

ABSTRACT

LAMBERT, GAIL ANN; The Taxonomy of Sweater Structures and Their Origins. (Under the direction of Dr. Cynthia Istook.)

Evidence of knit apparel has been traced back to at least AD 1000-1200 when the remains of knit cotton stockings were uncovered in Egypt. Children's socks from Antinöe Egypt have been dated back even earlier to AD 600. Due to the fragile nature of the materials used to produce a knitted garment, the earliest examples have long deteriorated, making the study of the origins of hand knitting difficult to trace with complete certainty. Adding to the challenge, written instructions for the earliest knit garments are not available. Ideas and patterns were originally handed down by word of mouth and often kept secret within families or other cultural institutions. The aim of this research is to gain a better understanding of the early foundations of sweater design, and to discuss it in regards to sweater construction.

This thesis focuses solely on the construction of the hand knit sweater. There are many other facets to the art of garment knitting that have been set aside for the purpose of this study. An extensive literature research follows the line of sweater evolution from the earliest existing example of a completely intact knit sweater (the waistcoat of King Charles 1, 1649) to where the major branches of sweater design lead. In the data section of the paper, a series of schematics, graphs, and photographs, will lead you through the construction elements of individual sweater designs. The combination of these will show how variations from the earliest sweater designs evolved.

In some regions, the shaping and practicality of a garment was of foremost concern, while in other areas, highly developed patterning and color design took precedence. Unraveling the elements that go into the design of a hand knit garment explains what makes a Fishermen's Guernsey different from an Aran. It illustrates why some sweaters

were knit in the round with armholes cut in and why some are shaped as they were knit. It also points to areas where several facets of the textile world join together in the creation of a sweater design.

The format of the data analysis section of this thesis gives the reader a clear and concise evaluation of different examples of sweater design. Each sweater has a schematic of the shape of the garment and most have graphs and hand knit examples of the patterns that define each region. It was designed to involve the reader with the historical information in the literature review and the visual information in the data section. Both sections combine an exhaustive amount of data and synthesize it to essential elements. There is an “at a glance” and accessible reference element that makes this work a valuable tool in the study of sweater structure and design.

Sweaters like people come in many shapes and sizes; each with their own history. This work will illustrate how history and necessity have played a role in the sweaters we wear.

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THE TAXONOMY OF SWEATER STRUCTURES AND THEIR ORIGINS

By

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APPROVED BY:

Chairman of Advisory Committee

DEDICATION

I dedicate this thesis to those who have come before. To those who created for schillings, to those who knit through the night. I dedicate this to the sheep for their wool and the child who watched as stitches became rows and rows became fabric. I dedicate this to my own children Lauren and Chelsea who have helped me in so many ways. They are proud that their mother is a designer and they have taught me that being a designer is something to be proud of.

BIOGRAPHY

Gail Lambert was born in Detroit, Michigan, in 1959. She graduated from the University of Michigan in 1981 with a Bachelor of Arts degree, with a concentration in the History of Art. She also had a minor in photography. In 1982 she moved to Salt Lake City, Utah, where she worked at Phillips Gallery and was responsible for the framing and the installation of exhibits for Phillips Gallery as well as framing for the University of Utah. While in Salt Lake City, Gail studied weaving and was represented in a wearable art show at Phillips Gallery.

In 1986, Gail Lambert moved to Kalamazoo, Michigan, and became the Art Preparator for The Kalamazoo Institute of Arts. Here, she was in charge of the permanent collection and installation of exhibits. In 1989, Gail went into semi-retirement with the birth of her first daughter Lauren Frances Lambert. In 1991 Gail moved to East Lyme, Connecticut. In 1992, Gail's world expanded with the birth of her second daughter Chelsea Morgan Lambert.

Gail Lambert learned to knit in 1977. Twenty years later, in 1997, she established a knitwear design company entitled: Lambert Designs that produced and published original knitwear patterns for resale. Through this endeavor she has represented herself in several trade shows and has been a guest artist at knitwear festivals. In 1998, Gail re-entered the academic environment at Meredith College seeking a degree in graphic arts. After being exposed to the Textile School at North Carolina State University, Gail transferred to NCSU in the fall of 2000 to begin work on her Master's of Science in Textile Management and Technology.

TABLE OF CONTENTS

	Page
LIST OF TABLES	vi
LIST OF FIGURES	viii
I. INTRODUCTION	1
II. LITERATURE REVIEW	5
King Charles I Waistcoat	7
Brocade Jackets	8
Patterned Sweaters of Germany and Austria	9
Denmark	11
Damask Nightshirts	11
Faroe Islands	13
Iceland Yoke Sweaters	15
Greenland	19
Sweden	20
Spedetröja Sweaters of Skane	22
Twined Knitting of Dalarna	23
Ullared Sweaters of Halland	25
Bohus Sweaters of Bohuslan	26
Norway	27
Lusekofa	29
Fana Sweater	32

	Page
Selbu Sweaters	34
Finland	35
Korsnäs Sweaters	37
Sweaters from Österbotten	39
Jussi Pullover	40
Great Britain	42
Fisherman's Guernsey	42
Fair Isle Sweaters	48
Shetland Yoke Sweaters	53
Argyle Sweaters	55
Ireland / Aran Sweaters	57
Canada / Cowichan Sweaters	62
Afghanistan / Afghanistan Vest	66
III. METHODOLOGY	68
IV. PRESENTATION OF DATA	73
V. SUMMARY, CONCLUSIONS AND RECOMMENDATIONS	149
REFERENCES	153
APPENDICES	156
Definition of Terms	157
Photograph Releases	163

LIST OF TABLES

	Page
Table 1: King Charles I Characteristics Chart	74
Table 2: Brocade Jacket Characteristics Chart	76
Table 3: Patterned Sweaters from Germany and Austria Characteristics Chart	79
Table 4: Damask Nightshirts Characteristics Chart	82
Table 5: Faroe Island Sweater Characteristics Chart	85
Table 6: Icelandic Yoke Sweater Characteristics Chart	88
Table 7: Icelandic Pullover Characteristics Chart	91
Table 8: Spedetröja Sweater Characteristics Chart	94
Table 9: Sweater from Dalarna Characteristics Chart	98
Table 10: Ullared Sweater of Halland Characteristics Chart	101
Table 11: Blue Shimmer / Bohus Knitting Characteristic Chart	104
Table 12: Lusekofa Sweater Characteristic Chart	108
Table 13: Fana Sweater Characteristic Chart	111
Table 14: Selbu Knitting Characteristic Chart	115
Table 15: Korsnäs Knitting Characteristics Chart	118
Table 16: Österbotten Sweater Characteristic Chart	121

	Page
Table 17: Jussi Sweater Characteristics Chart	124
Table 18: Fishermen's Guernsey Characteristics Chart	128
Table 19: Fair Isle Pullover Characteristics Chart	131
Table 20: Shetland Yoke Sweater Characteristics Chart	134
Table 21: Argyle Sweater Vest Characteristics Chart	137
Table 22: Aran Raglan Characteristics Chart	140
Table 23: Cowichan Sweater Characteristics Chart	144
Table 24: Vest from Afghanistan Characteristics Chart	148

LIST OF FIGURES

	Page
Figure 1: The Buxtehude Madonna by Master Bertram of Minden	6
Figure 2: The Waistcoat of King Charles I	7
Figure 3: Brocade Jacket	9
Figure 4: Detail of a Damask Nightshirt	12
Figure 5: Falstar Nightshirt	13
Figure 6: Faroese Sweater	14
Figure 7: Icelandic Yoke Sweater	18
Figure 8: Greenland Beaded Collar	19
Figure 9: A Couple Knitting	21
Figure 10: Spedetröja Sweater	23
Figure 11: Twined Knit Sweater from Dalarna	24
Figure 12: Ullared Sweater from Halland	25
Figure 13: The Blue Shimmer Bohus Knit Cardigan	27
Figure 14: Setesdal “Lusekofte” Sweater	30
Figure 15: Fana Cardigan	33
Figure 16: Selbu Cardigan	35
Figure 17: Korsnäs Sweater	38
Figure 18: Österbotten Sweater	40
Figure 19: Man wearing a Jussi sweater	41
Figure 20: Working Fishermen’s Guernsey	43
Figure 21: Fishermen at Pye Nest, Filey, 1926	46

	Page
Figure 22: Fair Isle Sweater	51
Figure 23: Yoke of a Shetland Yoke Sweater	54
Figure 24: Sample of Argyle Knitting	56
Figure 25: Aran Sweater	61
Figure 26: Salish Woman with Cowichan Sweater	64
Figure 27: Afghanistan Vest	67
Figure 28: Sweater Elements Schematic	70
Figure 29: King Charles I Schematic	73
Figure 30: Brocade Jacket Schematic	75
Figure 31: Bavarian Sweater Schematic	77
Figure 32: German / Austrian Pattern Knitting Sample	78
Figure 33: Damask Nightshirt Schematic	80
Figure 34: Eight-Pointed Star Pattern Knitting Graph	81
Figure 35: Damask Knitting Sample	81
Figure 36: Faroe Island Sweater Schematic	83
Figure 37: Faroese Knitting Graph	84
Figure 38: Faroese Knitting Sample	84
Figure 39: Icelandic Yoke Sweater Schematic	86
Figure 40: Icelandic Knitting Graph	87
Figure 41: Icelandic Knitting Sample	87
Figure 42: Icelandic Jersey Schematic	89
Figure 43: Icelander Knitting Graph	90

	Page
Figure 44: Icelandic Knitting Sample	90
Figure 45: Spedetröja Sweater Schematic	92
Figure 46: Spedetröja Knitting Graph	93
Figure 47: Spedetröja Knitting Sample	93
Figure 48: Sweater from Dalarna Schematic	95
Figure 49: Twined Knitting Graph	96
Figure 50: Twined Knitting Sample	96
Figure 51: Halland Sweater Schematic	99
Figure 52: Halland Knitting Graph	100
Figure 53: Halland Knitting Sample	100
Figure 54: Blue Shimmer Schematic	102
Figure 55: Bohus Knitting Graph	103
Figure 56: Bohus Knitting Sample	103
Figure 57: Norwegian Lusekofa Schematic	105
Figure 58: Lusekofa Knitting Graph	107
Figure 59: Lusekofa Knitting Sample	107
Figure 60: Fana Sweater Schematic	109
Figure 61: Fana Knitting Graph	110
Figure 62: Fana Knitting Sample	110
Figure 63: Selbu Sweater Schematic	112
Figure 64: Selbu Knitting Graph	113
Figure 65: Selbu Knitting Sample	114

	Page
Figure 66: Korsnäs Sweater Schematic	116
Figure 67: Korsnäs Knitting/Crocheting Graph	117
Figure 68: Korsnäs Knitting/Crocheting Sample	117
Figure 69: Österbotten Sweater Schematic	119
Figure 70: Österbotten Knitting Graph	120
Figure 71: Österbotten Knitting Sample	120
Figure 72: Jussi Sweater Schematic	122
Figure 73: Jussi Knitting Graph	123
Figure 74: Jussi Knitting Sample	123
Figure 75: Fishermen's Guernsey Schematic	125
Figure 76: "Sunday Best" Guernsey Schematic	126
Figure 77: Hebridean Guernsey Schematic	126
Figure 78: "Marriage Lines"	127
Figure 79: Fishermen's Guernsey Knitting Sample	127
Figure 80: Fair Isle Knitting Schematic	129
Figure 81: Fair Isle Knitting Graph (detail of top left corner of knitting)	130
Figure 82: Fair Isle Knitting Sample	130
Figure 83: Shetland Yoke Sweater Schematic	132
Figure 84: Shetland Yoke Sweater Knitting Graph	133
Figure 85: Shetland Yoke Knitting Sample	133
Figure 86: Argyle Sweater Vest Schematic	135
Figure 87: Argyle Knitting Graph	136

	Page
Figure 88: Argyle Knitting Sample	136
Figure 89: Aran Sweater Schematic	138
Figure 90: Aran Island knitting sample taken from a sweater purchased in Ireland, 1977	139
Figure 91: Cowichan Sweater Schematic	141
Figure 92: Cowichan Knitting Eagle Graph	142
Figure 93: Cowichan Knitting Graphs	142
Figure 94: Cowichan Knitting Sample	143
Figure 95: Vest from Afghanistan Schematic	145
Figure 96: Afghanistan Knitting Graph	146
Figure 97: Afghanistan Knitting Sample	147

CHAPTER I

INTRODUCTION

To pinpoint the origins of the first hand knit sweaters is challenging due to the nature of the elements involved and where the earliest examples have been uncovered. Sweaters created of wool, cotton, linen or silk do not last for ages like sculptures carved in stone or vessels made of clay. Sweaters break down with time and leave little trace. To add to the challenge of this process, the earliest designs were not written down on paper and then worked by hand. Ideas and patterns were spread by word of mouth; some were secretly coveted. Writing down instructions and documenting the elements of sweater construction is a relatively modern process.

This study of the development of sweater design is a vehicle that will enable those interested in designing to understand the reasoning behind certain shape and structural elements of the hand knit sweater. Aesthetics of form, color, texture, material and culture have historically swayed the creative process of sweater design. Cultures began to dictate the shape and ornament of the garment; while climate began to dictate the weight and density of the fabrics produced. Geography had its own influence in sweater design from patterning to the type of materials available.

Rationale

By building a better understanding of where elements of knitwear design originated, prospective designers will be able to use it as a springboard for future developments. Understanding the basic principles of earlier designs will allow a greater freedom to

abstract and create new methods of sweater construction. A designer is strengthened by having a thorough grasp of the fundamental principles of the history of their craft

This thesis aims to educate those interested in the construction of a sweater to the early developments of knitwear and the decisions that have gone into the production of the early sweater styles. It should provide a document to trace the origins of the hand knit sweater so that they can be followed or abstracted in future design concepts.

Statement of Objectives

Through a review of related literature the reader will become familiar with the cultural factors that came together in the construction of 24 early sweater styles. These will be discussed in regards to materials used, pattern influences, historical significance and environmental relationships.

From there, I will begin the study of the structural and visual aspects of sweater design. A schematic will be created to give a working vocabulary to basic elements of sweater construction and define the parts needed to create a sweater. This schematic will become the template for the sweaters that will be outlined.

Finally, examples of sweaters will be detailed and discussed. Each sweater will go through a series of objectives that will detail composition and construction elements. By distilling the available information of each sweater chosen for this study, comparisons and contrasts will develop between each successive design model.

To guide the reader through new terminology, there is a glossary of related terms in the appendices of this thesis.

Purpose

This thesis was designed to give the viewer a reference guide of the earliest examples of sweater design. Through a series of 24 different representations, the history of the origins of the hand knit sweater are traced from the earliest known example in mid-1600s to the designs that were evolving in the mid-1900s.

The format of the data analysis section of this thesis gives the reader a clear and concise evaluation of different examples of sweater design. Each sweater has a schematic of the shape of the garment and most have graphs and hand knit examples of the patterns that define each region. It was designed to involve the reader with the historical information in the literature review and the visual information in the data section. Both sections combine an exhaustive amount of data and synthesize it to essential elements. There is an “at a glance” and accessible reference element that makes this work a valuable tool in the study of sweater structure and design.

Limitations

There were numerous limitations to this study, but the topic was researched to the best of my ability given the resources that were available to me at the time of writing of this thesis. As previously stated, the origins of sweater design were poorly documented and there are areas where researchers were forced to present their best educated guess given the data available. I have tried to read all that was offered to trace the logic, as well as to present some of my own conclusions.

It is also difficult to analyze the structure of a sweater without the physical presence of the garment. To do this would have involved travel to the museums spread across the

globe and not possible for the scope of this work. Because of this, I was dependent upon the writings of those who had this experience along with close examination of photographs in the reference books.

Language became another obstacle in my research. As an example, I had ordered two books from Dr. Marketta Luutonen from Helsinki, Finland on sweater design in Finland. Unfortunately, only the summary paragraphs were written in English. I relied on those summaries and photographs for the information used from these books. There were other such examples of European knitting books that I had to pass over for the same reason.

In the research of the Afghanistan vest, I was delighted to come across the sole example that I worked with in this text, but frustrated that I was not able to track down any more examples. I felt that the patterning in the vest was fresh and an interesting subject and I longed to see more examples along this line. Graphs of the design were not available and so I zoomed in on a computer scan of the vest and hand-to-eye, picked off a chart from the computer screen.

In the early days after 9-11-2001, I saw on news footage, people of Afghanistan walking from war-torn areas to safer regions. As I was saddened by this reality of our world, I also became aware of the garments that many of the children were wearing. I saw brightly colored hand knit sweaters and wondered about their origins.

Finally, I was limited by the sheer space that recreating pattern examples requires. I was only able to select one or two samples to represent numerous patterns available. I referenced where the original graphs were taken from so the reader would be able to go into each region with more detail if so desired.

CHAPTER II

LITERATURE REVIEW

The literature review will follow the available information from region to region in the development of sweater design. This is not to say that innovations stop and start at each area within a particular time frame; what it does cover is the styles and techniques for which each region has become recognized. Due to the lack of written information available for some areas, it may seem that there is a greater concentration in one section over another. This is not an intentional oversight; rather, it is a report of that what has been documented. Also, this proposal is focused on the area of sweater design and not knitting in general. Because of this, there will be geographic areas that have a rich history of hand knitting but are not covered in detail in this thesis.

The art of hand knitting has been around far longer than the earliest existing example of the hand knit sweater. It is believed that true hand knitting originated in mediaeval Egypt in the 7th century AD (Rutt, 1987). True hand knitting is produced by using two rods (or more) with a continuous strand of yarn looped over the needle and down into the knitted fabric and back over again. Previous assumptions incorrectly date the development of hand knitting as early as the 3rd century AD; however, after a closer analysis of the technique used to construct this early pseudo-knitted fabric; it was discovered that it was produced with a single eyed-needle to loop into a fabric and back out again without live stitches being held on another needle. This technique is called nalbinding and was first discovered in ancient Dura-Europa in the 3rd century (Rutt,

1987). Knitting has a more elastic structure than its predecessor nalbinding and became more desirable for the creation of clothing.



Figure 1: The Buxtehude Madonna by Master Bertram of Minden. Painted probably shortly before 1400. Photograph reprinted with the permission from [A History of Hand Knitting](#) (Rutt, 1987) pg 49. Published by Interweave Press, Loveland, Colorado.

After its conception in 7th century Egypt, knitting spread northerly throughout Europe following trade routes and religious migrations. Above is a painting created in the late 1300s that represents a Madonna knitting a collar of a sweater in the round with double pointed needles (Figure 1). It is thought to be the earliest painting with hand knitting represented. Knitting guilds established themselves in France, Spain, Italy, Germany, the Southern Netherlands and England by the 15th century (Turnau, 1991).

KING CHARLES I WAISTCOAT

Due to the fragile nature of the materials used in hand knitting, the earliest known examples have long rotted away. The earliest known preserved example of a hand knit sweater is the waistcoat of King Charles I and is currently in the Museum of London. The waistcoat was worn by King Charles I on the day of his execution on January 31, 1649 (Figure 2). The years that passed from the beginning of hand knitting to the creation of the King Charles I sweater are reflected in the craftsmanship of this sweater.



Figure 2: The Waistcoat of King Charles I. Worn at his execution on January 31, 1649. Photograph reprinted with the permission from A History of Hand Knitting (Rutt, 1987) pg 78. Published by Interweave Press, Loveland, Colorado.

The King Charles I waistcoat was knit in sky blue silk and worked delicately in a damask pattern at over 19 stitches to the inch. That is extremely fine hand knit gauge by any standards. The King Charles I sweater was knit in the round starting at the bottom of the sweater and worked up to the shoulder seam. The shoulder seams were then grafted together. The sleeves were knit separately in the round and, when completed, were sewn into the armhole openings (Rutt, 1987). This sweater will be used as the starting point in the evaluation of sweater design.

BROCADE JACKETS

In the 17th century brocade jackets were being produced most likely simultaneously in many European countries (Figure 3). Often these jackets are referred to as “Florentine Jackets” and because of this many perceive them to be Italian in origin. The origin of the brocade jacket has not been documented and thus far any association with a particular country would be speculation.

Brocade jackets are considered to be mostly framework knit garments although this is also up for debate. It is thought that since the wrong sides of the existing garments have long floating threads of the color not woven into the fabric; this would indicate the use of a knitting frame (Rutt, 1987).

Brocade jackets are highly decorative jackets knit with rich silk and gold threads. The main body of the jacket is knit in two colors with intricate floral motifs. The use of purl stitches against a knit background adds depth to the brocade effect.

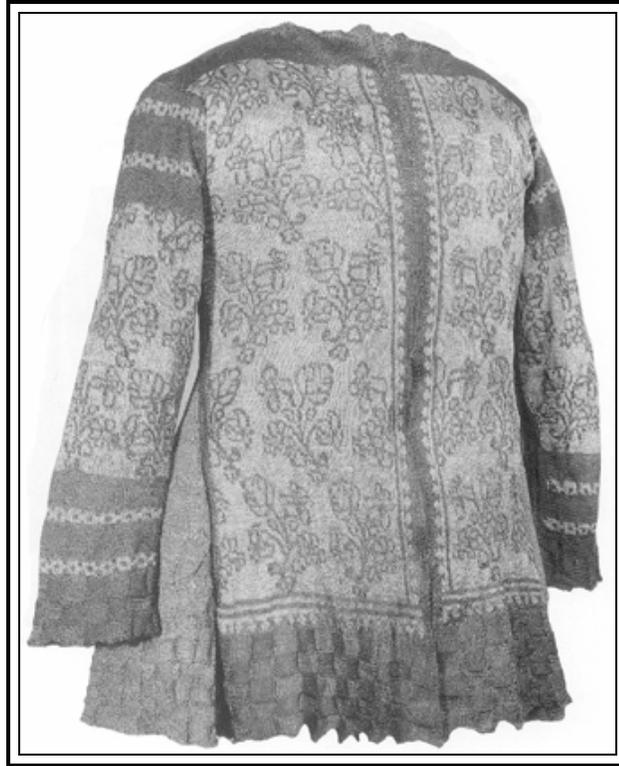


Figure 3: Brocade Jacket. 17th or 18th century, origin unknown. Photograph reprinted with the permission from A History of Hand Knitting (Rutt, 1987) pg 81. Published by Interweave Press, Loveland, Colorado.

The lower edge of the garment and sleeves are knit in a basket-weave of knit and purl squares. Often the jackets were lined. As noted by Rutt (1987, pg 81) “They are very small – only 72.5 cm (29 in.) round the chest and 55 cm (22 in.) long.”

PATTERNED SWEATERS OF GERMANY AND AUSTRIA

In the alpine region that borders southern Germany and northern Austria, a style of knitting emerged in the 1800’s that reflects the local flavor and geography. This style is has been given several names ranging from Bavarian to Alpine to Tyrolean knitting.

For the sake of not offending, I will let the above title stand as a general geographic indicator. What ties this area together is the beauty of delicate and patterned sweaters that incorporate motifs of twisted and trailing pattern work traditionally worked in cream colored wool. Filtered down through publications the title “Bavarian” sweaters implies sweaters knit customarily in cream colored wool with twisted, trailing stitches that do not require a cable needle to achieve a shift in stitch order. Twisted stitches are achieved by knitting into the second stitch on the needle and then knitting into the first stitch and dropping them off of the left hand needle at the same time. This automatically reverses the order of the two stitches and creates a linear vine effect. “Tyrolean” sweaters incorporate cable and bobble patterns similar to Aran sweater design. Added to this are accents of colorful embroidery. These sweaters surfaced later (just before the 20th century) than their Bavarian counterparts.

What has become a repeated theme in the study of knitting design is that sweater patterns evolve out of the sock patterns that have preceded them. It is suggested by Compton (1983) and Gibson-Roberts (1985) that the cream colored wool socks that were part of the traditional costume of Bavaria and Austria were the basis for the design of sweaters that followed.

The sweaters of this region were typically close fitting, scooped necked, and in the case of a woman’s sweater, waist length. The corresponding sweaters for men were slightly longer in length. The twisting, turning patterning of the knit stitches are thought to reflect the heavily forested surrounding alpine areas, perhaps follow the twisted pattern of branches. The flecks of colored embroidery duplicate the meadow flowers in bloom (Norbury, 1962).

DENMARK

DAMASK NIGHTSHIRTS

It is believed that Denmark was the first Scandinavian country to learn hand knitting and was exporting hand knit goods by the middle of the 17th century (Rutt, 1987). Sweater knitting in Denmark was stimulated by the peasant classes wishing to duplicate the finer nightshirts of the upper class. Nightshirts knit of silk, detailed in gold or silver like that of the nightshirt of King Charles I, were worn by royalty or the upper class. The common folk would duplicate this type of nightshirt in a fine wool yarn (without the gold adornment) but still incorporate the same eight pointed star and diagonal lines across the main body of the garment (Figure 4).

The damask nightshirts are thought to be the oldest type of sweater worn by the lower class of societies (Gibson-Roberts, 1985). As a definition, nightshirts were worn close to the body but were not considered to be underwear. They would usually be worn under another garment so that the sleeves could be seen but not the main body of the sweater (Lind, 1997). The most common color was red, but they were also knit in black, dark green or dark blue.

Damask knitting was produced using a stockinette background with purl stitches to detail the pattern. Designs were copied from damask woven pieces and the name followed to the knit version. The patterning on damask knitting is most successful when knit in smooth yarn with tight stitches (Lind, 1997). Structurally, the sweaters were worked back and forth at the bottom edges and then joined and worked in the round up the main body of the sweater. Side seam pattern lines were added to visually separate

the front and back of the sweater. Gussets were added to the underarm portion of the sweater to give ease in movement. This also reflects sewn shirt patterns of the time. The shoulders were grafted together with a seam line. The sleeves were worked from the cuff up and sewn into the armholes.

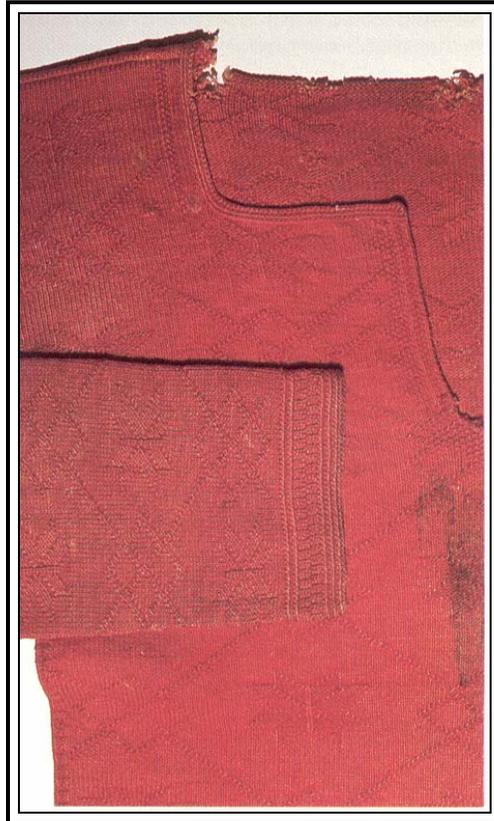


Figure 4: Detail of a Damask Nightshirt. The Herning Museum, Denmark; dated from the end of the eighteenth century. Photograph reprinted with the permission from Nordic Knitting (Pagoldh, 1987) pg 22. Published by Interweave Press, Loveland, Colorado.

Damask nightshirts evolved over time, from a longer version with long sleeves in the 17th century, to a shorter version with $\frac{3}{4}$ length sleeves in the beginning of the 19th century. The later versions also had cloth bands sewn around the neck openings that were embellished with embroidery. Eventually, on the island of Falster, twisted stitches

patterned the sweaters (Figure 5). A common element on the Falster sweaters is the use of a ribbon fold pattern (Compton, 1983). Often damask sweaters were knit in the natural unbleached white wool and dyed after the sweater was completed.



Figure 5: Falstar Nightshirt. Photograph reprinted with the permission from Nordic Knitting (Pagoldh, 1987) pg 12. Published by Interweave Press, Loveland, Colorado.

FAROE ISLAND

Halfway between Scotland and Iceland lay a cluster of eighteen islands called the Faroe Islands. With scarcely any bushes or trees due to the harsh ocean winds and the volcanic soil, sheep have roamed over these lands and become a part of the natural landscape. Even the word “faroe” translates to “sheep” so it is no wonder that the Faroe Islands are referred to as “Sheep Islands”.

Wool became an important export for the Faroese people and was sent to Norway in exchange for boats and lumber to build homes. Wool was even used locally as a means

of barter to pay rent, taxes and court fees. As the old saying goes: Sheep's wool is Faroese gold (Pagoldh, 1987, pg 24). By the middle of the 17th century the Faroe Islands were exporting socks and mittens and by the middle of the next century they exported sweaters as well. This had become the Faroe Islands' most important export.

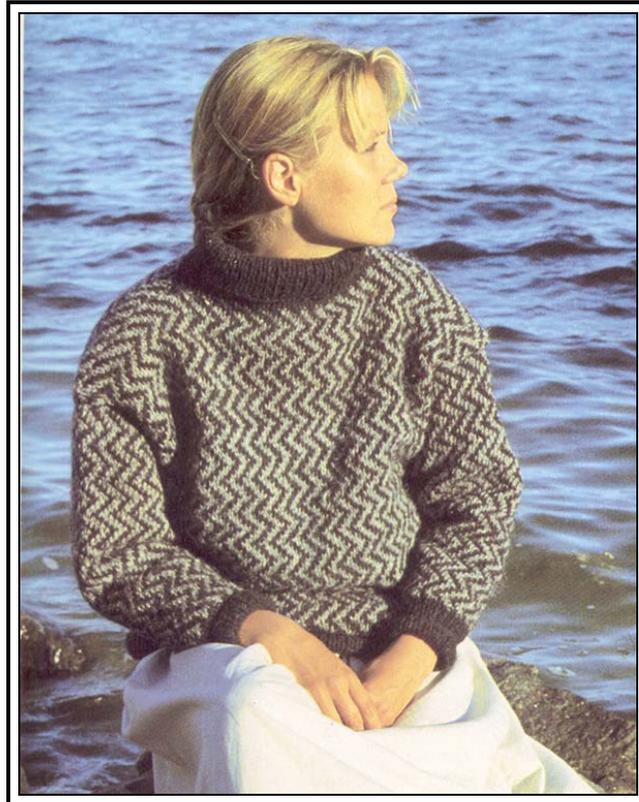


Figure 6: Faroese Sweater. Photograph reprinted with the permission from Nordic Knitting (Pagoldh, 1987) pg 27. Published by Interweave Press, Loveland, Colorado.

The sweaters of this region were made of a thicker yarn than those seen in the other Scandinavian countries (excluding Iceland and Greenland). This is due to many factors. The wool was hand plucked from the sheep and left in its natural state until the sweaters were knit. After knitting, the sweaters were felted and scoured (Lewandowski, 1997). It was also much faster to knit commercial sweaters out of a bulkier yarn than it

was out of a fine yarn. In addition, this heavy weight wool was much warmer. By knitting two-colored patterns out of a heavier yarn, the yarn that is not in use is floated behind the work and increases the amount of wool protecting the body. This is an island culture where fishermen's sweaters are needed to cut the biting winds.

The patterns used in the Faroese sweaters were simple, easy to knit repeats (Figure 6). This design element served the knitters well. The patterns were easy to remember, fast to knit; and the small, close patterns made the sweater more elastic. Another advantage was that with fewer stitches between color changes, knitters did not need to weave in the long floats of yarn as they knit (Pagoldh, 1987).

As culture began to influence knitting practices, tradition dictated that there would be no knitting for men between Christmas and New Years. Superstition suggested those wearing a sweater knit during that time would not return from sea. It was, however, acceptable to knit sweaters for resale during that period (Pagoldh, 1987).

In the 1920s, patterns from Faroe sweater designs were collected and displayed in Copenhagen for Queen Alexandrina of Denmark. There were 30 patterns on display. The queen was so impressed with the exhibit that she sent a master tailor to the islands to collect and preserve all of the patterns he could. In 1932 the book was published with 100 patterns that he had collected (Pagoldh, 1987).

ICELAND YOKE SWEATERS

Iceland is located between the Faroe Islands and Greenland and like those islands; Iceland is also maintained under Danish rule. The oldest hand knitting found on Iceland has been dated to the early 1500s and was a simple mitten; however, by the mid 1500s

hand knitting was being used as a means of valued exchange. In the next century Iceland was exporting around 72,000 pairs of socks and 12,000 pairs of mittens annually (Pagoldh, 1987). In the 1700s sweaters were also being exported. The wool of Iceland was also being woven into vadmál (a woven and then felted fabric) and accepted internationally as currency. Vadmál is a cloth that is incorporated with hand knitting in Scandinavian countries to make jackets (Compton, 1983).

It is uncertain whether it was the Dutch, English or the Germans that first brought hand knitting to Iceland; perhaps it was a combination of all of the above. Once discovered, Icelanders took to the craft and infused it into the culture. Families would assemble in what is called the *baóstofa* (a gathering room) and listen to folklore and work on their knitting. By the age of four Icelandic children were being taught to knit. By the age of eight, children were expected to be able to generate a certain amount of production knitting. The men of the family usually carded and combed the fleece and the woman did the spinning into yarn. All members of the family contributed to the knitting (Pagoldh, 1987).

As knitting wound itself into the culture of the people of Iceland, it also found its way into the folklore. An example of this is described by Pagoldh in her book Nordic Knitting (pg 36):

“During the weeks before Christmas, the work in the *baóstofa* went furiously because everyone had to get new clothes for Christmas. Those who didn’t have any would be eaten up by the Christmas cat, a large and dangerous animal described in the sagas.”

