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Draped Garments:

The influences of fabric characteristics and draping methods on 3D form

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Abstract

This thesis explores the way in which fabric characteristics; in particular the drapeability can influence and create three-dimensional form for garments. The aim is to combine scientific, visual and drape research and design methodologies to better inform the final design outcome – in this case a collection of garments. The characteristics of a fabric influence the draping effect. How fabrics with different drapeabilities influence design ideas and final forms is explored and revealed in this thesis.

An experimental fabric drape testing method is developed, which is suitable for the design processes of a practicing designer in order to investigate fabrics' drape characteristics. Six fabrics are chosen from the experiments that establish the quantitative and visual evidences for the design development. Each fabric is draped into one form according to its characteristic that influences the design ideas. Then other fabrics are draped into the same form to provide comparisons of their different performances and

evaluate how they create different appearances for the same form. A range of three-dimensional effects that are different from conventional garment shapes are created in which the fabric controls the final form. Various draping methods inspired by selected contemporary designers are employed to design the spatial effects around the body. Concepts of deconstruction, imperfection, volume, voids and architectural shape, are addressed in the design methodology.

The collection “Changing Dresses” is the final outcome of the initial design research, in which six dresses are created with variations from a single basic form. A range of draping methods are employed that best highlight the qualities of the fabrics and create sculptural forms that reflect the knowledge of fabrics on the body gained through the research. The three-dimensional garments, thus, stem from the research into the relationships among fabric characteristics and draping methods.

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Chapter one

Introduction

1.1 Central proposition

This project explores the relationship between draping, fabric characteristics and the resulting 3D garment. McIntyre and Daniels (1995, p. 104) define drape as “the direct application of fabric to a stand/dummy or body and the manipulation of the fabric to develop a design or as a means of producing a pattern.” Obviously, there is a close relationship between draping and fabric characteristics. Different fabrics have their own particular characteristics so they represent different draping effects. Whenever draping is mentioned, highly drapeable fabrics are often thought of first by designers. Such fabrics are ideal for creating the close fitting effect that contemporary fashion trends are currently pursuing.

This study, however, explores the use of fabrics with different and wide-ranging drapeabilities including those with low drapeability. A range of three-dimensional effects that are different from conventional shapes can be created in which the fabric controls the final form. The idea is to not only explore the drape qualities of fabrics but also to expose new and unexpected shapes that these drape qualities can produce. Thus exploring ways that I can use the fabric to create distinctive three-dimensional garments is the central aim of this research.

1.2 Background/context

The drapeability of a fabric affects the shape and outline of a garment (DeLong, 1998). This is an important point for the manipulation of fabric on the body. While draping, the designer has to deal with a number of different fabrics and must understand each fabric's characteristics intimately; for instance, whether the fabric provides a good fit or whether it swings dramatically, as exemplified by the dress in Figure 1.1, or whether the dress has a sharp crisp outline or soft shape (Figure 1.2), or whether it gives an exaggerated and stable geometric form (Figure 1.3). The fabric's characteristics affect its drapeability and performance. It is in this way that fabrics inspire the designer to



*Figure 1.1. Karl Lagerfeld
Autumn/Winter 2005*



*Figure 1.2. Emanuel Ungaro
Autumn/winter2005*



*Figure 1.3. Vivienne Westwood
Spring/Summer 2004*

create forms. Christian Dior (1950, cited in Gale, 2004, p. 5) states: “fabric not only expresses a designer’s dream, but also stimulates his own idea. It can be the beginning of an inspiration. Many a dress of mine is born of the fabric alone.” Obviously, fabric plays an important role in fashion design, especially in draping where fabric can be touched, felt and manipulated directly onto the mannequin. Becoming aware of the influence of fabric allows the designer to create any number of specific visual effects.

Traditional texts identify five basic draping methods: cutout, cowl, twisting, gathering and circularity (Amaden-Crawford, 2005; Armstrong, 2000; Jaffe & Relis, 1993). Examples of these methods are shown in Figure 1.4 (a, b, c, d, e).

Draping methods such as these are closely aligned to the characteristics of the fabric to achieve the three-dimensional shape of the garment. Aldrich (1996) visually compares fabric drapeability by draping different fabrics into the same simple form - that of a circular skirt. The drape characteristics of fabrics can then be evaluated and compared through the different silhouettes of the shape, in this case the simple skirt. The effect of fabric on the shape is direct and visual.

Investigating each selected fabric’s characteristics and drapeability is one departure



a. Cutout



b. Cowl



c. Twist



d. Gather



e. Circularity

Figure 1.4. Five basic draping methods.
All the above Garments draped by Ying Li, 2004.

point for this research. Furthermore, exploring draping methods that create strong sculptural effects on the garment surface is another departure point of the study. This thesis will extend these ideas by exploring how fabric and draping methods influence the three-dimensional form of a garment and design ideas.

1.3 Research aims and objectives

My research aim is to engage with the relationships amongst drape, fabric physical characteristics and garment form via different draping methods in order to review the performance of fabric on the body, to emphasize a three-dimensional visual effect, and to experiment with the combination of fabric and draping methods to give a sculptural look to a garment.

Specific objectives of this thesis are:

1. To present a visual review of selected contemporary designers' work that explores their unconventional design ideas by using fabrics and draping methods. Their radical and avant-garde designs are then used as a basis to inspire me to create new shapes.

2. To develop ways of measuring fabric drape in practice that suit the design process and may be used by the designer. Using these experimental and visual methods, I will investigate the drapeabilities of selected fabrics, choose fabrics and establish the quantitative and visual evidences for my subsequent draping design development and final designs.

3. To establish how the relationships among draping methods and the fabric characteristics influence the three-dimensional form of the garment. I will achieve this by taking advantage of the fabric drapeability measured in objective 2 above and by draping forms with various draping methods.

Fabric characteristics have the ability to influence and determine design. Different drapabilities of fabrics inspire different design ideas and draping forms. Moreover, when different fabrics are draped into the same form a comparison of different silhouettes can be made which helps to investigate the different performances of selected fabrics. Thus relating the drape character of the fabric with the 3D visual result is an invaluable tool for a designer. Various draping methods allow me to think beyond the limitations of 2D sketches, and create three-dimensional structures that are independent of pre-

existing designs. Furthermore I will explore unconventional shapes and designs in garments that echo architectural lines and include volume and voids rather than echoing the contours of the body. Through this I will realize the fabric's ability to drape volume and space around the body, so that it is free to create new shapes.

1.4 Methodology

The methodology of the project includes research for design, experimental method, and research through design. The research for design is achieved by collecting the information through a literature review of relevant theory and a visual review of the works of selected designers, which will help to develop and support my design research. The experimental method is achieved by selecting six fabrics from the initial physical fabric testing that represent a wide range of physical characteristics and drapeabilities of fabrics. This, together with simple visual drape tests for these six fabrics is the basic for the subsequent design development. Downton (2003) claims that research through design occurs when designers are engaged in designing and research knowledge is produced through design. In this thesis, research through design occurs because the designer focuses on the way of using fabrics' different drapeabilities to create unconventional forms that deal with issues of void, architectural shape, deconstruction,

imperfection. Each garment form is inspired and draped by one of the six fabrics. Then the other remaining fabrics are draped into the same form to give visual comparisons that help investigate the different drape performances of fabrics on 3D form and evaluate how they create the different aesthetics for the same form. In the final collection, I use these same six fabrics to design six garments with variations from a single basic form. The design allows a comparison of the fabrics' different drape performances and also highlights each fabric's drape characteristic through their three-dimensional shapes on the body. The design works are visually shown in the exhibition.

1.5 Overview of thesis

Chapter 1

Contains introduction, central proposition, background and research aims.

Chapter 2

Presents the literature and visual review that provide the context and references for this research.

Chapter 3

Describes the fabric drape testing experiment and visual experiments, and discusses the criterion for the selection of six fabrics.

Chapter 4

Describes the design development and investigates how the fabric and draping methods influence the three-dimensional effect of the garment.

Chapter 5

Describes the final collection and investigates the outcomes of the different design ideas inspired from the different drapeabilities of the six fabrics.

Chapter 6

Concludes and evaluates previous practices.

Chapter two

Literature review

In this literature review, the methods of measuring fabric drape are reviewed to develop a practical method of measurement that can be used by the designer. Reviewing the visual methods of fabric drape helps the development of my visual method in a more detailed way. To explain how fabric drape determines the shape of a garment, I review the influence of fabric characteristics on drape. The purpose for the visual reviewing of contemporary designers' work is to explore their unconventional design ideas of draping and fabric usage. In addition, their designs are the inspirations for my own design process creativity.

The literature review provides the information related to my topic and supports the development of my methodology.

2.1 Fabric influence on draping

Collier, Paulins & Collier (1989, p. 51) define fabric drape as “a major contributor to the overall appearance of a garment”. Fabric drape is an important factor that affects how the fabric will hang and fall from the body. Delong (1998) states that fabrics may drape in dramatically different ways, depending on their physical properties. Weight, drape and thickness of a fabric influence how the fabric can be manipulated into various lines and shapes (Delong 1998). The exploring of how fabric drape quality influences draping ideas is critical to the results of this thesis. Fabric drape assessment is a necessary step for understanding the influence of fabric on draping.

2.1.1 Approaches to drape assessment

Fabric drape may be measured in several different ways. As Collier (1990, cited in Gurel, Lentner & Moore, 1995, p. 132) points out:

“There are three basic approaches of drape assessment. (a) subjective assessment of fabric drape judged by visual observation; (b) direct quantitative assessment, e.g. the drape coefficient is measured by a mechanical apparatus; and (c) theoretical analysis of the physical structures and mechanical characteristics of fabrics.”

It is necessary to use both subjective and objective approaches to investigate fabric drape. Objective drape measurement is combined with subjective evaluation to produce an integrated result (Gurel, Moore & Lentner, 1995). I will employ both subjective assessment and objective assessment in my research. However complex theoretical analysis of the mechanical properties of fabrics is considered beyond the scope of this thesis, as it is of limited use to the practicing designer.

The appearances of draped fabrics can be compared and evaluated subjectively. Subjective assessment is important because the effect of fabric draping quality on the body is direct and visual. But Narahari and Traci (2005) report that because subjective evaluation involves individual preferences and furthermore these evaluations are influenced by fashion trends, the results may contain some bias and instability. The objective evaluation of drape is reliable and steady. This is why some early researchers studied experimental drape testing.

The literature suggests (Stylios and Wan, 1999) that there are two objective approaches for fabric drape testing and evaluation. Pierce (1930) first introduced the cantilever-bending tester that was only able to measure two-dimensional bending behaviour of fabrics. However Chu et al. (1950) first studied fabric drape in a three-dimensional

way. The drapemeter for measuring drapeability was introduced by Chu et al. (1950) and later improved by Cusick (1965). Fabric drape is often in a three-dimensional form so this more intricate method is necessary to assess the three-dimensional drape of a fabric. Cusick (1965, p. 9) defined the drape coefficient as “the degree of fabric deformation that is the percentage of the area of the annular ring of fabric obtained by vertically projecting the shadow of the draped specimen.” The range of drape coefficients for typical fabrics is from 30% to 90%. A small drape coefficient indicates high drapeability of a fabric.

Stylios and Wan (1999) have found that two fabrics with the same drape coefficient may have different drape shapes. Some other qualities should therefore be measured together with the drape coefficient, such as the number of folds and nodes, the variation of the folds and the depth of folds and nodes, since these are the approaches that the viewer use unconsciously to evaluate drape aesthetically.

Sudnik (1972) concludes that it is difficult to find the relationship between the drape coefficient and the visual assessment of garments. But the subjective and objective assessments can be combined together to evaluate fabric drape as fabric drape is reflected in 3D visual form. The measurement of some parameter like drape coefficient

can classify fabrics into groups of similar performances. It is then easier to relate drape characteristics to the demands of fashion and garment style.

For my fabric testing method, I measured the drape coefficients of fabrics in order to categorize them into high drape, medium drape and low drape. Then fabrics with different drapabilities were chosen from these three groups. When these fabrics were draped, their different drape characteristics influenced the design ideas so that various shapes of garments were created.

2.1.2 The Gioello method and the Aldrich method

Since the subjective method is combined with the objective method to evaluate fabric drape, visually displaying fabric on a 3D form is necessary. Gioello (1981) visually presents fabric drape by hanging different fabrics on the dress form freely to show their different performances under a simple draping deformation (Figure 2.1). Some fabrics like satin retain a soft graceful fall, hanging into soft flares and ripples, and accommodate fullness through pleating, gathering, shirring, while some of them can retain the shape of the garment, maintain a crisp bouffant effect and fall into a stiff wide cone. This visual method is one of the simplest methods for the practical observation

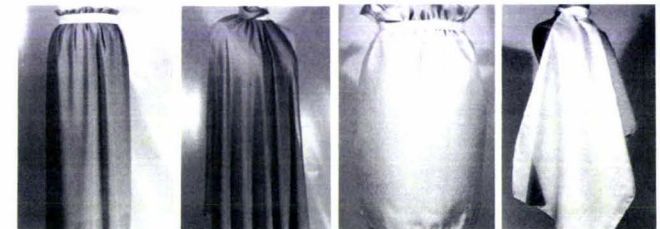


Figure 2.1a Figure 2.1b Figure 2.1c Figure 2.1d
Visual evaluation of fabric drape on a dress form. Gioello (1981).

of drape in three-dimensional form. This is why before I drape a fabric into shapes; I hang a big piece of the fabric on the body form to observe its folds' shapes and outlines. This is the initial step to understand fabric drape from a visual stance, because fabrics work with the body form all the time in draping.

Aldrich (1996) uses illustrations to show visual comparisons of different fabrics' draping forms; for example, simple circular skirts fall into different silhouettes on the garment form. Because the fabric dimensions used in each of the skirt shapes are the same; they vary only as a result of the fabric characteristics (Figure 2.2). This method allows the different draping characteristics of fabrics to be evaluated subjectively. Different from the Gioello method, the Aldrich method allows the fabrics to be draped into simple shapes. There is a clear comparison when fabrics are draped into the same shape. Firstly, this method links the fabric with the garment because fabrics are manipulated into garments to show their aesthetic drapeability. Secondly, the different drapeabilities of fabrics can be visually compared according to the various silhouettes of the skirts. The effect of the fabric on the silhouette is direct and influential. Although the dimensions of the cut pieces are identical, the silhouette visually appears quite different (Figure 2.2).

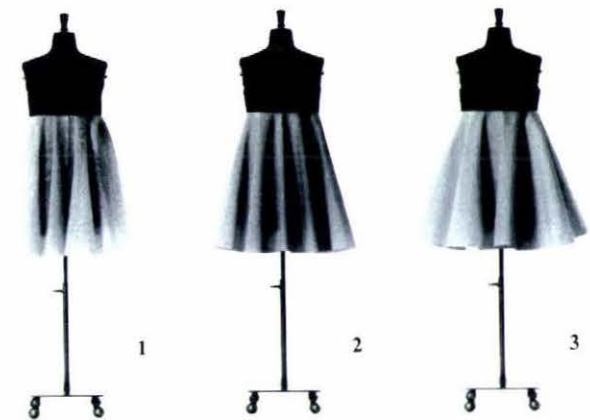


Figure 2.2. Comparison of drapeability of different fabrics when made into circular skirts. Aldrich (1996).

The Aldrich (1996) method is a good method for visually showing fabric drape with shapes on a body form. For a project related to draping such as the present Masters project, it is necessary to visually observe fabric drapeability on the body form rather than to just use physical or theoretical methods of drape evaluation. However the Aldrich method is most appropriate for simple comparisons because the shape of the fabric is just circular. Ultimately, it will be better to test fabric drapeability with different shapes or designs so that there will be a wide range of fabric performances to be compared. My research through design will extend the work of Aldrich (1996) by draping different fabrics on the body form with different shapes, and aesthetically displaying the comparisons. Relating the tactile character of the fabric with the visual result provides the designer with the experience of the visual influence of fabrics on the body.

In addition, Aldrich (1996) discusses how the fabric's physical characteristics, such as weight, thickness and shear, influence the visual appearance of any garment. Aldrich (1996) states that weight in a fabric can make graceful vertical folds and that lighter weight fabrics can cause general movement. Thick fabrics with low-drape and low-shear characteristics give exaggerated and firm geometric outlines. Extravagant but soft shapes can be created with thick fabrics and high-drape qualities. Aldrich (1996) also

implies that closely woven fabrics with high-shear characteristics are stable when cut in the bias, while open weave high shear fabrics distort if under stress. The investigation of the relationship between fabric properties and shapes provides designers with an intuitive sense of integrating form and fabric.

2.1.3 Fabric characteristics influencing drape

Collier, Paulins & Collier (1989) suggest that fabric drape is influenced by various fabric characteristics including fibre content, yarn type, fabric thickness, weight, weave, and finish.

Cusick (1965) reports that both bending stiffness and shear stiffness influence drape. As Rodel, Ulbricht, Krzywinski, Schenk & Fischer (1998, p. 201) state: “bending is a major mode of deformation in fabric drape. Bending stiffness of a fabric is mainly based on the stability of fibres in the thread”. Furthermore yarn diameter, yarn type fabric thickness and weight influence bending stiffness. Cusick (1965) determines shear stiffness by measuring the shear angle at which a fabric begins to buckle (Figure 2.3). Collier & Paulins (1989) suggest that yarn type influences the fabric shear stiffness. Orzada (2001) claims that the tighter weave structures have more resistance to shear

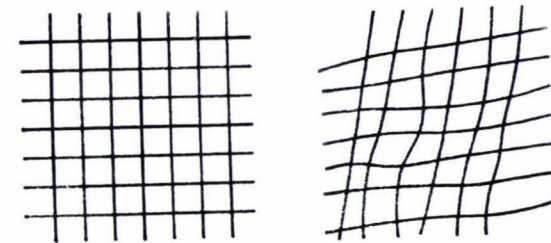


Figure 2.3. Original fabric and its shear deformation. Aldrich (1996).

than other weaves. Collier (1990) claims that a fabric with a low resistance to bending forms graceful folds. The more readily a fabric bends and shears, the more drapeable it will be. Fabric stretch helps the garment fit to the body closely and it is very visual. There are some fabric characteristics that influence the stretchiness of fabric. Ziegert & Keil (1988) state that fabric properties affecting fabric stretch are fibre content, yarn texturing, elastomer content, and fabrication structure. Moreover the grain line direction affects the fabric stretchiness as well.

