BASICS

FASHION DESIGN

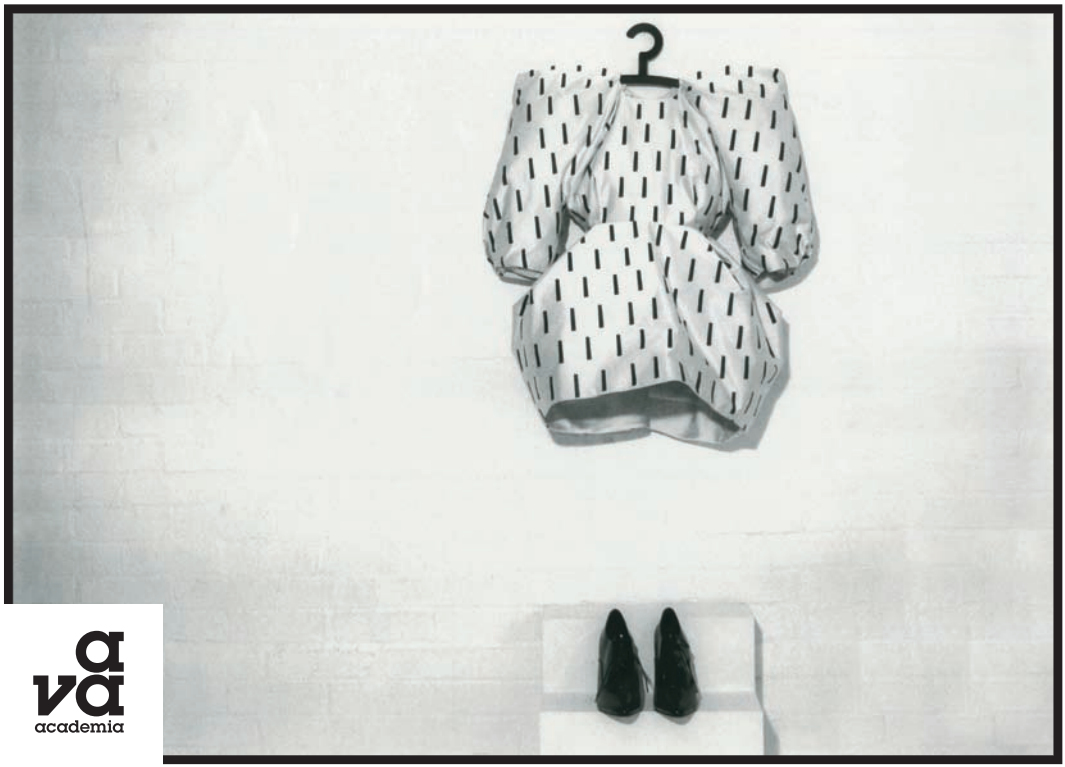
02

Jenny Udale

TEXTILES AND FASHION

n
the branch of industry involved in the manufacture of cloth

n
a popular or the latest style of clothing hair decoration or behaviour



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Ethical: awareness/ reflection/ debate

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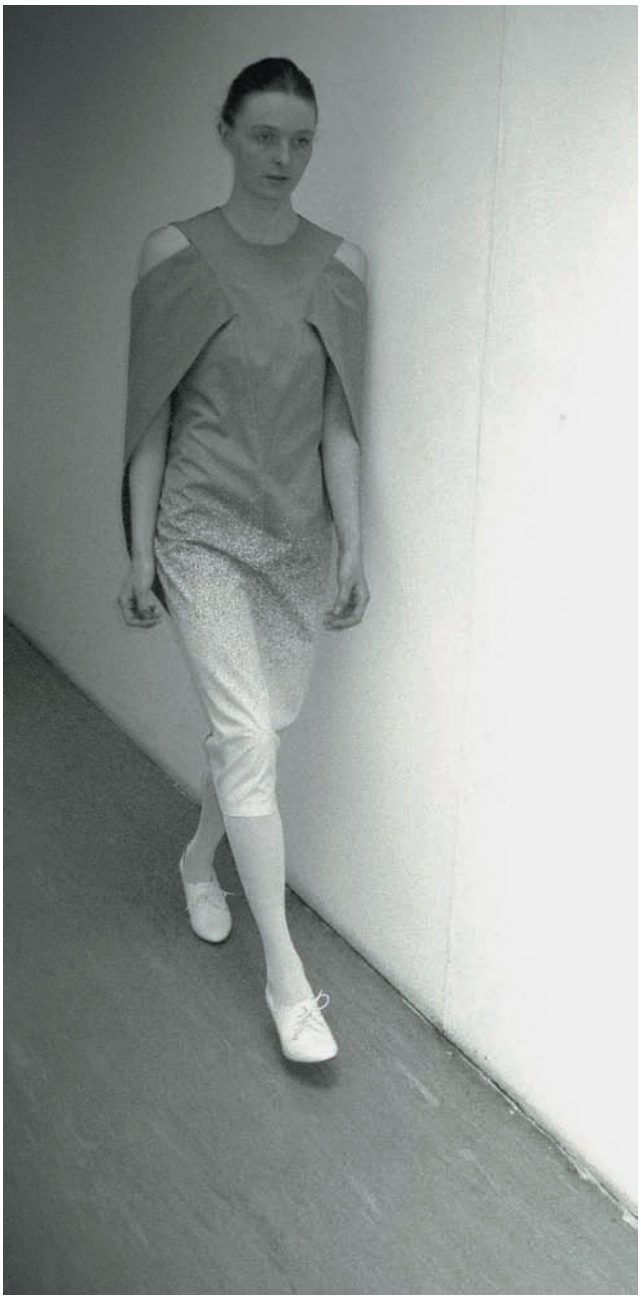
'Fashions fade, style is eternal.'

Yves Saint Laurent



1 Louise Henriksen design.

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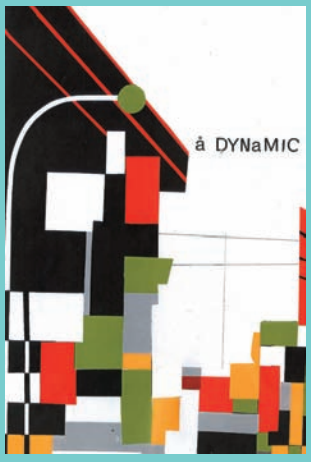


'Working on fabrics, colour and inspiration, garments go hand in hand at the beginning of a season as each one inspires the other.'

Michele Manz, senior director of womenswear for Converse by John Varvatos

This book is for the textile designer who is interested in the integration of textile design with fashion and also the fashion designer who wants to fully integrate garment design with textiles. Designers who will consider how the scale of a design will work on the body, how the fabric will function on the body through drape or structure, and how the fabric will be cut and finished will benefit enormously from reading this book.

The book endeavours to cover all the things you need to know about fashion textiles. It begins with a brief history of textiles, showing the links with technical innovation and social developments. It then focuses on the processes of textile design, including the ethical and sustainable issues around textiles today. The book also provides practical information on fibre production, dyeing and finishing techniques. Also examined is how a fibre becomes a fabric through construction techniques, for example, weave and knit, and other more innovative processes. The book continues by looking at the surface treatment of textiles including print, embroidery and embellishment, and then focuses on the way colour and trend can influence textiles and fashion. The final section gives practical information on the use of textiles within fashion design, how to choose, cut and sew fabrics. Additionally, there is a very important section on fashion and textile designers who work in the industry, exploring what they do and how they use textiles within their work.

All the text in this book is underpinned with visual examples of fashion and textiles from designers who create wonderful textiles. I hope their work will inspire you and that you gain a great deal of pleasure from this book.

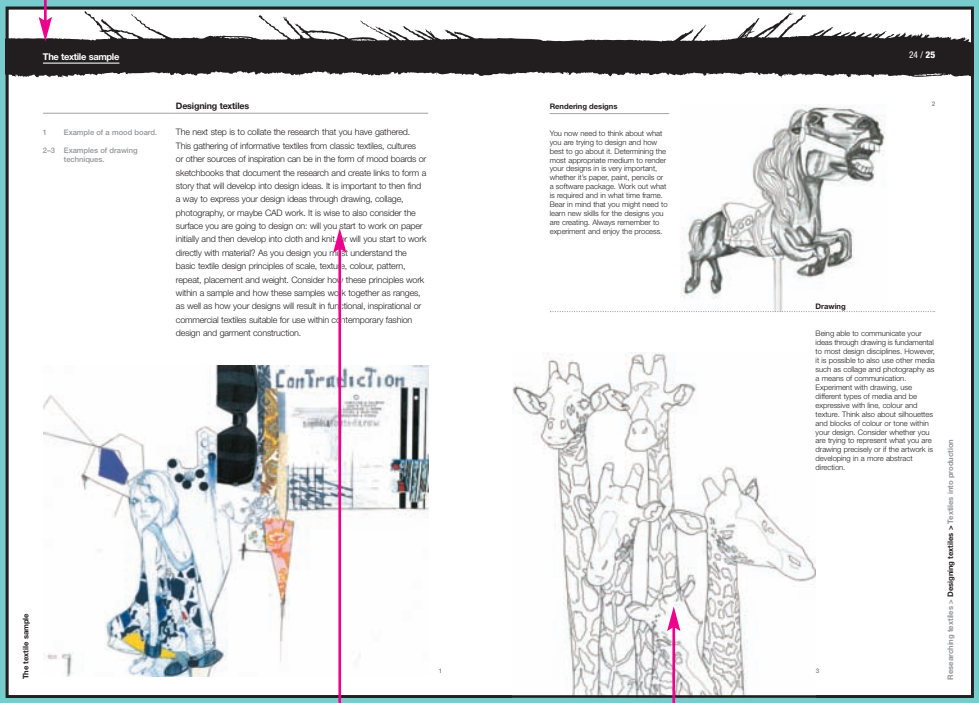
1 A design from Sandra Backlund's Ink Blot Test collection.

How to get the most out of this book

This book introduces different aspects of textiles and fashion via dedicated chapters for each topic. Each chapter provides numerous examples of work by leading fashion designers, annotated to explain the reasons behind choices made.

Key textiles and fashion principles are isolated so that the reader can see how they are applied in practice.

Clear navigation
Each chapter has a clear heading to allow readers to quickly locate areas of interest.



Introductions
Special section introductions outline basic concepts that will be discussed.

Examples
Projects from contemporary designers bring the principles under discussion alive.

Additional information
Box-outs elaborate on subjects discussed in the main text.

Headings
These enable the reader to break down text and refer quickly to topics of interest.

Captions
These provide image details and commentary to guide the reader in the exploration of the visuals displayed.

Chapter titles
These run along the bottom of every page to provide clear navigation and allow the reader to understand the context of the information on the page.

Running footers
Clear navigation allows the reader to know where they are, where they have come from and where they are going in the book.

'I get inspired by people, music, films, my own homes, travelling, the streets of London, Paris or New York. Great energy coming from meeting new and fun people, attending a great event, anything and everything feeds me in one way or another.'

Valentino in *Fashion: Great Designers Talking* by Anna Harvey

It is important to consider the function of the textile you are designing before you start. Is it required for its aesthetic qualities, how it drapes, the handle of the cloth, its texture, for its colour, pattern, surface interest, or is it required for its function, how it will stretch around the body or maybe how it can be tailored. Will it be used for its protective qualities, perhaps against rain or the cold? With the development of nano-textiles more advanced functions can be catered for – a fabric might deposit a medicine on the skin or be a form of communication, as the colour changes according to the wearer's temperature or mood.

It is useful to have knowledge of the historical development and use of textiles, for example, how different fabrics and techniques have become fashionable within Western fashion. It is also interesting to see how textiles are used in different cultures to clothe the body.

The inspiration for textile design can come from any source and it can inform colour, texture, pattern and scale. Consider the ways in which you might begin designing, what media you might use – paint, pencil, CAD – and what surface you might work on.

Once you have designed a range of textiles it is important to consider how you might sell your ideas or manufacture the design as a length of fabric or a garment.

1 Balenciaga A/W07 runway show. Catwalking.com.

1

Researching textiles

As with all designing it is important to look at what is happening in fashion and textiles currently (this is known as secondary research). This will enable you to direct your designs; do you want to do something similar to what is happening currently, to follow a trend and to be fashionable, or do you want to react against current ideas and try something more experimental and set a new trend or fashion?

Whatever you decide you will need to also find research that is original (known as primary research) in order for your designs to be new and not just copies of what is going on around you. Original research for textiles can come from anything: historical costume, galleries, nature, architecture, books, the Internet and travel, for example. It is important that your research can provide inspiration for imagery, pattern, texture, colour and silhouette.

A brief history of textiles

Toile peinte
This is hand-painted cloth.

Chint
A Hindu term for gaudily painted cloth that gave rise to the name 'chintz'.

Looking back historically we can see the types of textiles that were popular at certain times. This is usually related to some form of advancement in technology or trend within society.

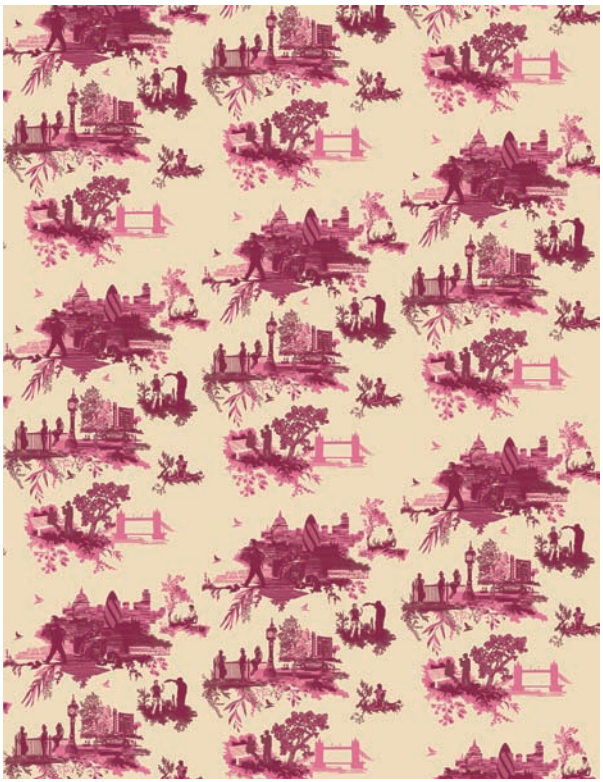
Throughout the history of textiles, certain patterns and fabrics have been repeated. These textiles become classics and some classics remain constantly popular in some form or another, for example, spots, stripes and florals. Other classics go in and out of fashion, such as the paisley design. It is interesting to take a classic textile design and look at what makes it so timeless, then try to reinvent it.

1–2 Toile de Jouy designs originally depicted pastoral scenes that were finely rendered in one colour and positioned repeatedly on a pale background. In these examples, Timorous Beasties have taken the landscape of modern-day London to produce a contemporary toile de Jouy design.

1600s

1

2



The French government supported the development of the silk industry in Lyon. New loom technology and dyeing techniques were developed that produced fine-quality silks, surpassing the Italian silks, which had dominated the 16th century. The rococo period of the 17th century saw the fashion for very decorative dresses. An offshoot of this was chinoiserie, where designs were inspired by the cultures and techniques of the East. Patterns were asymmetric, many featuring oriental motifs, and were exotic in their colour combinations. Japanese kimonos became very popular and were imported by the Dutch East India Company. This company also imported from India a hand-printed cotton known as chintz. It was popular fabric as it was cheap, bright and colourfast. The popularity of the fabric threatened the French and British textile industries to such an extent that a ban on importing or wearing it was imposed.

1700s

1–2 A ladies' jacket from the 1800s. The fabric is tin-dyed black and lined with a small provençale cotton print.

In the early 1700s 'bizarre silks' were popular. The exotic plant shapes found on them were the result of the influence of Eastern culture. They made way for lace motifs, then large-scale luxurious florals in the 1730s, moving to smaller sprays of flowers.

In 1759 the ban on the cotton indiennes or chintz was lifted and the French textile industry again boomed. One factory in Jouy became famous for its printed cotton, the toile de Jouy.

Louis XV's mistress, Madame de Pompadour, wore a type of silk known as chiné à la branche or pompadour taffeta. The silk had a water-blotting pattern effect, which was achieved by printing the warp before weaving the fabric. During the 18th century England dominated men's fashion due primarily to its superior wool manufacturing industry and skilled tailors, while France dominated women's fashion.

At the end of the 18th century a simpler fashion to the rococo style became popular in women's clothing. A thin white cotton dress with little or no undergarments was worn, inspired by Greek and Roman antiquity. A muslin or gauze was best suited for this design as it offered a simple drape rather than moulding to the body. Cashmere shawls were worn over this garment in the winter. The shawls were brought back by Napoleon from his Egyptian campaign in 1799. The cashmere shawl came from the region of Kashmir in NW India. The wool of the mountain goat was spun into yarn to produce a light, soft, warm cloth of the highest quality. As a result these shawls were very expensive. By the 1840s the cashmere shawl had mass appeal and was made in small industries in France and Britain. Notably Paisley in Scotland produced a less expensive shawl and the pattern became associated with the region.

Jacquard
A fabric made on a jacquard loom. Named after French weaver and inventor, Joseph M Jacquard (1787–1834).

1800s

Once again the popularity of cotton in French fashion had grown to the point where it was threatening the silk industry and the French economy. So when Napoleon became Emperor in 1804 he instructed that silk and not cotton would be worn as the ceremonial dress. The Romantic period at the turn of the 19th century saw the use of small floral prints. They were popular for their aesthetics and also because the small designs easily hid dirt spots and poor manufacturing.

In 1834 Perrotine printing was invented and used for the mass production of cloth. This process was the mechanisation of wood-block printing and allowed for multicoloured designs.

Polychrome patterns that had previously been produced through woven cloth could now be produced through a cheaper printing method.

In the 19th century lace manufacture was also mechanised. Large lace shawls made in the French towns of Valenciennes and Alençon became popular.

In the 1830s the jacquard was widely used. This was produced on a mechanised drawn loom and allowed for more complex weave structures and patterns.

It was felt by some in the late 19th century that technical advancements and mechanisation were responsible for a decline in the quality of design and crafts. Where a craftsperson had once been a designer and maker, the mechanised process was separating these two roles. The quality of textiles was poor and design was lacking. In Britain, William Morris was concerned with this situation and promoted handcrafted over machine manufacture. He designed textiles on naturalistic and medieval themes and chose not to use aniline dyes, preferring to dye them naturally.

He was the most prominent member of the Arts and Crafts Movement in England. Art nouveau developed from the Arts and Crafts Movement, with textiles becoming more stylised and intricately linear in design.

Opening Japan to international trade in 1854 resulted in the Japanese style coming to the West. Oriental motifs and Eastern flora, like the ayame pattern (a flower from the iris family) and also the chrysanthemum, began to feature in textile design.

Japanese lacquered products influenced the creation of shiny, laméd fabrics. In the 1860s, tarlatan, a thin plain, woven cotton, which was washed or printed with a starched glaze, was popular.

2

1900s

In the first quarter of the 20th century the Omega Workshops in London and Atelier Martine decorative art school and workshop in Paris opened. The Atelier Martine was founded by the couturier Paul Poiret, who was inspired by a visit to the Wiener Werkstätte school in Germany. The Atelier employed young girls with no design training who produced very naive textiles. This approach and look was in-line with the fauvist and cubist movements of the time in the fine arts.

1920s

After the discovery of Tutankhamun's tomb in 1922 Egyptian motifs were translated into textile designs. The art deco style originated from the Exposition Internationale des Arts Décoratifs et Industriels Modernes exhibition in Paris in 1925. Looser shaped clothing became fashionable, influenced by the kimono shape and unstructured Eastern clothing. Madame Vionnet developed the bias cut, while Mariano Fortuny was inspired by classical clothing and created the pleated, unstructured Delphos dress.

During the roaring 1920s and the jazz era the new dance crazes called for dresses made from fabrics that moved on the body or seemed to under light. Fine, light fabrics, beading, sequins and fringing achieved this. Lace, fur and feathers were also popular for evening wear in this exciting and glamorous period. Viscose rayon was a popular fabric of the 1920s. This period also saw the introduction of the screen-printing process.

2

1930s

In the 1920s and 1930s Coco Chanel used jersey in day dresses. This was revolutionary, as this fabric had only been used before in underwear production. Florals, abstract and geometric patterns were popular, featuring two or more contrasting shades in a print. The development of cinema saw luxurious fabrics used for their lustre onscreen. Nylon was invented in 1935. Two-way stretch wovens were also developed.

Surrealism also influenced textiles. The first pullover Elsa Schiaparelli displayed in her windows created a sensation: it was knitted in black with a trompe l'oeil white bow. She was a close friend of the artists Salvador Dalí, Jean Cocteau and Christian Bérard and commissioned them to design textiles and embroidery motifs for her dresses. Schiaparelli experimented with unusual fabrics in her designs, including the modern fabrics rayon, vinyl and cellophane.

1 **Full-length evening coat in black silk jersey, with appliqué pink silk flowers. Designed by Elsa Schiaparelli with Jean Cocteau; London, 1937.**

2 **'Delphos' evening dress in black pleated silk and decorated with Venetian glass beads. Designed by Mariano Fortuny; Venice, c.1920.**

1940s

Fabric was rationed during the Second World War so the amount used within a garment was conserved, for example, skirts were slim, not flared or pleated, and were a shorter length. Jackets were single breasted and trousers were a specific length. This was the era of 'make do and mend' with people recycling their textiles. Dresses were made from curtains, clothes were altered and knitwear was unravelled and re-knitted. Silk supplies from Japan were cut off during the war, so nylon became a popular substitute. As France was occupied, Paris as a fashion capital was under threat and American fashions rose in popularity. Denim and gingham labourers' uniforms entered the ready-to-wear American market.

1950s

After the war there was a reaction against ornate pattern. Textiles featured futuristic imagery, scientific diagrams and bright, abstract shapes that echoed this atomic era. Textiles with linear drawings of newly designed domestic objects were also very fashionable.

With the end of rationing skirts became fuller and fuller. These circle skirts were often hand painted and embellished. The influence of America on Europe also saw Hawaiian shirts and American prints becoming increasingly popular.

Some of the couturiers, such as Balenciaga, created silhouettes that worked away from the body. They were interested in the space between the body and the garment. Stiffer fabrics worked well for this.

During the 1950s new fabrics were developed. These included:

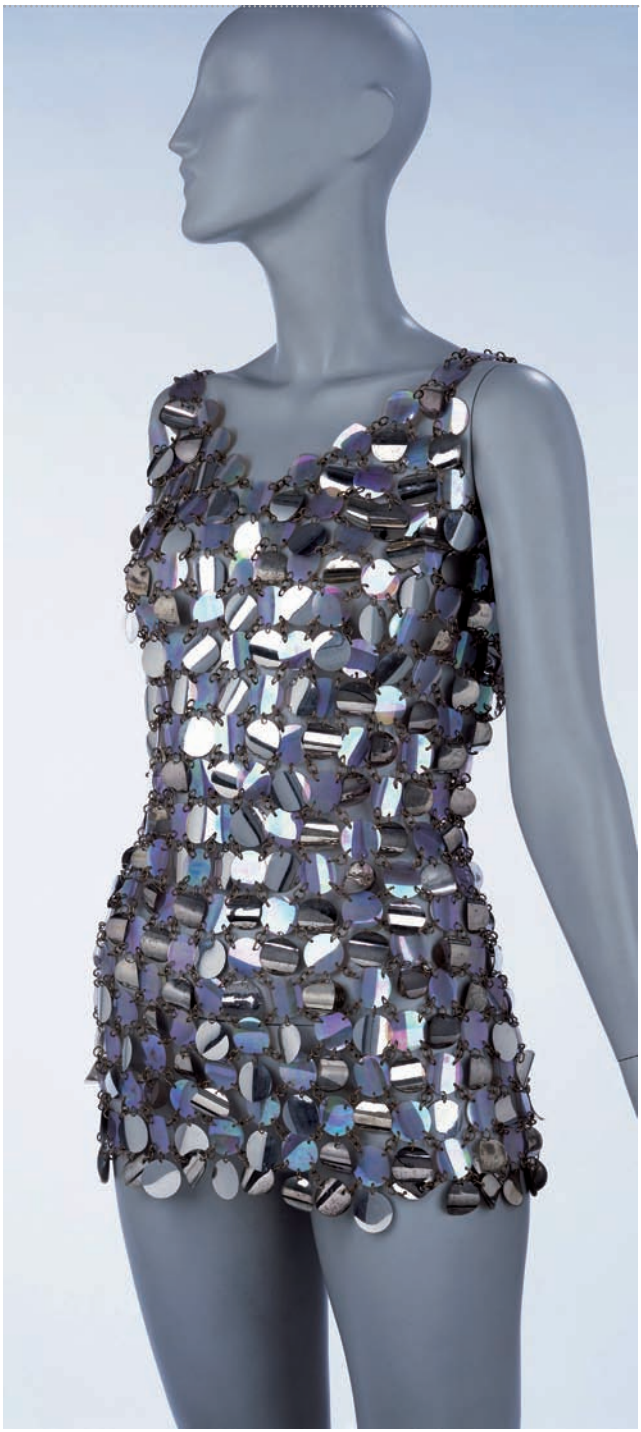
Acrylic (1950)
Polyester (1953)
Spandex (1959)

1

1 Calyx furnishing fabric. Screen-printed linen, designed by Lucienne Day for the 1951 Festival of Britain. Manufactured by Heal's (1951).

2 Paco Rabanne mini-dress in perspex pailletes and metal chain.

1960s



Baby boomers reached their teens and wanted to be different from their parents, so they chose to wear shorter skirts and modern fashions. Textiles were zany, in bright colours. Space travel influenced bold prints and new synthetics with new dyes were being developed. Pierre Cardin and Paco Rabanne experimented with modern fabrications not seen in couture before.

Trousers were normal daily dress for women. Jeans also became very popular particularly amongst teenagers as a result of American westerns and the influence of movie stars such as James Dean.

Towards the end of the 1960s there was a nostalgic look back to the art deco and art nouveau periods. Imagery was enlarged and translated into bright psychedelic colours. Florals were depicted flatter and with bold colour, and the term 'flower power' was coined. The work of Finnish designer Marimekko illustrates this very well.

2

1

1970s

The unisex hippie folk movement was a reaction to the modernism and mass consumption of the 1960s and was triggered by the Vietnam War. Anti-establishment looked to different non-Western cultures and religions for inspiration and enlightenment. Fashionable men wore bright colours, lace and frills.

The oil crisis of the 1970s contributed to the downturn of the synthetic fibre market in Britain. Natural fabrics were increasingly adopted. In the UK Laura Ashley produced hand-printed looking cotton with Victorian florals.

1980s

The UK was politically and economically more stable and fashion followed suit, adopting a more conservative approach. In 1979 Margaret Thatcher became the first female prime minister of Great Britain. More women were working and they chose to wear tailored suits with large shoulders. The term 'power dressing' was coined. There was also a body-conscious trend with underwear worn as outerwear. Gaultier famously designed Madonna's conical bra outfits for her world tour in 1990.

Azzedine Alaïa and Bodymap designed with the developed stretch fabric Lycra to contour the body. There was also a different trend developing started by the Japanese designers Rei Kawakubo and Yohji Yamamoto. Garments were not body conscious, but played with interesting cut. Fabrics were monochrome, non-decorative and in some cases torn and raw. Recycled cotton was also introduced.

2

1990s

The trend started by the Japanese designers continued and was also taken up by a handful of Belgian designers. Martin Margiela was one of them; he worked in a conceptual way and wanted his clothes to look man-made not mass-produced. He used deconstruction and recycling throughout his collections. Ripped denim and customisation became mainstream.

2000s

Textiles have become more and more decorative as production is taken to the Far East and China. The factories here can add value to a textile through embellishment; the workers are skilled (often using local crafts) and the fabric can be produced cheaply. Modern fabrics are developing so that they are light-sensitive and breathable. Computer-aided design and manufacture is common. The designer is now far more in control of the mechanisation process, however, as a result, craft skills are unfortunately declining in Europe.

