

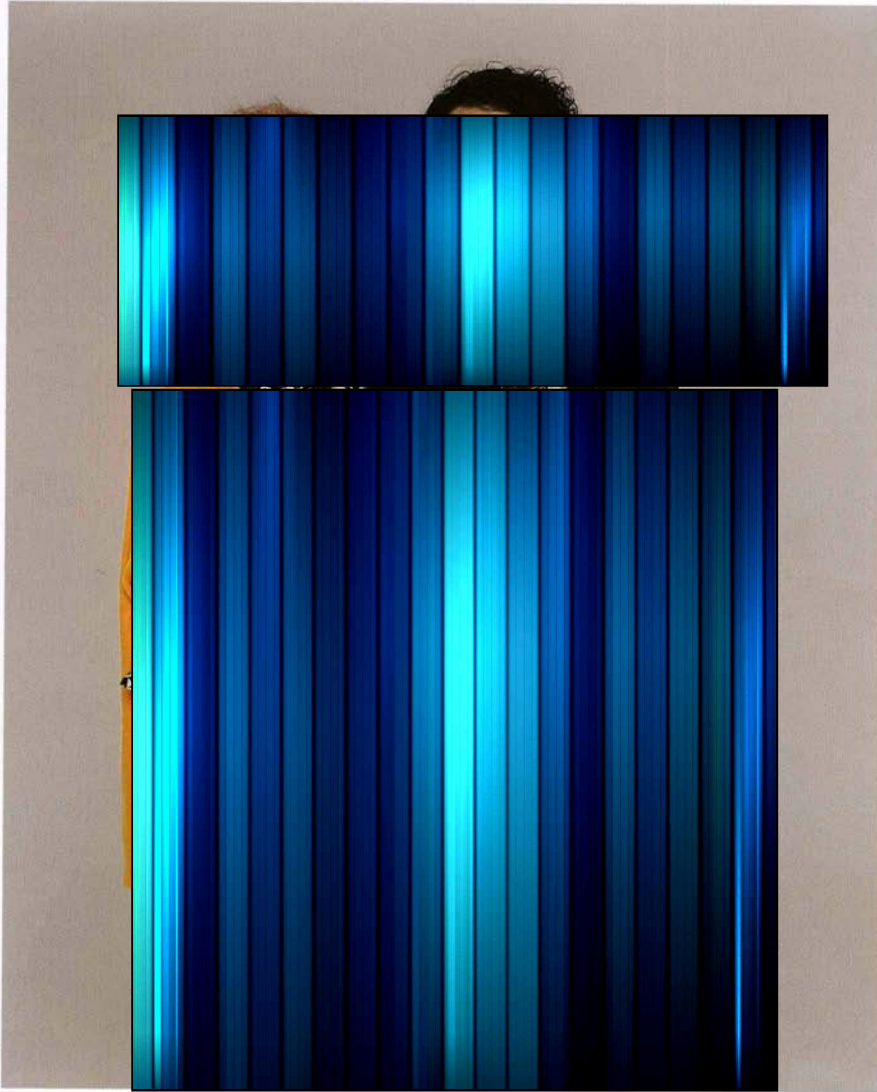
FABRICS AND TECHNIQUES

As a fashion designer you must have an understanding of fabrics and what their properties are. For example, how fabrics are constructed, what they are made from and how they perform. This knowledge will allow you to choose the right fabric for your designs.

It is also important to be aware of the various techniques that can be applied to your chosen fabric. This will give you endless possibilities to your designs; for example, a fabric could be dyed or printed to add extra colour, embellished, embroidered or pleated to give surface interest. Try to learn as many fabric names and techniques as possible, in this way you will be able to communicate your fabric ideas easily to others.



Fabric



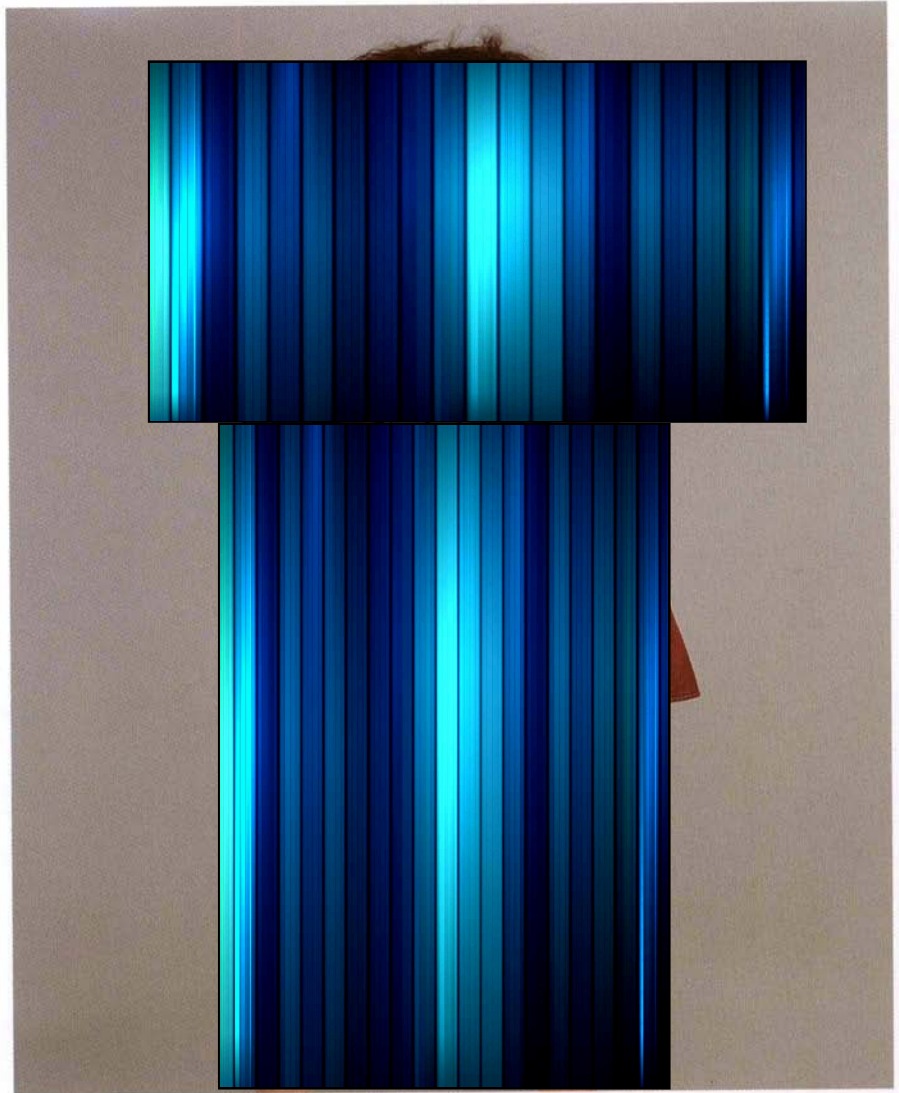
It is of fundamental importance for every designer to understand the properties and qualities of fabrics. The choice of fabric for a garment is paramount to its success. Firstly, the weight and handle of a fabric will affect the silhouette of a garment, giving it shape and form or allowing it to drape; for example, silk will have more of a 'draping' quality than heavy wool, which will have more structure. Secondly, a fabric will be chosen for its performance in relation to its function; for example, jeans must be comfortable, durable and long-lasting – and denim is the perfect fabric for this. A raincoat must ideally be lightweight, but still offer protection from the elements; a Teflon-coated cotton would be ideal for this kind of garment. A tight-fitting T-shirt would be best made in a stretchy, breathable fabric, possibly 100% cotton-knitted jersey. Finally, fabrics must be chosen for their aesthetic value; in other words, the way they look and feel, their colour, pattern or texture.

Let's look a little more closely at the defining characteristics of fabrics. What is the composition of a fabric? Are the fibres derived from natural or man-made sources? How is the fabric constructed? Is it for example knitted, woven or maybe crocheted?

1/2 From *Wonderland*
magazine, Sept/Oct
2005. (Photographer:
Kent Baker)

*Fashion is what one wears oneself.
What is unfashionable is what other
people wear. ¶*

Oscar Wilde (from a book of his quotes)



Natural fibres



1 Top row from left to right: Fur, leather, woven fabrics: wool, 50 per cent hemp, 50 per cent cotton,

raw silk, cotton. Bottom row from left to right: Knitted: wool, cotton, silk, linen, printed silk.

2 Jessica Ogden printed Indian cotton dress, Spring/Summer 2006 collection.



Natural fibres are derived from organic sources; these can be divided into plant sources (in other words, those composed of cellulose) or animal sources (those composed of protein).

Cellulose fibres

Cellulose is made of carbohydrate and forms the main part of plant cell walls. It can be extracted from a variety of plant forms to make fibres suitable for textile production. Here we are looking at fabrics that are most suitable for the production of garments; they must be soft enough to wear and not break up when worn or washed.