While bending and shear can be measured objectively, this requires sophisticated equipment and advanced theoretical analysis (refer to quote on page 10) and would be beyond the scope of most practicing fashion designers. Therefore these methods were considered beyond the scope of this thesis. Instead simple experimental techniques such as the drape coefficient and subjective visual evaluations will be employed.

2.1.4 Bias cut

In draping, fabric is not just cut on the lengthwise or crosswise grain as in Figure 2.1a and Figure 2.1c but also on the bias as in Figure 2.1b and Figure 2.1d so the direction of the grain line becomes important for draping performance.

When a fabric is hung on the bias, it is hung at junctures of the warp and weft threads and this together with the weight of the fabric under gravity causes distortion through fabric shear. From the mechanical and technical aspect, some researchers have already tested the influence of grain alignment on the fabric drape. Orzada (2001) measured a diverse range of fabrics and found that increased tilt angle away from the bias grain produces an increase in shear stiffness. Thus, degree of tilt towards the bias increases the stretch value of fabric, especially for twill and satin weave fabrics, so that the fabric fits the body curves more easily when draped on the bias grain. It is important to consider how a fabric's performance varies with grain orientation. When the fabric is placed on different grain line, its shear property will be changed. This could be an advantage or a disadvantage to the designer. Taking advantage of the bias fabric placement and avoiding the fabric distortion on the bias are both significant for draping.

The placement of the grain of the fabric affects the silhouette on the body (DeLong, 1998). If the fabric is placed on the lengthwise grain, it hangs straighter and gains more vertical lines (Figure 2.1a and Figure 2.1c). If the fabric is placed on the bias, the stretch of the bias permits the garment to follow the body curves more closely; fabric cut along the bias grain stretches and distorts at the crossovers to accommodate movement so that often any darts are unnecessary. In Figure 2.4, the fabric is cut on the bias grain around



Figure 2.4. Valentino, Autumn/Winter 2003.

the waist so that the garment clings to the waist curve line without darts. Consideration of the grain line placement of fabric is very necessary in draping (DeLong, 1998).

For draping, the fabric can be placed on the body form directly; therefore checking the effect of bias cut on a dress form becomes more evident. Adjusting the placement of fabric grain line can allow a fitted effect that satisfies the functional aesthetic requirements of the designer.

2.1.5 Summary

Aldrich (1996), Collier (1990) and Orzada (2001) suggest that fabric characteristics are important factors to influence the fabric drape and that fabric drapeability affects the appearance of a garment. Fibre content, weight, thickness, drape and stretch are the key fabric physical characteristics should be investigated during fabric drape testing. Authors such as Aldrich (1996) and Gioello (1981) provided the basis to develop my visual method.

Johns (2002) suggests that draping is sculpting with fabric. The designer works with the fabric directly on the garment form, which is different from flat pattern cutting.

Fabric performance gives the designer inspiration for the form of garment. In draping, the fabric pieces can be any shape, so fabric plays an important role in making those designed shapes possible and stable on the body. This is like a sculptor using fabrics to outline and cover the body in diverse shapes, for example, to create a rounded surface that protrudes from the silhouette, extending toward and away from the viewer. But whether shapes will stand away from the body or cling to it will depend on the fabric properties.

2.2 Draping methods influence on the 3D effect of the garment

Draping is a good way to create the three-dimensional form around the body. How does draping accomplish this goal? Delong (1998) notes that the fabric and the layout structuring of a garment can emphasize the three dimensional nature of the body and make the viewer aware of a visual path. Delong (1998) supports this statement with two points. The first one is the function of the fabric, but he only mentions the influence of fabric sheen, for example a shiny fabric reflecting light from different angles provides a rounded contour of the body. Secondly, the layout structuring enhances the body form, by gathering, pleating or design lines. Delong (1998) suggests that layout structuring is created by the three-dimensional manipulation of materials in, out, and round the

body. Draping is very good at revealing various layout structuring so designers take this advantage to make the draped garment emphasize the rounded body.

Arnheim (1971) notes that people have a visual concept of solids that allows them to visualize all around a solid body at the same time. Davis (1980) explains that when viewers look at the front of a garment, they tend to imagine the back and the entire form, so in draping the three dimensional body form, every side and angle should be taken care of to satisfy the curiosity of viewers. Delong (1998) claims that the viewing may not be complete from only one side of the body and that a design line continuing around the body may compel viewers to view the entire rounded body. For example, in Figure 2.5, a front line continues to the back, which attracts the viewer to see the side and back, and this creates the dress in a three-dimensional view.

In this project, I drape fabrics on the body form to create 3D shapes that are not simply front and back. Diverse lines and shapes give the uninterrupted view around the body. The border can be as long as it needs and the pattern can be as big as required without any space limitations. Therefore, draping methods are interrelated with the fabric to create the three-dimensional form. This relationship is cyclic (Figure 2.6).



Figure 2.5. *Akira, Spring/Summer 2003.*

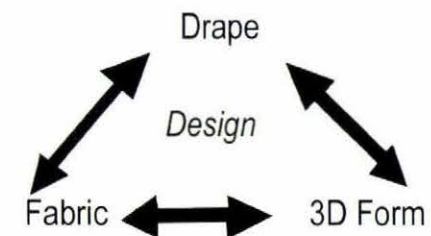


Figure 2.6. *The diagram of relationship between drape, fabric and 3D form, Ying Li, 2005.*

2.3 Contemporary designers' works exploring unconventional draping and fabric usage

In a postmodern scenario where the fashion focuses on individual distinction, contemporary designers place an important role upon draping and fabric application. Some designers, for example, Issey Miyake, Rei Kawakubo, Yohji Yamamoto, Hussein Chalayan and Vivienne Westwood are remarkable and talented fashion designers in this field. Their radical ideas explore new ways of creating shapes through fabrics and draping. Some of my design concepts are inspired from their works.

Sato (1999) explores Miyake's various fabric treatment technologies in the book "Issey Miyake Making Things". For instance, Miyake is very interested in the development of pleat technology. The surface of a pleated fabric looks three-dimensional because of the pleated surface texture. Miyake demonstrates the flexible advantage of the pleat in its ability to recover original shape. His pleated garments have a strong three-dimensional form with the light, soft and moveable characters (Figure 2.7). Fabric plays an important role in Miyake's garment, revealing the spatial geometry and sculpture aesthetics.



Figure 2.7. *Dancers from the Frankfurt Ballet in Pleats, Issey Miyake, 1999. Sato (1999).*

Miyake brings creativity to his clothes by using different fabrics; in Figure 2.8, the fabric of this evening dress is wool jersey. An evening dress with a bustle, open-back neckline, and halter such as this is usually draped in soft fabrics such as satin, or crepe. What is an evening dress like if it is made of wool jersey? Miyake manipulates its symmetric form with asymmetric patterns through draping, which deposes the traditional approach. The back of the garment is asymmetrically looped and wrapped, and the front is draped symmetrically.

Wool jersey fabric is usually not a popular fabric for an evening dress, however Miyake chose to drape an evening dress out of this fabric. It is against the conventional idea of fabric usage. The dress does not softly swing like most evening dresses; its straight and firm outline conveys a particular emotional sense that combines elegance and whimsy. In my project, I will use six fabrics to make six garments from the same form. Maybe only one or two fabrics are the ideal fabrics for that form, other fabrics may not be. But other fabrics do have the ability to create special and surprising aesthetic shapes because of their characteristics. This project thus works against the traditional idea that certain fabrics are ideal for certain forms. Every garment can be made of various fabrics and the unexpectable shapes created can be explored.



Figure 2.8. Issey Miyake, 1987. Martin & Koda (1992).

Sudjic (1990) describes Rei Kawakubo as a genius full of ideas about cloth, body, wrapping, and generous use of fabric. Sometimes if a garment is draped in a complex structure, it is necessary to make it clear where the neck or the arm is. The signature of Kawakubo's garments is asymmetric, loose, wrapped, knotted, torn or cut up. In Figure 2.9, the fabric is loosely layered and draped on the body. The form reflects the description of Quinn (2002, p. 147): "when the dresses are worn on the body, they are often draped or looped around the models rather than dressing the models in them". Fabric is draped into various shapes which can not be produced from flat sketches and patterns. The garment is created when the fabric touches the body.



Figure 2.9. Rei Kawakubo, Spring/Summer 2003.

Yohji Yamamoto is accomplished in combining body, fabric and structure. He designs garments to hang unambiguously or drape romantically around the body so that they are like sculpture and also poetry. In Figure 2.10, the layout structure is dramatic with the poetic effect created through draping methods. Yamamoto selected a crisp fabric to retain the shape of the garment and maintain the pleated form. The combined use of fabric and draping methods emphasizes the three-dimensional body and appeals to the viewer to look at the back form.



Figure 2.10. Yohji Yamamoto, Spring/Summer 2005.

In Figure 2.11, the garment is twisted and wrapped without fastening. It is not sewn onto a fixed position, so that every time it is worn it is recreated. The twist diagonally crosses the shoulder and echoes the mystery of the image. It raises the viewer's attention to look at the back and to discover the way that this twist finishes. Yamamoto is good at conquering space so the clothes look visually striking yet simple.

Hussien Chalayan is known for his provocative creativity. His design style is a little different by focusing on the interior/exterior fashion and architectural form. In Figure 2.12, the garment is from Chalayan's spring-summer 2002 collection "Medea", which has a voodoo theme. He expresses the "hex" image through the dress by using layering, twisting and cutting away partly, for instance cutting away the top fabric to leave only the lining. The fabric with frayed edges is ripped and torn to represent the curse affected area, which enhances the emotion of fear (Edward, 2003). Chalayan enjoys daring, novelty, and originality of design, highlighting the emotion of the dress with fabrics and design methods.

Vivienne Westwood's work is the physical expression of her ideas of manipulation of the form and structure of clothing. In Figure 2.13, the garment is geometrically cut, wrapped and tied. On the front skirt, the fabric is folded to be like a cone and to



Figure 2.11. Yohji Yamamoto, Spring/Summer 1998. (Wilcox, 2001).



Figure 2.12. Hussien Chalayya, Spring/Summer 2002.



Figure 2.13. Vivienne Westwood Spring/Summer 2005

swing with movement. The appearance or shape of this cone depends on the fabric performance. If the fabric was very soft and light, this cone could be a cowl with natural folds. However, this stiff fabric forms the firm outlines of the garment so that the clothing is very dynamic with the triangles, rectangles and cones. Through clever cutting and understanding of the fabric, the designer creates the clothing with both whimsical and feminine appeal.

Sophia Kokosalaki is well known for her Grecian drapery with gathers and pleats. In Figure 2.14, a breastplate is made up of stitched brown leather and pin-tucked cream leather to suggest the image of the Greek warrior goddess (McDermott, 2002). Its asymmetric and geometric cut evokes the mystery of this fairy tale character. If the leather causes a sense of power, the pleated green chiffon softens the overall effect. The fluid light chiffon is interwoven with leather to help the garment become a combination of strong and romantic. It is a balance between the delicate and the tough. This garment shows how the fabric usage and draping methods influence the garment form and emotion.



Figure 2.14. Sophia Kokosalaki Spring/summer 2001 (McDermott, 2002)

Summary

The visual works described above belong to “radical fashion” that “is a creative fashion by pushing boundaries, challenging preconceptions, exceeding limitations and ultimately finding a balance between conformity and eccentricity, function and adornment” (Wilcox, 2001. p. 7). These garments with interesting structures change the viewer’s ways of thinking, because they encourage people to look at garments from an unconventional viewpoint.

An intimate relationship with fabric is expressed in these designers’ garments. For example, Issey Miyake takes advantages of the pleated fabric to design a dancer’s costume. The characteristics of the pleated fabric create a garment with a three-dimensional structure. The garment moves with the body to create an aesthetic performance.

Eschewing traditional garment form of simply cut front and back or symmetrical balance of right and left, and conventional fashion that generally focuses on the curves of the body, these designers wrap and drape great swathes of fabric around the body. They explore an avant-garde fascination by pushing the limitation of traditional

garment forms and function.

In my design development, the garment is designed using the fabric as inspiration to create form. According to each fabric's different drape characteristics, I will attempt to create different spatial effects around the body. Various draping methods are employed to create unconventional shapes and explore the new ways of thinking about garments. Any part of the body, even the waist, the belly or the back, can be extended with fabrics through draping. When I manipulate fabrics on the body form, the garment can be any shape. These designers' works inspire my design research concept about combining fabric and draping methods to create new shapes.

2.4 Three-dimensional forms in contemporary designers' works: deconstruction, imperfection, void, volume, and architectural shape

The three-dimensional form of the garment is not only defined as the continuous layout structure but also as the three-dimensional concave or convex surface of the garment. Quinn (2003) implies that contemporary designers break the spatial limitations of the scale of the human form and create structures that are independent of preconceived standards of design. The designers are engaged with unconventional fashion that goes

beyond the limitations of accommodating the human body to signify its shape and curve. In their works, deconstruction, imperfection, volume, void and architectural shape reveal that fashion is inevitably linked with three-dimensional form. Garments with sculptural structures call the viewer's attention to the whole rounded body. The effects of these garments are related to the fabric's characteristics and related to the way that fabrics drape and work on the body.

2.4.1 Deconstruction

In architecture, deconstruction is dislocating a space to expose its structure and operation and produce certain visible effects (Wigley, 1993). The intention is not to collapse the structure; on the contrary, it is to open up its forms of distortion, failures and limitations, and even to locate what lies concealed (Wigley, 1993). In fashion, as Quinn (2003, p. 68) interprets:

“Deconstruction explores the interiority of garments by slicing them open; rearranging their structures, turning them inside out and sewing them back together in a new form. ...The intention is to uncover, reveal and simplify, creating an unconventional garment, yet one considered to be ‘finished’ ”.

The deconstruction of fashion is appropriated from architecture. Parallels can be drawn between the fashion designer's deconstructive technique and that of the architect. Figure 2.15 is Coop Himmelbau's "open house" whose facets of walls are disrupted and hidden spaces and structures are revealed. The establishment of new visual and spatial hierarchies uncovers the new meaning of the building (Wigley, 1993). A garment is like a building with structure, form, fabric, construction and space to accommodate the body. The visible seams, unfinished hems and linings are used as design motifs in deconstructive fashion, which expose some unseen areas and design process (Quinn, 2003).

Rei Kawakubo is well known for her management of deconstruction in design. She explores deconstruction as a process of investigating creation. In Figure 2.16, the sleeves and lower part of the garment are turned inside out, and then re-stitched together. The presence of facings, trimmings and seams reveals fresh narratives of the garment. The sleeves give a strong signal to the viewer that the garment is deconstructed, and the inside is displayed. This gives an illusion that the upper part of the garment is also the inside part. Its heavy gathering implies the disturbance traditionally hidden inside the garment. Chaos is explored through this deconstructive form to suggest that the inside, conventionally thought of as silence, also has its own story and meaning.



Figure 2.15. The "Open House" by Coop Himmelbau. Glusberg (1991).



Figure 2.16. Rei Kawakubo, spring/summer 2001

Deconstruction has a source in history. Even in fashion, many authors have analyzed deconstructive design associated with history, like Martin Margiela's work. For example Gill (1998) suggests that Margiela leaves traces of history on his deconstructive garments. Margiela takes old garments apart, and innovates a new one through fashion's history, by pushing a new idea at the expense of history. The old garment has a technical tradition which seems to be left behind. But this past trail of fashion cannot be discarded because it penetrates the frame of the new innovated garment. Kawakubo also stitches a dialogue with the past into the garment's future. She creates garments by dissecting the old garment, moving collars, sleeves and fastenings, rearranging pieces and sewing them in a new form. In Figure 2.17, a military uniform that served for the British King George VI's era is dismantled and the remaining part is twisted. This history of fashion is combined with swirling wrap and curtain swag to complete a new garment. It seems the new arrangement changes the former garment's manifestation, but the skeleton of the garment reveals the ties to its own history (Gill, 1998). At the same time the garment enables the making of a contemporary and fashionable garment.



Figure 2.17. Rei Kawakubo, spring/summer 2006

Traditionally, the inside of the garment is stitched so as to hide the construction secrets of a finished garment. Deconstructive fashion brings these secrets to the surface to

reveal a desire to explore it as a new thinking and a new meaning.

Some of my garments engage with deconstructive design to display conceptual ideas. However the way in which I deconstruct a garment with a low drape fabric differs from the way of deconstructing a garment with a high drape fabric. The key to research through deconstructive design in my project is how to rearrange the garment's structure and reveal its insides according to each fabric's characteristics. Moreover, I employ deconstructive design not only to expose design ideas, but also to express the characteristics of a fabric.

2.4.2 Imperfection

Darker elements of life and culture are often apparent in some contemporary designers' works instead of being masked under conventional fashion. Designers like Rei Kawakubu, Junya Watanabe and Martin Margiela design "imperfect" garments to reflect the inherent contradiction of human desire for perfection but never attaining it. In contrast to fashion's traditional role of the short-lived perfect fantasy, it is perhaps imperfection that reflects the real meaning of beauty.

When the garment embraces the elements of imperfection, it also demonstrates the nature of deconstruction. The construction of the garment is exposed through deconstruction and its surface no longer reveals a smooth perfection. The visible seams, frayed edges, and unfinished hems are the motifs of imperfection. In Figure 2.18, the dress, which is from Rei Kawakubo's autumn/winter 2005-06 collection "Broken Bride", is re-pieced together with visible seams and mismatched patches to express the imperfect design. The structure and the inner truth of the dress are brought to the surface. The dress furnishes an ironic commentary on the decorative and luxury wedding dressmaking. The imperfection of a deconstructed garment reveals distortion and error rather than constructing a lie of beauty (Arnold, 2001). The aesthetic and conceptual meaning of Kawakubo's imperfection is not an aesthetic of poverty, rather "it is a negative aesthetic, based in contestation of the idea of fashion itself" (Vinken, 2005, p. 101).