1 A 1970s textile design.

2 A range of dress patterns from the 1960s to the 1990s.

1

2

Different cultures

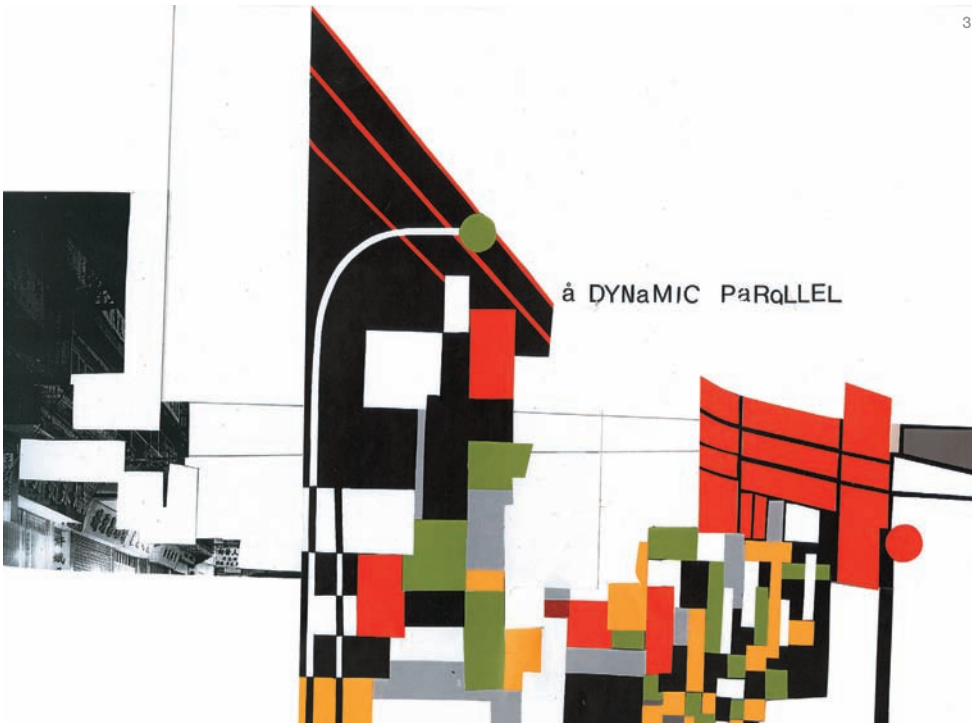
By looking at other cultures we can see the variety of uses for traditional textiles. In Japan the kimono is made from lengths of fine woven silks and there is little cutting in manufacture so that the pattern of the cloth can be clearly seen. This is in contrast to the Western tailoring of the 16th and 17th centuries. A garment that had seaming, darting and panelling was very desirable, as it would have been expensive to produce and would indicate that the wearer was wealthy enough to afford such a garment.

It is interesting to look to other countries and their traditional handcrafted textiles for inspiration and to note how these techniques can be applied to modern textiles.

1 Indian textile designs.

2 Hand-crafting textiles in Cambodia.

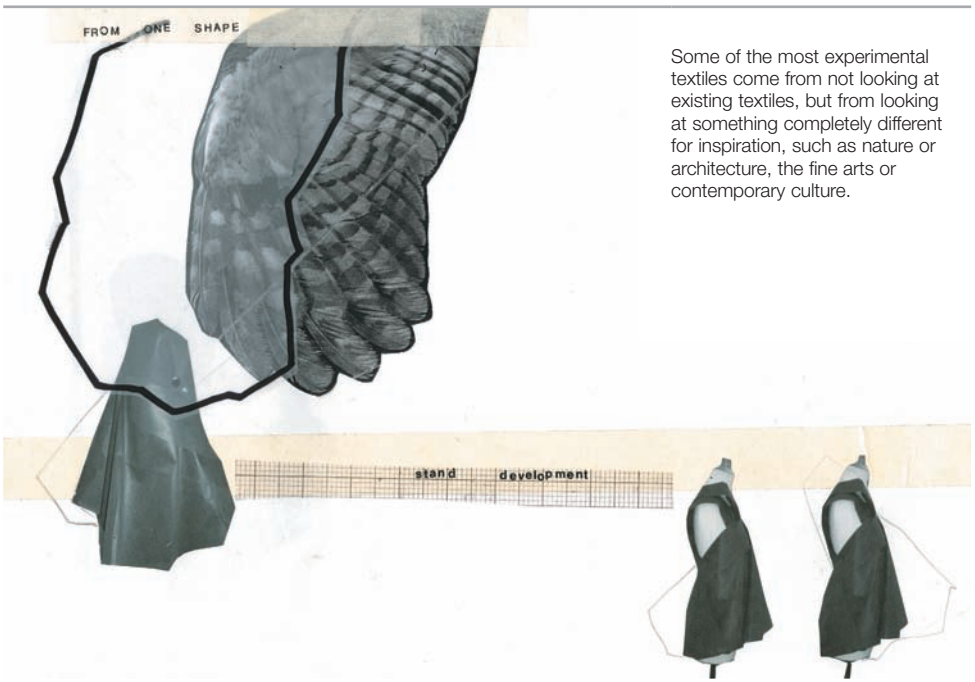
3–4 Examples of research boards.



3

Non-classic inspiration

Some of the most experimental textiles come from not looking at existing textiles, but from looking at something completely different for inspiration, such as nature or architecture, the fine arts or contemporary culture.



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Designing textiles

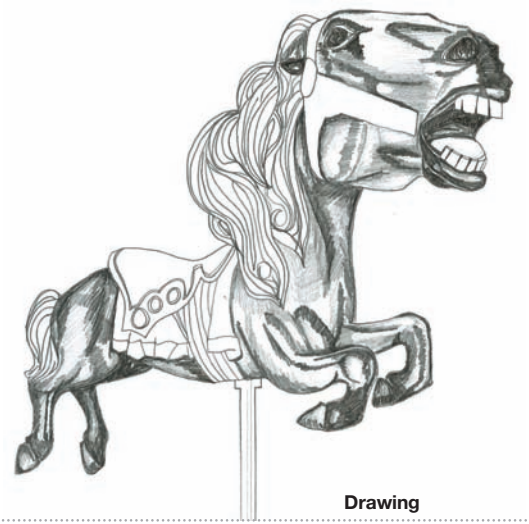
1 Example of a mood board.

2–3 Examples of drawing techniques.

The next step is to collate the research that you have gathered. This gathering of informative textiles from classic textiles, cultures or other sources of inspiration can be in the form of mood boards or sketchbooks that document the research and create links to form a story that will develop into design ideas. It is important to then find a way to express your design ideas through drawing, collage, photography, or maybe CAD work. It is wise to also consider the surface you are going to design on: will you start to work on paper initially and then develop into cloth and knit, or will you start to work directly with material? As you design you must understand the basic textile design principles of scale, texture, colour, pattern, repeat, placement and weight. Consider how these principles work within a sample and how these samples work together as ranges, as well as how your designs will result in functional, inspirational or commercial textiles suitable for use within contemporary fashion design and garment construction.

Rendering designs

You now need to think about what you are trying to design and how best to go about it. Determining the most appropriate medium to render your designs in is very important, whether it's paper, paint, pencils or a software package. Work out what is required and in what time frame. Bear in mind that you might need to learn new skills for the designs you are creating. Always remember to experiment and enjoy the process.



2

Drawing

Being able to communicate your ideas through drawing is fundamental to most design disciplines. However, it is possible to also use other media such as collage and photography as a means of communication. Experiment with drawing, use different types of media and be expressive with line, colour and texture. Think also about silhouettes and blocks of colour or tone within your design. Consider whether you are trying to represent what you are drawing precisely or if the artwork is developing in a more abstract direction.

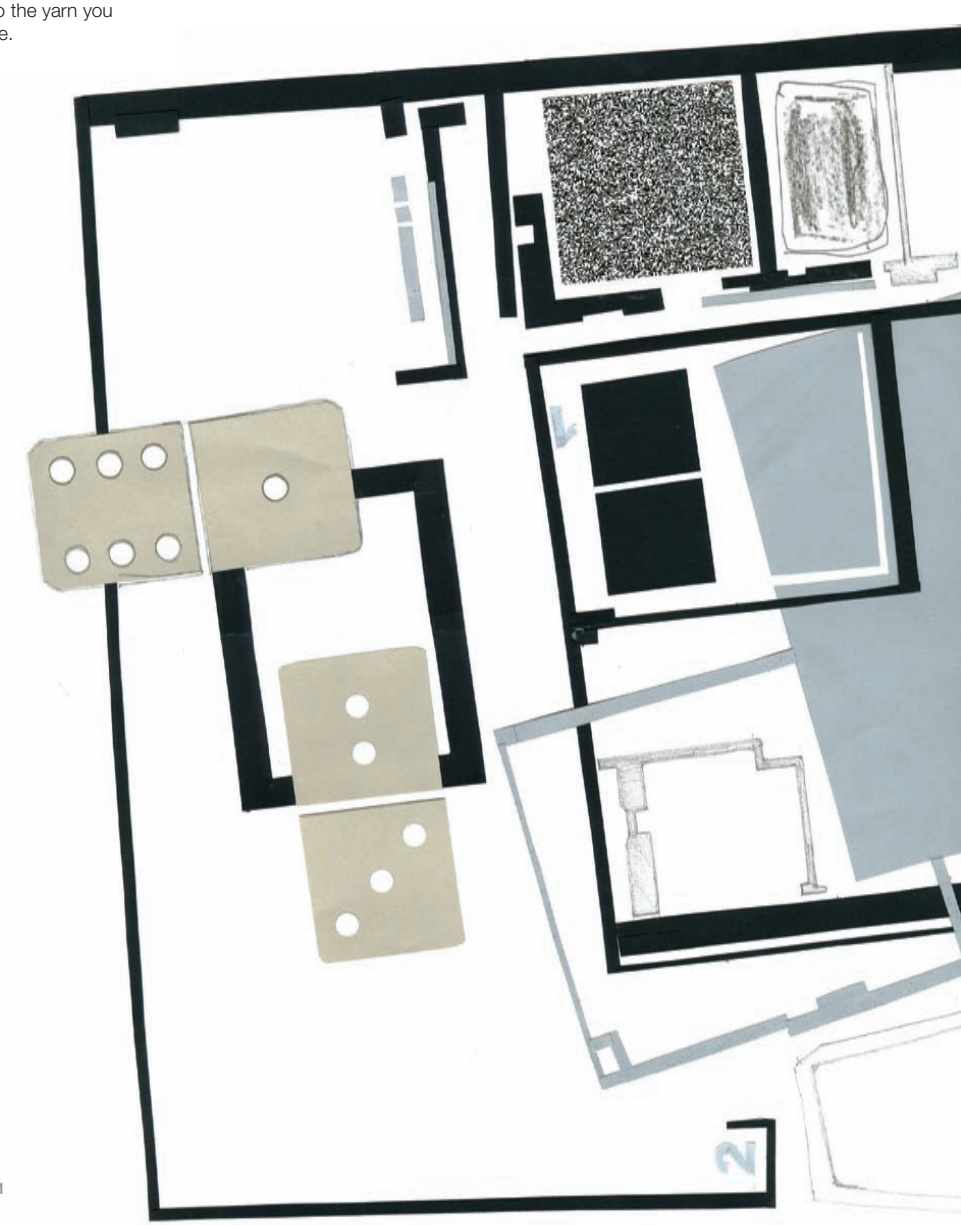
3

Collage and 3D rendering

Working with different types of papers and building up layers to create textures can be useful for knit and weave ideas. Try finding unusual textures to play with, but remember to refer back to the function of your fabric. You might try to experiment and mock up a sample in a fabrication similar to the yarn you might eventually use.

1 Example of collage work.

2 Tata-Naka A/W07 collection featuring digitally printed textiles produced using CAD.



2

CAD

This stands for computer-aided design. The use of the computer can make the design process faster. Colour and scale can be changed more quickly than manually recolouring or rescaling a design. Remember that colours on a computer screen are different from those eventually printed out, as the computer screen works with light and not pigment. Scanning in original drawings and combining them with other imagery can work well. Avoid using filters and treatments from design packages unless they are used originally otherwise they can look very obvious.

Photography

The use of photography can be great for capturing ideas quickly. Textures and shapes can be registered in great detail immediately without the need for hours of drawing. With the use of packages such as Photoshop, images can now be successfully translated into designs. Layers and collages can be built up on screen.

1

Basic textile design principles

It is important that as a designer you understand the basic design principles of textile design. This knowledge will allow you to fully explore the design process. Obviously different samples will feature certain principles more than others. For example, you might produce a range of black samples that focus on the application of shiny surfaces to matt-base cloths. The juxtaposition of surfaces and placement of pattern might be the focal point of these designs rather than colour.

Scale

Look at the scale of your design within the fabric piece. Is it very small and repeated or is it enlarged and abstract? You may consider placing a large design with a smaller design for added contrast. Think about how this design will work on the body and how it will work within the pattern pieces of a garment. An enlarged bold design may not have as much impact if the design has to be cut up to be used in a garment with many pattern pieces. Think how you can place a large design within a garment silhouette for the best effect.

1 Example demonstrating how print scale can work on the body.

2–3 Liberty print designs by Duncan Cheetham showing an all-over floral pattern (top) and a chevron print (bottom). The chevron design has a 'direction', a clear top and bottom to the design.

Pattern and repeat

2

3

If you would like your textile sample to work down a length of fabric you must consider how it repeats. Repeats can be very simple or very complicated working across a large area. The bigger the repeat the harder it is to see on a length of fabric; a small repeat is more obvious. It is important to observe how your design flows across a length. When you repeat your design en masse you might find that you can see where you are clearly repeating the motif. This might work in a design or it might look rather crude.

Also consider if there is a direction to your design. Is there a top and a bottom? This can look very interesting visually, but remember that this kind of design limits the lie of a fabric, as the pattern pieces will all have to be placed in one direction.

If you are working on a computer it is very easy to see how your design will work by cutting and pasting. There are also computer packages that quickly put your design into repeat. To work out manually whether your designs flow, cut the design in half and place the top part below the bottom to see where you need to fill in gaps.

Placements and engineered designs

Placements work well if you consider the position of the design on the garment. The most obvious placement is a print placed on the front of a t-shirt. It is interesting to consider how a design can be engineered to work around a garment. Can a seam be moved to allow a design to travel from the front to the back of a garment? Could a placement work around the neck or around an armhole? Can a design fit into a specific pattern piece? If you are working in this way you may have to consider how the engineered design scales up or down according to the size of the garment. A size 10 garment will have a smaller neck hole than a size 14. You will have to produce a different size design for each dress size for this to really work. If you are working on the computer this is much easier as designs can be scaled quickly and placed within pattern pieces.

Clever use of placements might affect the construction of the final garment. For example, a coloured block could be knitted directly into a garment, which would mean a coloured panel would not need to be cut and sewn in. A weave could incorporate an area of elastic running across it, thereby avoiding darting in the final garment to fit it to the body. Smocking applied to a fabric can work in a similar way.

Colour and colourways

It is often a good idea to start finding a colour palette that you like and that suits your theme before you begin designing. Finding an image, a photograph or painting where the colours already work together can be a good start or you may just start selecting colours and working them together by eye. You can work with chips of paper colour, fabric swatches or on the computer. A palette of colours can be any size, but do not over complicate it by using too many colours. Check your balance of colour and tone within the palette. Consider what the colour is going to be used for and in what proportion. Remember a small area of colour looks very different to an expanse of the same colour over a couple of metres of fabric.

When you design consider the various tones and saturations that can be found within one colour. Also experiment with the different textures of a hue. For example, the colour black can be blue-black, warm black, washed-out black, matt black, shiny black, or transparent black. Your palette will change under different lighting conditions – natural light at certain times of the day and different forms of electric lighting will all have an effect.

2

3

4

1 Givenchy S/S08. This design contains a striking use of placement. The circles on the jacket are placed so they correspond to the circles found on the blouse and shorts beneath. The circles on the front of the jacket also align with those on the sleeves and cuffs. Catwalking.com.

2–4 Prints by Jenny Udale showing a matt print on a shiny fabric. Puff adds surface interest and colours work together.

Weight, texture and surface

When you start to transfer your designs on to or into fabric, think about what weight your textile will be in relation to the design and also in relation to its use in the final garment. Understanding fabrics and yarns is paramount to this process (this will be explored more later on in the book).

Consider whether your design would benefit from texture. Surface interest is very important within textile design, especially in knit, embroidery and embellishment. In knit and weave design the weight of the yarn and size and type of stitch or weave will affect the texture. For printed textiles, surface interest is achieved through printing. Some printing media will sit on top of the fabric and produce a relief effect, while others might eat away at the surface of the textile through a chemical reaction.

The type of embellishment and the yarn or stitch used will produce various textures on embroidered fabrics. Mechanical and chemical finishing processes can change the texture of a fabric after it has been created.

Interesting textiles can be created by experimenting with a mixture of processes, for example, pleating a fabric before you print on to it, or knitting a fabric then boiling it to give a matted texture.

Textiles into production

As a student you will be creating small textile samples and developing experimental and exciting ideas. You will probably only have to produce a small length of fabric or a small range of garments that feature your fabrics. However, when you become a designer in the fashion industry you will have to consider how you sell your work. If you choose to manufacture your textiles you will also have to consider the skills and technology you will need for production and the ethical choices you might make. You must consider how your textiles now work together and form a collection; then to whom you will present the samples and where you will sell them.

Collections of fabrics

When you create a collection of fabrics you must consider how the designs work together and what their common theme is. Are you creating a collection of similar designs, for example, a range of striped textiles or a variety of designs – a stripe, spot and floral – that are maybe all rendered by a similar drawing technique? Consider how your range of designs works within a fashion collection: do you have all the different weights and qualities needed for all the garments?

The colour palette is usually common to a range of fabrics, but you can vary the proportion of colour used in each sample within the range. Try hard not to repeat a motif in a collection of designs. For example, you might think each design is very different, that in one design your motif of, say, a leaf is small and lime green and in the next design it is larger and black, but one company may buy the first design and another the second, and their designers could then resize and recolour your designs and end up with similar textile designs.

1 A selection of fabrics used for Wildlifeworks' S/S08 collection (see page 43). The organic fabrics are digitally printed and include a variety of textures, weights, embroidery and embellishment.

Presentation

Textile samples tend to be presented on hangers or simply mounted on light card fixed at the back. It is important that the textile is not stuck down as it needs to be handled, therefore usually only one edge is attached to the mount leaving the fabric sample hanging so the weight and drape can be experienced. Keep the mounting plain and simple so it does not distract attention away from the textile design. It is not normally advisable to present your samples in portfolio plastic sleeves, as the fabrics cannot be easily handled.

Calendar of Trade Fairs

Paris, France
February/September

Première Vision: promotes fabric for clothing.

Expofil: yarns and fibres.

Indigo: textile design including print, knit, embroidery and vintage fabrics.

Le cuir à Paris: leather, fur and textiles for accessories.

New York, USA
January/July

Première Vision: preview.

Milan, Italy
February/September

Ideabiella: menswear and womenswear fabric collections.

Ideacomo: fabrics for womenswear.

Moda In: avant-garde materials for the fashion market.

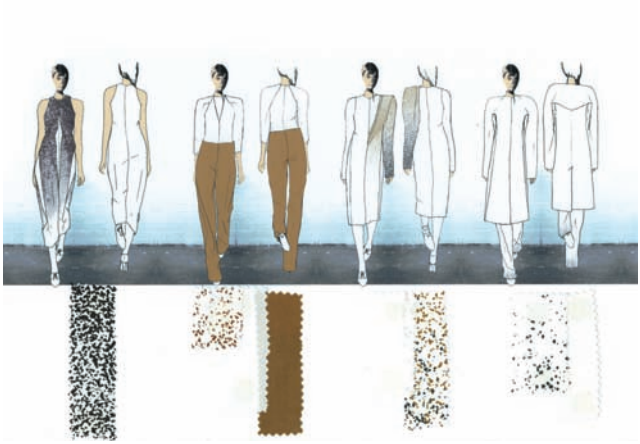
Prato Expo: fabrics for womenswear with a high fashion content and casual menswear.

Shirt Avenue: traditional and novelty shirting fabrics.

Florence, Italy
January/July

Pitti Filati: yarn show.

1



2

Fabric fairs

1–2 Fabric swatches presented alongside fashion drawings clearly show how the textiles will be used within a collection. The fabrics are not fully stuck down, but hang so they can be handled easily.

3 The Première Vision fabric trade fair.

Fabric trade fairs are held biannually in line with the fashion calendar. The fairs showcase new developments in woven, knitted, printed and embellished fabrics.

Première Vision is the main fabric and colour fair held biannually in Paris. Fabric manufacturers from around the world display their new fabric samples and take orders from designers. Sample lengths of fabrics are made first by the manufacturer and sent out to the designer. From this, garment samples are made and orders are taken. Based on this, the fabric is ordered and if not enough is ordered by designers, a fabric will not go into production.

Indigo, also held in Paris, is a platform for textile designers (mainly print designers) to show their textile samples. The samples are shown as collections and are bought by designers for inspiration or by fabric companies and fashion companies to be put into production.

Pitti Filati is a biannual yarn fair held in Florence. Here yarn companies display their latest collections of yarns for production and textile designers sell their knitted and woven samples. The other main yarn fair is Expofil in Paris.

If you choose to represent yourself at a fabric fair you must consider the cost of travel, hiring a stand at the exhibition, manning the stand and accommodation while you are there. If an agent takes your work to sell they will take a large cut of the sales of your samples to cover their expenses. Always keep a good record of the samples that you give to an agent. Number each sample on the back and list the ones that are going, get the agent to confirm and sign the list. Make sure you know what percentage the agent is taking and how long they will take to pay you.

3

Future fabrics

Developments in the creation of textiles seem to be following two paths – ethically driven by the environment and future-technologies driven by scientific advances – and where they meet is where great future fabrics will be produced. In other words, fabrics that use great design and can be sustainable, but can also be forward thinking.

We should also consider how traditional crafts, such as block printing, hand crochet and crewel work can be maintained. These handcrafts give textiles character and individuality, and they can add value to a product as a result of the time and skill needed to create it. A garment that has been hand stitched and embroidered will never be exactly the same as another garment. Certainly high-end designers are incorporating handcrafted fabrics and finishes into their collections, but these handcraft techniques are difficult for the high street to copy and therefore set them apart. Consumers, however, are demanding fabrics that can perform well and that can wash and wear well, so maybe combining craft with performance and modern technologies will ensure their survival.

1

1 A design from Sandra Backlund's Ink Blot Test collection.

2 An embellished design from Alabama Chanin's S/S08 collection.

2

Ethical

Clothing is becoming cheaper and cheaper as production is getting larger and larger. We are buying our clothing in supermarkets with our weekly food shop. We are wearing a t-shirt a few times and throwing it away to buy the next desirable cheap garment. Fashion has a short shelf life with new collections appearing every six months. If the season's collections do not sell in the season they go on sale, they are burnt or recycled.

One reaction to this mass consumption is the rise of sustainable collections. Companies are considering what the impact of their textiles and processes has on the environment. Many are choosing to use fabrics that are made from recycled material, either at fibre or fabric level. Many fibres come from natural sources and can be reused; some synthetic fibres can also be recycled, for example, polyester can be made from old plastic bottles. Dye companies that use synthetic dyes are reducing the amount of chemicals that are needed in processes and recycling the water they use, so reducing the impact of production. Synthetic dyeing is often seen as unethical. However, natural dyes need fixers that can be harmful to the environment as they build up; also some natural dyes need a large amount of natural material to produce a small amount of dye.

There has definitely been a trend for organic and fair trade in industries such as food and cosmetics, but the fashion industry has been slower to pick up on the idea. Some may say that fashion is fundamentally about aesthetics, so is there room in fashion for ethics? It is important that ethical companies integrate functionality, design and quality into their ethical story for their products to be fashionable and desirable. They will, however, be competing with low-price manufacturers who are churning out products more cheaply and quickly than before.

As a designer you can choose where you buy your textiles or where you have your textiles manufactured. It may be harder to source sustainable or ethical material and it may make your designs more expensive. You may be competing with cheaper goods from non-certified factories, but ultimately it is your choice. Decide how much you want to be involved with the issues, but educate yourself.

Fairtrade

The term 'fairtrade' is part of the Fairtrade Foundation's logo and is used to refer to products that have actually been certified 'fairtrade'. The Fairtrade Foundation gives this certification after it checks that the growers or workers have been given fair pay and treatment for their contribution to the making of the product.

The working environment in which the products are made is taken into account. Manufacturers have to demonstrate that they provide good conditions for the people involved in the factory. There are basic standards covering workers' pay and conditions, as well as issues such as the absolute prohibition of the use of child labour, which must be met in order to qualify for the fairtrade 'kite mark'.

Fairtrade is also used to describe products that try to encourage the use of natural and sustainable materials, together with contemporary design to maintain ancient skills and traditional crafts, where regular employment and the development of skills can bring dignity back to people and their communities.

1

Organic

The General Assembly of the International Federation of Organic Agriculture Movements (IFOAM) is the worldwide umbrella organisation of the organic movement, uniting 771 member organisations in 108 countries. IFOAM's goal is the worldwide adoption of ecologically, socially and economically sound systems that are based on the Principles of Organic Agriculture. The principles aim to protect the land that is being farmed and also those working on it and the communities of which they are a part.

Strict regulations define what organic farmers can and can't do, placing strong emphasis on protecting the environment. They use crop rotation to make the soil more fertile. They can't grow genetically modified crops and can only use – as a last resort – seven of the hundreds of pesticides available to farmers (see Chapter Two: Fibres, for more information on organic cotton production).

Animal rights

The campaign for animal rights gets stronger every year, yet designers continue to show catwalk collections that contain fur. There still seems to be a demand by a certain consumer group for fur in fashion. Designers are now using fur and leather substitutes in experimental ways. Stella McCartney does not use any animal products in her collections; instead she uses canvas and pleather (fake leather) in her accessories. There is a lot of research to develop good leather-look fabrics. The Japanese company Kuraray produces Clarino and Sofrina and the company Kolon Fibers produces an ultra-microfibre textile called Rojel.

Technology

Technology is being used to generate new fabrics and also to produce existing fabrics more quickly and efficiently. The possibilities of futuristic textiles are positively endless.

Smart materials

Interactive clothing incorporates smart materials that respond to changes in the environment or to the human body. Heat, light, pressure, magnetic forces, electricity or heart rate may cause changes to shape, colour, sound or size. It is especially appropriate to textiles, as during the construction process, fibres and yarns can form circuits and communication networks through which information is transferred. Coating finishes, printing and embroidery can also all be used to conduct information. Clothes could quite possibly interact directly with the environment by opening doors or switching on lights or could communicate with images, light or noise.

2

Biotechnology

Fabrics can contain chemicals within their fibres that can be released on to the skin for medicinal or cosmetic reasons. Fibres are being developed from natural sources to mimic nature, for example, the development of spider silk. Fabrics are also being grown directly from fibres in the same way that skin or bones grow.

CAD

Digital technology and computer-aided design is advancing and making the designer's job easier. Designing a textile sample using CAD can produce a repeat in many colours far quicker than if done by hand. Computerised looms can produce metres of fabric in minutes. Obviously manufacturing processes must evolve, but it is important to still understand the craft techniques on which these processes are based.

1 A design from Wildlifeworks A/W07 collection. Wildlifeworks produces organic and fairtrade clothing.

2 This high-tech dress from Hussein Chalayan's A/W07 collection features a light display system within its structure so that the patterns within the textile can be changed.

'As a child I was obsessed with video games, now I am fascinated with technology and what you can do with it.'

Rory Crichton, freelance printed textile designer for Giles Deacon and Luella Bartley

Fabrics are made fundamentally from fibres. These fibres can be categorised simply as natural or synthetic and each fibre has its own characteristics and qualities. For example, cotton fibres produce a fabric that is breathable, while wool fibres create a warm cloth, but one that can be sensitive to heat. The way the fibres are spun and the yarn constructed affects the performance and look of the final fabric. Finishes and treatments can be applied to a textile at fibre, yarn, cloth or final garment stages of production. These finishes can enhance and change the qualities of the textile for fashion. Colour, texture and performance qualities can all be added. Obviously the way the fabric is constructed also gives the fabric a specific quality. This will be discussed in the next chapter.

Companies who manufacture man-made and natural fabrics are considering their impact on the environment with their manufacturing processes. The production of natural fabric may have more impact on the environment than a man-made one if it uses harmful chemicals in its processes; also many man-made fabrics can now be completely recycled. Fabric characteristics can be integrated into the make-up of man-made fibres reducing the need for chemical and mechanical finishing processes.

1 Vintage Commes des Garçons suit. The jacket is 100% polyester with cotton panels and the skirt is 100% polyester with velvet ribbon, lace and tape work.

1

Natural

1 Top row (from left to right): silk organza, silk jersey, raw silk, dupion silk; wool herringbone, wool melton wool; shearling, leather, horse hair.

Bottom row (from left to right): foil-printed linen, linen; denim, cotton shirting; bamboo, jute hessian.

2 A Jessica Ogden cotton voile with a spot weave and nylon net dress.

3 Wildlifeworks S/S08 collection featuring organic cottons.

Natural fibres are derived from organic sources. These can be divided into plant sources (composed of cellulose), or animal sources, which are composed of protein.

1

Cellulose

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.

2

Cotton

Cotton is a prime example of a plant fibre. It has soft, 'fluffy' characteristics and grows around the seed of the cotton plant. These fibres are harvested from the plant, processed and then spun into cotton yarn.

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. The longer the fibre, the stronger and better quality the fabric is, for example, Egyptian cotton.

Cotton is mainly produced in the USA, China, the former Soviet Union, India, Mexico, Brazil, Peru, Egypt and Turkey. In most cotton production, farmers use chemical fertilisers and pesticides on the soil and spray them on the plants in order to prevent disease, to improve the soil and to increase their harvest. Cotton has always been extremely prone to insect attack and since insects started building up immunity to pesticides, the situation has worsened. This means growers have increased their use of chemical pesticides simply to ensure crop survival. Cotton crops in India, America and China demand thousands of tonnes of pesticides, which are sprayed on fields from the air. This overuse of pesticides is rendering hundreds of acres of land infertile and contaminating drinking water. The World Health Organisation estimates that about 20,000 people die each year as a result of pesticide use.

Also the chemicals that are used 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 these 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. There are designers pursuing organic solutions such as Katharine Hamnett, Wildlifeworks and Edun.