The wool of the Icelandic sheep is unique; there are two distinct layers to the fleece. The outer wool is coarse and long in comparison to the inner wool which is softer, finer

and shorter in length (Dawson, 1988). It is the combination of both the short and long fleece that makes up Lopli yarn. Lopli yarn has become synonymous with Icelandic knitting and knitwear design.

The evolution and process of creating Lopli yarn is best described by Pagoldh (1987, pg 41):

“Icelandic sheep are usually shorn in February so that the wool won’t felt as much and will be loose and easily processed in today’s modern wool factory machinery. Previously, wool was not shorn – it was plucked off in June. The outer coat is called *tog* and the undercoat, *el*. It is easy to tell the difference between the two coats in spring fleeces, but the wool is more blended in winter fleeces, and it is difficult to tell them apart. This doesn’t really matter if you are going to hand spin the wool. Lopli, a soft, unspun, and untwisted yarn, contains both *tog* and *el*, which makes the yarn stable.

Earlier “lopli” was the word for carded or combed wool which was drawn out into a thick strand for spinning on a spindle or wheel. When the first wool spinning mills came to Iceland, some of the farmers left the fleece which would be carded and drawn out as lopli, ready for spinning. During the 1920’s, Elin Guomundsdóttir Snaehólm tried to knit lopli without spinning it first. Working on small hand knitting machine, she managed to knit a scarf for her husband. She wrote about her experiment in a booklet on handwork in 1923 and the method became popular. It wasn’t until the 1930’s though, when knitting became a popular hobby for women, that lopli was used much for hand knitting.”

The Icelandic Sweater (Lopli Sweater) which this island became known for was knit out of lopli yarn and usually worked in natural colors (Figure 7). This type of sweater emerged in the late 1950s. The classic design structure of the lopli sweater was to knit the main body of the sweater and the sleeves separately up to the underarm area. All three pieces were then incorporated onto one circular needle. Decreases were made, evenly dispersed around certain rounds up to the neckline.

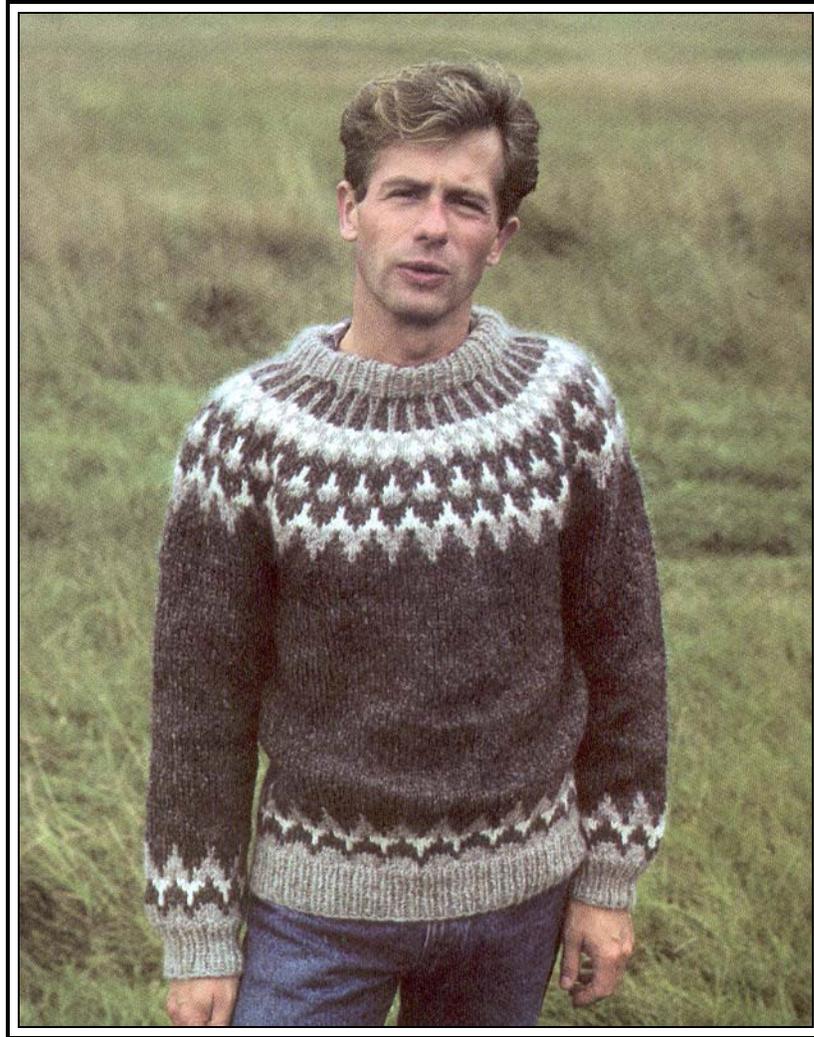


Figure 7: Icelandic Yoke Sweater. Photograph reprinted with the permission from Nordic Knitting (Pagoldh, 1987) pg 40. Published by Interweave Press, Loveland, Colorado.

The yoke of the Icelandic sweater was heavily patterned with two-color knitting. There were much simpler two-color designs worked just above the cuffs and the bottom ribbing of the sweater. Lopi Sweaters remain a popular export from Iceland. With the heavy denier of the yarn, the sweaters knit up quickly, and the loft of the wool makes for a warm sweater that many would wear as a coat more than a sweater for indoor use.

GREENLAND

Although knitting on Greenland is relatively in its infancy when compared to other European regions (having just begun knitting mittens in the 1850s), there is a contribution to knitwear design (although somewhat debated) that must be noted. On Greenland there is a tradition of wearing over garments a beaded, yoke shaped collar that very much resembles hand knit yoke collars of Icelandic and Norwegian sweaters. The balance and patterning of the color work ties in closely with the sweater counterparts. The collars are large and extend from the neck to more than halfway down to the elbow. In 1952, the royal family of Denmark was photographed in such collars after a trip to Greenland (Figure 8). Some believe that the inspiration for certain yoke patterned sweaters stems from this photograph and the design was then translated into knitwear (Pagoldh, 1987).



Figure 8: Greenland Beaded Yoke Collars. Photograph reprinted with the permission from Knitting in the Nordic Tradition (Lind, 1997) pg 63. Published by Host & Son, Copenhagen, Denmark.

SWEDEN

Sweden, with its rich textile history, adapted smoothly to the art of knitting sometime in the middle of the 1600s; although it is impossible to say with certainty where the first actual pieces of Swedish hand knitting occurred. It is most likely that knitting was being introduced in Sweden from different areas around the same time period. Hand knitting techniques may have developed in Sweden in the southwestern town of Halland (which was still a part of Denmark until 1645). A Danish woman named Magna Brita Cracau moved to Halland, Sweden, when her husband accepted a governorship position there. With Magna came hand-knitting techniques, as she and her servants shared their skills with the local people (Pagoldh, 1987). Many believe that this is how knitting originated in Sweden. There are others who believe that knitting in Sweden began on the small island of Gotland. By the 1600s, trade routes were well established and Gotland was located in a key position (Lewandowski, 1997).

What *is* understood about the early practice of knitting in Sweden is that, like those who came before, it soon became a source of revenue and trade for many of the poorer people. Knitting provided families with additional income which encouraged people to take needles in hand. Soon the desire for hand knit sweaters developed. There were times in Sweden when knitting created even greater profits than farming. Farms were going to waste because it became difficult to find people to tend the land (Pagoldh, 1987).

To speed up the efficiency of commercial hand knitting, often several people would combine their efforts to the knitting of a single sweater. Adults would work on the body of the sweater while children worked on the sleeves. It was possible for two people to

work on the same section of the garment concurrently, but at opposite sides (Figure 9). With double pointed needles you could have two live sets of stitches working simultaneously around the same sweater.



Figure 9: A Couple Knitting. Photograph reprinted with the permission from Knitting in the Nordic Tradition (Lind, 1997) pg 15. Published by Host & Son, Copenhagen, Denmark.

Before long, knitting spread throughout Sweden, and knitting traditions were established. Swedish beliefs became intertwined with the knitted stitches, adding to the charm of the finished garment. It was thought that if a person wore a sweater with patterns winding counterclockwise, it would bring that person bad luck and he or she would not be allowed to enter heaven. Another belief was that you would be testing your fate if you wore a sweater with knotted yarns inside, as misfortune would surely follow. Or finally, good luck could be yours if you wore sweaters knit by young maidens, as it could bring you a long life (Lewandowski, 1997).

In time, various regions of Sweden became recognized for distinctive knitting styles. In the northern country, small geometric patterns were often used. The color schemes were bright and whimsical incorporating bright red backgrounds with splashes of white and blue, yellow and green. Other regions were recognized for their striking black and red diamond patterned designs. Several notable styles of Swedish knitting will now be outlined.

SPEDETRÖJA SWEATERS OF SKANE

In Skane, Sweden, there is a style of sweater known as “spedetröja” sweaters. The name *spedetröja* is derived from the Swedish word “speda” which translates into “knitting needle” (Pagoldh, 1987). A *spedetröja* sweater utilizes the textural effect of juxtaposing purl stitches against knit stitches, similar to the Danish damask sweaters spoken of earlier (Figure 10). Twisted stitch patterns were also used.

Once *spedetröja* sweaters were knit, they were often felted so that individual stitches became unrecognizable. Silk or other fine fabrics were added to the neck and sleeves and often embroidery detailed the cuffs to pick up and complement the color in the main body of the sweater. Because they were usually worn under another garment, the shape of these sweaters was cropped and tight fitting. As with the damask sweaters, it was common to see *spedetröja* sweaters knit with an eight-pointed star pattern that is found in many Scandinavian knitting designs (Pagoldh, 1987).



Figure 10: Spedetröja Sweater. Photograph reprinted with the permission from Swedish Sweaters, New Designs from Historical Examples (Christoffersson, 1990) pg 15. © 1990 by the Taunton Press, Inc.

TWINED KNITTING OF DALARNA

Sweden's mid-western region of Dalarna was identified for a knitting style called "Twined Knitting." This is a type of knitting where two ends of yarn are alternated whether in the same color or two different colors. With each stitch, the yarn ends are twisted (on the back of the work for a knit stitch, or on the front of the work for a purl stitch). With this shift back and forth of the working yarn vs. the yarn being carried, the wrapping process creates a stiffer, thicker fabric. Twined knitting is less elastic but far more durable than regular knitting. Often knitting was felted to add to the warmth of the garment. Dating from the mid 1600s, it is one of the earliest known knitting styles in Sweden (Dandanell, 1989).

Sweaters from Dalarna often incorporate a bodice made of a woven fabric called vadmal cloth and hand knit sleeves (Figure 11). It was typical for this area to have the main body of the sweater in cloth. Often the bodice would be highly embroidered or detailed. The knitted portion of a garment was often worked in white and black yarn and later dyed red. The result would be a two colored fabric patterned in a deep red and black. Women's jackets would typically be waist length while men's jackets would be hip length. Patterns for the sleeves can vary from the different districts, but the basic model of woven bodice with or without detailing, and twined knit sleeves was customary (Dandanell, 1989).



Figure 11: Twined Knit Sweater from Dalarna. Photograph reprinted with the permission from Swedish Sweaters, New Designs from Historical Examples (Christoffersson, 1990) pg 35. © 1990 by the Taunton Press, Inc.

ULLARED SWEATERS OF HALLAND

Halland lies in a heavily forested area in southwestern part of Sweden. Because of the cold weather conditions, sweaters there were tightly knit to increase their warmth and wind resistance (Gibson-Roberts 1985). The immediate striking feature of the Ullared sweaters from Halland would be their two colored, red against black diamond shaped patterns (Figure 12).



Figure 12: Ullared Sweater from Halland. Photograph reprinted with the permission from Swedish Sweaters, New Designs from Historical Examples (Christoffersson, 1990) pg 27. © 1990 by the Taunton Press, Inc.

Often these would often have the wearer's initials and date knit into the center chest or just above the bottom rib. As in other areas, the initial knitting was done in black and white and the completed sweater was then dyed red. The main body of the sweater was

knit with a diagonal two-colored pattern. Small patterns on the seam lines served several purposes: to frame the pattern, create a false seam line, and to guide the knitter when cutting an opening for the sleeve. In early examples of sweaters from Halland, the neck and cuffs were sometimes finished in crochet (Pagoldh, 1987).

BOHUS SWEATERS OF BOHUSLAN

In 1939, a Swedish woman named Emma Jacobsson established a knitting cooperative called "Bohus Stickning". Bohus Stickning was created to help supplement family incomes during the depression. This was a cottage industry providing the opportunity for women to work out of their homes while still being able to tend to their families.

Bohus sweaters became internationally recognizable and people were purchasing them from many parts of the world. The sweaters produced became known for exquisite color changes and the interplay of knit and purl stitches. Angora was added to the wool blend to increase the softness and drape of the knitting. Jacobsson relentlessly orchestrated every detail of the Bohus sweaters and kept the quality standards at the highest levels. From selection of the raw material, to the design aspects, to the quality of the knitting, Jacobsson kept a sharp watch over her product. Because of this, the sweaters produced by Bohus Stickning were of exceptional quality and remain works of art.

While Emma Jacobsson did a great deal of the designing, in time other designers began creating for Bohus Stickning. Sweaters ranged in style from pullovers to

cardigans. A sweater entitled “Blue Shimmer” remained the most popular of all of the Bohus sweaters. It was designed by Anna-Lisa Mannheimer Lunn in 1947 (Figure 13).



Figure 13: The Blue Shimmer Bohus Knit Cardigan. Photograph reprinted with the permission from Poem of Color, Knitting in the Bohus Tradition (Keele, 1995) pg 95. Published by Interweave Press, Loveland, Colorado.

Bohus knitting reached its peak in 1950 and closed its doors in 1969. During this period over 4,000 garments were produced (Keele, 1995).

NORWAY

Similar to Sweden, knitting came later to Norway than it did to England or Southern Europe. A theory expressed by Compton (1983) was that nalbinding was heavily used (mostly for mitten construction) combined with other woven woolen garments being

produced as opposed to knitting. Knitting in Norway began by the mid 17th century (Pagoldh, 1987).

Remnants of imported knitting have been noted previous to this, so it is assumed that knitwear was being worn as early as 16th century. A fragment of a plain knit wool garment was uncovered in a grave and has been dated at around 1500 AD. Also (as noted by Anne Kjellberg of the Norwegian Folk Museum) there was the evidence of: ...worn Faroese knitted stockings worth four schillings in a deceased man's inventory in the accounts for Bergen county from 1566-1567 (Pagoldh, 1987, pgs 42-44). Bergen was and is today a major import/export center located on the southwestern shore of the Norwegian coast. It was here among other ports that imported knit and embroidered silk sweaters similar to that worn by King Charles I came into Norway.

Classic sweater styles that have since emerged from Norway after the 17th century are broken down into three individual styles: the Fana Sweater, the Lusekofta, and the Selbu Sweaters. What is similar to all three styles is how the two-colored work is handled and constructed. Norwegian sweaters are all knit in the round with the outside of the knitting facing as it is worked. Three separate pieces were knit; the body and two sleeves; and then assembled. The knitting is begun at the bottom of the main part of the sweater and whether or not it will be a cardigan or a pullover in its final stage, it is knit in a tube up to the shoulders. The sleeves are then knit from the cuff up to the shoulder. It has been suggested that originally the sleeves were knit from the top down with picked up stitches around the armhole opening (Gibson-Roberts, 1985), however knitting practices now work the sleeve from the cuff up. Next, the depth of the armhole opening is decided and a running stitch of yarn is run down a straight line of the

knitting at the armhole line. This line will later be cut, so 2-4 rows of closely sewn cotton reinforcement stitches are worked on either side of the opening line to assure that the knitting will not unravel after it is cut. If the sweater is going to be a cardigan, or if there is a drop opening for a neckline, this area is marked, reinforced and then cut. The sleeve openings are cut down the armhole line, the shoulder seams are then grafted together and the sleeves are sewn into place. Finally, the neck opening or cardigan opening is detailed. Woven fabric is added to this area and embroidered, or stitches are picked up and knit bands are applied (Compton, 1983).

Knitting sweaters in this fashion became known to be the quickest and smoothest method of two-colored sweater construction and is still done this way today. It is much easier and faster to keep on track with color pattern work when the right side of the pattern is facing the knitter at all times.

LUSEKOFTA

If you can visualize a quintessential Scandinavian sweater that has a black background with dots of white on the main body and sleeves, black and white pattern work of diamonds and stripes across the chest and black woven embroidered wool that has been added to the neck opening (sometimes at the cuffs), pewter clasps as closures; then you are thinking of the classic “Lusekofte” Norwegian sweater (Figure 14).

The Lusekofte emerged in the 1840s in the Valle in Setesdal (long valley in southern Norway) and went on to become a part of the Norwegian folk costume tradition (Pagoldh, 1987). Lusekofte translates as “lice-patterned cardigan” (Pagoldh, 1987) or “lice-jacket” (Gibson-Roberts, 1985). The older Lusekofte sweaters had less embroidery

around the neck and cuffs, but as time wore on the embroidered area became more and more elaborate. To conserve on the dyed black wool used in the sweaters, often the lower third of the sweater is knit in solid white since this area was often tucked into trousers anyway. By the 1960s the Lusekofte sweater shifted into a new line of cardigan sweaters. These were edged in an embroidered woven ribbon at the front opening and used pewter clasps for closures (Pagoldh, 1987).



Figure 14: Setesdal "Lusekofte" Sweater. Photograph reprinted with the permission from Nordic Knitting (Pagoldh, 1987) pg 47. Published by Interweave Press, Loveland, Colorado.

At the time of their conception, the Lusekofte sweater was often knit in dark gathering rooms with a central fireplace where smoke escaped from an opening in the ceiling. This was commonly the only source of light since windows were rare at this

time. An illustration of the difficulty of knitting under these conditions is spoken of in an old Setesdal poem referred to by Sundbo (1998, pg 13):

“I think I’ll put my knitting by,
I do not want one stitch to slide.
Unless the sky is crystal clear,
I cannot knit a black stitch here.”

Knitting in social groups intertwined the collective fiber of the people of this region with the production of hand knit garments. At night family and friends would gather and share stories, sing songs and pass along knitting traditions.

It is debated as to whether the Lusekofte style truly originated in Setesdal, but it was the people of this region that embraced the concept of a design with single stitch specks of a contrasting color as a sweater ground. There are references to an English “spotted frock” from the 1830s as well as the lice-like patterns from the Faroe Islands (Sundbø, 1998).

What is known is that the people of Setesdal developed this design concept into a national tradition. The Lusekofte sweater has supported the area with the production of thousands of sweaters since its conception and is still doing so to this day. Because the demand for the Lusekofte is so great, Norwegian wool began being shipped to Sri Lanka for knitting and construction and then returned to Norway for sale (Pagoldh, 1987).

Ironically, some of the history of the Lusekofte sweaters was brought to us by a weaver named Annemor Sundbø who purchased the Torridal Tweed woolen quilt factory in the 1990s. What she inherited with the purchase of the factory was a stockpile

of sixteen tons of woolen rags (mostly hand knit sweaters) that were being used to feed the wool supply needed for blanket production. The sweaters were being fed into a shredder that could consume twenty kilos of rags in one hour. Much of the knitting history of this area was being devoured on a daily basis by this machine. People would bring in old or unwanted sweaters in exchange for goods.

Annemor Sundbø was intrigued by the stockpile of sweaters and began sorting and preserving; first cutting out examples of knit patterns and then saving entire sweaters. As this process evolved, Sundbø received a grant from the Norwegian Council of Culture to dig through the enormous (and growing) pile of sweaters and to catalog and preserve those that could tell a story of the history of hand knitting in the region. Digging down to the bottom of the pile it was revealed that there were sweaters that dated just after WWII. The story of this exploration can be read in her book entitled: Everyday Knitting – Treasures from a Ragpile (2000).

FANA SWEATER

In the late 19th century in the city of Fana, Norway a sweater style evolved that is still being reproduced today. This sweater style is aptly called the “Fana Sweater” or “Fana Cardigan”. The sweater is worked in two colors, traditionally blue and white or black and white. Constructed in the round and cut in sleeves as previously described; the Fana sweater has a balance and a simplicity that has maintained its popularity (Figure 15).

Originally the Fana sweater was worn underneath the clothing as an under sweater. In the 1870s Fana sweaters were somewhat exposed and worn underneath a vest. These

Fana prototypes were tight fitting and had slits at the cuffs and necks probably to aid in sliding them on with ease. In the 1900s the Fana sweaters evolved into a cardigan sweater with silver buttons, occasionally even old coins were used (Pagoldh, 1987).

The Fana sweater has a checkerboard pattern across the bottom edge of the sweater and cuffs. The mid-section is alternating light and dark stripes with flecks of the opposing color dotting the stripe, and the shoulder and upper sleeve area has a broader band with the classic eight-point star pattern. Originally the sweaters knit with fine wool and very fine knitting needles (size US 000) but modern Fana cardigans are knit in a larger gauge yarn. The sweaters have a straight drop shoulder and the bottom of the sweater hits at about hip length.

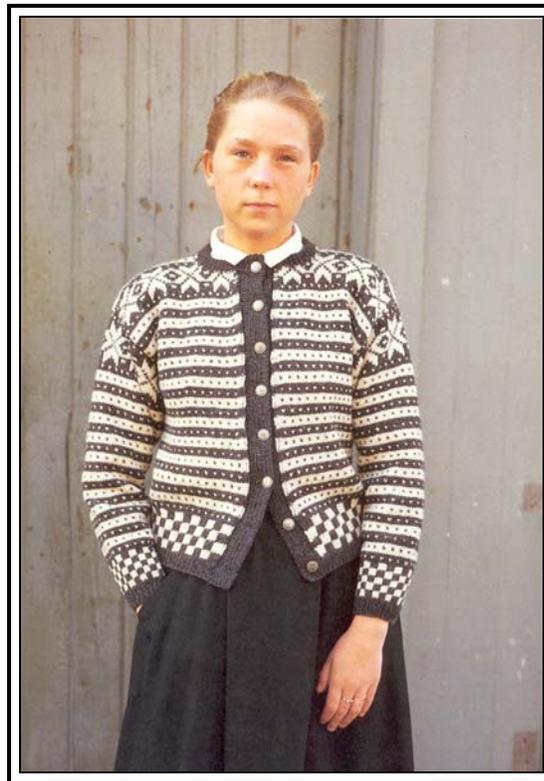


Figure 15: Fana Cardigan. Photograph reprinted with the permission from Nordic Knitting (Pagoldh, 1987) pg 43. Published by Interweave Press, Loveland, Colorado.

The Fana sweater/cardigan became a popular item for outdoor sports and cold weather wear. Classroom pictures of children all dressed in their Fana sweaters were common as they were a popular item on the ski slopes as well. With the German occupation in WWII, this classic Norwegian garment became a symbol of solidarity for the people of Norway (Pagoldh, 1987). It was like flying a silent flag.

SELBU SWEATERS

Selbu knitting is recognized by bold patterns in a number of differing themes but perhaps most common would be the reindeer, moose, dancing figures, and Selbu eight-pointed star designs (Figure 16). What made these designs innovative was the spirit of a woman named Marit Guldsetbrua Emstad. Emstad was thought of as the first in Norway to try two contrasting color yarns in her knitting (Lewandowski, 1997). One of the designs that she developed was the familiar eight-pointed star (sjenn-rosa or eight petaled rose) which became known outside of Norway as the Norwegian star. This pattern has been previously used in the solid color damask knitting patterns and also other European patterns, but under the hands of Emstad it became a national symbol.

Marit Guldsetbrua Emstad was born in Norway in 1841 and grew up to become known as “The Mother of Selbu Knitting”. What Emstad did by the age of 13 was to start to collect knitting patterns from numerous sources like weavings, carvings, and embroidery. She was exposed to abundant sources of design possibilities since she lived along a trade route that stretched from Norway to Sweden and then into the Baltic Sea, reaching Armenia, Russia and Turkey. Patterns that she “borrowed” reflect that she was exposed to design ideas from France, Germany, Italy and Switzerland as there are

similar motifs printed in some of the earliest knitting books of the 16th and 18th centuries. She then translated these inspirations into her knitting and encouraged all around her to learn to knit (Sundbø, 2000).

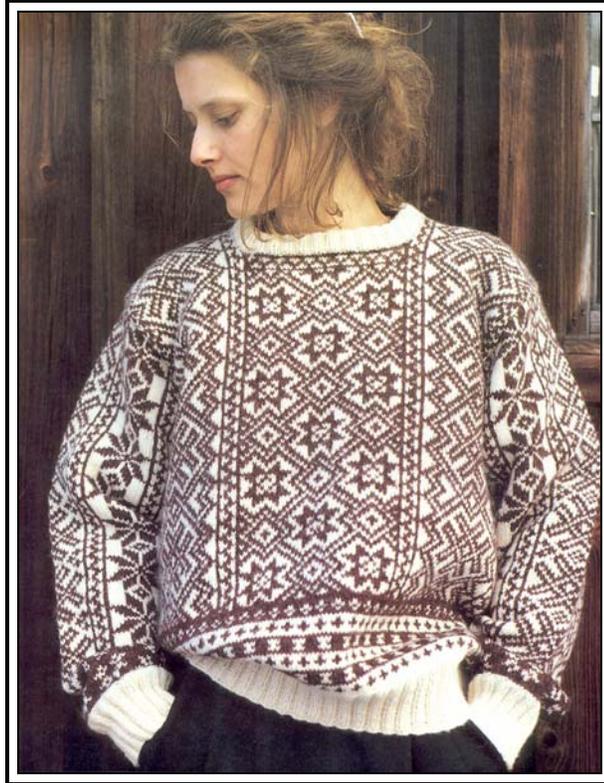


Figure 16: Selbu Sweater. Photograph reprinted with the permission from Nordic Knitting (Pagoldh, 1987) pg 52. Published by Interweave Press, Loveland, Colorado.

FINLAND

Hand knitting was slow to take root in mainstream Finland as suggested by Compton (1983). It was not until the 18th century that sweaters were being knit in Finland. The delay of hand knit production was due to: 1.) a strong Finnish economy at the time so the people did not feel the necessity to knit to make ends meet. They just bought the imports from other countries, and 2.) nalbinding was still so well respected

that there was a saying that went “a man whose mittens were knitted had a poor wife.” However, when knitting did filter into the Finnish society, it grew at a rapid pace.

Hand knitting is thought to have first taken root in Finland, at first isolated in the convent in Naantali in the 15th century (Luutonen, 1997) where the nuns worked feverishly on gloves sold to help support their living expenses. By the 17th century knit stockings were also being produced. After time, when it became more accepted, knitting expanded throughout Finland. In the 18th century knitting was so prolific that it was banned in public in the city of Nådendal (Pagoldh, 1987).

Men, women and children were all involved in the craft. In the 18th century knitting was popularized on a large scale in Finland and became an important source of income. Knitting parties were common and were anticipated fondly as social events with singing and eating and story-telling and of course, knitting. Three to four people would sit in a circle with knees touching and knit around the main body of a sweater. The most talented knitter would work the two-colored patterns while the less experienced knitter would knit the solid color rows.

The pattern influence in Finnish knitting is thought to have been derived from embroidery patterns and there is a feeling of east meets west in the design. Also, the color palette in Finland is more intense, more luminous than other Nordic countries. One possibility for this shift in color selection could be due in part to people like Ulrik Ingström who was trained in yarn dyeing in St. Petersburg, Russia. After his apprenticeship, Ingström moved to Korsnäs, Finland and became the parish yarn dyer after 1854. The dye materials he brought back with him from the German factories reflected the strength of his color choices (Pagoldh, 1987).

From 1928 to 1935, a woman named Hjördis Dahl was sent on a mission for Finland's Swedish Martha's Collective to collect textile samples and patterns throughout Finland. The Martha's Collective was an organization of Swedish speaking women living in Finland who set out to catalog and preserve the textile history of the area. Traveling by bicycle from farm to farm; Dahl was responsible for preserving a great piece of the textile heritage of Finland. The timing of this operation could not have been better since soon after, during the war, a great deal of old sweaters were sold as rags and recycled as materials became scarce (Pagoldh, 1987).

Preservation efforts like these have become invaluable in the study of knitwear design since so much of the early history has been lost. In studying the direction of knitting in Finland, the most notable contributions to knitwear design can be broken down into three categories: the Korsnäs Sweater, Sweaters from Österbotten and the Jussi Pullover. Each will be outlined separately.

KORSNÄS SWEATERS

In the area of Korsnäs a unique type of sweater emerged in the mid 1800s that incorporated knitting and crocheting, wool and cotton. These sweaters have since developed into a strong part of the national heritage and folk costume. The Korsnäs Sweaters have a unique look from the start; and with closer inspection it is revealed that the wide lower band, shoulders, cuffs and upper sleeves are crocheted, not knit (Figure 17). The crochet areas are worked in a deep red background with patterns of blue, green, yellow, light red, orange or lilac. The mid-portion of the body and sleeves of the sweater are knit primarily in white with red and green or red and blue lice dots. The

knit areas above and below the lice patterning blend the transition of the crochet red to the knit white with knit 2-3 colors per row patterning shifting from red to white.

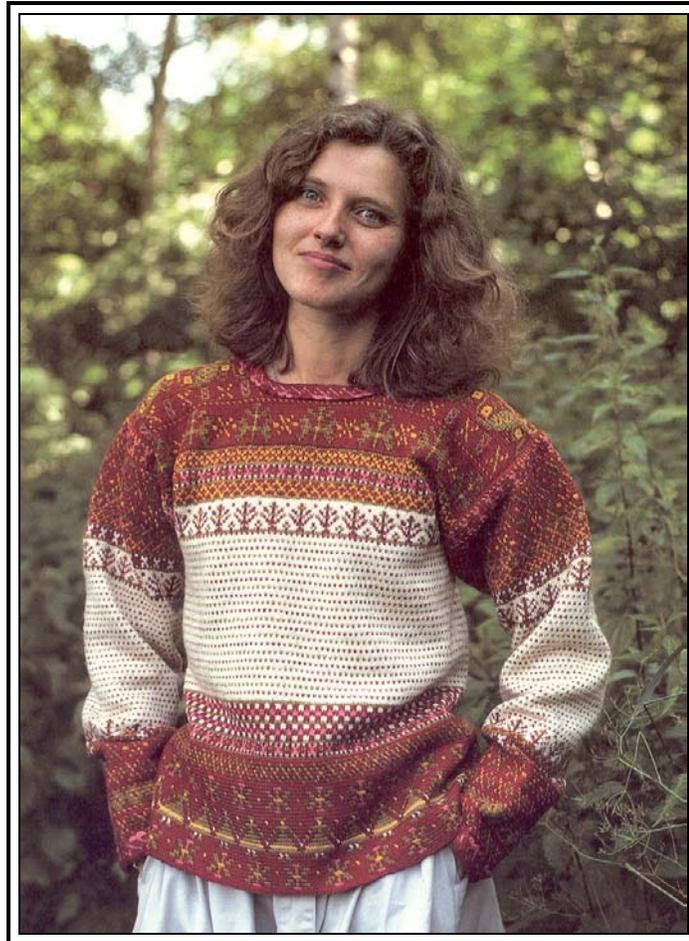


Figure 17: Korsnäs Sweater. Photograph reprinted with the permission from Nordic Knitting (Pagoldh, 1987) pg 79. Published by Interweave Press, Loveland, Colorado.

The crochet areas of the sweater add to the durability of the garment, decrease the amount that the sweater can stretch-out or lose it's shape during wear, and the section can just be unraveled and new crocheting can be added on when it does wear out. Another design feature worked into the sweater is that the drop for the front and back neck opening is the same depth. This way the sweater can be worn forward or backward

and if done evenly the sweater can extend its wear to accommodate three generations of use (Pagoldh, 1987).

Korsnäs Sweaters were knit by women and primarily worn by men. They were given as gifts from women to their fiancés. Common motifs worked into the patterns of these sweaters would include running dogs, dancing girls, flowers, hourglasses, hearts and numerous geometric patterns. No two Korsnäs Sweaters are worked exactly alike and each is a treasure.

SWEATERS FROM ÖSTERBOTTEN

The sweaters from Österbotten were similar in design concept to the Norwegian Luskofte with the main body and sleeves dotted with single stitches of a contrasting color yarn. What makes the Finnish translation different from those of Norway is that the sweaters are primarily knit in white and the lice flecks are worked in the darker contrasting color (Figure 18).

Two-colored patterning on the sweaters from Österbotten are much smaller at the shoulder area and top of the sleeves, but deeper at the cuff-line. Due to the geographic proximity to Russia and the Baltic countries, these sweaters integrate a more eastern flavor to the patterns used in Finland. Often designs were taken from woven pieces and translated to knitting.

In Finland, finer knit garments were knit in cotton and saved for special occasions. Everyday sweaters were knit in wool.