Apart from the deconstructed form, asymmetric and shapeless forms also express imperfection in fashion. In Figure 2.19, the jacket is draped asymmetrically and loosely without highlighting the curves of the body. Rei Kawakubo uses the ingenious asymmetric design and loose overlays of the fabric in her garments to explore new ideas about fashion. The designer appreciates the flaws and weakness of women, rather than designing new characters for the wearer (Arnold, 2001). The garment does not deny



Figure 2.18. Rei Kawakubo, Autumn/winter 2005-06



Figure 2.19. Rei Kawakubo, autumn/winter 2003-04

and disguise the natural asymmetry of the body and it is not a means of influencing the wearer, however it reflects one's own thinking and well-being. Kawakubo brings new thinking by challenging people to realize different types of beauty.

The designers wrap or drape fabrics around the body with asymmetric forms, layers, raw edges and visible seams to create imperfect forms. The seemingly random panels of the garments are the result of careful thought and technology. The garments have deeper meanings than the artificial beauty that is quickly passed. I appreciate the disclosure of the truth of the design process and construction itself instead of keeping it as part of the secret of the garment. The imperfection reveals the falseness and weakness of the real world rather than belying them by sophisticated decoration. Moreover, in this design research, I design imperfect garments to emphasize the characteristics of the fabric. Draping methods can create imperfection and different fabrics show different meanings of that imperfection.

2.4.3 Volume /Void

Another concept that is related to three-dimensional effect and much engaged with contemporary fashion designers is that of void and volume. Luecking (2002) claims that void and mass are the significant form in the world of three-dimensions. These forms are already widespread in architecture and in the fashion area. A space can be full or empty. In a three-dimensional aspect, void is an empty volume. A solid form has shape and form, but a void has them too. Quinn (2003) suggests that the void is not a non-meaning space; it generates a real form and is a container for ideas that has complex meaning.

Void can give an intense three-dimensional look. It provides big volume, creating space around the body and obscuring its margin. Generally, the effect depends on the fabric characteristics. In Figure 2.20, the garment is constructed from a thick and low drape fabric that inflates and creates empty space between the garment and the body. In Figure 2.21, the down filled fabric plays an important role in forming the voluminous wrap. The bulky characteristic of the fabric produces an illusion that the inside space of the garment is empty. Actually, the volume is filled with down feathers. The dress is draped with the fabric to show an avant garde elegance. In Figure 2.22, the doughnut



Figure 2.20. Rei Kawakubo, spring/summer 2005



Figure 2.21. Junya Watanabe, Autumn/winter 2004-2005

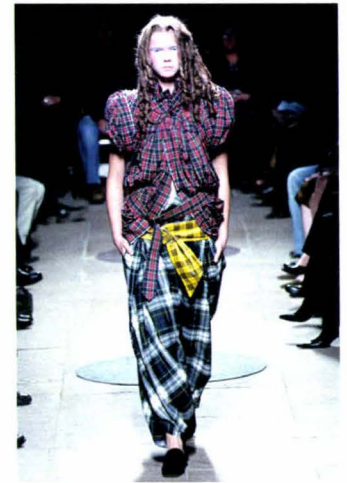


Figure 2.22. Rei Kawakubo, spring/summer 2006

shaped ruffles on the sleeves are solid volume which also contains a kind of space. This effect is innovative not because of the fabric characteristics, but because of the way in which the fabric is rolled and wrapped. The designers charge these striking voids with a sense of density; the mass created in the garments seems to overwhelm the wearers.

Luecking (2002) explains that the active void is the empty space entering into a solid form; the passive void is the space between two solids, like a gap. Compared to the mass voids, some voids are regarded as microcosm existing in fashion, e.g. the voids hiding in the recesses of folds or pleats, or in the pocket. In Figure 2.17, the upper section of the garment with gathers is like a maze consisting of nooks and crannies; each of them is regarded as a void that evolves as the fabric is gathered. The empty voids are like the passive gaps between gathers and folds. Quinn (2003, p. 217) explains, “The fold is understood in terms of surfaces, yet the void manifest with its central recess is ever present”. The so-called mobile void expresses the structure of the surface and creates the three-dimensional visual effect.

Creating volume and void in fashion has various design methods. In my project, I have used draping methods to create volume and void that reflect the physical characteristics and aesthetics of the fabrics.

2.4.4 Architectural shape

Contemporary designers employ architectural shape to extend the garment into a three-dimensional visual effect. Hussien Chalayan is one of the most influential fashion designers known for creating architectural fashion. His work seems to have more in common with architecture than fashion. The geometric cut and architectural lines of his garments indicate that fashion and architecture are close together. Quinn (2003, p. 119) comments that “Chalayan conceived to define space, reflect the construction principles and notions of contemporary architecture more than conventional fashion”.

In Figure 2.23, Chalayan uses architectural proportions to create spatial geometry on the dress. The elliptic outline of the dress is contrasted with the organic curve of the body. The elliptic form is like a dwelling for the body to inhabit. Its half open structure leaves an image that an empty space penetrates this mass elliptic dwelling to explore the hidden inside. The habitation is carved to create a void that defines the space between the garment and the body. This design combines architecture with fashion; the cutting and draping techniques provide the dress with a three-dimensional structure. The viewer will look all round the dress, like looking at a building from every angle.



Figure 2.23. Hussien Chalayan, Autumn/winter 2004-2005

The dialogue between fashion and architecture derives from construction and design techniques, providing a channel for understanding the meanings between them. The designers who employ architectural principles in fashion take garments beyond the traditional flat form into a three-dimensional form. They design garments as a process of probing and observing space by embracing principles of architecture in their garment construction.

The fabrics I use are chosen for their physical characteristics to create volume, void, and architectural shape. Moreover, design methods (draping methods) improve the spatial effect of the garment and create the rounded view of the garment. Fabric and draping methods work together to endow the garment with a three-dimensional effect.

2.5 Summary

In the literature review, the fabric drape assessment methods provide me with directions for measuring fabric drape. For this research, measuring fabric drape coefficient in an objective way could allow fabrics to be grouped into three levels of drape. The Aldrich (1996) method and the Gioello (1981) method suggest the use of subjective visual assessment to investigate fabric drape. Visual method is an important way to present

the fabrics' different behaviours on the three-dimensional dress form. Draping fabrics on the body form into various shapes will allow comparisons of their drapeability and evaluation of the contribution of draping methods to the form. The visual review explores some contemporary designers who are inspired towards using fabrics for draping and creating forms in an innovative way. Moreover, the visual review of deconstruction, imperfection, void, volume and architectural shape suggests how unconventional design ideas can be used to create three-dimensional forms. They are the basic concepts that inspire my design work to create forms through combining fabric and draping methods together.

To sum up, this literature review covers fabric characteristics, draping methods and contemporary designers' works. It helps to build the knowledge related to this research project and inspires me to develop my work.

Chapter three

Fabric investigation

The fabric testing component of this research involves measuring fabric physical properties including drape coefficient so that fabric drape characteristics can be investigated. The tested fabrics will be categorized into high drape, medium drape and low drape on the basis of their drape coefficients. Six fabrics will be selected from these three groups so that they have a wide range of fibre content, weight, thickness, hand and drapeability. The measurement of physical drape of fabric thus provides an objective method for the selection of six final fabrics. Then simple visual tests are performed using these six fabrics which provide a subjective method to complement the evidence for investigation of fabric's drape performance. These experiments are thus developed as a basis for the subsequent design development.

3.1 Fabric sourcing

Initial fabric selection for this research was mainly based on physical properties, such as fibre content, hand, structure and drapeability. The colour of the fabrics was not the main element of fabric selection although attention was paid to the compatibility of colours and styles. Fabrics were sourced locally in the Wellington market, e.g. outlets such as Global Fabrics, Fabric Warehouse, Evans and Spotlight.

An initial selection of 21 fabrics was made that included fabrics with a wide range of fibre contents. The reason for choosing a certain fabric was primarily because it possessed a certain characteristic; fabric physical characteristics such as drape assessed by the drape coefficient and fibre content were also the first consideration.

The initial 21 fabrics had various fibre contents, including wool, silk, linen, cotton, polyester, viscose and nylon, and included fabrics containing blends of these fibres. Fabric hand included a wide range of expressions such as, soft, stiff, harsh, smooth, compact, and loose etc. Fabric structures included knit, plain weave, crepe, sateen, twill weaves, and non-woven. The drapeabilities of the fabrics ranged from high, through medium to low. Because the final fabrics were chosen from these fabrics, the

colours of these fabrics needed to work well in harmony together, although this was a secondary consideration. Neutral colours (grey, sand yellow) and light pale colours (white, cream) were mostly chosen. After selecting the 21 fabrics, 40cm of each fabric were purchased as the preparation for fabric drape testing.

3.2 Fabric drape testing experiments

3.2.1. Definitions of fabric drape and Drape Coefficient

Fabric drape is defined as “the extent to which a fabric will deform when it is allowed to hang under its own weight” (BS 5058, 1973). The drape coefficient provides a quantitative measure of static drape of a fabric using an instrument called a drape meter.

3.2.2. Apparatus and method

There are two possible methods for measuring the Drape Coefficient (DC). The conventional method is to calculate the percentage of the area of an annular ring of fabric obtained by vertically projecting the shadow of the draped specimen on to a

sheet of paper (Cusick 1965). The area is calculated by cutting around the outline of the draped shadow, and weighting the cut out specimen. The formula is:

$$DC (\%) = (W_2 \times W_1) \times 100$$

Where: W_1 = the weight of the 30 cm paper ring

W_2 = the weight of the shaded area of the paper ring

The smaller the DC, the higher the drapeability.

The digital (modern) method involves using the image pixels and the image resolution from a digital image of the draped specimen (Kenkara and May-Plumlee 2005). It is the method used in this test experiment. In this project, I devised an experimental method for testing drape using the principle of the drape coefficient. The experimental setup of the drapemeter in this project was modified from the web camera drapemeter described by Natarajan and Apparaj (2004). The measurement method for the drape coefficient using the drape meter was similar to that of Kenkara and May-Plumlee (2005). The test apparatus of my experiment consisted of several parts (Figure 3.1 & Figure 3.2)

A translucent glass plate was supported between two horizontal surfaces. A source of light was positioned centrally and vertically above the drape disc (18cm diameter)

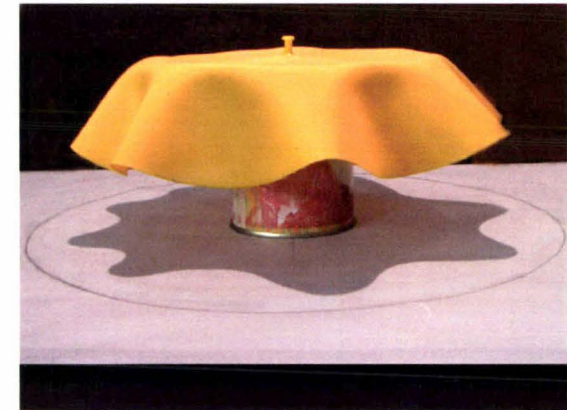


Figure 3.1. The test apparatus for measuring drape coefficient in my experiment, 2005

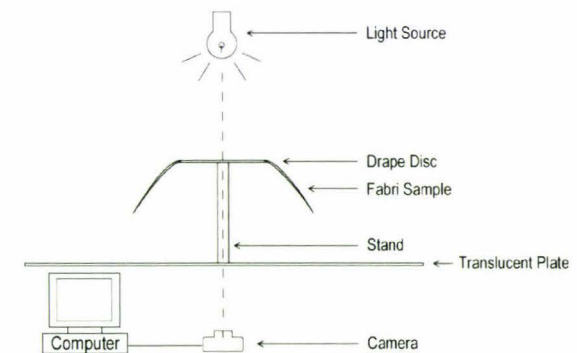


Figure 3.2. The diagram of my fabric test apparatus, 2005

which supported the specimen, having a central locating pin for positioning the fabric. A 30cm diameter circular ring was drawn on the plate. Its center was also the disc center. A 30cm diameter fabric specimen was positioned on the disc and the image projected onto the translucent glass plate. The height of the light was increased above the drape disc until the image size had no change (approximately 100cm). The digital camera was placed (approximately 70cm) directly underneath the plate to capture the draped image. The camera was mounted at a distance sufficient to focus the glass plate with the shadow of the draped fabric. The position of the camera lens, the disc center and the light source were in vertical alignment.

By means of a 30cm diameter card template, the specimen was traced, the centre was marked and the specimen was cut out. The specimen was placed freely on the disc and prevented from creasing. Its centre was fixed on the centre of the disc by a pin. The digital camera captured the image (shadow) of draped fabric. There were a total of six measurements on each specimen; three times surface side up and three times surface side down.

The method of analysis was similar to that of Kenkara & May-Plumlee, 2005. The raw image was imported into *Adobe Photoshop* software and the extraneous portion

of the raw image was cropped. The image was calibrated by setting the dimension of the circular ring to 30cm diameter (Figure 3.3).

The draped configuration of the image was traced with the “magnetic lasso” tool in *Adobe Photoshop*. The “magnetic lasso” tool attached a boundary and selected the dark region based on pixel value. The selected configuration was used to calculate Drape Coefficient of the fabric. The Drape Coefficient of the fabric was calculated by using the image pixels and the image resolution from the draped specimen, and the following formula:

$$DC(\%) = \left[\frac{(\text{Total selected Pixels} \div \text{Pixels per cm}^2) - \text{Area of Support Disk (cm}^2\text{)}}{\text{Area of the Specimen (cm}^2\text{)} - \text{Area of Support Disk (cm}^2\text{)}} \right] \times 100$$

Where: Resolution (pixels/cm)=300 pixels/inch=118.11 pixels/cm

$$\text{Pixels/cm}^2 = 118.11 \times 118.11 = 13949.9721 \text{ pixels/cm}^2$$

$$\text{Area of support disc (cm}^2\text{)} = \pi 92 = 254 \text{ cm}^2$$

$$\text{Area of the specimen (cm}^2\text{)} = \pi 152 = 706.5 \text{ cm}^2$$

The average Drape Coefficient of each specimen was calculated from the six measurements.

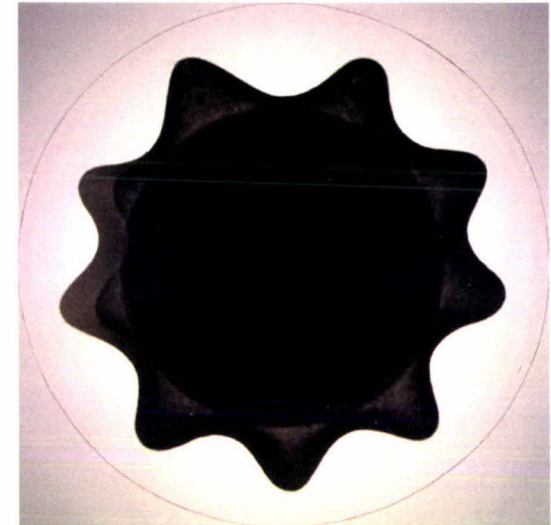


Figure 3.3. The digital image after the calibration, 2005

3.2.3. Checking the accuracy of the modified digital method

The conventional method of calculating the Drape Coefficient (BS 5058, 1973) was compared with the modified digital method to determine whether similar values were obtained using the two methods. This was done to provide a check of the accuracy of the digital method.

The difference between the DC obtained from the modified digital method and the DC from the conventional method was very small (Appendix 1). This means the digital method is a valid method of measuring Drape Coefficient.

3.3 Results



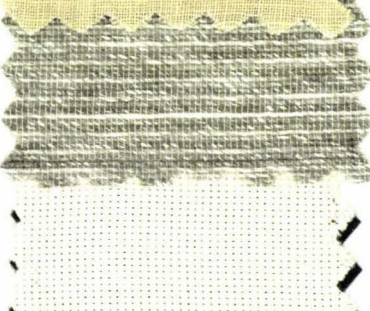
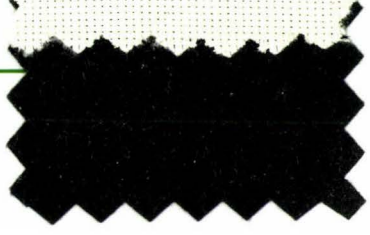
3.3.1 Physical characteristics of the 21 fabrics

The drape coefficients of 21 fabrics from the initial selection were measured. Their physical and drape characteristics are presented in Appendix 2. The 21 fabrics were categorized into three groups, high drape (0% – 35%DC), medium drape (35% - 65%DC) and low drape (65% - 100% DC).

3.3.2 Selection of final six fabrics

Six fabrics with different Drape Coefficients were selected from the above three groups so that they represented a wide range of drapeability from low drape (0-35%), medium drape (35%-65%), to high drape (65%-100%). Based on the DC measured, two high drape, two medium drape, and two low drape fabrics were selected. Their Drape Coefficients were respectively 7.6%, 33.7%, 39.8%, 61.9%, 76.3%, and 96.4%. The fibre contents of the six fabrics included wool, linen, silk, viscose, polyester, nylon and blends. Thus both natural fibres and man-made fibres were represented in the selection. The structures of the fabrics included knitted, woven and non-woven fabrics. Fabrics also had a wide range of yarn structures, weight, thickness and stretch. The colours of the fabrics matched together well. Table 3.1 presents the physical characteristics of the six selected fabrics.

Table 3.1 Physical characteristics of the six selected fabrics

Fabric	Fibre Content	Fabric Structure	Yarn Structure	Weight g/m ²	Thickness mm	DC %	Swatch
A	100% viscose	Single jersey weft knit 15courses x 20wales/cm	Staple single Z twist	103.0	0.376	7.6	
B	100% wool	1x1 plain weave 22warp x 19weft/cm	Wp: Staple single Z crepe twist Wt: Staple single Z crepe twist	126.5	0.548	33.7	
C	100% linen	1x1 plain weave 29warp x 24weft/cm	Wp: Staple single Z twist Wt: Staple single Z twist	121.1	0.268	39.8	
D	40% nylon, 25% cotton, 35% viscose	Stitch bonded (chain stitched warp) 13warp x 14weft/cm	Wp: Filament single S twist Wt: Single Z twist fancy yarn	207.0	0.518	61.9	
E	100% silk	Aida weave 48warp x 39weft/cm	Wp: Staple 2ply S+Z twist Wt: Staple 2ply S+Z twist	147.9	0.411	76.3	
F	100% polyester	Random wet-laid nonwoven interlining (non-fusible)	N/A	51.1	0.353	96.4	

3.3.3 Discussion of the selected fabrics

High drape fabrics

The viscose jersey fabric (Fabric A) had a very high drape (7.6% DC). The reason it was chosen from several high drape fabrics was because of its very high drapeability, its colour, and its smooth and pliable hand. The single jersey knitted structure provided the fabric with high stretch. Its high drapeability, lightweight (103.0g/m^2), and thinness (0.376mm) provided the fabric with languid folds. The loose knitted structure ($15\text{courses} \times 20\text{wales/cm}$) created a translucent look for the fabric.