3

Linen

Linen has similar properties to cotton, especially in the way it handles, although it tends to crease more easily. Linen has good absorbency and washes well. 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.

Protein

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

Wool: cashmere, angora and mohair

Sheep produce wool fleece 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. Merino sheep produce the finest and most valuable wool. 80 per cent of wool is produced in Australia, New Zealand, South Africa and Uruguay. Biodegradable and non-toxic pesticides are now more widely used in the production of wool to protect the sheep and improve the environment.

Goats are also used to produce wool; certain breeds produce cashmere and angora. Cashmere is extremely soft and drapes well. Alpaca, camel and rabbit are also sources of fabrics with a warm, luxurious feel to them. 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 the fibres.

1 Christian Wijnants A/W07. Heavy hand-knitted jumper made from wool and angora.

2 Dolce & Gabbana A/W07. Ostrich feathers trapped beneath silk voile. Catwalking.com.

Silk

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 to wrap 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. Silk worms live off mulberry trees. For one kilogram of silk, 200 grams of leaves must be eaten by the larva. Once extracted from the cocoon, the larva is often used as fish food by the farming community. In the wild, the silkworm chews its way out of its cocoon, thereby cutting into what would otherwise be a continuous thread. Silk fabric has good drape, handle and lustre.

2

Fur

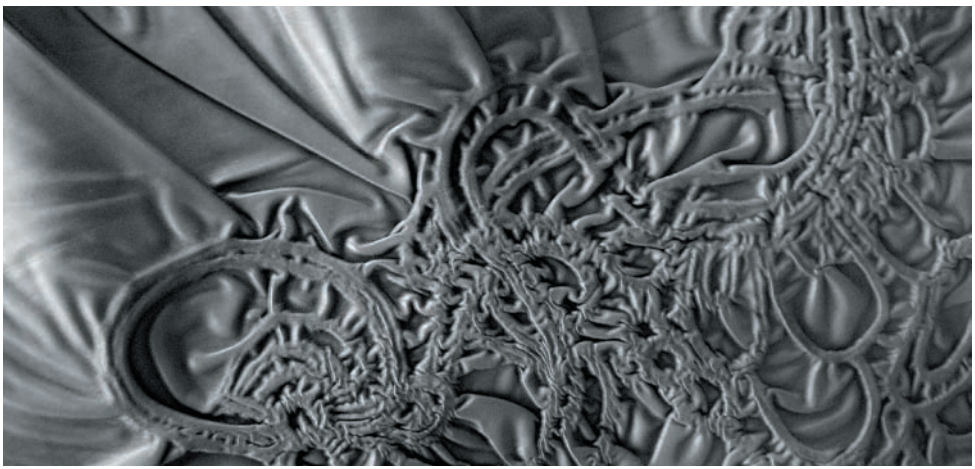
Animals such as mink, fox and finn raccoon are bred on farms where the animals are purely reared for their skin. This subject causes heated debate between those for and against fur. The fur farmers would argue that the ethical treatment of the animals has always been an important part of the approach to fur farming. The quality of fur depends on the welfare of the animal; the higher the quality of life the better the quality of fur. Fur farmers in Scandinavia are regulated by national laws and guidelines, and regulations governed by the Council of Europe. Scientists work closely with the farmers and their research findings have already been adopted in areas such as housing, disease prevention, nutrition, husbandry, breeding and selection. The process of implementing other animal welfare measures as a result of scientific research is ongoing.

Anti-fur protesters would argue that some fur used in the clothing industry is used from animals 'caught' in the wild. The animals are trapped in snares or traps and undergo hours of suffering before they are brutally killed. As for 'farmed' fur, again they will argue that the millions of animals killed every year are kept in small, cramped cages or enclosures. These living conditions go against the animal's natural instincts and cause severe stress and can lead to cannibalism and self-mutilation. The killing process itself is not quick and painless. Methods including gassing, poisoning, electrocution, suffocation and neck breaking are commonplace.

Leather

Leather is made from animal skins or hides. The procedure used to treat the raw animal hides is called 'tanning'. First the skins or hides are cured, a process that involves salting and drying, then they are soaked in water. This can be for a few hours or a few days. The water helps to rid the skin of the salt from the curing process as well as dirt, debris and excess animal fats. Once the skins are free from hair, fat and debris they are de-limed in a vat of acid. Next the hides are treated with enzymes that smooth the grain and help to make them soft and flexible. The hides are now ready for the 'tanning' process. There are two ways of tanning – vegetable tanning and mineral tanning. Which type is used depends on the hide itself and the product intended. Vegetable tanning produces flexible, but stiff leathers that are used in luggage, furniture, belts, hats and harnesses. Mineral or chrome tanning is used on skins that will be used for softer leather products, such as purses, bags, shoes, gloves, jackets and sandals. The skins then go through dyeing and rolling processes, which dry and firm the leather. The final step of the process involves finishing the skin. This is done by covering the grain surface with a chemical compound and then brushing it. Some leathers will show lots of imperfections after their final finishing, but they can be buffed or sandpapered to cover these up; after a period of prolonged buffing the leather becomes suede.'Splitting' the leather can also produce suede whereby the skin is cut into layers or splits with the outer or top layer being leather and then all the lower layers being suede. The higher-quality suede is in the upper layers.

Leather stretches but does not return to its original shape. DuPont has developed a fabric that is a fusion of leather and Lycra that has the properties of both. Napa is soft thin leather used for garments and can be made from leather skins or suede.



2

Hides and skins

Hides come from large animals such as cows, horses and buffalo, while skins are from smaller animals such as calves, sheep, goats and pigs.

Metal

Fibres can be drawn from metal rods; alternatively metal sheets can be cut into very fine strips. Metallic fibres can be used to decorate clothing; traditionally gold or silver strips were used but they are fragile and expensive, and silver tends to tarnish. Nowadays aluminium, steel, iron, nickel and cobalt-based superalloys are used.

1 Kenzo cow-hide skirt.

2 Sophie Copage leather design. The pattern is achieved through the application of heat.

Man-made

1 Man-made fabrics. Top row (left to right): spun rayon, tencel/lyocel, Nylon/ elastane, Nylon ripstop.

Middle row (left to right): silk/viscose/spandex /velour, nylon fusing, viscose, satin viscose.

Bottom row (left to right): polyester, polyester wadding, metallic silk.

2 Rory Crichton's *Strange I've seen that Face Before* textile design.

Man-made fibres are made from cellulosic and non-cellulosic fibres. Cellulose is extracted from plants, as well as 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 radical transformation in fabric production. Chemicals that had previously been used for textile finishing techniques began to be used to extract fibres from natural sources in order to make new fibres.

Cellulosic fibres

These are fibres that are derived from cellulose, but through chemical manufacturing processes are developed into new fibres.

Rayon

Rayon was one of the first man-made fabrics to be developed. The first rayon dates back to 1885 and was called artificial silk, due to its properties. The name rayon was not established until 1924. As it is derived from cellulose (wood pulp) it has similar qualities to cotton in that it is strong, drapes well and has a soft handle. Rayon has excellent absorbency, so it is comfortable to wear and dyes well. 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, known commonly as viscose. Lyocell and Modal are evolved from rayon.

2

Cellulose acetate

Cellulose acetate, more commonly known as acetate, was introduced during the First World War as a coating for aeroplane wings and was then developed into a fibre. It is made from wood pulp or cotton linters. Acetate shrinks with high heat and is thermoplastic, and it can be heat set with surface patterns such as moiré. It has the look, but not the handle, of silk. It does not absorb moisture well, but is fast to dry.

Tencel

Tencel was more recently 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, so the Tencel fibre is fully biodegradable. It produces a strong fabric that drapes like silk, with a soft handle.

Non-cellulosic or synthetic fibres

Germany was the centre of the chemical industry until after the First World War when the USA took over its chemical patents and developed its inventions. DuPont was one of the large chemical companies developing fabrics at this time. In 1939, DuPont was able to produce long polymeric chains of molecules, the first being the polymer nylon. This was the beginning of the development of synthetic fabrics.

Most synthetics have similar properties. They are not particularly breathable, so many are not as comfortable to wear as natural fibres. They are sensitive to heat, so pleats and creases can be set permanently, also fabrics can be glazed or embossed permanently. However, unwanted shrinkage and glazing can occur when a finished garment is pressed.

In general synthetic fibres are white unless they are first dyed. Synthetic fabrics have poor absorbency, which means they dry quickly, but it makes them difficult to dye. Dyeing at the fibre stage of production produces a very colourfast fabric, but it means that the fabrics produced in this way cannot respond quickly to fashion trends, as the colour is determined early on in production.

Nylon

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. It has very low absorbency so dries quickly and doesn't need ironing. Nylon is made from non-renewable resources and is non-biodegradable. 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.

Lycra is a form of nylon and was developed to use in lingerie, sportswear and swimwear.

Acrylic

DuPont developed acrylic in the 1940s. It has the look and handle of wool, but pilling can be a problem. It is non-allergenic, easy to wash, but sensitive to heat and melts under high temperatures.

1

1 Jean-Pierre Braganza A/W07. Mercury lurex jersey dress with leather collar.

2 Junya Watanabe dress made from 100% polyester. The dress is made from a continuous piece of fabric that wraps around the body creating a semi-opaque finished garment.

Polyester

Polyester is a strong, crease-resistant fibre developed in 1941 by ICI. It is the most widely used synthetic fibre and is most commonly found in blends where it is used to reduce creasing, softening the handle of the cloth and adding drip-dry properties. Polyester was introduced to the USA as Dacron.

Polyester is made from chemicals extracted from crude oil or natural gas by non-renewable resources and the production of fibres uses large amounts of water for cooling. However, polyester can be seen as an environmentally friendly man-made fabric; if it is not blended it can be melted down and recycled. It can also be made from recycled plastic drinks bottles.

2

Spandex

Spandex is a super-stretch fibre as it can be stretched 100 per cent and will return to its original length. It was introduced by DuPont in 1959 and is a manufactured elastic fibre; it has similar properties to natural rubber, which is a natural elastic fibre. Spandex is used to add power stretch or comfort to textile products. Power stretch provides garments with holding power and is often used in underwear or swimsuits whereas comfort stretch adds only elasticity.

Aramid fibres

DuPont introduced aramid fibres under the trade name Nomex nylon in 1963. The fibre is also known as Kevlar. The fibres have exceptional strength and are five times stronger than steel. They are also flame resistant, decomposing at temperatures of about 371ºC (700ºF). Kevlar is used for strength applications where the fabric needs to be light, for example, in bulletproof outfits. Nomex is used for its flame-resistance properties especially in military clothing and firefighting uniforms.

1 Rubber strips.

2 Shoe design by Marloes ten Bhömer incorporating a carbon fibre structure. The heels are positioned at the side of the shoe, making the wearer walk slightly differently, continuously moving the weight of the body from side to side.

New fibre developments

Chemists are now producing fibres from natural sources, changing their structure to produce superior properties. They are also developing microfibres and nanotechnology, which can produce fabrics with advanced properties that can react to the environment in various ways.

1

Odin Optim

Is a fibre developed by Nippon Keori Kaisha, Ltd in Japan, The Woolmark Company and the Commonwealth Scientific and Industrial Research Organisation. They have taken the wool fibre and altered its structure to produce a wool fabric that has superb drape and tactile qualities.

Azlon

This is a generic name for fibres regenerated from milk, peanut, corn and soybean proteins. Japan has produced a fibre made of milk protein and acrylic called Chinon. It resembles silk and is used for garments.

Spider silk or BioSteel

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. It is derived from protein in goat's milk and is trademarked BioSteel.

PLA fibre

This is a fibre that started being developed in 2001 under the trade name NatureWorks. It is derived from naturally occurring sugars in corn and sugar beet. The fibre is produced from a renewable source, needs little energy in production and is recyclable.

Microfibres

Microfibres are extremely fine fibres of one denier or less that have advanced properties. These fibres can be engineered into the construction of a fabric or can be used as a finishing coating. Microfibre properties may include being lightweight, tactile, water resistant, windproof or breathable and they are often used in sportswear and high-performance clothing. As their properties are integral to the fibre they will not wear or wash off. The microfibre Tactel is produced by DuPont and has great tactile properties; there are different types of Tactel all with their own advanced properties. Microfibres can be more expensive to manufacture so they are often mixed with cheaper fibres.

Microfibres can be produced with microcapsules that contain chemicals such as medication, vitamins, moisturisers, antibacterial agents, UV blockers or perfume. Chemicals in the microcapsules can be released on to the skin either by abrasion or as a result of heat given off by the body. Medication, vitamins or moisturisers can then be absorbed, imparting their benefits to the skin. However, these chemicals do get used up and gradually wash out of the fabric. Micro-organisms can also be incorporated that live off dirt and sweat, therefore maintaining cleaner odour-free garments.

2

X-static

Metals can be woven into fabrics to make them more malleable and they are often mixed with synthetics for their anti-static properties. The use of silver is being developed within fabrics as a result of its antibacterial properties. X-static is produced by Noble Fiber Technologies and bonds silver to the surface of another fibre to give it advanced properties.

Nanotechnology

Nanotechnology works at a molecular level, ultimately creating extremely intelligent and sophisticated fabrics that could be used in garments to change their colour, structure and even size. Currently nanotechnology is used for producing finishings for fabric, for example, Schoeller has developed a dirt-resistant coating for fabrics.

Yarn

Most fibres go through a process that produces a yarn, which then goes through a construction process to produce a fabric. (Non-woven fabrics go from fibre straight to fabric – this will be discussed in the next chapter.)

The way in which a yarn is produced is related to the texture, functional properties, thickness and weight of the final fabric. Yarn producers also look to trend and colour predictions when producing and developing yarns.

1 Shown anticlockwise (from top right): raw, unfinished sheep's wool fleece; spun wool; raw cotton (cleaned, but as grown from the plant); raw cotton (cleaned), carded and straightened; spun cotton yarn; elastane/lycra yarn; raw viscose rayon fibre (which is wood pulp dissolved and regenerated as viscose fibre); polyester yarn polymer chips melted and extruded as a continuous filament; linen yarn from flax plant; raw silk yarn spun from silk cocoons.

2 Shown from left to right: linen loop; wool loop; crêpe; tape; mohair; linen; raw silk; silk; cotton slub; wool slub; chenille.

Denier
This is the thickness of man-made fibres. The higher the denier the thicker the fabric.

Cotton count
This is the numbering system for cotton yarns. The lower the number the thicker the thread. Sewing thread is normally 40.

Crêpe
This is highly twisted so that the yarn curls up, producing a crinkled surface in the finished fabric.

Bouclé
One yarn is wrapped around another yarn with a looser twist, which gives a pattern of loops, or curls, along its length. Fabric made from this yarn has a characteristically knobbly surface.

Slub
This is when some parts of the yarn are left untwisted.

Chenille yarn
Extra fibres are added into the twisted yarn to create this.

Nepp
Small pieces of coloured fibres are added that show up in the finished yarn.

Yarn production

During fibre production, synthetic fibres are put through a spinning process during 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 during this process.

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

Spinning is also the name given to the process of twisting staple fibres together to make yarn. Yarn is twisted during the spinning process; the twist holds the short fibres together and contributes to strength. Yarn for weaving is tightly twisted to make it strong, while yarn for knitting is twisted more loosely to make it stretch. It also has better absorbency and a softer, warmer handle.

A single yarn is one yarn twisted, ply yarns are two or more single yarns twisted together. Two-ply yarn is two yarns twisted together and three-ply is three yarns twisted together. Ply yarns are stronger than single yarns.

Yarn can also be twisted and textured to enhance its performance or aesthetic qualities. Synthetic yarns can be heat set during manufacture to produce a texture.

Blending

It is common to blend yarns to provide optimum qualities in a fabric. Aesthetically a blended yarn may have a better handle and drape, and blending can also add function or reduce the cost of a fabric. Synthetic fibres are often 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; this is especially suitable for performance sportswear. Blending can occur during fibre production, yarn formation or in the processes of knitting and weaving.

Dyeing

The colour of a fabric can inspire, motivate and attract a designer or consumer to a particular article of clothing. There are also other aspects that can enhance a garment, such as a particular novelty dyeing effect or specialty coating that creates a look or feel that is unique and desirable. A dye is a colouring matter that works as a stain. It is absorbed into the fibres of a textile; the colour is not as easily worn away as a colour applied to the surface such as pigment or paint. Colour can be applied with synthetic or natural dyes at fibre, yarn, fabric or finished garment stages of production. If a garment is to be dyed, first test it 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 to make sure all the parts of the garment will react to the dye, for example, the thread, zips, elastic and other trims. Fabric should be washed to remove any coatings before the dyeing process, as this will allow for better absorption. Remember that the original colour of the base cloth will affect the final dyed colour. Fabrics can be cross dyed for interesting effects, for example, a fabric composed of silk and viscose fibres could be dyed with acid and direct dyes respectively. Most dyes can be used for printing fabric when mixed with a thickening agent.

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1 An example of a dye book.

2 A design from Alexander McQueen's S/S99 collection. Catwalking.com.

The water droplet test

Natural and synthetic fibres/fabrics contain impurities such as oils and starches, and may also have been subjected to finishes applied during production that can stop the successful absorption of dyes. A simple method for checking the purity of a fabric to be dyed involves applying a droplet of water to the surface. If it is quickly absorbed there are no or few impurities or coatings on the fabric. If the water remains on the surface the fabric will need to be washed before dyeing.

Natural dyes

Dyes originally came from soil, plants, insects and animals. For example, cochineal was obtained from the body of the female cochineal beetle and was used to produce red dye, while Tyrian blue was produced from shellfish. Some dyes sourced from natural dyes produce a subtle colour, but their light and colourfastness is not as good as synthetic dyes. Natural dyes use renewable sources, however, many need a huge amount of natural products to produce a small amount of dye. Also many natural dyes need mordants to fix the colour and these can be harmful to the environment. There are two kinds of natural dyes, adjective and substantive.

Adjective dyes need a mordant to help the cloth absorb the dye. The dye must form strong chemical bonds with the cloth to set the colour permanently. The mordant enters deeply into the fibre and when the dye is added the dye and the mordant combine to form a colour; since the mordant is thoroughly embedded, so is the colour.

Substantive dyes do not need mordants during the dyeing process to make the fabric light and wash fast. Indigo is the best known of these dyes.

Mordants
These prepare the fibre to receive the dyestuff and help the bonding. Most mordants come from minerals such as tin, chrome, alum (potassium alum), iron (ferrous sulphate) and tannin (tannic acid).

Natural mordants include mud, rushes, fungi, fruit peel and urine. The use of different mordants with the same dye can produce a variety of colours.

1–2 Viktor & Rolf S/S05. Half the collection was shown in shades of black and the second half in shades of pink. Catwalking.com.

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Synthetic dyes

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 worn by royalty; it was a difficult and expensive colour to produce as it was extracted from the mucus of molluscs. Fortunately, a young chemist named William Perkin accidentally 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, and as a response to new fabrics that are being invented.

There are a wide variety of synthetic dyes formulated for different fabric types and for specific effects. Synthetic dyes tend to have a better light and wash fastness than natural dyes.

Acid dyes

The first synthetic dyes developed for wool were acid dyes. This class of dye has since grown into a large, diverse, versatile and widely used group. Some acid dyes may also be used for dyeing other protein fibres, including silk and also nylon or polyamide (at a higher temperature), which have a similar structure to protein fibres.

The term 'acid' refers to the fact that acid or an acid-producing compound is used in the dye bath. There are different types of acid dyes including levelling and milling acid dyes. Levelling acid dyes are available in a range of bright colours and have good light fastness, but their wash fastness is only moderate. Milling acid dyes are also available in a range of bright colours and have good light and wash fastness, but are more difficult to apply correctly than levelling.

Direct or substantive dyes

These are suitable for dyeing cellulose fibres such as cotton and linen, but can also be used on silk, leather, wool and cellulose-mix fabrics. The first direct dye was called Congo red and was introduced in 1884. It was called a direct dye because it was the first dye to become available for colouring cellulose 'directly', without the use of a mordant. However, the addition of common salt (sodium chloride) or Glauber's salt (sodium sulphate) improves the take up of dye. If wool or silk is dyed then acetic acid is added instead. Direct dyes are simple to use and come in a wide range of colours, albeit not very bright colours. The resulting dyed fabrics have poor wash fastness, so direct dyes are rarely used for printing.

Basic dyes

Basic dyes were the first synthetic dyes to be developed, for example, Perkin's aniline dye. They have poor light and wash fastness and are not often used today except to dye acrylic fibres.

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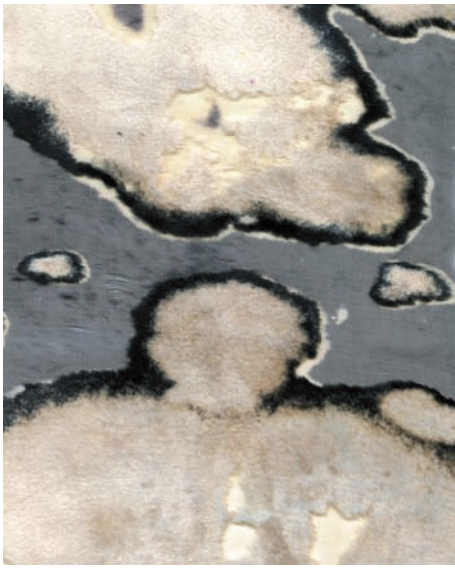


Dye classes

Different dyes are suitable for different fibres:

Cellulosic
Direct, reactive, vat, natural.

Wool
Acid, reactive (some).

Polyamide
Acid, reactive (some).

Acrylic
Basic, disperse (some).

Polyester
Disperse.

Cellulose acetate
Disperse.

Nylon
Acid, disperse.

Disperse dyes

Disperse dyes were introduced in the 1920s to dye acetate fibres, which were otherwise undyeable, with the notable exception of the natural dye logwood black, which was already being used on silk and wool. Nowadays disperse dyes are mainly used for polyester fibres, but are suitable for most synthetic fibres. They are applied at relatively high temperatures so are not suitable for use on fabrics that are mixed with wool as the wool may felt. Disperse dyes have brilliant light-fast properties.

Reactive dyes

Developed in the 1950s, reactive dyes were the first dyes produced that chemically reacted with the fibre (usually cellulose) under alkaline conditions. The dye thereby becomes part of the fibre, rather than merely remaining an independent chemical entity within the fibre, which gives the fabric good wash and light fastness. Dyeing takes place in alkaline conditions normally through the addition of sodium carbonate. Common salt or Glauber's salt is also added, which helps the fabric take up the dye evenly. Variations in the amount of alkali and salt produces lighter or darker colours. Reactive dyes are suitable for dyeing cotton, linen and silk and are often used for printing. These dyes were first marketed by ICI in 1956 as Procion dyes.

Pigments

Pigments are used for printing fabrics when mixed with the appropriate binder or thickening agent. They are easy to apply and do not need to be washed afterwards to remove the binder. This, however, means the printed area can be slightly stiff to handle.

Vat pigments

These are actually pigments that are insoluble in water. In order to apply them to fabric they must first be subjected to a process of chemical reduction known as 'vatting', which makes them soluble. They can then be absorbed into the cloth. The fabric is then exposed to the air or treated with an oxidising compound, whereby the reduced soluble form of the dye is reconverted to its original insoluble pigment form in the fibre and so is not liable to be removed by washing.

Multi-purpose dyes

Dyes produced for home use will dye most fabrics as they contain a mixture of dye types. They can be used in hot or cold water and some are ready to use in the washing machine.

1–2 Print samples by Mika Nash. These sample have been created by first dyeing the devoré velvet with direct dischargeable dyes. Discharge paste is frozen into ice cubes then placed on the fabric and allowed to melt. When dried the fabric is turned over and printed with devoré paste; the dye sets and also acts as a resist to the devoré.

Dyeing effects

Dyeing techniques can be used to create pattern. Certain techniques employ the use of resists that are applied to the fabric and act as a barrier to the dye. When the fabric is dyed the resist is then removed and the fabric is left with a negative pattern.

1–2 La Petite S***** A/W07. Silk satin and black organza dip-dyed dress. The design features a side seam that allows the organza layer underneath to be seen in between the sides of the baby-locked silk top layer.

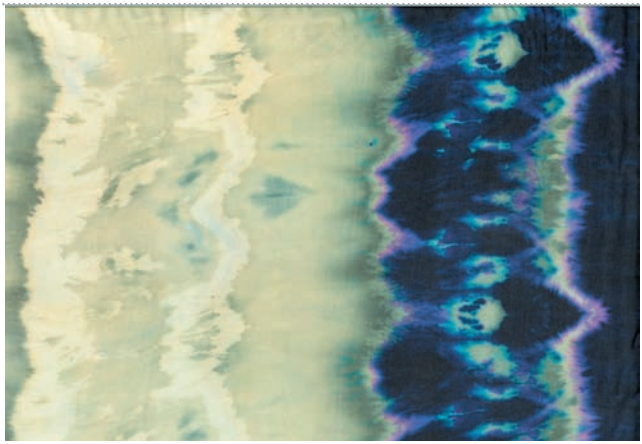
3–4 Tie-dye textile samples by Furphy Simpson.

1

2

Tie-dye

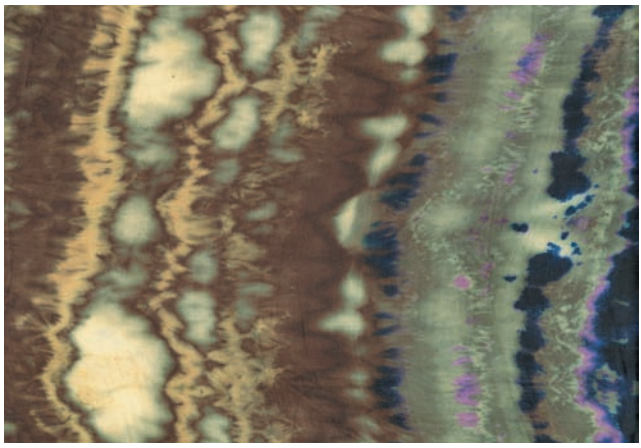
Tie-dyeing involves tying twine around areas of the fabric before dyeing; the twine prevents dye from penetrating the cloth. When the fabric is untied and dried, undyed areas form a pattern on the fabric. Fabric can also be stitched before it is dyed. The stitches are pulled tight, which creates areas where the dye cannot penetrate. Fabrics can also be gathered or folded first, creating interesting effects. Tie-dyeing has an interesting history as it has been used since ancient times – the Japanese call it 'shibori' and the craftspeople of one region have developed numerous, beautiful designs.



3

Starch and batik

Starch and wax can be used to paint and draw designs on to fabric. The starch or wax is left to dry and the fabrics are dyed. The starch is then flaked off or with the wax-resist technique (batik) the fabric is boiled and the wax melts off.



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Ikat

The warp or weft threads are tied with twine and then dyed, leaving a pattern where the twine was. When the warp or weft is woven into cloth it creates an ombré effect. A double ikat is produced when warp and weft are both dyed and woven together.

Colour testing

Companies test textiles under specific conditions for their colourfastness. The colour in swimwear must be fast to seawater and the chlorinated water found in swimming pools. Equally a blouse worn next to the skin should not discolour as a result of perspiration. Because of the wide range of end uses for coloured textiles, many tests have been developed to assess fastness. Testing involves comparing a dyed sample that has been exposed to an agency, for example, to light or to washing, with an original, to assess accurately any change in shade or change in depth of colour. Changes are accepted up to an agreed level depending on the end use of the dyed material, but if these levels are exceeded the product fails the test. During washing fastness a coloured sample is tested with white fabric to assess the extent of staining. Fastness to light is, in fact, a measure of the ability of the dye molecule to absorb radiation without being destroyed. In a dye with poor light fastness the molecule will be broken down by the absorbed radiation. No dye is completely fast to light, but it should not fade appreciably during the life of the article that it colours.

Finishing processes

1 Junya Watanabe S/S08 menswear jacket with a shrunken wash finish. Catwalking.com.

2 Emma Cook A/W07 knitted cashmere mix cardigan. Parts of the knit, including the collar, have been boiled to create an interesting effect.

Mechanical and chemical finishes can either take place at the fibre stage of the development of the fabric or on the actual finished surface of the textile. Processes can be used to add extra properties to a fabric or garment for visual, tactile or functional effect. Finishes can last the lifetime of a fabric or may wear off with time.

1

Basic finishes

These processes are necessary to prepare a fabric for dyeing or printing. Cleaning removes starch, dirt or grease after weaving or knitting. Desizing removes substances added to yarn before weaving to make the yarn stronger. Calico is not desized and as a result has a stiff handle. Scouring removes impurities from wool.

Bleaching cleans and whitens manufactured fabric and can improve the dyeing process. During the stentering process the fabric is pinned along its selvedge and stretched to realign the warp threads to their perpendicular position. You can see the pin marks down the selvedges of fabrics that have been stentered.

The milling process incorporates felting (a process where moisture, heat and pressure is applied to a fabric) causing wool fibres to matt to improve the handle of the cloth. The singeing process makes a fabric smoother as the fabric is passed over a flame and excess fibres are burnt off. Mercerization is usually used on cotton fabrics. Here chemicals are added to the fabric that increase the fibre's lustre. It also makes the fabric stronger and more susceptible to dye. Fabrics can be treated with optical brightening agents that are colourless fluorescent dyes; these react to UV light making white fabric look whiter.