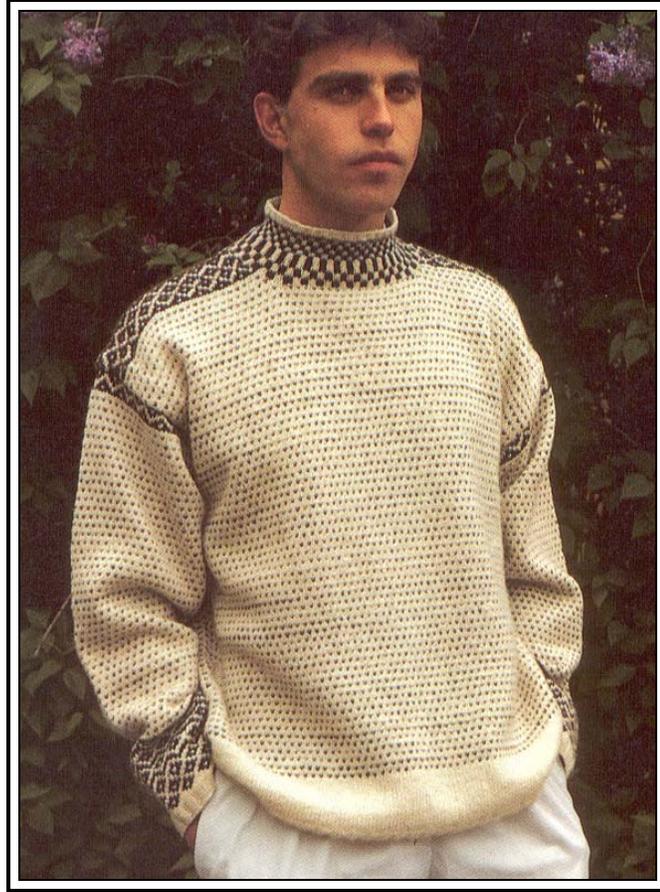


Figure 18: Österbotten Sweater. Photograph reprinted with the permission from Nordic Knitting (Pagoldh, 1987) pg 76. Published by Interweave Press, Loveland, Colorado.

JUSSI PULLOVER

The Jussi pullover is an odd little sweater developed in the 1920s and primarily looked on as a machine knit sweater (Figure 19). Its design roots stem from the Finnish Ostrobothnian hand knit woolen sweaters of the 1800s.

The Jussi pullover was traditionally worked in grey at the lower portion and red on the upper portion. It is thought to represent the national sense of “Finnishness” as described by Luutonen in her doctoral thesis in 1997:

“As for the Jussi pullover, little attention is generally paid to its physical appearance, but it nevertheless has a high profile and instant recognisability. Its design is eminently functional, thereby enabling the pullover to acquire its particular symbolic value. The Jussi pullover is perceived as a symbol of Härmä, of Östrobothnia and of all things inherently Finnish. It is associated with notions of self-reliance and primordial force. People who wear this pullover are undoubtedly aware of the values they represent in doing so. The pullover sends out a certain message to the onlooker, who may not otherwise associate the wearer with these particular attributes. The symbolic value of the pullover has been reinforced by Artturi Jäviluoma’s popular play: The Ostrobothnians, by the Finnish film industry and by performers who wear the pullover as a stage costume.” (pgs 158-159).



Figure 19: Man wearing a Jussi sweater. Photograph reprinted with the permission from Marketta Luttonen: *Rustic Product as a Conveyor of Meaning: (A Study of Finnish Pullovers)* pg 126.

GREAT BRITAIN

(England, Scotland, Wales, Northern Ireland, Shetland Island, Hebrides, Orkney Isles, Channel Islands)

Hand knitting traditions developed in Great Britain beginning in the 15th century. The earliest knit products in Great Britain were stockings, caps and mittens. In 1588 a knitting school was created in the town of York and others followed soon afterward (Bush, 1994). We know that sweaters were being knit before 1649 since the earliest existing hand knit sweater that of King Charles I was knit in 1648 or '49. In the 300 years after the death of King Charles I, the hand knit sweater from Great Britain has evolved into several recognizable styles. The most noteworthy designs can be divided into the following categories: Fishermen's Guernsey (or gansey), Fair Isle Sweaters, Shetland Yoke Sweaters and the Argyle Sweaters of Scotland.

FISHERMEN'S GUERNSEY

The fishermen's guernsey is a tightly knit working sweater developed on the Channel Islands in the 1800s (Compton, 1983). The main purpose of a fishermen's guernsey was to produce a hard working garment that would give protection from the bitter elements of the wind and sea. They were generally knit in 5-ply navy wool in a fine stitch gauge. The sleeves were intentionally short so that the cuffs would not get wet from the cold sea water. The yarn of a fishermen's guernsey was at times described as "seaman's iron" (Brown-Reinsel, 1993) because it was so durable and tightly spun.

The term guernsey or gansey can be used interchangeably as explained by Harvey & Compton (1978, pgs.13-14):

"The word can be written as either gansey or guernsey. The English Dialect Dictionary (Oxford, 1900) states that the word gansey is used in

Yorkshire, the Shetland Isles and Suffolk, although in east Suffolk it is also written as ganzy. Basically a gansey is a thick, closely fitting upper garment which has been knitted in the round, generally in blue wool, and worn by fishermen as a jersey. Note the use of the names of the two Channel Islands, Jersey and Guernsey, for such pullover-type garments.”

A traditional fishermen’s guernsey was cast on with two strands of yarn so that the ribbing or welt of the bottom of the sweater would last longer with hard wear. The main body of the sweater was box-shaped and worked in the round. There was a false seam stitch at each side of the sweater that started above the welt and ran up the sweater and down the sleeve to the cuff. Underarm gussets were an essential part of the fishermen’s guernsey to provide freedom of movement and to extend the life of the sweater (Figure 20).

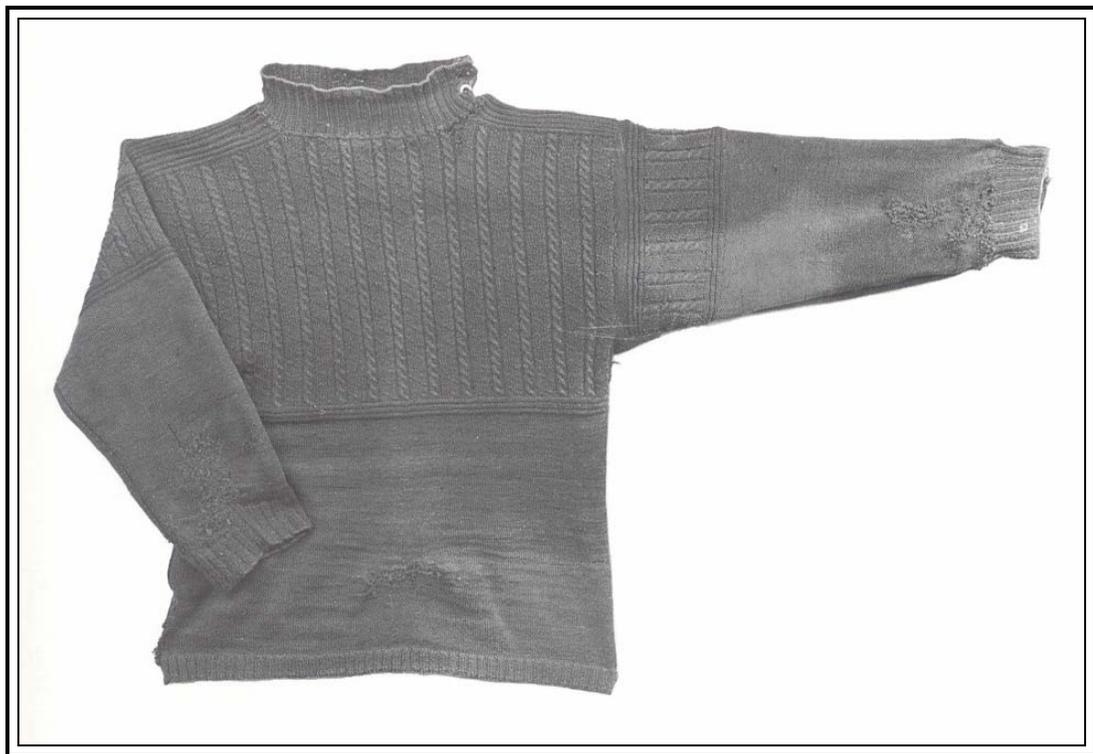


Figure 20: Working Fishermen’s Guernsey. Photograph from the book: Traditional Knitting (Pearson, 1984) p 87.

When you reach the underarm point of the sweater, the gussets and back sweater stitches were placed on a stitch holder and the front of the sweater was worked back and forth up to the shoulder. Next, the back stitches were worked to the shoulder. The shoulder seams were grafted together in one of a number of ways. The gusset stitches were then put back on a needle and stitches were picked up around the remainder of the armhole. These live stitches were worked down to the cuff to form the sleeve.

Knitting the sleeves from the armhole down was an important part of the design of the sweater for several reasons. The stitches being picked up and then knit down meant that the sweater was being worked in one piece and that there would be no sewing needed at the end of the project. To follow the Shetlander's advice (Pearson, 1984, p. 16) "Never, ever sew when you can knit." Another important feature to this method is that it was easy to remove a sleeve when it was worn and to re-knit another sleeve in its place. Finally, sleeve length adjustments were easy to obtain by working from the top down. All you needed to do was add or subtract rows to custom fit the sweater to its intended wearer. To finish off the sleeve, the cuffs were also worked in double strands of yarn, again to strengthen and reinforce the bottom edge.

One method was to shape the neck or collar was to pick up stitches around the neck edge and knit 2 purl 2 around to desired length and end with two rows of purl and two rows of knit; cast off all stitches loosely (Pearson, 1984). There are variations of this simple collar treatment. Some sweaters have an opening at one of the shoulder seams with two button band as a closure. Others are worked in a knit 1, purl 1 turtle neck style that folds down on itself.

With these basic shaping elements intact, it was then up to the knitter to select and incorporate the stitching patterns. Many of the guernsey patterns were created in a similar fashion to the Damask knit and purl patterns seen in the Netherlands, since the motifs were created by the juxtaposition of purl stitches against knit stitches; however guernsey patterns were numerous and followed many symbolic references. Later guernsey sweaters also incorporated cable patterns and open work.

In time, the guernsey sweater tradition followed the routes of the fishing fleets and made its way to other ports. The fishermen's guernsey appeared in Holland in the 1860s and began a new tradition that was chronicled by Henriette van der Klift-Tellegen in her book, Knitting from the Netherlands: Traditional Dutch Fisherman's Sweaters (1985). In this book one can see variations on the theme that make the sweaters of the Netherlands different from those of Great Britain. In van der Klift-Tellegen's schematics there is no evidence of the underarm gusset and patterns have more yarn-over open work and bobble stitches that were not present in the guernsey's of the Channel Islands.

The fishermen's guernsey soon became an integral part of the fishing culture on the Channel Islands. Guernseys worked to bring communities together where women would gather (often by the docks) and work on their sweaters. Certain stitch patterns were guarded from family to family and from town to town. It is said that the patterns in the fishermen's guernsey were used to identify a body if a person was lost at sea and washed up on shore. Some knitters also chose to stitch the owner's initials at the bottom of the sweater just above the rib for identification.

There were two main styles of the fishermen's guernsey that developed; a working guernsey and a finer guernsey that was saved for Sunday-best attire. Working Guernseys were less elaborate in patterning and often the area below the yoke of the sweater was worked in a plain stockinette stitch. This is due to plain stitching requiring less time to produce requiring fewer materials. Because of these features, working guernsey's were also the style of sweater more often produced for resale. The yoke of the working guernsey was still patterned because the bulk of the pattern work added to the warmth of the sweater where it was most desired.

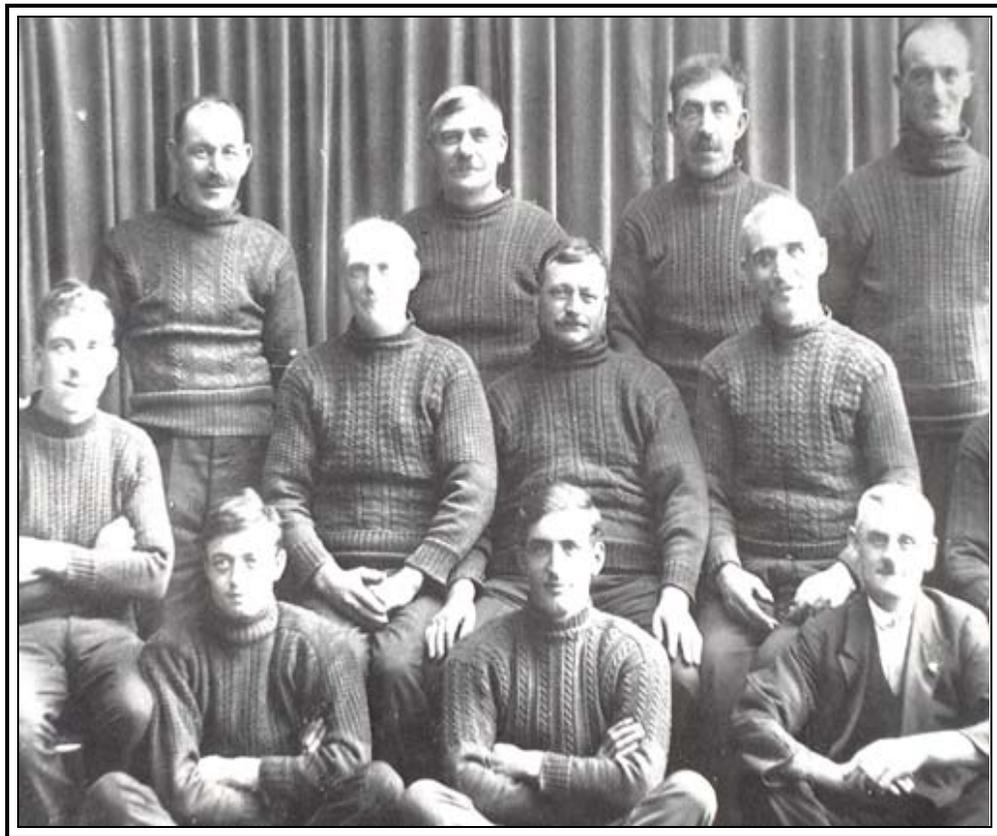


Figure 21: Fishermen at Pye Nest, Filey, 1926. Photograph from the book: Traditional Knitting (Pearson, 1984) pg 42.

The finer knit guernsey's were much more elaborately patterned and were worn as a source of pride. The patterning generally started just above the bottom rib and followed up to the shoulder seams (Figure 21). Often these sweaters replaced suit coats and were saved for weddings and special occasions (Pearson, 1984).

Guernseys were often made as a gift to a fiancé to show the industrious nature of the woman he was to marry. One pattern that was often used in the fishermen's guernsey was the wedding line. This pattern consisted of a double zigzag pattern that was worked vertically up the front of the sweater. This double line was to symbolize the ups and downs that married couples must go through during their lives together; life does not lead us down a straight path.

An illustration of the dedication it took to create fishermen's guernsey is described in the foreword of Pearson's book, Traditional Knitting: Aran, Fair Isle and Fisher Ganseys:

“This is a book about traditional knitting and the people who created it; about a time when knitting was essential rather than recreational, an act of survival rather than of fashion. It is above all, a book about the patterns that have emerged in spite of great hardship – patterns whose origins are tucked away with in the centuries, here recorded directly from the oral tradition, transposed from older documents and recreated from old photographs. It is a book of celebration – a celebration of the tradition and of the people who practiced it. It is also a book about a journey made around the fishing communities of Britain where this tradition continues, and of the patterns collected village by village, from the Shetlands to the Scilly Isles, from Aran to Hebrides (1984, p.7).”

Knitting fisherman's guernseys for resale was also a means of supporting the family income. As stated earlier, the patterns incorporated in sweaters intended for resale were often a simpler design so that they could be produced at a faster rate. Pearson (1984)

estimates that to knit a guernsey took approximately three weeks at four hours of knitting a day which comes to 84 hours of knitting.

FAIR ISLE SWEATERS

Fair Isle is the most southerly of the Shetland Islands that lie off the northeast coast of Scotland. What has baffled knitting historians is how this wind swept island three miles long and two miles wide could lay claim to one of the more recognizable and finely patterned garments in the evolution of sweater design. The answer to that mystery seems to be wound tightly in a thread of survival and perseverance. Beginning in the 16th century the people of the Fair Isles supplemented family incomes with the profits of knitting plain knit stockings and exported them for resale. In the 18th century the demand for these stockings fell off due to the use of hosiery machines and the increase of sheep in England and Scotland (Starmore, 1988). Lace knitting was also a desirable export but demand for that dropped as well, since knitting machines could produce it faster and cheaper. The islanders needed to consider a new avenue for their knitting expertise.

Historians have battled with trying to give a complete story as to how this intricate form of knitting developed on Fair Isle. There are stories that the patterns were introduced after the Spanish ship *El Gran Grifón* shipwrecked off the east coast of the island on August 17, 1588. But this was determined to be a fanciful tale since there was no evidence of Fair Isle knitting until the 1850s. How could a craft develop for 300 years without some sort of physical trace, be it samples or talk of it in writings? There

is another story of a woven shawl being brought to Fair Isle and patterns were copied from this one single piece of cloth (McGregor, 1981).

Books have tried to unravel the facts and bring to a conclusion to this tale. The two theories that seem to be the most developed and follow the clearest line of logic would be Sheila McGregor's book: The Complete Book of Traditional Fair Isle Knitting (1981) and Alice Starmore's Book of Fair Isle Knitting (1988). McGregor's work seems to lay the ground work for Starmore's book which follows. McGregor feels strongly that Fair Isle knitting was not introduced by the Spaniards. This was just an intriguing tale that captured the imaginations of those looking for an answer to a question. McGregor believes that the influences for Fair Isle knitting lie in the Baltic region. Estonia, Lithuania, Russia and even Finland had been knitting two color stranded patterns much earlier than those found in the Shetland Islands. Their geometric patterning seems to follow along with the patterns in Fair Isle knitting. Trade routes were open between these areas and Fair Isle was a common port for the North Sea fishermen. It seems logical to her that the patterns may have been derived from a shawl brought home by a sailor for his fiancé. This follows the same time frame that wool dyeing came to the Fair Isles with the introduction of imported madder to create the deep reds and indigo to create the deep blues of Fair Isle traditions. McGregor cites the Fair Isle cap of 1850 as the first example of Fair Isle knitting in existence.

Seven years after McGregor's book came Alice Starmore's contribution. Starmore follows the line of McGregor's thinking to a point, but adds some very interesting insights to the Fair Isle theory. Starmore explains that the fisherman's cap of 1850 which all before her seem to accept is the earliest existing example of Fair Isle knitting,

cannot have been knit on the island. She has discovered that the materials used in the cap are not native to this region and that it is knit with an expertise not yet seen in this area. The pieces knit *after* the cap's arrival seems to still be experimenting with the technique and not at all showing the mastery of the craft that its predecessor had. Starmore believes that the cap was an import from the same areas in the Baltic that McGregor suggested earlier. This Fair Isle technique originated most likely in Finland or Estonia. The cap was then studied by the islanders and patterns were developed from that point forward. Whatever the origin, Fair Isle now had a new form of knitting that they could develop and to help keep their cottage knitting industry alive.

To clarify this technique; Fair Isle knitting is a stranded form of color knitting, knit on circular needles, producing color bands of pattern without ever using more than two colors at one time in any given row (Starmore, 1988).

Patterns used in Fair Isle sweaters range from small (5-7 rows) "peerie" patterns. ("peerie" is a Shetland term for the word "small"), to border patterns (9-13 rows), to traditional Fair Isle patterns (15-17 rows), to large stars (21, 25 or 31 rows) and finally "allover" patterns that repeat evenly up the sweater. The large star patterns most likely were influenced by Fair Isles' Scandinavian roots since the islands were at once under Norwegian rule. The wool of the Shetland Islands is long and fine and although it is too weak for weaving, it is ideally suited for fine knitting and adds a delicacy and detail to the Fair Isle sweater (McGregor, 1981).

One of the hallmark patterns for Fair Isle knitting is the "OXO" pattern that is repeated in bands around the sweater. The "O" of the pattern is referred to as the "lozenge" and the "X" as the cross. Some offer the ideas that within these patterns are

religious symbols of crosses, but this is purely speculation. All of the Fair Isle patterns are developed over 4 lines of symmetry (across, up, and at both diagonals) and because of this, patterns are easy to remember and repeat; and they appear more complicated than they really are. With interplay of the background and the contrasting colors shifting back and forth, Fair Isle patterns seem to hold a complexity which when broken down can be viewed as much simpler elements (Figure 22). Because of these repeats and shifts in patterns there are no long floating yarns at the back of the knitting that need to be woven in and it allows the knitter to work at a faster pace. Expert knitters can knit at 100 stitches per minute in two-color patterns (Starmore, 1988).



Figure 22: Fair Isle Sweater. Photograph reprinted with the permission from [Alice Starmore's Book of Fair Isle Knitting](#) (Starmore, 1988) pg 8. © 1988 by the Taunton Press, Inc.

The construction of a Fair Isle is similar to the Fishermen's Guernsey to a certain degree. The sweaters are cast on at the bottom edge and knit in the round up to the underarm gussets. At this point however, the Guernsey would be knit back and forth (front separate from back) to the shoulder and then the shoulder seams grafted together. The Fair Isle sweater is worked like the Scandinavian two color knitting, still knitting in the round with the right side showing at all times. In Scandinavian countries the body is worked like a tube and the armhole opening can be considered after the three main sweater pieces are complete, the stitches are reinforced and then the opening is cut and the sleeves sewn in. In Fair Isle knitting the armhole depth is pre-calculated during the knitting of the main body. At the point where the armhole opening begins, there is a shift in construction. On the first round a few stitches are bound off at each underarm area. On the following row 7-9 stitches are cast on and it is these stitches that are cut into as the sleeve stitches are picked up and knit down from the main body of the sweater. This is a "steek" or "bridge" between the back and the front of the sweater. This keeps the main sweater stitches intact and adds the extra stitches needed to create the armhole opening. After the main body of the sweater is finished and the shoulders are grafted together, it is completed similarly to the Guernsey sweater by picking up stitches around the underarm and knitting down to the cuff (Starmore, 1988).

From the mid 1800s to the early 1900s, Fair Isle sweaters were looked at as a quaint oddity to those outside of the region. Times changed dramatically when HRH the Prince of Wales received one of these sweaters as a gift and wore it as Captain of the Royal and Ancient Golf Club at St. Andrews (Butler, 2000). Following that event, he commissioned his portrait to be painted while wearing it. These events became the most

influential occurrences in the history of the Fair Isle sweater. From that point forward, the Fair Isle became the rage in Great Britain and abroad. The design was so popular among those attending Oxford and Cambridge that the Fair Isle sweater was thought of more or less as part of the school uniform (McGregor, 1981).

After the 1920s, with the arrival of chemical dyes, the color palette expanded from the red, blue, yellow, white, and natural shades of wool to include new hues like orange and green. Patterns evolved and smaller peerie patterns were worked among the larger patterns. Life was hard for the Fair Isle knitters but their struggles began to lessen when knitting became more profitable after WWII. Now servicemen were offering cash for their hand knits at much greater prices than before the war. Soon after The Shetland Hand Knitters' Association was created to monitor and protect the rights of the Shetland knitters.

SHETLAND YOKE SWEATERS

A spin-off from the Fair Isle sweater was the Shetland yoke sweater which was being produced in the mid 1900s. The Shetland yoke sweater differs from the Fair Isle in the construction and design elements in several ways. Borrowing from some of the two-colored patterns of Fair Isle sweaters and joining together the eight-point star patterns of Scandinavian sweaters, the Shetland yoke sweater incorporated both elements into the color work to create a style of its own.



Figure 23: Yoke of a Shetland Yoke Sweater. Photograph reprinted with the permission from [Knitting in the Nordic Tradition](#) (Lind, 1997) pg 62. Published by Host & Son, Copenhagen, Denmark.

The Shetland yoke sweater has a patterned yoke area similar to the Icelandic yoke sweater; however, it is knit in the finer Shetland yarn (Figure 23). This sweater is plain knit in a solid color from the bottom edge to the yoke and from the cuff of the sleeves to the yoke. Then, the sleeves and main body are brought together on one circular needle and the sweater is knit in one piece up to the neckline with decreases spread evenly across specific rounds. The yoke area of the sweater is where the two-colored knitting was incorporated in the sweater. This method of construction was a clever way of creating a sweater with a splash of the intricate detail of a Fair Isle, but doing it in a way that was far less time consuming.

This design evolved for several reasons but one that remains foremost is the fact that with the advent of domestic knitting machines and the acceptance of them in most households starting in the 1930s in the Shetlands', often the yoke sweaters were begun on the machine and knit up to the point where the two-colored patterned area of the

sweater began. The patterned area was then worked by hand. This helped the islanders stay competitive with the onslaught of machine knit sweaters. The plain knit areas of the sweater worked up quickly and the sweater was finished off with the hand-detailing of the yoke two-colored knitting. This style of sweater was produced in mass quantities in the 1960s (Feitelson, 1996).

ARGYLE SWEATERS

The evolution of the argyle knitting pattern is intriguing. Like many sweaters, the argyle sweater was derived from the argyle stocking pattern which was worn under Scottish kilts, mainly in military regiments (Compton, 1983). Originally, the Scots wore leggings sewn from Scottish tartan fabric. It was found that the leggings were more flexible and shaped around the calf of the leg better if it was cut on the bias. If you turn a tartan plaid on the bias the checks become diamond patterns. From these original leggings, designs were translated into knitting patterns (Figure 24) and the argyle pattern was born (Gibson-Roberts 1985).

Argyle sweaters generally have the pattern knitting only on the front of the garment. The back and sleeves would be knit in a solid background color. Typically, argyles are knit as sleeveless vests with a V-neck and rounded armhole openings. To create the pattern work across the front of the sweater the yarn is not stranded across the wrong side of the sweater like previous sweater samples since there are many stitches between color changes and the floats of yarn would be too long. Argyle sweaters are patterned with yarn bobbins held at the wrong side of the knitting and there is one bobbin for each color section even though there may be several of the same

color sections across the piece. When there is a shift to a new color the new yarn is wrapped under the old color so that the two colors become locked together and there will not be holes in the finished fabric.



Figure 24: Sample of Argyle Knitting.

Argyle sweaters have only been around since the 20th century, but they have become a classic in the history of sweater design. True argyles have diamonds of light, medium and dark yarns with an overlay of diagonal lines. With all of the color changes and bobbin shifting, they can be challenging to knit. In contrast to the previous two-color sweaters spoken of, argyle sweaters are knit in flat pieces. This means that the front is knit separate from the back and they are sewn together after the knitting is completed (Gibson-Roberts 1985).

IRELAND

ARAN SWEATERS

The Aran Islands consist of a group of three islands that lie off the western shore of Ireland. They are named Inishmore (big-island), Inishmaan (middle-island) and Inisheer (east-island). Like the Shetland Islands, the terrain is harsh and unforgiving. Bitter winds sweep across a barren landscape void of trees, and there are merely pockets of fertile soil and rivulets of water to help sustain the islanders. Supporting themselves mainly by fishing, the people of the Aran Islands eventually came to produce a beautiful cream-white hand knit; highly textured wool sweater to further supplement their income.

As defined by Starmore (1997, pg 40):

“An Aran sweater is a hand knitted garment of flat construction, composed of vertical panels of cabled geometric patterns and textured stitches. On each piece of the sweater there is a central panel, flanked by symmetrically arranged side panels. The use of heavy, undyed cream wool is a classic – though not essential – component of the style.”

The discovery of the Aran sweater by the outside world came about when German textile historian Heinz Edgar Kiewe happened upon it in the “Country Shop” in Dublin in 1936. The sweater was being sold there in part by the efforts of Dr. Muriel Gahan who set about trying to preserve and protect the craftsmen of Ireland. Gahan was the founder of the “Country Workers Limited” as well as the “Irish Homespun Society.” She also established the Country Shop in efforts to sell the local crafts to the public. In 1935 Gahan had visited Inishmore and asked to be introduced to the finest knitters in the area. She then purchased what sweaters she could and brought them back to her shop

for resale. In 1936 Kiewe came across one of the Aran sweaters from Inishmore and in turn showed it to another knitting historian Mary Thomas (McQuillan, 1993). From this beginning the word was out, and the Aran Islands were on their way to spinning a reputation for developing this striking garment that has gone on to become an icon in the study of sweater design.

What was once a tangled web of myth, conjecture and storytelling, has again been unraveled by knitwear designer and historian Alice Starmore. For a second time (the first being her account on Fair Isle knitting) all eyes were on Starmore to help disentangle the confusion that has surrounded the history of Aran knitting and to bring a factual basis to the conclusions of a working time frame in the significant developments of the Aran sweaters. In her book: Alice Starmore Aran Knitting (1997), Starmore walks step by step through a summary of the noteworthy literature surrounding knitting on the Aran islands and pulls together a plausible and well researched analysis of the information that is available.

If left to the imagination of Kiewe, people would be led to believe that Aran knitting was an ancient form of knitting that began as early as 790 AD as he stated was evidenced in: The Book of Kells. Kiewe writes that: “An enlargement with a telescopic lens proved the discovery of the first handknitted Aran sack of penitence, about 790 AD” (Starmore, 1997 pg 19). Kiewe spent 30 years after the first “discovery” of the Aran sweater creating an Aran folklore that ties in symbolism to each stitch pattern, to identifying dead fishermen by the sweaters they are wearing, to tall tales of the origin of Aran knitting. After this shaky mythical beginning, it has finally become accepted that true Aran knitting has only been in existence since after 1946 (Starmore, 1997).

Kiewe had his converts to the ideas of Aran knitting origins, those most prominent would be Mary Thomas and Shelagh Hollingworth who have both included Kiewe's ideas into their own books on the subject. There are also accounts steeped with symbolism on the different pattern stitches knit in Aran sweaters. In Hollingworth's book: The Complete Book of Traditional Aran Knitting (1982); Hollingworth has outlined patterns and given each their intended symbolic meaning. For example: the trellis pattern would suggest: "the bond of man with God and religion," the tree of life pattern: "Jacob's dream of the ladder to heaven," and the plaited stitch pattern: "the holy three strands of hair ribbon or straw, the plaited holy bread of the Old Testament, symbolic of a devout family bound up with God." The idea of associating symbolism to the stitch patterns seems to make for an interesting interpretation but really has no sound factual basis.

Starmore follows through the literature, but then goes right to the source to clarify the fact from fiction of Aran knitting. Her theories are documented with museum examples of actual Irish knit sweaters to walk you through the evolution of this sweater design. In her work, Starmore has detailed the progression of the design process using four museum pieces to support her ideas. In Garment 1, Starmore shows a navy blue British fishermen's guernsey. This sweater was donated to the National Museum of Ireland in 1937 and is the oldest sweater in the collection. The construction of the sweater is clearly in keeping with the Scottish fishermen's gansey; worked in the round to the underarm gusset area, seed stitches denoting a false side-seam line, the back and front yokes knit separately, the sleeve and gusset stitches are picked up and the sleeve is knit down to the cuff. The fact that this sweater was produced on the Aran Islands

proves to Starmore that there was at least one exceptionally skilled knitter with the knowledge of creating a sophisticated example of a Scottish gansey on the islands by at least 1930.

Garment 2 was donated to the same museum in 1942 and shows a cross between the Scottish fisher gansey and what we know today as the Aran sweater. This piece was knit in the cream colored wool that we associate with true Aran knitting. The lower edge is a cabled welt that is knit in the round. Next, the sweater is divided and the front and back are worked separately. The shoulder has a saddle strap that is a detail-oriented method of joining the back and front shoulder stitches by knitting a piece at a right angle to the shoulder line, then picking up and joining shoulder stitches to the strap until the armhole seam is reached. Then stitches are picked up around the armhole and the sleeve is worked down to the cuff. This is a design element that is seen in the Scottish fisher gansey's as well. The significance of Garment 2 is that the design elements are a combination of the fisher's gansey sweater which will later be recognized as a true Aran sweater. Garment 2 shows the metamorphosis from one style of knitting into the next.

Garment 3 is one step further in the sweater evolution of the Aran sweater. Starmore has dated it to be knit about the middle of the 20th century, although its exact date cannot be traced. The front of this sweater was worked in two pieces; then the sleeve stitches were picked up around the armhole opening and knit down to the cuff. The patterning is in traditional Aran styling with moss-stitched diamond center panel and cable patterning on either side.



Figure 25: Aran Sweater. Photograph reprinted with the permission from Alice Starmore Aran Knitting (Starmore, 1997) pg 33. Published by Interweave Press, Loveland, Colorado.

Garment 4 (Figure 25) is a raglan Aran sweater donated in 1996. This sweater was knit no later than 1966 and has been worn by its owner for thirty years before the museum acquired it. This piece has evolved from the shadow of its predecessor and stands as a true Aran sweater through and through. The raglan style sleeve was popular during the mid-century so that incorporating it with the Aran design would make it more marketable. The sweater was knit in four flat pieces and then sewn together. The collar was added as the finishing touch. With this detailed and exhaustive research into the make-up of the Aran tradition, Starmore brings many new insights to the history of sweater design.

For those truly interested in separating fact from fiction on the subject of Aran knitting, Starmore's book is the definitive work on the subject. The following is a synopsis of Starmore's conclusions:

- The Aran sweater was developed from the traditional Scottish gansey.
- Aran women learned gansey knitting from a Scottish source or sources.
- The Aran sweater was not made as a fisherman's garment.
- The impetus behind the development of the Aran sweater was commercial.
- Any "tradition" involving the Aran sweater is of recent origin, beginning only after 1946.
- Contrary to widespread belief, the Aran sweater was not made from heavy, unscoured, naturally oily wool, spun straight from the sheep's back.
- Aran sweaters have no connection with ancient Celtic sources, unless it is on a purely superficial level.
- Most of the Aran patterns were born in the mind of an expert gansey knitter.

CANADA

COWICHAN SWEATERS

The Cowichan Sweater is the only true original folk sweater designed in North America (Gibson-Roberts, 1985). This sweater has been developed on Vancouver Island, Canada by the Coast Salish Indians who learned knitting techniques from Scottish settlers sometime after the 1860s (Rutt, 1987). Previously, the Salish depended on the

sale of their hand woven blankets to fuel their economy. They were already accomplished spinners even before the arrival of the European settlers (Liscomb, 2000), and the Salish adapted quickly to this new concept of hand knitting. Soon the Salish people were selling knit items along with the woven blankets.