Cotton is a prime example of a plant fibre; it has a soft, 'fluffy' character and grows around the seed of the cotton plant; these fibres are harvested from the plant, processed and spun into cotton thread. Cotton fibres are used to produce 40 per cent of the world's textiles. Its enduring popularity is its extreme versatility; it can be woven or knitted into a variety of weights. It is durable and has breathable properties, which is useful in hot climates as it absorbs moisture and dries off easily.

With most cotton production, farmers have used chemical fertilisers and pesticides on the soil and sprayed them on the plants in order to prevent disease, improve the soil and to increase their harvest. The chemicals are absorbed by the cotton plant and remain in the cotton during manufacture, which means that it is still in the fabric that we wear next to our skin. Due to environmental issues, manufacturers are increasingly developing organic fibres that are grown and processed without the use of artificial fertilisers and pesticides.

Organic fabric production is more expensive, but it has a low impact on the environment and is healthier for the consumer. Designers pursuing organic solutions are Katherine Hamnett and Edun.

Linen has similar properties to cotton, especially in the way it handles, although it tends to crease more easily. It is produced from the flax plant and is commonly regarded as the most ancient fibre. Hemp, ramie and sisal are also used to produce fabrics as an alternative to cotton.

- 1 Examples of animals that natural fibres originate from: llamas, a merino sheep, and an angora goat.
- 2 Wildlifeworks womens wear collection, Spring/Summer, 2006. Wildlifeworks collections are made from organic fabrics and are produced in their fair-trade factory in Kenya. (Photographer: Rama)

Protein fibres

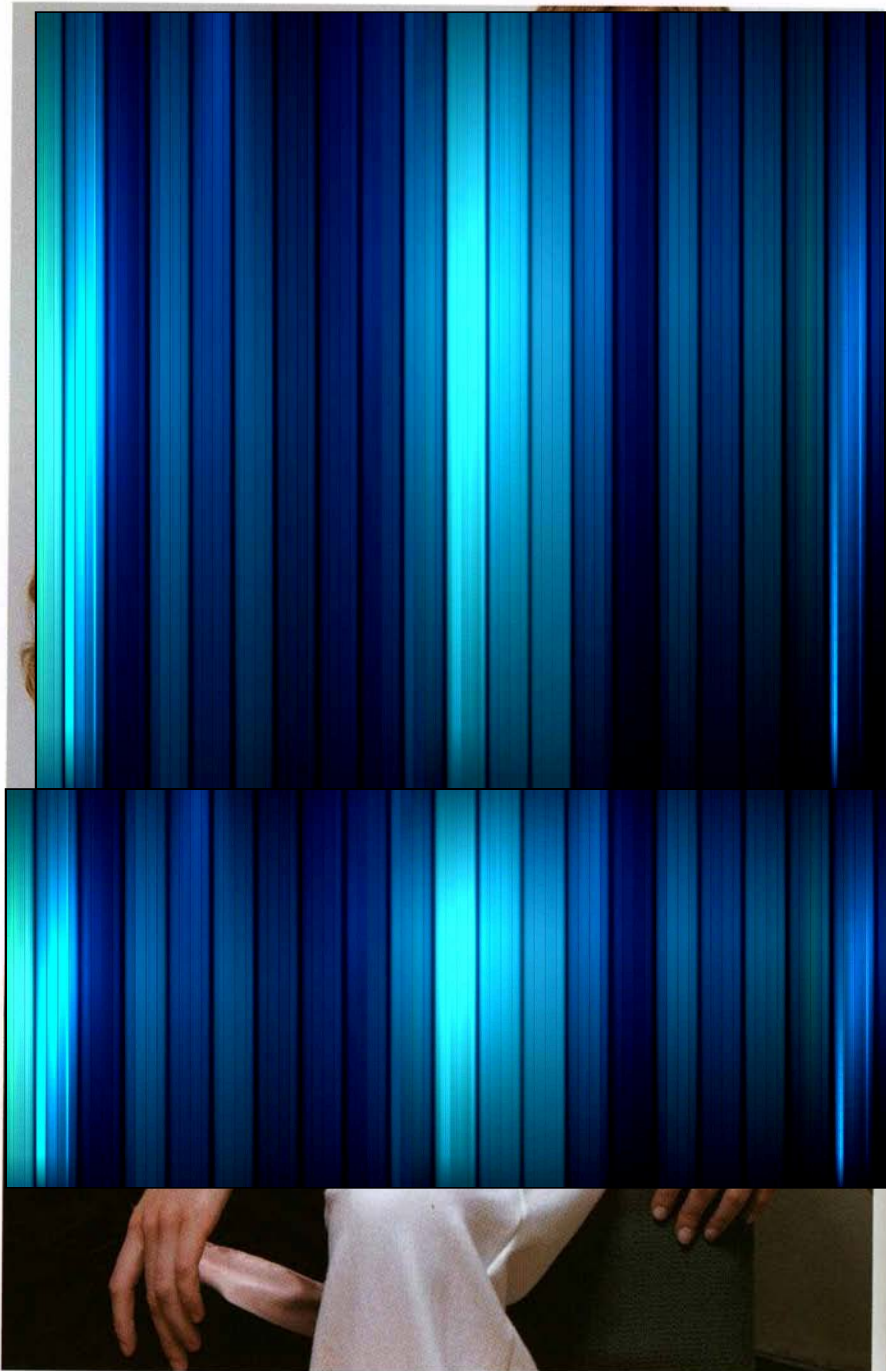
Protein is essential to the structure and function of all living cells. The protein fibre 'keratin' comes from hair fibres and is the most commonly used protein fibre in textile production.

Sheep produce wool fleece on their skin for protection against the elements and this can be shorn at certain times of the year and spun into wool yarn. Different breeds of sheep produce different qualities of yarn. Wool has a warm, slightly elastic quality, but it doesn't react well to excessive temperatures; when washed in hot water it shrinks due to the shortening of fibres. Goats are also used to produce wool; certain breeds produce cashmere and angora. Alpaca, camel and rabbit are all also used to produce fabrics with a warm, luxurious quality.



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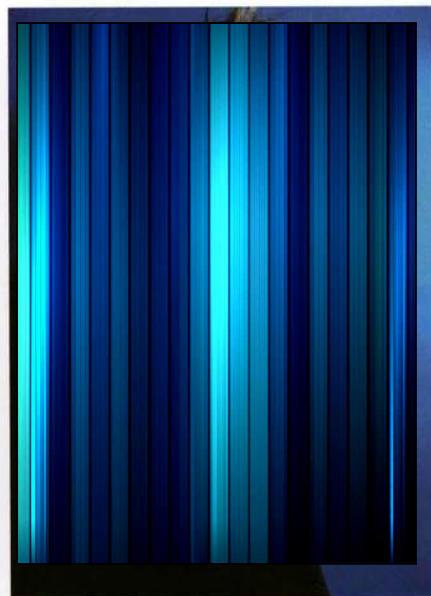
- 3 Winni Lok angora mohair jumper.
- 4 Jean-Paul Gaultier dress with silk frill, originally shown in

i-D magazine, October 2005. (Photographer: Nick Knight. Photograph © Nick Knight)

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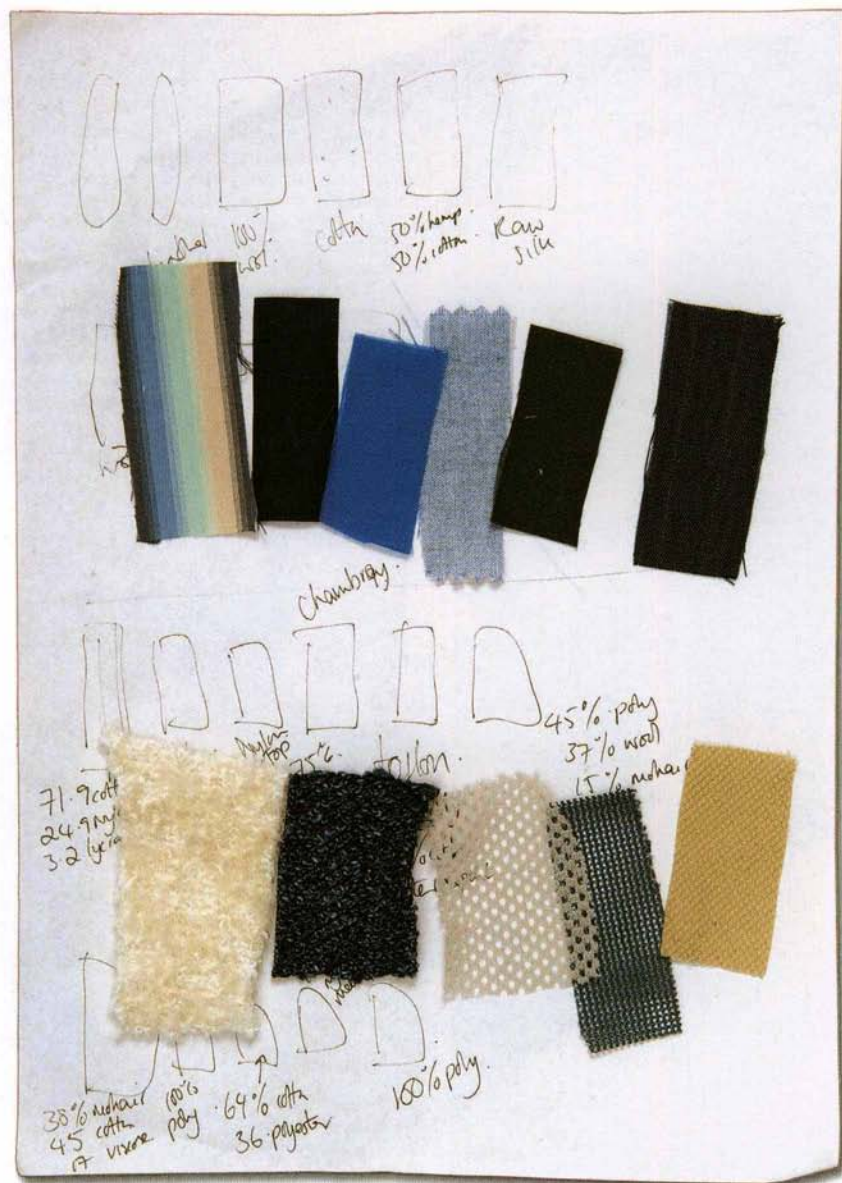