The crepe wool (fabric B) also belonged to the high drape category although its drape was not so high as fabric A. Its DC (33.7%) was higher than that of fabric A. The DC of the two high drape fabrics were selected so as not to be too close, as different performances within high drape fabrics were needed. The fairly loose plain weave structure ($22\text{warp} \times 19\text{weft/cm}$) and the fine single crepe twisted yarn gave fabric B high drapeability and stretch on the bias. And its moderate thickness (0.548mm) caused the fabric fall into moderate and graceful folds. In addition, the diagonal texture caused by the crepe twisted yarns was aesthetically very attractive. Its colour was quite

close to that of fabric A.

Medium drape fabrics

A 100% linen fabric (fabric C) was chosen as a medium drape fabric. Because linen is a vegetable fibre from the stem of the *Linum usitatissimum* plant, the fabric exhibited aesthetically pleasing natural characteristics that were considered typical of that fibre. Plain woven linen fabric remains one of the most comfortable and durable fabrics, but it is not very popular when used in draping because its slightly creased surface does not provide a good fit for the body. However its creased surface and fairly loose plain weave (29warp x 24weft/cm) brought an appealing natural aesthetic look. Fabric C had fair drapeability (DC of 39.8%) that produced moderately firm flares. Although there was a colour contrast between the yellow of fabric C and purple of fabric B, together they cultivated a tender, gentle and quiet hue.

The second medium drape fabric selected was a striped stitch bonded interlining (fabric D). Its DC was 61.9%, but its lengthwise grain and widthwise grain had very different bending behaviours. The stiff weft yarns had high bending stiffness and held a straight look so that the fabric was difficult to fold along the lengthwise grain. The softer warp

yarns were chain stitched and had lower bending stiffness so that the fabric was easy to fold along the widthwise grain. Also, its neutral colour was easy to match with other colours.

Low drape fabrics

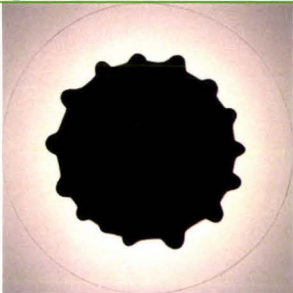


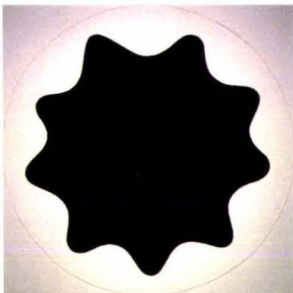


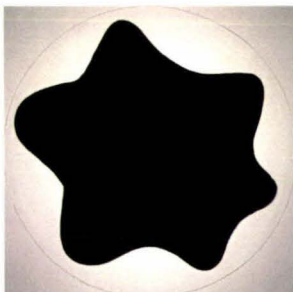


One of the low drape fabrics selected was a 100% silk fabric (fabric E) with DC of 76.3%. There were not many low drape silk fabrics available on the market. The weave of the fabric was called Aida (a dobby weave) and had a firm structure. Fabric E was relatively thick (0.411mm) and heavy (147.9g/m²) for a silk fabric, and it fell into soft wide flares. The white colour was easy to match with other neutral colours.

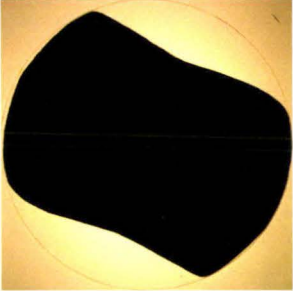

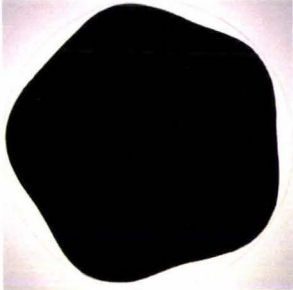


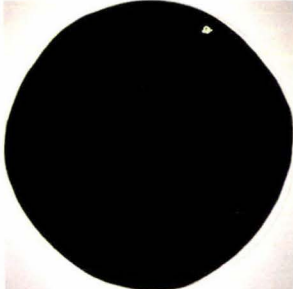


The other low drape fabric selected was a random wet-laid black non-woven interlining (fabric F) whose fibre content was 100% polyester. Its DC was 96% which meant it was the lowest drape fabric of the six of them. Although fabric weight was low (51.1g/m²) and thin (0.353mm), this fabric had a stiff “papery characteristic” i.e. a non-stretchy feel. Its firm and inflexible properties made it differ from the woven and knitted fabrics. The non-woven fabric fell into a crisp cone with a stable outline.

3.3.4 Simple visual test of six fabrics

These six fabrics had a wide range of Drape Coefficients, resulting in different drape behaviours. They also had different fibre contents and fabric structures. The six colours were quiet and harmonious so that they matched together. In Table 3.2, the three simple visual tests, draping circular specimen on the disk of the drapemeter, draping fabric from a point and scrunching specimen, present the aesthetic characteristics of the fabrics. The three ways of displaying fabric lead to sensory (subjective) evaluations of the fabric drape. The visual evaluations provide an initial understanding of behaviours of the fabrics before the fabrics are draped on a three-dimensional body form. From these visual images, the general draping performances of the fabrics can be judged and compared visually.

Table 3.2 Visual and aesthetic characteristics of the six selected fabrics

Fabric	Hand	Drape qualities	Aesthetic Properties	Draped circular specimen	No. of nodes	Draped from a point	Scrunched specimen
A	Slippery, thin, stretchy, pliable	Falls into soft languid flares and ripples, accommodates fullness by gathering, retains soft fall.	The knitted structure provides the fabric with high stretchiness and high drapeability. The fabric has translucent appearance.		15		
B	Lofty, warm, soft	Falls into moderately soft flares, accommodates fullness by gathering, retains moderately soft fall.	The flexible crepe twisted yarns provide the fabric stretchiness and high drapeability. The thick fabric with the high drape has extravagant but soft shapes.		9		
C	Soft, cool, spongy	Falls into moderately firm flares, retains shape or silhouette of garment with fair drapeability.	The slightly creased surface and fairly loose plain weave provide the fabric an appealing natural aesthetic look.		6		

Fabric	Hand	Drape qualities	Aesthetic Properties	Draped circular specimen	No. of nodes	Draped from a point		Scrunched specimen
D	Stiff on the weft grain and flexible on the warp grain, dry touch	Falls into stiff folds along the widthwise grain and fullness maintains bouffant effect along the lengthwise grain.	The thick and stiff weft yarns are difficult to fold, and the softer warp grain is easy to fold. The fabric maintains stable and exaggerated geometric shape.		4	Lengthwise	Widthwise	
E	Firm, soft, supple	Falls into soft wide flares, accommodates fullness by gathering, fullness retains soft fall, shape or silhouette of garment.	The silk yarn is resilient and smooth so the fabric is soft. The thick fabric with low drapeability creates stable geometric outlines.		5			
F	Firm, crisp, non-elastic, dry touch, flat	Falls into wide cones, fullness maintains crisp bouffant effect, can be shaped by folding.	This stiff fabric with low drape can maintain a firm outline, sharp node creases and retain stable and solid shape.		4			

The image of the draped circular specimen is the two dimensional shadow which is caused by the fabric draped from the circular disk of the drapemeter. The circular specimen is not only used to measure the drape coefficient, but also provide visual evidence of other drape qualities such as the number of nodes which the viewer can use to evaluate drape aesthetically (Stylios and Wan, 1999). The shadow clearly shows the shapes and numbers of folds so that it is easier to compare each fabric's drapeability in a sensory manner. Generally, the more nodes the fabric has, the more drapeable it is. Fabric A has the most nodes (15) and it is the highest drape fabric among the six of them. The shadow of fabric D has four uneven (unbalanced) nodes which reveals that the warp grain has low bending stiffness and the weft grain has high bending stiffness. It is difficult to see the nodes on the shadow of fabric F because this fabric has very low drapeability. However, the four faintly discernible nodes are more evenly distributed than those of fabric D, indicating a more balanced fabric with regard to bending and draping properties.

The image of the fabric draped from a point is included to display the performance of fabric in a simple three-dimensional way. A big piece of fabric shows the drapeability, the folds and the outline of the fabric to a great extent. This visual method follows the method of Gioello (1981). The high drape fabric A draped from a point produces the

languid and tight folds. Fabric B, also with high drapeability falls into moderately soft flares. Fabric C, the medium drape fabric, falls into moderately firm flares. Fabric D draped along the lengthwise grain creates wide folds while draped along the widthwise grain it creates narrower and tighter folds. This also reveals that fabric D is difficult to fold along the lengthwise grain and easy to fold along the widthwise grain. Fabric E is the first low drape fabric falling into relatively wide flares. Fabric F with the lowest drapeability falls into crisp wide cones and firm outlines.

The image of the scrunched specimen is also a three-dimensional presentation of the status of fabric randomly falling into folds on a flat surface. Fabric not only hangs on the body, but also sometimes piles on the body to provide a three-dimensional effect. Thus, I created this new method for visual evaluation by scrunching the fabric to give an idea of bulk and allow small tight folds to be evaluated. The scrunched fabric A falls into the small and tight folds that are unable to retain stable geometric shape and create volume. Fabric C with the medium drapeability has soft and relatively big folds that can create more volume than fabrics A and B. The scrunched fabric D shows its different bending stiffness on two grain lines. Some areas have bulky folds while some areas have small folds. Fabric F creates sharp node creases and the pointiness of nodes where curves meet is created by fabric buckle. This fabric can stand independently to

create volume.

Both the physical drape test and the visual drape evaluations help the designer to investigate fabric drape performance and provide the knowledge and experience for the subsequent design development.

Chapter four

Design development

4.1 Introduction

The design development extends the fabric testing in chapter three to reveal the effects of the six fabrics' drape characteristics on the garment form aesthetically. In chapter two, the visual methods which Aldrich (1996) and Gioello (1987) used to evaluate and compare fabric drapeability were reviewed. Gioello randomly hung and tied fabrics on the dress form, which is a most practical way to display different behaviours of fabrics and allow different fabrics to be compared. For designing a real garment, the fabrics are draped into complex shapes rather than randomly hung on the body as with Gioello's method. In the Aldrich method, different fabrics are draped into circular skirts with different appearances and aesthetics. However since the circular form is

not “designed”, it does not have the ability to show in detail the effects the fabrics can create in complex drape silhouettes. The drape performance of a fabric then cannot be fully evaluated through one simple form. As part of the design development phase, I will drape fabrics with various draping methods and explore the performance of the fabric in complex three-dimensional forms. If a fabric is draped into a garment with complex geometric shapes rather than a simple shape, the behaviours of the different fabrics can be explicitly showed and compared. When different fabrics are draped into the same three-dimensional form, they should allow a comparison of different visual effects. In the literature review, Issey Miyake used wool jersey fabric to drape an evening dress, which is against the conventional idea of fabric usage. Thus, although the traditional idea is that certain fabrics are ideal for certain forms, every garment can be made of various fabrics and the unexpectable shapes can be explored. The next stage in the present research is to drape six fabrics into the same form. Maybe only one or two fabrics are the ideal fabrics for that form, other fabrics may not be. But other fabrics do have the ability to create special and surprising aesthetic shapes because of their physical and aesthetic characteristics.

The design of each garment reported in this chapter employs different draping methods to explore the three dimensional interrelationship between the garment and the body.

The spatial concepts of these different garments –deconstruction, imperfection, volume, void, and architectural shape – are exposed in the design. How the fabrics impart these qualities on the garments will be reflected upon and analyzed in this chapter.

In designing these garments, one fabric respectively becomes the inspiration for each form. Ideas and shapes are suggested from the different characteristics of the fabrics, both tangible and intangible. Draping exploits the fabric's innate properties and behaviours on the body. The design ideas in these garments respond directly to the fabric as it performs in the draping process.

There are several steps to designing and making the garments in this section of the research. Step 1: Before the form is draped, the designer chooses an ideal fabric for that form, so that the fabric can inspire the design concept. The design is thus based on inspiration of fabric to the designer, together with the experiments in chapter three. The shape developed can explore the fabric's drape characteristic. Step 2: After the draping is finished, all the pieces of fabric are removed from the mannequin and traced to form a pattern. Then a toile is made to check the effect and pattern. Step 3: The same garment is then remade with a selection of the five other fabrics that give totally different visual effects. Fabrics chosen for this exercise were those thought to exhibit

greatest variations in properties. Step 4: The garments are viewed, reflected upon and compared with each other. This process is repeated for each design form. When each form is being designed, the three-dimensional effect is always the key effect that should be expressed on the garment. Hence, the visual effects are achieved by both draping methods and fabrics.

The following section of this chapter describes the outcomes of the design and reflective process. Garments are classified according to the spatial concepts exposed in the design – deconstruction, imperfection, volume, void, and architectural shape.

4.2 Design development

(Deconstruction/imperfection/volume/void/architectural shape)

4.2.1 Deconstruction: The jacket

Design Concept (deconstruction)

The ideal fabric selected for this jacket was gauze wool (fabric B). In order to explore the characteristic of this fabric (DC 33.7%), namely its high drape and resilience, the

designer needs to create design lines continuing around the body and a close fitting effect.

The design lines of the garment attract the viewer to see the rounded body and to experience how this fabric is carefully displayed on the body. Some part of the jacket must fit closely to highlight the fabric's high drapeability and stretch on the bias grain due to the loose weave structure and soft crepe twisted yarns. However, emphasizing the curves of the body is not the design concept aimed to be expressed in this research; this is why the jacket was designed to be a deconstructed form of a conventional jacket. Quinn (2003, p. 68) defines "deconstruction explores the interiority of garments by slicing them open, rearranging their structures, turning them inside out and sewing them back together in a new form". Rei Kawakubo creates a deconstructive garment by dismantling the garment, moving some parts, rearranging and sewing them in an unconventional form. It seems the new arrangement changes the former garment's manifestation, but the skeleton of the garment reveals the ties to the original one and creates the new meaning (Gill, 1998). This jacket retains distinctive features (such as the close fitted right bodice and the normal fitted right sleeve) that make it recognizable as a jacket, yet it is thrown off balance by incorporating unconventional components on the left side and the back (Figure 4.1a).



Figure 4.1a. Front view of fabric B jacket

This jacket challenges conventional design by presenting an asymmetric and deconstructive form. For example, the left sleeve is the extension of a tube twisted from the bust area (Figure 4.1a). Due to the high drapeability of fabric B, the twisted tube snakes gently onto the shoulder. The two sleeves are draped in different ways to show the rejection of symmetry and react against the conventional sleeve form. The difference of the front right and left panels and the different sizes of the two lapels, create an asymmetric form. The back of the jacket appears with a round cutout and a twist (Figure 4.1b). The high drape of fabric B makes the cutout fit the back. Although the twist is like the tail of a man's swallow-tailed coat, the folds create a bustle like impression. The intention of the deconstruction is not to collapse the form, on the contrary, it is to uncover and reveal something unseen such as limitations and distortion (Wigley, 1993). For instance, the back of the jacket is cut to show the unfinished raw edge and the body underneath. The twisted tube on the right chest displays how the unstructured sleeve is distorted and created. By showing the structure of the jacket, the form presents an unconventional aesthetic.



Figure 4.1b. Back view of fabric B jacket

Visual evaluation and comparison of the fabrics' drape performances on the deconstructed jacket

Four other deconstructed jackets were then manipulated in other fabrics and the effects were compared with fabric B and with each other.

Fabric B – Gauze wool fabric (DC 33.7%)

The loose weave structure (22warp x 19weft/cm) and the fine crepe twisted yarns provide the fabric with high drapeability and stretch on the bias grain. Due to the high drapeability of fabric B, the jacket can fit the body closely on the right front side (Figure 4.1a), but also has an overall relaxed appearance in this deconstructive form. The thickness of the fabric makes the back folds look stable so that they present a refined manner (Figure 4.1b), which is consistent with the gentle draping folds when fabric B is draped from a point (Table 3.2). This thick fabric with high drapeability creates an elegant and soft look on the deconstructive design.

Fabric A--Viscose knitted fabric (DC 7.6%)

The jacket (Figure 4.2a) constructed from fabric A clings to the body as a result of the very high drapeability and stretch of the single jersey knit fabric. The twisted tube is



Figure 4.2a. Front view of fabric A jacket



Figure 4.2b. Back view of fabric A jacket

not as voluminous on the shoulder as with fabric B, but it sits like a soft decoration. The back twist (Figure 4.2b) forms languid folds which have to be held in place along seams by stitching; while the rest of the fabric length flows smoothly along the hip. This appearance is consistent with limp folds exhibited in the simple drape tests (Table 3.2). The use of such a delicate high drape fabric for a jacket challenges the preconceived ideas of allowing medium or heavy weight fabric with medium drape to be used for a jacket.

Fabric C – Linen fabric (DC 39.8%)

In Figure 4.3a, the fabric of the jacket is linen (Fabric C) that gives the jacket a loose and natural fitting appearance on account of its medium drapeability. The folds of the back twist (Figure 4.3b) create more voids hiding in the recesses of the folds than those of the last two high drapeable fabrics. Its 29warp/cm and 24weft/cm plain weave structure is a loose structure, so the frayed edges and the wrinkled surface enhance the deconstructive effects for this jacket.

