Identifying Textile Types and Weaves 1750-1950
DATS in partnership with the V&A
Identifying Textile Types and Weaves 1750-1950

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This information pack has been produced to accompany a one-day workshop of the same name taught by Sue Kerry and held at Birmingham Museum and Art Gallery Collections Centre on 29th November 2007. The workshop is one of three produced in collaboration between DATS and the V&A, funded by the Renaissance Subject Specialist Network Implementation Grant Programme, administered by the MLA.

The purpose of the workshops is to enable participants to improve the documentation and interpretation of collections and make them accessible to the widest audience. Participants will have the chance to study objects at first hand to help increase their confidence in identifying textile materials and techniques. This information pack is intended as a means of sharing the knowledge communicated in the workshops with colleagues and the public.

Other workshops / information packs in the series:

Identifying Printed Textiles in Dress 1740-1890
Identifying Handmade and Machine Lace
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Identifying Textile Types and Weaves 1750 - 1950

Introduction

The aim of this workshop is to inspire and to provide a basic grounding for the individual to move forward and learn more, and not to be put off by what may seem complicated structures. It is impossible to study all aspects of weaving and yarn structure, so as a starting base, we will look at basic weaves moving to first stage complex weaves. In order to do this, we have had to include basic loom types which date back to ancient times and also a basic fibre and yarn identification, so that the individual can understand the weaving structures.

The workshop has been structured to look at fabrics which were woven from 1750-1950 as it was felt that cloth types from this two hundred year period would be in most museum or other Collections. It will look very closely at industrial manufacture of the ‘Western World’ (Europe and USA), and is intended to impart the manufacturer’s knowledge and terminology to the individual; it cannot look at other cultures due to its time frame. The booklet is to be used in conjunction with the taught workshop.

Basic Check List For Identification Of Woven Fabrics

1. If the item is a piece of clothing, determine its historical date range as this will help in determining the weave structure and yarns used. For instance a 1760 silk sac dress should not incorporate nylon as this was not invented until 1938. If it is a piece of cloth determine its historical style through observation. N.B. During the 19th & 20th centuries it was common practice to copy and adapt historical fabric samples or to make a copy appear older (i.e. distressed or from an earlier period) than it was.

2. Establish which is the warp and weft of the cloth (the bias is the ‘stretch’ section of the cloth which can be determined by pulling at the diagonal corners of the cloth, causing the cloth to stretch.)

3. Determine the front (face) and back (reverse) of the cloth; be aware that in some cases the cloth can be reversible, for instance in a double cloth or compound cloth. If the fabric is a recent weaving, look for the tenter hook or stentering marks (this is where the cloth is held to the required width using hooks or pins). If the pins push through the cloth then the raised area is the front. If the punched hole shows a ‘sideways’ mark to the left when looking at the left selvedge and the right side for the right selvedge then this is the front of the cloth. If cloth is older, look at weave structure to see if a binding ground warp has been used. In some cases determining the face and reverse of the cloth may have to wait until fabric analysis has been made, see section 5.

4. Is it a basic weave, complex weave or cellular fabric type?

5. Analyse the weaving structure and set of the cloth via magnification; count threads of warp and weft to determine woven structure of damask or brocaded damask etc.

6. Analyse yarn type for warp and weft. N.B. This is often difficult to do without chemical analysis and so can only be an ‘eye account’ unless positive analysis has been undertaken.

7. Cross reference example with other fabric types through books, other extant examples, to establish date and structure.
Identifying Textile Types

Fibres and Yarn

Type and weight
The fibres used to make cloth are of either animal, plant, metal or synthetic origin. The weight and feel of a piece of cloth is determined as much by the fibre it’s made from, and the way that fibre has been processed into yarn, as by the way the cloth has been woven. This section will look at the main fibres used to produce cloth between 1750 and 1950 and offer guidance on how to identify which fibres have been used from examination of the cloth’s surface qualities.

Yarn
There are two main types of yarn. The first is formed from fibres with long continuous filaments which simply need to be twisted together to produce a length of strong yarn. Silk is the only natural fibre with long continuous filaments though many synthetic yarns are also produced to have the same qualities. Filament yarns are used to weave fabrics with smooth, shiny surfaces though filament fibres can also be cut for use in more textured fabrics. The second type of yarn is formed from plant or animal fibres which are shorter and therefore need to be spun together to form a strong yarn. Cotton, linen and wool fibres all need to be separated from their source and combed before being spun. Fabrics made from these fibres have less natural lustre, are fuller bodied and have a more textural surface than filament yarns.

Twist
Yarn twist helps to hold the fibres together and allows tension on the yarn to be distributed along its length: the greater the twist the thinner, harder and stronger the yarn as its fibres are forced closer together. For example, crêpe fabric has a crinkly texture because the yarns used to weave it (which can be made of cotton, wool, silk or synthetic fibres) have been given a hard twist in opposite directions. The resulting contortion in the thread gives the fabric its characteristic weight, feel and texture. Non-crinkly fabrics are twisted in one direction only, either clockwise, known as an ‘S twist’, or anti-clockwise know as a ‘Z twist’.
Identifying Textile Types

Natural Fibres - Animal

Silk
Discovered in China over 5000 years ago, historically, silk is the most luxurious and expensive of fibres, its long filaments being obtained from the cocoons of the mulberry silkworm or, in the case of wild silk, from the larvae of various moths. Silk is used for both dress and furnishing fabrics and can be woven in a variety of weights, from the lightest dress chiffon to the heaviest furnishing brocade. Silk fabrics include: velvet, taffeta, crepe-de-chine, damask, georgette, grosgrain and satin. Tussah silk (also frequently called ‘pongee’) is a wild silk made in India. It has a coarser feel than cultivated silk and maintains its uneven slub texture.