Aesthetic finishes

Aesthetic finishes help give a fabric the right feel or look. A fabric could have a high-tech finish added to it that makes it look more modern or it may be that its finish could be a wash process that makes the fabric look older. Putting a finish on a mixed-fibre fabric can create interesting effects as the fibres may react in different ways to the finish. For example, one fibre may shrink on heat, while the rest of the fabric remains static therefore creating a crumpled or embossed surface. Chemical processes can change the tactile quality of the fabric, becoming soft and velvety or maybe papery and dry to the touch. Brushing the back of looped-back jersey sweatshirting will produce a fabric that now traps air and will insulate better. Felting occurs when a fabric is heated or mechanically manipulated, causing the fibres to shrink and distort the fabric. During the calendering process a fabric passes between heated rollers producing a flat glossy surface. A moiré finish also can be achieved using patterned rollers; the pressure and heat used produces a higher lustre.

Pleating

1 Abercrombie & Fitch shorts with 'wash' effect.

2 Barbour waxed cotton coat.

Washing 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. Permanent crinkles and pleats can be achieved on most synthetics and wool fabrics through applying heat and shaping as the fibres are permanently changed. This can also work on fabrics that are a high blend of synthetic. The hand-pleating process involves the fabric being placed between two already pleated textured cards; the cards are then rolled up and put into a steamer. The resulting fabric takes the texture of the pleated cards. The Siroset process is used for wool and can be applied to specific areas of a garment to create a press line. A chemical is sprayed on to the front trouser leg and then steam pressed.

Issey Miyake signature pieces are made from thermo plastic polyester jersey. The garments are made first then pleated, which changes the garments' dimensions. As the garments are so stretchy due to the pleats there is no need for zips or buttons. The flat construction of the garments has reference to the kimono.

Washing

Stonewashing was a hugely popular finish in the 1980s and was the fashion style of choice for numerous pop bands of that era. Stonewashing is achieved with the aid of pumice stones, which fade 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, is 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 laser gun to target specific areas where fading and distressing is required. Lasers can also be used to produce precisely faded areas on a garment.

1

Performance finishes

Chemical and/or mechanical processes can alter a fabric for a functional process. Fabrics can be flame proof, stain repellent, anti-static, non-iron, moth- or mould-proof and can even be treated to reduce UV ray penetration. The use of new microfibres is being developed in this field.

Bacteria

Chemical treatments can also control the growth of bacteria on a fabric therefore reducing odour. Teflon-coated fabrics also provide an invisible protective barrier against stains and dirt – useful for practical, easy-clean garments.

Breathable

Breathable waterproof fabric is produced by applying a membrane to the surface that contains pores big enough to enable perspiration to escape from the body, but small enough to stop moisture droplets penetrating. GORE-TEX® is a superior example of this kind of fabric. The GORE-TEX® brand was first developed as light, efficient insulation for wire on Neil Armstrong's early space mission. (Teflon is used to produce GORE-TEX®). It was then developed and registered as a breathable, waterproof and windproof fabric in 1976. It is now used widely for its properties in outerwear and sportswear.

2

Reflective

Laminates applied to a textile give the cloth a new property and function. They can be visible or non-visible, while holographic laminates reflect and refract the light.

Waterproofing

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. Natural oils left in the wool of a fisherman's jumper acts as a naturally-occurring waterproofing layer.

'It is a freedom to be able to make your own fabric while you are working.'

Sandra Backlund

In order to transform lengths of yarn into fabric to wear, the yarn must go through a process of construction; the two main fabric constructions are knit and weave. Other types of construction include crochet, lace making and macramé. Fabric can also be made directly from fibres and solutions. Tyvek is made from the matting together of fibres to make a paper-like fabric. Mass-produced shoulder pads are made from foam that comes from a solution. Leather and fur are probably the oldest types of 'fabric' that have been used by humans to clothe themselves. They are not constructed, but are cut from the animal as a skin.

When looking at fabric construction it is important to consider what properties a certain technique will give to a fabric and ultimately the finished garment. A knitted fabric will tend to be used for its comfort stretch and ease of fit. A woven fabric may be used when a garment needs structure and stability, whereas a lacy fabric could be used for its decorative qualities. However, a knitted fabric can be structural if knitted and then felted. A woven fabric can be stretchy and comfortable if woven with Lycra and can also be decorative if produced on a jacquard loom.

1 Prada womenswear A/W07 featuring experimental fabrics. The cardigan is made from plasticised mohair. The outer side of the knit is sprayed with a plastic substance then heat-pressed to give it a shiny and puckered appearance, although it remains soft and supple. The skirt's satin fabric is woven with elastic yarn. When heat-pressed, the elastic shrinks causing the fabric to crinkle and pucker. A herringbone fabric is fused with silk satin then through a needle-punching process areas of the herringbone are brought forward through the satin cloth.
Catwalking.com.

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Weave

Structure variations

There are many variations in the structure of plain-weave fabrics:

Ribbed
This is created by grouping warp or weft yarns or using thicker yarns in areas of the cloth.

Basket weave
Is a loosely woven fabric achieved by alternately passing a weft under and over a group of warps so the weft lies over the warps. This is repeated to produce a square pattern in the fabric.

Seersucker
Here the warp is held at different tensions, one set of warp yarns is held tight with the remaining yarns held slack. As the weft is inserted across the warp a puckered effect is created by the looser warp yarns.

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'. If the grain is not at 90° the fabric is said to be 'off grain' and may not hang or drape properly, which can cause problems when making up a garment. The warp is stretched on to a loom before weaving; this means there is more 'give' across the width of the fabric where the weft is woven across. The warp is sometimes coated with starches to increase the strength of the yarn; these starches are washed out in a finishing process when the fabric is woven. The loom traditionally had a shuttle carrying yarn back and forth under and over the warp yarns. This process can still be seen in today's production methods. Newer shuttleless looms use air or water jets to propel the weft yarn across the warp at incredibly fast speeds. These machines are a lot quieter than traditional looms. The weft yarn is not continuous, but is cut to length before it is passed across the warps. Looms can be circular, producing a tube of fabric, and also double-width, producing two widths of fabric at the same time – denim is often woven in this way.

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.

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Plain weave

1 Marios Schwab A/W07 layered silk-chiffon dress. The chiffon is a plain weave construction.

2 Plain weave structures. Shown top row (left to right): plain weave, plain weave with chintz finish; basket weave waffle, rib.

Middle row (left to right): cotton voile, georgette; silk organza, chiffon.

Bottom row, (left to right): searsucker canvas; chambray, gingham.

Plain weave is constructed from a warp and weft that is similar in size. During the weaving process the weft is passed over alternate warp threads to create the fabric and is usually closely woven. Basic plain weaves have a flat characteristic and are good for printing and techniques like pleating and smocking. Using different yarn weights and tensions creates variations to the plain weave.

Plain weave fabrics

Calico
A plain cotton fabric that has not gone through a finishing process. It therefore still contains starch from weaving and has a slightly stiff handle.

Canvas
A heavyweight tightly-woven cotton fabric.

Chambray
A medium-weight fabric with white warp yarns and coloured weft yarns of cotton or cotton mix origin.

Chiffon
A lightweight soft fabric.

Gingham
Features a small check weave structure usually made up of two colours.

Muslin
A lightweight soft-handled plain weave, usually white or unbleached cotton.

Organdy
A sheer, crisp lightweight cotton.

Organza
A sheer, crisp, lightweight cotton made from filament yarns, for example, silk or synthetic yarns.

Voile
A lightweight fabric made with two-ply warp in cotton, cotton mixes or man-made fibres.

Twill weave

1 Peter Jensen A/W07 wool tweed jacket and skirt.

2 Twill and satin weaves. Shown top row (left to right): silk cotton twill, twill, cotton gaberdeen, drill.

Middle row (left to right): denim, tweed, herringbone, houndstooth,

Bottom row (left to right): polyester satin, silk satin, cotton sateen.

During the twill weave process 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 diagonal lines on the surface of the fabric; these lines are called wales. The wale can run at various degrees across the fabric; a regular twill runs at a 45° angle, while a steep twill runs at more than 45°. Twill lines or wales can also run from left to right, a right-hand twill, or right to left, a left-hand twill. Wales can show on one side of the fabric or can show equally on the front and back of the fabric. Twills are usually closely woven and are strong and hardwearing fabrics.

Twill weave fabrics

Chino
This has a steep twill and is made from combed or two-ply yarns.

Denim
Usually made from yarn-dyed cotton or cotton blends.

Drill
A dyed medium- or heavyweight fabric.

Herringbone
An even-side twill where the wale regularly reverses to form a chevron pattern.

Tweed and houndstooth
Twills using different coloured yarns and weave structures to create pattern.

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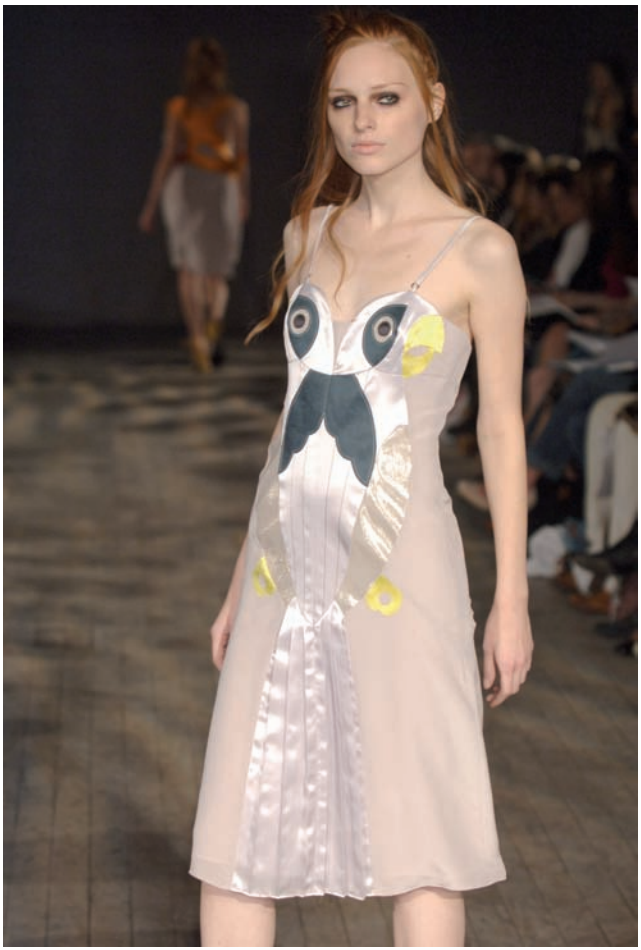
Satin weave

Satin weave has visible sheen and feels smooth, due to a tightly woven weave structure that allows yarn to lay across the surface of the fabric. The warp is woven to lie on top of the weft or vice versa. Satin weave fabrics are often used for lining as they glide easily over other garments.

3 Peter Jensen A/W07 silk satin top incorporating pearl necklace detail.



4 Spijkers en Spijkers S/S06 silk satin panelled dress.

Satin weave fabrics

Double-faced satin
The front and back have a smooth satin line finish as the fabric is woven with two warps and one weft.

Crêpe-back satin
The fabric is woven with a high-twist crêpe yarn that shows on the back and a lower twist yarn that shows a smooth satin finish on the front.

Sateen fabrics
These are made from spun yarns, usually cotton.

Satin fabrics
These are often made from filament yarns with low twist.

Other weave structures

The three basic weave structures can be varied to produce more complicated weave structures.

Pile fabrics

These are woven with extra yarns to the basic warp and weft, which create floats or loops that can then be cut, for example, corduroy, or left as loops, as in towelling.

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, patterns or colours. This kind of fabric is reversible so that either side can be used as the outer layer of a garment. Sometimes the fabric is connected all over or it may be just connected in some parts creating pockets and puckers.

Pile fabrics that show pattern

Corduroy
Extra weft yarn is woven leaving regular floats, which are cut and brushed up to form piled lines working down the fabric that can be of varying thicknesses. Fine lines are known as needle cord, large lines as jumbo cord.

Towelling
This is created by slack tension weaving, which creates loops on the surface of the cloth in a similar way to the construction of seersucker as discussed earlier.

Velveteen
A fabric with an all-over cut pile, usually made from spun yarns.

Other weave structures

Brocade
Usually using different coloured yarns to produce a highly patterned fabric with many floats on a plain, satin or twill base.

Damask
Usually constructed in one or two colours in a similar way to brocade.

Jacquard
Creates patterns and textures through a complicated weave system in which warp and weft threads are lifted or left. Often long floats occur on the fabric that can catch and snag.

Dobby
These weaves have small repeated geometric patterns in their structure.

Pique
The dobby weave is used to create a surface pattern.

Spot weaving
Yarns are added to the basic warp and weft to create pattern and texture in places.

Waffle
A dobby weave that produces a honeycomb pattern.

Engineered weave

It is interesting to consider engineering pattern, colour or function in a weave. An elastic yarn could be woven across the width of a fabric to change its construction. The elastic when released would constrict, bringing the fabric in. This could then be cut and incorporated into a garment that when placed on the body would tighten to fit it in specific areas. Computer-aided weave can produce fabrics with many layers and surfaces. In jean production sometimes the denim is woven narrow so that the selvedge edge can be incorporated into the trouser leg. It is the finished edge to the inside seam.

Shape-memory alloys, such as nickel and titanium, can be woven into fabrics so that the fabric regains its shape with the application of a certain temperature. This principle is used in the production of bras; the wire in the cup retains its shape and bra structure when the bra is put through the washing machine.

2

3

Double-cloth fabrics

Melton
Usually wool produced in the double-cloth process, but not cut through afterwards, which produces a heavy fabric suitable for outerwear.

Velour
A woven fabric or felt resembling velvet. Produced using the same process as velvet construction, but made usually from cotton yarn.

1 Other weave structures. Shown left (top to bottom): silk, velvet, cotton velvet, jumbo cord, needle cord.

Middle (top to bottom): ripstop dobby patterns, cotton spot weave with cut threads, wool double cloth.

Right row (top to bottom): jaquard, moleskin, resin-coated cotton, crêpe.

2 Eley Kishimoto A/W07 dress featuring an engineered weave in the design.

3 Evisu jeans with a selvedge edge used in leg seam.

Knit

Knitting dates back to the Egyptians, but was really developed into an industry in Europe in the early 16th century. Knitting machines were developed in the second half of the 18th century due to the demand for patterned stockings and following the invention of the rotary knitting machine, tubular knitting could be produced for hosiery.

In the 19th century British sailors and fishermen developed styles of knitting that incorporated pattern and texture that are still well known today. Fishermen's Guernseys or 'ganseys' originated in the Channel Islands in Guernsey and at one point a fisherman's region of origin could be identified by the pattern of his Guernsey. Texture was important, often incorporating cables that looked rather like the fishermen's ropes. An Aran knit was originally cream and heavily embossed with cable, honeycomb, diamond and lattice patterns. The patterns were handed down from generation to generation often just visually rather than being written down as a pattern.

Fair Isle is a term that is used to describe patterned knitting in multicolours. It should, however, really be used to describe the specialised colours and patterns used in Shetland knitting; Fair Isle is an island south of Shetland. Shetland is positioned between Scotland and Norway and the influence of a folk-style motif is apparent in Fair Isle patterns; the motifs tend to work in bands on the knit and are not random. Shetland sheep produce fine soft-quality wool that is not clipped from the sheep, but plucked by hand. The wool is available in a variety of colours such as white, cream, fawn, grey and black. The wool is also dyed with lichens to achieve soft rose, pale yellow and purplish browns. Patterns from other European countries tend to be more bold and graphic than British designs. The Bjarbo pattern from Sweden was traditionally worked in red and blue on cream ground. Scandinavian designs also use small figures on a light ground and an eight-pointed star was common in Norwegian designs.

In the late 19th and early 20th century fashions changed and women and men began wearing jumpers and cardigans and other knitted garments for day, evening and more importantly for sports. With the increase in leisure time in the 20th century, knitted fabric has become increasingly important for sportswear as it is stretchy, comfortable and absorbent.

1 Knitted socks.

1

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 are known 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, with the construction being more complicated and the fabric less easy to unravel.

Knitted fabric tends to be comfortable to wear as it is stretchy, but this can also mean that it can stretch out of shape and can shrink with heat, especially if it is made from wool. Knitted fabrics tend to be more prone to pilling than woven fabrics. This is because loosely spun yarns are often used for knitted construction and these pill more than tightly spun yarns. Different thicknesses of knitting can be produced according to the stitch used, the size of the needles and the thickness or the count of the yarn. Knit finishes can change the quality of the fabric. For example, softeners can be used to improve the handle of the cloth. Washing at a high temperature and using friction can cause woollen knit to felt, which in turn causes the fibres to matt together making the knit denser and less stretchy.

Gauge
The number of rows and/or stitches per length/width of a knitted fabric. For example, five stitches per inch.

Basic stitches

Texture and pattern can be created by knitting with different needles, yarns, colours or stitches. Stitches add decorative quality, but they can also benefit the physical quality of a knit, for example, the use of tuck stitch or cable increases the density of the fabric. It is important how the swatch looks, but also how it feels and how it drapes. Experiment with stitches, techniques and tensions to create something unique. Knit can be embroidered to highlight areas and beads can be inserted into stitches for a more decorative effect.

Slip or float stitch

These are used to create patterns or change colour within a piece of knitting. The yarn is stitched then floats across the back of the fabric before it is used again. It is best not to allow the floats to be too long as they tend to catch and cause snagging. These floats also restrict the stretch of the fabric and make the finished knit heavier. Fair Isle and jacquard incorporate this method to create pattern. The wrong side of the fabric can be used as the right side and the floats can be cut, again for decorative effect.

2

Intarsia

Pattern is created with yarn changes, but the yarn does not travel across the back of the fabric creating floats, which means that larger colour blocks can be used in a design.

3

1 Sonya Rykiel S/S08. Knitted garment featuring graphic details of a macintosh coat, including a belt, collar and pocket.

2 Winni Lok knitted sweater using the right side of the fabric on the front of the jumper and the wrong side with floats on the back.

3 Vintage Sonya Rykiel Marino wool intarsia pattern jumper.

Tuck stitch

The stitch is held on the needle as the rest of the piece continues to be knitted creating a pulled or tucked effect. Small honeycomb patterns to larger bubbled or puckered effects can be created and both sides of the fabric can be used showing either a bubbled look or indent.

Partial knitting

Needles are selected so some stitches are knitted and others are held on the needles. This is used for decorative effects and also for shaping garments for a dart or flare.

1

1 Vintage Tao Comme des Garçons 100% polyester blister effect top.

2 Kenzo cardigan.

3 Marc by Marc Jacobs jumper.

4 Clare Tough hand-knit.

Lace stitch or stitch transfer

A stitch is transferred to another needle, creating a hole as the knitting continues. Single or groups of stitches can be transferred from needles by hand using a transfer tool to create interesting patterns. Lace knitting has been produced in Europe since the 15th century, but did not become popular until the 18th century when fine cotton was imported from the East. It was known as white knitting as the yarn used was predominantly undyed.

2

Cable knit

Stitches are transferred across a knit creating raised twisted groups of stitches. Cables are used more commonly in hand knitting as raised three-dimensional designs can be created, however, they can also be created on the V-bed machine. Wool yarn is good for this technique as it is elastic and will allow stitches to stretch during transfer.

3

Inlay

A yarn is woven or laid on to the knit and the stitches catch it down. The laid yarn does not make loops as normal knitting does, so it tends to make the knitted fabric less stretchy. Yarns that would normally be too thick, thin or maybe too textured to knit with, can be successfully incorporated into knit using this method.

Hand knitting

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. It is possible to create a fabric very quickly with thick yarns and large needles. It is also a very transportable means of constructing a fabric as it can be carried around and worked on in any location.

4

1

2

1–2 Dubied and domestic knitting machines.

3 Shown from top to bottom: airtex, single jersey stripe, interlock, piqué, loop back sweatshirting, fleeceback sweatshirting, rib.

4 Christian Wijnants 2007, silk stretch jersey dress with marble wall digital print.

Machine knitting

Originally, knitting was produced by hand, but this developed into machine knitting for mass production. Yarn can be knitted flat or circular and as a length of fabric or fashioned to fit – knitted socks are an example of fully fashioned machine knitting.

Punch cards are used on domestic machines to select needles more quickly than by hand in order to create pattern and texture. The card is fed into the machine and row-by-row selects needle positions. Pre-punched cards can be bought or cards can be punched for specific designs. Computer-linked jacquard and knitting machines can produce very intricately patterned fabrics from drawings and photographs through complicated needle selection, and designs can also be worked across a large area. The use of CAD also allows knitting designs to be changed quickly and respond to fashion trends.

It is important not to use a yarn that is too thick for the capacity of the machine, otherwise it will jam up or the yarn will snap. A thicker yarn could instead be laid into a design. Certain yarns that are darker may knit in a different way to paler yarns as the dye has altered the properties, making them less elastic. Wool is one of the best yarns to knit with as it recovers its shape well after stretching or distorting. In contrast, cotton can be hard to knit with due to its inelastic quality and it is more liable to break.

Shaping aids are used with domestic machines to allow the knitter to quickly and simply create shaped knitting without having to manually count stitches and rows.

Machines have beds of horizontal needles with each needle producing a column of stitches (wale) in the fabric. Single-bed machines have one set of needles all working in the same direction producing stocking stitch. Double-bed or V-bed machines have two sets of needles set opposite each other and produce double-knit or rib fabric. Examples of electronic machines are Stoll, Shima Seiki and Protti. Dubied is a hand-operated knitting machine.

One-needle bed

Single-jersey knit has a front 'knit' and a back 'purl', and is produced when using one bed of needles. This fabric can be heavy- or lightweight, can ladder and run, and tends to curl when cut. Sweatshirting is a heavier knit, the back of which is looped and brushed to achieve a fleeced effect.

Two-needle bed

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, or a 1x1 rib.

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. Due to their construction they have greater stretch. Ribs can also be used to produce a whole garment. A 2x2 rib has two columns of knit stitches and then two columns of purl stitches alternating across the fabric, 3x3 would have the corresponding number of stitches and so on. Rib knits are more elastic than single-jersey knits.

3

4

Circular knitting

Circular machines produce a tube of knitting. They are very fast as they continuously knit and one row can be started before the last row has finished. The fabric, however, can twist due to the manufacturing process. If a flat piece of fabric is needed, the tube is then cut through and the edges sealed before being processed as it has no selvedge and would otherwise run.

Warp knits

Warp knits are usually created on a flat knitting machine and this is the fastest way to produce fabric from yarn. The main makes of machine are Tricot or Raschel. Tricot knits tend to use fine yarns and produce smooth, simple fabrics, whereas Raschel knits are more textured and have open work designs in heavier yarns. Fine nets, laces and powernet fabrics are produced on a Raschel machine.

New research in warp knitting has resulted in the creation of seamless garments. Issey Miyake is known for his A-POC (a piece of cloth) tubular clothing where garment shapes are cut out of a knitted tube length, each garment featuring cut lines that when cut do not run or ladder. The wearer interacts with the garment and can customise it using the cut lines to their specific requirement.

Other forms of construction

Types of lace

Alençon
A needlepoint lace. A fine corded pattern worked on a mesh background.

Chantilly
A very delicate intricate lace often featuring flowers or vines.

Cluny
French bobbin lace.

Rose Point
A needlepoint lace with elaborate raised patterns.

There are many other fabric constructions other than knit and weave, and they can be used to produce a variety of fabrics ranging from decorative, handcrafted looks to functional and technologically advanced creations.

Knotted and twisted

These techniques can be seen as more craft based. They involve a yarn or yarns that are twisted and knotted together to produce fabrics that are decorative and have an open structure.

1 A vintage crochet top.

2 Different lace samples.

Crochet

The word crochet comes from the French word *croc*, meaning hook. Stitches are made using a single hook to pull one or more loops through previous loops of a chain. This construction can be built up to form a patterned fabric. Different from knitting, crochet is composed entirely of loops made secure only when the free end of the strand is pulled through the final loop. Crochet hooks vary in size so they can be used to produce different structures of fabric. Fine needles and yarn create a lacy fabric, while thicker needles and hooks create a more solid fabric. Textures can be created by either wrapping yarn around the hook before it is stitched or by working stitches on top of existing stitches. More open-work fabric with holes and spaces can be created by forming bars and lines of stitches. Fabrics can also be made by building up rows of stitches or from working in the round, from a circle out.

2

Macramé

Macramé is constructed through the ornamental knotting of yarn, giving the fabric a 'handcrafted' appearance.

Lace

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. Needlepoint lace is based on embroidery techniques and bobbin lace is based on braiding techniques. They were both developed in the late 16th century and were the most expensive type of ornamentation at the time. In Europe lace production mainly came from Italy, France and Belgium and the lace was named after the region it was produced in. Irish crochet lace originated from the Italian needlepoint lace of the 17th century and from the 19th century, Ireland became the main producer. Lace became very popular again in the early 20th century, with patterns often depicting organic shapes and insects in the art nouveau style.

Originally lace was made by hand, but now it is mainly produced using the Levers machine. Lacy knits can be created on Raschel knitting machines and lacy embroideries can be produced using the Schiffli embroidery machine.

1

Non-woven constructions

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 have no grain and do not fray or unravel in the same way as woven fabrics, which makes them eminently more suitable for garments or accessories that need to be more hard-working and reliable. Other non-wovens are being developed for future fabrics.

Chemical and mechanical

Compressing fibres together with the use of heat, friction or chemicals can produce fabrics. Examples of this are felt, rubber sheeting and Tyvek. Tyvek, produced by DuPont, is made by matting fibres together – almost like the way paper is made. It also has a coating that makes it tear-proof, water-resistant, recyclable and machine-washable.

Fabrics can also be made from solutions; foams and films are examples of this.

2

Sprayed fabric

Manel Torres has developed a way of producing a textile by literally spraying the fibres from a can; in this way a fabric can be sprayed directly on to the body. Areas can be built up to be thicker than others and there is no need for fastenings as the garment is cut off at the end of its use. The fabric adheres to the form of the body or if a shape is needed then moulds can be placed underneath to shape the garment. In this way, Torres is combining design with chemistry.

3

3D forming

Using computer technology, objects can be created three-dimensionally. So far this technology of three-dimensional printing has grown out of rapid prototyping, which has been used with great success in the engineering industries. Sports footwear design has benefited from this computer technology. This technology allows a three-dimensional map of the body to be taken digitally and a garment produced to perfectly fit the shape of the body.

1–2 Tyvek, leather and stainless steel slip-on boots by Marloes ten Bhömer. These boots look into the aesthetics of destruction, in order to create a new silhouette form. The front of the boot is distorted and dented. Normally a slip-on boot is very straight at the back so your foot can slide into the boot. The way the patterns have been cut enables the back of the boot to hug the calf and leg.

3 Manel Torres sprayed fabric dress.


12
12
STUDENT-FORM
Kennett & Lindsell Ltd

'My concept about clothes for men and women is it's about a person, an image, a concept. It's style, not fashion.'

Ralph Lauren in *Fashion: Great Designers Talking* by Anna Harvey

Once a fabric has been constructed, it can be enhanced or altered with the application of different kinds of surface treatments. Pattern, colour and texture can be added to fabric through such treatments. Techniques include print, stitch, fabric manipulation, beading and embellishment. It is important to consider the type of technique that best suits the fabric you are working with. A loose-weave fabric would be suitable for drawn work (discussed later), whereas a tightly woven fabric with no pile is the easiest to print on. It is wise to consider the function of the fabric, for example, it could be made light reflective through the application of a print finish or quilting could be incorporated to improve heat retention. Some techniques might be interesting as a sample, but might not be applicable to a fashion garment. Consider if you are making the fabric unstable by deconstructing its structure perhaps through devoré or drawn work, or if the resulting fabric becomes impractical and heavy as a result of too much embellishment. Consider whether the fabric can be successfully worn again, whether it can be washed or dry-cleaned. It is a good idea to test a sample of the fabric you are creating by finding a dry-cleaner who is willing to trial small samples for you.

1 Emma Cook A/W07. Birds were the inspiration for this collection. From feather imagery, which is printed in pigment and flock, to a dress that is completely embellished in feathers; producing graduated colour and pattern.

Print

1 Peter Pilotto A/W07 collection.

2 Examples of hand-painted fabric and inspiration.

3 Printing blocks.

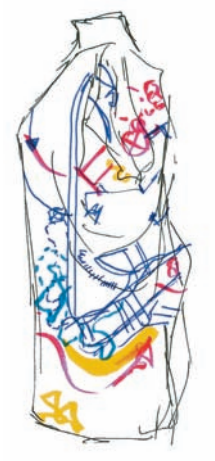
Print can be applied to a fabric through the techniques of screen-, block, roller, mono, hand or digital printing. Pattern, colour and texture can be achieved by printing with a variety of media, including pigment, dye, flock or glitter.

Processes

Although certain processes are more applicable to specific fabrics, it is important to experiment as a fabric might react in an unexpected way. Always make notes of the processes you are trying out to refer back to later.