Fabric D – Striped stitch bonded fabric (DC 61.9%)

Fabric D is an interesting fabric. Although it is a medium drape fabric, the fabric has extremely different bending behaviour on both grain lines, which are evidenced with



Figure 4.3a. Front view of fabric C jacket



Figure 4.3b. Front view of fabric C jacket

the very uneven (unbalanced) nodes exhibited in the draped circular specimen and with differences in drape folds in the lengthwise and crosswise grains (Table 3.2). The warp yarns are thin and soft so they have low bending stiffness while the weft yarns are thick and stiff so they have high bending stiffness. Draping and cutting the fabric along the weft grain and the warp grain respectively thus gives two absolutely different looks to the deconstructed jacket. In Figure 4.4a and Figure 4.4b, the jacket is cut on the widthwise grain and fits the body well. With the stiffness of the weft yarns, the fabric holds a straight and firm look. The fabric is easy to form vulnerable flat folds along the widthwise grain so the front twist is easily compressed into a compact shape which seems like the air has been totally squeezed out. Moreover, the back twist arranges the folds into pleats holding their form and flattening the curve of the waist (Figure 4.4c). The appearance is consistent with the firm folds when the widthwise grain of the fabric is draped from a point (Table 3.2).

In Figure 4.4d, the jacket is cut on the lengthwise grain and it looks bigger so that it could be doubted whether both of the jackets are cut from the same pattern. The fabric is difficult to fold along the lengthwise grain, which suggests that the garment cannot cling to the body. For example, the appearance of the twisted sleeve echoes that of scrunched specimen of this fabric (Table 3.2). The undulation round the cutaway back



Figure 4.4a. Front view of fabric D jacket (Widthwise)



Figure 4.4b. Side view of fabric D jacket (Widthwise)



Figure 4.4c. Back view of fabric D jacket (Widthwise)



Figure 4.4d. Front view of fabric D jacket (Lengthwise)



Figure 4.4e. Side view of fabric D jacket (Lengthwise)



Figure 4.4f. Back view of fabric D jacket (Lengthwise)

is also a reflection of this characteristic. There are more spaces between the body and the garment, as if the jacket has been inflated. The jacket can even maintain its bulky form without a body inside, almost like armour. The fabric creates a sculptural look and discloses the spatial structure of the jacket when draped into the deconstructed form (Figure 4.4e & Figure 4.4f).

Fabric F – Black non-woven fabric (DC 96.4%)

In Figure 4.5a, the jacket is draped with this non-woven fabric; its lightweight and low drapeability provide the jacket with a solid and stable look. It is not an easy fabric to twist, which is why the twisted tube has a rigid appearance and forms a voluminous cap at the sleeve head. The back twist (Figure 4.5b) is easiest to fold and creates sharper crease angles (like flat pleats) than any other of the fabrics. The hems and edges are firm enough to retain the stable form without finishing, due to its non-woven structure. In Figure 4.5c, the side view of this jacket is remarkably similar to the lines of the fabric when draped from a point (Table 3.2). Through the deconstruction form, the half-round in shape obscures the curve of the waist, which explores the unconventional form.



Figure 4.5a. Front view of fabric F jacket



Figure 4.5b. Back view of fabric F jacket



Figure 4.5c. Side view of fabric F jacket

4.2.2 Imperfection: The cutout dress

Design Concept (design lines and cutout shapes)

The ideal fabric for this cutout form is fabric A (DC 7.6%) that is a single jersey knitted fabric with high stretch and high drapeability. The use of cutout subtracts the void between the garment and the body. Due to its knitted structure, the stretchy fabric A closely clings to the body. The smoothness and high drapeability of the fabric inspires the designer to cut out smooth shapes and continuous lines around the body so that this dress creates an uninterrupted rounded view of entire body.

The cut out shape was designed to coincide with the body structure; this was achieved through transfer and elimination of darts. In Figure 4.6a, a circle is cutout below the waist and the fabric around it fits the back waist without any wrinkles. It is the cutout, together with the knitted fabric, that achieves the fitting effect by avoiding darts.

There are two ways to create a cutout shape. The first way is to cut out the fabric with a certain shape to reveal the skin directly. The other way is by layering two panels or curved shapes to create an enclosed “cutout” space. Both ways are used in this



Figure 4.6a. Side view of fabric A cutout dress in the first layout structure



Figure 4.6b. Side view of fabric A cutout dress in the second layout structure

dress that consists of two layers cut in different shapes. When two layers overlap, new cutout shapes appear. The lines and shapes can then be noticed in different ways. For example, in Figure 4.6c, both layers have half-moon cut out shapes which are in different positions and directions. When two layers are displayed on the body, two new cutout shapes are created by other curved edges enclosing them. One example of the technique is the shape around the stomach area and another example is a wedge shape around chest area (Figure 4.6c).

This single jersey knit fabric with 15course/cm and 20wales/cm has a loose knitted structure so that the fabric appears translucent. This inspires me to create interchanging layers for the dress, because when two layers are reversed in their position, the under layer can be seen through, which exposes the intricate and uninterrupted layering. Furthermore, two layers can be interchanged so that the cutout shapes are changed and the path of the edge lines appear changed as well, however the lines still keep their continuity. The viewer's visual experience is changed as the edge line path changes. For example, In Figure 4.6c there is a waistband that begins to disappear in the two layers' overlap area. In Figure 4.6d, it disappears under the second layer. When it is inserted between the two layers (Figure 4.6c), it looks like the extension from part 1. Actually part 2 and part 1 is the same layer. The band creates an optical illusion. This

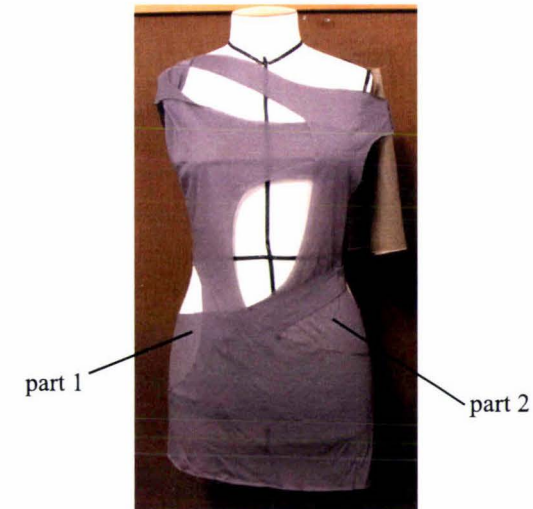


Figure 4.6c. Front view of fabric A cutout dress in the first layout structure

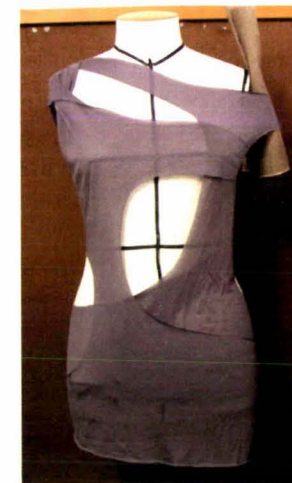


Figure 4.6d. Front view of fabric A cutout dress in the second layout structure

interchanging of shapes happens around the entire dress (see the difference between Figure 4.6c & Figure 4.6d, and the difference between Figure 4.6e & Figure 4.6f).

In Figure 4.6e, on the skirt, a long piece comes out through a closed round cutout shape, extends to the back and integrates with the piece from the front (Figure 4.6a). The long piece forms a continuous view around the body, although it breaks the round shape into half. However, in Figure 4.6f, this long piece is shifted underneath so that the round cutout shape is revealed. When this long piece closes the dress with the front piece, it reveals a new cutout shape (Figure 4.6b). The layers shift their positions so that the cutout shapes and lines change the space division between the visible and unseen.

For this dress, the fabric is cut out to form lines which are continuous around the body to attract the viewer to see the whole body. This reflects Delong's (1998) statement about the three-dimensional effect of a garment. Delong (1998) claims that the viewing may not be complete from only one side of the body and that design line continuing around the body may compel viewers to view the entire rounded body. Although the surface of the dress is flat, the design lines create a three-dimensional viewing for the dress.



Figure 4.6e. Side view of fabric A cutout dress in the first layout structure



Figure 4.6f. Side view of fabric A cutout dress in the second layout structure

Visual evaluation and comparison of the fabrics' drape performances on the cutout form

Four other cutout dresses were then manipulated in other fabrics and the effects were compared with fabric A and with each other.

Fabric A – Viscose knitted fabric (DC 7.6%)

The high drapeability and the stretch of the fabric provide the dress (Figure 4.6c) with a close fit that highlights the trait of cutout. The open gaps between the yarns in the fabric create the transparency of the fabric that makes two geometric layers look continuous around the body.

Fabric B – Gauze wool fabric (DC 33.7%)

Fabric B is stretched on the bias for this design because the yarns are crepe twisted and the plain weave fabric is openly woven. This is why the dress is cut on the bias to achieve a nice fitting effect (Figure 4.7). Its high drapeability presents a fitting effect similar to fabric A, although fabric A is knitted and fabric B is woven.



Figure 4.7. Front view of fabric B cutout dress

Fabric C – Linen fabric (DC 39.8%)

Compared to last two dresses, fabric C seems highly unsuited to this form (Figure 4.8). The medium drapeability, together with the creased surface and open weave of the fabric create crinkles around the bust area and gaps between the garment and the body. This soft fabric provides the dress with loose fitting effect.

Fabric D – Striped stitch bonded fabric (DC 61.9%)

The dress (Figure 4.9) seems to rebel against the principle of cutout. The dress is cut on the lengthwise grain, and the images in Table 3.2 show that the fabric is difficult to fold along the lengthwise grain, so it is not closely fitting and even increases the gap between the garment and the body, particular evident below the bust on Figure 4.9. The stiff and thick weft yarns and high weight of the fabric create a stiff look for the dress that does not move with the body, like a frame, surrounding the body in a rigid manner.

Fabric F – Black non-woven fabric (DC 96.4%)

The low drape fabric (Figure 4.10) creates interspaces between the dress and the body that are even greater and more pronounced than fabric D. Although the dress cannot closely fit the body due to its non-woven structure having low stretch and low drape,



Figure 4.8. Front view of fabric C cutout dress



Figure 4.9. Front view of fabric D cutout dress



Figure 4.10. Front view of fabric F cutout dress

the fabric is firm enough to support the form. Moreover, this non-translucent fabric does not allow the layering of cutout method to be exploited as with fabric A.

Visual evaluation and comparison of imperfect effects created by an alternative method of viewing the dresses

Compared with the results of the jacket, the differences among five fabrics' visual effects with the cutout dress are not so pronounced. The dresses are quite different in subtle ways, for example the dresses draped with low drape fabrics produce a looser fitting effect than those of high drape fabrics. However, the fabrics lie flatly on the body, causing the garments to cling to the body so that they have no chance to hang in folds. Because the dresses do not have the three-dimensional surface, such as folds or gathers, the differences of visual effects among these dresses are not clear enough.

When the form has no support of the body, the garment just collapses into an extremely different form. This could be seen as an alternative way to wear these dresses, which emphasizes their sculptural appearances and provides elucidation of further visual differences among them. By removing the body from inside and hanging the entire dress on the front from the shoulders so that the dress drapes loosely on the body like

a neckpiece, then the differences of visual effects are easily visible. These new forms demonstrate imperfect effects with loose panels and raw edges. The imperfection speaks of the conceptual fashion rather than trend (Vinken, 2005). It is not to show off the luxury and superficial decoration, but to reveal the real meaning hidden inside. Arnold (2001) states that imperfect fashion brings the distortion and error to the surface rather than concealing the lie of beauty. The visible seams, the raw edges, the disordered layers of the dress expose the real structures hidden beneath the smooth surfaces. In this way, the dress discloses the true construction when it is randomly hung from the shoulders, displaying irregularity and distortion. Arnold (2001) explains that breaking the smooth surface is to reflect a different type of beauty. However, the six fabrics' different properties reflect different meanings of imperfection.

Fabric A – Viscose knitted fabric (DC 7.6%)

Fabric A has the ability to show imperfection through its collapsed form. In Figure 4.11, the high drapeability of the fabric creates languid folds. Due to the extensible knitted structure and thin light weight properties of this fabric, its cutout pieces become spindly strips on the hung form. The randomly draped layers are revealed to convey an imperfect sense. However it is beauty in simplicity rather than in ornamentation.



Figure 4.11. Front view of fabric A cutout dress in the alternative method

Fabric B – Gauze wool fabric (DC 33.7%)

Although the dress (Figure 4.12) becomes pieces in disorder, it drapes gracefully on the body. Different from fabric A, fabric B has fewer pliable folds because of its greater thickness and lower drape. The dress still does not lose its elegant manner as the softness and high drapeability of the fabric endows the dress with this spirit.

Fabric C – Linen fabric (DC 39.8%)

In Figure 4.13, the medium drape fabric does not easily fall into folds (Table 3.2) as fabrics A and B do. This is why the dress presents flat pieces on the body, resembling a rag. It seems the surface of the dress is irregularly torn without precise cutting. The dress is at once a finished garment but its surface looks incomplete now. The frayed layers confuse the eye, distorting the smooth perfection of the surface that the dress once had.

Fabric D – Striped stitch bonded fabric (DC 61.9%)

In Figure 4.14, the pieces of fabric D drape from the body without any folds on the fabric surface. The dress is cut on the lengthwise grain and the fabric is hard to fold along the lengthwise grain that makes the dress spread out over a larger area, which is consistent with the images in Table 3.2. The disordered layers with heavy weight and



Figure 4.12. Front view of fabric B cutout dress in the alternative method



Figure 4.13. Front view of fabric C cutout dress in the alternative method



Figure 4.14. Front view of fabric D cutout dress in the alternative method

thickness highlight the physical imperfection rather than concealing the contradiction and making up a lie of superior beauty.

Fabric F – Black non-woven fabric (DC 96.4%)

In Figure 4.15, the low drape fabric with light weight allows the dress to hover around the body and rarely touch the body. The cutout pieces of fabric F do not fall easily as those of other fabrics do. The disordered layers are draped into a stiff form with sharp node creases. The dress reveals the distortion and limitations that are created by the fabric's behaviour instead of constructing a smooth surface.

The fabrics' different drape characteristics achieve different meanings attributing to imperfection. The significance shifts according to the fabrics' particular characteristics.



Figure 4.15. Front view of fabric F cutout dress in the alternate method

4.2.3 Volume and void: The blurred dress

Design Concept (volume/void)

This dress is firstly draped with the fabric D – the striped stitch bonded fabric (DC 61.9%) since that fabric provides me with lots of inspiration and feelings towards the voluminous form. Quinn (2003) describes how Rei Kawakubo ignores the contours of the body to create volume that can obscure the body and express the uncelebrated void between body and fabric. In response to this idea, the draped dress (Figure 4.16a, b, c, d) blurs the curves of the body because the fabric has the ability to create the void and the draping methods employ the principles of voluminous form. This fabric create a self-generating stable void when it folds and bends along the lengthwise grain. It is draped to create volume without adding layers underneath. The fabric provides the possibility of extending the body rather than highlighting its curves.

The dress is draped from the back and is intended to be voluminous (Figure 4.16a). The fabric protrudes from a slit like a pouch on the back, creating excess empty spaces which obscure the curve of the back (Figure 4.16b). This reveals the fabric characteristics of structure and shape. The front bodice is wrapped into a round shape



Figure 4.16a. Back view of fabric D blurred dress



Figure 4.16b. Side view of fabric D blurred dress



Figure 4.16c. Front view of fabric D blurred dress



Figure 4.16d. Side view of fabric D blurred dress

with folds (Figure 4.16c & Figure 4.16d). When the fabric is folded along the warp grain, it creates a bulky form that forms the front bodice. However, when the fabric is folded along the weft grain, it is compressed into neat lines easily. The draped images along the lengthwise and the widthwise grains of the fabric (Table 3.2) clearly indicate the different effects. For example, the waistband is folded like pleats, giving smooth and tidy lines. The fabric is manipulated to create and decrease the void, by taking advantage of its physical characteristics.

On the skirt section, most of the geometrically shaped pieces are cut on the lengthwise grain and sewn with visible seams, because the stiff weft yarns can keep firm and stable lines. The visible seams not only support the skirt structure and wave-like shapes but also express the deconstruction principles. These intersecting seams create a visual effect, like geographical strata or ocean weaves. The protrusion of fabric is against the conventional idea of a skirt being straight and clinging to the legs.

A large hole is cut on the back of the skirt to reveal and explore its inside hidden space (Figure 4.16a & Figure 4.16e). Although the inside space seems to be empty, uninhabited, and without content, Quinn (2003) suggests that the void is not a non-meaning space, it generates a real form and is a container for ideas which has complex

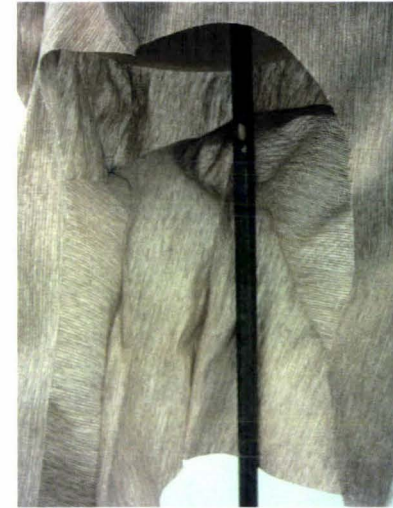


Figure 4.16e. Back open structure of the skirt section of fabric D blurred dress

meaning. These traditionally hidden features are on display to allow the viewer to enter the recesses and make visible the fascinating structure underlying the surface and contribute to the power of the entire dress. Seams intersect the panels, like the inside structure of a building, and tell the story of how the inside is constructed (Figure 4.16e). This design concept imbues the empty space with voice, expression and form. This blurred form that is a strong contrast of closed and open space establishes a powerful visual and spatial concept.

Visual evaluation and comparison of the fabrics' drape performances on the volume/void form

Four blurred dresses were then manipulated in four other fabrics and the effects were compared with fabric D and with each other.

Fabric D – Striped stitch bonded fabric (DC 61.9%)

The volume of this dress (Figure 4.16a, b, c, d) is constructed with a series of voids that reflect the fabric's drape characteristic. The two extremely opposite bending stiffnesses along the two grain lines provide this dress with bold shape and fluid lines. The voluminous effect is a description of the life of the fabric. It evokes a sense of

levitation when the dress gently sways with the movement of the wearer.