Identifying silk:
Feel and colour: Silk is strong, breathable and elastic. It absorbs moisture but retains heat and rarely feels damp or cold. Plain woven silks have a light-reflecting translucent sheen. The protein fibres of silk absorb dye quickly, making it perfect for fabrics which require densely vibrant yet translucent colour. Silk fibres are weakened by dirt and sunlight.
Fibre examination: Although silk is a fibre with continuous filaments these are sometimes difficult to see in lightweight fabrics and cheaper dress silks as they are frequently made from spun silk waste (shantung silk) which has short fibres. Silk in its natural state is usually an off-white colour, but can also be green, pink and yellow. Upon examination with a microscope the filament will look like a very fine strand of hair. It should not be perfectly cylindrical which means that the filament is man-made. When a fine silk cloth is placed against the face it will give a warm feeling.

Burning Test: Burns easily and quickly to a black crushable ball with a smell of burning hair or feathers.

Wool
The hair of goats, llamas and rabbits have all been used for weaving but the term wool is most generally used to describe a cloth whose fibres originate from the fleece of a sheep. The use of wool in textile production pre-dates Christianity, its thermal qualities being invaluable in cold, damp North European climates where it was a valuable commodity. Wool fibres have a rough-surfaced (crimped) outer cuticle which traps air and enmeshes easily with neighbouring fibres making it suitable for felting, knitting and weaving. The term ‘worsted’ refers to woolen cloths in which long wool fibres are combed smooth and parallel before spinning. Fabrics made from wool include flannel, gabardine, tweed, serge and when mixed with fine silk, challis.

Identifying wool:
Feel and colour: Woolen cloths are elastic, breathable and generally warm and soft to the touch, sometimes with a visibly fluffy surface (not worsteds). The fibres retain water and are weaker when wet; they have a natural, subtle sheen and readily absorb and retain dye. Wool is particularly prone to moth damage.
Fibre examination: The fibres of wool are often short and when viewed through a microscope look like strands of hair. Wool fleece is very soft to touch. A wool yarn which has been prepared for weaving feels hairy and rough through the fingers. This is so that the yarn can be easily woven.

Burning Test: Burns with an irregular flicker to a black crushable ball with a smell of burning hair or feathers.
Identifying Textile Types

Natural Fibres - Vegetable

Cotton

Native to Asia, the USA, West Indies and Egypt, cotton was the plant fibre which helped fuel the industrial revolution in the eighteenth and nineteenth centuries. Hardwearing and washable it was produced in qualities and grades to suit every market as printing technology developed in the Western world. Although the quality and fibre structure of cotton varies from region to region, all cotton fibres are short (from less than 2cm to a maximum of 6.5cm) and require several layers of processing, including cleaning, combing and spinning, before being woven into cloth. Cotton dress fabrics include muslin, dimity, denim, corduroy and flannelette. For furnishing: chintz, candlewick, ticking, piqué, towelling and velveteen.

Identifying cotton:
Feel and colour: Cotton cloth is cool to the touch and hardwearing. In its ‘grey’ (unbleached) state it is a pale yellowy-cream colour but it can be bleached to a bright white. It can be woven to a smooth surface suitable for even, high quality printing - the fibres absorb mordant dyes evenly and effectively. Cotton is absorbent and the fibres remain strong when wet. It is an extremely versatile fibre with yarn that can be hard twisted to be used in delicate open-weave fabrics or used with hardly any twist to add bulk to furnishing cloths. Cotton cloth was given various decorative finishes between 1750 and 1950, in particular glazing (with an applied resin) or calendering, which involved rolling the finished cloth between hot rollers to create a surface shine.
Fibre examination: A short staple fibre, it has a good strength and a low elasticity; as cloth it has a poor wrinkle recovery and a stiff drape. When examining warp and weft threads, the ends of the cotton can become ‘fluffy’.
Burning Test: Burns with a bright flame to grey ash with a smell of burning paper.

Linen

Used in ancient Egypt for clothing and as part of the mummification process, linen was the strongest natural fibre in use in the eighteenth and nineteenth centuries, providing the strong warp needed to weave cotton cloth (fustian) and becoming increasingly fashionable in the nineteenth century when it was used as a dress material in its own right and consequently became more expensive. It is made from the long bast fibres extracted from the stems of flax which grows in Eastern Europe and the Soviet Union. British linen in the late nineteenth century and first half of the twentieth century was grown in Scotland and Northern Ireland. Irish linen is particularly fine and therefore used for clothing, handkerchiefs and high quality table linen. Linen cloths include: crash, cambric, drabbet and, when woven with a cotton weft, fustian.

Identifying linen:
Feel and colour: Linen is a smooth, silky fabric which has a natural slub and in its unbleached state is an attractive oatmeal colour. It can be bleached, dyed and printed though it is not as receptive to dye as cotton. Although absorbent and strong when wet, linen has a tendency to crease.
Fibre examination: Staple fibres which are very strong, with very little elasticity; yarn is often rough to touch, holding their shape for years. It can often be found in cloths where the strength of the linen thread has worn the other less resilient threads, such as silk away.
Burning Test: Burns with a bright flame to grey ash with a smell of burning grass.
Identifying Textile Types

Man-made / Synthetic Fibres

Rayon
Rayon, or ‘Art Silk’ as it was first known, was the first man-made fibre though it’s constituents, wood and cotton pulp are organic. Viscose rayon was patented in 1894 by British inventors Charles Cross and Edward Bevan but it was not until the large-scale firm Courtaulds purchased the production rights in 1904 that viscose rayon became a more widely available. Unlike real silk, rayon requires spinning before it can be woven into cloth. Rayon offered a lustrous, shiny fabric which had the same weight and feel as silk but which was much cheaper to produce. Popular for underwear, dress fabrics and accessories in the interwar years, rayon versions of fabrics traditionally made in silk or cotton, such as georgette and crêpe, were sold by Liberty and Co between the wars and after. Richly coloured, figured rayon cloths were also produced for upholstery, curtains and bedding.