Consider how you work with pattern on the fabric; the scale, proportion of colour, placement and repeat will all affect the overall look of the fabric and ultimately the garment it is to be used for.

1



2

Hand painting

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, but can be a slow process for producing a long length of fabric.

Block printing

3

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 applied to the fabric with pressure to form an imprint. In 1834 Louis-Jerome Perrot invented the mechanisation of woodblock printing allowing multicoloured designs to be printed. The Perrotine printing process enabled the mass production of printed cloth.

Roller printing

The flat copperplate-printing process was introduced in the 1770s making the printing of large repeats with fine engraved details possible. They were mainly one colour with extra colours introduced through hand-block printing or hand colouring. This was developed into the roller-printing machine and was patented by Bell in 1783. This meant fabric could be printed in a continuous length and mass produced. Printing multicolours through this process was developed shortly after.

1–2 Marc by Marc Jacobs A/W06 dress. The fabric has been printed using a rotary method, each colour, including the dark background, is printed. A rotary method ensures no print joins can be seen.

3 A digitally-printed dress design by Cathy Pill.

1

2

Rotary

Rotary screen-printing involves a series of revolving screens made of fine metal mesh, each with a squeegee inside that forces the print paste through the mesh on to the fabric. The design is either laser etched from a computer on to the metal mesh or exposed in a photographic process. The rotary process is much quicker and more efficient than flat screen-printing.

Screen-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 through the use of different screens for different colours. The silk-screen process was used as far back as the 17th century. Nowadays the silk screen is made from a tougher nylon or polyester mesh and the stencil is processed using photographic emulsion.

Transfer printing

A design is printed with disperse dyes on to a transfer paper that is then left to dry. The paper is subsequently placed on the fabric, dye side down, and heat and pressure are applied so that the design is transferred on to the fabric. The transfer paper cannot be reused as all the dye has been transferred. The sublimation process of transfer printing ensures the dye penetrates the fabric rather than sitting on top of it. This gives the cloth a good handle and also does not affect the fabric's ability to breathe. This method is used on synthetic fabrics; however, non-synthetic fabrics can also be used, but they must first be prepared with a coating.

Digital printing

Inkjet printing for textiles is very different from the other types of printing already discussed because of the non-contact mechanics of the print head, but also the means by which the individual colours of a design are produced. Ink is directed through nozzles as a controlled series of drops on to the surface of a fabric, printing line by line. Usually a set of inks is used consisting of at least three or four primary colours, namely cyan (turquoise), magenta, yellow and optionally black, the so-called CMYK inks. As most inkjet printers were originally designed for paper printing, technical specifications are more related to those used in the reprographics industry than to those that a textile printer would normally employ. Reference is usually made to inks rather than dye solutions, pigment dispersions or print pastes. Similarly print resolution is usually defined as dots per inch (dpi) or lines per inch (lpi). The two main digital fabric printers used today are the Stork inkjet printer from the Netherlands and the Mimaki textile digital printer from Japan.

Technological improvements are enabling manufacturers to use pigments rather than dyes when making inks for textile printing using digital technology. Pigments are intrinsically more light fast and wash fast than dyes, and are often less expensive. Unfortunately, pigmented inks tend to flow less well than dye-based inks. This is important when delivering ink through a nozzle. Furthermore, technological advances in digital printing have led to improvements in the way that pigment-based inks adhere to the surface of the fabric. Pigment-based inks can be printed on to a broad variety of fibres and fabrics, whereas dye-based inks are restricted to specific types of fibres and fabrics.

When using dye-based inks the fabric must first be prepared with a chemical coating. The fabric is then printed and goes through a fixation process using steam to ensure that the ink adheres to the fabric. The fabric is then washed to remove the coating. Pigment-based inks do not need to go through this fixation process, which makes pigment-based printing more economical in terms of running costs. Unlike dye-based inks, pigmented inks do not require a solvent to dissolve the colourant. Such solvents are often based on volatile organic compounds, which means that dye-based inks tend to be less environmentally friendly than pigmented inks.

Digital printing allows the textile designer to work straight from the computer to cloth with no need for paper designing. Very high-definition imaging can be achieved and many colours can be printed without the need for numerous screens. Infinite layers can be built up within a design and clever three-dimensional imagery can be achieved. The repeat can be any size for a design and is not restricted by screen size.

3

Printing media

It is important to choose the correct media for successful textile printing. The media must fix to the cloth correctly and have a good handle for fashion purposes. Colour and pattern are achieved through the application of inks and pigments, and texture can also be added to fabrics through certain printing methods. Chemicals can be used to produce a 'relief' effect on the surface of the fabric or to 'eat away' at it to create a deconstructed look.

1

Inks

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. These inks are available in a range of colours and finishes, including pearlescent, metallic and fluorescent. Water-based inks leave fabrics with a better handle as the thickening agent can be washed out after the fabric has been printed and fixed. When printing on a stretch fabric a stretch auxiliary is sometimes added to the ink to improve the print quality so that it does not crack when stretched.

Types of printing media

Luminescent
Invisible in daylight, visible in infrared or UV light.

Fluorescent
Colours that glow in daylight or UV light.

Glitter
Fine monochrome and polychrome glitter inks.

Holographic
Interference high-contrast, viewing-angle dependent.

Hydrochromic
Textiles that respond to water.

Opaque
Colours that are not transparent. These are good for printing on dark fabrics.

Pearlescent
Soft, viewing-angle dependent polychromatic colour effects.

Phosphorescent
After charging with light, this glows in the dark.

Piezochromic
Textiles that respond to pressure.

Polychromatic
Colour-changing effects.

Reflective
Direct reflection of visible light.

Thermochromic
Inks that change colour with temperature.

Transparent
Colours with low opacity.

Discharge printing

A fabric can also undergo 'discharge' printing. First, the fabric must be dyed with a dischargeable colour. (You can see if a dye is dischargeable by looking at the manufacturer's dye information.) 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.

Devoré paste

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.

Flock, glitter and foil

Fabrics can also be printed with glue then heat-pressed with flock paper. The flock adheres to the glue, creating a raised 'felt' effect. Glitter and foil can be similarly applied to produce special effects.

2

3

4

Puff

When printed and heated the ink expands on the surface of the fabric. Expantex is a brand of chemical that produces an embossed effect on fabric and has a rather rubbery texture. Three-dimensional qualities can be achieved by printing puff on the back of fabrics that are light or drape well. The puff distorts the fabric creating three-dimensional effects on the right side of the fabric.

5

1 Jean-Pierre Braganza A/W07 wool felt coat with plastisol print.

2 Clear discharge paste has rendered parts of this denim sample pale blue.

3 An example of the devoré print technique.

4 Digitally printed cotton with hand-applied bronze foil in parts.

5 Tata-Naka A/W07 grey marl jersey dress with nylon net. The top part of the dress features puff print on silk organza.

Pattern

Textile designs have over the years been categorised into styles. It is important to have an understanding of these styles so that you can communicate with other designers or clients. The styles also show the wide variety of prints available.

Floral

Flower motifs. They are the most popular style and are reinvented each season. Leaves and grasses also go into this category, but fruits, vegetables and trees are classified as conversationals. Bouquets are tight ties of flowers whereas a spray is a looser, more free-flowing tie of flowers. Sprigs are small single stems of flowers.

Chintz

This fabric is typically glazed in appearance. Originally the fabric would have been rubbed with wax, starch or resin as it was thought that this would help repel dust and dirt. More recently the glaze is achieved with mechanical calendars. The floral pattern is the print style most associated with chintz.

Toile de Jouy

During the 18th century the town of Jouy in France produced printed cotton fabrics, especially a fabric depicting the printing process of the factory set in an outdoor landscape that was put into repeat. The name is now associated with a design that represents a repeated landscape or pastoral scene. The design is usually printed in an engraved style in colour on a pale background (see page 12).

Indiennes

These are a version of the Indian hand-painted cottons imported into Europe in the 17th century.

1 Viktor & Rolf A/W07. Catwalking.com.

2 Example of a ditsy design by Furphy Simpson.

3 Example of a trompe l'oeil design by Jenny Udale.

4 Example of an all-over design by Jenny Udale.

5 Example of a striped design by Kenzo.

6 Example of a spotted design by Kenzo.

2

Ditsy

Small clustered basic motifs scattered over a background.

3

Trompe l'oeil

A design that looks three-dimensional.

Stripes

Parallel bands of colour.

4

All over

A design that works all over the fabric taking up more space than the ground.

Spots or polka dots

These are round circles of solid colour.

5

6

1

Ethnic

A design with a foreign or exotic style usually thought of as African or Indian.

Geometrics

Angular designs often abstract or non-representational.

2

Conversationals

Imagery featuring everyday objects or creatures in repeat and sometimes showing a narrative. Novelty prints on boxer shorts would fall into this category. Often the choice of objects featured can allow for easy identification of the period the fabric originates from, as the objects are fashionable at the time.

Tartan

This is a pattern consisting of criss-crossed horizontal and vertical bands in multiple colours. Blended colours are created where the bands cross each other. This check pattern is known as a sett, which repeats down the fabric. Originated in woven cloth, but now used in many other materials, tartan is particularly associated with Celtic countries, especially Scotland.

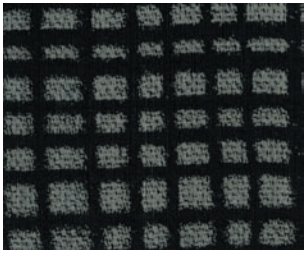
3

Paisley

The paisley design developed from a stylised plant form seen on 17th- and 18th-century Indian cashmere shawls. During the 19th century the town of Paisley in Scotland produced cashmere shawls featuring the design. This pattern has now become synonymous with the name paisley.

4

5



6

Checks

Horizontal and vertical lines that cross each other at right angles.

Ombré

Gradual shading of one colour into another.

7

Folkloric

These designs are taken from European cultures and are often representative of a peasant style.

8

Chinoiserie

French term for European designs based on Chinese motifs, featuring pagodas, dragons, lanterns and temples.

Animal prints

Fake printed animal skins, usually emulating the skins of big cats and snakes.

Psychedelic

Neon acid prints that developed during the 1970s.

Gingham

Horizontal and vertical lines of one colour of the same width that cross each other at right angles producing a small check pattern.

Camouflage

This was invented as a way to blend troops in combat into their surroundings. In the 1970s after the Vietnam War, camouflage military clothing was worn as a rebellious statement by anti-war protesters. Camouflage became more mainstream after being adopted by the youth market.

9

10

1 Examples of an ethnic design by Rory Crichton for Luella S/S04.

2 A conversational design (vintage Liberty).

3 A vintage paisley design.

4 A geometric design by Eley Kishimoto.

5 A tartan design by Kenzo.

6 A check design by Furphy Simpson.

7 A folkloric design by Furphy Simpson.

8 A chinoiserie design by Furphy Simpson.

9 Example of an ombré design by Louise Henriksen.

10 An animal print design by Spijkers en Spijkers.

Embroidery and fabric manipulation

Introducing detail to fabric

If detail is required in a design it might be helpful to first draw the design on to the fabric by hand. An embroidery transfer pencil can also be used to trace a design on to paper, the image of which can be then transferred on to the fabric using an iron.

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

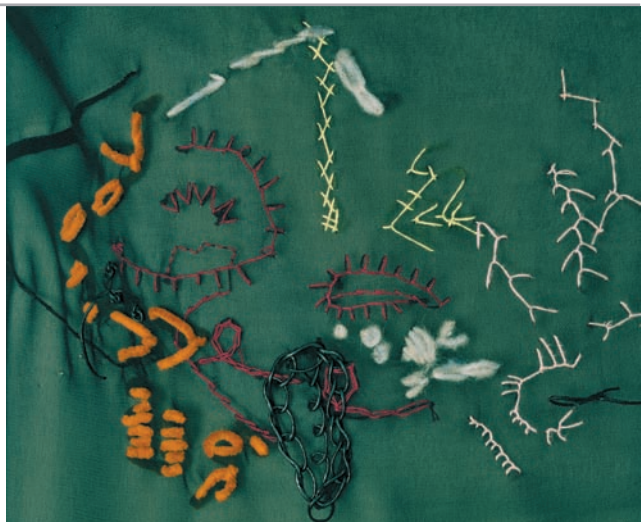
Contemporary embroidery is based on traditional techniques. Hand stitching is the basis of these and once you have learnt the principles, you have the foundation for a vast array of techniques. The three basic embroidery stitches are flat, knotted and linked.

1 A Manish Arora S/S07 design. Catwalking.com.

2 An embroidery sample by Hannah Maughan.

Basic stitches

Flat stitches lie on the surface of the fabric, for example, running, satin and cross stitch, while knotted stitches, such as French and pekin, add texture to a fabric. Linked stitches are stitches that loop together, for example, chain stitch. 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. Also experiment with the base cloth you are working on; the key is to be as creative and innovative as possible.



2

Satin stitch

This is a repeated long horizontal or diagonal stitch that sits on the surface of the fabric. The stitches are worked parallel to each other and close together to produce a satiny area where the front and back of the fabric look the same. The stitch is widely used in Chinese embroidery.

Cross-stitch

This is often used on a fabric with an even weave where the threads can be counted and the stitches can be exactly placed. Cross-stitch is often associated with the peasant look and English Victorian ladies in the 19th century.

Couching down

This is when threads are laid on the fabric and small stitches are used to hold the main thread down. It is a decorative technique often used when the main stitch is too heavy to pass directly through the cloth.

French and pekin knots

The size of the knot depends on the thickness of the thread used and the number of times it is wrapped or looped around the needle to form the knot. The French knot is wrapped around while the pekin knot is looped and neater in appearance. Bullion, coral and colonial are other examples of the knotted stitch.

Chain stitch

This stitch can be made with a needle or a tambour hook. The first looped stitch is held down with the next stitch to form a chain.

Blanket stitch

This is used to strengthen the edges of blankets or garments. Buttonhole stitch is the same, but worked with tightly packed stitches for a stronger finish.

Embroidery techniques

Blackwork

Blackwork became popular in England in the 1500s perhaps due to its popularity with Catherine of Aragon, Henry VIII's wife. It usually features black stitches on a pale background. The stitches are flat and regular in nature creating a graphic effect. Double-running stitch, Holbein stitch and backstitch are usually used.

Assisi style

An Italian style of embroidery where the background of a fabric is worked and filled in with stitches leaving the design motif unworked and in the negative. Originally double-running stitch, Holbein and cross-stitch were used.

Bargello or Florentine work

Working on a canvas, straight vertical stitches are placed in a zigzag design and the colours of the rows of zigzag are changed to create a pattern.

Berlin style

This is an embroidery style (originally from Germany), where bright coloured wool in tent or cross-stitch is worked on canvas.

Canvas work or needlepoint

This is sometimes called tapestry work as the finished stitched piece looks similar to a woven tapestry. The canvas is usually woven using a single- or double- (Penelope canvas) thread construction. Needlepoint work uses a variety of embroidery stitches, but they must be worked closely together so that the canvas is eventually covered and cannot be seen. This is best achieved on an even-weave fabric with the same number of threads in warp and weft, as threads can then be counted and the stitches placed regularly and precisely.

Crewel work

Ornamental needlework, typically using crewel yarn, which is wool of special worsted yarn of two twisted strands.

2

Open work

Open work gives the appearance of lace yet is worked on fabric and holes are created through cutting and/or stitch. Examples of open work include pulled thread work, withdrawn thread work, cutwork or eyelet lace.

Drawn work

Warp or weft threads are pulled out of the cloth and the remaining threads are held back with embroidery stitches. The spaces are decorated with stitch work and needlework, which also serves to strengthen the open structures. John Ruskin introduced the technique to linen workers in the English Lake District and Ruskin Lace has been practised since the 1880s.

3

Pulled work

Pulled thread work produces a stronger fabric as no threads are taken away. The lace effect is created through stitches pulling the warp or weft away from the normal weave structure. For the best effect the fabric is loosely woven and the stitches that hold the warp and weft back are of a fine thread so that they don't show. The intricate German derivative of the technique is known as Dresden work.

Needle weaving

This is a variation of drawn thread work. Threads are drawn from the fabric and the remaining warp or weft threads are grouped and woven together.

1 An example of Assisi embroidery can be seen at the top of this sample.

2 An example of crewel work.

3 An example of drawn work and needle weaving.

1 Example of broderie anglaise.

2–4 Alison Willoughby appliqué skirts.

White work

The open work techniques just discussed are used in white work, but the base cloth and thread stitch are traditionally white. Typical white work also includes broderie anglaise, Richelieu, Dresden and Reticella.

Broderie anglaise

This features rhythmic and repetitive eyelet patterns, where fabric has been cut away and the edges are prevented from fraying by stitches. From 1870 it was produced on a greater scale as it could be done by machine.

1

Richelieu cutwork

This is French embroidery. Cardinal Richelieu was the principal minister for Louis XIII. He wanted France to be self-sufficient and therefore welcomed Italian lace makers to France to teach their skill. Richelieu cutwork is a development of Venetian lace. Designs feature an organic or floral pattern, with the edges of cut-away shapes defined by stitch, and within the shapes are buttonhole bars.

Mountmellick work

This originated in the town of Mountmellick in Ireland during the 19th century. A soft matt white cotton thread is stitched on to a closely woven white fabric in bold organic designs. Most samples are finished with a knitted fringe.

Shadow work

Stitches are worked on the reverse side of a sheer fabric, usually herringbone or double backstitch. When the fabric is turned over to the right side, shadowy shapes can be seen.

Fabric manipulation

Appliqué

Appliqué in textiles means to stitch one piece of fabric on to another for decorative effect. Pieces of fabric can be stitched on top of a base cloth or a reverse appliqué technique can be applied where the top fabric is cut away to form a pattern and reveal the fabric beneath. Interesting intricate designs can be created using many layers of cloth. Fabrics that do not fray are often good for appliqué work. Fabric motifs, such as badges, can be beaded or embroidered first and then appliquéd on to the garment with stitches.

Smocking

Smocking has a practical as well as decorative function, as it is used to gather in fullness in a garment. Traditionally a garment that featured smocking was called a smock and was worn by agricultural workers in the 19th century. The stitches and motifs used in the smocking related to the trade of the workers.

Horizontal rows of dots are marked on the fabric and running tacking stitches placed at these points. These stitches are then drawn together forming vertical pleats in the fabric. The pleats are then stitched permanently together to create the smocking and the original tacking stitches are taken away. Smocking should be placed parallel to the direction of the warp and weft to avoid distorting the fabric.

Patchwork

The technique of joining together pieces of fabric to make another fabric creates a patchwork; the pieces can be sewn randomly or in a geometric pattern. The choice of fabric and placement of pieces to form the pattern creates the design.

English patchwork
Paper pieces are used as templates to cut fabric shapes; the shapes are cut slightly larger than the template. This extra piece of fabric around the template is then folded over and tacked down. These fabric paper pieces are then sewn together at their edges and the tacking stitches and paper taken away.

American patchwork
Fabric pieces are cut using a template, but the template is then removed. The fabric pieces are subsequently sewn together with a small running stitch. A fabric that allows for a crisp fold works best for patchwork, for example, finely woven cotton.

Quilting

Layers of fabric are stitched together to form a heavier quilted fabric. Wadding of cotton, wool, horsehair or feathers can be put between the layers to make a warmer or more decoratively raised fabric.

English quilting
Two layers of fabric are stitched together with wadding placed in between.

Italian corded quilting
Traditional Italian quilting designs are based upon pairs of parallel lines through which cord or wool is threaded to make a raised pattern.

Trapunto quilting
Like corded quilting, Trapunto is padded after the stitching is complete leaving a design that stands out in relief. Enclosed stitched shapes are slit in the back of the fabric and padded from behind, the slit is then sewn up.

1

2

Machine embroidery

3

Many of the embroidery stitches and techniques discussed already can be worked on domestic or industrial embroidery machines. The machines can be used creatively and flexibly to produce a wide range of effects and techniques, from controlled to more freestyle work. Domestic embroidery machines allow the user to move the fabric under the needle in order to create free-flowing designs. Most machines also have the ability to produce automated patterns at the press of a button. As with hand embroidery, the techniques can vary in accordance with the choice of thread and fabric. More complicated embroidery designs can be created on the computer and then downloaded for use on digital embroidery machines. Machines can have single or multi heads to feed many threads simultaneously. Embroidery machines include Cornelli, Irish, tufting, loop-pile cut machines and Schiffli machines.

4

1–2 Marios Schwab A/W07 garments padded with goose down.

3–4 The white silk fabric of this blouse was first pleated and then embroidered with white cotton. When overdyed the embroidery stayed white while the base cloth coloured blue. A dissolvable fabric was embroidered with the design in silk. The fabric was then dissolved and the design was stitched on to the organza. Both embroideries were produced on the Schiffli machine; embroidery by Punto Seta for Magdalena Glowacka.

Embellishment

1 A Marios Schwab A/W07 neoprene and metal dress. The metal pieces can be screwed off.

2 A Marios Schwab A/W07 heavily embellished Swarovski crystal dress. Each crystal is enclosed in silk net then hand stitched on.

3-4 Two beaded and sequined pieces designed by Richard Sorger.

Another way to add surface interest to fabric rather than through print or embroidery is to embellish, which gives a more three-dimensional and decorative look. Beads, sequins, mirrors (shisha), seeds, shells, pebbles and feathers can be used to add colour, pattern and essentially surface texture to a fabric or garment. Beads and sequins were used for decorative effect on the flapper dresses of the 1920s, their reflective quality enhanced by the movement of the dresses as the wearer participated in the new dance style of the time. The weight of a fabric can be changed through the addition of embellishments. Beads were used by Fortuny to weigh down the sides of his pleated 'Delphos' dresses (see page 17).

In certain cultures embellishment has been used for social identity or superstitions. Buttons, medallions and braids can show rank and power. Eagle feathers are worn by the Native Americans of North America and signify bravery. Shiny items such as coins or mirrors are commonly sewn on to garments to avert the evil eye.

Consider what kind of embroidery stitch and thread you use to attach the embellishment. Are you able to stitch through the embellishment, as you would with a bead or sequin, or is it held down on to a fabric with a combination of stitches like the application of a mirror disc?

1

2

Beading and sequining

Beads can be made from glass, plastic, wood, bone and 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, for example, using glass beads on a garment lends the textile a wonderful, light-reflecting, luxurious quality.

Beads can be stitched individually or they can be couched down, where a thread of beads is laid on top of the surface of a fabric and stitched down with small stitches between the beads. Running the thread over beeswax or a candle before threading beads helps to strengthen the stitch and minimise fraying.

French beading is the application of beads stitched with a needle and thread on the front of fabric that has been stretched over a frame. The frame keeps the correct tension of the fabric, 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.

Types of beads:

Glass beads
These can be transparent, opaque, pearly, metallic, iridescent or silver lined.

Rocailles
These are small glass beads.

Round rocailles
These are smooth on the outside and inside.

Tosca or square rocailles
These are smooth on the outside and square-cut inside to catch the light.

Charlottes
These are ridged or faceted on the outside, square-cut or metal lined inside.

Bugles
These are tube shaped.

Crystal and cut glass
These are highly reflected with many facets.

3

4

Cutwork

Fabrics can also be enhanced through the use of hand cutwork or, more recently, with 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 and very complex detailing can be achieved.

'Colour is an element which right from the initial sketch appears inseparable to me in regard to the idea of a dress, to its substance and nature. My colours are always part of the whole, have a chosen place in the idea from the very first moment of conception.'

Gianfranco Ferre in *Fashion: Great Designers Talking* by Anna Harvey

It is important to understand the principles of colour and how individual colours can be worked together to create palettes that can be used within the design of textile and fashion collections. This chapter looks at the fundamentals of colour, how it is used in design and also its significance to trend prediction.

Fabrics available to a designer are influenced by trends. The colour, fibre and handle of the cloth will most probably have been designed and created based on trend information. Trend forecasters track trends and recognise new directions. Forecasters predict all aspects needed for fashion and textile design such as colour, fibre, fabric, silhouette, details and lifestyle. Forecasters do not have the ability to dictate styles. They forecast when the consumer is ready to accept a new trend and at what market level and price point. This helps designers, manufacturers and retailers select products that are on trend and that the consumer is ready to buy. By anticipating trends, forecasters enable companies to take advantage of new opportunities.

1 Jessie Lecomte A/W07.

1

Colour

In order to successfully design a fashion and textile collection colour must be considered. It is fundamental to the feel of a collection and is what the customer first sees. Colour may be chosen for a variety of reasons. It may relate to a season, the profile of a customer, the type of fabric that is available or the concept of the designer. Colour might also be influenced by trend information and a designer may decide to produce a collection that will fit in with the colours predicted for a specific season.

We first need to understand a little of the basics of colour theory and how colours scientifically work together. From this we can start to look at how the designer uses colour within design.

Colour theory

1 The colour wheel.

2 Additive primaries.

3 Subtractive primaries.

4 The CMYK colour system.

Colour originates in light. Sunlight is colourless, but in reality it is made up of colour; this can be seen in a rainbow. Light shines on an object and certain colours are absorbed leaving the remaining colour to be reflected back to the eye. This information is then sent to the brain, which is when we register the colour of the object.

So you could simplify colour down to the colour we can touch, for example, on the surface of an object, like the red of an apple, and the colour that we can't touch, which is made up of beams of light, for example, the colour from a computer screen.

1

Additive colour system

The basic principle of additive mixing shows that when the primary colours of light – red, green and blue – are mixed in equal amounts they make white. Red and green light produces yellow, blue and green light produces cyan, and red and blue light produces magenta.

2

Subtractive colour system

Subtractive mixing is a principle where the primary colours of magenta, cyan and yellow can be mixed to produce all other colours. All colours mixed together would produce black rather than white as in the additive system.

3

The colour wheel

Mixing other hues cannot create the primary colours red, yellow and blue. Secondary colours come from mixing the primary colours together. Blue and yellow becomes green, red and yellow becomes orange, and red and blue becomes violet. Tertiary colours are the colours that come from mixing secondary colours together.

4

CMYK colour system

This is used in the printing industry. Cyan, magenta, yellow and black are the primary colours that make all the others. If you mix all four colours together you produce black.

Colour definitions

Hue
This is colour.

Saturation
This is the purity of the hue, its richness, strength and intensity. Bright colours are very saturated. Saturation is also known as chroma.

Tone
This is the lightness or darkness of the hue. It is also often referred to as the value of the colour. Dirty colours have more black added to them, pastel colours more white. The tone or saturation of a hue gives a colour many variations.

Fluorescent
These colours react to light and seem to glow.

Highlight colour
This is a small proportion of colour used in contrast to a group of colours to lift a palette.

Tonal colours
These are of the same hue, but range between light and dark colours.

Monochrome
This is a one-hue palette.

Colour harmonies
These are hues that sit well together and have a good balance with each other.

Naturals
These are colours derived from the landscape, sky and water.

Pastels
These are colours lightened with white.

Contrasting colours
These are from opposite sides of the colour wheel and fight against each other. The contrasting colour of red is green, yellow is violet, and blue is orange. The colours that seem to most contrast one another are the primaries as they are the purest colours.

The perception of colour is heightened by the use of contrasts and harmonies within a palette. A red, which is seen as a warm colour, can seem even warmer if it is put with a palette of cool colours. A pure saturated yellow can seem very bright if put with a palette of pale yellows.

Colour palette
A group of colours.

3

4

The language of colour

It is important to understand the language of colour within design. The human eye can see around 350,000 colours, but cannot remember or recall them all. It is therefore important to have a way to identify and communicate colours. Words are used to describe and give reference to a type of colour by association, for example, pillar-box red or blood red. Words are also used to describe specific colour tones, for example, cool colours have a blue undertone, while warm colours have an orange or red undertone. A washed-out colour could be said to have little hue or to be weak. Pastel colours have white added to them, making them pale, but not weak.

We give colours subjective and symbolic meanings. We apply our own individual characteristics and associations to colour and various cultures see colour differently. In Europe the colour blue is associated with a boy and pink with a girl, white for a wedding and black for mourning. In India, red is associated with fertility and is also used as a wedding colour, while white is linked to mourning. In most Asian cultures, yellow is the imperial colour and has many of the same cultural associations as purple does in the West. In China, red is symbolic of prosperity, luck and celebration, while white is symbolic of mourning and death.

It used to be that colours were common to a geographical location due to the dyestuffs that came from the minerals and plants found in that region.

Colour psychology

There is a psychology to colour with scientific evidence to show that certain colours affect our mood. There are colours that make us feel depressed and others that raise our spirits; some colours make us feel warm and others cool. Blue is considered to be a calming hue, while black and grey are seen to be depressing. These theories of colour are interesting to consider, but within fashion the choice of colour used within a collection tends to be related to artistic choice rather than psychology. Certain colours are in fashion one season and out the next season regardless of whether they make us feel better or not.

1–4 Colour palettes and image inspiration by Justine Fox. Copyright Global Color Research Ltd.

Colour and design

The choice of colour within design is quite a personal thing. We all have our own personal palettes that we like to work with – colours that we feel are exciting, comfortable, classy or fun. As a designer you may have to work outside your own range of colours with palettes you are not very comfortable with. It is therefore important to try and understand how colours work together, and experiment.