Fabric A – Viscose knitted fabric (DC 7.6%)

This high drape knitted fabric gives the dress a collapsed form (Figure 4.17a & Figure 4.17b). Unlike the fabric D, fabric A loses the function of supporting the shape because this fabric has a very high drapeability. The scrunched specimen (Table 3.2) reflects the tight folds of this dress. The volume disappears instead creating fluid ripples flowing over the body and looking smooth and peaceful.

Fabric C – Linen fabric (DC 39.8%)

This fabric does not droop as much as fabric A and hangs with a little more structure (Figure 4.18a & Figure 4.18b) because it has lower drapeability than fabric A. The similarity of aesthetics of folds with the scrunched specimen (Table 3.2) is also evident on this dress. Small voids are created among the gathers and folds of the dress. Moreover, the loose weave structure (28warp x 24weft/cm) makes the visible seams frayed and rough, which gives the impression that the seams of the skirt are turned inside out and sewed together again in a new form, intensifying the deconstruction effect which reveals the inner structure.



Figure 4.17a. Front view of fabric A blurred dress



Figure 4.17b. Back view of fabric A blurred dress



Figure 4.18a. Front view of fabric C blurred dress



Figure 4.18b. Back view of fabric C blurred dress

Fabric E – Aida silk fabric (DC 76.3%)

This low drape fabric creates a balanced blurred dress, accommodating fullness and void through its folds (Figure 4.19a), which is evidenced by the scrunched folds of the visual testing (Table 3.2). Voids are larger and more voluminous than fabric C. The solid visible seams show their firm curve lines on the skirt due to the fabric's low drapeability and its tight weave structure (48warp x 39weft/cm). The dress maintains its stable geometric outlines to reflect its composed and graceful spirit. The opened back cave also reveals its inner story (Figure 4.19b and Figure 4.19c).

Fabric F – Black non-woven fabric (DC 96.4%)

This very low drape fabric gives the dress a stable and voluminous form. “Pointiness” of nodes where curves meet is similar to the scrunched specimen in Table 3.2. Compared to the bulky volume of fabric D, fabric F creates solid volume with buckles and firm outlines (Figure 4.20a & Figure 4.20b). Voids prompt feelings of liberation and energy for this dress.



Figure 4.19a. Front view of fabric E blurred dress



Figure 4.19b. Back view of fabric E blurred dress



Figure 4.19c. Back open structure of skirt section of fabric E blurred dress

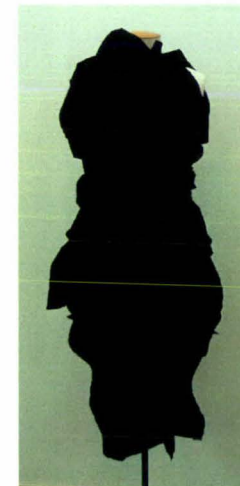


Figure 4.20a. Front view of fabric F blurred dress

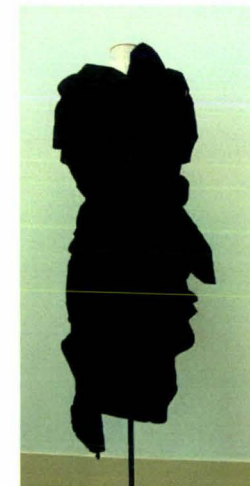


Figure 4.20b. Back view of fabric F blurred dress

4.2.4 Gathering voids: The one-piece top

Design Concept (void)

Different from many silk fabrics, fabric E – Aida silk (DC 76.3%) is a thick fabric with low drapeability. The fabric can hold a stable form and also can be easily folded or gathered so that it inspires the designer to drape the fabric around the body in one piece. The low drapeability of fabric E creates voids within the gathers and folds that is evidenced in the visual testing with the folds exhibited in the draped from a point fabric and the scrunched specimen (Table 3.2).

Quinn (2003) suggests that folds compress the surface area of fabric into a more compact shape to represent more complex spatial arrangements. Thus, I wrap a long piece of fabric around the body, which creates numbers of voids hiding in the recesses of gathers, ties, twists, rolls and the pocket, and provide the garment with a three-dimensional surface. These empty small voids are easily ignored but they are not reductive to the point of non-meaning for the garment (Quinn, 2003). Although they give the illusion of “nothing”, the voids are empowered with distinctive meaning which reveals the characteristics of the fabric and the story of the garment. All the

voids created through one-piece wrap evoke questions about the path of the fabric around the body, which make the garment feel poetic.

Moreover, twist plays an important role in this garment. In fashion, there are various forms and functions of twist. Several types of twist have been applied to other garments in this research such as the deconstructed jacket (Figure 4.1a). The role of twist on this garment is different from that of the jacket. This top has no fastening, yet the body slips in easily because the twists function as the fastening. Due to the thickness and the low drapeability of the fabric, the fabric can be twisted tightly and strongly enough to hold the structure of the garment. The twist around the neck fixes the position of the sleeve and also brings the rest of the fabric to the front (Figure 4.21a). A vertical twist on the back is integrated with the gathered fabric. Another twist around the back waist enables the garment to be adjusted to the proper tightness, and fixes the position of the front section, while also acting as the closure for the garment (Figure 4.21b).

A pocket on the front is an extension from the twist (Figure 4.21a), accomplishing a continuous and rounded visual effect and distracting the viewer's sight from the closed seam. This subtle detail is not so easily grasped, it remains below the threshold of attentiveness. Moreover, due to the low drapeability of the fabric, the rolled pocket



Figure 4.21a. Front view of fabric E one-piece top



Figure 4.21b. Back view of fabric E one-piece top

keeps the stable shape and echoes the voids in it. Only one-third of the back is covered, breaking the conventional symmetric backless shape, such as a “V” shape. The garment is wrapped, twisted, gathered, rolled, tied, increasing and gathering voids, and reflects the poetic effect of the garment.

Visual evaluation and comparison of the fabrics’ drape performances on the gathering voids form

Other one-piece tops were then manipulated in five other fabrics and the effects were compared with fabric E and with each other.

Fabric E – Aida silk fabric (DC 76.3%)

The voids are generated through gathers, ties and rolls. For example, in Figure 4.21a and Figure 4.21c, the right side hem is rolled up and creates voids inside so that the firm curve edge circles the body. This thick fabric with low drapeability allows the formation of stable geometric outlines for the garment.

Fabric A – Viscose knitted fabric (DC 7.6%)

This garment gives a different look from fabric E, since it is less voluminous. The limp



Figure 4.21c. Side view of fabric E one-piece top



Figure 4.22a. Front view of fabric A one-piece top



Figure 4.22b. Back view of fabric A one-piece top

folds flowing along the body reflect the high drapeability of the fabric (Figure 4.22a & Figure 4.22b). However the voids concealed in the gathers cannot be fully eliminated, small traces of the voids always remaining within the gathers. The scrunched specimen in Table 3.2 suggests the appearance of folds with small voids hiding between them. The garment emits a historical tone, like ancient statuary's drapery.

Fabric B – Gauze wool fabric (DC 33.7%)

This high drape fabric with soft crepe twisted yarns creates smooth gathers. However its thickness produces more voids with gathers than fabric A does, which provides this garment with a moderate manner (Figure 2.23). The appearance of the garment echoes the folds of the fabric when scrunched (Table 3.2).

Fabric C – Linen fabric (DC 39.8%)

The linen fabric has lower drape than last two fabrics so the gathers and folds create more voids (Figure 4.24a & Figure 4.24b). The appearance is consistent with the folds in the scrunched specimen (Table 3.2). It seems that the voids can change their empty shapes due to the flexibility and the loose weave structure of the fabric. The bouffant form attracts the viewer to feel the spring of voids.



Figure 4.23. Front view of fabric B one-piece top



Figure 4.24a. Front view of fabric C one-piece top



Figure 4.24b. Side view of fabric C one-piece top

Fabric D – Striped stitch bonded fabric (DC 61.9%)

The stiff weft yarns of the fabric are difficult to fold. When gathers compress the fabric into a limited area, the fabric inflates itself and big voids are created (Figure 4.25a). The appearance is remarkable similar with the folds of the scrunched fabric (Table 3.2). The gathered, folded or tucked fabric billows into an exaggerative form, which is full of spirit (Figure 4.25b). The gathering effect is a reflection of the physical characteristics of this fabric.

Fabric F – Black non-woven fabric (DC 96.4%)

The gathers of the fabric are like pleats as this non-woven structure creates firm folding lines and sharp node creases that are similar to the scrunched specimen in Table 3.2. The fabric's low drapeability provides the form with exaggerated and stable outlines to give a strongly striking look (Figure 2.26).



Figure 4.25a. Front view of fabric D one-piece top



Figure 4.25b. Side view of fabric D one-piece top



Figure 4.26. Front view of fabric F one-piece top

4.2.5 Architectural shape: The geometric dress

Design Concept (architectural shape)

The black non-woven fabric (DC 96.4%) can be cut like paper into rigid lines and it can be folded to enclose stable volumes. Taking advantage of the low drapeability of the fabric, the designer employs geometric lines and three-dimensional shapes to create an architectural effect.

Gill (1998, p. 26) claims that, “fashion itself is enabled even encouraged, by experiments in architectural design”. This is because fashion and architecture share many potentials such as structure, form, space, fabric and construction. The characteristics of fabric F have the ability to provide the dress with architectural and spatial structure through draping methods. For example, the sleeve creates two cones hovering over the shoulder, hiding the margin of the shoulder (Figure 4.27a). The sleeve is composed of several panels with straight lines, establishing a rotation effect which is called “twist” in architecture. Although the sleeve is raglan in shape, it creates a multi-dimensional effect. In Figure 4.27b, two panels on the sleeve are rotated in the same direction, but facing different directions, which develop a visionary shape, like a twisted helix.



Figure 4.27a. Front view of fabric F geometric dress



Figure 4.27b. Detail of the sleeve of fabric F geometric dress

Quinn (2002) comments that Chalayan Hussien interprets architectural fashion through breaking the conventional scale of the human form and redefining proportion and space around the body. In response to this idea, this dress extends the body contour with stable lines created by the fabric's low drapeability. Two appendages with rigid lines are attached on the front and back, and then are folded to create volume and mask the body outline into an unconventional configuration (Figure 4.27c and Figure 4.27d). Luecking (2002) explains that in the three-dimensional world, subtraction is seen as space entering into a form, while addition is seen as a form entering into space. These two appendages grow up and out into space and demonstrate the architectural lines of the garment. For this garment, geometry is echoed in the shapes of angles, such as the cone on the shoulder, cones on the raglan sleeve, the protrusion of fabrics on the front and back, the sleeve, and rotated straight lines on the bodice. The structure of concave and convex forms hollow out and inflate the whole sculptural dress. Draping this dress is the process by which thought, meaning, and form are transformed through the fabric and into the spatial form. The proportion and geometric structures of the dress are based on the architectural framework and define notion of the architectural shape.

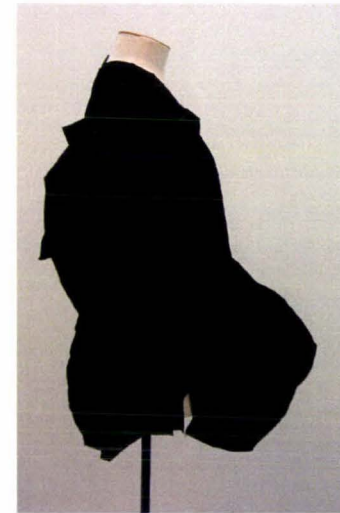


Figure 4.27c. Side view of fabric F geometric dress

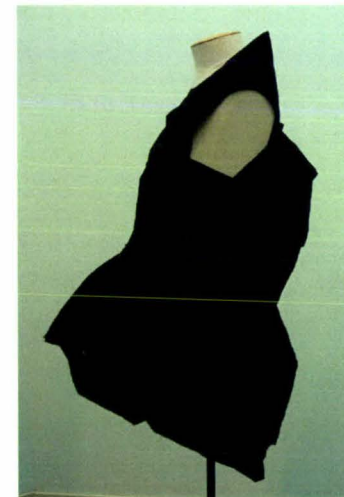


Figure 4.27d. Side view of fabric F geometric dress

Visual evaluation and comparison of the fabrics' drape performances on the architectural form

Geometric dresses were then manipulated in three other fabrics and the effects were compared with fabric F and with each other.

Fabric F – Black non woven fabric (DC 96.4%)

The non-woven structure and high drapeability of the fabric creates a dress with rigid shape, standing independently of the body (Figure 4.27a, b, c, d). Moreover, the fabric is very light and flat so that the dress can hover around the body and rarely touch the body. The angular appearance echoes the outlines of the fabric draped from a point (Table 3.2). The dress is like a shield that seems to retain its shape without the presence of the body.

Fabric A – Viscose knitted fabric (DC 7.6%)

For the dress of fabric A (Figure 4.28), the three-dimensional shapes have totally disappeared; no cones or protruded appendages can be recognized because of the high drapeability of the fabric. The appearance of the back appendage is evidenced by the pliable folds of the fabric when draped from a point (Table 3.2). The dress is quite



Figure 4.28. Back view of fabric A geometric dress

different from the original shape of the dress draped using fabric F. The architectural structure is transformed into a fluid form with geometric lines and panels.

Fabric C – Linen fabric (DC 39.8%)

This medium drape fabric cannot support the firm shape of this dress, so that panels of the dress loosely droop instead of standing independently (Figure 4.29a). The geometric lines are still clear with some interesting folds, but the surface of the dress looks messy due to the intrinsic creased surface of linen (Figure 4.29b).

Fabric D – Striped stitch bonded fabric (DC 61.9%)

Fabric D can hold the stable three-dimensional effect around the body (Figure 4.30a). The stiffness of the weft yarns keeps the visible seams firm enough to retain the architectural effect, such as the rotated sleeve (Figure 4.30b). This effect suggests a desire to let the fabric speak about itself.



Figure 4.29a. Back view of fabric C geometric dress



Figure 4.29b. Side view of fabric C geometric dress



Figure 4.30a. Side view of fabric D geometric dress



Figure 4.30b. Back view of fabric D geometric dress

4.3 Discussions and Summary

In Table 4.1, all the garments of this design development research are displayed to make visual comparison easier. The different draping performances of the six fabrics have been explored. Through this process, each fabric's distinctive drapeability is realized to create variations for the subsequent final collection.

Fabric A (viscose knitted fabric) is the highest drape fabric among the six of them. The more drapeable a fabric, the easier it is to fold. A drapeable fabric is able to provide small languid tight folds and create fewer gaps between the garment and the body (see garments of fabric A in Table 4.1). The weft knitted structure imparts a stretch characteristic to fabric A that makes the fabric an ideal material for garments that closely fit the body. In this research, however, the fabric is draped into loose form to explore spatial and unconventional effect such as imperfect form. The high drape fabric creates more space in the cutout form than the low drape fabric does. Compared with some dresses made of low drape fabrics, the cutout dress with the high drape fabric (Figure 4.11) produces more empty spaces revealing the body.

Table 4.1 Visual table of design development

Fabric		A	B	C	D	E	F
		Viscose knitted fabric	Gauze wool fabric	Linen fabric	Striped stitch bonded fabric	Aida silk fabric	Black non-woven fabric
THE JACKET	Front view					This shape of fabric E is similar to the one of fabric B.	
	Back view						
THE CUTOUT DRESS	Front view					This shape of fabric E is similar to the one of fabric D.	
	Front view						
THE BLURRED DRESS	Front view		This shape of fabric B is similar to the one of fabric C.				
	Back view						
THE ONEPIECE TOP	Front view		This shape of fabric B is similar to the one of fabric C.			This shape of fabric E is similar to the one of fabric C.	
	Back view						
THE GEOMETRIC DRESS	Front view						
	Back view						

Fabric B (gauze wool fabric) is a high drape fabric with moderate thickness so it can create graceful folds. Its loose weave structure (22warp x 12weft/cm) and the crepe twisted yarns provide the fabric with some stretchiness on the bias grain although it is not as stretchy as fabric A. This high drape fabrics did not inspire me towards close fitting shapes, but inspired shapes with continue rounded design lines and panels that formed a three-dimensional visual path on the body. In Figure 4.1 (a, b), the fabric is manipulated into a deconstructed shape that echoes the space around the body. Although the fabric is not normally used for stiff or bulky shapes, it is possible to create voids by combining the fabric with appropriate design methods, such as folding, gathering or twisting.

Fabric C (linen fabric) is a medium drape fabric that can produce moderately stable folds. The fabric has a naturally creased surface aesthetic. Although its medium drape cannot make rigid forms stand up, its flexibility allows the shape to create voids through gathers, folds or ties (Table 4.1).

Fabric D (striped stitch bonded fabric) is a medium drape fabric, however, it has extremely different bending stiffness on two grain lines. The stiff weft yarns are hard to fold but easy to create volume. For example, the jacket in Figure 4.2(d, e, f) is bigger

than others with the high drape fabrics, although all the jackets are from the same pattern. However the softer warp grain allows the fabric to be easy to fold and compress (Table 4.1). Taking advantage of the opposite drape characteristics of both grain lines, the designer creates contrasting visual effects on a garment. The voluminous folds or the compacted folds depend on the grain line usage. The fabric is very stiff so it can create architectural effects with stable geometric shapes.

Fabric E (Aida silk fabric) maintains a stable shape due to its low drapeability, moderate thickness and tight weave structure. However its silk content softens the strong appearance of the overall shape (Table 4.1).

Fabric F (Black non-woven fabric) has light weight and low drapeability. It can create stable shapes that hover around the body and rarely touch the body (Table 4.1). Its non-woven structure without stretch produces either a firm flat shape that subtracts voids or a firm three-dimensional shape that creates voids.

Draping manipulates fabric and explores its behaviour on the body form directly through various methods. For example, the key to research through deconstructive design in my project is how to rearrange the garment's structure and reveal its insides according

to each fabric's drape characteristic. The way in which I deconstruct a garment with a low drape fabric differs from the way of deconstructing a garment with a high drape fabric. I employ deconstructive design not only to expose design ideas, but also to express the characteristics of a fabric.

For a garment with a three-dimensional look, it is often better to let the fabric dictate what will happen, rather than attempting to design a garment from a sketch. These designs leave behind the conventional ideas of emphasizing the shape of the body and the body's curve. The design methods conquer and consume space in the form of draped garments that explore deconstruction, irregularity, imperfection, asymmetry, volume, void and architectural shape. The designer shows these sculptural effects and different aesthetic appearances that can be created from a single basic concept using different fabrics.