Identifying rayon:
Feel and colour: Early versions of viscose rayon were rather brittle and harshly coloured with a high lustre which lacked the subtle translucency of silk. Later, modified versions of rayon (which have finer fibres) are light and cool to the touch with excellent draping qualities and good colourfastness. Both types of rayon are fragile when wet.
Fibre examination: Under a microscope the fibre will look completely cylindrical and will be one continuous filament, there will be no hair like structures like there are in natural fibres. The yarn has a good elasticity to it.
Burning Test: Burns and flames readily to grey ash with a smell of burning paper.

Nylon
Invented by du Pont in America in the late 1930s, nylon was the first totally synthetic yarn - a product of the petro-chemical industry. It was first produced in Britain in 1941 and it revolutionised textile production in the 1950s. Produced in both filament and staple (spun) forms, nylon could be knitted or spun to produce flexible fabrics across a range of weights and textures. Its availability, versatility and easy-care qualities made it practical and desirably modern in a post-ration consumer society. Nylon’s extreme strength meant it was as useful in the production of industrial materials such as tyres and rope as for clothing and furnishing fabrics. Used for all type of clothing including nightwear, and sportswear, as well as for bed linen and loose covers for furniture.

Identifying nylon:
Feel and colour: Unpleasantly synthetic by today’s standards, nylon lacks absorbency making it non-breathable and resistant to moisture and dirt. Absorbs dyes well for bright fast colours. It’s fast-drying qualities made it easy to launder, though washing in hot water leads to discolouration and yellowing, particularly of whites.
Fibre examination: Under a microscope the fibre will look completely cylindrical; there will be no hair like structures like there are in natural fibres.
Burning Test: Melts in flame and forms into a hard bead with a chemically smell a little like fresh celery.
Weaving and Woven Cloth

Historical Framework - Looms

Origins and the mechanics of weaving
Text adapted from the chapter on ‘Weaving’ in 5000 Years of Textiles, edited by Jennifer Harris (British Museum in Association with the Whitworth Gallery and the Victoria and Albert Museum, 1993)

The weaving of cloth probably developed sometime around 15,000 years ago in the Mesolithic period. In its simplest form, weaving may even pre-date spinning since early cultures doubtless interlaced with their fingers long fibrous stems (essentially basketwork) before they learned to convert short fibres into continuous yarn.

A woven structure consists of two sets of threads, the warp and the weft, which are interlaced to form cloth. The warp threads are held parallel to each other and under tension, while the weft is worked over and under them, row by row. Weaving requires three basic operations: For example, in a plain weave cloth, first alternate warps (the threads which run parallel to the fabric edge) are lifted to create sheds (see glossary) which allow the second operation: the crossing of the shuttle (see glossary) which interlaces the weft threads (the threads which run from left to right or right to left) in a simple ‘over-one under-one’ formation. Unlike warp threads, weft threads are not under any tension. Lastly, the wefts are beaten or packed evenly together with a comb. The loom is the device for keeping the warp threads evenly spaced and even the simplest loom can be used to produce very sophisticated work. Several types of loom have evolved over time, though mostly only to speed production and to make certain types of weaving process easier.

Types of Loom

The horizontal, ground loom
This type of loom was used for weaving linen in ancient Egypt and it is the type of loom which has been most highly developed throughout the course of history. The warp threads are stretched between two fixed parallel beams and threaded, either individually or in predetermined groups, through the ‘heddles’ (see glossary) which allow the warp threads to be raised or lowered for weaving with the weft threads. In later, mechanized versions of the horizontal loom the heddle is attached to a frame called a shaft. The shafts are then lifted in a pattern sequence in order to weave the weft of the cloth.

The Treadle Loom
The treadle loom employs a treadle worked with the feet to lift the shafts. This leaves the weaver’s hands free to work the shuttle for the weft threads. The origins of the treadle loom go back to Chinese silk weaving (200-300 BC) and it is thought to have arrived in Europe in the Middle Ages. This type of loom is still used by hand-weavers today.

1 From 1993-1998 archeologists from Dundee University found that settlers on the Scottish Isle of Colonsay were using cat-gut and fibrous strands for weaving in the Mesolithic period.
The Drawloom
This type of loom was developed in the Middle East for silk weaving during the sixth and seventh centuries AD though its origins may be earlier. It allowed for an almost infinite variety of raised warp formations allowing ever more complicated variations other than plain weave fabrics. Instead of using a heddle to raise a series of warps in one movement, the warp threads on a drawloom were attached individually to numbered cords operated by the weaver’s assistant, the ‘draw-boy’\(^2\). The draw-boy pulled the cords to raise the warp threads in either isolation or in combination with other warp threads allowing texture and pattern to be woven into the cloth. The drawloom was used to create elaborate textiles such as brocaded damasks. It remained in use until the Jacquard loom became common place in the 2\(^{nd}\) quarter of the 19\(^{th}\) century (1820 to 1860). However there are known instances of industrial use of the use of draw looms into the early 20\(^{th}\) century\(^3\). Fly shuttle weaving (the action of sending the shuttle quickly across the cloth) was invented in 1733. It came into common use in the late 18\(^{th}\) century. This speeded up the process of weaving from the manual form of weaving.