In 1864, the Sisters of St. Ann had established a school for the Indian people of Vancouver Island and one of the subjects covered was knitting techniques. Mainly these courses taught knitting caps, socks and mittens. In 1885, another Scottish immigrant named Jerimina Colvin taught the Salish women to knit a simple turtleneck sweater in only one color (Gibson-Roberts, 1985).

Before long, the creativity of the Salish women was kindled. They began incorporating patterns into their work that had been adapted from woven basket designs (Figure 26). They relied on the natural variation of the wool tones to implement the two color knitting patterns. There was a great variance in the fiber shades moving up the value scale from white, to tan, to grey, to brown, to black. All Cowichan sweaters are knit in the natural color range and there is no dyeing of the wool.

By 1950, the Cowichan sweater had evolved into its contemporary form. Distinguishing characteristics of the design would be: long sleeves; shawl collar; natural yarn colors; firmly spun single-ply wool; bold pattern designs; two-colored designs; 3.5 – 5 stitches per one inch of knitting; made solely of hand spun yarns; always hand knit since the thickness of the yarn precludes the use of a knitting machine; dense fabric given that all of the floats are woven in and the needles used are smaller than would normally be used for the weight yarn; knit in the round; and, finally, the creation of an original shawl collar that folds over deeply past the neck opening.

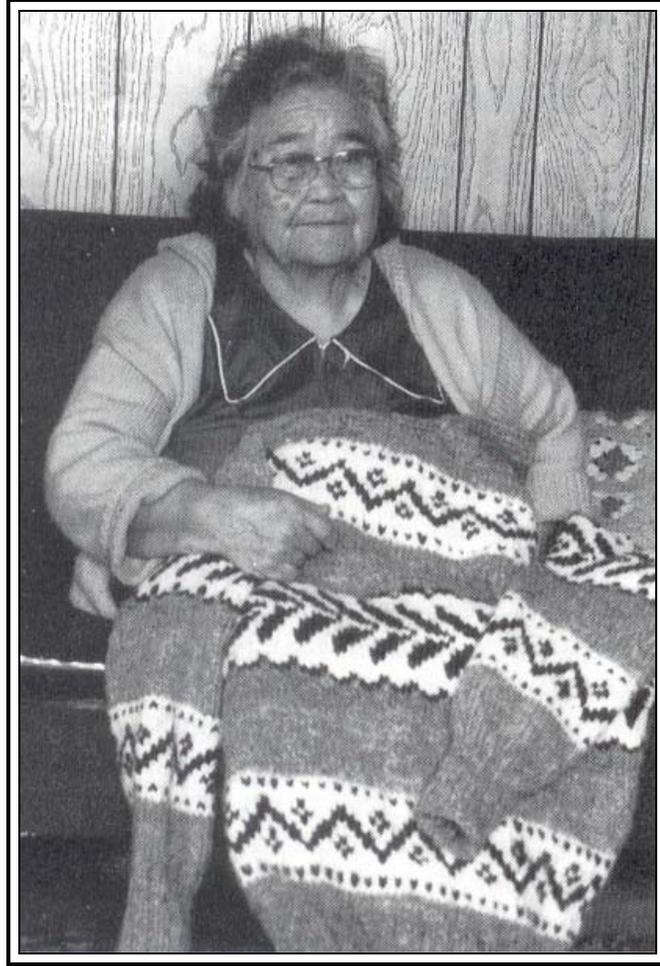


Figure 26: Salish Woman with Cowichan Sweater. Photograph reprinted with the permission from A History of Hand Knitting (Rutt, 1987) pg 207. Published by Interweave Press, Loveland, Colorado.

The patterns used in the Cowichan sweater are varied and range from geometric designs to designs taken from nature. Examples of the common natural patterns would be: trees, leaves, bears, deer, rabbits, squirrels, whales, eagles. Occasionally there will be a large figure (such as an eagle) that dominates the sweater design.

The construction of a Cowichan sweater shows a blend of old ideas and new. The basic knitting elements reflect the Scottish gansey influence in that the sweaters are

knit in the round up to the armholes, knit back and forth in separate pieces for the front and back, the shoulders are sewn together, and the sleeve stitches are picked up and knit down to the cuff. The new elements to the design are the v-neck shaping, shoulder seams that gradually slope by casting off a third of the shoulder stitches over six rows, and the most obvious departure from the Scottish influence is the shawl collar of the Cowichan sweater.

The shawl collar differs from collars previously knit in that the stitches at the back of the neck opening are knit separate from the front two panels of the collar. The back stitches are worked back and forth, increasing a stitch at each end every other row until the desired depth of the collar is achieved. The back collar stitches are then all cast off. Stitches are then picked up along the collar fronts and they are knit back and forth, incorporating the back collar by knitting the last stitch in the row into a corresponding row in the back collar. When the stitch count is equal to the number of rows left to knit, one stitch is decreased each row and the collar tapers down to the v-neck opening (Gibson-Roberts, 1985).

The Cowichan sweater has become incorporated into the culture and traditions of the Salish Indian tribe. Patterns are passed down from generation to generation through samples and word of mouth. The families all share in the washing, carding, spinning and knitting of the sweaters. It has been said that a Cowichan woman will sometimes work on a sweater all through the night so that she can put food on the table the next day (Liscomb, 2000). What is gained by all of these efforts is a warm, weatherproof, long lasting sweater that can be worn for generations and treasured by many.

AFGHANISTAN

AFGHANISTAN VEST

In Janet Harvey's book: Traditional Textiles of Central Asia (1996), there is a photograph of a knit vest that was created by the Hazara in central Afghanistan and it is brought into this work as the sole representation of knitting in Afghanistan (Figure 27). This has been included even though it is only one sweater because it is important to note that sweaters have been produced in this region even though there is not much written documentation on the subject.

The Hazara is defined by Harvey (1996, pg 14) as:

“A smaller group of Mongol origin living with a Tadjik population is descended from the thousand-strong garrison posted by Jenghiz Khan to guard conquered territory in central Afghanistan. Known as the Hazara ('one thousand'), they are renowned for their fine patterned Fair Isle type of knitting and chain stitch embroidery.”

Harvey explains that the Hazara have become known for their two-colored knitting, knit in the round with sets of four needles. The garments are patterned with ancient horn designs and abstracted floral motifs. In the mountainous region of central Afghanistan both men and women work at knitting to create garments to help them ward off the cold (Harvey, 1996).

The vest is the only example that was available to me at the time of this writing, but the beauty of the stylized tulips and abstraction of pattern makes one inspired to locate more examples and study this area more closely. It is an important piece of reference to

show that there has been a standing tradition of knitting in this region. The date of the knitting was not available.



Figure 27: Afghanistan Vest. Photograph reprinted with the permission from Traditional Textiles of Central Asia (pg 88). Published by Thames and Hudson, Ltd, London, England

CHAPTER III

METHODOLOGY

The purpose of this study is to catalogue historical methods of hand knit sweater design so that they can be used as a reference tool for the apparel industry. By having a better understanding of the techniques incorporated in hand knit sweater construction, future designers can learn from early examples of the craft, and build a better understanding of the structure and development of hand knit sweaters. With the material covered in this research, the apparel industry will have an instrument to use as a catalyst for future developments. With the added knowledge of methodologies that came before, new garments can challenge the confines of design set before them and redefine the future limits.

Research Methods

The task of tabulating the information gathered for this project increased exponentially with every resource that was uncovered. It became clear that a method of cataloguing the data needed to be constructed. It was only with more exposure to the material that a pattern began to unfold. It was after this period that a formula was developed. Not every example was able to be incorporated in this study. Doing such would have made publication of this thesis impossible. What has been included are classic examples of each region or style. The information was broken down first by countries and then by regions within the country, if necessary.

Formula for Structuring Data

Each sweater example was broken down into the following design elements:

- A schematic of the sweater design
- Unique construction methods of the design
- Samplings of stitch or color patterning, given in graph form where applicable
- Photographs of actual knit samples
- A chart of sweater characteristics

Schematic of the Sweater Design:

Schematics of the construction pieces needed for the sweater were created using the Microsoft Excel® program. This shows the linear structure of the pieces needed to create the sweater. Patterns and design elements were included within the limits of the program. The schematics contain notations of specific details that are distinctive to that specific design or shaping of the sweater elements.

The following schematic was used as a base template for all of the schematics in the data section of the thesis (Figure 28). Here I have outlined the elemental properties of a hand knit sweater to give a working vocabulary to the designs that were studied. When considering specific sweater models, design variances occur. There are optional elements included in the schematic. One example would be the insertion of the underarm gusset. The underarm gusset is strictly a design option and is not incorporated in all hand knit sweaters.

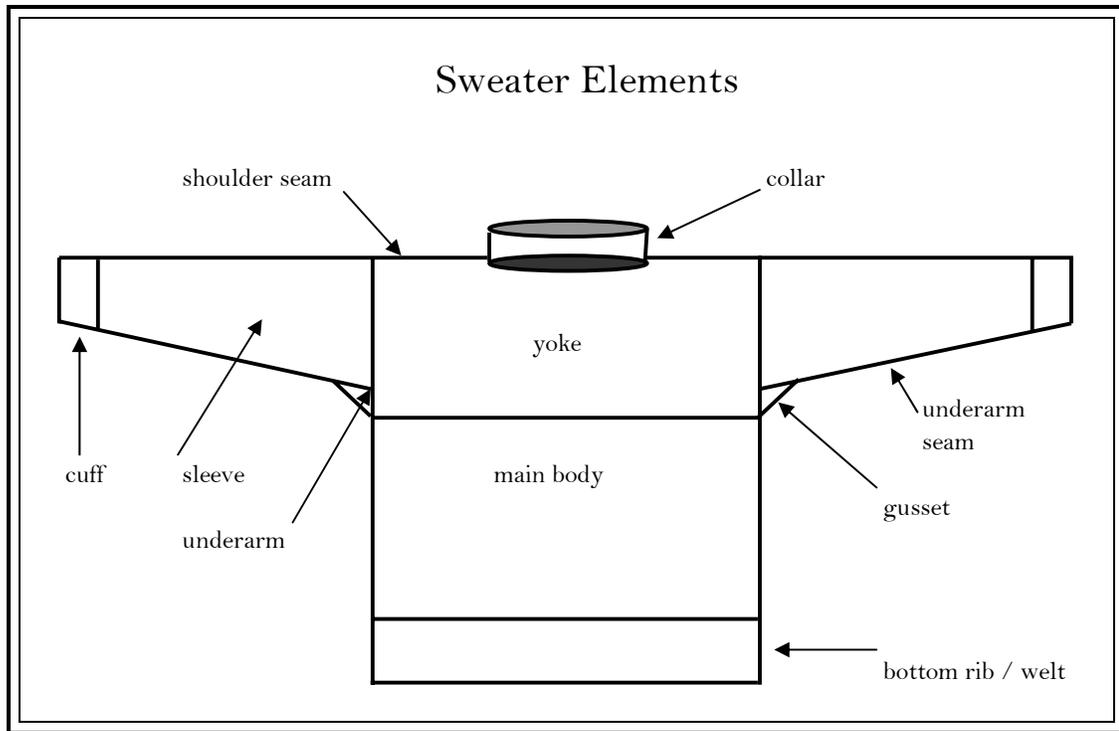


Figure 28: Sweater Elements Schematic

- The bottom rib/welt of the sweater can be worked in the round as a piece of tubular knitting or knit back and forth and either joined or left open creating a slit at the lower edge of the sweater.
- If a sweater is referred to as “flat knit” the front and the back are knit as two separate sections and sew up the side seams after the knitting is complete.
- The gusset of the sweater is to allow ease of movement but is an optional element.
- If a sweater is referred to as “knit in the round” the front and back are knit at the same time on a circular needle.
- Some sweaters are knit in the round up to the shoulders and the armholes are cut in after the main body is completed.
- Sleeves can either be worked by picking up stitches at the armhole opening and then knit down to the cuff or worked from the cuff up (in the round or flat), and sewn in place when all the sweater pieces are complete.

- There are numerous options for creating a collar and they will be handled on a sweater by sweater basis.
- Shoulder seams can be straight or sloped. Some shoulders are brought together with the inclusion of a saddle, or strip of knitting between the front and back of the sweater.

Unique Construction Methods of the Design:

This section lies below the schematic and outlines what makes this sweater design unique and noteworthy. It will detail elements of assembly or structure that are distinctive to the sweater model. The sweaters studied were chosen because they added something innovative to the line of sweater development. An explanation of the method and how it was accomplished is discussed in bulleted notation form.

Samples of Stitch or Color Patterns or Both:

In this section, examples of characteristic stitch, color patterns or both are presented. The charts were created using the Microsoft Excel® program. With almost all of the sweaters discussed, it was not possible to include the great majority of individual patterns that are involved within each region. There were far too many options to include them all within one work. What has been offered is representation of a traditional pattern so that an understanding of the style of design can be appreciated.

Photographs of Knit Samples:

With the exception of the King Charles I and the Brocade Jacket (detailed graphs were unavailable), every sweater model has a photograph of a hand knit example of the pattern work used in each sweater style. All of these samples (with the exception of the

Aran photograph) were hand knit by Gail Lambert. The Aran sample was photographed from an Aran sweater purchased in Ireland in 1977.

Chart of the Sweater Characteristics:

A chart for each design was created to classify specific sweater characteristics of that region. In the chart are included materials from the literature review section of this thesis and a synopsis of design details. This chart gives the reader an “at a glance” review of the relevant data in regard to a particular sweater style.

The headings of the chart include:

- Region
- Date of Origination
- Yarn Gauge
- Yarn Content
- Yarn Color
- Knit in Round or Flat
- Bottom Edge Design
- Underarm Gusset
- Armhole Shaping
- Cuff Design
- Neck Opening Design
- Collar Design
- Two-Color Patterning
- Stitch Patterning
- Other

CHAPTER IV
PRESENTATION OF DATA

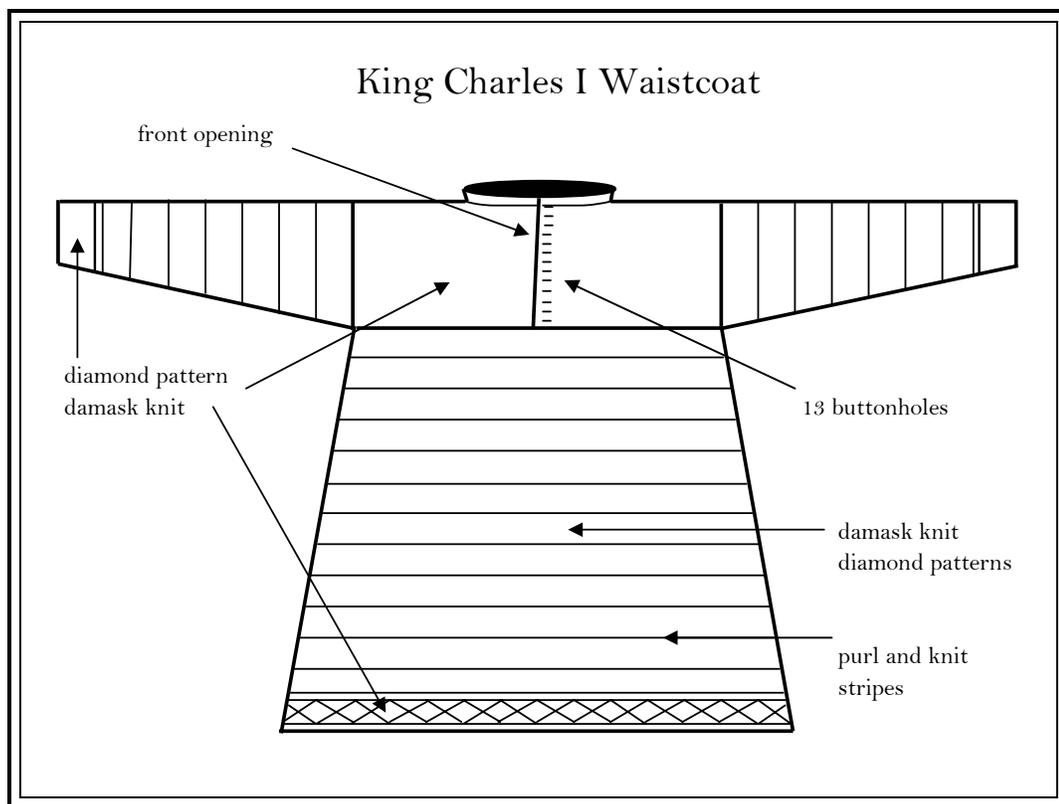


Figure 29: King Charles I Schematic

Construction Elements

- knitting begins at the lower edge of the sweater and is knit in the round
- at the underarm, sweater is knit back and forth, separating the front and back
- shoulders are grafted together
- sleeves are knit in the round from the cuff upward and then stitched into place
- thirteen buttonholes on the front yoke
- sweater is worked in detailed patterns of knit and purl stitches
- knitting is extremely fine at 19 stitches per inch

	King Charles I Waistcoat
Region	England?
Date of Origination	before January 31, 1649
Yarn Gauge	very fine, 19 sts per inch
Yarn Content	silk
Yarn Color	sky blue
Knit in Round or Flat	knit in round to underarm, flat after
Bottom Edge Design	diamond pattern of knit and purl stitches
Underarm Gusset	none
Armhole Shaping	straight
Cuff Design	diamond pattern of knit and purl stitches
Neck Opening Design	simple round neckline with slit down the front
Collar Design	very small, simple collar
Two-Color Patterning	none
Stitch Patterning	damask knit and purl patterns.
Other	<p>This is the oldest hand knit sweater that is in existence today (that we know about). It was worn by King Charles I on January 31, 1649 on the day of his execution It is now in the Museum of London.</p>

Table 1: King Charles I Characteristics Chart

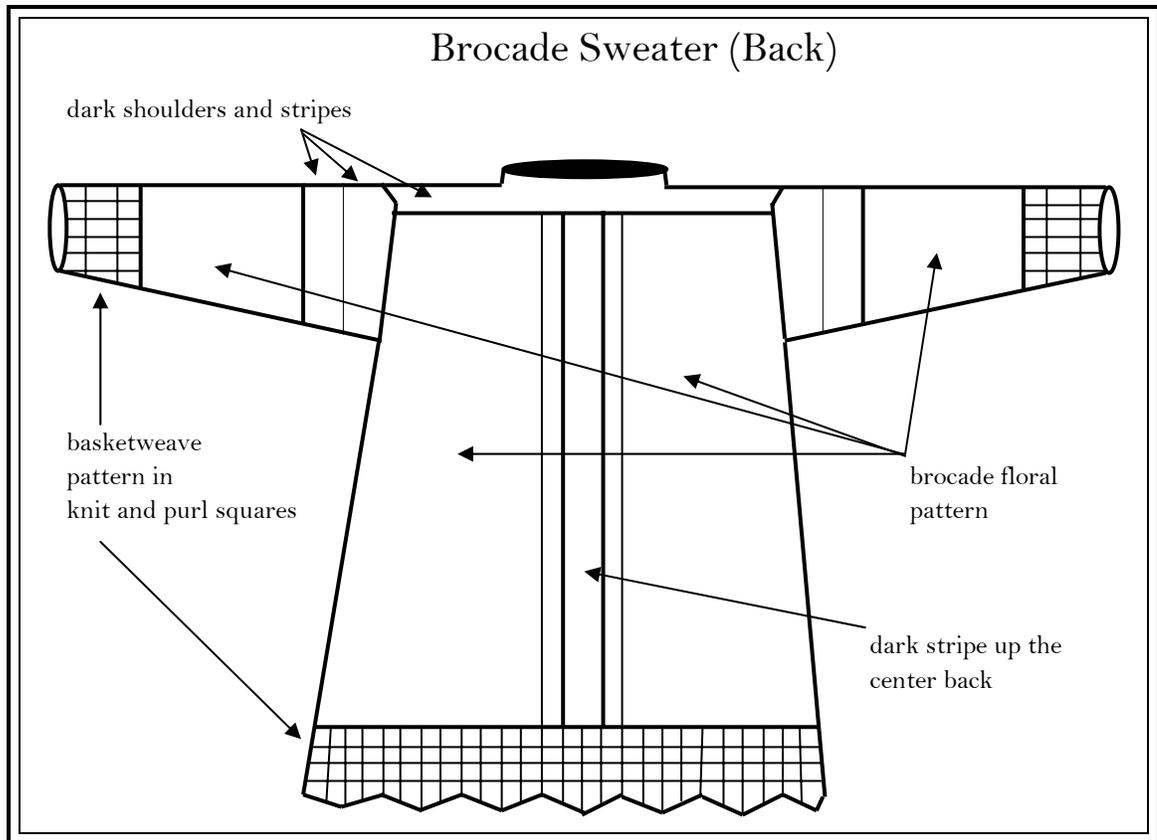


Figure 30: Brocade Jacket Schematic

Construction Elements

- sewn from quadrangular pieces of knitting and then sewn together
- knit in two-color silk
- bottom edge and cuffs have knit and purl basket weave box patterns
- purl stitches to enhance brocade pattern
- green with gold and silver flowers
- possibly frame knit as evidenced by the long floats on the back of the work
- small in size (29 inches around the chest and 22 inches long)

	Brocade Jacket
Region	unknown / perhaps Italian, Spanish, England?
Date of Origination	1600s
Yarn Gauge	very fine aprox. 16-20 sts per inch
Yarn Content	silk, gold and silver threads
Yarn Color	greens, yellows, golds
Knit in Round or Flat	knit in quadrangular flat pieces
Bottom Edge Design	basketweave pattern of knit and purl boxes
Underarm Gusset	none
Armhole Shaping	line across shoulder and then straight down
Cuff Design	basketweave pattern of knit and purl squares
Neck Opening Design	only saw back of design, straight / wide
Collar Design	no collar
Two-Color Patterning	intricate two-color brocade patterning of large flowers and leaves twisting across garment
Stitch Patterning	basketweave pattern of knit and purl squares at lower edge and cuffs, plain stockinette at shoulders, stripe down center back and sleeves
Other	Referred to as "Florentine Jackets" so the assumption is that they came from Italy. This has never been proven and were probably knit in many European countries in the 17 th century. It is thought that some may have been knit on knitting frames since there are long floats on the back. Some of these jackets were lined with a woven fabric.

Table 2: Brocade Jacket Characteristics Chart

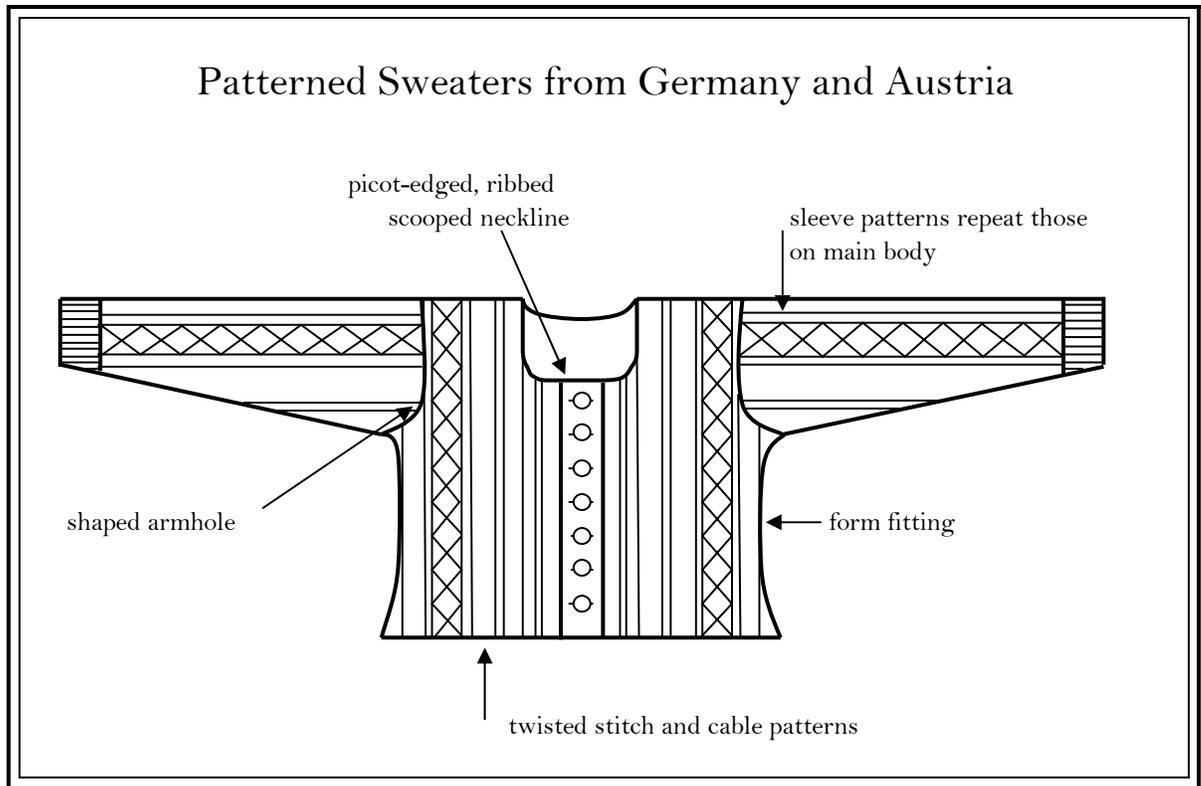


Figure 31: Bavarian Sweater Schematic

Construction Elements

- knit in separate pieces, 2 for the front (cardigan), 1 for the back and 2 sleeves
- twisted rib patterns are stiffer and longer lasting
- close fitting, scooped neck, waist length for women's sweaters
- men's sweaters were slightly longer than women's sweaters
- stitch patterns thought to reflect natural elements of the forests in the region
- accents of color (on Tyrolean sweaters) reflect the mountain blooms
- often knit without sleeves
- picot ribbing sometimes used on neckline and armhole opening for vests



Figure 32: German / Austrian Pattern Knitting Sample

Above is an example of German / Austrian pattern knitting recreated from Compton's book: The Complete Book of Traditional Knitting (1983, pg 160). The stitches in this region are often worked into the back of the stitch to twist the stitch before it is dropped off the left needle. This creates a stiffer quality to the knitting and increases the strength of the fabric. Trailing stitches are created by knitting two stitches out of order (knit into the back of the 2nd stitch on the needle and then knit into the 1st stitch, then drop both stitches off the needle at the same time. This shifts the order of stitch one and two and creates a turn in the knitting. A cable needle was also used to create some of the twisted stitch pattern.

	Patterned Sweaters from Germany and Austria
Region	Germany / Austrian border
Date of Origination	1800s
Yarn Gauge	aprox. 6 sts per inch
Yarn Content	tightly twisted wool
Yarn Color	cream
Knit in Round or Flat	knit flat in pieces
Bottom Edge Design	twisted rib
Underarm Gusset	none
Armhole Shaping	curved
Cuff Design	twisted rib
Neck Opening Design	scooped neckline
Collar Design	none
Two-Color Patterning	none
Stitch Patterning	twisted stitches, stitch order changes, trailing vine-like stitches, twisted ribbing by knitting into the back of stitches
Other	Bavarian sweaters are solid cream-color, highly patterned sweaters. Tyrolean sweaters are considered a later development around the turn of the 20th century. Tyrolean sweaters have bobbles and more cable patterns. Flecks of colored embroidery reflect the meadow landscape. The sweaters are tight fitting and the women's sweaters were shorter than the men's. Often these are knit without sleeves.

Table 3: Patterned Sweaters from Germany and Austria Characteristics Chart

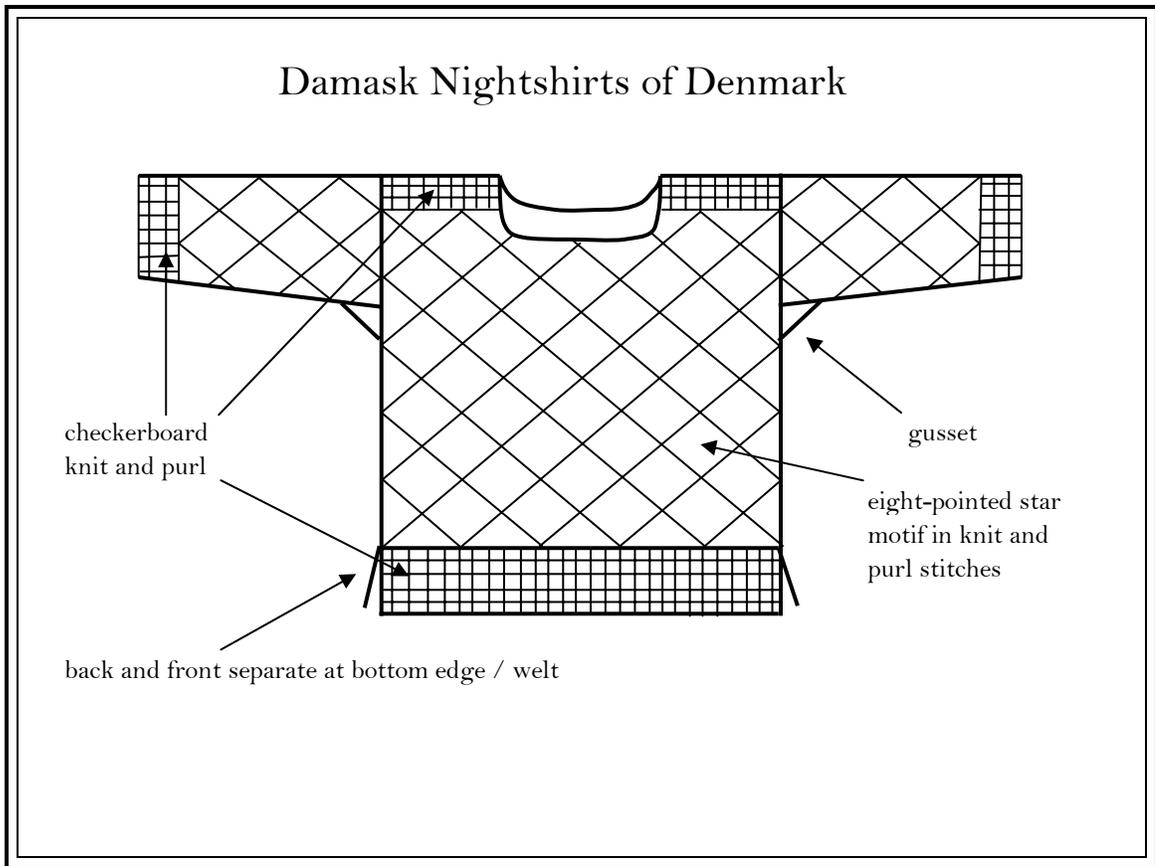


Figure 33: Damask Nightshirt Schematic

Construction Elements

- bottom of the sweater knit back and forth, back separate from the front
- sweater joined above the welt and knit in the round up to the gusset
- pattern at side seam to visually separate front and back
- at gusset, sweater knit back and forth up to the shoulder
- shoulder seams grafted together
- scoop neckline
- sleeves shifted from full length to three-quarter length over time

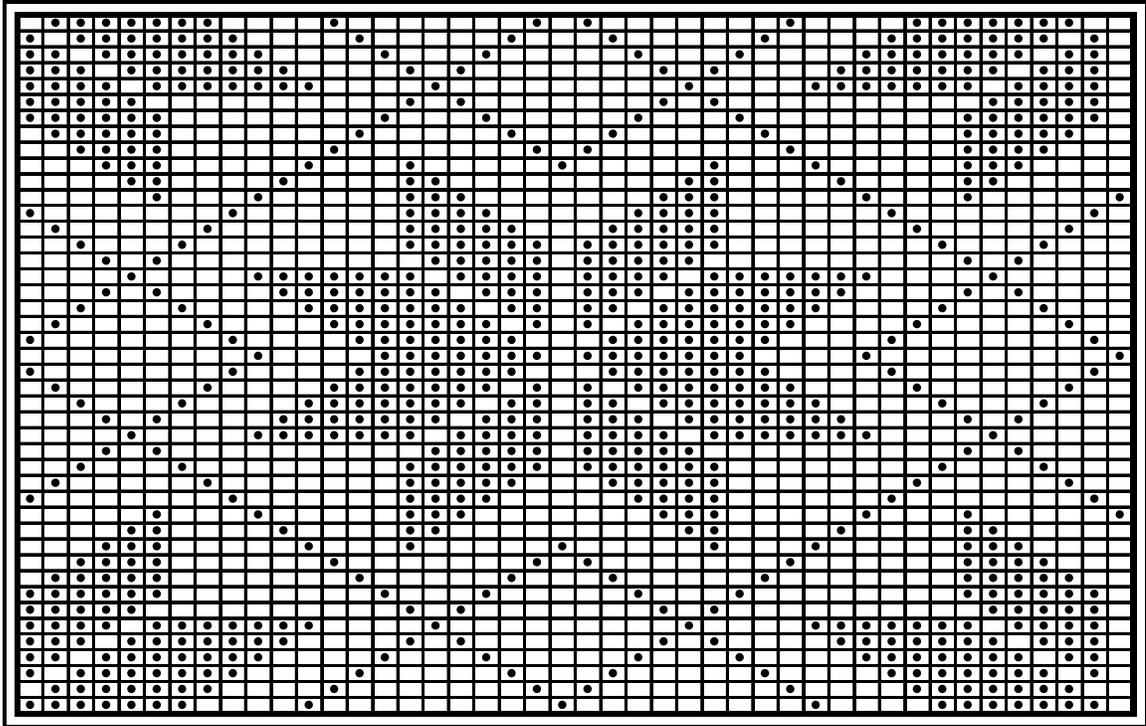


Figure 34: Eight-Pointed Star Pattern Knitting Graph

Figure 7 is the stitch pattern common in damask knitting. Each square in the graph represents a stitch. The blank square would be a knit stitch and a square with a dot inside would be a purl stitch. Below is a sample of the knitted fabric.

