

BASICS FASHION DESIGN

Juliana Sissons

KNITWEAR

Second Edition



B L O O M S B U R Y

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0.1
Rebecca Swan's oversized knitwear in cream,
grey and black. Woven techniques in silk, wool
and leather.

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Perceptions of knitwear and knitting span a very wide spectrum from the domestic hand-knitting on needles to the commercial products of today's sophisticated industrial technology. Knit technology was mechanized more than 150 years before the Industrial Revolution, and it continues to be at the forefront of innovation in the digital era. Once associated with wartime thrift and knitting for victory, hand-knitting is again seen in public, with people learning to knit in cafes and social gatherings, and creating mildly subversive artworks. For those wanting to make a career in the fashion and knitwear industry, however, this public image is far removed from the complex, soft engineering that takes two-dimensional knitted fabric into three-dimensional form – and from the requirements and understanding of knit structures, and the consideration of garment form, whether in loose volume for drape from the shoulders, or knitted to shape for a body conscious silhouette.

This second edition of Juliana Sissons' *Knitwear Basics* book provides new inspiration from both professional designers and students graduating

from fashion and textile courses in UK universities and arts colleges, and for the first time, from the United States. In the intervening years since the first edition, the development of menswear with its own independent fashion weeks has grown, and is reflected here with a complete chapter on menswear, including an interview from Cozette McCreery, designer of former men's fashion knitwear label, SIBLING.

Juliana Sissons, herself a designer and pattern maker working in higher education, conveys the excitement and endless potential of the medium of knitwear in a fashion context, beyond the classics that have become ubiquitous yet essential pieces. The techniques, designs and insights contained here provide the basis of knowledge for endless experimentations with yarn, knit structure, pattern, texture, form and colour that will inspire a new generation of fashion and textile designers to go forth and create, either within the industry or as designer/makers.

Professor Sandy Black, London College of Fashion

0.2

Menswear made from silk, wool and monofilament yarns. Extreme scale of proportions were achieved through weaving yarns into knit on the domestic knitting machine. Abigail Coop, runner up of Graduate Fashion Week, Knitwear and Gold Award 2017.





‘Missoni’s aesthetic is inside me, my mother, grandmother and I all have different styles, but we share the same taste.’

Margherita Missoni

The machine-knitting industry dates back to the early sixteenth century, but it could not be more exciting and alive than it is today. Knitting provides endless creative outcomes, enabling an independent and experimental approach to design. Modern developments in technology and manufacturing, coupled with contemporary treatments and spinning technology are constantly reviving the knitwear industry. Knitwear can be found at all levels of the fashion market, from the industrial mass production of hosiery, underwear and sportswear to the use of its sculptural qualities in high fashion and accessories, such as bags, shoes and jewellery. The medium also provides an astounding range of possibilities for art, interior design and architecture.

Knitwear: An Introduction to Contemporary Design, second edition

begins with a brief history of knitting and knitwear design, with an introduction to yarns, fibres, machinery and tools. The book then leads you through the essential stages of creative design development,

0.3

Katherine Mavridis’ oversized knitwear design from a collection of handcrafted designs, with three-dimensional coiling techniques.

offering a range of exercises to hone your practical skills: how to knit a tension swatch, basic techniques on domestic machines and how to create knitting patterns. It looks at the differences between two- and three-dimensional design, exploring the textural and sculptural qualities of knit. The important considerations of the finer details, trims, embellishment and fastenings are explored before the final chapter, which examines the exciting possibilities in knitwear for men. This new addition takes a different approach to the previous chapters by showcasing exemplary international practitioners in menswear, in order to demonstrate how the knitting techniques that have been explored throughout the book can be applied in contemporary knitwear design.

Menswear design is an emerging area within the fashion industry, designers are pushing more boundaries than ever before. Students are playing with unique themes, concepts and influences, leading to valuable sources of research for innovative design outcomes, thus giving men the freedom to explore more adventurous colour combinations, flamboyant textures and exciting developments in garment scale.

Interviews with fashion/knitwear designers and knitted textile specialists serve to illustrate the different ways you can work with knitted textiles, offering inspiration and insight into the range of careers within the knitwear industry.

I hope that this book will provide you with the fundamental skills, knowledge and inspiration to design and create your own innovative knitted textiles.



Approach to knit

1

In order to take a fresh look at knitting, and at ideas that are normally taken for granted, we should first understand historically how these techniques came about and consider the classic, timeless designs as significant and creative starting points for further design development. Hand-knitting skills and patterns have long been passed from generation to generation, allowing a greater understanding and acknowledgement of knitting as an intellectual, artistic tradition. A growing number of new and exciting designers are graduating each year from fashion and textile courses, and by comparing their designs with the work from the early knitters, a story starts to emerge.