The Dobby Loom
The dobby loom controls the warp threads using a device called a dobby (shortened from ‘draw-boy’), this type of loom is an alternative to the treadle loom. On a treadle loom, the number of available warp-raised combinations is limited by the number of treadles - most eight shaft looms have space for only ten to twelve foot-operated treadles which limits the weaver to only ten to twelve combinations of raised warp threads with which to create a pattern. The dobby mechanism, however, allows for a far greater number of raised warp combinations. Introduced in the 1840s, this type of loom is frequently used to produce woven cloths with small, repeating geometric patterns and stripes colloquially known as ‘dobby cloths’. Computerised versions of dobby looms are still in use today.

The Jacquard Loom
Advances in technology during the Industrial Revolution of the eighteenth and nineteenth century led to steam power and further mechanization of the weaving process. The Jacquard loom (invented in 1801 by J.M Jacquard) was in general use in English cotton mills by 1830.\(^4\) It employed a mechanism incorporating a series of linked, hole-punched cards. Each punched hole in a Jacquard card corresponded to one warp thread and informed that warp’s position (either raised or down) in the weaving of a patterned cloth. Because one card signified one pick or weft thread, many cards were required to produce a full pattern repeat. The cards were mounted in formation on the loom in a linked loop. Passing the weft threads from right to left could also be performed mechanically by this time developing the mechanism of fly shuttle weaving mentioned earlier in which the shuttle was propelled by air.\(^5\)

\(^2\) The role of the draw boy was however frequently performed by a girl as well as a boy. See, Daryl Hafter, The Programmed Brocade Loom and the “Decline of the Drawgirl” in Virgins and Dynamos Revisited, Martha Moore (ed), Trescott, London, 1979, pp.46-66.

\(^3\) Documentation in the Warner & Sons archive relates to the fact that apprentice weavers were trained upon the drawloom up to the start of WWII. See also, Mary Schoeser, World Textiles: A Concise History, Thames & Hudson, London, 2006, p.187.

\(^4\) Jacquard weaving was not however the only form of power loom weaving. Horrockses Cotton Mill in Preston, Lancashire, used non Jacquard power looms as early as 1791.

\(^5\) The motion of passing the weft threads mechanically saw several patents being introduced in the late 19\(^{th}\) century. This included the lever motion where, in simple terms, the shuttle was activated by touching a lever which propelled it across the warp at approximately 60 picks (wefts) per minute. The multiple shuttle box gave the ability for several shuttles of different colours to be loaded into a box allowing for the alteration of weft colours at speed. Today the method of producing the weft is done by air pressure which forces the now shuttleless thread across the warp. See Murphy W.S., The Textile Industries: A Guide to fibres, yarns and fabrics in every branch of
18th, 19th and 20th Century Industry Standard Fabric Widths

It is difficult to standardise fabric widths from different countries. The reason for standardisation was to try and ensure that designs and patterns could not be stolen and woven by competitors particularly those abroad. However, in many circumstances, if a weaver wanted a job and it needed to be woven to a non-standard width, then they would normally undertake to weave such an order, weaving as close to the width of the specification supplied by the client. As a general rule, 21”, 50” and 63” are standard widths for British industrial weaving, with 24”, 54” and 60” being standard widths for French industrial weaving. The width of a fabric cannot be solely used to determine where the cloth is produced - a more detailed analysis of the pattern, yarn type, and application of weaving must be considered as well. Natalie Rothstein’s enlightening essay in Barbara Johnson’s Album of Fashions and Fabrics offers useful insight on the fabric widths of cottons and silks used for middle-class women’s clothing between 1746 and 1823. Measured in ‘ells’, the normal width for an English dress silk between 1746 – 1751 was half an ell (22 ½ inches) though by 1769, widths of ¾ ell (27 inches) are also listed. Natalie Rothstein also mentions an ell wide (45 or 46 inch) printed calico bought in 1796.6

**Handloom**


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6 Natalie Rothstein includes a note to her text taken from the February 5th 1765 issue of the Gazette and New Daily Advertiser in which a correspondent noted that English silk manufacturers sold fabrics measuring just 19½ inches to 21 inches width yet still described them as ½ ell, and fabrics with a width of 23½ to 24 inches described as ¾ ell. Outside England the exact measurement of an ell varied by country, province, and even type of cloth. Natalie Rothstein, ‘Textiles in the Album’, *Barbara Johnson’s Album of Fashions and Fabrics*, Thames and Hudson, 1987, pp. 29-34 and 204.
Power loom
Identifying weaves

Basic Weaves

Plain Weave (a.k.a Tabby Weave)
The simplest and most universal weave. Produced by passing the weft across the warp twice. On the outward journey it passes over all the odd warps and under the evens: on its return it passes over the evens and under the odds. Texture can be added by way of textured yarn or using different colour threads (warp or weft) to produce checks or stripes. [Source: JH]

Twill Weave
Twill weaves can be identified by the marked diagonal movement across the cloth created by the sequencing of the weft threads which cross the warps at evenly off-set, vertical intervals (from left to right or from right to left). The sequencing of interlacing can vary - this diagram shows a 3/1 twill which has three wefts passing behind one warp before it is bound in place by the fourth front cross of the weft. Denim is the most well-known example of a twill weave.

Satin Weave
The smooth shiny surface of a satin weave is created by the large surface area of exposed warp threads which are intermittently bound on only every fourth cross of the weft (four under, one over). This sequence can be reversed so that the weft threads form the dominant surface area of the fabric (four over, one under) though this type of weave is called ‘sateen’. Satin weaves are frequently used in combination with other weaves to form ‘figured’ cloths. Figured cloths are woven in one colour with pattern created solely by the use of different textured weaves, for example damask.