Silk is derived from a protein fibre and is harvested from the cocoon of the silkworm. The cocoon is made from a continuous thread that is produced by the silkworm as it wraps it around itself for protection. Cultivated silk is stronger and has a finer appearance than silk harvested in the wild. During the production of cultivated silk the larva is killed, enabling the worker to collect the silk and unravel it in a continuous thread. In the wild, the silkworm chews its way out of its cocoon, thereby cutting into what would otherwise be a continuous thread.



4

Man-made fibres



Man-made fibres are made from cellulosic and non-cellulosic fibres. Cellulose is extracted from plants, especially trees. Man-made fibres such as rayon, Tencel, acetate, triacetate and Lyocell are cellulosic fibres as they contain natural cellulose. All other man-made fibres are non-cellulosic, which means they are made entirely from chemicals and are commonly known as synthetics.

Developments in the chemical industry in the 20th century caused a transformation in fabric production. Chemicals that had previously been used for textile finishing techniques began to be used to extract fibres from natural sources to make new fibres.

Rayon was one of the first man-made fabrics to be developed. It is extracted from cellulose and was developed to mimic the qualities of silk; to be strong, absorbent, to drape well and have a soft handle. Different chemicals and processes are used in the production of rayon, each with its own name; these include acetate rayon, cuprammonium rayon and viscose rayon, which is known commonly as viscose. Lyocell and modal are evolved from rayon.

Tencel was developed to be the first environmentally friendly man-made fabric. It is made from sustainable wood plantations and the solvent used to extract it can be recycled. It is a strong fabric that drapes like silk, with a soft handle.

- 1 Top row: fabrics include cotton/nylon/lycra mix, nylon, nylon ripstop, poly-cotton, Teflon-coated poly-cotton, polyester/wool/mohair mix. Bottom row: fabrics include mohair/cotton/viscose mix, polyester, poly-cotton, nylon mesh, polyester. rayon jacquard and has a gold chrysanthemum pattern. The cuffs and hems are gold rayon and the collar is made from beaver fur. This is an example of an early use of rayon in womenswear. (Liberty of London, Evening Coat, c1925. Collection of the Kyoto Costume Institute, Photograph by Richard Haughton)
- 2 Liberty & Co. evening coat, c1925. The coat is made from silk



Synthetic fibres

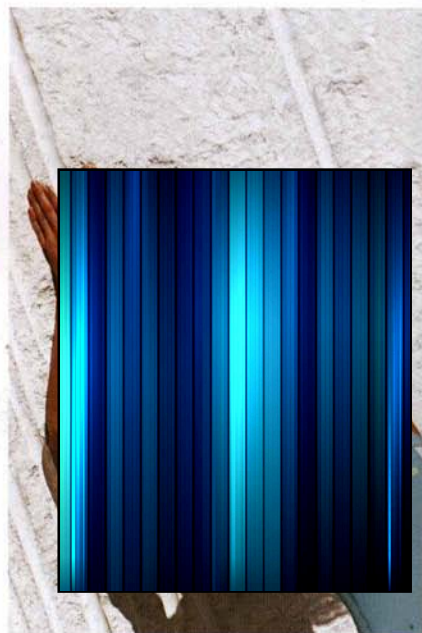


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Germany was the centre of the chemical industry until after the First World War when the USA took over their chemical patents and developed their inventions. DuPont was one of the large chemical companies developing fabrics at this time. In 1934, DuPont was able to produce long polymeric chains of molecules, the first being the polymer nylon. This was the beginning of the developments of synthetic fabrics.

Nylon is a strong, lightweight fibre, but it melts easily at high temperatures. It is also a smooth fibre, which means dirt cannot cling easily to its surface. During the Second World War silk supplies from Japan were cut off, so the US government redirected the use of nylon in the manufacture of hosiery and lingerie to parachutes and tents for the military.

There are several other synthetic fabrics. Acrylic has the look and handle of wool. It is non-allergenic, but melts easily under heat. DuPont developed it in the 1940s. Lastex is an elastic fibre, but after repeated washing loses this quality. It is used in Spandex, which is a super-stretch fibre. Polyester is a strong, crease-resistant fibre developed in 1941 by ICI. It can be recycled from clear, plastic drink bottles. Acetate has the look, but not the handle, of silk. It does not absorb moisture well, but is fast to dry.



2

- 1 Comme des Garçons 2 Stella McCartney for Adidas collection, Spring/Summer, 2006. (Photographer: Alexander Gnädinger for Adidas)
- 3 Stockings were in short supply during the Second World War as nylon was being used to produce parachutes and tents. In this image, women flock to get sub-standard artificial silk stockings. (Getty Images/Hulton Archive)

Synthetic fibres are best blended with natural fibres to improve their qualities; for example, polyester mixed with cotton will produce a fabric with a natural handle that creases less. Lycra and Spandex can be mixed with other fibres to give a stretch quality so that a fabric retains its shape with wear. It is especially suitable for performance sportswear.

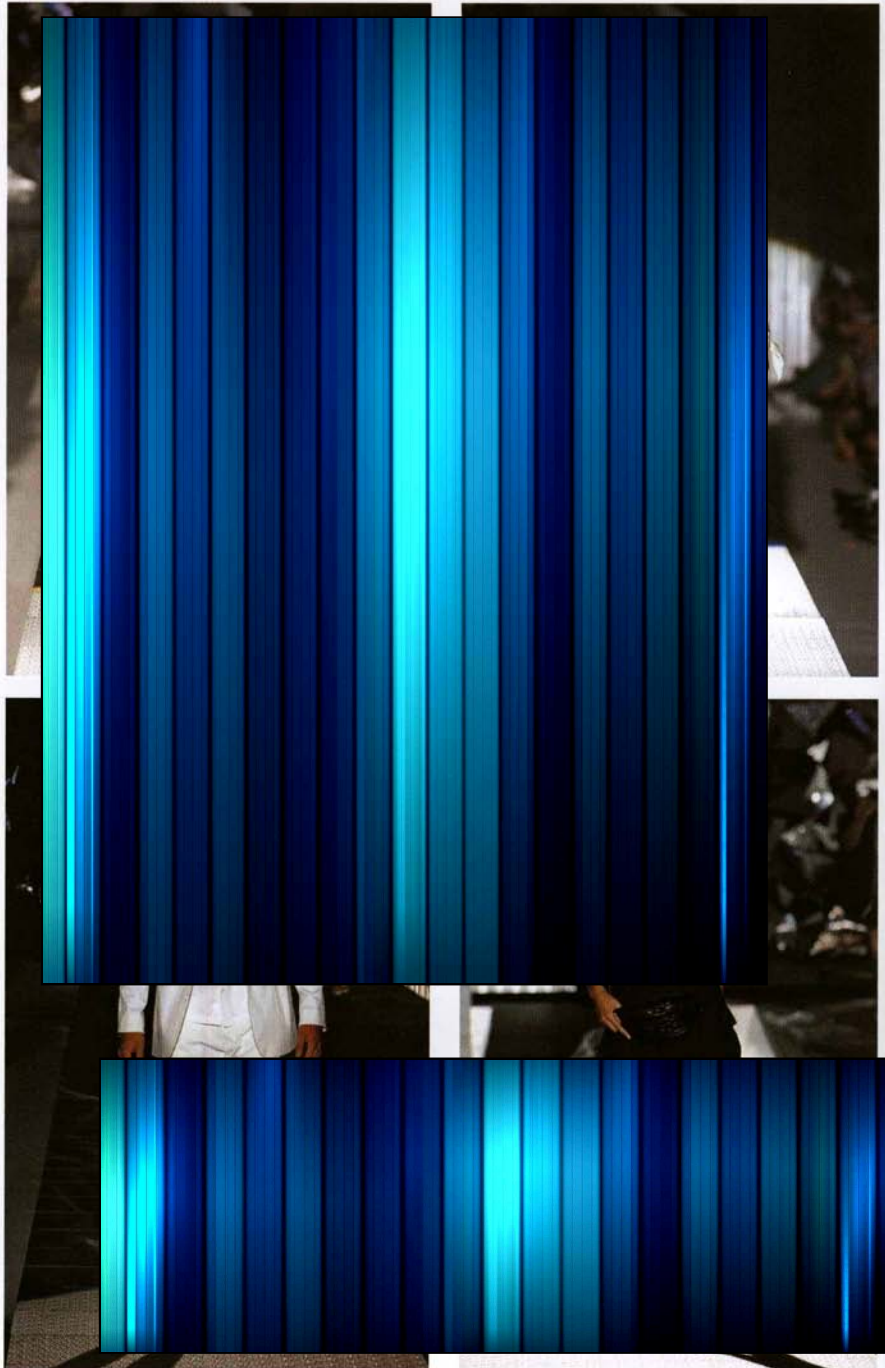
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Developments in fabric

Many modern developments in fabric have come from research into military use or space travel. For example, the Gore-Tex® brand was first developed as light, efficient insulation for wire on Neil Armstrong's early space mission. It was then developed and registered as a breathable, waterproof and windproof fabric in 1978, and used in the astronauts' suits in the NASA mission in 1981. It is now used widely for its properties in outerwear and sportswear.