This chapter offers an introduction to knit and knitwear design, comparing traditional knitting techniques with their modern reinventions. It looks at the characteristics and behaviour of different yarns and fibres, from the traditional to the contemporary, such as metallic, steel and plastic. It offers an overview of knitting machines and tools and the different aspects of work that can be produced. Finally, it looks at how developments in design and technology are radically reinventing this traditional craft.

‘It is a freedom to be able to make your own fabric while working. For me it is the absolute challenge.’

Sandra Backlund

1.1

Knitwear design embellished with Swarovski crystals by Björg Skarphéðinsdóttir.



Reinventing traditional knitting

Developments in technology enable new ways of creating knitwear and knitted textiles, but many students and designers are looking to traditional techniques for inspiration to merge with contemporary ideas. Designers are capitalizing on the unique qualities that knit has to offer, pushing boundaries with unusual yarns and materials and playing with scale. There is a natural interplay between craft, design and new technology. We will look at some of these traditional knits – fishermen's ganseys or guernseys, Aran cables, Fair Isle and lace – and explore their modern reinventions.

A brief history

Wool fabric has protected us since the very early days, and people may well have knitted, using only the fingers, as long ago as 1000 BCE. Techniques using circular

peg frames, similar to French bobbin knitting, were also probably practised alongside hand pin knitting.

There are various European paintings that portray the Virgin Mary knitting, providing evidence that knitting was practised as early as the fourteenth century. Shown here is Master Bertram's painting of the Madonna, who is seen knitting Christ's seamless garment on four needles. Hand-knitting was commonplace in medieval Europe, and the production of caps, gloves and socks was an important industry.

In 1589, the Reverend William Lee invented the stocking knitting frame, which was to revolutionize the knitwear



1.2

Visit of the Angel, known more commonly as the Knitting Madonna, by Master Bertram of Minden, 1400–10.



1.3

The framework knitting machine was invented by William Lee in 1589.

trade. Initially created for use with the short, fine sheep's wool from Sherwood Forest, this first machine produced coarse knitting for peasant hose. Lee was unsuccessful in promoting the frame; Queen Elizabeth refused the patent because she feared that it would jeopardize the hand-knitting industry. Lee then developed the frame to be used with silk: the original machines had eight needles per inch; this new machine was thought to have twenty needles per inch, and it was perfect for making expensive, fancy stockings. The English were still not interested, and Lee took the frame to France, where the machine eventually proved to be successful. By the end of the seventeenth century, it was in increasingly extensive use across Europe. Knitting had become faster, because now, instead of knitting one stitch at a time, whole rows could be knitted at once. The machine was gradually refined further, and by the eighteenth century, the idea of knitting holes opened up new scope for design. By the late nineteenth century, the knitwear industry was huge; new innovations in technology paved the way for the straight bar, flat frame.

Jerseys and guernseys

Jerseys and guernseys originate from the Channel Islands, just off the north coast of France. These fishermen's garments were hard-wearing, comfortable and warm; they were knitted in oiled wool with a tight stitch and could resist rain and sea spray. Original jerseys and guernseys were dark blue, almost black in colour, and were knitted in the round, using four or more needles, in order to secure a seamless garment.

Designs were often knitted in banded patterns, sometimes displaying different

textures between the bands. Thanks to the opening up of trade routes in the seventeenth century, these garments soon became the fisherman's staple around the UK, where they were adapted with new patterns and textures (and are often referred to elsewhere as 'ganseys'). Stitches were passed down from generation to generation. The wealth of pattern in the stitches gave great scope for individual design. These garments were cherished, looked after, mended and often handed down. It is thought that a fisherman who died at sea could be identified by the handiwork of his guernsey.



1.4

Shetland fishermen wearing individually patterned hand-knitted ganseys in worsted yarn, circa 1900.



1.5

Knitwear design by Graduate Fashion Week Winner 2016, Kendall Baker. Knitwear collection explored a variety of cable designs for menswear.

Aran

The Aran Islands are located off the west coast of Ireland. Most historians agree that the Aran jumper is a relatively recent invention. The Irish government set up an initiative in the 1890s to encourage poorer families to weave and knit garments to sell.

The garments were originally knitted in thick, untreated wool, which retained its natural oils; they were mostly cream, but sometimes black, in colour. An Aran knit is heavily patterned with closely

knitted cables, honeycombs, diamonds and lattice effects; it quite often displays different patterning on the front and back. The basis of many Aran patterns is the simple cable, a twisted rope design, which consists of a certain number of stitches that are divided so they can be twisted around each other. A typical Aran design consists of a centre panel with two side panels and cable stitches. The knitter uses tools to move one stitch or a group of stitches over or behind another.



1.6

Modern interpretation of the traditional Aran knit by Alexander McQueen, A/W 2006.