All diagrams, courtesy of Caroline Rendell, from, The National Trust Manual of Housekeeping, Butterworth Heinemann, 2006, p.405
Identifying weaves

Plain Cloths

- **Plain linen weave**
- **Twill weave**
- **Basket weave**

A fabric which was originally woven for special occasions such as a coronation (supertunica mantle), ecclesiastical vestments or court dress. The cloth is constructed from a ground cloth being of tabby (plain) weave; gold foil (a flat metal thread of either silver, gold, a combination of both or alloy) is then woven across this tabby ground in a twill structure. The term ‘cloth of gold’ usually means yellow silk ground with gold foiling; blue cloth of gold is a blue ground with gold foiling. Lamé is a French term and a more recent British term where the weft is that of a metal thread held in place by a taffeta or satin ground. The fabric on the left shows a lamé, woven in a metal thread with a cotton ground. The cloth on the right is a yellow cloth of gold woven in a five over twill structure. To weave such cloths takes time, with the average hand loom weaver only weaving 5 inches a day. Today pure cloth of gold is very rarely made and found.
Identifying weaves

Plain Cloths - Ribbed

**Repp**
A true repp is a plain weave fabric having both warp and weft threads arranged as one fine thread over one coarse thread. The coarse threads are always tilted above the coarse *picks* and the fine *ends* over the fine *picks* this produces more prominent transverse ribs. A repp can either be woven horizontally or vertically on the warp.

**Ottoman**
An ottoman structure has to have a horizontal ribbed weave, a filler yarn is used to produce the raised cording effect. The structure comprises of two warps and a thick filler yarn for the cording. The second warp catches the corded rib here shown by the use of the black thread.

**Corduroy**
A strong and hardwearing cut pile cotton cloth identifiable by its characteristically ribbed surface, the ribs may vary in width. Woven in a similar manner to velvet with the pile formed by the weft threads.
Identifying weaves

Plain Cloths – Checks

**Houndstooth**

The cloth is normally produced using worsted yarn and is achieved by a combined colour and weave effect. The twill structure can be produced by either four and four or eight and eight contrasting threads in the warp which are crossed with a similar weft thread arrangement. This structure forms a jagged edge check cloth which is often found in suiting. During the late 19th and 20th centuries the cloth was also referred to as Shepherd's Check.

**Gingham**

Usually an all cotton cloth, which is a tabby (plain) weave fabric, woven from dyed yarns in stripes and checks. In each case there is the same number of coloured warps and wefts as there are white. The widths of the formed checks can be many sizes, the cloth differing qualities and nearly all checks of this structure can be placed under this heading. This cloth is hard wearing, cheap to produce and is often used for work clothes or upholstery cloth. Several origins of the name gingham have been suggested including Guingamp in Brittany where gingham was once manufactured extensively. However, the Oxford English Dictionary derives the word from Malay ‘ging-gang’ meaning striped.

**Diaper**

The term used to describe woven cloths with small all over repeated geometric patterns such as diamonds, rectangles or square. The cloth has been used for many applications including dress and furnishing.
Identifying weaves

More Plain Cloths

Armure / Cannetillé
This term is given to cloth which can be woven for either dress or furnishing. The word is a derivation of the French word ‘armour’. Its woven effect gives a pebble-like appearance with a resemblance, as the name suggests, to chain mail. The cloth compromises of two warps, one is lightly weighted whilst the other is heavier, the cloth is constructed by the use of an eight shaft

Worsted / Harris Tweed
A fabric defined for the purposes of the trade mark of the Harris Tweed Association as ‘tweed, hand-spun, hand-woven, dyed and finished by hand in the island of Lewis in the outer Hebrides’. It is a loosely woven worsted yarn made from pure virgin wool of mountain and hill sheep. The cloth is a two and two twill structure woven on a dobby hand loom or power looms (Hattersley). During the finishing the cloths are dried in a loft heated with peat fires. This gives a peculiar odour to the cloth.

Doublecloth
As the name suggest, the cloth comprises of two fabrics, each with its own warp and weft, these warps can be combined together, but are more usually crossed over to produce a pattern. The primary object is to produce a heavier cloth than could be done in a single texture, without spoiling the fineness and the weave of the face cloth. Double cloths are reversible with the different colours alternating from the front to the back. They can also be referred to as compound cloths.
Identifying Weaves

Figured / Ornate Cloths

**Damask**
A damask is a figured fabric, created solely through the juxtaposition of two weave structures, typically satin and twill, using an eight and eight satin twill structure. The reversible pattern is distinguished from the background by a contrasting lustre. The word derives from rich silk fabric introduced into Europe from Damascus. The illustrated damask shows the use of a five over twill for the patterning with a tabby structure ground.

**Brocade**
Brocade in its truest sense refers to a woven silk where the coloured weft threads which make the pattern are carried only across the width of the motif using small shuttles. The term brocade should not be used on its own, it must specify the ground cloth, e.g. brocaded damask. It should be noted that the term brocade during the late 19th and early 20th century was commonly used to denote any highly figured cloth. A brocade differs from a decoupé fabric in that the brocaded motif threads are woven into the cloth whereas for a decoupé they are cut. A decoupé is where the weft threads are carried across the full width of the back of the cloth, these weft threads are then woven where the figuring or motif are desired. The long floats are then sheared off leaving a fringed edge around the motif.
Identifying Weaves
Figured / Ornate Cloths

Brocatelle
A heavily patterned cloth often, although not exclusively, used for furnishing fabrics. The pattern is raised with the ground being sunken. The cloth is produced by the insertion of a filler yarn of linen or cotton in the weft and the use of two sets of warps which produce a padded effect. The warps are held in place by a third supplementary warp which binds all the warp and weft threads together. This third is shown on the reverse side of the cloth at the bottom of the picture.