Developments also come from looking at nature. Spider silk is naturally stronger than steel, and is stretchy and waterproof. Biochemists are currently studying its structure and developing synthesised fibres with the same properties that could be used for fabric production.



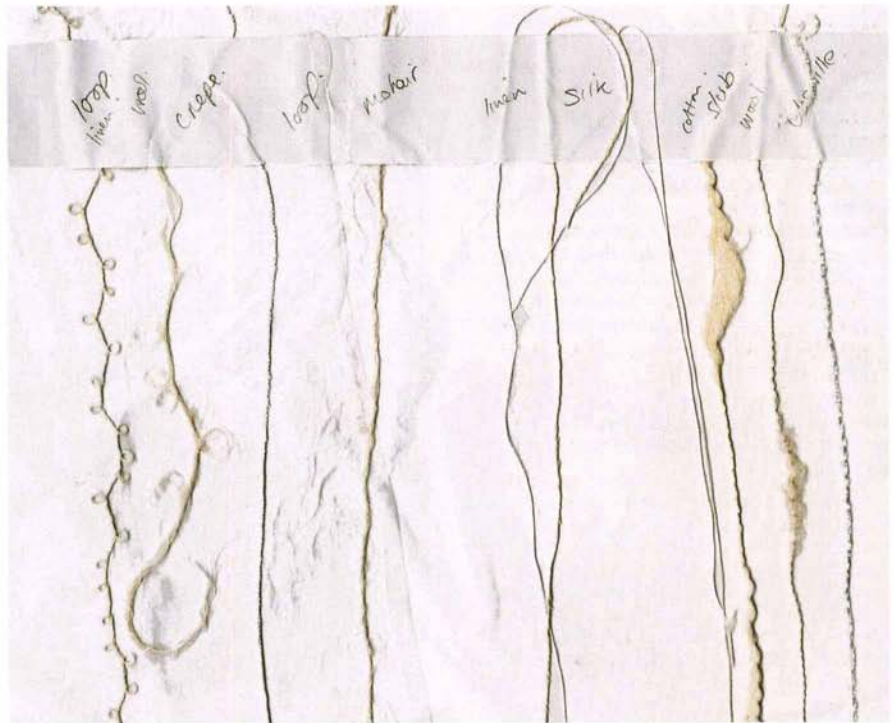
- 1 Y-3 Spring/Summer 2006 collection sees the use of modern developments in fabric.
- 2 Linen loop, wool loop, crêpe, tape, mohair, linen, raw silk, silk, cotton slub, wool slub, chenille.

Yarn production

During fibre-production man-made fibres are put through a spinning process in which they are forced through small holes in a showerhead-style structure, creating long, continuous fibres called 'filament' fibres. Unlike natural fibres, manufacturers can control the thickness of the fibre, which is called the 'denier'.

Staple fibres are short, natural fibres; an exception to this being silk, which naturally develops in a continuous length. Filament fibres can be cut to resemble staple fibres to mimic the properties of natural fibres. Synthetic fibres are cut down to become staple fibres when they are blended with natural fibres.

After spinning, the fibres are twisted together to form yarn. Yarn can be twisted in various ways to produce different effects in the finished fabric. Crêpe yarn is highly twisted, producing a crinkled surface in the finished fabric. A bouclé yarn has an irregular pattern of loops, or curls, along its length; fabric made from this yarn has a characteristically knobby surface.



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‘ I think it’s important to know your position in the whole fashion discourse and to maintain it, but always add elements that will help you move forward. ’

Hussein Chalayan

Fabric construction

Woven fabrics

A woven fabric is made from a warp that runs down the length of a fabric and a weft that weaves across the breadth of the fabric. The warp and weft are also known as the 'grain'. The warp is put on the loom before weaving, so that it is already stretched, which gives it more 'give' across the width of the fabric. Garments are normally cut with the major seams running parallel to the lengthwise grain; this helps to control the structure of the garment. The bias is at 45 degrees to the warp or weft. Garments can be cut on the 'bias' or cross, which gives characteristic drape and elasticity to a garment.

Weave construction

The way the warp and weft are woven together produces a variety of fabrics. The three main types of weave construction are plain, twill and satin.

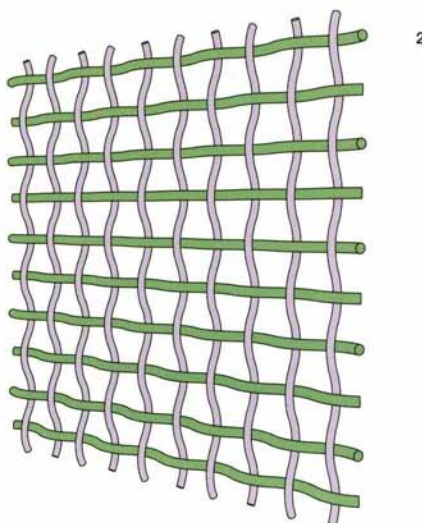
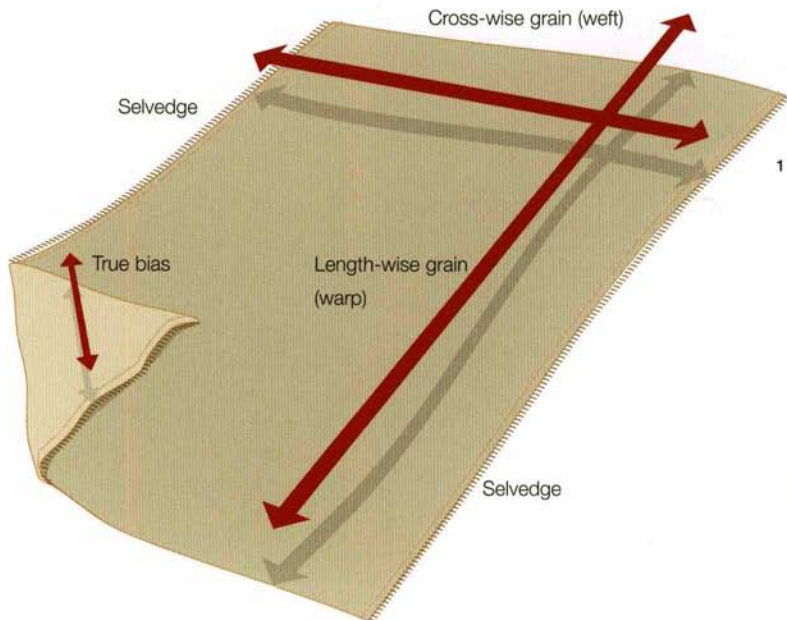
Plain weave is constructed from a warp and weft that is similar in size. During weaving the weft passes over alternate warp threads to create the fabric and it is usually closely woven. Plain weaves include calico, flannel and chiffon, and variations to the plain weave include basket weaves, ribs and cords. Basket weave is achieved by alternately passing a weft under and over a group of warp.

With twill weave the weft is woven over at least two warp threads before it goes under one or more warp threads; where this is staggered down the length of the fabric it produces a diagonal weave effect. Gabardines, drills, denims, tweeds and herringbones are good examples of twill weave.

Satin weave has visible sheen and feels smooth; this is due to yarn laying across the surface of the fabric. The warp is woven to lie on top of the weft or vice versa.

Variations on the three basic weave structures include:

Pile fabrics: These are woven with yarns that are 'looped' during weaving; they can then be cut, which is characteristic of corduroy, or left as loops – for example, with towelling.



1 This diagram illustrates the warp and weft, or 'grain', in fabric.

2 This illustration shows the basic weave structure.

3 From the top, left to right: Wool herringbone, polyester satin, plain cotton. Silk satin, jacquard, silk organza. Cotton

velvet, double cloth wool, denim. Cotton rib, wool twill, silk chiffon. All on a corduroy background.