Certain designers are known for their use of colour. The Japanese designers Comme des Garçons and Yohji Yamamoto tend to use dark colours. Their collections are timeless and concentrate more on the clever cutting of a garment than a fanciful colour. Versace, however, relishes colourful collections to seduce its customer. Marni and Dries Van Noten use colour beautifully, their palettes are sophisticated and unusual. Calvin Klein is known for its muted neutral tones and Tommy Hilfiger for bold primary colours.

Certain colours such as red, navy, black, white and ivory are so basic they are always fashionable for mass-market end usage. Menswear colours tend to use these safer colours in mass-market and high-end fashion.

1 Dries Van Noten A/W07 runway show. Catwalking.com.

2 Backstage at Louis Vuitton's S/S08 show.

Texture

Of course, within fashion a colour does not work on its own. The designer will see the colour in relation to a surface or textile, and in the context of a silhouette or garment, and this can change the perception of the colour. For example, the quality of a colour can change in relation to certain fabrics – red can look cheap and playful in a plastic, but it can look luxurious and rich in a fine silk. Black polyester can look cheap, while black wool can look very expensive (obviously this also depends on the quality of the fabric of choice). Lighter colours show texture better than darker colours.

Proportion

It is important also to consider the proportion of colour within an outfit. Sometimes difficult or unusual colours are best dealt with in smaller proportions, but it all depends on the customer and trends in colour at the time. A new fashion colour (one that has not been in fashion before) may be first introduced in small amounts within a print or multicolour knit, or used as an accent (highlight) within a group of colours.

The placement of a colour on the body can make certain areas look bigger or smaller. Black is seen to recede to the eye so making an object seem smaller; this principle can be used to flatter the body shape.

Context

It is also important to consider the context in which colour is used and what it is trying to communicate. For example, in the West a red wedding dress is conveying a very different statement to a traditional white dress. Also consider how colour has been used historically for certain garments, for example, indigo denim jeans, the white shirt and the little black dress. If the colour of these staple garments is changed, do they then become faddy and not classic?

Colour can help to keep product lines new and fresh. Often a garment does not change each season in silhouette or detail, but it does change in colour.

2

Khaki
During their years of colonial rule in India, The British Army dyed their white summer tunics to a dull brownish-yellow colour for camouflage in combat. This neutral tone was called 'khaki'. The word's origin is mid-19th century from the Urdu term *kaki* meaning 'dust-coloured' and from the Persian word *kak*, meaning 'dust'.

1

Season

Colours can also be seasonal. Cold seasons tend to warrant darker colours, such as blacks, browns and sludgy colours. As the season warms up the colours become lighter and paler. They then become stronger and brighter as the sun becomes more intense. The sun bleaches out pale colours, so if you are designing for hot countries consider a brighter colour palette. Think of the colour palettes of African textiles or Hawaiian shirts. When we pack for our summer holidays we quite often take brighter clothes than we would wear in a colder climate.

2

Colour referencing

Colour often needs to be consistent across various fibres or fabric types, which in turn may require different types of dye that may even be produced in different countries. For a colour of a textile to remain consistent from the design stage through development to realisation, companies often use a colour referencing system. Pantone and the Munsell colour systems are common references for colour matching, as each colour has a specific number for reference. Rather than trying to describe the colour, the number can be used to identify the hue. Pantone charts are arranged chromatically by colour family and contain 1,925 colours. They are a great resource, but they are expensive and need to be replaced as the colours start to fade, making referencing inaccurate.

Looking at colour under different lighting conditions can affect the hue – an incandescent light places a yellow cast on the hue, while a halogen light creates a blue cast.

Colour and the customer

Colour is very important within fashion and textile design. When a customer enters a store they tend to be drawn to the colour of a garment. They may then go and touch the garment and lastly they will try it on to see if the fit is right.

Within a fashion collection safe colours are usually black, navy, white, stone and khaki. Buyers will often buy in garments in these colours as they are the staple colours of most people's wardrobes. It is sometimes a good idea to offer some of the basic colours and add to them seasonal experimental colours. These colours will add life to the collection and will ideally entice the customer to buy each season's new colours along with the trans-seasonal basics.

Skin tone can also have an effect on the colour choice of a garment. Dark skin looks great against strong, bright colours, while softer colours work better against paler skin.

1 A colour palette created by Justine Fox in response to the Chloé S/S08 collection. Copyright Global Color Research Ltd.

2 Chloé S/S08 runway show. Catwalking.com.

3 Pantone colour book.

3

Trend prediction

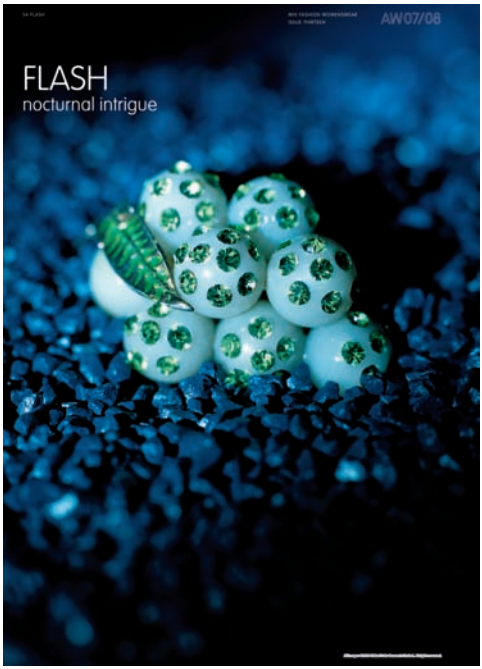
1 Mens- and womenswear trend information. These pages show inspirational images, colour referencing and suggestions for colour groupings and proportions. Copyright Global Color Research Ltd.

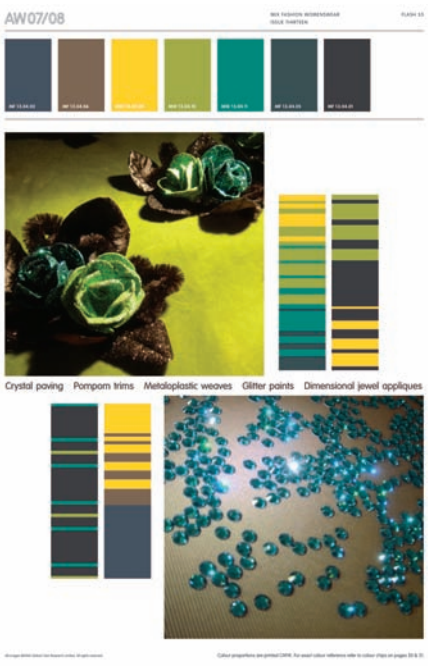
Trend prediction is a huge industry influencing many areas of design especially fashion and textiles. A trend company focuses on a specific area of a market and tries to predict what is going to happen to that market sector in the future. It could be that the trend company is predicting what will happen next season or what may happen in years to come. These companies sell the information they gather to other companies who do not have the time or the resources to do their own research and prediction. More often this information is sold to companies that do some form of trend prediction in-house already. They then align their trends to those of the prediction company in order to feel comfortable that what they are designing is on trend, that the market is ready for the designs, and that it understands them and ultimately wants to buy them.

Trend companies look at the progression of trends. They monitor what has been successful for a while and evaluate whether this trend will continue and grow stronger or whether it is time to react against it and do something different. Trend companies look at a variety of sources to inform them. They may look at what is happening in society, the economy, the arts, fashion, science, street culture and haute couture, for example. It is easier to identify a trend once it has happened; looking back, historically important trends can be recognised through changes in fashion. Trends are far clearer in retrospect.

Certain design companies are keen not to follow trends and instead be seen to be setting the trends. These companies work with their own prediction ideas and in a way operate like fine artists, developing their own personal ideas and concepts. These designers have to find their own niche market that is not influenced by trends, which can be difficult. The basis of trend prediction is intuition, what feels right and what feels new.

1


AW07/08
FLASH
nocturnal intrigue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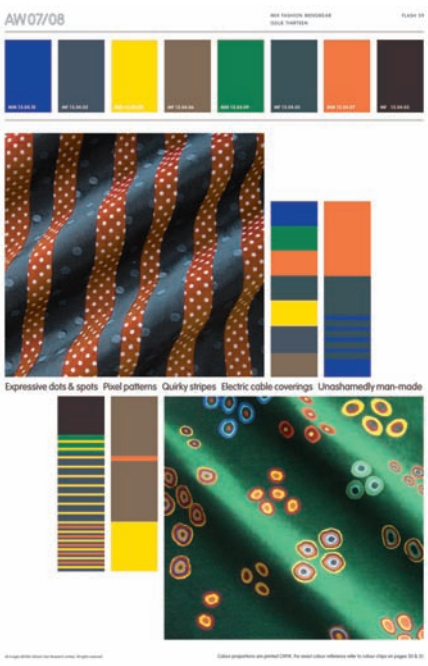
AW07/08
Expressive dots & spots
Pixel patterns
Quirky stripes
Electric cable coverings
Unashamedly man-made

Trend sources

Trend companies see that there are long-term trends and short-term trends. Long-term trends look at social trends, demographics, global trends, new technologies and processes. For example, an increase in the use of the Internet facilitates easier communication and enables employees to work more from home, so this might have an influence on fashion becoming more casual and comfortable. Short-term trends are more affected by passing fads, for example, an important retrospective exhibition or a hot new designer's current collection.

1

Culture

Until recently fashion was for the wealthy upper classes and nobility. The lower classes looked at what they were wearing and emulated it (known as the trickle-down theory). This, however, changed in the 20th century as street fashion started to trickle up and be adopted and reinterpreted by the couturiers. Now fashion trends are seen to trickle up and down, influencing consumers up and down the scale. This in turn drives new trends. As street fashions become too mainstream and popular they are seen as unfashionable with the style setters. As a result new styles emerge.

New technologies

New technologies and processes lead to new developments within the fashion industry. These can be in the form of new fibres, yarns, printing processes, dyes or manufacturing processes, which in turn trigger new colours or fashion silhouettes, creating new trends. The copper roller-print process allowed for lengths of printed fabric to be produced first in one colour then in multiple colours. These printed fabrics can be seen in the fashions of the late 18th and early 19th centuries. More recently the development of the circular knitting machine has allowed for seamless underwear and also Issey Miyake's A-POC concept. New developments in nano-fibres are creating exciting possibilities for interactive textiles.

1–2 Scenes from the Première Vision Paris trade show.

2

Shop reports

Shop reports analyse what is happening in store at a particular time, in other words, what the shops are buying and putting in store and what customers are buying. Looking at the best stores in a city can give a good overview of the strong fashion trends for the season. It is often a good way to see the collections from up-and-coming designers in high-end boutiques. These designers may have new innovative ideas, but cannot yet afford to show their collection on the catwalk and receive press coverage from their shows.

Trade fairs and the catwalk

Communication is now so quick that trends are disseminated around the world in seconds via the Internet. A catwalk show in New York can be seen an hour later in London and used as inspiration for a high street fashion company immediately. Companies are able to react to this information directly and produce collections to go in store within weeks. Trends now travel and are picked up faster than ever, therefore new trends are replaced far quicker than before.

Fabric fairs such as Première Vision and Expofil (France) and Pitti Filati (Italy) all feature trend areas. Here a presentation is shown that highlights the predicted textures, yarns and colours for the season ahead. It includes fabrics from the companies exhibiting and colour palettes that can be purchased with colour referencing for exact colour matching.

Intuition

Within trend prediction nothing is fact, all information is up for interpretation and reinterpretation. However, it is clear that certain individuals just have a knack for interpreting information and successfully predicting trends. Natural intuition has a great role to play in trend prediction.

Flow of information

There are levels of trend prediction within fashion. The first level looks at trends in colour. Colour groups meet from around the world to put forward their ideas for future colour palettes. These predictions can sometimes occur two years before the collections are seen in store. It is important that the chemical companies that produce dyes know what the colour trends are going to be so that they can supply appropriate dyes to the fibre, cloth and garment dye industries. It can take dye manufacturers four to nine months to manufacture dyes and send them to the dye houses. The darkness or lightness of a colour on trend will affect the amount of dyestuff that is needed, also the kind of fabrics that are going to be dyed affects the type of dye required. In the 1950s ICI produced new, cheap, bright dyes called Procions for cellulose fibres, which were seen in the brightly coloured fashion of the 1960s.

The second level is texture and fabrication, determining the fabrics that are going to be important. Fibre companies, mills and weavers will look to this type of trend prediction to see what new fibres have been invented or improved upon. They look at different mixes of fibre types and how they perform, and also at the prediction for yarn weights and finishes. Large fabric companies such as DuPont suggest colour and tactile qualities.

The third level is surface interest, in other words, the print and embellishment for the season, for example, strong print ideas and key motifs and colours. The fourth and final level is the garment trend prediction, in other words, the key garments for the season and their details and silhouette.

Cool hunters

Cool hunters are employed around the world to find what is new and 'cool'. They usually look at underground events and movements that are not known about in the wider community, but are strong ideas within a core niche of society. They look for things such as a new band, a new store, a new toy or a new way of wearing trainers or jeans.

Colour groups

Most countries have groups that brainstorm colour trends for the home market and for export. In the United States there is the Color Association and the Color Marketing Group, in Europe the Deutsche Mode Institut and the Institute da Moda Espagnol. Colour groups are made up of the leading fashion colourists from fibre companies, fashion services, retailers and textile firms who develop and produce colour palettes for fashion and furnishings. The palette can include a large number of colours and it is important to look at the hue, value and intensity in relation to its usage on a product range.

1 A selection of interiors from a range of Marni stores.

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Packages and presentations

Packages are produced by the trend companies to sell to the fashion industry, which contain information on the specific trend areas. They may contain colour palettes with reference to Pantone colours; images are grouped to form moods for the different stories or ideas and fabric swatches and yarns may also be included. Sometimes the fabric swatches can be very experimental, developed specifically by designers working on the new trends.

Images of catwalk shots or fashion illustrations help to describe future garment trends.

The trend packages can be quite specifically targeted to a design team's needs and not shown to any other designers or they can be more general, targeting more companies. Obviously the more selective the package, the more expensive it will be.

Some trend companies are involved in presentations where a member of their team talks through a series of projected images and the images are often presented with key words to stimulate the imagination.

The main trend companies are Trend Union (Europe), Nelly Rodi and Peclers (France), INDEX and Global Colour Research Ltd (UK) and BrainReserve (USA). The two trend 'gurus' are Li Edelkoort of Trend Union and Faith Popcorn of BrainReserve. They are most successful at being able to read the clues that indicate trends that are already out there or up and coming.

2

Trend magazines

Textile View
Viewpoint
Zoom on Fashion Trends
WWD Women's Wear Daily
Book Moda
Collezioni Trends
Fashion Forecast
International Textiles
Bloom

1 Trend package from Woven studio that suggests colour and pattern forecasts.

2 WGSN.com trend website.

Publications and the Internet

There are various trend magazines available that include exciting inspirational ideas. These magazines commission images that sum up a trend idea. They may also commission fashion illustrations to depict key fashion silhouettes and details. Colour palettes are also featured and there may be a round-up of the season's catwalk pictures. Some publications are very inspiring and allow the reader to really interpret the ideas suggested, others are more commercial and defined in the ideas they publish.

The Internet is a great place to find trend information as it can be updated so quickly. Millions of other people can also get the same information, which means a trend can spread quickly, however, the downside is that a trend may as a result suffer from overexposure. Many trend websites are subscription-only and as a result, information remains exclusive to the subscribers. Worth Global Style Network (WGSN), established in the UK in 1998, has offices in the major capitals of the world and is seen as the global online trend leader. The key fashion and textile companies subscribe to this service and are given global news, reviews and inspiration. WGSN offers a free subscription to students, however, the information they receive is a couple of weeks old.

Trend prediction is a useful tool, but should be used creatively and interpreted with independent thought.

'I build my designs from a lot of small pieces which I attach to each other in different ways to discover the shape that I want. In that sense I guess you can say that I approach fashion more as a sculptor than a tailor.'

Sandra Backlund

This chapter focuses specifically on how textiles are used within fashion. It investigates the decisions a designer has to make when choosing a fabric, choices to do with functionality, aesthetics and cost. It also looks at how a designer can best design with fabric, working in three dimensions by draping on the stand or through computer draping. When the textiles have been designed and made it is important to understand how to then make them into garments, what are the best ways of cutting and constructing specific fabrics. The second part of this chapter gives an enlightening insight into how textile designers work in the fashion industry through interviews with designers working as freelance textile designers, fashion textile designers, designers in the fields of trend prediction and designers who are pushing the boundaries of future textiles.

1 Louis Vuitton S/S08 runway show.

Choosing fabrics for fashion design

1 Jessie Lecomte A/W07 wool coat.

As a knitted textile designer it is possible to design just the knitted sample, but you are more likely to design the sample and also the garment that the sample becomes. These two processes are very much connected, as the garment literally grows from the knitted stitch.

As a print or weave designer the process of textile design and garment design are less integral. The fabric tends to first be designed as a length and then the garment is cut from it. However, some of the most interesting print and weave designs can come from the knitwear approach where the garment shape develops along with the fabric sample so that they connect with each other.

As a fashion designer it is extremely important that you understand what properties fabrics have and how best to use them on the body, functionally and aesthetically.

The best fashion designers have a strong understanding of fabrics, how best to design with them and construct garments from them. The best design ideas on paper will remain just drawings unless the designer has these skills. Try to integrate the design of the silhouette and details with the choice of fabric as you go along. Fabrics can stimulate garment ideas and vice versa. Certain designers will be known for their use of textiles for fashion, others for their details and silhouettes, but these designers still need to choose the right fabric for their designs. A poor design can be improved with a fabulous fabric, but a fabulous design rarely works in a dreadful fabric.

1

1–4 Jan Taminiau A/W07. In this collection each garment can be worn in two ways, so every garment came out twice on the catwalk.

1–2 The jute base cloth of this dress is tufted with silk chiffon and silk crepe. The top layer is made of washed silk and tapespooled lace woven with needle-spooled lace.

3–4 This one-piece woven dress is constructed from three layers of cotton, with elastic woven into it to create shape. Underneath is a boxer short.

Consider what you are trying to achieve in your fashion designs. Are you after a flashy print or embellished garment to dazzle as a showpiece on the catwalk? You may need a fabric that will show off design details of cut, seam lines and darts – a woolly knit certainly would not allow for this, but a simple plain weave would work well. What kind of silhouette are you working with? A fitted silhouette close to the body can be created with a tailored woven fabric or may be a stretch fabric or bias-cut fabric. A silhouette that sits away from the body could be created from thick boiled wool or perhaps from a crisp organza with French seams giving structure to the garment.

The season you are designing for can dictate the choice of fabric. Heavier fabrics are used more in autumn/winter and lighter, breathable fabrics in the spring/summer. However, we tend now to be able to wear a variety of fabrics in all seasons as we live and work in heated and air-conditioned environments.

Consider the durability and function of the fabric, does it need to be hard wearing or wash well for everyday use or is it a garment that will be worn on special occasions and dry-cleaned? If the garment needs to be worn in poor weather conditions consider the fabric and construction finishes best suited for this.

Lastly, how much does the fabric cost that you are using? Is it appropriate to the level of the market you are targeting? A couture garment will feature the most high-quality original fabrics available. High street designs will be made from cheaper, high-performing fabrics that are durable and wash well.

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Function

Performance

As discussed in the previous chapters, performance or technical fabrics can be created at various stages of production, at fibre production, garment construction or even when the garment is finished. Performance fabrics can be creatively used in garment design. A viscose microfibre could incorporate microcapsules containing specific chemicals that when made into a yarn and woven, produce a fabric with UV protection, which could be used for beachwear or childrenswear. Wool could be boiled and quilted to protect the body from the cold or even from pressure or abrasion, ideal for outerwear. A cotton fabric could be waterproofed with the addition of a laminate finish for sportswear. New developments in smart fabrics can also add more futuristic properties to fabrics, for example, fabrics that have a memory can change colour or can even act as a communications interface.Designers can use technical performance fabrics for their aesthetic qualities rather than for their primary functions, for example, neoprene is used for diving suits, but can also be used to create structure due to its density.

Drape

Fine fabrics that have a loose construction tend to drape better than thicker fabrics with a tighter construction. However, this is not always the case, fibre content and finishes both play a part in the drapability of a fabric. It also depends on what type of draping you require; flat fluid drapes or full voluminous folds and shapes. When buying a fabric, unwind a length and hold it up to the body to see how it falls and if it is appropriate for draping.

Volume

Volume can be achieved through the use of thick or hairy fabrics, but also by using large amounts of thinner fabrics that can be gathered or pleated. Fabrics can be used in garments in such a way that they catch air when the garment is in motion, creating volume. Volume can also be created with the use of seams and darts to create shape. It is important to think where the garment is touching the body and what shapes you are trying to make between the body and garment.

1 Alexander McQueen A/W06. Catwalking.com.

2 Knits from Sandra Backlund Ink Blot Test collection.

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Structure

Structure can be achieved by employing tailoring techniques adopted from menswear design through the use of specific seaming methods, interfacing, canvases, padding and boning. Structure can be simply achieved by using appropriate fabrics; on the whole a tightly or densely constructed fabric will offer greater garment structure than a loosely constructed fabric. A structured garment does not rely on the body to give it shape, you can create a shape that sits away from the body or that exaggerates the body in some way, for example, a tailored suit could give the illusion of broad shoulders. Structure can also be used to control the body and force it into new shapes. Tailoring was used before the invention of stretch fabric to create new body shapes through clothing.

Stretch

Stretch fabric allows garments to fit on the body without the use of tailoring. Stretch garments are comfortable and easy to wear, allowing the body to move freely with the garment. They also support the body (powernet can be used to lift and hold the body) and if used well stretch can be used to flatter the body. Stretch fibres are frequently added to other fibres to improve the performance of a fabric. Fabrics tend to distort when we wear them especially in areas such as the knees, elbows and seat. A proportion of stretch in a fabric will bring the fabric back into shape after it has been worn.

1 Christopher Kane S/S07. Catwalking.com.

2 Examples of fabric selection and use within the design process.

3 Tata-Naka hand-knitted jumper with three dimensional parts.

Aesthetics

Colour, mood and trend

The choice of textiles, imagery and colour significantly influences the message of a fashion collection. As discussed in Chapter five: Colour and trends, most fabrics that are produced have been designed as a result of the influence of trends. These trend ideas might then come through into a fashion collection or the fabric may be used in a completely different way. For example, a futuristic laminated fabric could be used to produce a modern, futuristic-looking fashion garment or the fabric could be used to give a modern twist to a classic piece. The use of well-chosen fabrics can unite fashion ideas into a strong collection.

Pattern

Pattern can be used to give a fashion collection a specific look, but this can have both positive and negative outcomes. For example, if a designer uses a certain pattern that is not on trend for the season, the collection may not be desirable and may not sell even if the garment shapes are good. Good use of pattern and clever placement can create a very personal fashion collection.

Pattern can be used to create a strong brand image too: think of Pucci prints or Missoni knitwear. However, if the pattern becomes too popular it can have a negative effect on the brand.

Texture

Texture can enhance a garment through its visual and tactile qualities. It is really important how a fabric feels; fabric is worn next to the skin and is felt throughout the day. Texture can also add interest to a garment without using detail.

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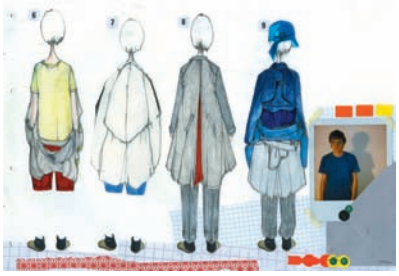

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Cost and availability

You must consider where you are going to buy your fabrics from if you are not creating them yourself. You may just need a length of fabric for a one-off garment or you might need to buy more of the fabric if you are going to put your fashion designs into production. If you are creating one-off garments you could find fabric at markets, vintage fabric fairs, flea markets or on trips and holidays. If you sell quantities of your designs you will have to think about buying fabric from a place that can supply larger amounts and that you could go back to and reorder from if necessary. If you are buying fabric in a shop you can see how much is on the roll and hope that it is still there if you need to come back. It is safer to buy from wholesale fabric suppliers who will have specific fabrics in stock, as they have catalogues that you can buy from and reorder. However, this can still be risky as they may not have fabric in a certain colour in stock when you need it.

Looking for fabrics at fabric fairs such as Première Vision is an option, however, for students this may simply not be realistic as fabric suppliers must sell fabrics in minimum lengths and you may not be able to meet their requirements. Also certain fabrics that are shown at trade fairs do not go into production if the supplier does not get enough orders for them. When buying from fabric fairs, it is important to check the prices carefully and to find out whether there are hidden costs, such as delivery or supplementary (such as minimum order) fees. Many suppliers will also require a VAT number.

Show pieces
These garments never get to the shop rail, but are conceived to attract press interest, which will promote the designer to a wider audience. They are intended to grab attention.

1

Market level and genre

Consider what level you are designing for. The fashion industry can be simplified into the following categories: supermarket, high street, independent designer (producing smaller amounts of garments), ready-to-wear designers (that show at the fashion weeks in the main capitals of the world), luxury super brands (such as Gucci and Prada) and couture. There are also casual and sportswear brands that range from small labels to the massive super brands such as Levi's and Adidas. It is interesting that most fabrics can be found at all levels of the fashion industry; what matters is the type of garment that the fabric is made into and its perceived value (that is, what the customer expects to pay for it). However, there are some fabrics that you will see more of at certain levels, for example, sportswear and casual wear will use more technical performance fabrics with durability and stretch. Supermarkets will use cheaper fabrics, but because they will be producing huge quantities of garments they will need a lot of fabric, so can therefore buy a good fabric at a cheaper price than an independent fashion designer. High street garments at mid prices should wash and wear reasonably well; this level of the industry is very competitive and the customer will demand that garments have these qualities. The ready-to-wear level will try to use innovative individual fabrics to set garments apart from other ready-to-wear designers. Showpieces for ready-to-wear designers may not have to perform beyond the catwalk. These textiles might never need to be washed or need to be very durable, allowing room for more experimentation. Also the work required to create the textile may make it unfeasibly expensive to produce to order. Couture is really the only area where a fabric could be very expensive and it may not need to be washed or wear well.

Don't forget to consider whether you are designing menswear, womenswear or childrenswear. Certain fabrics might be difficult to use in menswear as they may appear too feminine. There are safety regulations about certain childrenswear fabrics too, especially nightwear.

2

1 Dior Couture S/S07. Each layer of the dress has been hand dyed. Catwalking.com.

2 Prada menswear A/W07. Catwalking.com.

Designing with textiles

1 Draping on the stand.

2 Fashion illustrations by Julia Krupp.

3–4 Examples of textile use within fashion design development.

The best fashion collections integrate fabric design and fabric selection with garment design from the start. It is important to integrate the fabric and garment together working from one to the other. To achieve this, select fabrics as you design garments and continue to perfect your fabric choices as your garments develop. It is important to handle (feel and drape) your fabrics when you design in order to understand their properties, for example, whether they drape and stretch or whether they are stiff and structured.

Three-dimensional work

Draping on the stand

1

Certain fashion ideas are best designed in three dimensions on the stand, as working in this way allows you to see how fabrics drape or fold. If you can use the fabric you have designed to drape, this will obviously give the best results, however, you may not have yet created your fabric. If so, choose a fabric with similar characteristics in weight and construction to your designed fabric in order to get as true a representation of the fabric's qualities as possible.

When draping, design ideas are endless so consider what you are trying to achieve, what is the reason for the draping. Drape with control, don't just scrunch. Think about where the fabric touches the body and the shapes you are making. Remember that draping on the stand isn't just about letting fabric fold and hang, it can also help with other areas of design such as the proportion of detail on the form, volume and placement of pattern. It is really important as a textile designer who works in fashion, to trial your designs on the stand or body. Also hold your fabrics up and look at them in a mirror to see if colour, pattern, proportion and texture are working well.

Photograph or draw your stand work and then work into the images adding details, eliminating areas that don't work or changing proportions. Once you have created something you like on the stand, consider how the shapes and proportions you have created work with the body, how they will become garments; in other words, how you will get into them, seam them and finish them.

Digital drape

There are computer packages that allow a designer to digitally drape fabrics on a three-dimensional form. By scanning in a fabric or using a virtual fabric construction, drape, colour and texture can be shown in three dimensions on the two-dimensional computer screen. The benefit of this system is that sample garments can be trialled in virtual space quicker and more cheaply than in reality. The garments do, however, look rather computer animated and designers do not really get a good understanding of a fabric unless they are handling and interacting with it.

Two-dimensional rendering

Drawing textiles

Experiment with different media and textures when you draw garments and think about using a technique that can represent a fabric well. It is important that you can express the type of fabric a garment is made from and not make everything look like it is made of cardboard. Try to express structured, hairy, woolly, flat, smooth, transparent, shiny, hard, soft, padded, crispy, lacy, printed, embroidered and sequined textures. Explore how a fabric moves, drapes and folds on the body.