Tissue
Tissue is the English term for a cloth construction that uses supplementary weft threads which run from selvedge to selvedge, these threads are then woven into the front of the cloth to form the figuring. This weft weaving can clearly be seen on the back of the cloth at the left hand side of the illustration. This type of cloth produces a finely woven silk fabric, which can be made from many colours. The name is derived from a cloth which was produced during the Middle Ages using metal or gold thread which was then stored between very fine sheets of tissue to prevent it from tarnishing. It should be noted that in Europe (France) this term is not used and this cloth type is referred to as a lampas, however a true lampas uses both warp and weft for the figuring.
Identifying Weaves
Figured / Ornate Cloths

Pékin
A pékin indicates a dress cloth of equal stripes with a small brocaded motif running down one of the stripes. Often the cloth features a broad stripe of satin alternating with stripes of a white rep or tabby weave. Alternately, the illustrated image features an equal width tabby stripe with brocaded motif and an equal width ottoman stripe.

Lisére
A lisére cloth is formed by the main weft threads or by one of the main threads. The weft threads float between the figuring or are used as part of the figuring as illustrated and so can either be on the face or the reverse of the cloth. The warp and weft of the cloth are usually both silk and often combine different coloured threads. This weaving differs from a tissue or lampas which has the floats woven into the ground cloth.
Identifying Weaves
Figured / Ornate Cloths

Imberline
In this fabric which has long stripes of differing colours throughout the warp, a motif is usually woven via the weft, and this motif is usually produced as a damask. The illustrated 18th century chasuble features an imberline and ombré stripe with a floral motif woven in a damask structure. Edging the cloth is a metal thread trim.

Chiné
A printed fabric frequently characterised by the blurred edges of its printed design. This blurring is created by printing the warp threads with the pattern, or by pre-dying the warp threads using a discharge method, prior to weaving with a (plain) tabby coloured weft. As the weft threads cross the warp they break up the solid edges of the printed design creating a diffused outline. Combinations of weave structures were used for chiné patterns. Illustrated is a late-Victorian silk jacket made of a repp cloth with a thin satin insertion. The motif would have been warp printed. The whole cloth has been finished with a moiré finish.
Identifying Weaves
Figured / Ornate Cloths

**Velvet ciselé**
A ciselé velvet is a cloth where the pattern is formed by a cut and uncut pile; the cut pile is usually higher than the uncut pile. The illustrated piece features a cut and uncut silk velvet with a silk satin ground and the differences of the pile height can be seen.

**Piqué**
A piqué is usually woven on a dobby loom and is composed of two warps and two wefts. The face warp is lightly weighted (loosely beamed) and is woven with a (plain) tabby weft, the back warp is heavily weighted (tightly beamed) and stitches through the face cloth according to the pre-arranged design. At the stitching points the face cloth is pulled down, causing the face to form an embossed surface. The second weft is used as wadding to make the raised figure more pronounced. The illustration shows a magnified section of the cloth and clearly shows the loose top cloth with the weft producing a pulling effect.
Identifying Weaves

Sheers

Muslin
The name is derived from the city of Mosul where the fabric was first made. It is a very light and open tabby (plain) weave fabric used for summer dresses and utility use. At first the cloth was not always plain but could also have silk and gold thread woven into it. As the ability to spin yarns of greater fineness developed cotton was used more readily than silk. Lappet weaving (see glossary) produces a muslin cloth with a motif, as illustrated. The difference between this example and Madras muslin should be noted. In this muslin the motif weaves in and out of the cloth, as if it has been embroidered. In the Madras net, the motif is predominately woven on the surface. With improved weaving machinery lappet weaving became very popular for dress cloths from the late 18th century until the early 19th century (c.1830) when its delicacy began to wane.

Madras muslin net
Madras net is used mainly for furnishing such as curtaining. The cloth is an open gauze ground cloth where an extra weft is inserted to produce a motif, this is then woven into the ground cloth. Where there is a surplus floating weft yarn this is then cut away after weaving revealing the motif, the edge of the sheared motif shows shorn ends of a the weft yarn.

Image courtesy of Birmingham Museum and Art Gallery

Image courtesy of Morton Young & Borland
Identifying Weaves

Sheers

Mousseline
A term used to denote very fine clear fabrics, finer than muslins. Made of silk, wool or cotton, the weave structure is either (plain) tabby or two and one twill. In the 18th century the British term referred to a fine cloth with a cotton warp and a worsted weft. In France from the late 18th century onwards mousseline-de-laines were made of very fine wool which were printed in beautiful designs. This fabric proved very popular for fashionable as dress and shawl fabrics. The mousseline cloth is so fine and transparent it is often found backed with another cloth of either a satin or taffeta silk. The illustrated example features a silk mousseline backed with a blue silk satin cloth and features a motif. Mousseline cloths of the early 19th century often featured brocaded or lappet motifs.

Organdie / Organza
A thin light fabric in a (plain) tabby weave which, if organza, has a very stiff crisp finish; and for organdie the finish is lighter or there is no finish, and thus the cloth is more pliable. The structure of the cloth always has more warps than wefts per inch, and the weft threads are finer than the warp threads. Illustrated is a colourful group of organza fabrics.
Identifying Weaves
Sheers (Cellular)

Leno
A fabric in which an open effect is created by causing certain thread ends or doup threads to cross over. Two threads or ends act as one thread; when a weft thread passes between them, the doup ends twist catching the weft and holding it tightly in place. Very fancy and beautiful cloths can be produced by combining the cross weaving with other weave structures. The term leno is generally applied to all light weight fabrics in which the cross weaving principle is used. A mock leno is where there is no crossing of the warp threads. The gauze is obtained by the warp being reeded to allow for open spaces on the cloth, the weft is then loosely woven to produce a net-like effect. This type of cloth is recognisable by the ease in which both the warp and the weft can be moved about, whilst in leno weaving it cannot be moved so easily.