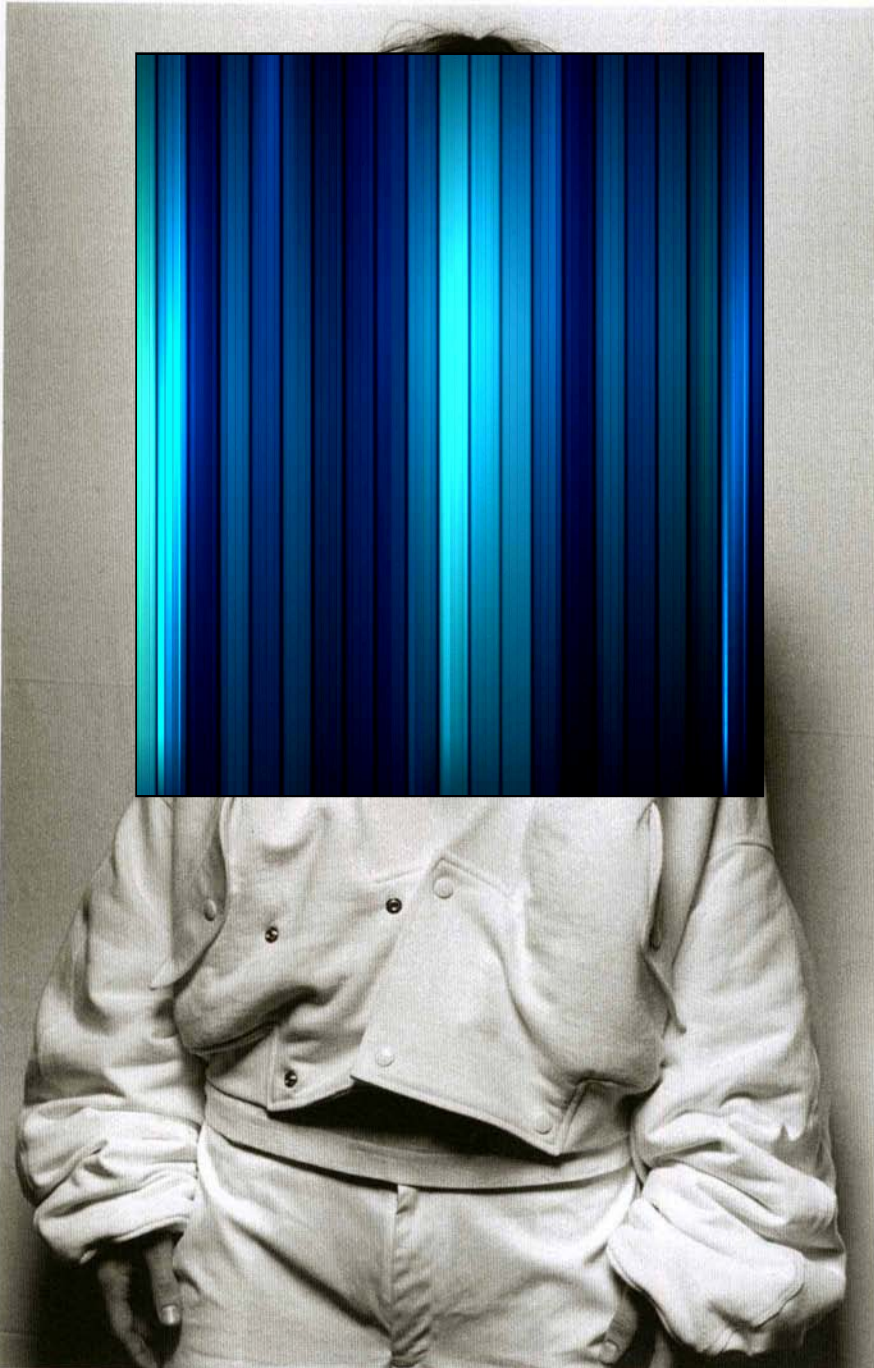


Double cloth: This is the result of weaving two interconnected cloths at the same time. Velvet is commonly woven as a double cloth – that is, cut apart after weaving to produce two fabrics that are the same. Double cloth construction can also produce a fabric made of two quite different qualities. This kind of fabric is reversible so that either side can be used as the outer layer of a garment.

Jacquard weaving: This is a complicated weave system in which warp and weft threads are lifted or left to produce patterns and textures. Jacquard weaving includes brocade and damask constructions.

Wrong and right sides

Most fabrics have a front (or 'right') and a back (or 'wrong') side, the front being the side that is usually cut to be visible on the outside of the garment. The 'selvedge' is the edge of the fabric running down the length or warp so that it does not fray.



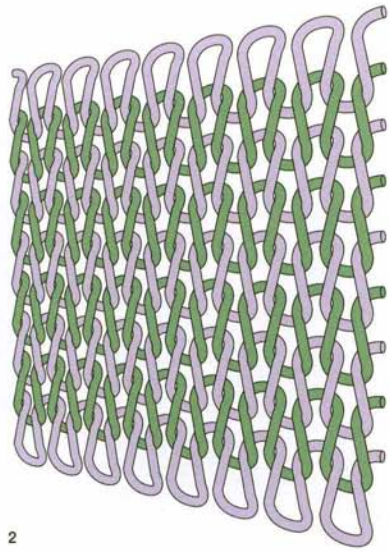
Knitted fabrics

Knitted fabrics are constructed from interconnecting loops of lengths of yarn, which can be knitted along the warp or weft, giving the fabric its stretchy quality. Horizontal rows of knit are known as 'courses' and vertical rows as 'wales'. Weft knitting is created from one yarn that loops and links along the course; if a stitch is dropped the knit is likely to ladder and run down the length of the wale. Hand-knitting is a prime example. Warp knitting is more like weaving; the construction is more complicated and the fabric is less easy to unravel.

Originally, knitting was produced by hand, but for many years it has been made by machine for mass production. The yarn can be knitted flat as a length of fabric or circular, producing a long tube that can be fashioned to fit – knitted socks are an example of fully fashioned machine knitting. Different thicknesses of knitting can be produced according to the size of the needles and the thickness or the count of the yarn. The number of needles per inch or centimetre of construction is known as the 'gauge'.

- 1 Jens Laugesen upside-down sweatshirting bomber jacket from the Autumn/Winter 2004 collection. (Photographer: Jean-Francois Carly)

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Knitting techniques: machine knit and hand knit

Single jersey knit has a front 'knit' and a back 'purl' and is produced when using one bed of needles. Interlock knit or double jersey is produced with a double row of needles and the knit looks the same front and back both showing a knit stitch. Sweatshirting is a heavier knit, the back of which is looped. The loops can be left looped or brushed to achieve a fleece back. Ribs and other textured knitting are produced using two beds of needles knitting alternate knit and purl stitches. Ribs can be used to finish garments on the cuffs or waistband where a garment needs to be gathered in; they have a greater stretch due to their construction. Rib can also be used to produce a whole garment.

An illustration showing basic knit structure.

Running from top to bottom, machine-knitted fabrics: interlock (showing knit stitch front and back),

loop back sweatshirting, rib (showing alternate grouped knit and purl construction), single jersey (showing knit and purl stitches).



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In addition to different knitting techniques, texture can be created by knitting with different needles, yarn or stitches; for example, cable. Changing the colour of the yarn within a knitted piece can create pattern. Aran, jacquard, Fair Isle and intarsia are all examples of pattern within knit.

Hand-knitting can produce a variety of weights of fabric and has its own 'home-made' character; it is especially suited to very heavy knits and cables. You can produce really creative hand-knitting by increasing the scale of stitches used and even leaving stitches to deliberately ladder.

Knitwear construction

Knitwear can be constructed in three different ways. First, fabric can be knitted as a length, then the garment pieces cut and sewn together. Second, garment pieces are knitted to shape or fully fashioned, then sewn together to produce a garment. Finally, the garment is knitted in three dimensions with little or no seams.