Fair Isle

Fair Isle knitwear is known for its multicoloured, specialized patterns. Fair Isle, a tiny island south of the Shetlands, was a frequently visited trading centre for fleets coming from the north and Baltic seas. Influences from places such as Scandinavia and Spain can be seen in the Fair Isle knit.

Cottage industries flourished and continued to thrive until a decline in the early 1800s. By 1910 Fair Isle knitting had become popular again; knitters continued to experiment with patterns and colours, and by the 1920s, the style had become a distinctive fashion for the wealthy and the middle classes.

While Aran knitting combines textured effects, Fair Isle knitting concentrates on pattern and colour. Fair Isle knitting is a combination of design repeats and motifs, which tend to be broken up into vertical or horizontal bands or blocks. Knitting instructions are taken from charts, which give a visual impression of how the design will look when finished. There is great design potential with the different combinations of border patterns and motifs. See more about Fair Isle patterns on page 80.



1.7

Fair Isle knit by Hannah Taylor.



1.8

Modern interpretation of argyle stockings by Vivienne Westwood, A/W07.



1.9–1.10

Modern take on traditional tartan, knitted swatch from Catherine Brown at the University of Brighton, from a project set by the Liberation Kilt Company and Ethical Fashion Forum, to draw awareness to human trafficking.

Argyle-patterned hose

Originating in Scotland, argyle stockings were traditionally worn with kilts, particularly by military regiments. The pattern was worked either in a large check – showing light, dark and a half-toned area between – or check-like tartan. Rather than being knitted in the round with four needles, these stockings were knitted on two needles with separate lengths of yarn for each colour.



1.11–1.12

Rachel Wells' knitted swatches designed for the Rebel Tartan Project, in collaboration with the Liberation Kilt Company (Blue-Heart Tartan) and Ethical Fashion Forum, to draw awareness to human trafficking.

Lace knitting

The Shetland Islands are also famous for their lace patterns, knitted in very fine, soft yarns. Lace shawls were worked from the outside edges in. Designs varied from quite simple mesh patterns, based on garter stitch, to intricate lace patterns, based on stocking stitch. Different lace patterns were given names to describe the stitch. Some had meanings, such as 'Old Shale', which depicted waves on the beach. Others were more descriptive, such as 'Feather and fan', 'Crest of the wave', 'Cat's paw' and 'Horseshoe'. Lace patterns were capable of numerous modifications and combinations. This enabled the production of lace pieces that were luxurious to wear and individual in design. Lace knitting has never died out completely; many crafts people are still enjoying the challenge today. See page 67 for more on lace.

Yarns and fibres

Your choice of yarns is very important, and there are lots of factors to take into consideration; the most important being quality and suitability for the end result. Here we take a brief look at some of the many different yarns available to



1.13

Shetland women knitting lace (left) and Fair Isle (right), early twentieth century.

machine knitters and try to unravel some of the confusion over yarn thickness, the spinning process and the different types of fibre content.

All yarns are made from natural or man-made fibres, which come in various lengths known as filament and staple. Filaments are very long fibres, which are made in one continuous length. Synthetic fibres are produced in a filament form. They are often then cut into shorter staple lengths before being spun into yarn. The only natural filament fibre is silk. Staple fibres are much shorter in length: lots of separate pieces are twisted and spun together to make a staple yarn. Sometimes, for reasons of strength, design or economy, yarns can be made from a blend of staple and filament fibres.



1.14

Cassie Green's richly ornate garments made with luxurious materials: fine wool and silk.



Spinning

Spinning involves the twisting together of staple fibres to form lengths of yarn. A process called carding is first used to separate the entangled fibres. Carding machines, which consist of large rollers covered with sharp wires, create a thin blanket of fibres, and these are divided into narrow strips, known as slubbings. The slubbings are then drawn out and spun. Yarn may be twisted in a clockwise or anticlockwise direction, resulting in an s or z twist. The yarn may be tightly twisted, producing a hard, strong yarn; it can also be lightly twisted, giving a bulky, soft yarn with less strength, but good insulating properties.

Hand-spun yarns can be machine knitted but are usually best suited to a chunky machine due to the uneven texture of the yarn. Single strand or 'ply' yarns are produced through the spinning process. These strands can be twisted together with other strands to produce thicker yarns. These yarns are known as two-ply, three-ply and so on. Plying also prevents yarn from twisting back on itself and makes the final knitting lie straighter. According to the number of single ends that have been combined, and the way the yarns are doubled, many different effects can be achieved. Fancy yarns have a variety of textures and colour blends applied at the spinning stage.



1.15

Selection of hand-spun yarns by Jennifer Dalby.

Natural yarns

Natural yarns may be derived from animal or vegetable sources. The main three animal-based yarns are wool, hair and silk. The most common vegetable-based yarns are linen and cotton.