Mock leno
See leno. The illustration also features within the weft of the net a brightly coloured yellow silk floss and metal thread. Such effects were very common during the late 19th and early 20th century.

Aertex
A trade name for a cloth patented in Britain in 1886, which was first manufactured in 1888. The cloth traps air in-between its structure, keeping the body cool in summer, and warm in winter and was originally used for under garments, sportswear, corsetry and as a cloth to protect early space equipment. The product of the Cellular Clothing Company who invented and manufactured aertex, were ideal for extreme weather conditions. The structure is referred to as a cellular cloth type and is made with two warps: one leno and one tabby which interweave, the pattern is formed in a mirror fashion.
Identifying Textile Types and Weaves

Glossary of Terms

This selective glossary is intended to serve as an aid to those individuals wishing to identify cloth types, within museum or archival Collections. The terms are explained in a simple and easy to use manner with view to ease of identification rather than technical details on how to weave each respective cloth. We have also tried to explain the history behind some techniques and highlighted that usage of some terms has changed over time. The source of each definition is noted in parenthesis after the text and a dated key to these sources is listed at the bottom. More comprehensive glossaries can be found in several of the texts listed in the Bibliography.

**Basket**  
A simple weave, usually in cotton or linen, which employs an over-under combination of equal number warps and wefts (usually two, three or four) to create a coarse surfaced cloth which resembles basket-work. [MERC]

**Beam (warp)**  
A beam in any of the horizontal rollers on which the warp yarn or finished cloth is wound and secured. The main beam is fitted onto the back of the loom, and the cloth beam is fitted directly under where the weaver is sitting. [SK & MERC]

**Bouclé**  
An imitation astrakhan or cloth having knots, loops or curls on the surface. The name is French for buckled. The term is rather loosely applied to all fabrics having curls, knots or loops on the surface. [MERC]

**Bourette**  
A silk dress material in which the surface is produced by using lumpy knotted yarns for both the warp and the weft. Cheap and durable, it was often made using silk waste and was much used for men’s and women’s clothing. [MERC]

**Brilliantine**  
A light dress cloth with a cotton warp and wool (often mohair) weft, woven in both plain and patterned designs. Its manufacturing process involved calendering after weaving to achieve a soft flat silky finish. Calendering is a process by which cloth is rolled between heated rollers to flatten the threads and add sheen. [MERC]

**Broadcloth**  
A term that in many districts was used to indicate garments worn by the clergy. It is a stout wool cloth. Made from fine merino yarns, and heavily milled and finished with a dress face. It has a velvety feel and a silky gloss. Quality varies according to price. It is a superfine, smooth-faced and dense fabric, and considered the perfection in woolen materials. [MERC]

**Chambray**  
A light-weight, plain weave cotton or linen dress fabric, sometimes with gingham-style checks or stripes but retaining white selvedges. Used for overalls, aprons and children’s dresses. [MERC]

**Check**  
Any cloth with a pattern of rectangles or squares created by crossing striped warps with blocks of coloured wefts at right angles. [MERC]

**Chenille**  
Fancy tufted yarn, used from the 17th century and usually of cotton or silk, made by a weaving process. The threads are woven into a solid piece of cloth which is then cut along its length every
two to six warps. The severed weft threads create the tufts which give the yarn its velvety texture. The word chenille comes from the French word for caterpillar. Chenille is used as a weft thread for cloths intended for various uses including table covers, dressing gowns, rugs and other clothing. [MERC and V&A]

**Chiffon**

The softest and most flimsy of cloths in a plain weave structure. Both the warp and the weft threads are heavily twisted (crêpe). The difference between a crêpe de chine and chiffon is that the weft yarn is either a Z or S twist. The characteristic 'wrinkles' are caused by the weft being pulled in one direction. The name is derived from "chiffe" the French word for rag or flimsy cloth. [MERC]

**Crêpe**

A general term used for all cloths made of a textured, crinkled, wrinkled or grained matt-surface effects. The cloth can be made from a combination of many yarns. Predominantly used in the 19th century for mourning dress. Special hard-twisted yarns are used which shrink when washed to create its puckered and crinkled surface. [MERC]

**Crêpe-de-Chine**

A soft, thin, opaque and lightweight fabric with a crinkled effect. Woven with alternate S and Z highly twisted weft threads and untwisted warp threads. Alternate picks are of opposite twists resulting in a crimpy appearance on the fabric. A lustre is always visible owing to the fine silk warp. [MERC & Weavers]

**Damasquette**

A brilliant silk cloth woven at Venice during the 18th century and later at Lyon in France. The cloth consists of a ground cloth usually in a tabby weave construction with a brightly coloured floral pattern, usually made in gold. The best quality used thin gold foil for the patterning which was flattened out under rollers. [MERC & SK]

**Dimity**

Lightweight, plain weave cotton cloth with raised (relief) stripes or cords running lengthwise through the cloth. [MERC]

**End (or doup)**

A single thread which forms the warp of the cloth, they are held in place by a heddle. The term heald was first used from the mid 18th century until the early 20th century. [SK]

**Gabardine**

Cloth characterised by a whipcord (steep twill) effect on the face of the fabric but not on the reverse and frequently made from a worsted wool warp and a cotton weft (although all-cotton gabardine is common). Its tight weave gives it a smooth flat finish and a degree of resistance to water. Gabardine is most commonly used for lightweight, showerproof outerwear. [MERC]