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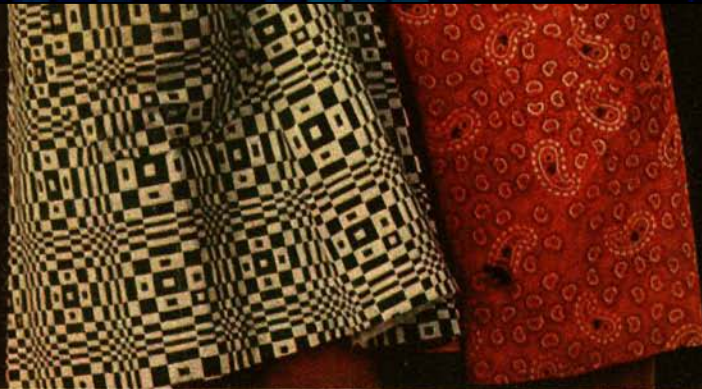
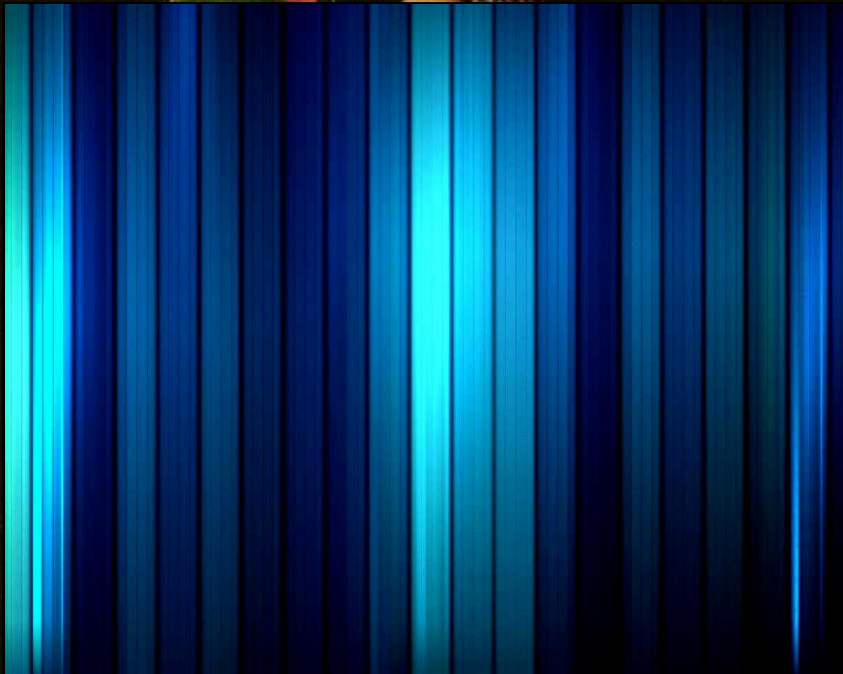


- 1 Walter Van Beirendonck sweater.
- 2 Winni Lok knitted sweater. The front of the garment uses the

front or 'right' side of the knitting and the back of the garment uses the back or 'wrong' side of the knitting.

- 3 Winni Lok knitwear showing cable stitch and laddering, also rib stitching at the cuff.





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(Sizes: Petite 3 to 6, Small 7 to 10, Medium 11 to 14, Large 15 to 18)

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- 1 The 'paper caper' dress was produced by Scott Paper Company in 1966 as a promotional tool,

available by mail order. (The D'arcy Collection, Communications Library of University of Illinois)

- 2 Chloé Spring/Summer 2006 collection.

Non-woven fabrics

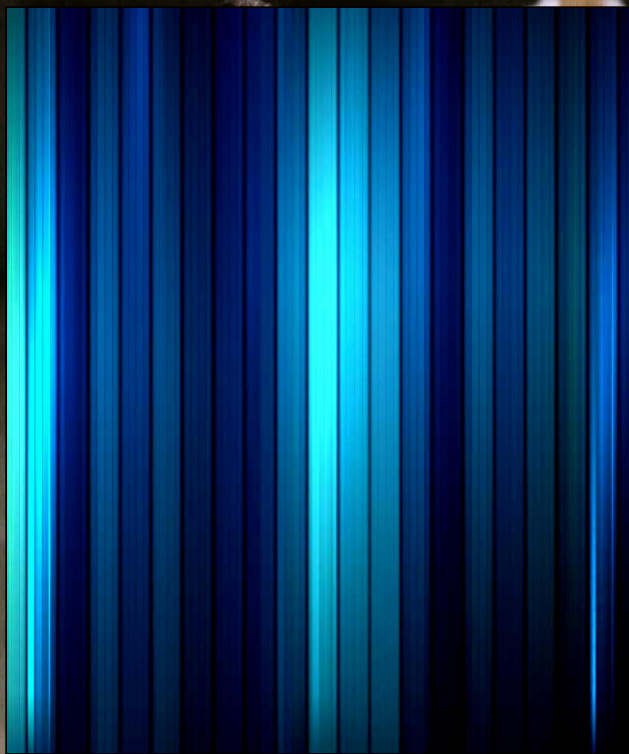
Different to woven fabrics, non-woven fabrics are produced by compressing fibres together with the use of heat, friction or chemicals. Examples of this are felt, rubber sheeting and techno fabrics such as Tyvek®. Tyvek® is produced by matting fibres together to make a paper-like fabric. It also has a coating that makes it tear-proof, water-resistant, recyclable and machine-washable. However, non-woven fabrics needn't be man-made. Leather and fur might be considered natural non-woven fabrics, for example.

Non-woven fabrics can be used for fashion garments, but are also used for linings, padding and the interiors of shoes and bags. Due to their construction, non-woven fabrics do not fray or unravel in the same way as woven fabrics.

Other fabrics

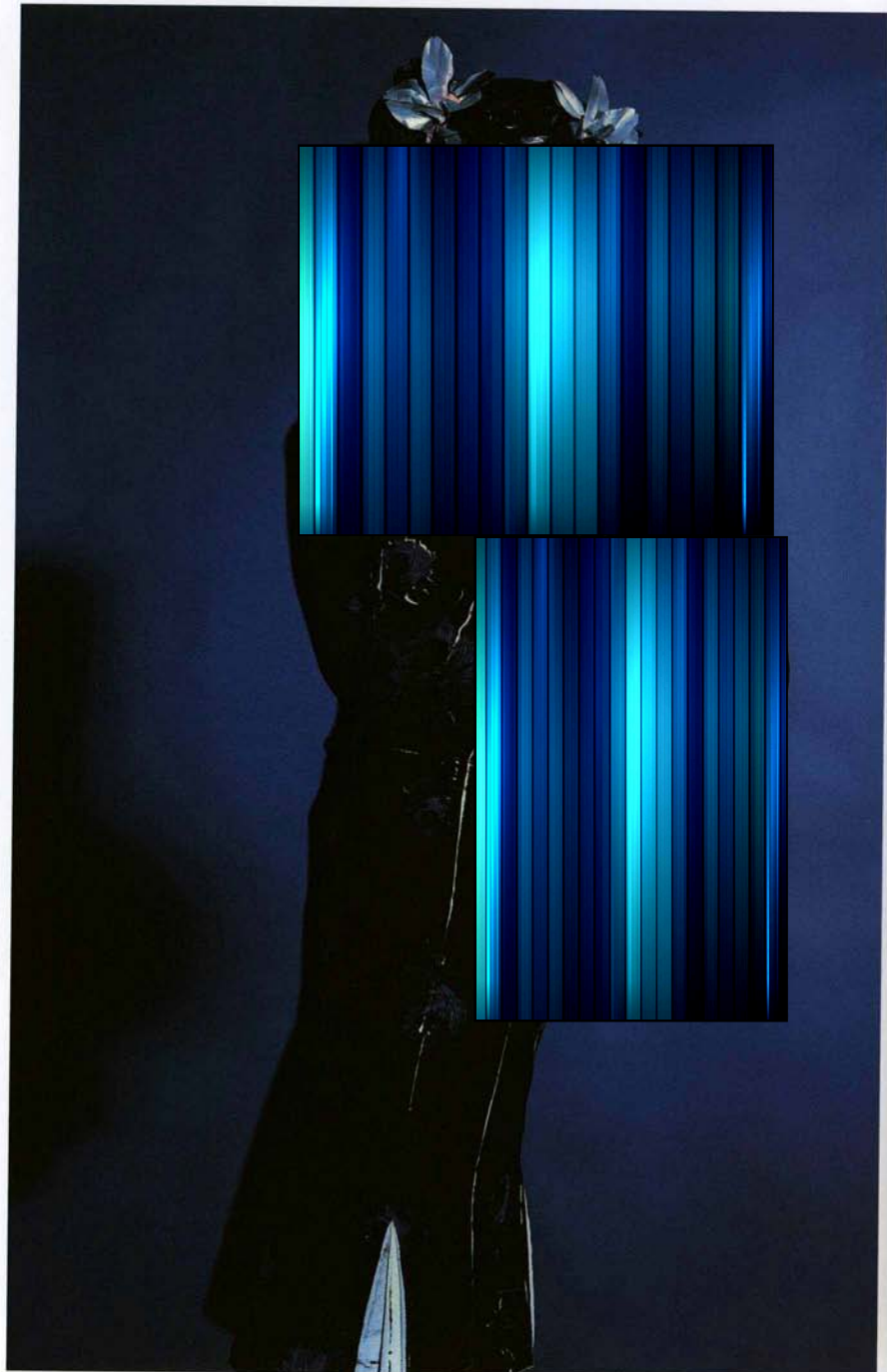
Some fabrics cannot be classified as either woven, knitted or non-woven in construction. These include macramé, crochet and lace. Macramé is constructed through the ornamental knotting of yarn, lending the fabric a 'hand-crafted' appearance. Crochet stitches are made using a single hook to pull one or more loops through previous loops of a chain.

This construction is built up to form a patterned fabric. Different to knitting, it is composed entirely of loops made secure only when the free end of the strand is pulled through the final loop. Lace-making produces a fabric that is light and open in structure. The negative holes in lace are as important as the positive stitches in the overall pattern of the fabric.



Surface treatments

Once a fabric has been constructed, it can be enhanced or altered with the application of different kinds of surface treatments. Techniques include print, embellishment, dyeing and wash finishes.