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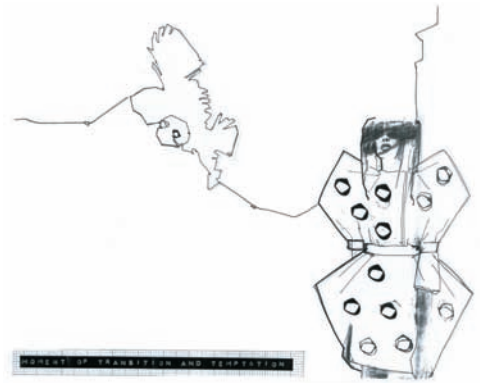

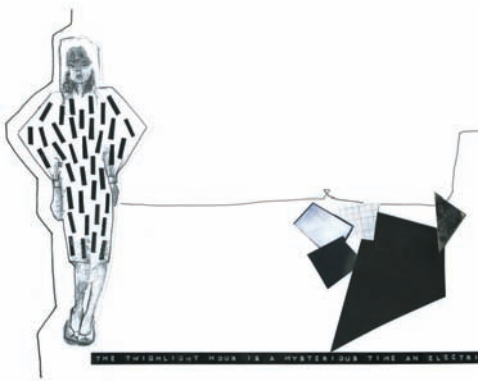

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1

Garment construction

Most fabrics have a front (or 'right') and back (or 'wrong') side, the front being the side that is usually cut to be visible on the outside of the garment. Some fabrics also have a top and a bottom; they might have a repeated direction of pattern like a printed, damask or brocaded fabric. A fabric may also have a pile that has a slight direction and a slight colour difference that can be seen when the fabric is draped, for example, velvet and corduroy. It is important to consider the right, wrong, top and bottom of a fabric when cutting out pattern pieces. Grain lines with a direction should all face the same way on the fabric to avoid cutting a piece wrong.

Garments are normally cut with the major seams running parallel to the lengthwise grain as this helps to control the structure of the garment and there is also more stretch across a fabric. Pattern pieces for sleeves and legs where elbows and knees flex will be accommodated in the stretchy part of the fabric. 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.

Selvedge
This is the edge of the fabric running down the length or warp produced during manufacture so that it does not fray.

1 Vintage Comme des Garçons deconstructed wool coat.

2 Detail of a welt seam with top stitching, often used for denim garments.

3 Overlocked jersey seam and bound neckline.

4 French seam detail.

5 Running seam with overlocked edges.

Seams and darts are needed to render a two-dimensional fabric into a three-dimensional garment. A seam can be chosen for its functional or aesthetic qualities. Garment seams need to be finished to stop the seam allowance fraying and to make the inside of the garment more attractive. Some seams can be bound or overlocked after construction, while other seams such as French seams and welt seams are constructed and finished at the same time.

It is important to know how best to cut seams and finish garments using the fabrics you have chosen. Good construction will make a garment far more successful and show your fabrics off well.

Seam allowance
This is the amount added to the outside of the pattern edge to allow for sewing.

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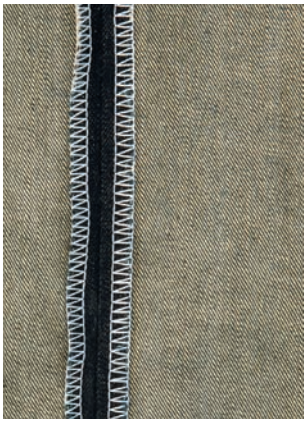


Toile
Toile is a French term for cloth, but is used nowadays to describe a mock-up of a garment (to check fit and make). A toile is usually made from cotton calico (in various weights) or a fabric similar to that which the actual garment will be constructed from. Toiling your designs is important as it allows you to see whether your design ideas actually work as a garment.

1

Before you make up a garment, measure a square of the fabric, then wash and remeasure it to see how much the fabric has shrunk. When lining a garment make sure the lining fabric has the same wash qualities as the main body of the garment, as shrinkage can cause the garment to hang badly or the colour in a fabric might run.

Certain construction techniques need a fabric that can be shrunk with steam, such as a wool used in a tailored sleeve head. A synthetic fabric will not work in the same way so may not be suitable for a particular technique.

Don't let stretch fabrics hang over the table as you cut them, as the fabric will distort and affect how the pattern pieces are cut. Use stretch interfacings with stretch fabrics if you need to retain the stretch in a garment.

Thin needles, for example, size 9, are used for light fabrics including silk, chiffon and voile, while a heavier needle, for example, size 18 is used for denims, canvas and overcoating. Replace needles as they become blunt for better stitching.

1 Internal construction of a La Petite S***** wool dress. It is lined with silk organza, the hem of which is babylocked and shows beneath the dress. A corseted structure holds the top of the dress, leaving the wool to hang from under the bust.

2 Wool dress by La Petite S***** A/W07.

2

Patterned and embellished fabrics

Patterned fabrics

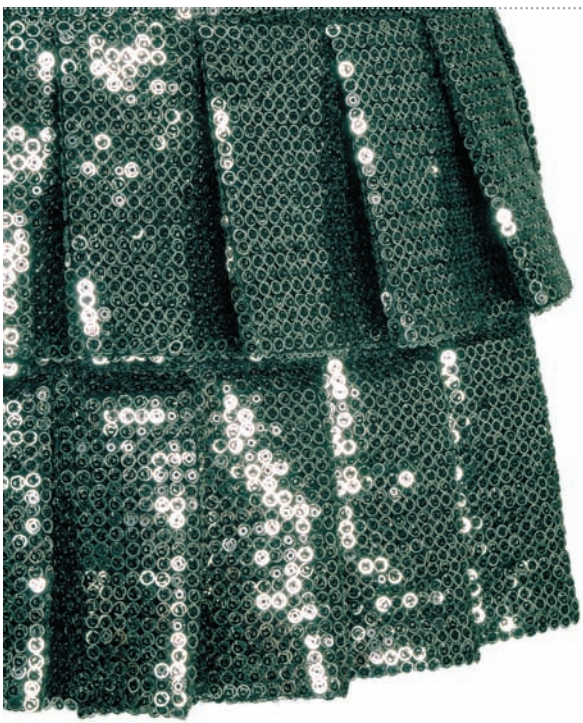
Consider how pattern is placed on the garment. Some patterns may have a direction – a top and a bottom. How does the size of the pattern relate to the size of the garment? Large-scale patterns will need thoughtful placement; a larger garment will obviously provide more space for a larger design. You may need more fabric than you think for your garment so that you can place patterns in specific areas. It is possible to engineer designs so they flow from one pattern piece to another or think about shifting seams so that a pattern can work around the body and not be cut by a seam. If the pattern needs to be symmetrical across a garment, you must take time to carefully lay out pattern pieces on the fabric. When marking out pattern pieces for cutting make sure you consider where the seams join and not where the edges of the seam allowance join. Also look at how a pattern travels across the body and across openings and the centre front of a garment. Consider what the garment looks like as pattern pieces go off grain, for example, a batwing sleeve placed on a vertically striped fabric will have stripes running up the body, but horizontally across the width of the sleeve. It might help to draw the pattern you are working with on to the toile to work out its position on the body and across seams.

Sequined and beaded fabrics

Sequined and beaded fabrics may need to be stabilised before they are cut so that the beads do not come off. The most professional way to work with embellished fabric is to first mark the pattern pieces on the fabric, then remove the sequins or beads from the seam allowance just past the seam line and knot off the bead or sequin threads. The fabric can then be cut without the sequins or beads falling off. Tape can be used to push the sequins or beads away from the seams before sewing and then sequins or beads can be sewn by hand over the seams on the outside of the garment. If a sequined garment is not constructed in this way the garment might have to be lined to cover any scratchy seams that contain cut sequins or beads. Garments should be stored flat to avoid sagging caused by the weight of the embellishments.

Pleated fabrics

Natural fibres can shrink when a fabric is pleated so pre-shrink the fabric first. Flat pleats are best hemmed before pleating, whereas raised pleats can be hemmed afterwards.



1

1 Pleated double sequined dress by Bérubé A/W07.

2 Jessie Lecomte A/W07 creation.

3 Giles Deacon A/W07 hand knitted oversized cardigan by Sid Bryan.

Knit

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 (see Chapter three: Fabric construction for more information on types of knit).

2 3

Cut and sew

Knits have different stretch qualities related to the stitch construction and fibre content, and knits can stretch across length and width or in all directions. Consider where you require the stretch on a garment, usually where elbow and knee joints are and in the seat of a garment. Consider how much stretch is needed to get a garment over your head without a fastening.

Machine-knitted fabrics tend to twist in production so the grain is off; this can cause garments to hang badly. Follow a vertical rib or wale to determine the grain of the knit and lay your pattern pieces accordingly. Don't let the fabric hang off the end of the table as you cut it as this will cause distortions.

Silk jersey can be pinned first to tissue paper, pattern pieces can then be laid on and cut out with sharp scissors. Certain knits can ladder and will curl when cut (single jersey curls to the right side when cut). A ballpoint needle or stretch needle will glide between the yarns rather than piercing the fabric and causing laddering.

Jersey garment seams are overlocked together, this stitch allows the seams to stretch with the garment and not break. The stitch also contains the raw edges of the pattern pieces to create a neat finish. If no stretch is needed in a seam it may be advisable to stabilise it with a non-stretch tape, for example, on a shoulder seam. Reinforce buttonholes with woven interfacing and hand stitch zippers in place before machine stitching them. Let the garment hang overnight before measuring and hemming, then zigzag or twin needle the hem. Knitted garments should ideally be stored flat so they do not sag.

Fully fashioned knit

Knitted fabric that is not cut into pattern pieces must instead be fashioned or shaped into pattern pieces through increasing and decreasing stitches. Fully fashioned shaping can also create a decorative feature at seams. Slight increases and decreases can be created by changing the stitch tension row by row, by changing the thickness of the yarn or by changing the type of stitch. A ribbed edge is a good example of this; ribbed panels can be placed at the waist to bring the garment in to fit.

In order to work out a pattern for a knitted garment you must first knit a tension swatch. Knit a 15cm square of knitting, finish it in the way the garment would be finished, for example, washed or pinned out and steamed, but be careful not to overstretch the sample while you do this. When the sample is dry and relaxed measure the number of rows (vertically) and stitches (horizontally) in a 10cm square section in the middle of the swatch. In certain swatches you may have hidden some of the stitches in tucks or slipstitch structures – this should be taken into consideration.

Measurements of centre-back length, cuffs and sleeve length are taken either from a person, from a garment that already exists or from a jersey toile. Now work out how many stitches need to be knitted to create the required pattern pieces for the garment shape. Trims such as collars, cuffs and waistbands will all have to be knitted also.

Once fashioned pieces have been knitted they may need to be blocked before constructing together, as they may have lost their shape while on the machine. Chunky fabrics and ribs do not need to be blocked. Blocking involves placing the knitted piece face down on to a padded stiff backing, straightening the knit and checking the measurement. The knitted piece then requires careful steaming. Do not put the iron in direct contact with the knit as this may flatten stitches. Let the piece cool down completely before removing it from the backing. Fully fashioned knitwear can be sewn together by hand using a variety of hand stitches including back, blanket, overlock, or zigzag stitch on a sewing machine, which allows for more stretch than a normal straight stitch. Make sure you use a roller foot or cover the foot with tape so it doesn't get caught in the knit stitches if using a sewing machine. There should be as much stretch at the seams as there is in the rest of the garment. Pin together first so pieces do not overstretch, you can use the same yarn that the garment is made in so the stitches do not show. Use a blunt thick needle when hand sewing so that the yarn in the knit stitches is not split.

1 Vintage Junya Watanabe wool jersey t-shirt with silk, cotton and polyester appliqué flowers.

2 Peter Jensen fully fashioned neck detail (A/W07).

3 Louise Goldin machine-knitted dress (A/W07).

4–5 Junya Watanabe two-layer cardigan. This piece clearly shows full fashioning around the shoulders and neck.

2

3

4

5

Woven fabrics

1

Transparent fabrics

Transparent fabrics allow seams, facings, hems and construction to show on the outside of a garment. Crisper transparent fabrics such as organza are easier to cut and sew than the softer transparents such as chiffon and georgette. Also the heavier the transparent is the easier it is to construct into a garment. Difficult fabrics easily distort when cutting and sewing. To help avoid this lay the fabric on the cutting table to rest overnight, roll it out flat on tissue paper with no overhang, then pin the fabric to the paper and carefully cut out the pattern pieces. The tissue can be left on the pieces while they are sewn together and then carefully ripped off after construction. The selvedge of the fabric can be successfully used as a finish of a seam. The seams used can affect the drape and structure of the garment so try testing different types of seams first to see what works best. Very light transparent fabrics are often French seamed, as the seams can be seen from the outside this type of construction is very desirable.

Darts can be very hard to achieve successfully; maybe consider how seams can be placed to avoid darts. Leave garments to hang before hemming them to allow the fabric to drop, the hem can then be measured from the floor up, trimmed and sewn. Iron transparent fabrics at a lower temperature than heavier fabrics made from the same fibres.

French seams
To create a French seam, place the wrong sides of the fabric together and sew on the seam line. Next, trim the seam allowance down, press the seam open to flatten and then press the seam allowance to one side. Put the right sides together and sew a line of stitching that traps in the seam allowance.

Pile fabrics

Check the direction of piled fabrics, there might be an up and down that will create a slight tonal colour difference on pattern pieces and garments. When cutting fabric, mark the pile direction on the back of the fabric or on the selvedge edge and then lay all the pattern pieces in the same direction. Pile fabrics tend to shift when they are right side to right side, so lay fabric out wrong side together or completely flat. When pinning pattern pieces to velvet put the pins in the seam allowance as they can mark the fabric. To avoid fabrics shifting when you are creating seams hold fabrics taut when stitching or stitch with tissue in between the fabric. Be careful when pressing these fabrics as it can spoil the pile, so press from the wrong side only.

Outerwear fabrics

Seams used for outerwear fabrics often need to be strong and durable; a welt seam, which features topstitching is often chosen. Running a plastic coating along the seam from the inside can create a waterproof seam.

1 Comme des Garçons blouse. Cotton calico lining can be seen through the transparent viscose outer layer, enabling the internal and external elements of the garment to work together.

2 Jasper Chadprajong menswear designs.

2

Non-woven fabrics

Leather and suede

Leather and suede skins do not come as a length, but are specific to the size of the animal they come from. Think how big your pattern pieces are; you may have to create more seams in a garment if the skins are not big enough. Seams are easier to sew than darts so consider how you can position your seams. When choosing skins check them for imperfections, thinning and holes that you might have to work around, also compare skins for colour matching and pattern. Suede may have a nap so this must be considered when choosing skins and when sewing them up.

When cutting out use weights to hold down the pattern pieces, as pins will mark the leather. Wedge-point needles or leather needles cut cleanly through leather and suede, while a normal needle tends to rip the skin as it punctures the hard surface. Needle holes cannot be removed so take care sewing seams especially topstitching. It may be necessary to put a leather or Teflon foot on the machine to stop the leather sticking while sewing.

When sewing leather, press out seams from the wrong side and if they do not lie flat, glue the seam allowance down and lightly hammer from the back, being careful not to mark the leather on the right side. A very heavy leather might best be sewn with an overlapped seam. Remove seam allowance from one of the sides of the seam and overlap the other and topstitch down. It might be necessary to stick the surfaces first so they do not slip. If the leather is heavy, slash and glue darts or topstitch or overlap to create a flat finish. Leather stretches, but does not return to shape so it may be necessary to tape seams that are under strain from wear and tear.

Fur

Fur can be bought as tails, pelts or fur plates. Fur plates are fabrics created by sewing together smaller scraps of fur. When buying fur consider the size of your pattern pieces. Look for an overall good even coverage and colouration, pull the fur to see if it comes out, also see how soft and flexible the skin is as it may have dried out and not be worth buying. It might be possible to patch any holes and splits on the under leather side, as long as it doesn't affect the look on the fur side. It may also be possible to recycle dated second-hand fur garments into something new.

When cutting out fur lay right side down and place the pattern pieces in reverse on top, then cut through the leather skin and pull apart the fur or hair. Try not to trap long hairs or fur into seams, push them away from the seams before sewing. After seaming cut away fur or hair from the seam allowance to remove bulk and give a better finish.

Plastics

Plastics should be treated in a similar way to leather, as they may show needle holes, so take care when stitching. Be careful when pressing that you do not melt the fabric.

1 Jessie Lecomte A/W07.

How will you work?

1

As a textile designer you will need to consider the area you would like to specialise in, be it print, knit, weave, stitch or embellishment. You might work as a freelance designer producing samples that you sell yourself or through an agent. Alternatively you could work within a company designing textiles and also recolouring and preparing artwork for production. Textile ideas could also be taken into fashion garments, creating unique fabrics for fashion collections. There are also openings for textiles designers in the field of trend prediction, producing textiles for use within the trend prediction packages or working on trend ideas and colour. Here various textile designers have been interviewed to provide an overview of some of the jobs a fashion textile designer can have.

James Stone – Embroidery designer and part owner of Code Studio

What is your job title?
Embroidery designer.

Please describe your job.
I design one-off embroidered and beaded designs for the fashion industry. I personally design, produce and sell the designs to fashion companies worldwide.

Who have you worked for?
I have sold work to many companies around the world including Calvin Klein, Donna Karan and Nicole Farhi. I mainly design the work and show a portfolio, but sometimes I work on special commissions for runway development and concept.

What was your career path to your current job?
I studied at Norwich School of Art and then did an MA in Textiles at the Royal College of Art in London. I graduated in 1998 and then set up Code Studio with two friends. We now do two shows in Paris (at Première Vision) and three in New York a year.

What do you do on an average day?
I start work at 8.00am and normally spend most of my time designing for the next season. I also have appointments to arrange when needed and all the administration work that goes along with working for yourself. I also have to source new fabric and yarn to sew with, which can mean shopping in fabric shops and antique markets.

What are your normal working hours?
I normally start at 8.00am and go through to 7.00pm each day. Sometimes when I have a deadline or a show coming up, I often work a little more.

What are the essential qualities needed for your job?
To be motivated, have enthusiasm, enjoy what you do and also strive to be creative with each design.

What kind of wage can someone command in your job?
There is an average price for a design throughout the textile industry. It is about £325 a design and the price can be more for larger pieces. You can also work on commission per day or sometimes the client gives you a budget and you explain what can be done in that time.

How creative a job do you have?
Very creative, I feel lucky to earn money from something I enjoy doing. You do have to work hard, but it's worth it in the end to be able to be creative all day.

What kind of team do you work with?
I did share a studio space with Emily and Lisa from Code Studio, but I now work from home, so I tend to design alone and then have lots of time with the clients whilst selling my work.

What is the best bit about your job?
It has been nice to travel with work and get a real insight into the industry from a freelance side. I also like to be able to push myself and work when and where I want.

And the worst?
The worst can be waiting to get paid from some companies, also having no financial support if things did not go well, but the good always outweighs the bad.

Any advice you would give someone wanting to get a job in your area of fashion?
Believe in yourself, always follow up any lead or interest there is in you and your work. Often you need to give something a go once or twice and then hopefully it could work out for a future design. Work hard at college, take full advantage of the facilities and workshops you have.

Duncan Cheetham – Printed textile designer

What is your job title?
Printed textile designer and consultant.

Please describe your job.
Print designer and direction for menswear and womenswear fashion. Colour and trend predictions. Print designer for Liberty and working on seasonal collections for a range of global fashion designers.

Who have you worked for?
Liberty of London, Pringle of Scotland, Marc Jacobs, DKNY, Donna Karan, Temperley, Calvin Klein, Diane von Furstenberg, Converse, WGSN and Penguin Books.

What was your career path to your current job?
MA in Printed Textiles at the Royal College of Art. BA (hons) Fashion and Textile design from UCE Birmingham.

What do you do on an average day?
Design, draw, research for design and colour. Concepts for client's trends and directions.

What are your normal working hours?
9.00am–5.00pm Monday to Friday and some weekend work when necessary.

What are the essential qualities needed for your job?
Organisation, good colour and design concepts and research skills, CAD skills in design and repeat, and knowledge of working to tight deadlines.

What kind of wage can someone command in your job?
£30–40k.

How creative a job do you have?
I have a very creative job involving drawing, colouring and initial concepts for clients.

What kind of team do you work with?
I work on my own doing freelance projects and with other design studios. At Liberty I work in a team of four designers and one archivist (working on a seasonal print collection that is wholesaled out to other designers).

What is the best bit about your job?
Seeing your designs through to colour and production, and seeing your designs in fashion products. Working with other design studios and a range of different projects, from flooring to book illustration.

And the worst?
At Liberty working two years in advance of the season. Not having time to do more freelance work!

Any advice you would give someone wanting to get a job in your area of fashion?
To gain as much experience in industry as possible, be original and different. And don't irritate anyone, it's a small industry! And work hard.

1 **James Stone textile design.**

2 **Duncan Cheetham textile designs for Liberty.**

Sid Bryan – Knitwear designer

What is your job title?
Knitwear designer.

Please describe your job.
Freelance designer. I go into companies and work on knit, from commercial selling collections through to one-off showpieces.

Who have you worked for?
Many designers at all levels of the market from high street and technical sportswear through to high-end designers worldwide.

What was your career path to your current job?
I wanted to study fine art/painting after my foundation course, but failed to get on to a painting degree. Thankfully I was directed towards textiles where I could utilise all my passion for colour and texture at Buckinghamshire on the BA Textile Design and Surface Decoration course. From there I studied Fashion Knitwear at the Royal College of Art and started working freelance with Bella Freud and Alexander McQueen. From then it snowballed and through word of mouth I met more and more designers.

What do you do on an average day?
There isn't really an average day. I travel a lot, so when I am back in the office my days are often taken up with administrative work, catching up with paperwork and liaising with suppliers and clients. I might be meeting with a designer to create a brief, brainstorming with my team, drawing, knitting, sampling and creating technical support documents for suppliers. I could be sourcing vintage stitchwork from markets or using a trampoline to create giant plastic doilies.

What are your normal working hours?
Endless! I live near my studio so I get up at 6.30am in the morning and work until as late as possible. I work most weekends.

What are the essential qualities needed for your job?
You have to have a certain sort of technical brain to be a knitter and patience is essential as you have to do things over and over again until it's right. Because I work with so many different designers you need to be able to adjust and work with every sort of personality.

What kind of wage can someone command in your job?
You can charge as much as you want, but ultimately you have to get a reputation as being reliable and talented and then decide how much you think that is worth.

How creative a job do you have?
Extremely, every time you create a piece of knit you start with a strand, a yarn then through an endless variety of processes you create a sample cloth and with that you then have an endless variety of shapes and forms this can take. There are joyous, really creative bits like knitting with elastic bands for the last Giles show and a lot of boring business and admin bits too.

What kind of team do you work with?
I have two full-time assistants who I couldn't function without and any number of people working with me as and when necessary. Last season we swelled to 12 at its peak.

What is the best bit about your job?
I knit, which is what I love and I get to work with amazing, talented people.

And the worst?
I travel so much that sometimes I don't know what day it is and I miss my husband and my dog.

Any advice you would give someone wanting to get a job in your area of fashion?
Ultimately you need to have a real passion and talent for what you do. There are no conventional routes, work with people and gain as much experience as you can. You must have a real technical understanding of knitwear and with this understanding push all the boundaries possible whenever possible. Above all, as with all of the creative industries be nice, be keen, it will go a long way.

Justine Fox – Colour and fabric trend prediction

What is your job title?
Project manager/colourist/fabric editor.

Please describe your job.
Working closely with clients to create colour palettes and forward trends for a range of industries including dyestuff, plastics, paints and electronics. I work in conjunction with graphic designers to come up with effective marketing solutions for B2B and B2C. I also oversee production from panel meeting to publishing of the Mix interior colour forecasting book. I identify, collate, style and write interior fabric pages in Mix Future Interiors magazine and I promote the company through presentations and workshops around the world.

Who have you worked for?
Global Color Research Limited. Clients include DuPont, Clariant, Homebase, KTF Retail, Comex and Addis.

What was your career path to your current job?
Studying Fashion BA at the University of Brighton, working in the fashion industry, interiors and branding, furniture and finally, colour psychology and colour trends.

What do you do on an average day?
A lot on client liaison, but it depends on the time of year – the industry is quite seasonal.

What are your normal working hours?
9.30am–6.00pm are contracted, but there is a lot of overtime particularly at the end of projects, when the trade fairs are on and business trips.

What are the essential qualities needed for your job?
A good understanding of colour, diplomacy, stamina, time management and at least basics in design packages.

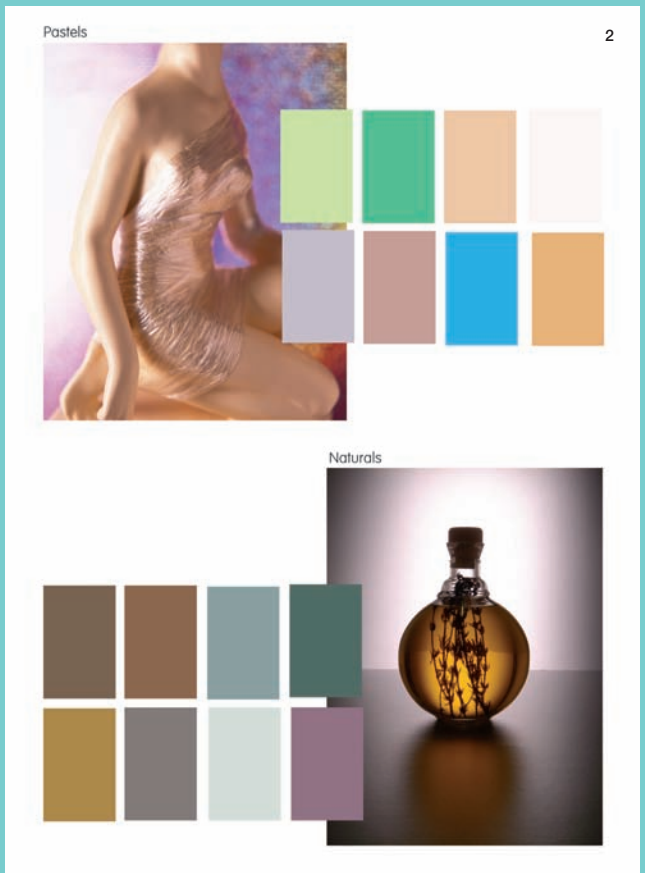
How creative a job do you have?
I would say it's 40/60 between creative and administrative.

What kind of team do you work with?
A lot of freelancers – we choose the team dependent on the job.

What is the best bit about your job?
Travelling, fun clients and the finished product.

And the worst?
The hours and pay.

Any advice you would give someone wanting to get a job in your area of fashion?
Keep up to date on developing trends, go to as many exhibitions and trade shows as possible and be enthusiastic about colour.



1 Sid Bryan show piece.

2 Justine Fox colour palettes.

Antoine Peters – Fashion textile designer

What is your job title?
Initiator and creative director of the Antoine Peters design label.

Please describe your job.
Concept, design, development, technical and business direction.

Who have you worked for?
Work experience at Viktor & Rolf and *AvantGarde* magazine.

What was your career path to your current job?
Commercial economy, HEAO, Arnhem; Arnhem Institute for the Arts, Fashion Department; working at Viktor & Rolf and *AvantGarde* magazine; a master course from Fashion Institute Arnhem; self-employed fashion designer, design label Antoine Peters 'A sweater for the world!'; guest teacher ArtEZ, The Arnhem Academy of Art and Design, fashion design and product design.

What do you do on an average day?
Emailing, designing, pattern drawing and getting inspired.

What are your normal working hours?
9.00am to as late as needed.

What are the essential qualities needed for your job?
The same as those of a midfield footballer: creativity, all-roundedness, keeping an overview, positive coaching, team worker, winning mentality, self-critical and perseverance. Oh yes, it's nice to have a little business sense off the 'pitch' too. And you must be amorous with the ball.

How creative a job do you have?
One of the most creative ones in the world, because of the mixture of all the different disciplines, restrictions and lack of limits at the same time.

What is the importance of textiles in your work?
Silhouettes are very important to me and so are textiles. And I believe (silk) jersey and denim can be just as interesting in high fashion as the stereotypical richer fabrics. And print design is an even more important part of my collections, because it can add a lot to a story and is very communicative.

What kind of team do you work with?
Work experience students, friends and soulmates.

What is the best bit about your job?
The possibility to bring some lightness into the world. Force negativity out of the picture and connecting people by means of a smile.

And the worst?
Finding decent quality foreign production facilities and/or an investor. Someone?

Any advice you would give someone wanting to get a job in your area of fashion?
Listen, watch and ask as much as possible in the beginning. And then keep as close as possible to your new 'self'.

Manel Torres – Textiles with technology

What is your job title?
I am the managing director of Fabrican Ltd.

Please describe your job.
My role within the company is to give strategic direction and creative thinking within all areas the company operates (such as fashion, science and business) and ensure the financial buoyancy of the company.

What was your career path to your current job?
I studied for a PhD on the subject of spray-on fabric, which led me to found Fabrican Ltd.

What do you do on an average day?
Anything and everything.

What are your normal working hours?
As many as needed.

What are the essential qualities needed for your job?
Creativity, discipline and the ability to take risks.

What kind of wage can someone command in your job?
None of your business!

How creative a job do you have?
As stated before, creativity is essential in making the company what it is.

What kind of team do you work with?
I work with a team that has a varied background. It ranges from arts and design, to science and business.

What is the best bit about your job?
Creating products for future use, which no one has thought of yet.

And the worst?
Getting a fair agreement in a business deal.