From knowledge of fabric performance in the simple fabric tests in chapter three, each fabric with the particular characteristics inspires each shape. By making a single basic form using different fabrics having different physical characteristics their aesthetics can be compared. Some fabrics may not necessarily be ideal to represent the form, but they do usually create completely different aesthetics and shapes, some of them

surprising and attractive in spite of the fact that most designers would not normally attempt to drape such designs with those fabrics. Understanding this process allows the designer to employ draping methods to best highlight the qualities of fabrics and create sculptural forms with the knowledge of fabrics on the body.

Photographs of the garments of this design development worn by a model are shown in appendix 3.

Chapter five

Final collection“Changing Dresses”

Through the design development, the performances of six fabrics with different draping methods were explored. Each fabric presented a different effect and exposed a new shape when made into the same form. Their behaviours describe their individual characteristics which in turn helped further the design process. As a result of knowledge and experience gained through the experimental and comparative research, each fabric's performance becomes more predictable. Before a fabric is draped, its behaviour can be imagined and this allows the designer to use the fabric's characteristics as a part of the design. Also the visual sense it reveals in the preliminary experiments can be explored and incorporated in the different designs.

The purpose of the final design is to demonstrate the different characteristics of each fabric through six garments and reveal how these characteristics can influence the design process. When certain elements of the dress are repeated on six dresses, then six different performances are reflected and compared. In each garment, the design of the dress is varied, in order to emphasize all of the physical characteristics which inspire the design's particular form. In short, there are six similar but different garments appearing unified as a collection due to both repetition and variation.

5.1 Basic design

At the beginning of this collection, a basic form is designed for six garments. The six fabrics each express different visual effects when applied to different garment shapes as explored and discussed in chapter four. The basic form is intended to reveal the fabrics' different physical characteristics. Moreover the form expresses the relationship between the garment, the fabrics and the body by using of void, volume and deconstructive design.

The basic form was first draped with calico because this is seen as a neutral fabric. The draping starts from the right sleeve by slashing and folding (Figure 5.1 a, b). There is

lots of excess fabric around the right shoulder. For low drape fabrics, this excess fabric can create volume. For high drape fabrics, this can create a three-dimensional surface effect or inspire further design solutions.

The front left side emerges from a jacket that has been cut in half (Figure 5.1a). It is recomposed with the right side to complete a new form. The layer from the left shoulder covers the lower left part of the torso and creates the void inside, which acts as a pocket. The wearer's hand can be inserted into the pocket as in Figure 5.1c. This invisible volume between the body and the garment is created not for visual effect but for performance. It hides secrets, which can be stored by the wearer. The other baggy piece facing out is a pocket as well but this one is more open to the outside. When used on each of the six dresses, this open pocket helps to explore the fabrics' different behaviours.

The hem of the dress is asymmetric and rolled up to reveal the inside of the dress (Figure 5.1d), which reflects the process of deconstruction. Wigley (1993) claims that deconstruction is dislocating a space to expose its structure and operation that are ongoing and produce certain visible effects. Conventionally, the inside would be covered, but in this case, this exposure highlights the dress's three-dimensional structure



Figure 5.1a. Front view of the basic form



Figure 5.1b. Side view of the basic form



Figure 5.1c. Detail of how the hands insert into the pockets



Figure 5.1d. Side view of the basic form

(like a building) and the way the space accommodates the body. When some part of its inner space is revealed to the viewer, the dress's spirit becomes closer to the viewer.

On the back of the dress, a large piece of fabric is draped on the hip to create a swirl-like effect (Figure 5.1e). An extended piece from the left disappears into the center swirl, which again creates a void hidden in the garment. Quinn (2003, p. 82) suggests, “the very nothingness of the void can paradoxically support substantial concepts and solid physical structures”. The volume of the dress expresses the unconventional spatial concept and creates the three-dimensional effect around the body. Thus the basic design is next considered to expose the different draping performances on the garment through six different fabrics in the following sections.

5.2 Six dresses

After the basic form is designed, the effects of the six fabrics on the basic design form can be predicted by the designer. Each garment is designed with variations that suit the visual effect of each garment and also highlight each fabric's physical characteristics. The variations reflect learning and experience gained through the preliminary research and design development.



Figure 5.1e. Back view of the basic form

5.2.1 Dress A – Fabric A (viscose knitted fabric) (Figure 5.2 a, b, c, d)

The viscose fabric is a very high drape fabric (DC 7.6%) and its single jersey knitted structure creates a stretchy quality. Thus, the fabric falls easily into languid folds and ripples. The variations of basic design for this dress are: excess fabric on the shoulder is tied, the sleeve is lengthened and shirring gathered, and the skirt section is cutout. This is intended to highlight the limp gathers and folds, and the high drapeability of the fabric through an imperfect form. The dress shows how the design is adapted to highlight the special qualities of this fabric to maximum effect.

When fabric A is gathered or tied, it creates fluid and tight folds as evidenced by drape from a point (Table 3.2). This behaviour has been showed in the previous research with this fabric, such as Figure 4.17a and Figure 4.22a. This is why the excess fabric on the right shoulder is tied to display the high drape of fabric A (Figure 5.2a). Moreover, ties on the right shoulder stand out from the slim dress to create a strong visual effect. The shirring gathers of the long sleeve also demonstrate the high drape fabric's performance in the folds (Figure 5.2b). With the rotated (twisted) structure that the original form has already had, the gathered surface provides the sleeve with a great three-dimensional effect (Figure 5.2e).



Figure 5.2a. Front view of the dress A



Figure 5.2b. Side view of the dress A



Figure 5.2c. Back view of the dress A



Figure 5.2d. Side view of the dress A

The skirt's lower section is cut into strips to fully show the high drape of the fabric (Figure 5.2c, d). When the viscose fabric is cut, pieces drape loosely and easily, as shown in the preliminary design development (Figure 4.11). The fabric is cut into strips that are interlaced and hung in spindly forms. The characteristics of fabric A provide these strips with a loose appearance that seems like ragged or torn pieces. The imperfect design is not a mistake made by the cut, but it is on purpose. Vinken (2005, p. 101) suggests one of the meanings of imperfection is “a negative aesthetic, based in contestation of the idea of fashion itself”. The frayed pieces, randomly hung restore the irregularities to the perfection and work against luxury and ornament. Imperfection is a way to disclose and clarify something that has already been forgotten or something that is concealed under superficial beauty.



Figure 5.2e. The twisted structure of the sleeve

5.2.2 Dress B – Fabric B (gauze wool fabric) (Figure 5.3 a, b, c, d)

Fabric B is a high drape fabric (DC 33.7%). Its loose weave and crepe twisted yarns provide the fabric with some stretch on the bias grain. But due to the fabric's thickness, this high drape fabric creates moderately soft folds and gathers as evidenced by the image of draped from a point (Table 3.2). The variations of the basic design for this dress are: the sleeve is lengthened, and hem of the dress is gathered. The high drapeability of the fabric and the small voids within gathers and folds are thus emphasized.

Preliminary draping research with this fabric (Figure 4.12) showed that the thick fabric with high drapeability creates graceful and straight drape lines. The purposely exaggerated long sleeve of this dress conveys this character of fabric B (Figure 5.3a, b). Moreover, the sleeve is shaped into unconventional permutations to give the dress its radical visual effect. The hem of the dress is gathered instead of rolled up (Figure 5.3d). Reasons for this approach are: firstly, fabric B is soft so the rolling hem would not support such a form. Secondly, the gathering hem is more suitable for the tender sense of the dress. The previous research with this fabric (Figure 4.23) showed that this high drape fabric creates smooth gathers; however its thickness produces a fair amount of voids within the gathers. Quinn (2003, p. 217) explains, “the fold is understood



Figure 5.3a. Front view of the dress B



Figure 5.3b. Side view of the dress B



Figure 5.3c. Back view of the dress B



Figure 5.3d. Side view of the dress B

in terms of surfaces, yet the void manifest with its central recess is ever present". The so-called mobile void expresses the structure of the surface and creates the three-dimensional visual effect. The voids are extracted from the gathering and give a sense of destiny. Thus, the gathers around the opening of the hem look puffy and seem to conceal something from the inside, which is left to the viewer's imagination. The back swirl creates delicate folds (Figure 5.3c) and completes the whole dress with an elegant look.

5.2.3 Dress C – Fabric C (linen fabric) (Figure 5.4 a, b, c, d)

The linen fabric is a medium drape fabric (DC 39.8%). Because of the relatively low drapeability, fabric C is harder to fold than fabrics A and B. The creased surface is a special natural aesthetic of this fabric. The variations of the basic design for this dress are: the excess fabric at the right shoulder becomes ties, and the openings of front pockets are shirred and gathered. The stable void created by gathering and tying is exposed here.

The creased texture and open weave of the fabric make this dress look loose and natural. If the excess fabric on the right shoulder had no ties, the dress would look too limp and unstructured. This is why these two design variations are applied to give the dress a little more structured effect. Due to the natural flexibility of the linen yarns and the creased surface the fabric creates voids through the gathers, folds and ties. This characteristic has already been reviewed in preliminary draping research with this fabric (Figure 4.24). For this dress, because the drapeability is lower than fabrics A and B, the ties on the shoulder can stand independently (Figure 5.4a, b). It seems there is air entrapped in the ties that are produced by the fabric's a natural effect. Quinn (2003) implies that the emptiness of the interior determines its shape by creating a void in the real. The shapes of the ties reflect the void that is created by the fabric. Furthermore the



Figure 5.4a. Front view of the dress C



Figure 5.4b. Side view of the dress C



Figure 5.4c. Back view of the dress C



Figure 5.4d. Side view of the dress C

openings of pockets are shirred to produce small voids between the gathers, and also avoid the dress becoming too loose. Quinn (2003, p. 217) suggests, “a fold can bring the surfaces together while simultaneously dividing them by organizing the space they occupy”. Thus the pockets become compact shapes and their surfaces are divided by the voids within the gathers. Similarly, there are voids hidden in the pockets as well so that wearer will desire to open the pockets and feel the tiny inside space.

The back swirl falls naturally and gently to create folds (Figure 5.4c). The rolling hem is not self-controlled because the fabric is too soft and drapeable to be stable. But the soft curve, which the rolling creates, adds to the tender sense of the dress (Figure 5.4c, d). The gathers, ties and roll flow smoothly and continually around the body without interruption, together with the natural aesthetic of the fabric, provide the dress with a fluid trait.

5.2.4 Dress D – Fabric D (striped stitch bonded fabric) (Figure 5.5 a, b, c, d)

The fabric is a medium drape fabric (DC 61.9%). Its thick and stiff weft yarns are difficult to fold while its softer warp grain is easier to fold. This feature is evidenced by the unevenness in nodes in circular specimen in the visual tests (Table 3.2). The variations of the basic design for this dress are: the sleeve has been enlarged and widened, the front form is deconstructed, the back swirl is changed into a truncated cone, and the dress is shortened. This dress explores an architectural effect by taking advantage of the difference in bending stiffness of warp and weft grain lines.

In Rei Kawakubo's theory, she creates architectural form by distorting the figure of the wearer to an exceptional degree, such as by enlarging the shoulder pad. I use this fabric to exaggerate the body contour. This fabric has the ability to create dramatic sculptural shapes, as seen in the preliminary research exploration (Figure 4.16c and Figure 4.30). This dress presents an architectural effect. The front of the dress is deconstructed through turning the seams inside out, re-cutting and re-stitching into a new form (Figure 5.5a). Due to the stiff weft yarns, the stitched seam can retain stable lines and appears to be firmly spiraling from the front, passing through the shoulder and to the back (Figure 5.5a, d). The twisted and rotated surface that is presented in modern architecture is appropriated to the fashion form (Quinn, 2003). The rotated



Figure 5.5a. Front view of the dress D



Figure 5.5b. Side view of the dress D



Figure 5.5c. Back view of the dress D



Figure 5.5d. Side view of the dress D

panels and spiraling seams reinforce their shapes with a robust structure and create a sculptural garment. It is easy to imagine how this fabric would spiral from the draped disc (Table 3.2). The sleeve of the dress that is cut on the lengthwise grain is wider than those of the previous three dresses because the high bending stiffness of the weft grain can support such a structure (Figure 5.5a, b). The architectural look is more effective when the sleeve becomes more voluminous and exaggerated. It matches the inflated shoulder and right side bulky bodice that is produced because the fabric is hard to fold along its lengthwise grain. Every part of the dress goes against soft draping and everywhere creates volume.

The truncated cone on the back (Figure 5.5c) is inspired by the uneven nodes in the circular specimen where the weft yarns are hard to fold. The fabric can hold this form and present not only this fabric's characteristics but also creates the voids of the garment. The cone is subtracted from the top, and an active void is produced. In architecture, this is called a carving process, as though a block of material has been removed from a mass (Luecking, 2002). Then the void interacts visually with the truncated cone to create strong positive-negative relationships and open up a distinctive space (Figure 5.5e). The viewer is attracted by the void inside the concave and expects to look for the space inside of the dress. For this dress, the design effect is about how the fabric



Figure 5.5e. The truncated cone on the back

and draping methods work together to create a visually strong sculptural form that demonstrates an architectural quality.

5.2.5 Dress E – Fabric E (Aida silk fabric) (Figure 5.6 a, b, c, d)

Fabric F is a thick, heavy weight and low drape fabric (DC 76.3%). The variations of this dress are: the dress is shortened and there is no appendage on the back. The dress is focused on the fabric's ability to retain a stable form in a moderate way.

The thick fabric with low drape and tight weave structure (48warp x 39weft/cm) allows the dress to maintain a geometric shape with clear and stable outlines (Figure 5.6a, b) as discovered in the preliminary research. The short form without appendages completes a neat and simple dress, which shows its design lines and structure (Figure 5.6c, d). This fabric has two different characteristics from each side; soft and solid. The thickness (0.411mm) and low drapeability of the fabric create a stable voluminous shape. However the silk yarn content gives the fabric a smooth and soft character that endows the dress with gentle and free sense. This dress is the combination of soft and strong sense.



Figure 5.6a. Front view of the dress E



Figure 5.6b. Side view of the dress E



Figure 5.6c. Back view of the dress E



Figure 5.6d. Side view of the dress E

5.2.6 Dress F – Fabric F (black non-woven fabric) (Figure 5.7 a, b, c, d)

This fabric is the low drape fabric (DC 96.4%) with light weight (51.1g/m²). Due to its non-woven structure (Table 3.2), the fabric has very low stretch and has “papery characteristic”, for example, the fabric creates sharp crease angles where curves meet. The design variations for this dress are that the single layer lapel becomes multiple layered lapels, gathers emerge from the right arm’s slit, and the twist around the front neck is eliminated. The dress highlights the flat surface of the fabric and the exaggerated stable form that the fabric can create.

Some designers work with low drape fabric, for example, Junya Watanabe uses feather-down fabric to create mass volume that overwhelms the wearer. This fabric F is capable of creating stable voluminous form with sharp node creases and a flat surface. The preliminary draping research for this fabric (Figure 4.5a and Figure 4.20a) displayed this paper-like character of the fabric. Due to the low drapability and the light weight of fabric F, the excess fabric on the right shoulder can retain firm geometric outlines and form volume (Figure 5.7a, b). Although this non-woven fabric has a dramatic three-dimensional effect, it is very flat when it lies down (Figure 4.10). The multiple layered lapels present and highlight this characteristic (Figure 5.7e). The even and rigid structure of the fabric makes the layers lie in order. The gathered form protrudes



Figure 5.7a. Front view of the dress F



Figure 5.7b. Side view of the dress F



Figure 5.7c. Back view of the dress F

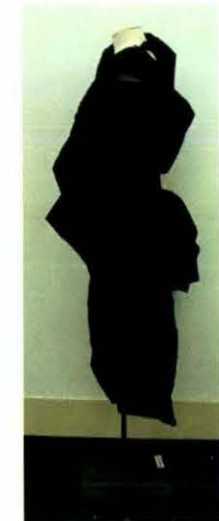


Figure 5.7d. Back view of the dress F

from the slit, showing the fabric's low drapeability and giving a striking visual look.

The back swirl (Figure 5.7c) is not as fluid as the dresses made from fabric B and fabric C. The fabric keeps the stable outline of the basic design, but gives the dress a soft look. The expanded piece inserted into the swirl centre creates an illusion that there is something moving and rotating inside the swirl. The dress creates a combination of dynamic and static visual effect. The rolling hem suits this non-woven fabric because it is solid and does not fall down (Figure 5.7c, d). This behaviour was apparent in the one-piece top from the design development (Figure 4.26). The rolling hem keeps its structure and can be adjusted. The opening of the skirt strengthens the visual communication with the viewer.

Undoubtedly, this non-woven fabric can form a flat structure when layered, which displays its firm texture and low drapeability. It also gives a dramatic three-dimensional effect when combined with draping methods to create volume. Quinn (2003) states that the void is an empty and unoccupied space, but it defines a reality of form and a container for ideas. For this dress, the void is the container for ideas that are generated from the fabric.















Figure 5.7e. Multiple layered lapels on the front

5.3 Summary and discussion

Table 5.1 displays the six dresses together for an easier visual comparison. In this collection, dresses created from the same basic design form display very different shapes and aesthetics. Each fabric has the ability to determine the form of the garment but because they suggest individual design ideas, variations are created. The dresses are varied by the characteristics of the fabrics that were revealed and highlighted in deconstruction, imperfection, volume, void or architectural shapes of the preliminary draping research and experimental and visual tests.

This collection highlights the six fabrics' drapabilities through the comparison and variation of design. Aldrich (1996) visually compared fabrics' different drape behaviours by draping fabrics into the same simple form. This idea from Aldrich has been extended by draping fabrics into complex forms that have the ability to show in detail the visual effects that the fabrics can create when linked to specific design concepts. The drape performance cannot only be evaluated through one simple form. With various draping methods, I have draped fabrics into complex geometric and three-dimensional forms to explicitly show the diverse properties of the different fabrics. In the collection, however, I chose not drape six fabrics into the same three-dimensional

Table 5.1 Visual table of final collection of dresses

Fabric	A Viscose knitted fabric	B Gauze wool fabric	C Linen fabric	D Striped stitch bonded fabric	E Aida silk fabric	F Black non-woven fabric
Front view						
Back view						

form to compare their different effects; instead each dress emerges from the basic form so they look similar and comparisons of the effects of fabrics' different physical characteristics can be made. Through the comparison of similar shapes and varied shapes, the special drapeability of each fabric can be highlighted.