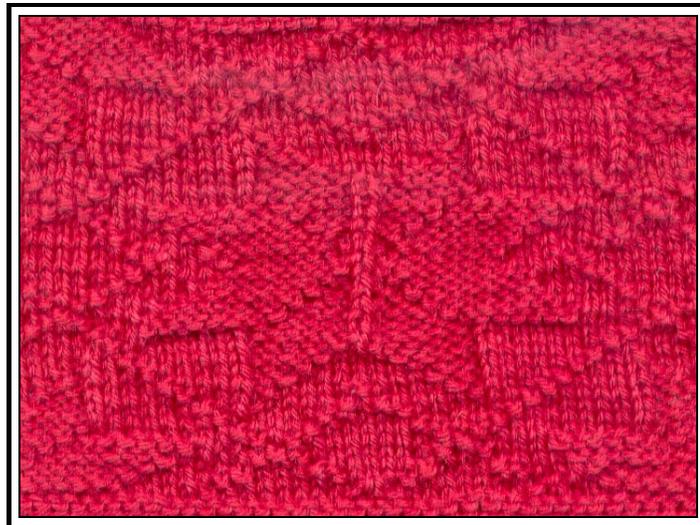


Figure 35: Damask Knitting Sample

	Damask Nightshirts
Region	Denmark
Date of Origination	1600s
Yarn Gauge	very fine aprox. 16-20 sts per inch
Yarn Content	silk, gold, silver for wealthy, fine wool for poor
Yarn Color	red, black, dark green, bottle blue
Knit in Round or Flat	knit in round to gusset, then back and forth
Bottom Edge Design	front and back separate
Underarm Gusset	yes
Armhole Shaping	straight
Cuff Design	knit and purl stitch patterns / checkerboard
Neck Opening Design	scoop neckline
Collar Design	no collar / opening trimmed with fabric
Two-Color Patterning	none
Stitch Patterning	damask knit and purl patterns / often knit in the eight-pointed star with diagonal lines
Other	<p>Oldest sweater worn by common folk. Copies of silk nightshirts of wealthy. Originally tight fitting with long sleeves, worn under garments. Evolved into 3/4 length sleeves, trim at neck and looser fit. Cropped in length. Damask patterns taken from weaving patterns. Patterns most successful when worked in smooth yarn with tight stitches.</p>

Table 4: Damask Nightshirt Characteristics Chart

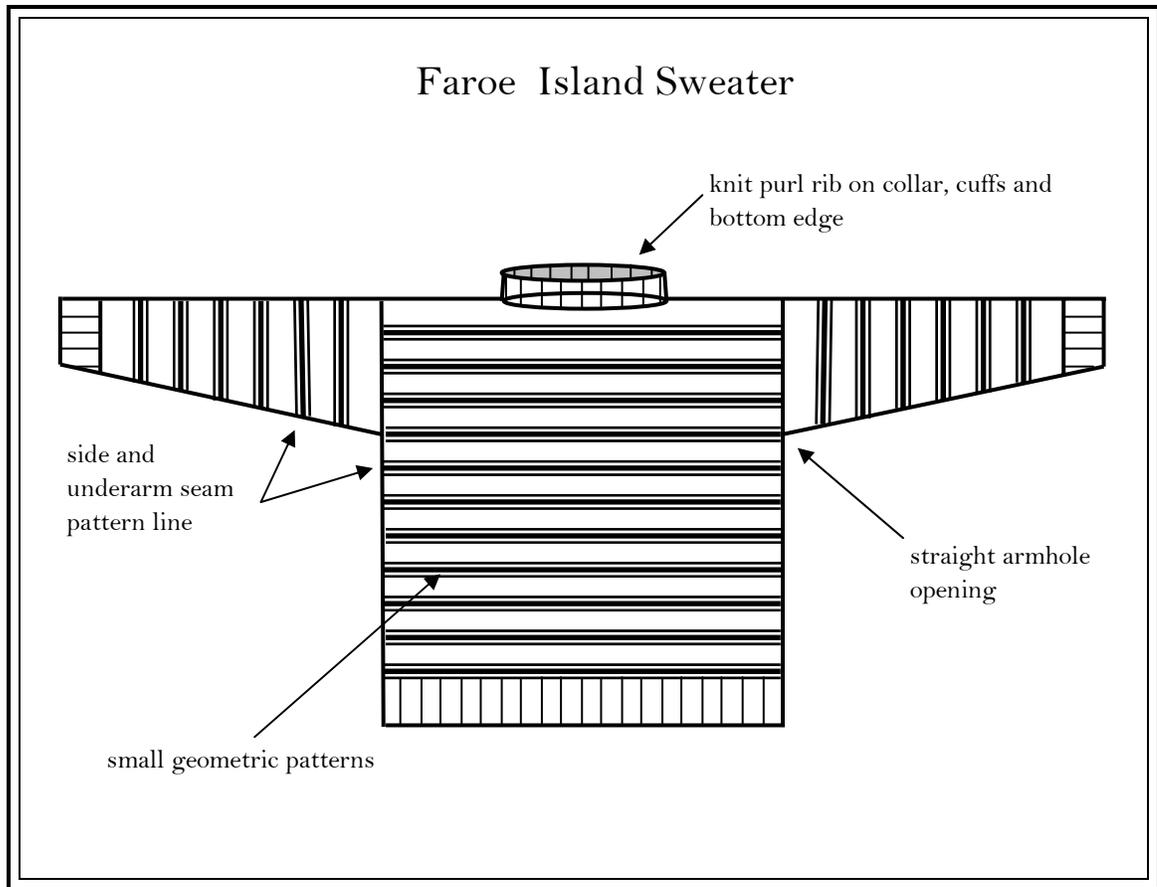


Figure 36: Faroe Island Sweater Schematic

Construction Elements

- sweater begun at bottom edge and knit in the round to underarm
- simple rib bottom edge
- knit back and forth up to shoulder
- shoulder seams grafted together
- stitches picked up around armhole opening and sleeves knit down to cuff
- simple rib cuff and collar
- often a side seam pattern line from side seam down to wrist

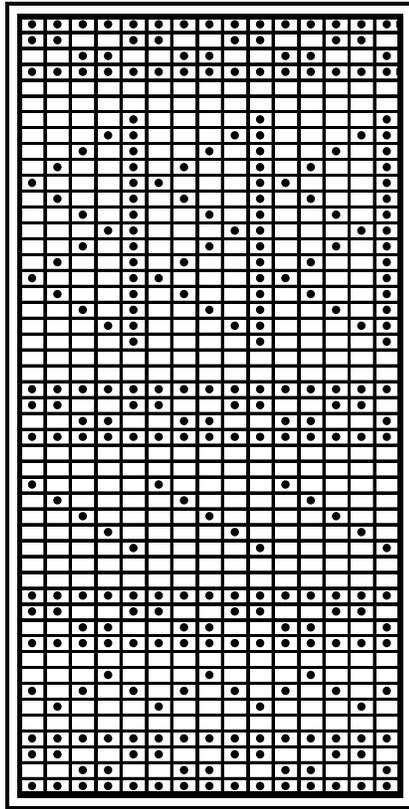


Figure 37: Faroese Knitting Graph

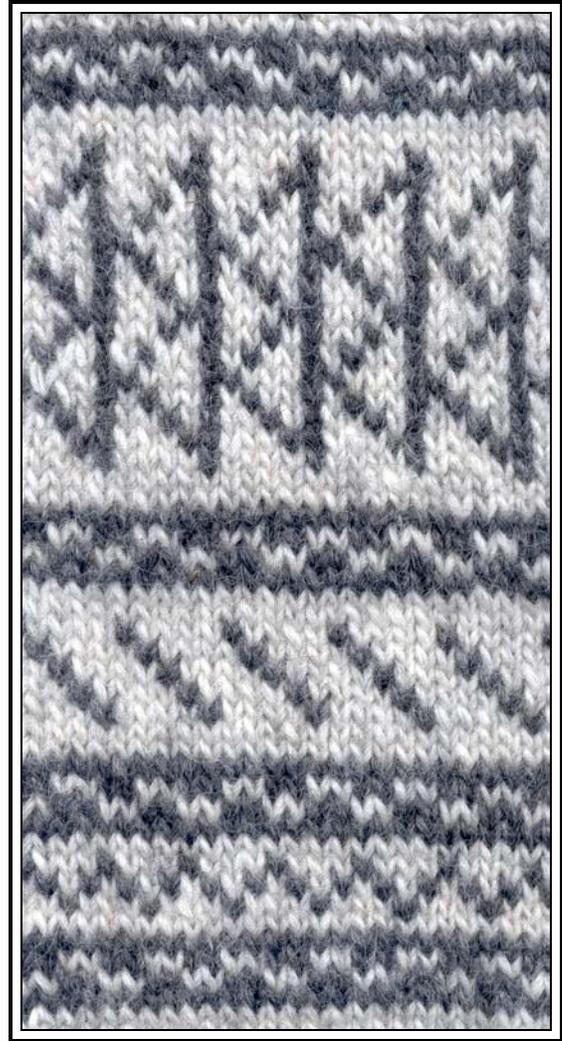


Figure 38: Faroese Knitting Sample

Above are examples of Faroese knitting patterns recreated from Compton's book: The Complete Book of Traditional Knitting (1983, pgs 78 – 80). Patterns from this region are simple geometric repeats and can run either vertically or horizontally. Having small repeats is useful in that patterns are easier to remember and eliminates long floats to weave in while knitting. Other stitch patterns include diamond shapes, triangles, wavy lines, small boxes and single stitch dots.

	Faroe Island Sweater
Region	Faroe Island Sweater
Date of Origination	1800s
Yarn Gauge	bulky / aprox. 3 1/2 stitches per inch
Yarn Content	wool
Yarn Color	natural wool colors (white, grey, black brown)
Knit in Round or Flat	knit in round to underarms then back and forth
Bottom Edge Design	ribbing
Underarm Gusset	none
Armhole Shaping	straight
Cuff Design	ribbing
Neck Opening Design	crew neck
Collar Design	ribbed collar
Two-Color Patterning	simple geometric patterns can run vertically or horizontally
Stitch Patterning	plain stockinette
Other	Faroe Island sweaters are simple in design construction with straight armhole openings, and a simple neckline. With use of the bulky yarn these sweaters knit up quickly and were a vital export for the islanders. The small pattern repeats also made knitting them much faster. These sweaters were often felted after knitting.

Table 5: Faroe Island Sweater Characteristics Chart

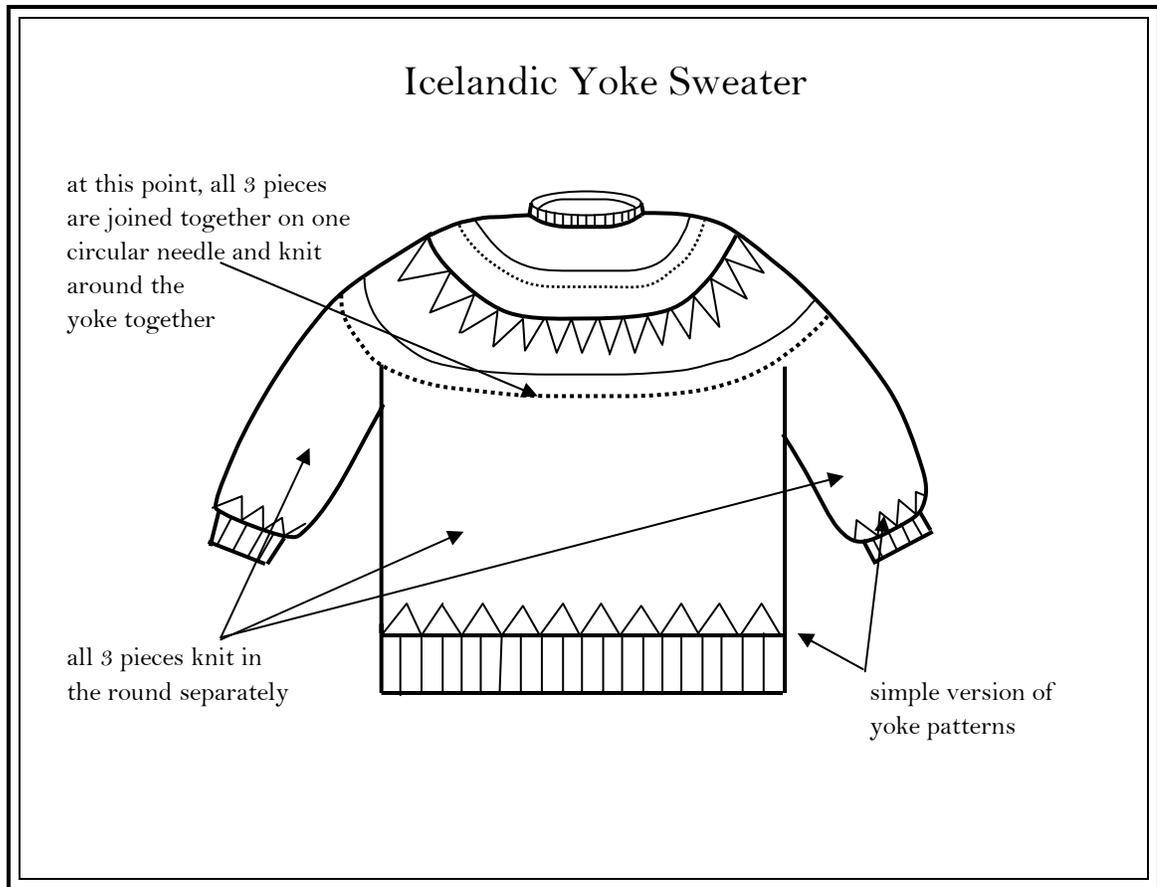


Figure 39: Icelandic Yoke Sweater Schematic

Construction Elements

- bottom edge of sweater and collar knit in plain rib
- sweater and sleeves knit in the round separately up to the underarm area
- sleeves and main body of the sweater are then all placed on one circular needle and knit together up to the collar
- decreases in the yoke made evenly spaced around the sweater
- broad two-color patterns on the yoke
- simple pattern above the cuffs reflect yoke patterns only on a smaller scale

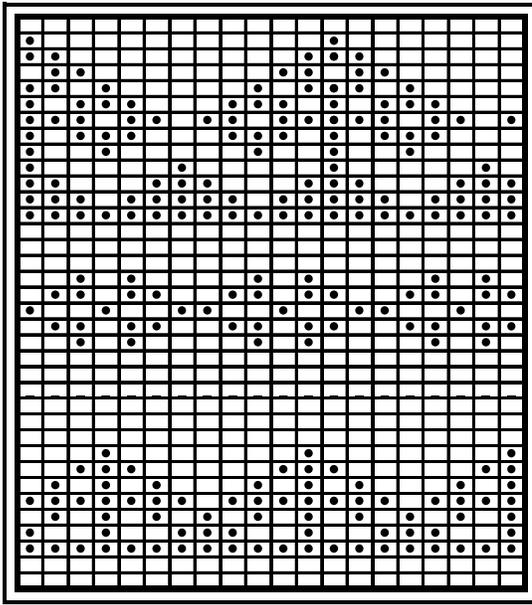


Figure 40: Icelandic Knitting Graph



Figure 41: Icelandic Knitting Sample

Above are examples of Icelandic knitting patterns recreated from Compton's book: [The Complete Book of Traditional Knitting](#) (1983, pg 77). Patterns from this region are geometric horizontal repeats that can be worked in the round. Broad two-color patterns are worked from the shoulders down to the top of the sleeve. There are smaller two-colored patterns knit above the cuffs. The inspiration for these patterns are said to be taken from beaded collars worn on Greenland although that is still being debated. The yarn used is heavy Icelandic "Lopi" yarn. When lopi is knit in two-color, it creates a dense, warm fabric.

	Icelandic Yoke Sweater
Region	Iceland
Date of Origination	1900s
Yarn Gauge	bulky / aprox. 3 1/2 stitches per inch
Yarn Content	wool
Yarn Color	natural wool colors (white, grey, black brown)
Knit in Round or Flat	knit in round
Bottom Edge Design	ribbing
Underarm Gusset	none
Armhole Shaping	knit together with yoke of sweater
Cuff Design	ribbed
Neck Opening Design	crew neck
Collar Design	ribbed
Two-Color Patterning	numerous two-colored patterns with Scandinavian influence / bold patterns because of bulk of yarn
Stitch Patterning	plain stockinette
Other	The main body of the Icelandic yoke sweater is knit in the round, the sleeves are knit separately in the round. All three pieces are joined onto one circular needle and the yoke is knit in the round up to the collar. Decreases on the yoke are made evenly spaced. It is thought by many that yoke collared sweaters of Iceland were influenced by the beaded collars of Greenland.

Table 6: Icelandic Yoke Sweater Characteristics Chart

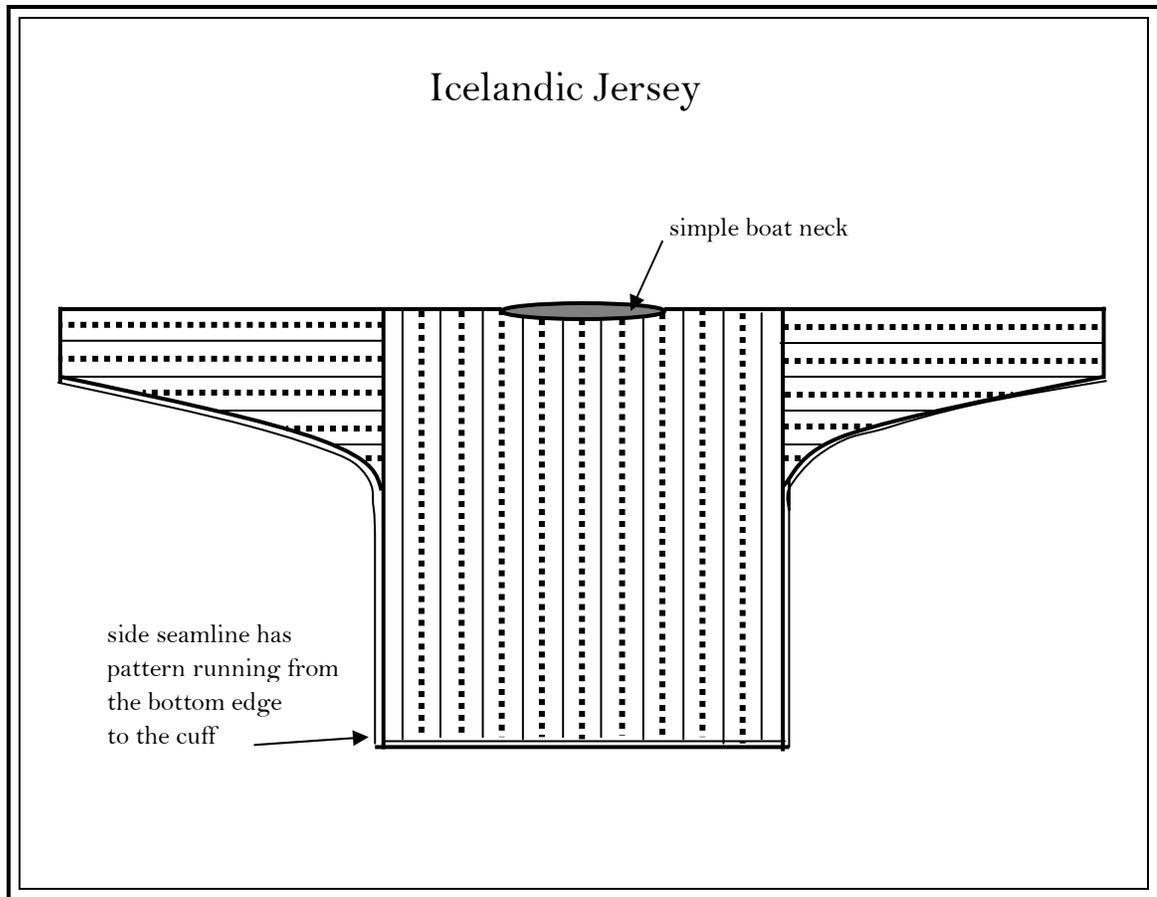


Figure 42: Icelandic Jersey Schematic

Construction Elements

- simple box shaping
- small geometric patterns
- made of heavy woolen yarn / two to three natural colors
- twisted edge cast on in two colors
- 5-7 stitch seam panel
- straight boat neck opening
- no ribbing / no cuff
- sleeves picked up at armhole and worked to wrist

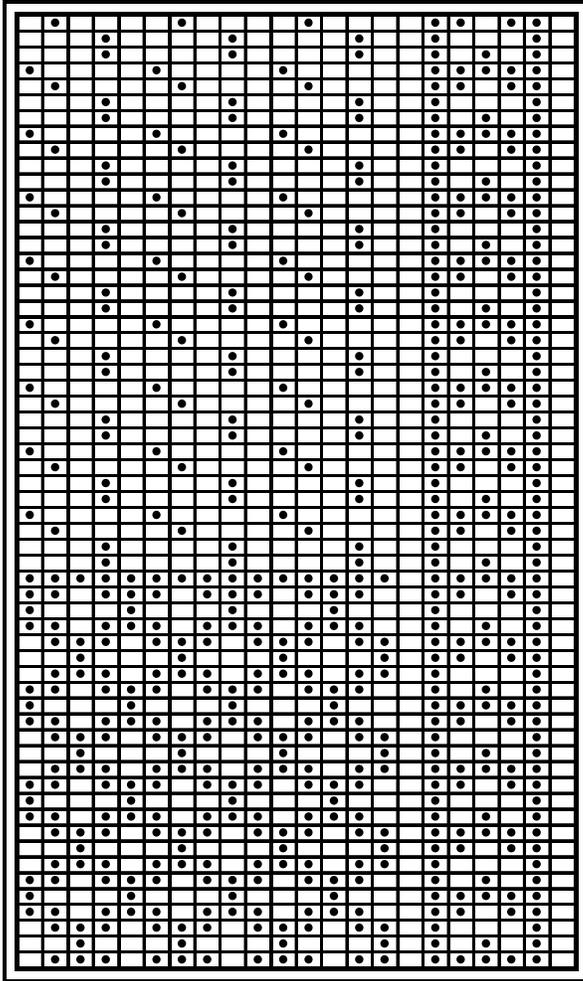


Figure 43: Icelander Knitting Graph

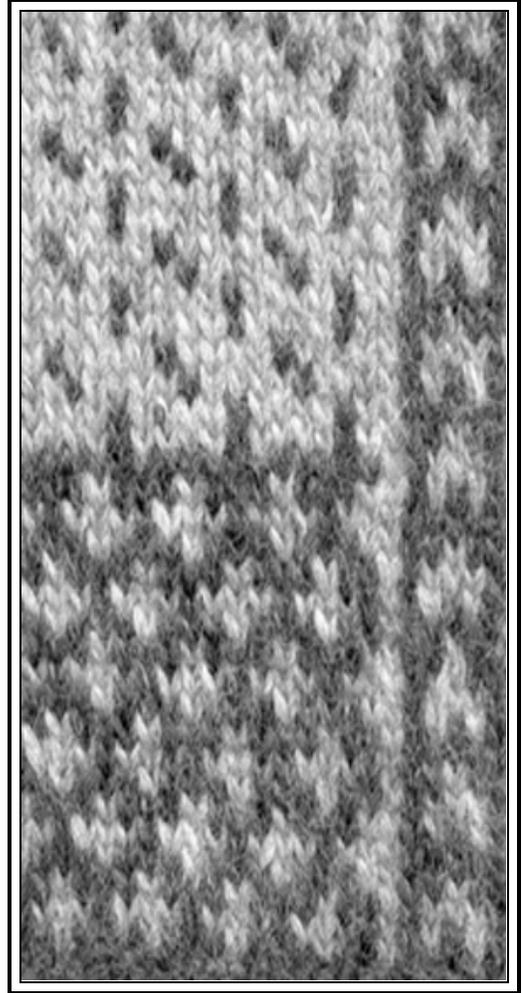


Figure 44: Icelander Knitting Sample

Above are examples of Icelander knitting patterns recreated from Lind's book: Knitting in the Nordic Tradition (1997) pgs 49 and 50. The two-colored stitch patterns were simple in nature. On the above graph two different knitting patterns are represented on the left hand side. Only one would be used in any single sweater. The stitches on the right hand side of the graph represent a sample of a seam line that would run from the bottom of the sweater up the side and down to the wrist.

	Icelandic Pullover
Region	Iceland
Date of Origination	1800s
Yarn Gauge	bulky / aprox. 3 1/2 stitches per inch
Yarn Content	wool
Yarn Color	natural wool colors (white, grey, black brown)
Knit in Round or Flat	knit in round to armholes, then back and forth
Bottom Edge Design	no ribbing / two-color twisted cast on
Underarm Gusset	none
Armhole Shaping	straight
Cuff Design	no ribbing / two-color twisted cast on
Neck Opening Design	straight boat neck
Collar Design	no collar
Two-Color Patterning	numerous small geometric stitch patterns
Stitch Patterning	plain stockinette
Other	The Icelandic pullover has a 5-7 stitch side seam detail that runs up the side seams and down to the wrist. The decreases for the sleeves are made on either side of this pattern to keep it intact. This is perhaps the first bulky knit sweater design. After knitting, the sweaters were often felted to add to the warmth of the garment. Commonly referred to as the "Icelander."

Table 7: Icelandic Pullover Characteristics Chart

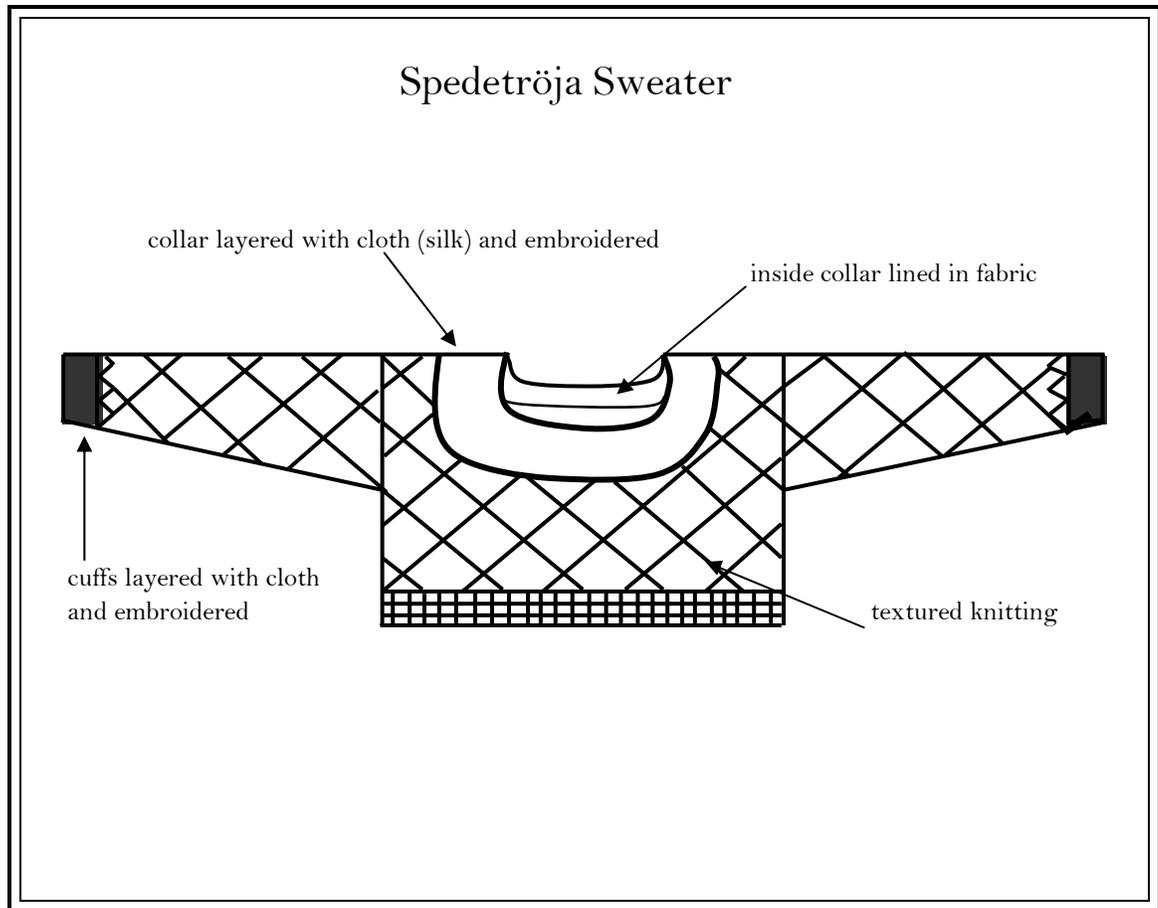


Figure 45: Spedetröja Sweater Schematic

Construction Elements

- bottom edge is knit in a checkerboard pattern (knit 2, purl 2 for two rounds and then purl 2, knit 2 for two rounds)
- knit in the round up to the underarms and then back and forth to the shoulder
- the traditional eight-point star pattern is worked over the main body and sleeves
- the neckline and cuffs were ornamented with fabric and embroidery stitches
- the sweater was most likely knit in white and then dyed after completion

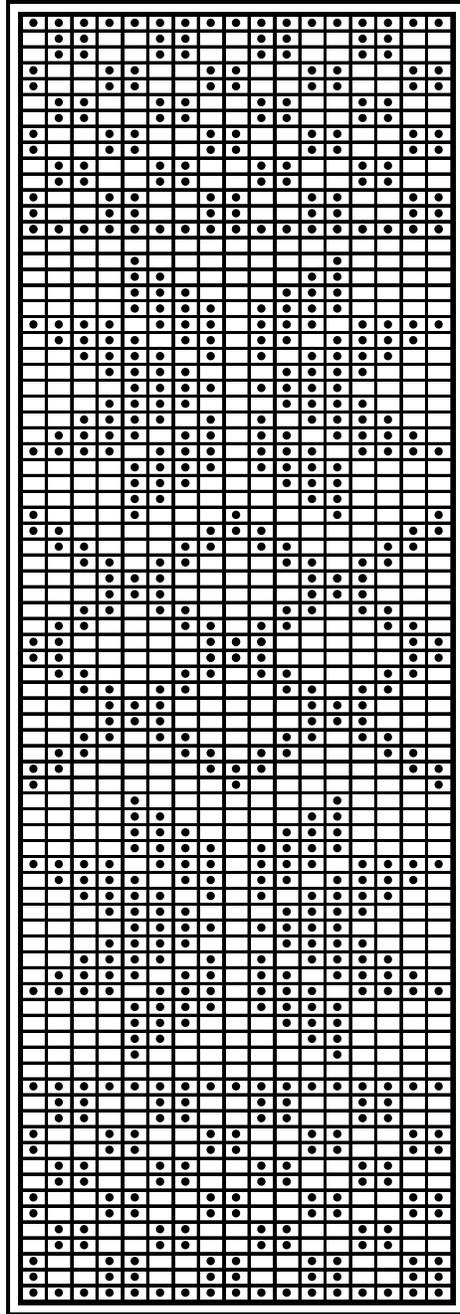


Figure 46: Spedetröja Knitting Graph

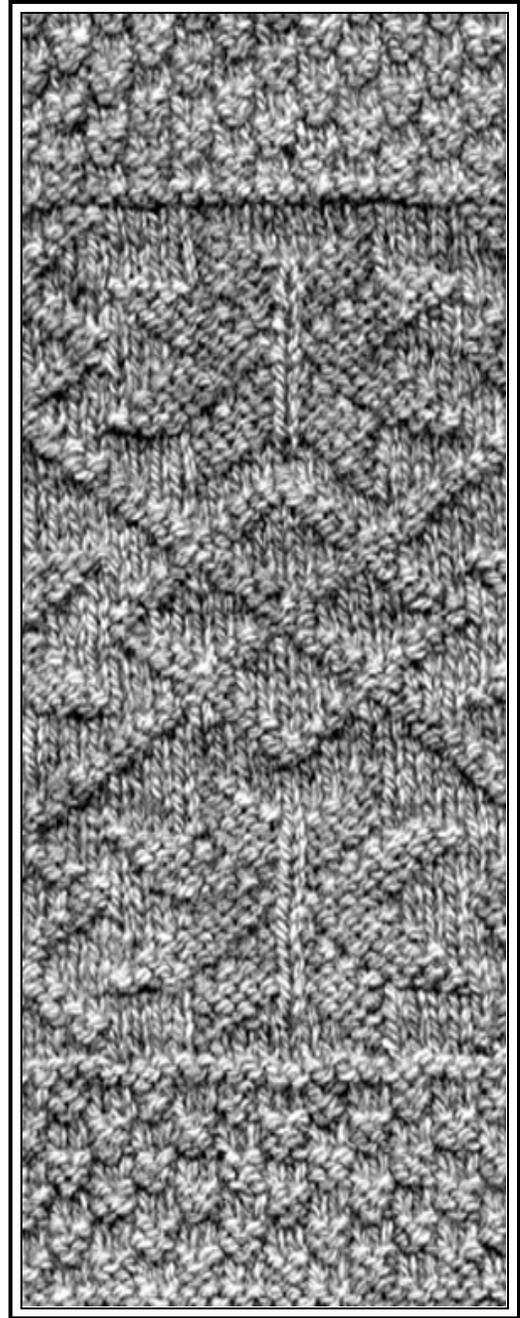


Figure 47: Spedetröja Knitting Sample

The knitting samples above were recreated from Christoffersson's book: Swedish Sweaters: New Designs from Historical Examples (1990, pg 14).