Any advice you would give someone wanting to get a job in your area of fashion?
Persevere!

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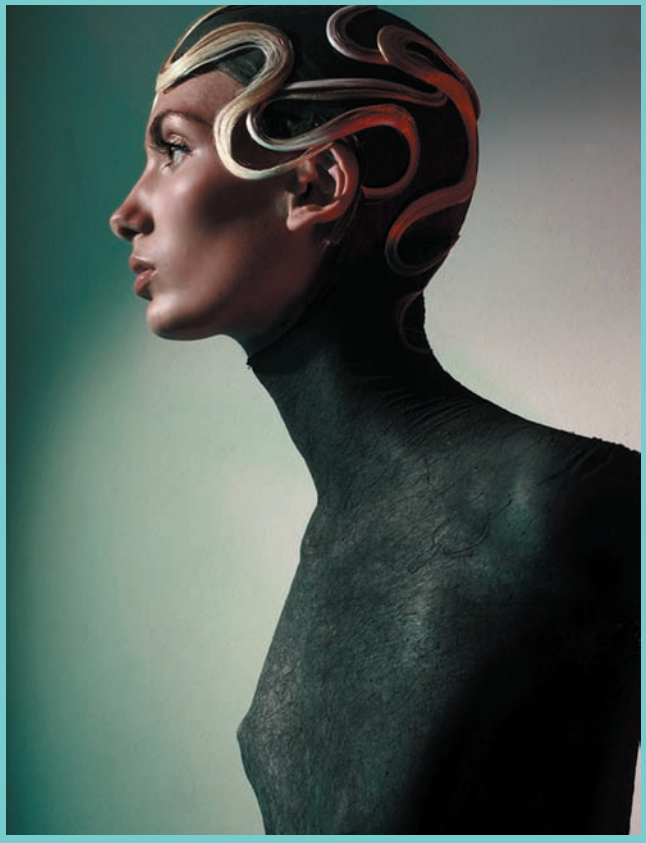

1 **A SWEATER FOR THE WORLD! by Antoine Peters. Shown during Amsterdam International Fashion Week, July 2007.**

2 **Manel Torres textile design.**

1 Vintage menswear. Dress shirt and waistcoat.

The intention of this book has been to try and cover all the areas relating to the research, design and creation of fashion textiles. The aim has been to give an insight into the topics a textile designer should know about in order to really understand their subject and to provide information fashion designers will benefit from to improve their textile work. This includes fibre qualities and fabric finishes, together with practical information on how to work, cut and sew textiles into garments.

I hope that the information about careers for textile designers in the fashion industry is useful. Quite often textile designers do not get credited for their amazing work, leaving the fashion designer to pick up all the acclaim. Textile design is often the unsung hero of fashion design, however, without innovative textiles fashion design would surely not be as interesting.

Fashion can be a difficult industry to work in, but also a very interesting and exciting one, so try to be the best you can. Use the information in this book to inform and stimulate your designs. Continue to research topics that have not been covered in detail here. It is important to really push your ideas, be innovative, experimental and above all take pleasure in what you are doing.

This book has been a challenge to compile, as there was so much to look at, the more I researched the more I wanted to know. I personally have learnt so much more about textiles through writing this book. I hope you get as much out of it as I have done.


12

Glossary

Brand image
Tangible and intangible characteristics that identify a brand.

Camouflage
Fabric originally developed by the French army during the First World War to disguise soldiers during field combat. The abstract coloured patterns have now been developed and adopted in fashion.

Classic
A garment that has a widespread acceptance over a period of time and is well known by name.

Colourfastness
How a fabric's colour reacts to washing, abrasion or light.

Colourways
Colour groups and combinations offered.

Computer-aided design (CAD)
The use of computers to design.

Drape
The way a fabric hangs.

Empire line
Dresses worn during the First Empire in France (1804–1815), which were characterised by a high waistline.

Engineered designs
Designs that are made to fit into a shape or are placed in a certain way.

Fashion week
Periods of time usually twice a year during which fashion collections are shown in the major fashion capitals of the world, for example, New York, London, Paris and Milan, to press and buyers.

Felted
The knotting together of fibres through heating with chemicals or friction to produce a matted material.

Finishes
Processes and techniques that are used to manipulate the appearance, characteristics, performance or handle of a fabric. Also used to describe the way a garment is neatened during construction, for example, with seams, hems and facings.

Fully fashioned
The shaping of a knitwear garment so each edge is a selvedge and will not unravel.

Handle
The tactile quality of a fabric.

Interfacing
Fabric placed between the garment and facing to add body, strength or structure.

Japonisme
The influence of Japanese arts on Western art.

Lining
Fabric used on the inside of a garment to hide the construction. It extends the garment's life as it helps to retain the shape and also makes the garment more comfortable to wear.

Mainstream
Trends that are accepted by the majority.

Mood boards
A collection of images, colours, objects or fabrics that are grouped together to express visually a theme or design idea.

Pattern pieces
The shapes that make up a garment in paper form, created through pattern cutting.

Penelope canvas
A double mesh canvas formed with pairs of crosswise and lengthwise intersecting threads.

Performance fabrics
High-tech fabrics that were originally developed for sportswear or extreme climate outerwear, but are now used for mainstream fashion.

Overlocking
Mostly used in knitwear for cut-and-sew production to cover cut edges and seams at the same time.

Smart textiles
Fabrics that respond to changes in their environment and alter in some way. Smart fabrics appear to 'think'.

Stand
A dressmaking mannequin or dummy.

Topstitch
To stitch on the right side of the garment.

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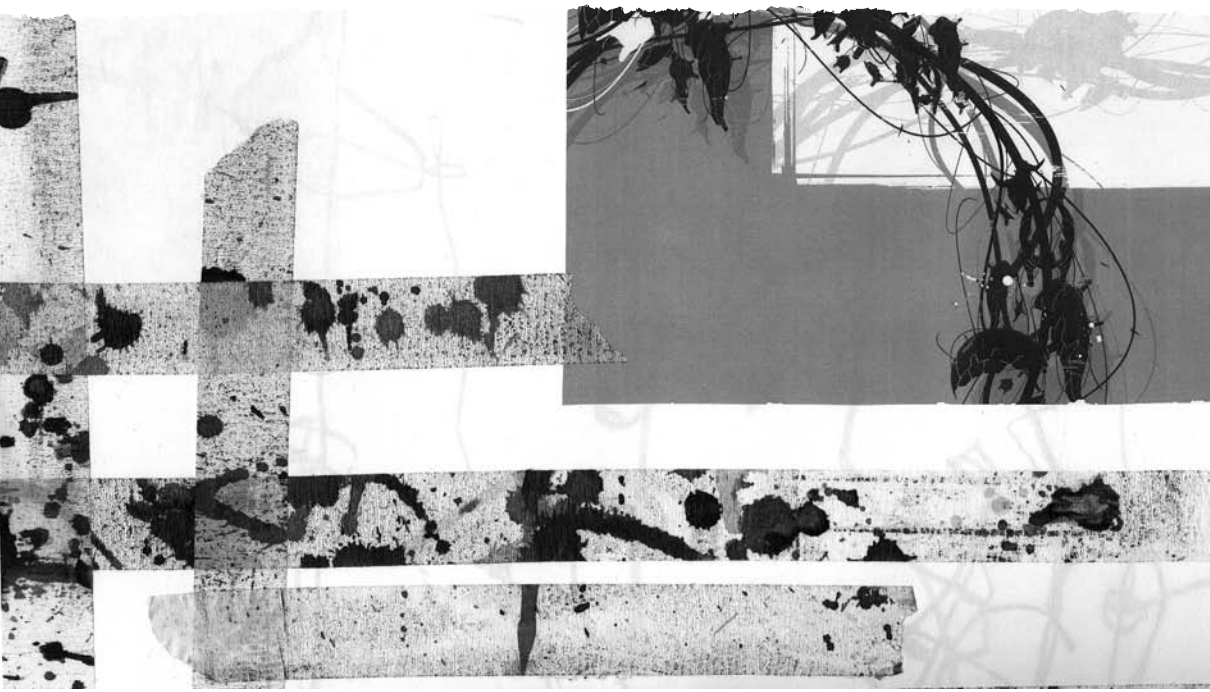

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Tymorek S (ed.) (2001)
Clotheslines: A Collection of Poetry and Art
Abrams

Watt J (2003)
Ossie Clark: 1965–74
V&A Publications

Wells K (1997/1998)
Fabric Dyeing and Printing
Conran Octopus

Useful resources

UK

British Fashion Council (BFC)
5 Portland Place
London
W1B 1PW

Tel: +44 (0)20 7636 7788
www.londonfashionweek.co.uk

Owns and organises London Fashion Week and the British Fashion Awards.

It also helps British fashion designers.

The Department of Trade and Industry (DTI)
1 Victoria Street
London
SW1H 0ET

www.dti.gov.uk

Business advice on export and legal issues.

Portobello Business Centre
www.pbc.co.uk

Runs excellent business courses for fashion designers and provides advice on finding finance.

Prince's Trust
www.princes-trust.org.uk

Advice and finance for small business start-ups.

Fashion employment agencies
www.denza.co.uk
www.smithandpye.com

USA

Council of Fashion Designers of America
www.cfda.com

Promotes and advises American fashion designers.

Olympus Fashion Week
www.olympusfashionweek.com

America's Fashion Week held in New York.

ITALY

Camera Nazionale della Moda Italiana (National Chamber for Italian Fashion)
www.cameramoda.it

An association that disciplines, co-ordinates and promotes the development of Italian fashion. It organises the Italian Fashion Week.

FRANCE

Fédération Française de la Couture, du Prêt-à-Porter des Couturiers et des Créateurs de Mode
www.modeaparis.com

Under various departments it oversees French couture and the ready-to-wear design industry for menswear and womenswear.

The federation organises the Paris fashion shows and events at Mode à Paris.

JAPAN

Council of Fashion Designers, Tokyo
www.cfd.or.jp

Promotes Japanese fashion.

HONG KONG

Hong Kong Trade Development Council
www.hkfashionweek.fw.com

Hong Kong Fashion Week is organised by the Trade Development Council. www.tdctrade.com

Useful resources

MUSEUMS

Victoria and Albert Museum (V&A)
Cromwell Road
South Kensington
London
SW7 2RL
UK

www.vam.ac.uk

Fashion Museum
Assembly Rooms
Bennett Street
Bath, BA1 2QH
UK

www.fashionmuseum.co.uk

Costume Gallery
Los Angeles County Museum of Art
5905 Wilshire Boulevard
Los Angeles
CA 90036
USA

www.lacma.org

The Bata Shoe Museum
327 Bloor Street West
Toronto
Ontario
Canada
M5S 1W7

www.batashoemuseum.ca

Museum at the Fashion Institute of Technology
7th Avenue at 27th street
New York
NY 10001–5992
USA

www.fitnyc.edu/museum

The Costume Institute
The Metropolitan Museum of Art
1000 5th Avenue at 82nd street
New York
NY 10028–0198
USA

www.metmuseum.org

Museum of Fine Arts, Boston
Avenue of the arts
465 Huntington Avenue
Boston
Massachusetts 02115–5523
USA

www.mfa.org

The Kyoto Costume Institute
103, Shichi-jo
Goshonouchi Minamimachi
Kyoto 600–8864
Japan

www.kci.or.jp

Kobe Fashion Museum
Rokko Island
Kobe
Japan

www.fashionmuseum.or.jp

MoMu
Antwerp Fashion ModeMuseum
Nationalestraat 28
2000 Antwerpen
Belgium

www.momu.be

Musée des Arts décoratifs
Musée des Arts de la mode et du textile
107 rue de rivoli
75001 Paris
France
www.ucad.fr

Musée de la Mode et du Costume
10 avenue Pierre 1er de serbie
75116 Paris
France

Musée des Tissus et des Arts décoratifs de Lyon
34 rue de la charité
F-69002 Lyon
France

www.musee-des-tissus.com

Galeria del Costume
Amici di palazzo pitti
Piazza Pitti 1
50125 Firenze
Italy

www.polomuseale.firenze.it

Museum Salvatore Ferragamo
Palazzo Spini Feroni
Via Tornabuoni 2
Florence 50123
Italy

www.salvatoreferragamo.it

Wien Museum
Fashion collection with public library (view by appointment)
A-1120 Vienna
Hetzendorfer
Straße 79

www.wienmuseum.at

Useful resources

FABRICS AND TRIMS

UK

Cloth House
47 Berwick Street, Soho,
London, W1F 8SJ
Tel: 0207 437 5155
www.clothhouse.com

Broadwick Silks
9–11 Broadwick Street, Soho,
London, W1F 0DB
Tel: 0207 734 3320

VV Rouleaux
54 Sloane Square, Cliveden Place,
London, SW1W 8AX
Tel: 020 7730 3125
www.vvrouleaux.com

Kleins
5 Noel Street, London W1F 8GD
Tel: 0207 437 6162
www.kleins.co.uk

Whaleys (Bradford) Ltd
Harris Court, Great Horton,
Bradford, BD7 4EQ
Tel: 01274 576718
www.whaleys-bradford.ltd.co.uk

US

NY Elegant Fabrics, NYC
222 West 40th St, New York,
NY 10018
Tel: +11 212 302 4980
www.nyelegantfabrics.com

M&J Trimming
1008 6th Ave, New York,
NY, 10018
www.mjtrim.com

WEBSITES

www.costumes.org

www.fashionoffice.org

www.promostyl.com

www.fashion.about.com

www.style.com

www.fashion-era.com

www.wgsn-edu.com

www.londonfashionweek.co.uk

www.premierevision.fr

www.hintmag.com

www.infomat.com

www.catwalking.com

PUBLICATIONS AND MAGAZINES

10
Another Magazine
Arena Homme +
Bloom
Collezioni
Dazed & Confused
Drapers Record
Elle
Elle Decoration
i-D
In Style
International Textiles
Marie Claire
Marmalade
Numéro
Oyster
Pop
Selvedge
Tank
Textile View
View on Colour
Viewpoint
Visionaire
Vogue
W
WWD Women's Wear Daily

FASHION FORECASTING

www.londonapparel.com
www.itbd.co.uk
www.modeinfo.com
www.wgsn-edu.com
www.peclersparis.com
www.edelkoort.com

FASHION TRADE SHOWS

www.premierevision.fr
www.informat.com
www.pittimmagine.com
www.purewomenswear.co.uk
www.magiconline.com

Useful resources

Alexander McQueen
www.alexandermcqueen.com

Balenciaga
www.balenciaga.com

Buddhist Punk
www.buddhistpunk.co.uk

Cathy Pill
www.cathypill.com

Chloé
www.chloe.com

Christian Wijnants
www.christianwijnants.be

Clare Tough
www.claretough.co.uk

Comme des Garçons
www.doverstreetmarket.com

Dior
www.dior.com

Dolce & Gabbana
www.dolcegabbana.it

Dries Van Noten
www.driesvannoten.be

Eley Kishimoto
www.eleykishimoto.com

Emma Cook
www.emmacook.co.uk

Givenchy
www.givenchy.com

Global Color Research Ltd.
www.globalcolor.co.uk

Hussein Chalayan
www.husseinchalayan.com

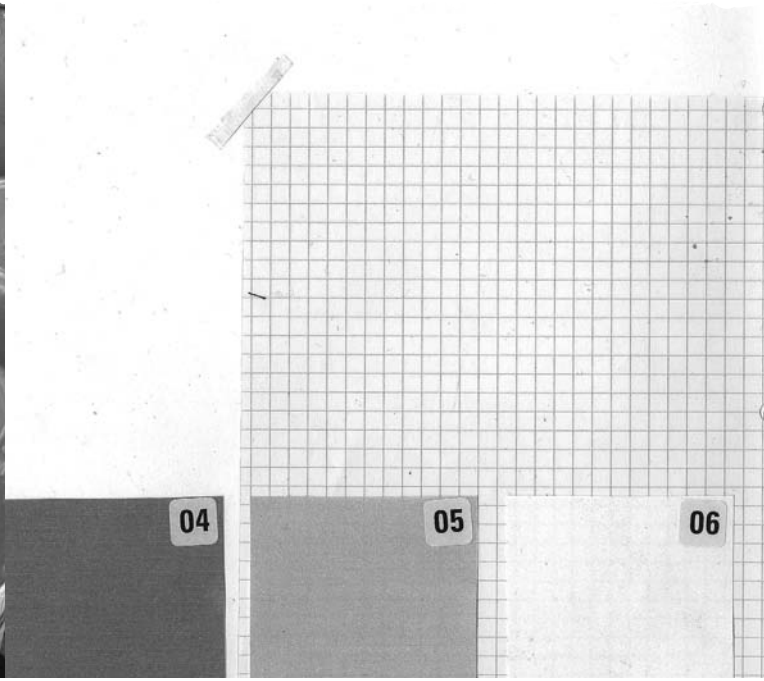
Jean-Pierre Braganza
www.jeanpierrebraganza.com

Jenny Udale
jennyudale@hotmail.com

Lecomte
www.jessielecomte.com

Jonathan Saunders
www.jonathan-saunders.com

Julia Krupp
www.julia-krupp.de



Kenzo
www.kozen.com

La Petite S***
www.lapetitesalope.com

Louis Vuitton
www.louisvuitton.com

Manel Torres
www.fabricanltd.com

Manish Arora
www.manisharora.ws

Marc by Marc Jacobs
www.marcjacobs.com

Marios Schwab
www.mariosschwab.com

Marloes ten Bhömer
www.marloestenbhomer.com

Natalie Alabama Chanin
www.alabamachanin.com

Pantone
www.pantone.co.uk

Peter Jensen
www.peterjensen.co.uk

Peter Pilotto
www.peterpilotto.com

Prada
www.prada.com

Richard Sorger
www.richardsorger.com

Sandra Backlund
www.sandrabacklund.com

Sid Bryan
sid@sidneybryan.co.uk

Sonia Rykiel
www.soniarykiel.com

Tata-Naka
www.tatanaka.com

Viktor & Rolf
www.viktor-rolf.com

Wildlifeworks
www.wildlifeworks.co.uk

Woven
info@wovenstudio.co.uk

Canon

Sonia Rykiel

Manish Arora

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Dior

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Dior Homme

Martin Margiela

Balenciaga

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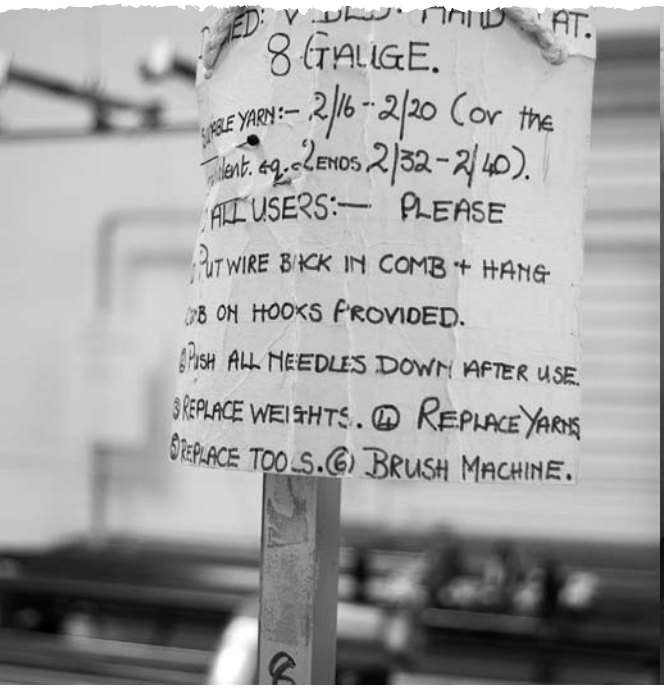

Vivienne Westwood
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Issey Miyake
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Sophia Kokosalaki
Stella McCartney
Poiret

Coco Chanel
Dolce & Gabbana
Elsa Schiaparelli
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BASICS
FASHION DESIGN
Working with ethics

Lynne Elvins
Naomi Goulder

Publisher's note

The subject of ethics is not new, yet its consideration within the applied visual arts is perhaps not as prevalent as it might be. Our aim here is to help a new generation of students, educators and practitioners find a methodology for structuring their thoughts and reflections in this vital area.

AVA Publishing hopes that these **Working with ethics** pages provide a platform for consideration and a flexible method for incorporating ethical concerns in the work of educators, students and professionals. Our approach consists of four parts:

The **introduction** is intended to be an accessible snapshot of the ethical landscape, both in terms of historical development and current dominant themes.

The **framework** positions ethical consideration into four areas and poses questions about the practical implications that might occur. Marking your response to each of these questions on the scale shown will allow your reactions to be further explored by comparison.

The **case study** sets out a real project and then poses some ethical questions for further consideration. This is a focus point for a debate rather than a critical analysis so there are no predetermined right or wrong answers.

A selection of **further reading** for you to consider areas of particular interest in more detail.

Ethical: awareness/ reflection/ debate

Introduction

Ethics is a complex subject that interlaces the idea of responsibilities to society with a wide range of considerations relevant to the character and happiness of the individual. It concerns virtues of compassion, loyalty and strength, but also of confidence, imagination, humour and optimism. As introduced in ancient Greek philosophy, the fundamental ethical question is: *what should I do?* How we might pursue a 'good' life not only raises moral concerns about the effects of our actions on others, but also personal concerns about our own integrity.

In modern times the most important and controversial questions in ethics have been the moral ones. With growing populations and improvements in mobility and communications, it is not surprising that considerations about how to structure our lives together on the planet should come to the forefront. For visual artists and communicators, it should be no surprise that these considerations will enter into the creative process.

Some ethical considerations are already enshrined in government laws and regulations or in professional codes of conduct. For example, plagiarism and breaches of confidentiality can be punishable offences. Legislation in various nations makes it unlawful to exclude people with disabilities from accessing information or spaces. The trade of ivory as a material has been banned in many countries. In these cases, a clear line has been drawn under what is unacceptable.

But most ethical matters remain open to debate, among experts and lay-people alike, and in the end we have to make our own choices on the basis of our own guiding principles or values. Is it more ethical to work for a charity than for a commercial company? Is it unethical to create something that others find ugly or offensive?

Specific questions such as these may lead to other questions that are more abstract. For example, is it only effects on humans (and what they care about) that are important, or might effects on the natural world require attention too?

Is promoting ethical consequences justified even when it requires ethical sacrifices along the way? Must there be a single unifying theory of ethics (such as the Utilitarian thesis that the right course of action is always the one that leads to the greatest happiness of the greatest number), or might there always be many different ethical values that pull a person in various directions?

As we enter into ethical debate and engage with these dilemmas on a personal and professional level, we may change our views or change our view of others. The real test though is whether, as we reflect on these matters, we change the way we act as well as the way we think. Socrates, the 'father' of philosophy, proposed that people will naturally do 'good' if they know what is right. But this point might only lead us to yet another question: *how do we know what is right?*

You

What are your ethical beliefs?

Central to everything you do will be your attitude to people and issues around you. For some people, their ethics are an active part of the decisions they make every day as a consumer, a voter or a working professional. Others may think about ethics very little and yet this does not automatically make them unethical. Personal beliefs, lifestyle, politics, nationality, religion, gender, class or education can all influence your ethical viewpoint.

Using the scale, where would you place yourself? What do you take into account to make your decision? Compare results with your friends or colleagues.

Your client

What are your terms?

Working relationships are central to whether ethics can be embedded into a project, and your conduct on a day-to-day basis is a demonstration of your professional ethics. The decision with the biggest impact is whom you choose to work with in the first place. Cigarette companies or arms traders are often-cited examples when talking about where a line might be drawn, but rarely are real situations so extreme. At what point might you turn down a project on ethical grounds and how much does the reality of having to earn a living affect your ability to choose?

Using the scale, where would you place a project? How does this compare to your personal ethical level?

Your specifications

What are the impacts of your materials?

In relatively recent times, we are learning that many natural materials are in short supply. At the same time, we are increasingly aware that some man-made materials can have harmful, long-term effects on people or the planet. How much do you know about the materials that you use? Do you know where they come from, how far they travel and under what conditions they are obtained? When your creation is no longer needed, will it be easy and safe to recycle? Will it disappear without a trace? Are these considerations your responsibility or are they out of your hands?

Using the scale, mark how ethical your material choices are.

Your creation

What is the purpose of your work?

Between you, your colleagues and an agreed brief, what will your creation achieve? What purpose will it have in society and will it make a positive contribution? Should your work result in more than commercial success or industry awards? Might your creation help save lives, educate, protect or inspire? Form and function are two established aspects of judging a creation, but there is little consensus on the obligations of visual artists and communicators toward society, or the role they might have in solving social or environmental problems. If you want recognition for being the creator, how responsible are you for what you create and where might that responsibility end?

Using the scale, mark how ethical the purpose of your work is.

Case study **Feather Capes**

One aspect of fashion design that raises an ethical dilemma is the way that clothes production has changed in terms of the speed of delivery of products and the now international chain of suppliers. 'Fast fashion' gives shoppers the latest styles sometimes just weeks after they first appeared on the catwalk, at prices that mean they can wear an outfit once or twice and then replace it. Due to lower labour costs in poorer countries, the vast majority of Western clothes are made in Asia, Africa, South America or Eastern Europe in potentially hostile and sometimes inhumane working conditions. It can be common for one piece of clothing to be made up of components from five or more countries, often thousands of miles apart, before they end up in the high-street store. How much responsibility should a fashion designer have in this situation if manufacture is controlled by retailers and demand is driven by consumers? Even if designers wish to minimise the social impact of fashion, what might they most usefully do?

Traditional Hawaiian feather capes (called *'Ahu'ula*) were made from thousands of tiny bird feathers and were an essential part of aristocratic regalia. Initially they were red (*'Ahu'ula* literally means 'red garment') but yellow feathers, being especially rare, became more highly prized and were introduced to the patterning.

The significance of the patterns, as well as their exact age or place of manufacture is largely unknown, despite great interest in their provenance in more recent times. Hawaii was visited in 1778 by English explorer Captain James Cook and feather capes were amongst the objects taken back to Britain.

The basic patterns are thought to reflect gods or ancestral spirits, family connections and an individual's rank or position in society. The base layer for these garments is a fibre net, with the surface made up of bundles of feathers tied to the net in overlapping rows. Red feathers came from the *'i'iwi* or the *'apapane*. Yellow feathers came from a black bird with yellow tufts under each wing called *'oo'oo*, or a *mamo* with yellow feathers above and below the tail.

Thousands of feathers were used to make a single cape for a high chief (the feather cape of King Kamehameha the Great is said to have been made from the feathers of around 80,000 birds). Only the highest-ranking chiefs had the resources to acquire enough feathers for a full-length cape, whereas most chiefs wore shorter ones which came to the elbow.

The demand for these feathers was so great that they acquired commercial value and provided a full-time job for professional feather-hunters. These fowlers studied the birds and caught them with nets or with bird lime smeared on branches. As both the *ʻiʻiwi* and *ʻapapane* were covered with red feathers, the birds were killed and skinned. Other birds were captured at the beginning of the moulting season, when the yellow display feathers were loose and easily removed without damaging the birds.

The royal family of Hawaii eventually abandoned the feather cape as the regalia of rank in favour of military and naval uniforms decorated with braid and gold. The *ʻooʻoo* and the *mamo* became extinct through the destruction of their forest feeding grounds and imported bird diseases. Silver and gold replaced red and yellow feathers as traded currency and the manufacture of feather capes became a largely forgotten art.

Is it more ethical to create clothing for the masses rather than for a few high-ranking individuals?

Is it unethical to kill animals to make garments?

Would you design and make a feather cape?

Fashion is a form of ugliness so intolerable that we have to alter it every six months.

Oscar Wilde

Further reading

AIGA
Design business and ethics
2007, AIGA

Eaton, Marcia Muelder
Aesthetics and the good life
1989, Associated University Press

Ellison, David
Ethics and aesthetics in European modernist literature: from the sublime to the uncanny
2001, Cambridge University Press

Fenner, David E W (Ed)
Ethics and the arts: an anthology
1995, Garland Reference Library of Social Science

Gini, Al and Marcoux, Alexei M
Case studies in business ethics
2005, Prentice Hall

McDonough, William and Braungart, Michael
Cradle to cradle: remaking the way we make things
2002, North Point Press

Papanek, Victor
Design for the real world: making to measure
1972, Thames and Hudson

United Nations Global Compact
The ten principles
www.unglobalcompact.org/AboutTheGC/TheTenPrinciples/index.html

BASICS FASHION DESIGN 02

Featured topics
researching textiles
designing textiles
textiles into production
future fabrics
natural and man-made fibres
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finishing processes
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Timorous Beasties
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The **Basics Fashion Design** series from AVA Publishing's Academia imprint currently comprises a collection of five titles, including *Research and Design*, *Construction*, *Developing a Collection* and *Fashion Drawing*.

These books offer an essential introduction to the subject and form a comprehensive reference for students of fashion design and people with an interest in fashion.

As a fashion designer you must have an understanding of fabrics and what their properties are. 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 can provide endless possibilities to your designs. Fabric can be dyed or printed to add extra colour, embellished, embroidered or pleated to create surface texture.

Textiles and Fashion is packed with varied examples of work by talented contemporary designers and other creative people who work in the fashion industry. This book will both inform and inspire you.

Ethical: awareness/ reflection/ debate