**Gauze**

Gauze a plainly woven cloth woven using two warp beams, one firmly weighted, with the other being lightly weighted for the crossing threads. The cloth is a very fine sheer fabric called gazzatum. It was originally produced in Gaza, Palestine. Traditionally woven in silk, cotton or linen with a leno or gauze weave construction, it was used for veiling and mosquito netting. Although surgical bandage is often referred to as gauze it is in fact plain woven fabric similar to cheesecloth. The French word for gauze is 'gaze', from which the names of many types of fabric derive, such as gaze de fil (linen), gaze de violette and gaze fond filoche. The French term for leno or gauze weave is gaze tour anglais. [MERC and Weavers]

**Georgette**

A fine sheer crêpe weave fabric which can be made of silk, cotton, rayon or a mixture of these fibres. The cloth is more grainy than crêpe, and this is a result of highly twisted warp and weft threads. [SK]
**Heddle**
In early looms the heddle consisted of little more than a string looped around a rod. Later versions on industrial looms were made of metal and also named the ‘shaft’ or ‘harness’. [MS]

**Lampas**
A term used exclusively for figure fabrics. The pattern composed of weft floats is bound into the ground cloth by a binding warp. The ground may be tabby, twill, satin, damask etc. The weft threads which form the pattern are often made of many colours, and can either form the motif across the whole width of the weft or through brocading. The material may be all silk, cotton warp and silk weft, or all cotton. The designs are formed by warp and weft figuring in an intricate manner. [MERC & SK]

**Lappet loom**
Lappet loom weaving is where a fine gauze is woven with a motif. The patterning is referred to as the whip and these threads are thicker than the warp and weft of the ground. The whip threads are not carried on a warp beam nor heddle, as in the usual manner. Instead needles are stuck with their points facing upwards in long laths which are fixed to bars beneath the warp. The laths have an up and down motion, lifting and pulling the warp threads in a configuration so that the execution of the figuring can be obtained. This up and down movement is governed by discs named lappet wheels which are fixed to the side of the loom and worked by the weaver. [SK]

**Lawn**
Very fine plain cloths. The original lawn was a fine linen cloth used for dress purposes, but is now known as ‘linen lawn’. The cloth is ‘crisper’ than voile but not as crisp as organza. [MERC & SK]

**Moquette**
Loop pile fabrics produced by the aid of wires as for Brussels and other carpets. Originally made by hand with knotted tufts. The name is used for a light cloth used for upholstery in which the pile may be looped (uncut), all cut, or partly looped and partly cut. Produced in self-colours and multi-coloured. The pile yarn is usually wool and the ground warp cotton two ends together. [MERC]

**Ombré**
A term applied to design, which means stripes shading from light to dark. Produced by different tones of the same colour in the warp yarns. [MERC]

**Pick**
A single thread which is worked across the full width of the cloth [SK]

**Sett**
A term used to indicate the spacing of ends or picks or both in a woven cloth: this should be expressed as threads per centimetre. [TEX INST]

**Shed**
This is the technical term for the triangular shaped space which is formed by lifting the warp to allow the weft thread ‘pick’ to be pass between it. [SK]

**Shuttle**
This is the implement used to carry the weft thread (pick) from the left to the right side of the cloth, the shuttle moves between the warps in the shed area. [SK]

**Sateen**
A smooth cloth, woven with a weft-faced weave. The cloth exposes more of the weft than the warp. It is mostly used for linings. [MERC & SK]

**Taffeta**
A plain weave, characterized by its closely woven surface created by an even number of weft and warp threads per inch. It has a slightly stiff crisp papery feel. [MERC]

**Velvet**
A textured pile fabric used for dress and furnishing, the distinguishing features of which are successive rows of short cut tufts of fibres standing so close together as to present a uniform
surface and a dense luxurious feel. The tufts are created by the warp threads which are looped over a wire during weaving and later cut to release the wire and form the pile. [MERC]

**Velveteen**

A solely cotton fabric with a short full pile made by weft tufts, and frequently referred to as cotton velvet. A better definition of velveteen would be weft pile velvet to distinguish the fabric from warp pile velvet. [MERC]

**Worsted**

Wool yarns of superior quality and appearance which are spun from good quality wools. The process uses a more elaborate preparation for spinning than other woollen yarns receive. The spinning process assembles the fibres of the yarns to be as parallel as possible, and to remove by combing all the short fibres that would otherwise spoil the regularity, smoothness and lustre which is characteristic of worsted yarns. The cloth requires highly specialised finishing to create the soft crease resistance which marks the quality of the cloth.[MERC]

Identifying Textile Types and Weaves 1750 - 1950

Bibliography

For textile terms and identification, with some basic historical and social context


Hooper, Luther, *Silk: Its Production and Manufacture*, Pitman & Sons, Bath, 1911


The Textile Institute, *Textile Terms and Definitions, 7th edition*, Manchester Textile Institute, 1975


Websites

The Worshipful Company of Weavers has an excellent glossary page  [www.weavers.org.uk](http://www.weavers.org.uk)

The Textile Institute is used by many industrial manufacturers, and has a good terminology page for old and new fabrics and yarns  [www.texi.org](http://www.texi.org)
Working mills to visit

Quarry Bank Mill, Styal, Cheshire  www.quarrybankmill.org.uk

Paradise Mill & the Macclesfield Silk Museum Heritage Centre, Macclesfield  www.macclesfield.silk.museum


Armley Mills, Leeds Industrial Museum, West Yorkshire  www.leeds.gov.uk/armleymills

Sir Richard Arkwright’s Masson Mills  www.massonmills.co.uk