In the literature review, I reviewed some contemporary designers' works and the way they design radical fashion to challenge prevailing clothing conventions. These contemporary designs influenced my design ideas. For example, Rei Kawakubo who radically inverts the conventional garments reconfigures the distance between neckline, waistline and hemline by not placing them in the usual areas (Quinn, 2003). Kawakubo creates new ways to redefine the body's proportions and rethink conventional design ideas. As a response to this, I have used six fabrics with a wide range of drapeabilities to challenge the limitations of the garment structure. By redefining the body proportion and forming space around the body, I have draped or wrapped different fabrics around the body and created unconventional fashion forms to display fabric's drape characteristics where the fabric determines the final form. For example, the variation for dress D (Figure 5.5a, b, c, d) uses a deconstructive effect to express the architectural shape because this shape has the ability to explain the distinctive drapeability of the fabric. Both fabric and draping methods create these

sculptural dresses in a unified collection. All the design ideas are essential to highlight the six fabrics' different behaviours. Photographs of the six dresses worn by a model are shown in appendix 4.

Downton (2003) claims that research through design occurs when designers are engaged in designing and research knowledge is produced through design. This research through design reflects the design model that explains the relationship between fabric, drape and 3D form (Figure 2.6). The fabric's distinctive characteristics, together with the experimental and visual tests of fabric drape become the inspiration for the design of three-dimensional forms. Fabrics are combined with appropriate draping methods to create these forms. Vice versa, the sculptural shapes developed explore the fabric's characteristics and the function of draping methods.

Chapter six

Conclusion

In this project, I firstly developed a way of measuring fabric drape in practice that suits my design process. I then selected six fabrics from the initial fabric testing through studying their physical characteristics, especially their drapeability. They were grouped into high drape, medium drape and low drape. Thus objective evaluation helped me to choose the six fabrics that were used in the subsequent design development.

Establishing how fabrics and draping methods influenced the three-dimensional look of the garment was achieved by applying six fabrics to design forms and studying their aesthetic characteristics. The six fabrics with different fiber contents, weight, thickness, and drapeability have a wide range of characteristics. The fabrics' different drape performances were exposed when they were draped to create the spatial effect

around the body. Moreover the garments' shapes are against the conventional fashion that echoes the contours of the body through the employment of various draping methods. The geometric and three-dimensional shapes were achieved by combining both fabrics and draping methods.

Key findings were:

1. The method of testing fabric drape was a suitable way for my design process, because measuring the physical drape of fabrics using the drape coefficient (especially developed for this thesis), together with subjective visual experiments helped me to choose six fabrics and to establish the evidence to develop my design research. Simple visual methods do not require complex bending or shear tests and could therefore be used by other designers. The visual subjective methods developed in this thesis (draping from a point, scrunched specimen, circle shadow and nodes) extended the simply visual experiments innovated by Gioello (1981) and Aldrich (1996).

While one fabric inspires one form, other fabrics may not be the inspiration of the same form, but when they are made to represent one form, they create very different aesthetics and shapes. I extended the work of Aldrich (1996) by applying six fabrics

to the same complex design form to expose the drape performances of the fabrics in five different design concepts of deconstruction, imperfection, volume, void and architectural shape. Fabrics can give surprising outcomes that cannot be imagined before, but which convey different visual senses.

2. Various draping methods can build up fabric into garments with sculptural forms.

Through reviewing some contemporary designers' work, their unconventional ideas inspired me to employ spatial concepts, such as deconstructive form, voluminous form or architectural effect, to create three-dimensional forms. I created these shapes by taking advantage of the fabric's drapeability. For instance, I manipulated the fabric to penetrate the space or create the shape of void. Distinctive draping methods provided the garment with spatial structure that displayed the drape characteristic of the fabric.

3. Fabric physical properties can help inspire three-dimensional design effects on a garment. Each fabric has the ability to influence and determine the design ideas.

High drape fabrics were draped to create three-dimensional forms with intricate and continuous design lines and panels around the body. They help the designer to create deconstructive or imperfect designs that can explore the spatial structures of the

garment.

Low drape fabrics give the voluminous outline and form of the garment. Low drape fabrics are sometimes not considered fashionable materials for showing draping work. These fabrics are thought by many designers to be stark, hard and insensitive materials. This project revealed how low drape fabrics enable the designer to create the sculptural shape of the garment. The properties of these fabrics stimulates the designer to drape “an architecture”.

When a form is designed for a high drape fabric, then the low drape fabric can also express this form in a unique way different to the original shape. When an architectural form is designed for a low drape fabric, high drape fabric can present an architectural look in a soft way as well. These forms that present in a fluid and unstructured way may not look architectural, but they are still architectural. It takes a lot of structuring to make a garment architectural, but the architecture of the garment will not be denied if the fabric does not look solid. The garment reflects the spirit of architectural design in a new and fresh way. Fabrics provide different looks for the same shape, which depends on their drape characteristics.

My research thus integrates subjective and objective methods to investigate how fabric and draping methods influence the shape of a garment. The objective method (measurement of physical drape of fabric) defined the fabrics' drape characteristics. However the fabric drapability should also be displayed visually and subjectively through draping them on the three-dimensional forms. This is why the design development was necessary. When applied to complex shapes, the drapeabilities of the fabrics can be exposed visually and directly. It is better to investigate fabric drapeability with different shapes or designs so that there will be a wide range of fabric performance to be compared. The comparison of different silhouettes of the same shape exposes the different drapabilities of fabrics and their influences on the garment's shape. Understanding this process allows the designer to create new sculptural forms with fabrics on the body.

The draping of this project involves an intimate bond with the fabric to create form constantly changing in space. The draping methods no longer divide a garment into a two-dimensional plane, composed of a front and a back panel, but rather are three-dimensional. The sculptural garments of this project stem from the research into the relation of fabric properties and draping methods.

Recommendations for further research:

The further research can be expanded from the processes developed in this research.

- In this research, I manipulated one fabric for one form. Further research could combine two or three fabrics to drape a single three-dimensional form. Knowledge gained through this research about fabrics with different drapeabilities and how they create different effects would allow designers to combine their different drapeabilities to create sculpture garments.
- I strongly believe the model I developed can be applied to other designers' design process. The fabric testing experiment is suitable for the design process. Designers may use this method to study the fabrics with a wide range of drapeabilities for their various design forms. Investigations of drape coefficient and fabric's drape performance in simple visual forms (drape from a point, scrunched specimen, circle shadow and nodes) can establish the evidence for designing ideal forms. Through this method, designers can take advantage of fabric's drapeability for different design purposes.

Draping different fabrics from the same complex form is a powerful visual method to compare fabrics' behaviours to the maximum extent. Designers could apply this method to create different shapes and emotional senses from the same form. Alternatively, the distinctive drapeability of a fabric can be emphasized through such comparisons. Thus new forms can be created according to the fabric's individual characteristics. Combining the fabric drape characteristics and the 3D visual effect can help designers to predict possible shapes and designs of the fabric on the body. Thus relating the drape character of the fabric with the 3D visual result helps gain the knowledge of the fabric on the body, which is an invaluable tool for a designer.

- Knowledge of how fabrics inspire the design of three-dimensional garments with unconventional effects such as deconstruction, volume and architectural shape can inspire other designers to design unconventional garments by using other fabrics or even non-fabrics.

Appendices

Appendix 1

The comparison of the Drape Coefficient of the two methods

	Fabric 1		Fabric 2		Fabric 3	
	High drape fabric		Medium drape fabric		Low drape fabric	
	Digital pixels	Conventional weight (g)	Digital pixels	Conventional weight (g)	Digital pixels	Conventional weight (g)
Face up	5890674	1.160	7312232	2.145	8465583	2.503
	5909740	1.155	7508848	2.016	8444125	2.636
	5968876	1.213	7322103	1.885	8449656	2.550
Face down	5986001	1.232	7374176	2.058	8353403	2.676
	5925502	1.244	7270964	1.993	8340270	2.651
	5781933	1.224	7301459	1.993	8381364	2.651
Average	5910454	1.204	7348297	2.015	8405733	2611
DC %	37.50	36.17	60.27	59.75	77.02	77.52

Weight of paper ring =3.376 g

Appendix 2

Physical characteristics of the 21 fabrics

	Fabric	Fibre Content	Fabric Structure	Yarn Structure	Weight g/m ²	Thickness mm	DC %
H I G H D R A P E	1 Jersey	100% viscose	Single jersey 15courses x 20wales/cm	Staple single Z twist	103.0	0.376	7.6
	2 Jersey	100% cotton	Single jersey 14courses x 21wales/cm	Staple single Z twist	89.9	0.496	11.7
	3 Merino jersey	100% wool	Single jersey 13courses x 18wales/cm	Staple single Z twist	210.1	0.671	13.6
	4 Chiffon	100% silk	1x1 plain weave 95warp x 72weft/cm	Wp: filament single 2S +2Z twist Wt: filament single 2S +2Z high, crepe twist	77.0	0.324	14.3
	5 Georgette	100% silk	1x1 plain weave 41warp x 36weft/cm	Wp: filament single 2S +2Z twist Wt: filament single 2S +2Z high, crepe twist	53.6	0.235	15.1

	Fabric	Fibre Content	Fabric Structure	Yarn Structure	Weight g/m²	Thickness mm	DC %
H I G H D R A P E	6 Jersey	100% cotton	Single jersey 26courses x 23wales/cm	Staple single Z twist	98.9	0.306	15.3
	7 Crepe	100% silk	1x1 plain weave 36warp x 46weft/cm	Wp: filament single Z low twist Wt: filament single 8S +8Z crepe twist mixed	71.6	0.426	17.4
	8 Merino jersey	100% wool	Tuck stitch 19courses x 10wales/cm	Wp: staple single Z twist Wt: Staple single Z twist	289.7	1.263	20.5
	9 Satin	100% viscose	Sateen 3/1 46warp x 34weft/cm	Wp: filament single Z low twist Wt: filament single Z low twist	124.0	0.219	24.4
	10 Linen cotton	Linen, cotton	1x1 plain weave 23warp x 20weft/cm	Wp: Staple single S twist Wt: Staple single S twist	230.1	0.452	28.2
	11 Gauze wool	100% wool	1x1 plain weave 22warp x 19weft/cm	Wp: Staple single Z crepe twist Wt: Staple single Z crepe twist	126.5	0.548	33.7

	Fabric	Fibre Content	Fabric Structure	Yarn Structure	Weight g/m ²	Thickness mm	DC %
M E D I U M D R A P E	12 Lycra wool	Wool + lycra	Twill 2/1 22warp x 19weft/cm	Wp: Staple single S twist Wt: Staple single S twist	182.3	0.512	35.4
	13 Nylon Dobby	100% nylon	Sateen 1/3 40warp x 45weft/cm	Wp: filament Z twist Wt: filament Z twist	136.4	0.378	39
	14 Linen	100% linen	1x1 plain weave 29warp x 24weft/cm	Wp: Staple single Z twist Wt: Staple single Z twist	121.1	0.268	39.8
	15 Organza	100% silk	1x1 plain weave 39warp x 28weft/cm	Wp: filament single Z twist Wt: filament single Z twist	40.2	0.143	52.7
	16 Batiste wool	100% wool	1x1 plain weave 11warp x 11weft/cm	Wp: Staple 2ply Z crepe twist Wt: Staple 2ply Z crepe twist	260.0	0.837	54.9
	17 Striped stitch bonded interlining	40% nylon, 25% cotton, 35% viscose	Stitch bonded (chain stitched warp) 13warp x 14weft/cm	Wp: Filament single S twist Wt: Single Z twist fancy yarn	207.0	0.518	61.9

	Fabric	Fibre Content	Fabric Structure	Yarn Structure	Weight g/m²	Thickness mm	DC %
L O W D R A P E	18 Organza	Polyester, nylon, metallic	1x1 plain weave 40warp x 25weft/cm	Wp: filament single Z twist Wt: filament single Z twist	56.7	0.225	68.8
	19 Aida silk	100% silk	Aida weave 48warp x 39weft/cm	Wp: Staple 2ply S+Z twist Wt: Staple 2ply S+Z twist	147.9	0.411	76.3
	20 Net	Nylon, polyester	1x1 plain weave 15warp x 9weft/cm	Wp: Staple single Z twist Wt: Staple single Z twist	103.5	0.428	91.7
	21 Black nonwoven	100% polyester	Random wet-laid non-woven interlining (non-fusible)	N/A	51.1	0.353	96.4

Appendix 3

Photographs of design development

Deconstruction: The Jacket



When a garment presents in “unfinished, undone or destroyed” form, it is called deconstructed fashion (Quinn, 2003). The designer forms and deforms, constructs and destroys, composes and decomposes the garment to expose the deconstructive fashion as a “new thinking”. Martin & Koda (1993, p. 94) states, “deconstruction is a process of analytical creation”.

The jacket appears to be deconstructed from a conventional jacket so it retains distinctive features (such as lapels and normal right sleeve) that make it recognizable, yet the jacket is thrown off balance. The garment structure appears rearranged and re-stitched to disclose the new spatial effect around the body.

The form remains mysterious as it initially presents an unconventional aesthetic.









Imperfection: The cutout dress

Fashion seeks to make the garment perfect. However, Arnold (2001) argues that imperfect fashion brings the distortion and error to the surface rather than concealing the lie of beauty. In contrast with fashion's traditional role of the short-lived perfect fantasy, imperfection is against the superficial ornament and reflects the real meaning of beauty.

The disordered layers, frayed seams and visible seams of the dresses expose the real structure hidden beneath the smooth surface once. They bring the thinking that challenges the viewer to realize different types of beauty.







Volume and void: The blurred dress

"As an absent space, the 'presence' of the void redefines whole structures, generating a reality of form and a container for ideas" (Quinn, 2003, p. 80). The intense big volume creates sculptural space around the body and obscures the boundaries between the dress and the body. It creates a new way of thinking of ignoring the contours of the body.

The lower part of the dress is cutout into a cave to expose the inside structure. The new construction is generated and inverts the traditional understanding of the division between the visible and unseen. The dress is a strong contrast of closed and open space established a powerful visual and spatial concept.

The new thinking imbues the empty space with voice, expression and form.









Gathering Void: The one-piece top

The Void is imagined to be empty, unoccupied and without content, but it is rarely reductive to the point of non-meaning (Quinn, 2003). The designer wraps a single length of fabric around the body, evoking numbers of voids hiding in the recesses of gathers, ties, twists, rolls and the pocket. As they are small empty gaps, these voids are easily ignored. Although they give the illusion of “nothing”, the voids are empowered with complex meanings which reveal the story of the garment. The path of the fabric gives poetic sense to the garment.









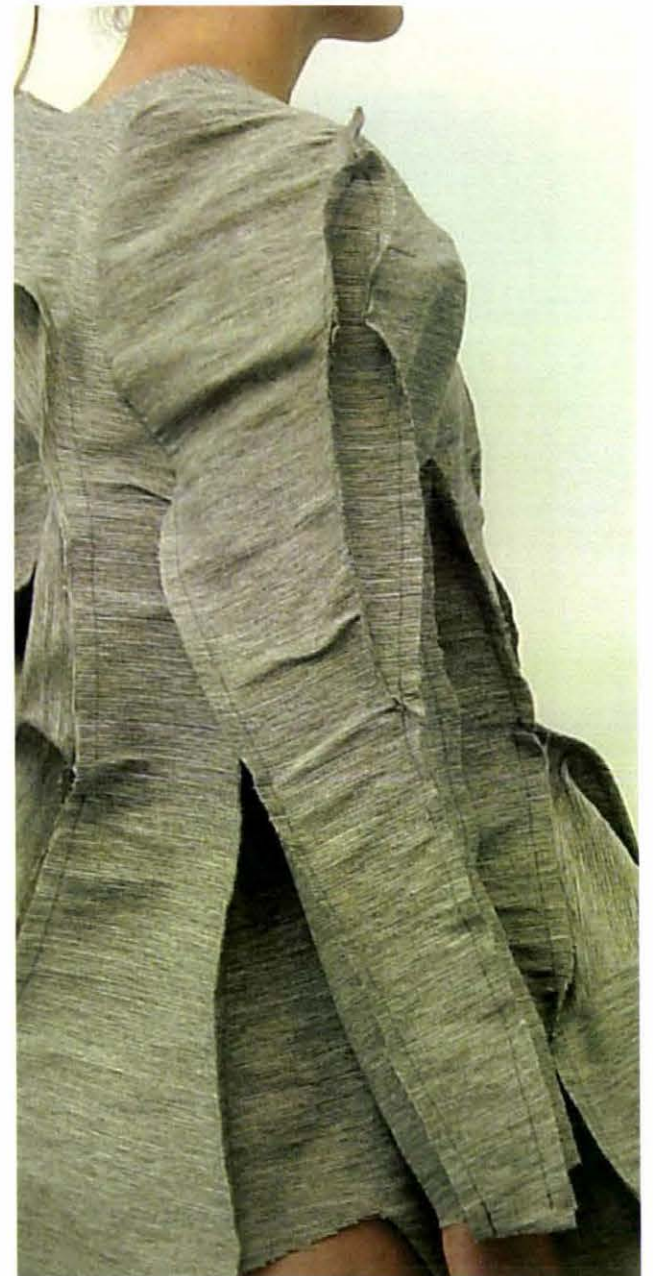
Geometric Dress: Architectural form

"Fashion itself is enabled, even encouraged, by the experiments in architectural design" (Gill, 1998, p. 26). This is because architecture and fashion share many potentials like structure, form, fabric and construction.

Draping clothes is the process by which presence, thought, meaning, and form are transformed through fabrics and into the spatial form that we wear. The designer designs proportions and geometric structures based on architectural framework and defines the notion of the architectural shape. Whether the fabric is soft or solid, it represents the form in a spatial effect.







Appendix 4

Photographs of final collection















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