1.16

Alison Tsai's oversized organic garment in luxury yarns combines techniques of macramé, beading and crochet stitches with knit. Her sketchbook displays sketches of monochrome knitwear development with beads, fringes and tassels to create organic shapes. A strong mathematical approach to complex designs is seen in pattern construction.



Wool

Taken from the fleece of a sheep, wool is by far the most common type of yarn used in knitting. It has a natural elasticity, which makes it easy to work with. It can be chunky or fine, depending on the way it is spun, and the quality can vary depending on the type of sheep. Some wool has a longer and thinner staple length; for example, merino wool, from the merino sheep, has a finer fibre than other wools. Shetland yarn has a shorter staple length; it is sometimes itchy because the shorter, thicker fibres poke out of the spun yarn. Worsted wool is spun with a mix of varying length fibres, making it smoother, stronger and more lustrous than Shetland wool.

Hair

Hair is taken from the coats of animals other than sheep, although hair fibres are often blended with sheep's wool. Examples include mohair, which comes from the angora goat. This is a luxury yarn with a unique hairy surface; when blended with wool or silk, the appearance becomes more refined. Angora, which comes from the angora rabbit, is a soft, fluffy yarn. It is usually blended with wool to give it strength. Cashmere is another luxury yarn. Taken from the cashmere goat, this is a soft, warm and lightweight yarn.

Silk

Harvested from silkworms, silk is the only natural filament fibre, and it is expensive. It is strong, with a smooth, shiny appearance and is often blended with other fibres to make it more versatile. Spun silk is cheaper, as it is made from the broken pieces of waste filament spun together. Wild silk, which is harvested from undomesticated silkworms, is coarse and uneven.

Linen

Linen's long staple fibres are taken from the stem of the flax plant. This strong yarn is lacking in elasticity and is often blended with other fibres, such as cotton, to make it easier to work with. Yarns are usually slubbed.

Cotton

Cotton is made from staple fibres of the cotton plant. This is also a strong, non-elastic yarn with a soft finish. Untreated cottons are more difficult to knit than mercerized cottons, which have a treatment added at the production stage.

Man-made yarns

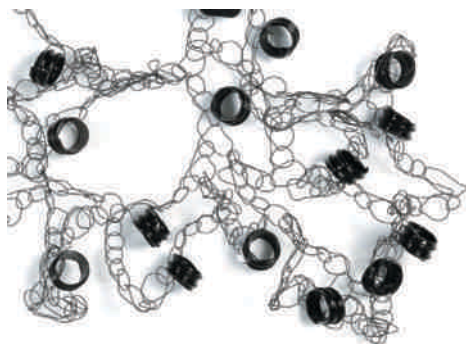
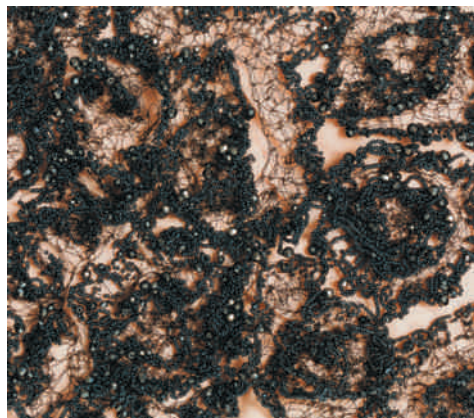
The development of manufactured fibres and their texturing processes have inspired the knitting industry, and they have been beneficial in many ways: they are easy and inexpensive to produce and can be blended with natural fibres that are too fragile to use alone. However, there are environmental drawbacks as the entire production of these yarns involves the chemical treatment of raw materials and the use of coal and oil. Definitions between natural and man-made fibres are becoming blurred as many natural fibres, such as cotton, wool and flax, are regularly subjected to chemical treatments.

Manufactured fibres fall into one of two categories: regenerated and synthetic. Regenerated fibres are derived from natural substances, such as wood pulp cellulose or milk. Rayon, the best known of these, is usually characterized by its sheen and often used as a substitute for silk. Viscose and acetate are both products of the rayon family and are all

liable to melt under a hot iron. Synthetic fibres, such as acrylic, are made from petroleum-based chemicals, plastic and/or coal. Acrylic crimped fibre yarn is often used as a wool substitute, but it is less durable, not as warm and has a tendency to stretch. Nylon is another synthetic yarn: it is very strong, non-absorbent and best blended with wool. Polyester is similar to nylon but with less shine.

Other man-made yarns include metallic threads, such as Lurex, which are made

from aluminium and coated in plastic. Manufacturing of man-made yarns continues to evolve, and a great number of refined, sophisticated yarns are available today. There are now extremely fine microfibres, which have opened up new possibilities in the design of yarns; stretch yarns are increasingly being used in seamless garments, and new blends and textures are continually being developed.



1.17–1.20

Selection of swatches by Victoria Hill, constructed using unusual, man-made yarns, such as rubber, acrylic and wire.