	Spedetröja Sweater
Region	Skane, Sweden
Date of Origination	mid 1600s
Yarn Gauge	10 1/4 sts per inch
Yarn Content	fine, tightly twisted wool
Yarn Color	red or green
Knit in Round or Flat	knit in round to underarms, then flat
Bottom Edge Design	checkerboard knit and purl stitches
Underarm Gusset	none
Armhole Shaping	straight
Cuff Design	embroidered fabric
Neck Opening Design	scooped neck
Collar Design	no collar
Two-Color Patterning	diagonal lines and diamonds, eight-pointed stars
Stitch Patterning	damask knit and purl stitches
Other	<p>Spedetröja sweaters are similar to the cropped Danish nightshirts in many ways. The sleeves however are wrist length not 3/4's and the stitch pattern is knit and purl, not twined knitting. "Speda" translates into "knitting needle" thus the origin of the name spedetröja. Often the sweaters were felted after knit. Fabric was added to the neck opening and cuffs and usually embroidered.</p>

Table 8: Spedetröja Sweater Characteristics Chart

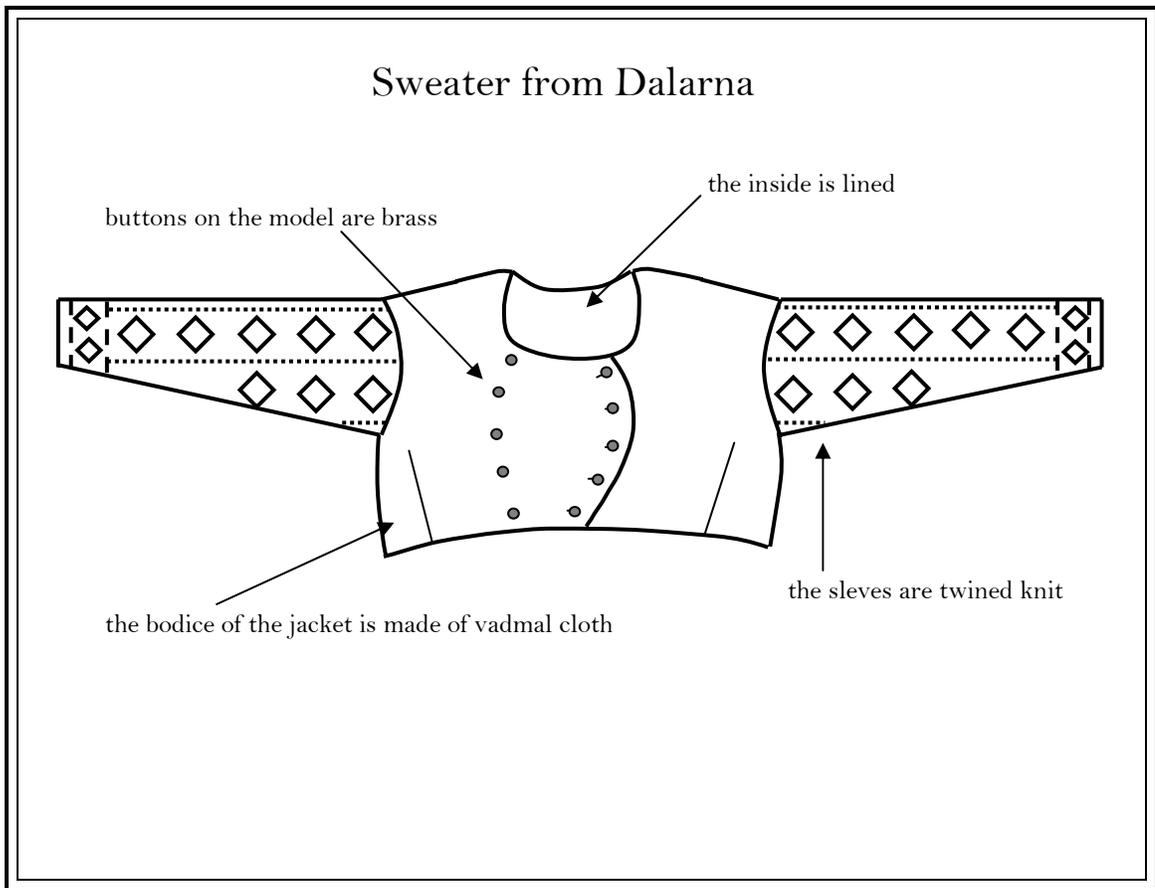


Figure 48: Sweater from Dalarna Schematic

Construction Elements

- the only knitting on this jacket is on the sleeves
- the sleeves are knit in the twined knitting
- the bodice of the jacket is sewn from vadmäl and lined
- the sleeves are knit in black and white and then dyed red after the knitting is complete

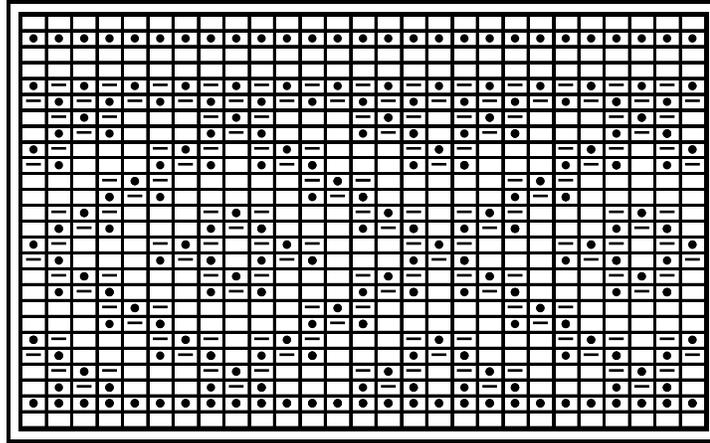


Figure 49: Twined Knitting Graph



Figure 50: Twined Knitting Sample

The knitting sample above was recreated from a graph in Dandanell & Danielsson's book: Twined Knitting: A Swedish Folkcraft Technique (1989, pg 67). Hand knitting in this style is tricky and time consuming but creates a beautiful pattern of "O's and lines.

Twined Knitting of Sweden Techniques

- All twined knitting is knit with the right side of the fabric facing you.
- All twined knitting is knit on double point or circular needles.
- All twined knitting is knit in a tube.
- Twined knitting is usually worked with two yarns (usually the same color) at the same time.
- Twined knitting is produced when you alternate the two yarns every other stitch and wrap the new yarn around the old on the backside of the work.
- Twined knitting is a technique still in practice in Swedish knitting.
- Twined knitting produces a dense, double thickness fabric that is less elastic than regular knitting.
- Twined knitting was generally done with fine yarns and needles.

Twined knitting is usually done with both ends held in the right hand. Insert needle into the first stitch like any other knitting stitch. With the index finger of the right hand bring the lower strand forward and in front of the higher strand on the right hand, wrap around needle and knit this stitch. Now the strands have switched places. Take the new strand forward and in front of the first strand, knit the next stitch. Note: you must always alternate strands and wrap them around each other.

In purling, both strands are on the front of the work at all times. The strands are held on either side of the index finger and middle finger as in knitting, just on the front of the work. Insert needle into the next stitch as if to purl. Carry the yarn under the one just used and purl as usual (Dandanell & Danielsson's, 1989, pgs 58-67).

	Sweater from Dalarna
Region	Sweden
Date of Origination	mid 1600s
Yarn Gauge	13 1/4 sts per inch
Yarn Content	fine, tightly twisted wool
Yarn Color	red and black
Knit in Round or Flat	sleeves knit in round
Bottom Edge Design	does not apply
Underarm Gusset	none
Armhole Shaping	curved
Cuff Design	twined knit in two-color patterning
Neck Opening Design	scooped neck
Collar Design	no collar
Two-Color Patterning	numerous geometric stitch patterns / diamond, scrolling lines, stars
Stitch Patterning	twined knitting
Other	<p>This jacket is cropped in length. Woman's jackets were shorter and men's were waist length. The bodice is sewn from vadmal cloth. Sometimes the bodice is accented with embroidery patterns. Twined knitting was one of the earliest forms of knitting in Sweden and is still practiced today. Twined knitting is less elastic but more durable than plain knitting. Often the knitting was felted for warmth.</p>

Table 9: Sweater from Dalarna Characteristics Chart

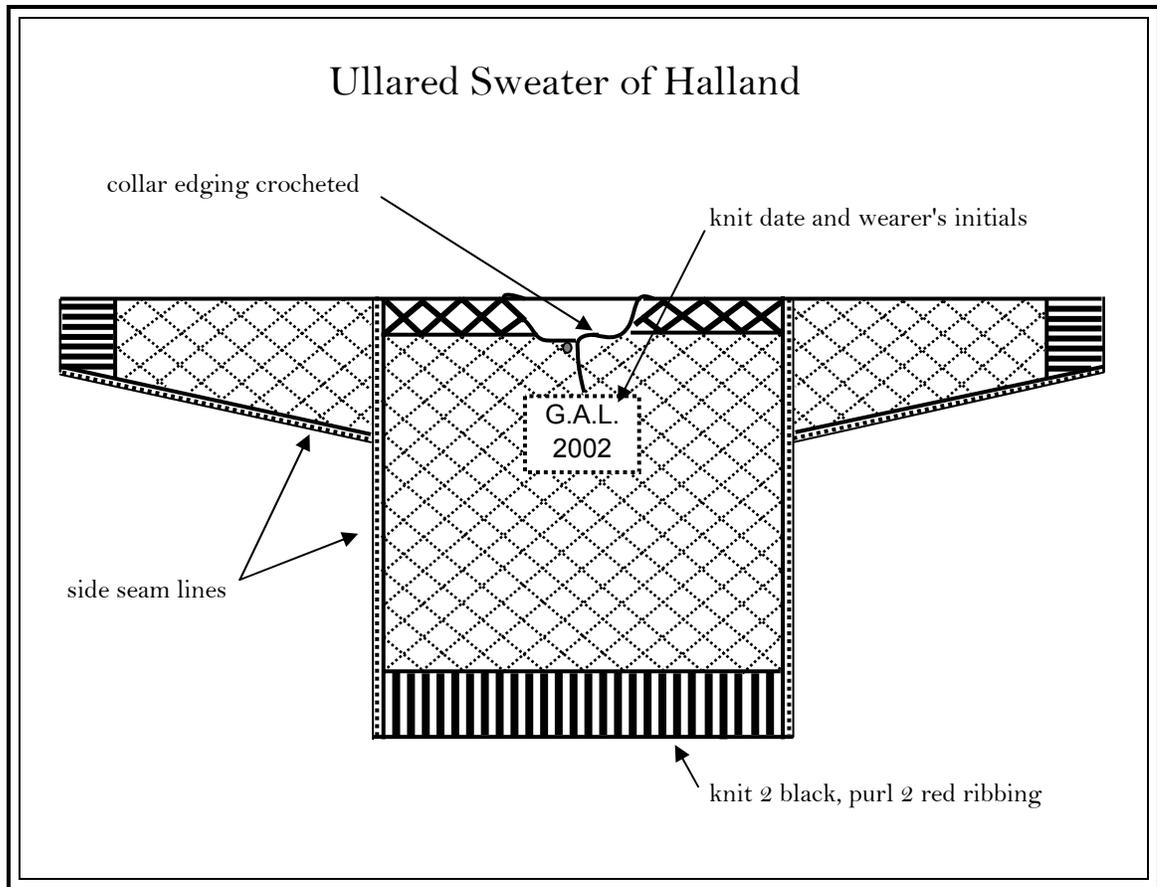


Figure 51: Halland Sweater Schematic

Construction Elements

- bottom rib is worked in knit 2 black, purl 2 red ribbing
- sweater is knit in the round up to the underarms
- there is a 5 stitch seam line from bottom edge to wrist
- initials and year sometimes knit in center chest or just above the right-side bottom ribbing
- the collar is constructed of a simple crochet line around the opening

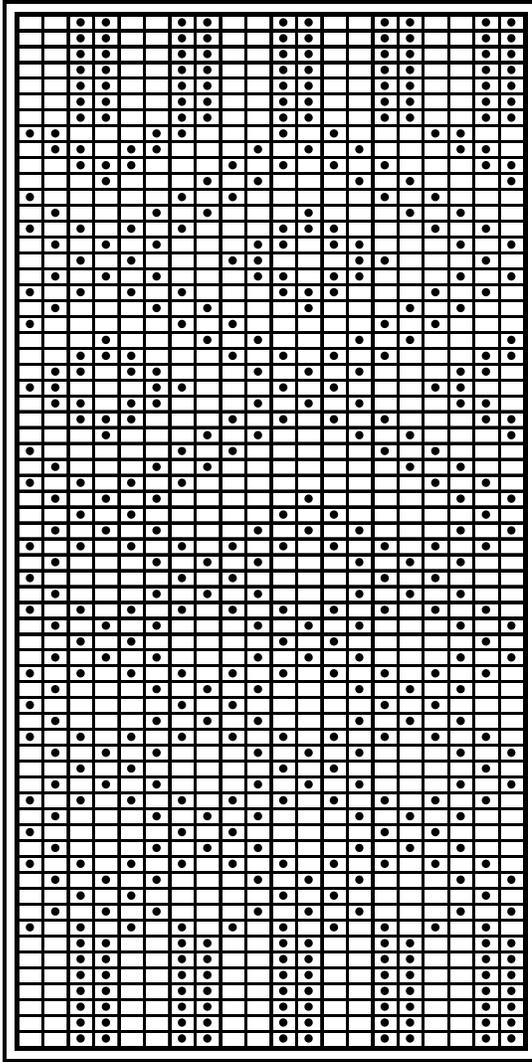


Figure 52: Halland Knitting Graph



Figure 53: Halland Knitting Sample

Above is a sample of knitting from Halland, Sweden recreated from Christoffersson's book: Swedish Sweaters: New designs from Historical Examples (1990, pg 26). Diamond patterns worked in red and black exemplify sweaters from this region. Sweaters were knit in black and white and dyed red after knitting was completed.

	Ullared Sweater of Halland
Region	Sweden
Date of Origination	1800s
Yarn Gauge	8 1/4 stitches per 1 inch
Yarn Content	wool
Yarn Color	black and red
Knit in Round or Flat	in the round up underarm, then back and forth
Bottom Edge Design	knit 2 black, purl 2 red
Underarm Gusset	none
Armhole Shaping	straight
Cuff Design	red and black zig-zag pattern
Neck Opening Design	round neckline with a crocheted trim / slit about 3" down with button attachment
Collar Design	none
Two-Color Patterning	red and black diamond pattern
Stitch Patterning	plain knit
Other	Sweaters in this region were tightly knit to add to the warmth of the garment. Typically they were knit in black and white and dyed after the sweater was completed. A 5 - 7 stitch seamline frames the sweater but also helps lose the visual pattern shift at the end of a row, gives a clean edge to the decreases for the sleeve shaping and visually separates the front from the back.

Table 10: Ullared Sweater of Halland Characteristic Chart

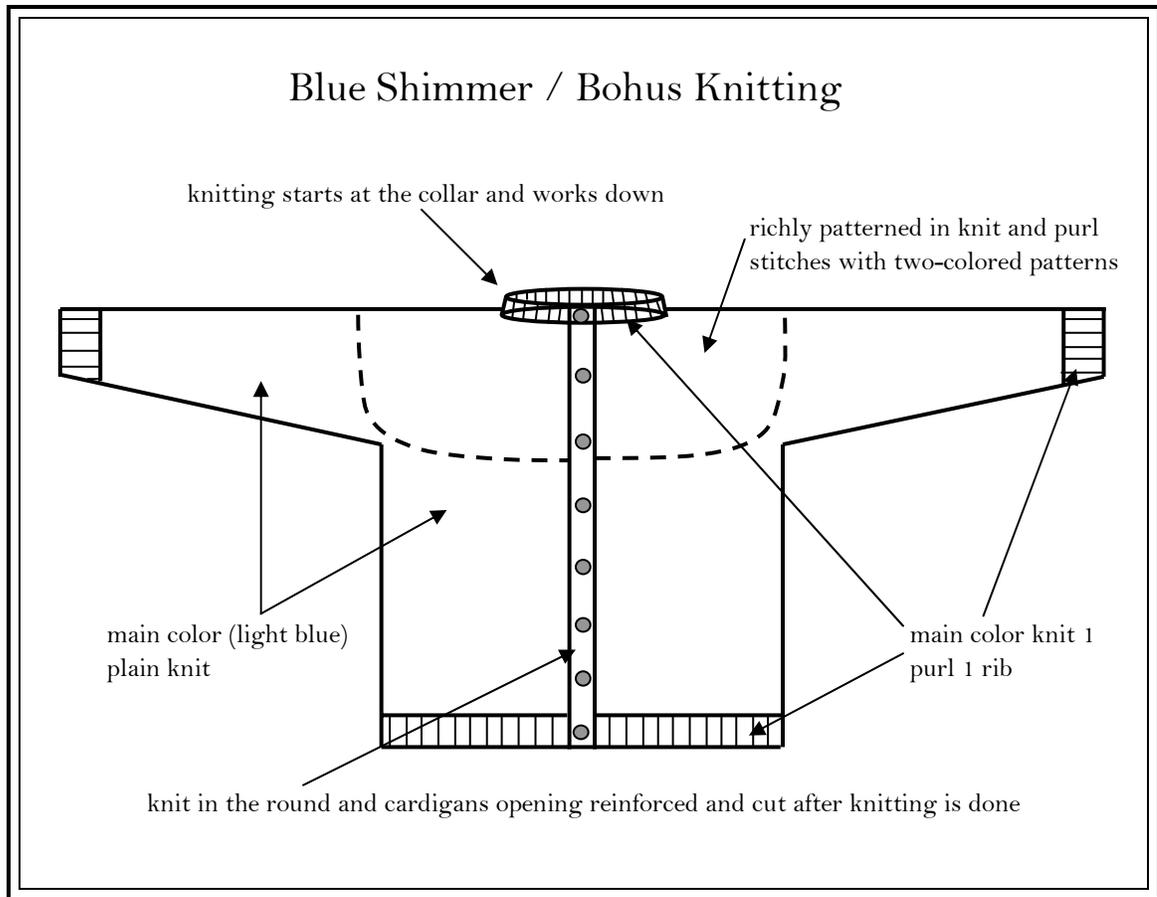


Figure 54: Blue Shimmer Schematic

Construction Elements

- stitches cast on for neck and knit down
- collar and top buttonhole band worked back and forth
- stitches for center front band cast off, initial increases made for yoke, knitting joined into the round
- yoke pattern worked in knit and purl stitches following a specific graph
- sleeves and body separated and knit down
- cardigan opening reinforced and cut / button band and facing knit

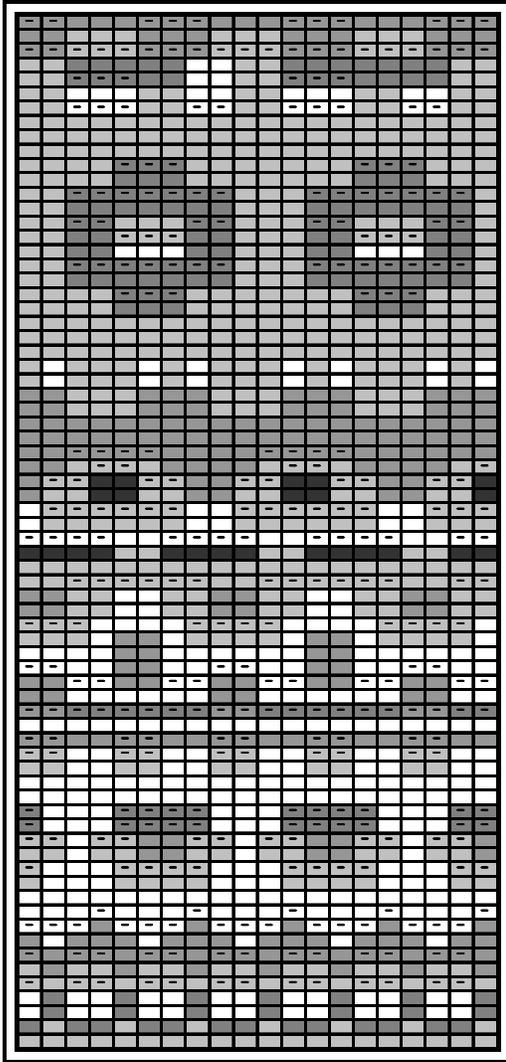


Figure 55: Bohus Knitting Graph

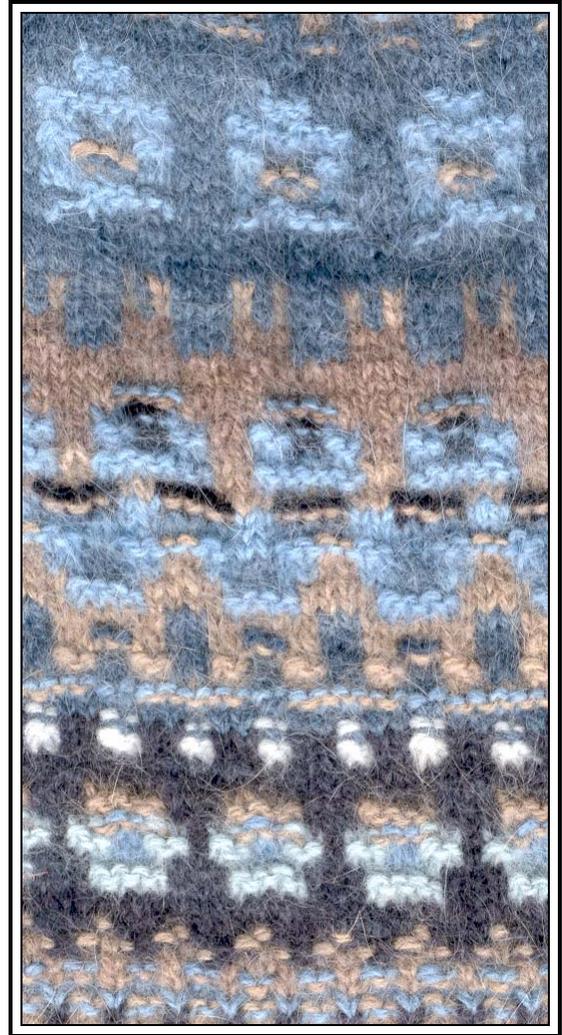


Figure 56: Bohus Knitting Sample

Above is a sample of Bohus knitting from Sweden recreated from Keele's book: Poems of Color: Knitting in the Bohus Tradition (1995, pg 97). The graph selected is the most famous of all the Bohus sweaters entitled "Blue Shimmer." The dashes on the graph represent purl stitches. The value changes represent different color stitches. Pattern repeats vary in number up the graph but are not reflected in the graph. One must recognize the repeat in each pattern and work from there.

	Blue Shimmer / Bohus Knitting
Region	Bohuslän, Sweden
Date of Origination	1947
Yarn Gauge	9 stitches per 1 inch
Yarn Content	wool / angora
Yarn Color	soft blues, latte color, black, green blues
Knit in Round or Flat	knit in round from the neck down
Bottom Edge Design	knit 1 purl 1 rib
Underarm Gusset	none
Armhole Shaping	yoke shaping
Cuff Design	knit 1 purl 1 rib
Neck Opening Design	crew neck
Collar Design	knit 1 purl 1 round collar
Two-Color Patterning	Bohus patterning of color patters in knit and purl highlights
Stitch Patterning	knit and purl variations
Other	There are numerous variations of Bohus sweater designs from pullovers to cardigans, flat knit sweaters to those knit in the round. Yoke sweaters became very popular after master designer Anna-Lisa Mannheimer Lunn began experimenting with this design in 1947. Bohus Strickning produced sweaters from the 1930s to April 30 1969, and was owned and operated by Emma Jacobsson.

Table 11: Blue Shimmer / Bohus Knitting Characteristic Chart

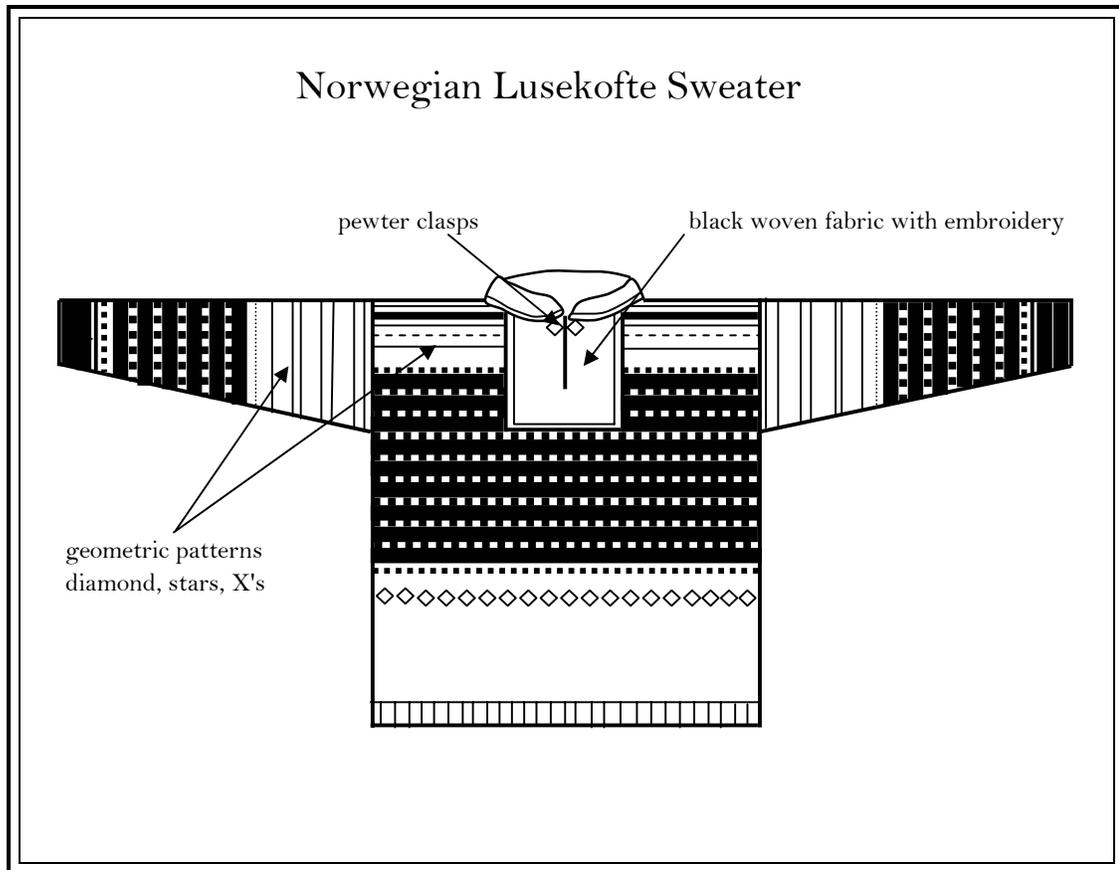


Figure 57: Norwegian Lusekofte Schematic

Construction Elements

- knit in the round beginning from the bottom edge
- often the bottom third of sweater was knit in white to preserve the dyed yarn
- small patterns to start / middle third of sweater knit in lice pattern / top third heavily patterned in larger repeats
- the armhole and neck openings are marked, reinforced and cut open
- the shoulders are grafted together
- the sleeve stitches are picked up and knit from the shoulder down
- woven / embroidered fabric added / pewter clasps sewn on

Cutting into Hand Knitting

It is much easier to knit complicated pattern work if the right side of the fabric is always facing you. If you are knitting a pullover and are using circular needles this process flows smoothly from the bottom edge and then up to the armholes, the tricky part is what to do next. How do you knit with the right side facing you *and* separate for the armholes? It has been discovered that the simplest way is to keep knitting straight up and when you reach the shoulders, cut the armhole openings in after.

Sometimes, depending on the design, you can continue up body of the sweater and figure the armhole depth afterwards. Other times, additional stitches are added to the armhole area to create an inside seam allowance for finishing the sweater. With the latter approach, you must be aware of the armhole depth to be able to calculate when to begin the armhole increases.

Generally, you would *never* cut into knitted fabric without first securing the cut edge so that the stitches will not unravel. This is done by establishing the cutting line and then machine sewing reinforcement lines on either side in very small stitches. This will lock the knit stitches in place and you are free to very carefully cut the armhole opening.

There are other benefits to working the body of the sweater in the round and cutting the armholes in after. One would be that it is easier to maintain a consistent gauge in your knitting. Another would be the flexibility of determining the armhole depth after the sleeves have been knit.

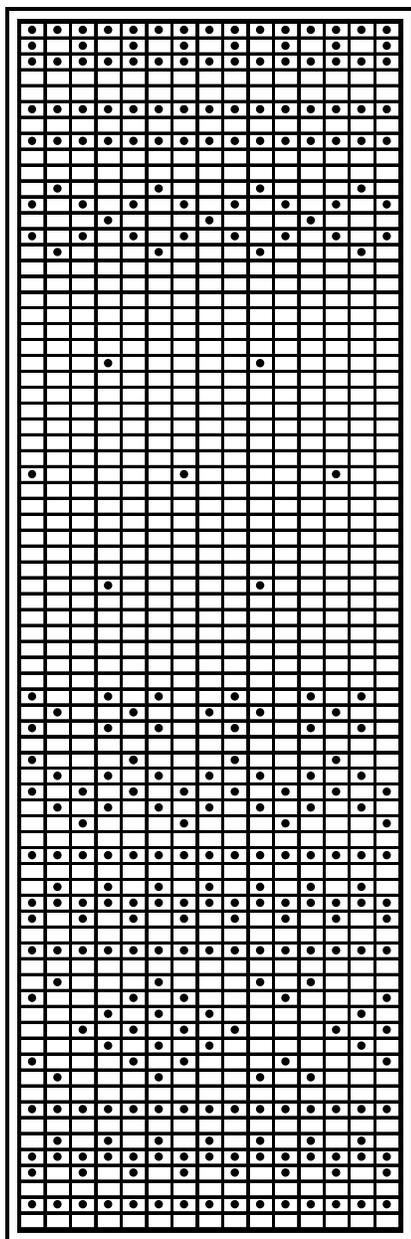


Figure 58: Lusekofta Knitting Graph

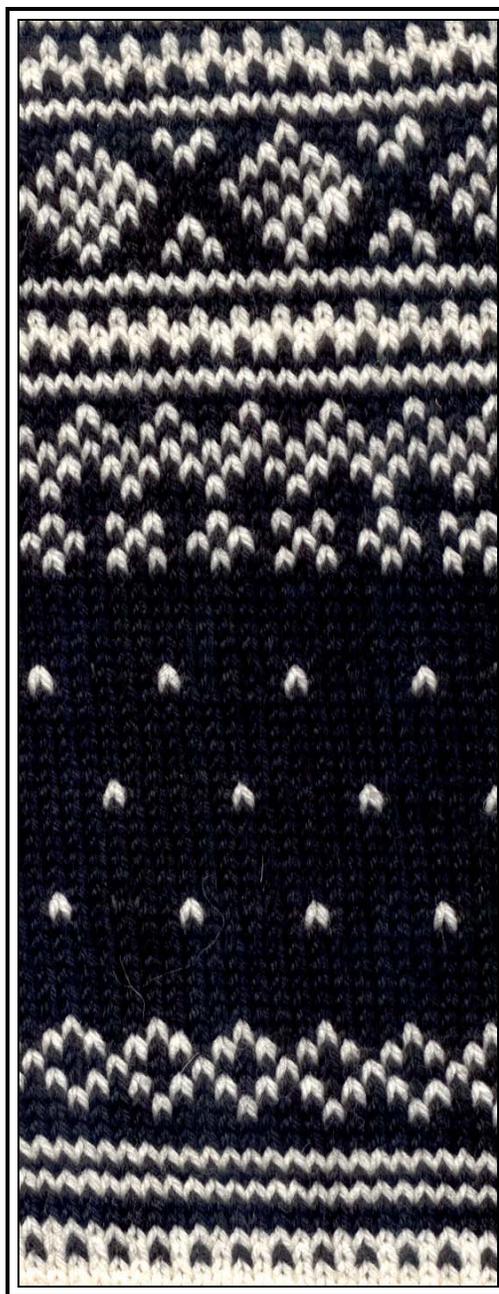


Figure 59: Lusekofta Knitting Sample

Above are examples of Lusekofta knitting patterns recreated from Sundbø's book: Lusekofta fra Setesdal (1998, pg 132).

	Lusekofte Sweater
Region	Setesdal, Norway
Date of Origination	1830s
Yarn Gauge	varies / 6-12 stitches per inch
Yarn Content	wool
Yarn Color	black and white
Knit in Round or Flat	knit in the round up to the shoulders
Bottom Edge Design	plain ribbing
Underarm Gusset	none
Armhole Shaping	straight
Cuff Design	sometimes rib / sometimes cloth embroidered
Neck Opening Design	round opening around neck, slit down center
Collar Design	cloth embroidered
Two-Color Patterning	numerous stitch patterns ranging from small geometric designs to wavy lines, diamonds, eight-pointed stars, X's. ect.
Stitch Patterning	plain stockinette with rib edge and cuffs
Other	Lusekofte Sweaters range from pullovers to cardigans. Generally there are areas that are covered with a black woven fabric that is embroidered in assorted yarn colors. The earlier sweaters had far less embroidery than the later ones. Closures are formed out of pewter. "Lusekofte" translates to "lice-jacket". Often lower third of sweater was plain white knitting to conserve on the black dyed wool.