- 1 Jonathan Saunders Spring/Summer 2006. The colours in the top of this dress are beautifully reflected in the print design in the lower part of it.
- 2 Prada over-printed dress. Originally shot for *i-D* magazine, October 2005. The dress was first made then printed over; when the body moves,

the print separates to show the unprinted fabric in the creases. (Photographer: Nick Knight. Photograph © Nick Knight)

3 Basso & Brooke inkjet print. This print has been generated in the computer.



Print

Pattern, colour and texture can be applied to fabric by printing. Fabric can be printed by various methods, including screen, block, roller, mono, hand or digital printing.

Screen printing requires a design, ink, squeegee and a 'silkscreen' – that is, a piece of silk stretched evenly across a frame. The first step is to make a stencil of the design, which is applied to the screen, blocking the silk so the ink can only pass through the 'positive' areas of the design. The screen is placed on the fabric and the ink is pulled through the screen evenly with the squeegee, leaving a printed image on the fabric. The print is then fixed on to the fabric with heat so that it will not wash off. Multicoloured designs are created by using different screens for different colours.

Block printing is one of the earliest forms of printing. A design is applied to a hard material – for example, wood, lino or rubber – via embossing or by cutting into the surface to make a negative image. This block can then be coated with ink and, with pressure, applied to the fabric to form an imprint.

Roller printing produces a continuous design on a fabric. This is useful for designs with a repeat image over a large print area as this method enables seamless printing so that the joins in the design are invisible.

As the name implies, mono printing produces a single, unique print. Inks are applied to a surface that is then transferred to the fabric, in reverse, to make a print. Hand painting is made directly on to the fabric using one of a number of tools, such as brushes and sponges. Hand painting gives a 'hand-made' feel to a piece of fabric. It can be a slow process for producing a long length of fabric.

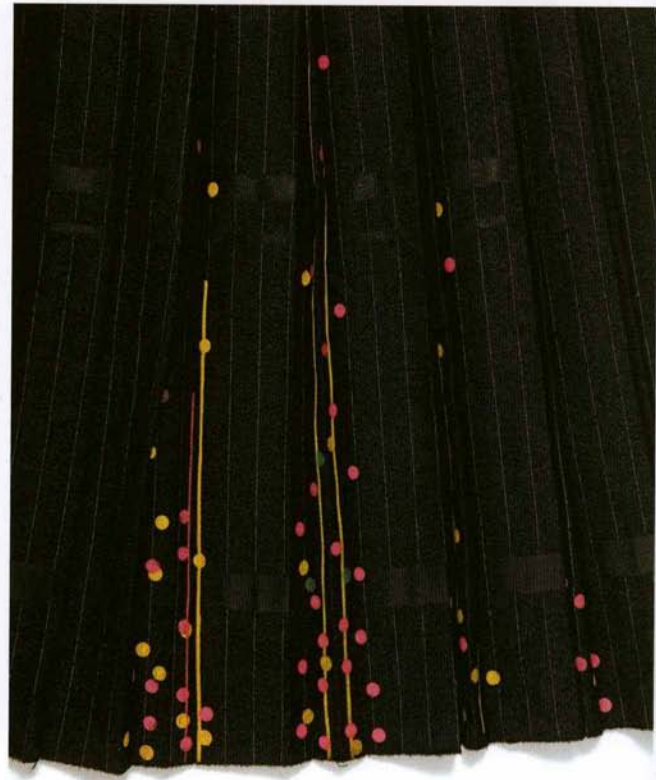
Digital printing can be applied directly to fabric from the computer via an inkjet printer. Very high-definition imaging can be achieved, and many colours can be printed without the need for numerous screens. Laser printers are also used, but it is still a relatively expensive process.

Printing dyes and agents

To print a colour a dye is used with an oil- or water-based thickening agent, which stops the dye from bleeding in the design. An oil-based ink is more opaque and heavy and tends to sit on the surface of the fabric. It is available in a range of colours and finishes, including pearlescent, metallic or fluorescent. Water-based inks produce fabrics with a better handle as the thickening agent can be washed out after the fabric has been printed and fixed.

A fabric can also undergo 'discharge' printing. First, the fabric must be dyed with a dischargeable colour. The fabric is then printed with a substance that bleaches away (or 'discharges') the dye. Discharge printing is useful if a pale-coloured image is required against a dark background.

In addition to colour, texture can be achieved on fabrics via printing methods. Chemicals can be used to produce a 'relief' effect on the surface of the fabric or to 'eat away' the fabric for surface interest. Expantex is a brand of chemical that when printed and heated, produces an embossed effect on fabric. Fabrics can also be printed with glue then heat-pressed with flock paper. The flock adheres to the glue, giving a raised 'felt' effect. Glitter and foil can be similarly applied to produce special effects. Fabrics constructed with both natural and synthetic fibres within the warp and the weft can be printed with a devoré paste. When heated, the paste burns away one of the fibres, leaving behind a pattern where the other fibre remains.



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Devoré

Devoré is a printing technique that produces a burnt-out image on a fabric that is a mixture of man-made and natural fibres. The devoré paste burns out either the man-made or the natural fibre.

- | | | | | | | | |
|---|---|---|--|---|--|---|---|
| 1 | Jenny Udale pleated oil-based print. The print is applied within the pleats in the skirt so the design is only seen when the pleats open. | 2 | Jenny Udale pleated devoré print. The fabric was first devoréd, then sunray pleated. | 3 | Hand-embroidered sweatshirt by Peter Jensen. | 4 | Hand-embroidered jacket by Jessica Ogden. |
|---|---|---|--|---|--|---|---|



Print and design

Designs can be applied in a repeat manner to a length of fabric or as a placement to a specific part of a garment. A design does not necessarily need to be just on the front or back of a garment. It makes for an interesting effect when a printed design works around the body and affects other design elements, such as the placement of seams. In this way, the print is integral to the construction of the garment.

Embellishment

Another way to add surface interest to fabric is to embellish rather than print, which gives a more three-dimensional and decorative look than printing. Techniques for embellishment include embroidery, appliqué, cutwork, beading and fabric manipulation.

Embroidery

Embroidery can be used as an embellishment on the surface of the cloth to enhance the look of the fabric. Contemporary embroidery is based on traditional techniques. Hand stitching is the basis of these, and once you have learnt the principles, you have the foundation for a vast array of techniques. There is enormous scope for developing basic stitches. You can achieve fascinating textures and patterns by working in different threads, changing scale and spacing, working formally, working freely and combining stitches to make new ones. The key is to be as creative and innovative as possible.

Machine embroidery can be worked on domestic or industrial machines. The machines can be used creatively and flexibly to produce a wide range of effects and techniques, from controlled to more freestyle work. As with hand embroidery, the techniques can vary in accordance with the choice of thread and fabric.

Embroidery can be applied before or after the construction of a garment, and concentrated in specific areas or as part of an overall design. Embroidery can be used in a way that makes it integral to the function of the garment, rather than simply as a decorative enhancement. For example, a buttonhole can be created with interesting stitch work and a simple garment can change shape through the application of smocking.



Beading

Beading is essentially embroidery with beads because each bead is attached to the fabric with a stitch. Beads can be made from glass, plastic, wood, bone, enamel and are available in a variety of shapes and sizes. These include seed beads, bugle beads, sequins, crystals, diamanté and pearls. Beading adds texture to fabric; using glass beads on a garment lends the textile a wonderful, light-reflecting, luxurious quality. French beading is the application of beads stitched with a needle and thread on the front of a fabric. Stretching the fabric over a frame can keep the fabric taut, making beading easier and giving the work a more professional finish. Tambour beading is a technique whereby beads and sequins are applied with a hooked needle and a chain stitch from the back of the fabric. It is a more efficient way to apply beads than French beading.

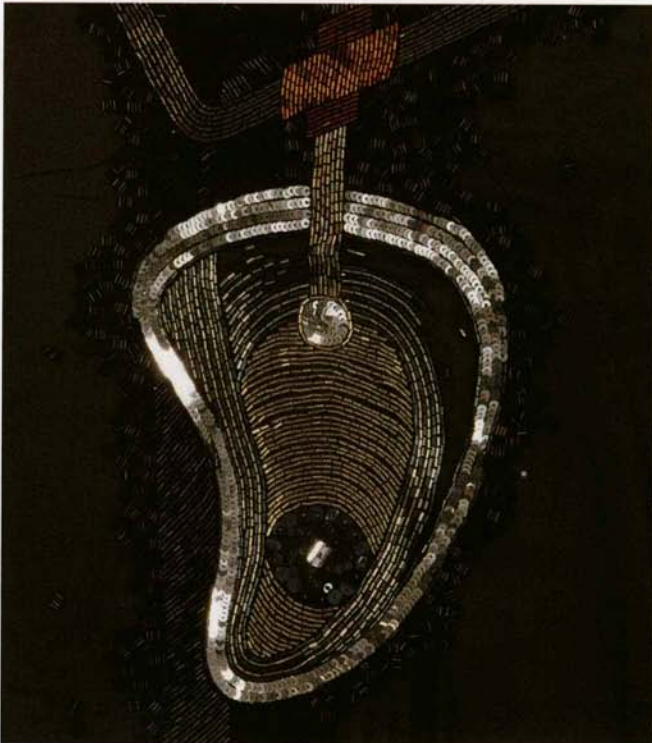
Appliqué

Appliqué means to stitch one piece of fabric to another for decorative effect. Fabric motifs, such as badges, can be beaded or embroidered first and then appliquéd on to the garment with stitch.