Table 12: Lusekofte Sweater Characteristic Chart

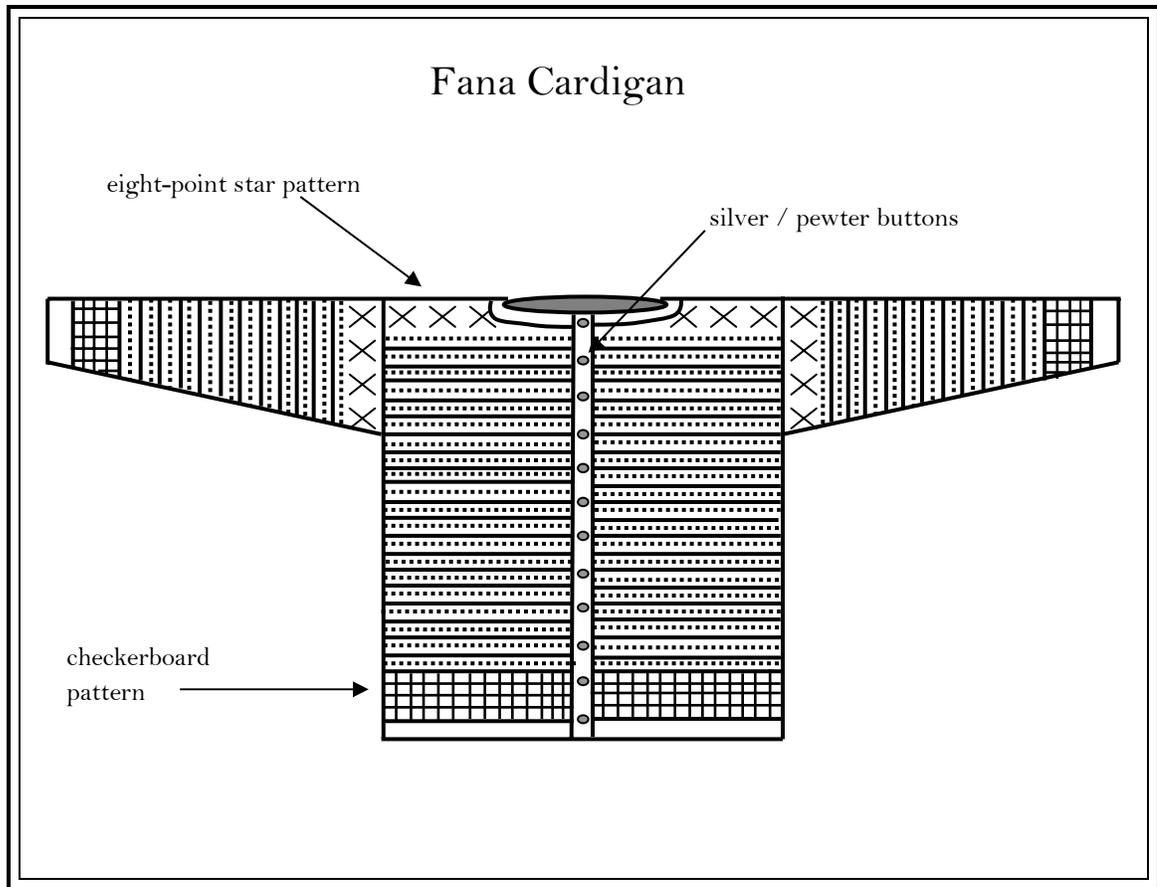


Figure 60: Fana Sweater Schematic

Construction Elements

- the Fana cardigan is knit in the round
- the bottom rib is generally a simple knit 1 purl 1 rib
- checkerboard patterns are typically above the bottom rib and the cuffs
- main body and sleeved knit in stripes with dots in the contrasting color
- the shoulders and upper sleeve would have a eight-point star pattern
- buttons were pewter or silver

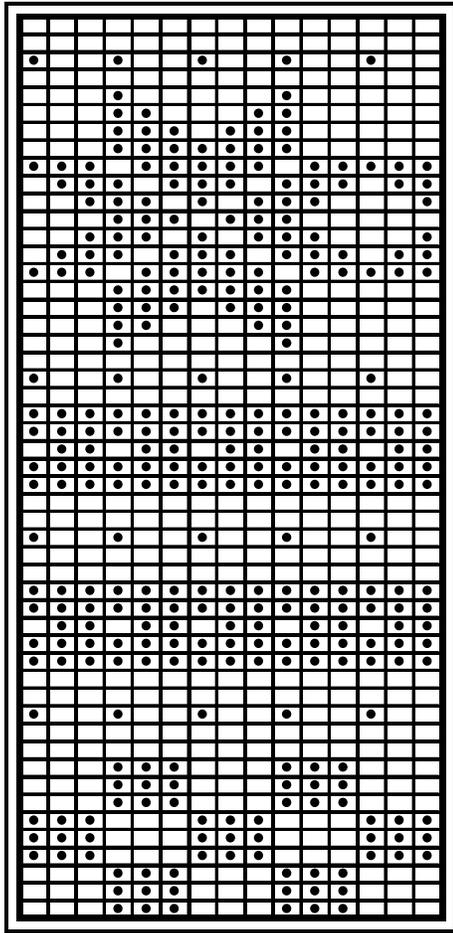


Figure 61: Fana Knitting Graph



Figure 62: Fana Knitting Sample

Above are examples of Fana knitting patterns recreated from Lind's book: Knitting in the Nordic Tradition (1997, pg 45). The eight-pointed star has become one of the most recognizable patterns used in textiles. It has strong associations with Norwegian knitting but it was in use well before knitting came to Norway. It was being knit in 13th century Spain and in Damask patterns as well (Pagoldh, 1987).

	Fana Sweater
Region	Fana, Norway
Date of Origination	1870s (or just before)
Yarn Gauge	varies / 6-12 stitches per inch
Yarn Content	wool
Yarn Color	black and white or brown and white
Knit in Round or Flat	knit in the round up to the shoulders
Bottom Edge Design	plain ribbing
Underarm Gusset	none
Armhole Shaping	straight
Cuff Design	ribbing
Neck Opening Design	crew neck
Collar Design	ribbing
Two-Color Patterning	checkerboard trim, dotted lines that shift contrasting colors, eight-pointed stars
Stitch Patterning	plain stockinette with rib edge and cuffs
Other	Fana sweaters began as pullovers somewhere around 1870 but shifted to cardigans around 1900s. Originally worn under garments, it evolved into an outer garment and went on to being part of the traditional men's costume in Norway. This sweater was considered a symbol of patriotism during WWII. Buttons were silver and occasionally old coins were used. Colors shifted to include blue and red.

Table 13: Fana Sweater Characteristic Chart

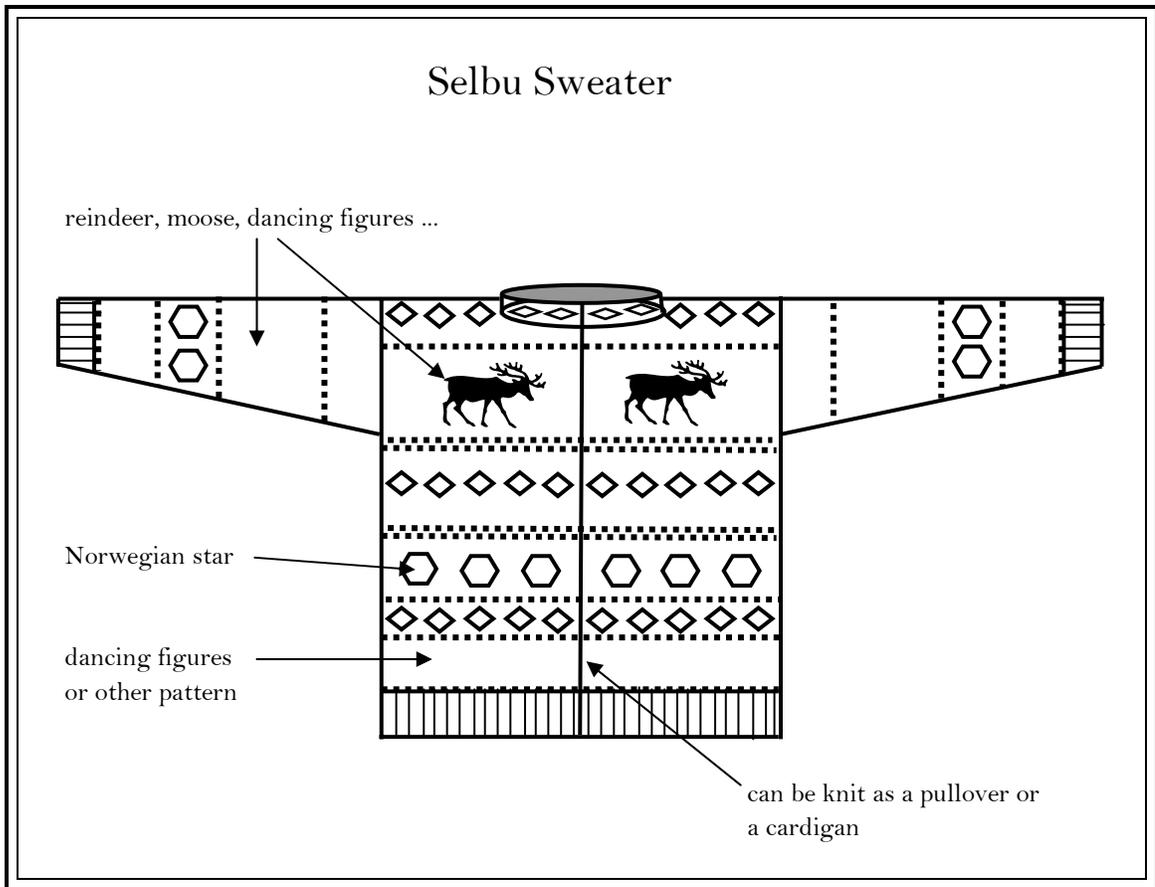


Figure 63: Selbu Sweater Schematic

Construction Elements

- knit in the round with a simple rib pattern
- sleeves and cardigan opening cut in
- can also be knit as a pullover
- most noteworthy design element being the bold patterning with varying motifs
- patterned collar knit in stockinette stitch and folded over to create a lining

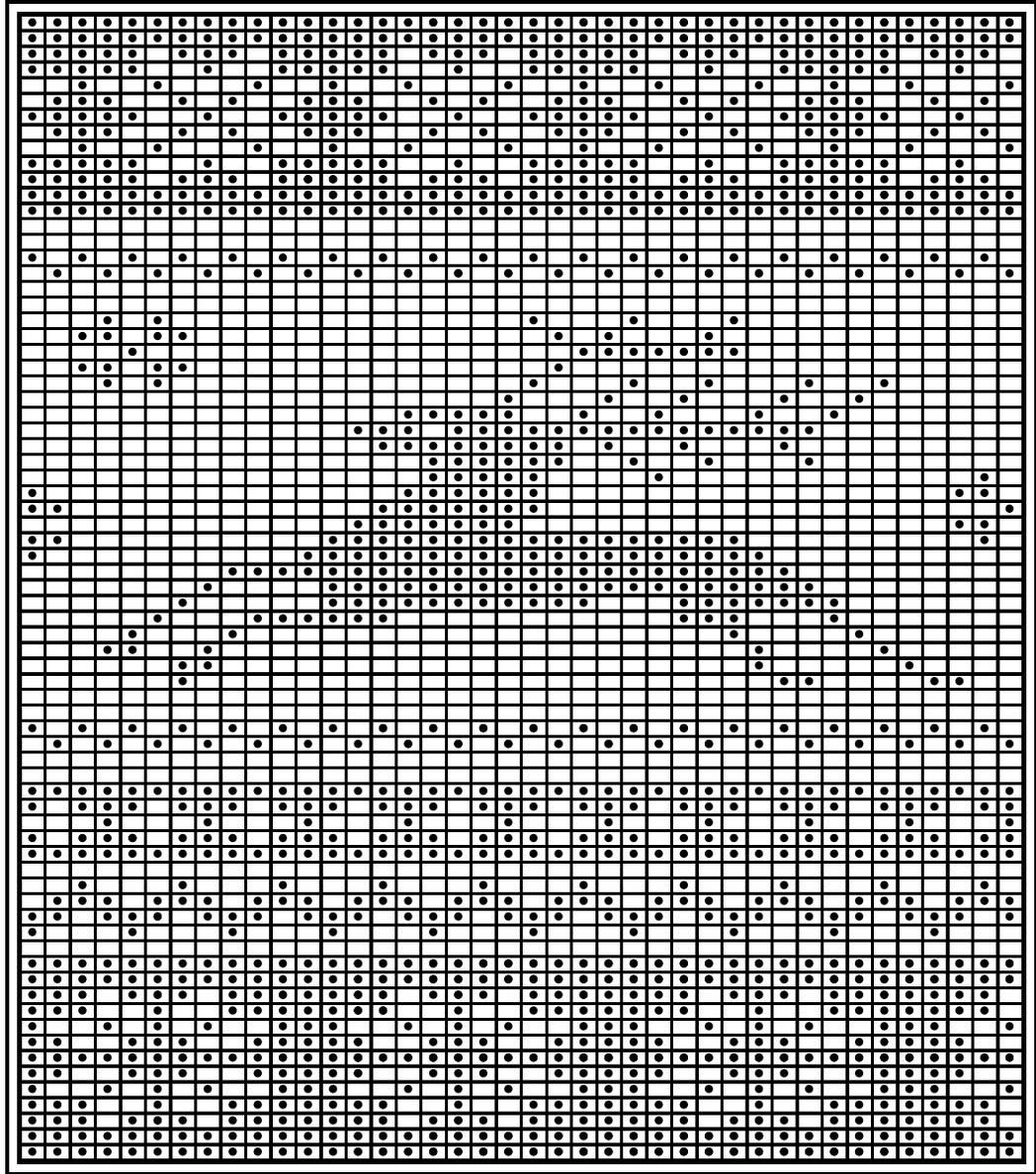


Figure 64: Selbu Knitting Graph

The above graph shows examples of Selbu knitting patterns recreated from Pagoldh's book: Nordic Knitting (1987, pgs 53 and 95). Selbu knitting incorporated patterns from many different sources but perhaps most common would be the reindeer, moose, dancing figures, and Selbu eight-pointed star designs. The following page is the above graph translated into knitting.



Figure 65: Selbu Knitting Sample

	Selbu Sweater
Region	Selbu, Norway
Date of Origination	1850s
Yarn Gauge	varies / 6-10 stitches per inch
Yarn Content	wool
Yarn Color	black and white or brown and white
Knit in Round or Flat	knit in the round up to the shoulders
Bottom Edge Design	plain ribbing
Underarm Gusset	none
Armhole Shaping	straight
Cuff Design	ribbing
Neck Opening Design	crew neck
Collar Design	varies
Two-Color Patterning	numerous bold patterns of animals, dancing figures, Selbu stars, geometric patterns
Stitch Patterning	plain stockinette with rib edge and cuffs
Other	The mother of Selbu knitting Marit Emstad is thought to be the first in Norway to try two colors of yarns in her knitting. She developed the eight-pointed star and it became known as the Selbu star or the Norwegian star. Emstd collected patterns from a myriad of sources (weaving, books, woodcarvings...) and incorporated them into her knitting. She encouraged all around her to knit.

Table 14: Selbu Knitting Characteristic Chart

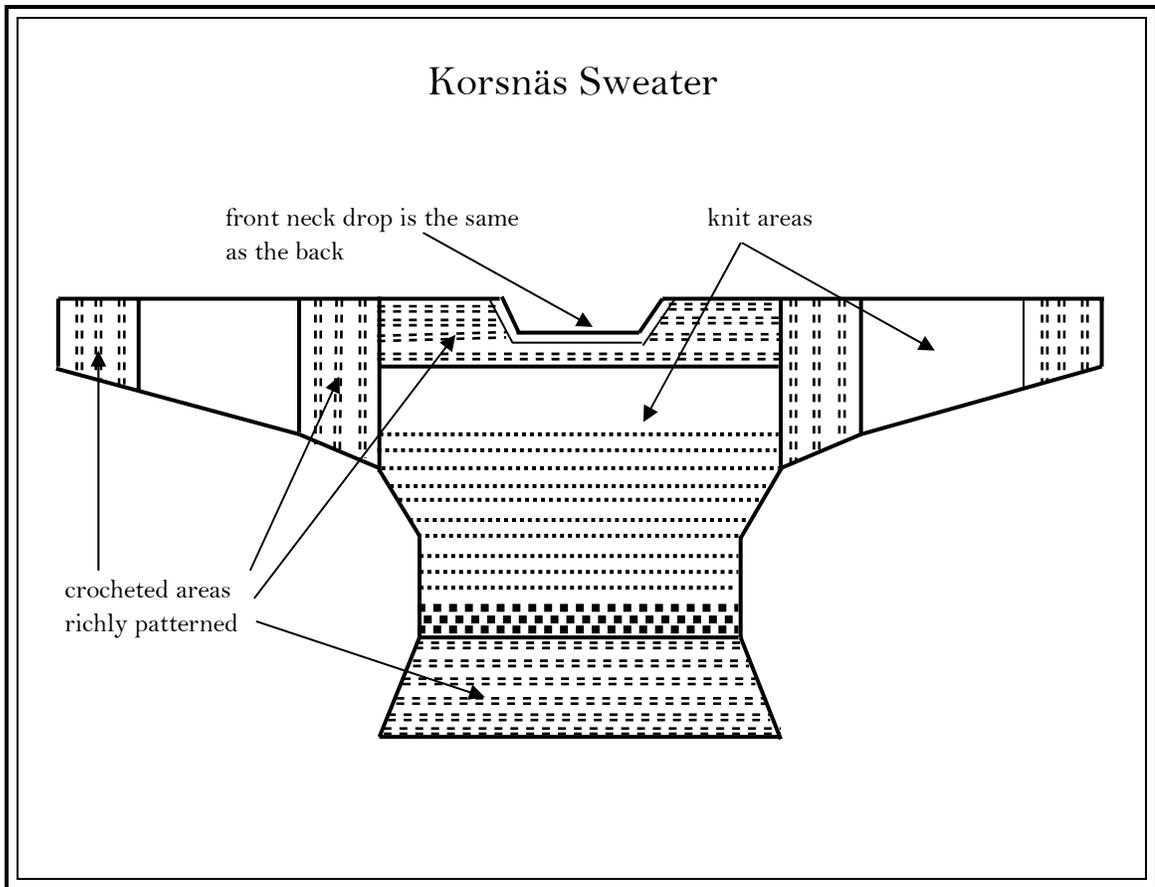


Figure 66: Korsnäs Sweater Schematic

Construction Elements

- the sweater is begun at the bottom edge / single crocheted in the round
- stitches are picked up and knit in pattern up to the waist of the sweater
- the center of the main body is knit in red and green or blue flecks on a white
- more complicated patterns are knit and the top of the sweater / shoulders in crochet
- the armholes are either cut in or worked back and forth
- the sleeves are worked from the top down, crochet, then knit, and then crochet
- the neck shaping is the same for the front and back

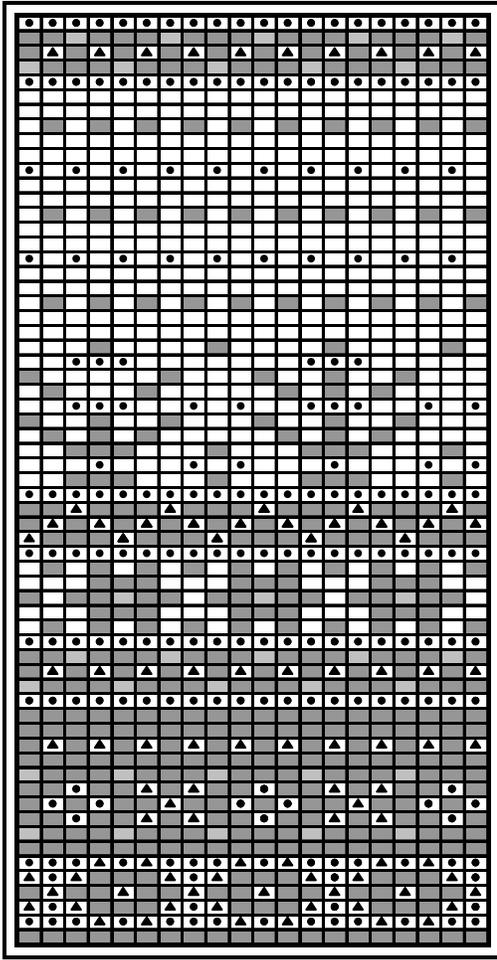


Figure 67: Korskäs Knitting/Crocheting Graph



Figure 68: Korskäs Knitting/Crocheting Sample

Above are examples of Korskäs knitting patterns recreated from Pagoldh's book: *Nordic Knitting* (1987, pgs 96 and 97). The lower 15 rows are worked in single crochet. Stitches are then picked up and the remaining rows are knit. The transition between crochet and knit is hidden by the use of color patterning continuing in mainly red and then slowly shifting to white. When knitting a sweater the shoulders would return to crochet. The shoulder seams would be crocheted together.

	Korsnäs Sweater
Region	Korsnäs, Finland
Date of Origination	1850s
Yarn Gauge	varies
Yarn Content	wool and cotton
Yarn Color	red, white, pink, yellow, olive green
Knit in Round or Flat	worked in the round throughout or back and forth after the armholes
Bottom Edge Design	crocheted wide bottom band
Underarm Gusset	none
Armhole Shaping	straight
Cuff Design	crocheted wide band
Neck Opening Design	squared off scoop neck, front is shaped the same as the back
Collar Design	collar band around neck opening
Two-Color Patterning	rows incorporate 1-3 colors in each row, heavily patterned in lively colors
Stitch Patterning	single crochet worked in the back loops and 1-3 colors per row plain knit color patterns
Other	The Korsnäs sweater uses both knit and crochet. The crochet areas are form fitting and not as elastic as the knit areas. The neck opening is shaped the same for the back and the front so that the sweaters can be worn either way to increase the time before the sweater would wear out. Most of these sweaters were made by women for men, usually as engagement gifts. Rich colors stem from parish dyer who studied in St. Petersburg.

Table 15: Korsnäs Knitting Characteristics Chart

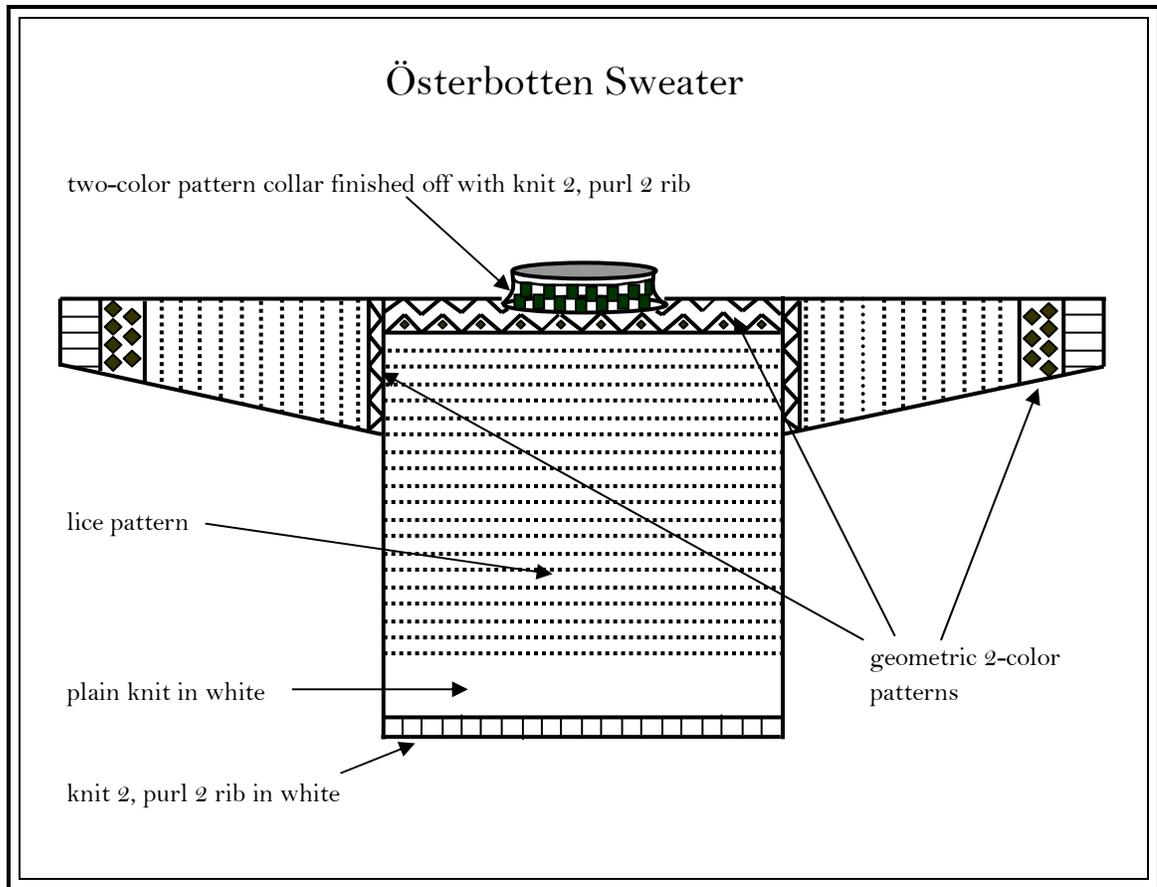


Figure 69: Österbotten Sweater Schematic

Construction Elements

- the sweater is knit in the round beginning at the bottom rib
- the bottom is knit in white
- the shoulders are grafted together
- the sleeves are knit from the cuff up and sewn into the armhole openings
- the sweater this schematic was derived from had a button band across the left shoulder
- the sweater example was knit in white and dark brown wool throughout except for the top of the collar checkerboard which was knit in black and white

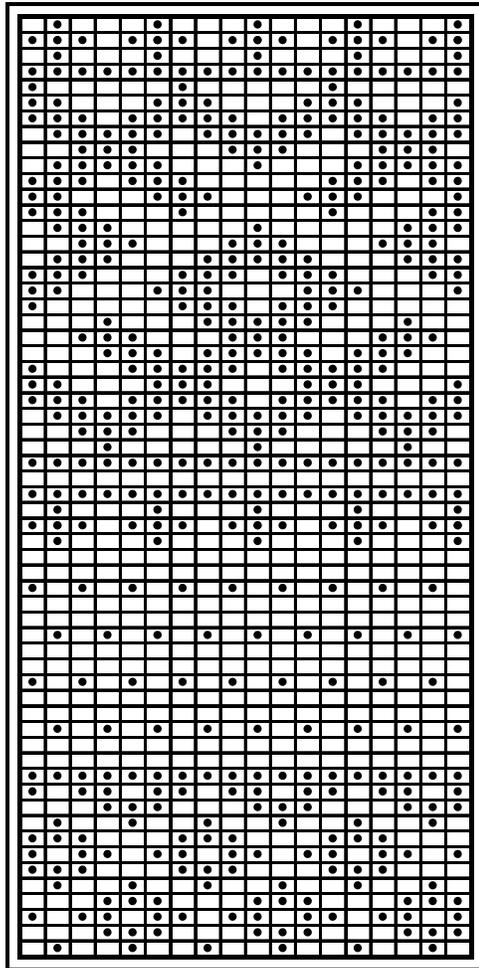


Figure 70: Österbotten Knitting Graph

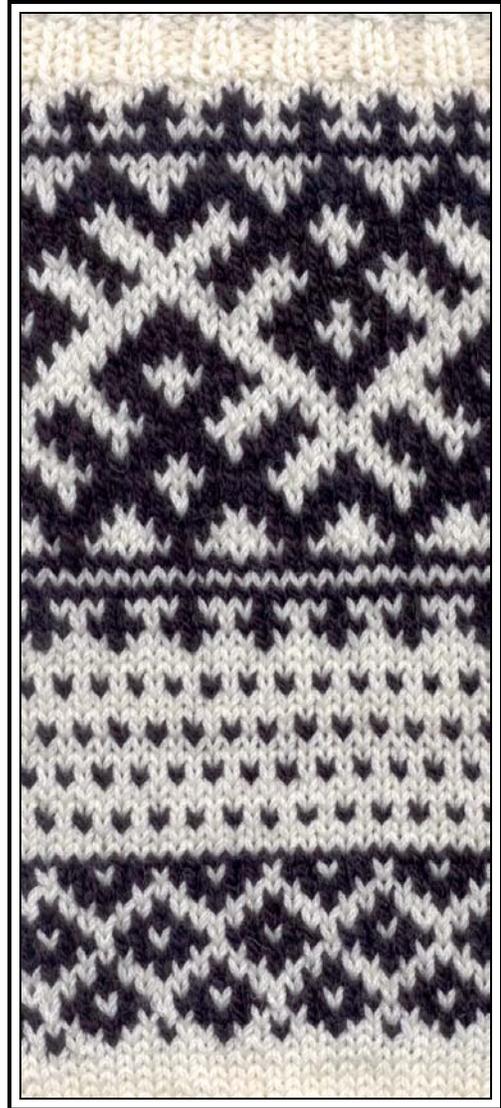


Figure 71: Österbotten Knitting Sample

Above are examples of Österbotten knitting patterns recreated from Pagoldh's book: Nordic Knitting (1987, pg 87) and from Compton's book: The Complete Book of Traditional Knitting (1983, pgs 146 -147).

	Österbotten Sweater
Region	Östrobotten, Finland
Date of Origination	1800s
Yarn Gauge	unknown
Yarn Content	wool or cotton
Yarn Color	white with contrasting black, blue, brown or red
Knit in Round or Flat	knit in the round and cut in armholes
Bottom Edge Design	plain rib
Underarm Gusset	none
Armhole Shaping	straight
Cuff Design	plain rib
Neck Opening Design	crew neck
Collar Design	two-colored patterning with small amount of rib
Two-Color Patterning	lice pattern on main body of sweater and sleeves, crisp, eastern influence of patterning on shoulders, top and bottom of sleeves
Stitch Patterning	plain knit
Other	The Österbotten sweater is similar to the lice patterned sweaters of Norway, however the background is white instead of black. Other differences would be the patterning above the cuffs goes up farther on the arm of the Österbotten sweater and the pattern selections are more of an eastern influence of bold, sharp edged geometric patterns. The sweaters are knit in either cotton or wool, cotton being reserved for special occasions.