Cutwork

Fabrics can also be enhanced through the use of hand cutwork where areas of the fabric are cut away and stitch is applied to stop the raw edges fraying. Cutwork can also be achieved by the use of a laser. Precise patterns can be achieved with laser cutting. The laser also seals, or melts, the edge of man-made fabric with heat, which stops the fabric from fraying. An 'etched' effect can be achieved by varying the depth of the laser cut into the fabric.

1



2



1 Richard Sorger
beaded piece.

2/3 Back of tambour
beading, showing the
chain stitch that holds
down the beads on
the front of the sample,
and the tambour hook.

4 Appliqué work in
Emma Cook's
Spring/Summer
2006 collection.



3

4

- 1 Garment-dyed Preen 2 Advert from Diesel's Autumn/Winter 2004 campaign. Diesel uses wash finishes on their denims.

Dyeing

Most fabrics are woven or knitted before they are dyed with synthetic or natural dyes. Natural dyes are derived from plants, animals or minerals. For example, red dyes can be produced from crushed cochineal beetles or the roots of the madder plant. Most natural dyes need a fixative to stop the colour bleeding from the fabric through wear or washing.

Towards the end of the 19th century, fabric manufacture expanded at a rapid pace due to the industrial revolution in Western Europe, predominantly in the UK. Great quantities of natural resources were needed to produce the dyes for the fabric. In some cases, the natural dyes were shipped from abroad, which was expensive and time consuming. As a result, chemists started to look at ways of producing synthetic 'copies' of natural dyes. At this time, a purple dye called Tyrian purple was used to colour cloth used by royalty; it was a difficult and expensive colour to produce as it was extracted from the mucus of molluscs. A young chemist named William Perkin invented the first synthetic purple dye, which was called aniline purple, or mauveine. His discovery made him very wealthy and paved the way for the research and development of other synthetic dyes. Today, synthetic dyes are developed continuously to improve their colourfastness and performance.

Dyeing techniques can be used to create pattern. Two popular methods are resist techniques and tie-dyeing. The latter involves tying fabric in knots before dyeing, which prevents dye from penetrating the cloth in certain areas. When the fabric is untied and dried, undyed areas form a pattern on the fabric. Tie-dyeing has an interesting history. It has been used since ancient times – the Japanese call it 'shibori' – but it was popularised in the West by the craft revival of the 1960s.

Garment dyeing

Fabric is usually dyed in lengths, but it is possible to dye garments after their construction. It is important to first test the cloth for shrinkage; dyeing often requires high temperatures to fix the colour properly, and the heat can cause the fibres to shrink. It is also important that the thread, zips and trims of the garment will react to the dye and not resist the dyeing process.



- 4 An example of pleating technique by Issey Miyake.

Fabric finishes

Fabric finishes can be applied to a length of fabric or to a garment that has already been constructed. Finishes can alter the look of the fabric; for example, a garment can be stone-washed to produce a pale, faded effect. Finishes can also give the fabric an added function; for example, a fabric can be waterproofed with the addition of a coating of wax.

Wash finishes

Stone-washing was a hugely popular finish in the 1980s and was the fashion style of choice for numerous pop bands of that era. Stone-washing is achieved with the aid of pumice stones, which fades the fabric, but it is difficult to control and can damage the fabric and the machinery used to finish it. Acid dyes were introduced to perform the same task and the effects are called snow or marble washes, but this type of process is not environmentally friendly.

Enzyme washes or bio-stoning are less harmful to the environment. Various effects can be achieved, depending on the mix and quantity of enzyme used within the wash. Enzyme washes can also be used to soften fabrics.

Garments can be sand- or glass-blasted using a gun to target specific areas where fading and distressing is required. Lasers can also be used to produce precisely faded areas on a garment.

Washing or heat can be used to give fabrics a creased or crinkled effect. Fabrics can be randomly creased by washing and leaving them unironed. Creasing and fixing the fabric before washing can form crinkles in specific areas. How long these creases remain in the fabric depends on the process used, the fabric chosen and the heat of the wash; for example, permanent creases can be made on synthetic fabrics through the application of heat, which affects the structure of the fibres.

Aromatic fabrics are created by washing the fabric with a perfume; this is being developed for lingerie. A successful way to fix permanently the smell to the cloth has not yet been developed so the perfume eventually washes out.

Coating finishes

As the term implies, 'coating' finishes are applied to the surface of the fabric.

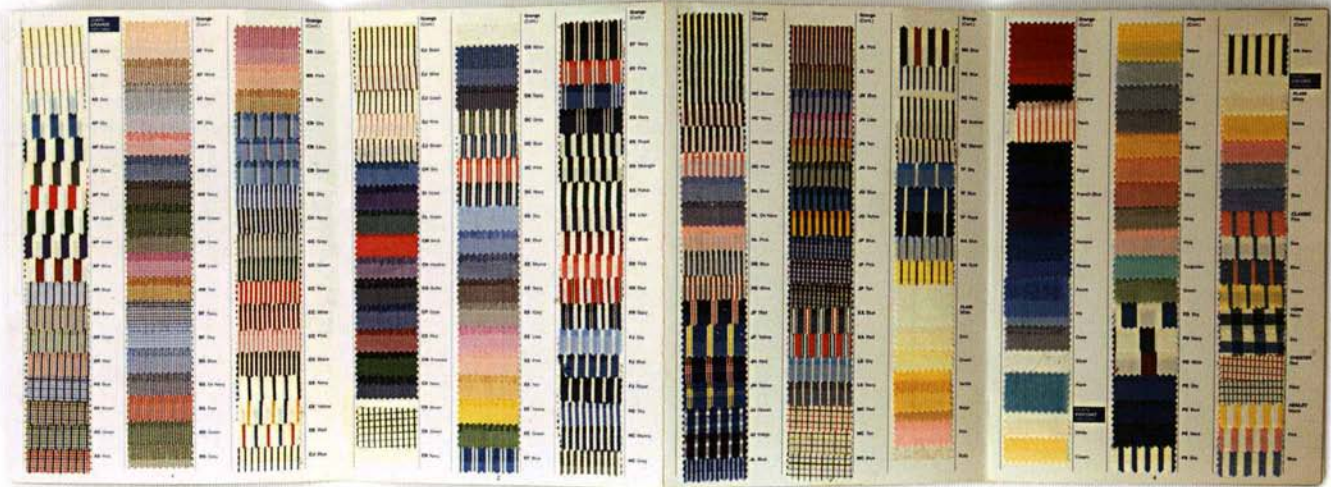
Fabrics can be waterproofed by applying a layer of rubber, polyvinyl chloride (PVC), polyurethane (PU) or wax over the surface. These fabrics are ideal for outdoor wear and footwear. Teflon-coated fabrics also provide an invisible protective barrier against stains and dirt – useful for practical, easy-clean garments. Breathable waterproof fabric is produced by applying a membrane containing pores big enough to enable perspiration to escape, but small enough to stop moisture droplets to penetrate. Gore-Tex® is a superior example of this kind of fabric and is often used in sportswear. For example, when selecting fabric for a breathable waterproof garment, the fabric properties must be considered. Cotton would allow the body to breathe, but would become damp in the rain. A PU-coated fabric would stop the rain, but retain perspiration against the body. Whereas a fabric such as Gore-Tex® would allow the body to breathe and would also protect from the rain.



3

Fabric and yarn trade shows

Fabric trade fairs are held biannually in line with the fashion calendar (see page 126). The fairs showcase new developments in fabrics and present samples from manufacturers and the mills. Designers visit these shows for inspiration and to choose fabrics for their designs. Swatch books and fabric hangers are made by the manufacturers and designers select their fabrics from these. Sample lengths of fabrics are then made and sent out to the designer. The designer will then produce the garment samples for a collection and shops will place orders from these. The orders will all be collated and the fabric requirements worked out. The designer will then order the fabric lengths needed for production. If a fabric supplier does not receive enough orders on a fabric, they may not put it into production.



1/2 Fabric swatch books 3 Premier Vision 2006.
from which sample
lengths are selected
and ordered.

The main knitting yarn fair is Pitti Filati in Florence and Expofil in Paris. The main fabric fairs are Moda In in Milan, Interstoff in Frankfurt and Premier Vision in Paris. The printed textile fair, Indigo, is held at Premier Vision. Because fabric suppliers must sell fabrics in minimum lengths, it is important to have this in mind when visiting the fairs. For many students, this is simply not realistic. For students who want to buy from the fairs, it is important to check the prices carefully and to find out whether there are hidden costs, such as delivery or supplement fees. Many suppliers will also require a VAT number.