Table 16: Österbotten Sweater Characteristic Chart

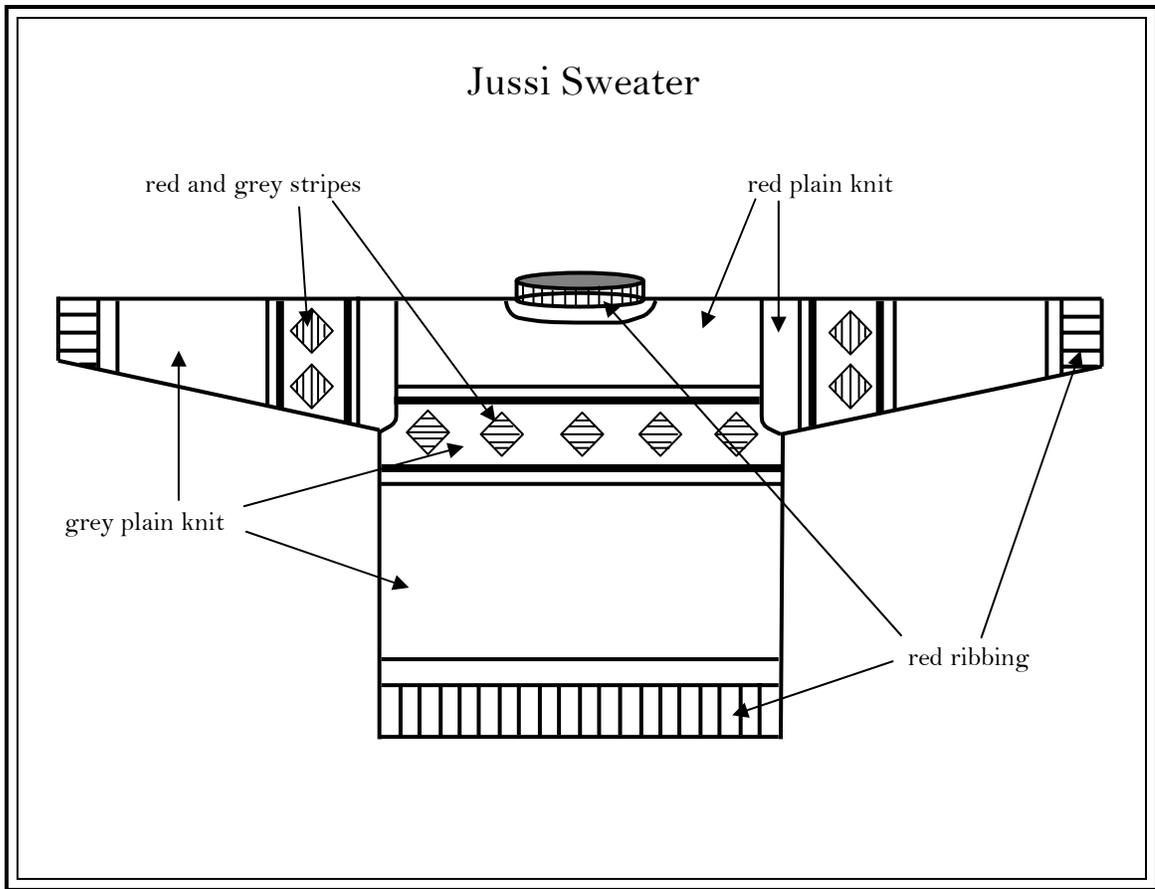


Figure 72: Jussi Sweater Schematic

Construction Elements

- this was likely designed as a machine knit sweater made in flat pieces
- no construction details were available
- bottom rib generally in dark red
- mid-sweater knit in grey with a thin red stripe at the bottom
- red stripes at the chest with diamonds in solid red or red / grey stripes
- main color shifts to dark red at the yoke with grey stripe

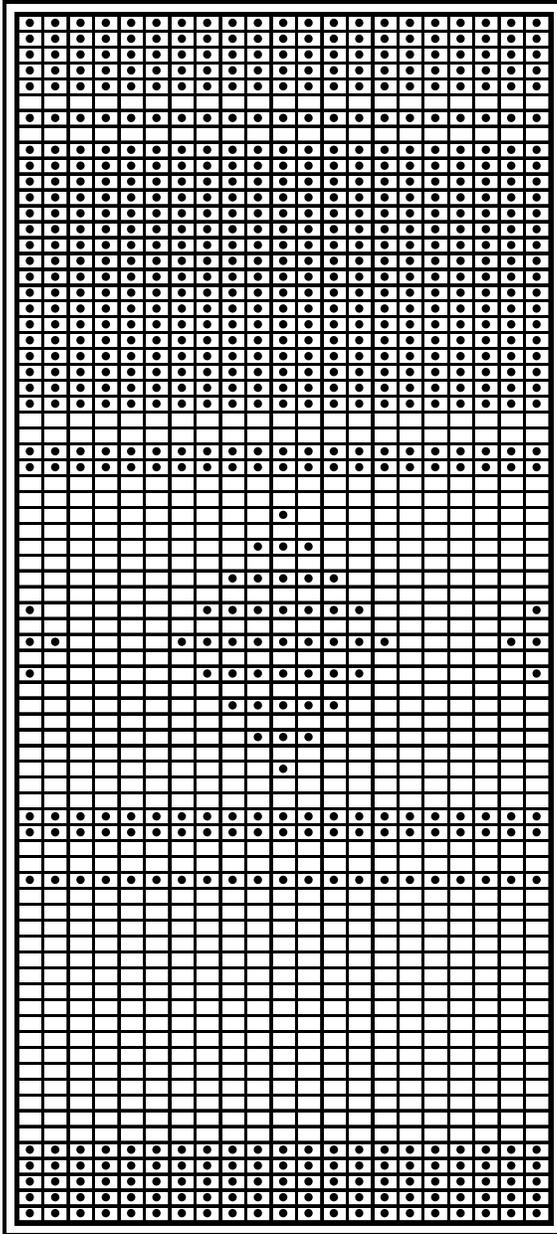


Figure 73: Jussi Knitting Graph

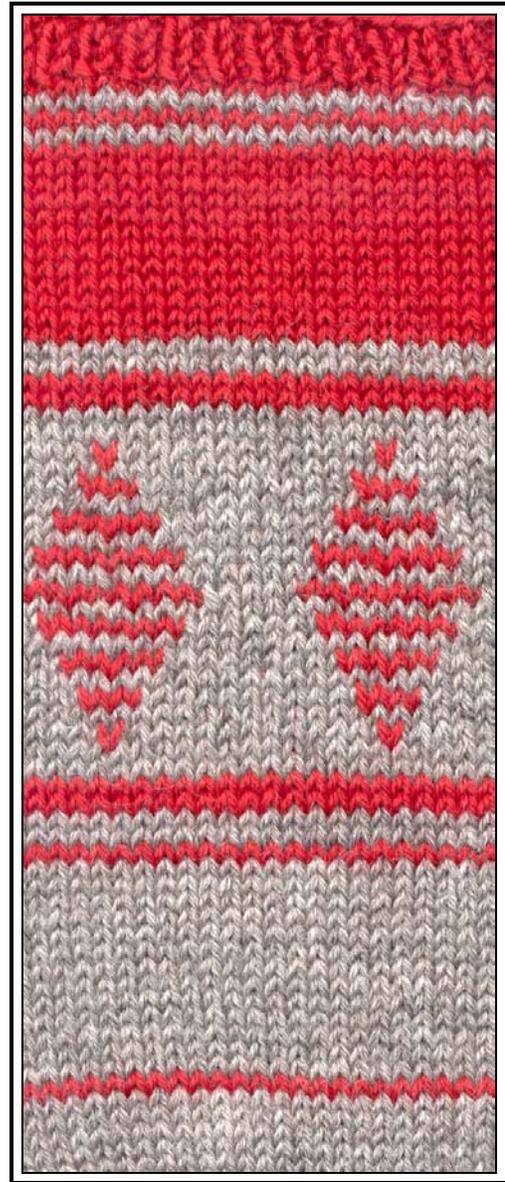


Figure 74: Jussi Knitting Sample

Above are examples of Jussi knitting patterns recreated from Luutonen's thesis: Rustic Product as a Conveyor of Meaning: A Study of Finnish Pullovers (1997, pg 124). The diamond pattern above is sometimes knit in stripes, or sometimes knit in solid red diamonds.

	Jussi Sweater
Region	Östrobotten, Finland
Date of Origination	1920s
Yarn Gauge	unknown
Yarn Content	wool
Yarn Color	grey and red
Knit in Round or Flat	probably knit in flat pieces
Bottom Edge Design	plain rib
Underarm Gusset	none
Armhole Shaping	curved
Cuff Design	red ribbing
Neck Opening Design	crew neck
Collar Design	red ribbing
Two-Color Patterning	grey and red striped diamonds across chest and upper sleeve
Stitch Patterning	plain knit
Other	<p>The Jussi sweater is simple in design but rich with the emotional sense of all that is Finnish. It was probably designed to be a machine knit sweater. Over time it evolved to be a highly recognizable pattern in Finland and eventually even printed on t-shirts. It was worn in the theater in famous Finnish play: The Ostrobothnians. It is associated with notions of self-reliance. Knit in only two colors, grey and red.</p>

Table 17: Jussi Sweater Characteristic Chart

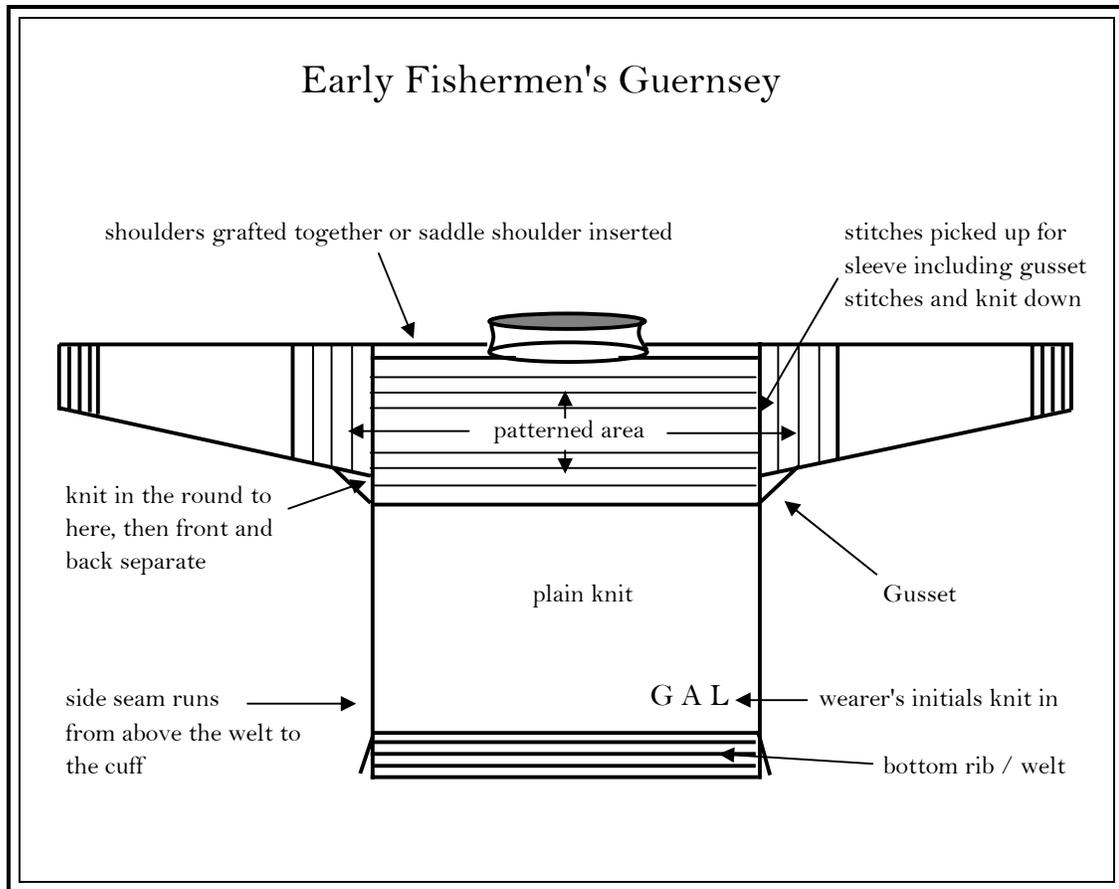


Figure 75: Fishermen's Guernsey Schematic

Construction Elements

- bottom welt worked separate or worked in the round
- sweater knit in round in plain knit until the underarm (initials optional)
- seam stitches at sides of sweater that extend down to cuffs
- definition ridge at the beginning of the yoke / sweater knit back and forth separately until shoulders / shoulders grafted / optional saddle shoulder
- knit stitch patterns worked across yoke
- stitches picked up around the armhole opening (including the gusset stitches) and sleeve worked down to cuff / pattern at top of sleeve
- collar stitches picked up and knit

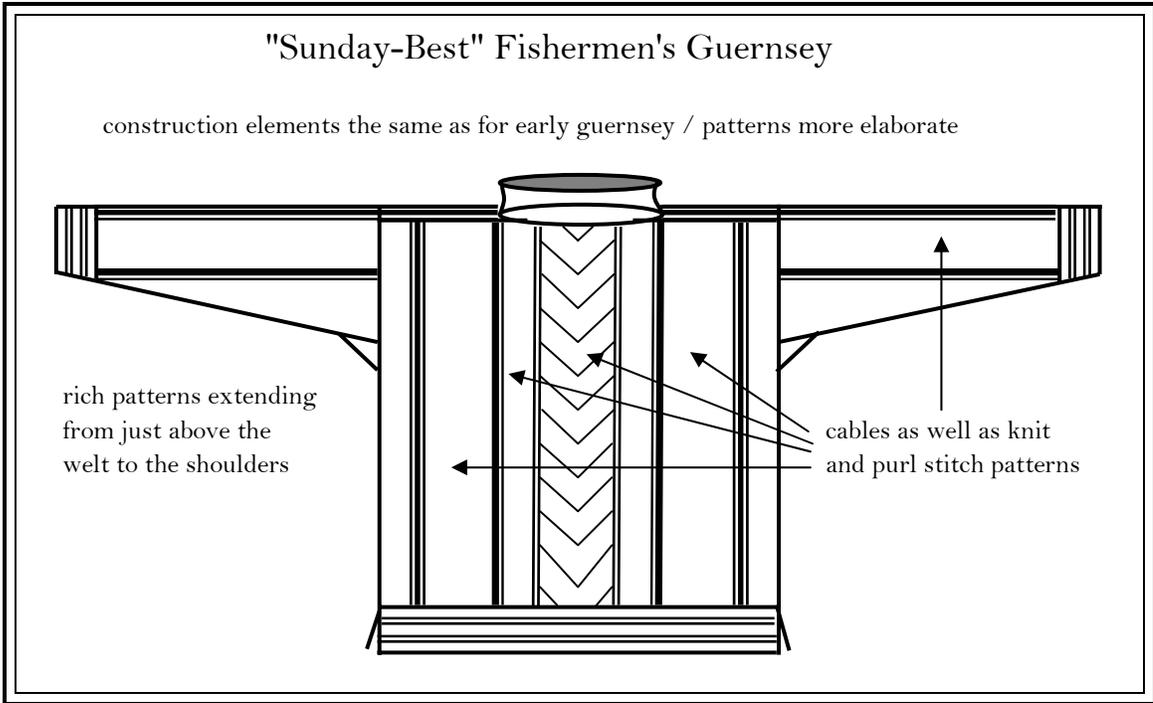


Figure 76: "Sunday Best" Guernsey Schematic

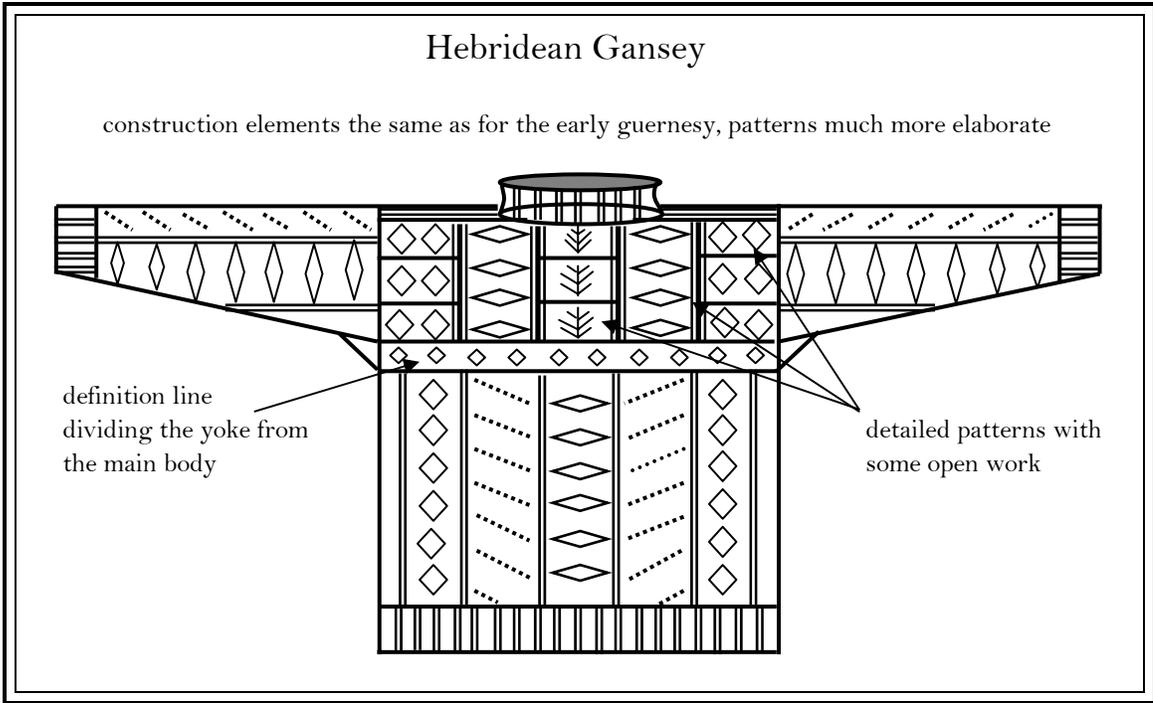


Figure 77: Hebridean Guernsey Schematic

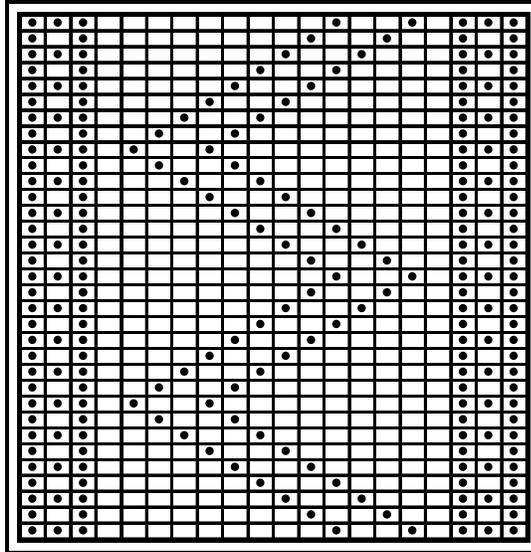


Figure 78: "Marriage Lines"

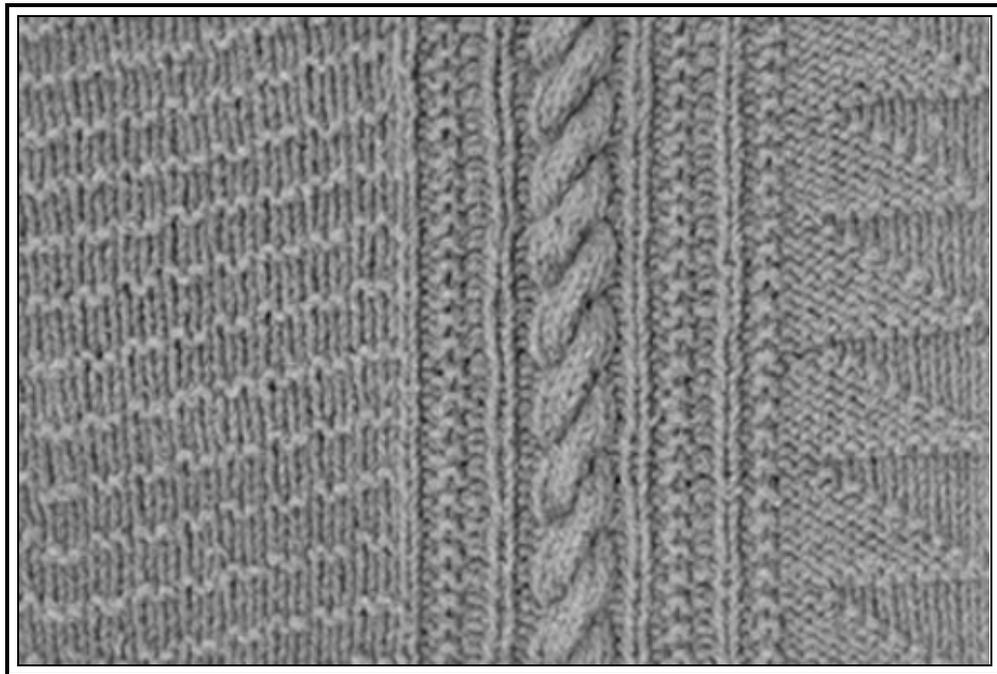


Figure 79: Fishermen's Guernsey Knitting Sample

There are numerous patterns relating to fishermen's guernsey knitting. Figure 78 is a knitting graph of a common pattern called "Marriage Lines" found in Compton (1983, pg 58). Figure 79 is a sample of fishermen's guernsey knitting.

	Fishermen's Guernseys
Region	originated on Channel Islands, Great Britain
Date of Origination	1800s
Yarn Gauge	7 - 9 stitches per inch
Yarn Content	5-ply wool
Yarn Color	navy blue
Knit in Round or Flat	knit in the round to undearms, then separate to shoulders
Bottom Edge Design	bottom welt sometimes knit separate front and back for slit edge
Underarm Gusset	yes
Armhole Shaping	gusset underarm with straight up shaping
Cuff Design	ribbed cuff
Neck Opening Design	rounded neck opening
Collar Design	ribbed collar, sometimes with buttonholes
Two-Color Patterning	none
Stitch Patterning	numerous knit and purl patterns along with cable and later some open work in the Hebridean designs
Other	<p>Hard wearing garments for fishermen, designed to keep out harsh elements. Made of "seamen's iron" a tightly twisted 5-ply wool. Designed so that sweater is knit together without sewing. Gussets for ease of movement. Designs vary from simpler early versions with yoke only patterns to later designs "Sunday-best" with patterns extending from bottom rib to shoulders. Usually knit in dark blue. Patterns could originally identify seamen to a village, later they blended together. Symbolism given to patterns. Initials often knit into sweater.</p>

Table 18: Fishermen's Guernsey Characteristics Chart

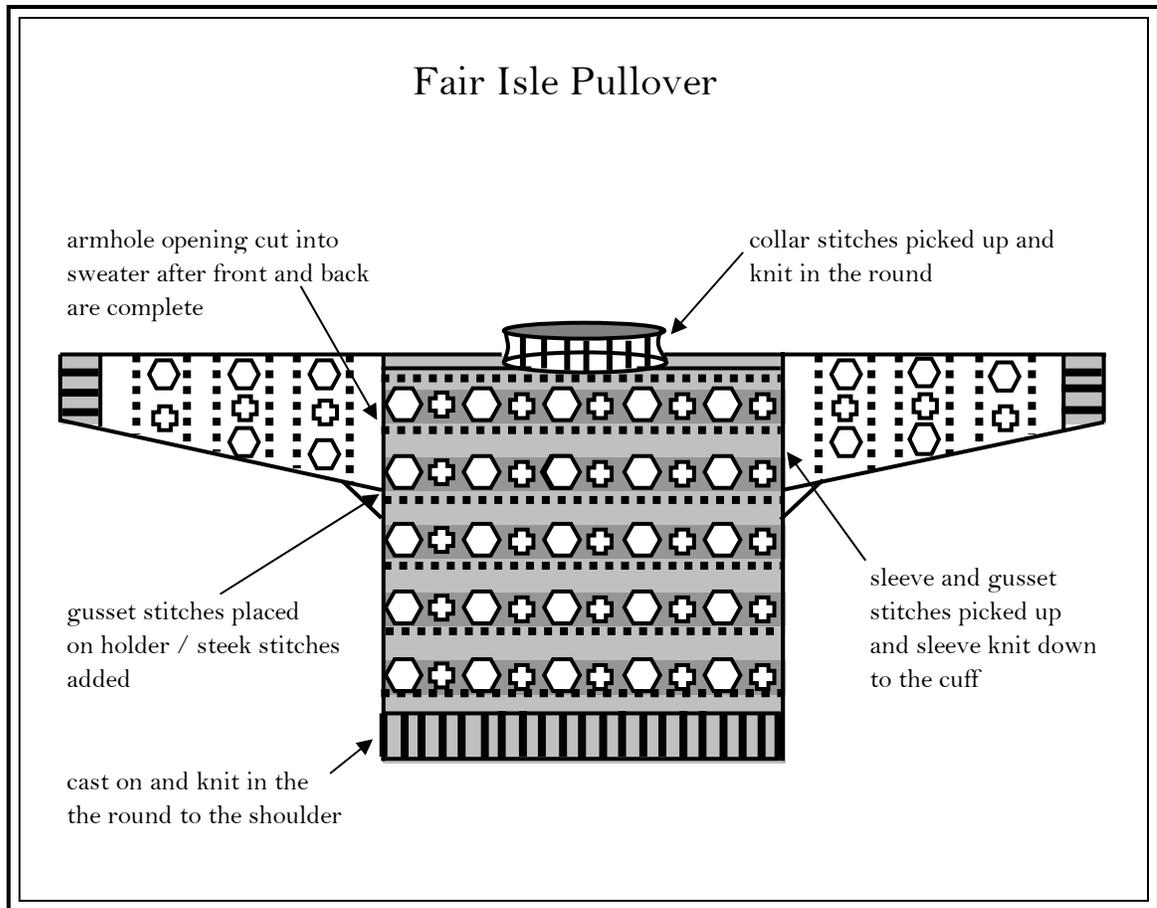


Figure 80: Fair Isle Knitting Schematic

Construction Elements

- cast on at bottom edge in rib (sometimes corrugated rib: knit 2 color A, purl 2 color B)
- sweater knit in round in plain knit with two-color pattern work until the gusset (gusset is optional)
- gusset stitches placed on a holder and approximately 10 stitches added to each armhole area for cutting line (steek)
- shoulders grafted together
- stitches picked up around the armhole opening (including the gusset stitches) and sleeve worked down to cuff in two-color patterns
- stitches picked up around neckline and collar knit in the round in rib

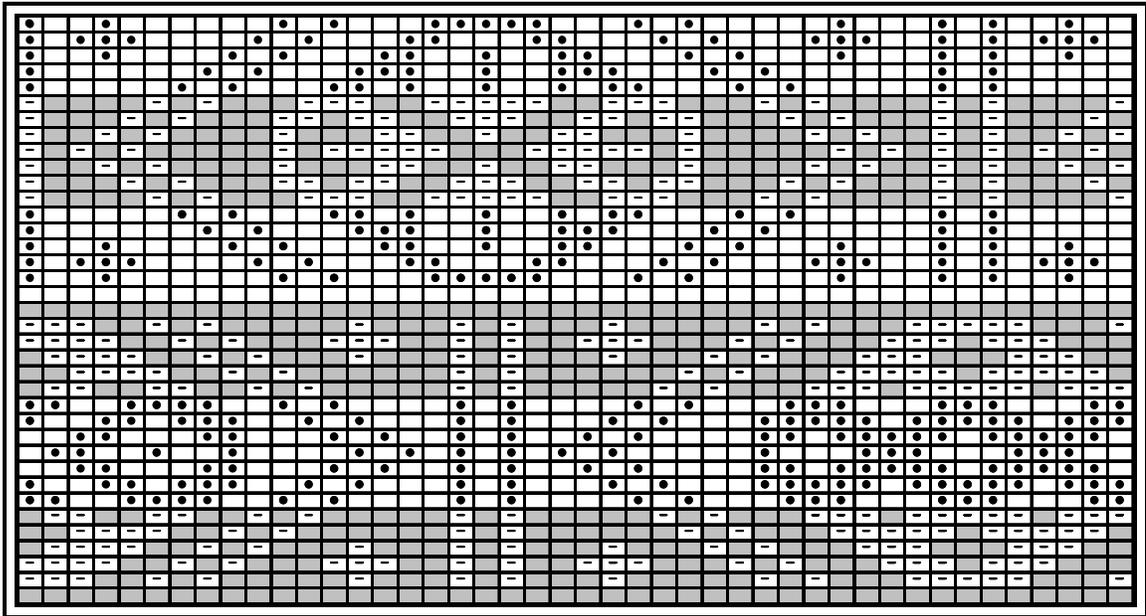


Figure 81: Fair Isle Knitting Graph (detail of top left corner of knitting)



Figure 82: Fair Isle Knitting Sample

	Fair Isle Pullover
Region	Fair Isle in the Shetland Islands, Scotland
Date of Origination	late 1850s
Yarn Gauge	8-10 stitches per inch
Yarn Content	shetland wool
Yarn Color	deep red, indigo, gold and white in early sweaters natural colors and a range of dyed colors later
Knit in Round or Flat	knit in the round
Bottom Edge Design	example: corrugated rib (knit 2 in color A, purl 2 in color B)
Underarm Gusset	optional
Armhole Shaping	straight
Cuff Design	ribbed
Neck Opening Design	crew neck
Collar Design	ribbed
Two-Color Patterning	a myriad of patterns ranging from peerie patterns to larger "OXO" patterns. Only two colors used in and given round.
Stitch Patterning	none
Other	Fair Isle sweaters are finely knit and intricately patterned sweaters based on the guernsey style construction techniques. The yarn used is fine wool that is produced on the Shetland Islands. The patterns appear very complex, but when broken down into repeats they are skillfully combined color shifts and designs that heighten the interplay of pattern and color. The patterns generally work in bands around the sweater.

Table 19: Fair Isle Pullover Characteristics Chart

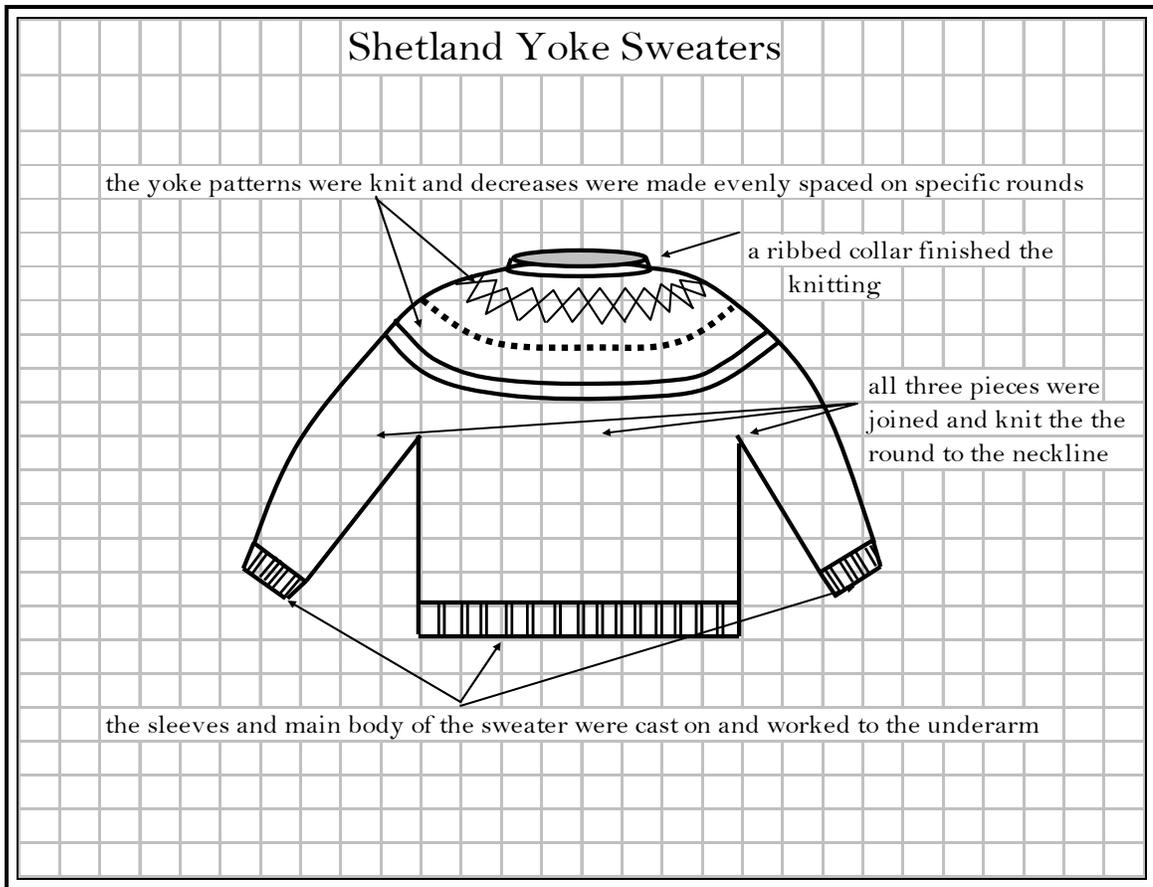


Figure 83: Shetland Yoke Sweater Schematic

Construction Elements

- cast on at bottom edge of sweater, rib knit lower edge and stockinette knit up to the yoke
- cast on and knit sleeves like main body
- place all three pieces onto one circular needle
- knit yoke in two-color patterns up to the collar spacing decreases evenly around on given rounds
- collar knit in the round in rib
- stitch up the underarm seam

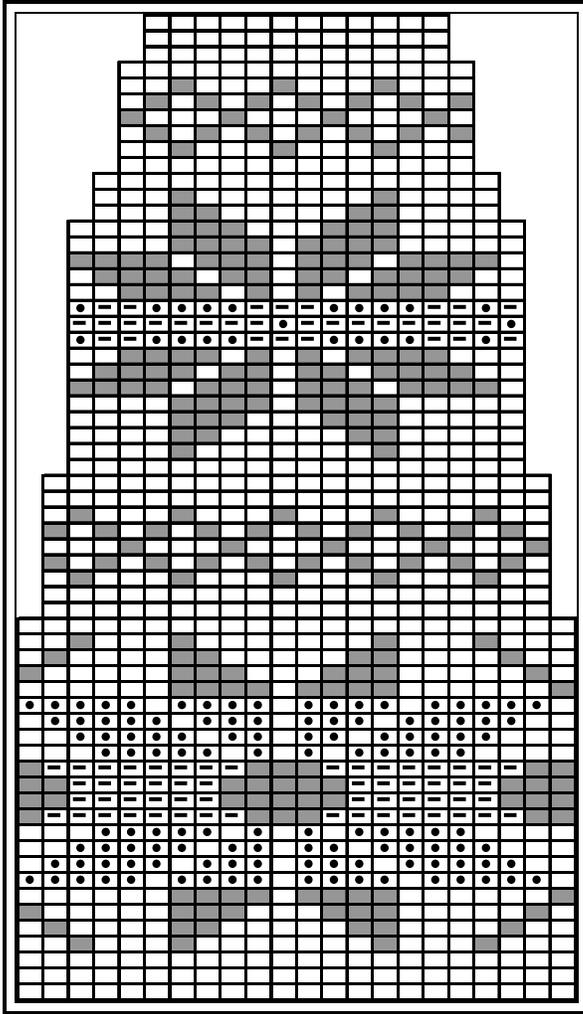


Figure 84: Shetland Yoke Knitting Graph



Figure 85: Shetland Yoke Knitting Sample

Above are examples of Shetland Island Yoke sweater knitting patterns recreated from Lind's book: Knitting in the Nordic Tradition (1997, pg 63). The decreases in the pattern are made evenly spaced around the yoke of the sweater so that the yoke slopes evenly narrower to the neck opening. In the Shetland yoke sweater there is a combination of Scandinavian and Fair Isle patterning in the design.

	Shetland Yoke Sweater
Region	Shetland Islands, Scotland
Date of Origination	mid-1900s
Yarn Gauge	8-10 stitches per inch
Yarn Content	shetland wool
Yarn Color	colors vary / island heathers and naturals
Knit in Round or Flat	knit in the round
Bottom Edge Design	ribbing
Underarm Gusset	none
Armhole Shaping	yoke shaping
Cuff Design	ribbed
Neck Opening Design	crew neck
Collar Design	ribbed
Two-Color Patterning	numerous patterns ranging to small peerie patterns to eight-pointed star
Stitch Patterning	stockinette
Other	The Shetland Island Yoke sweater was developed as an answer to meeting the needs of "hand knit" sweater production on the Shetland Islands while at the same time staying competitive in a fluctuating market. The sweaters were being machine knit up to the yoke and then hand knit from the yoke to the collar. Patterns were Scandinavian in flavor with small Fair Isle patterns blended in.

Table 20: Shetland Yoke Sweater Characteristics Chart

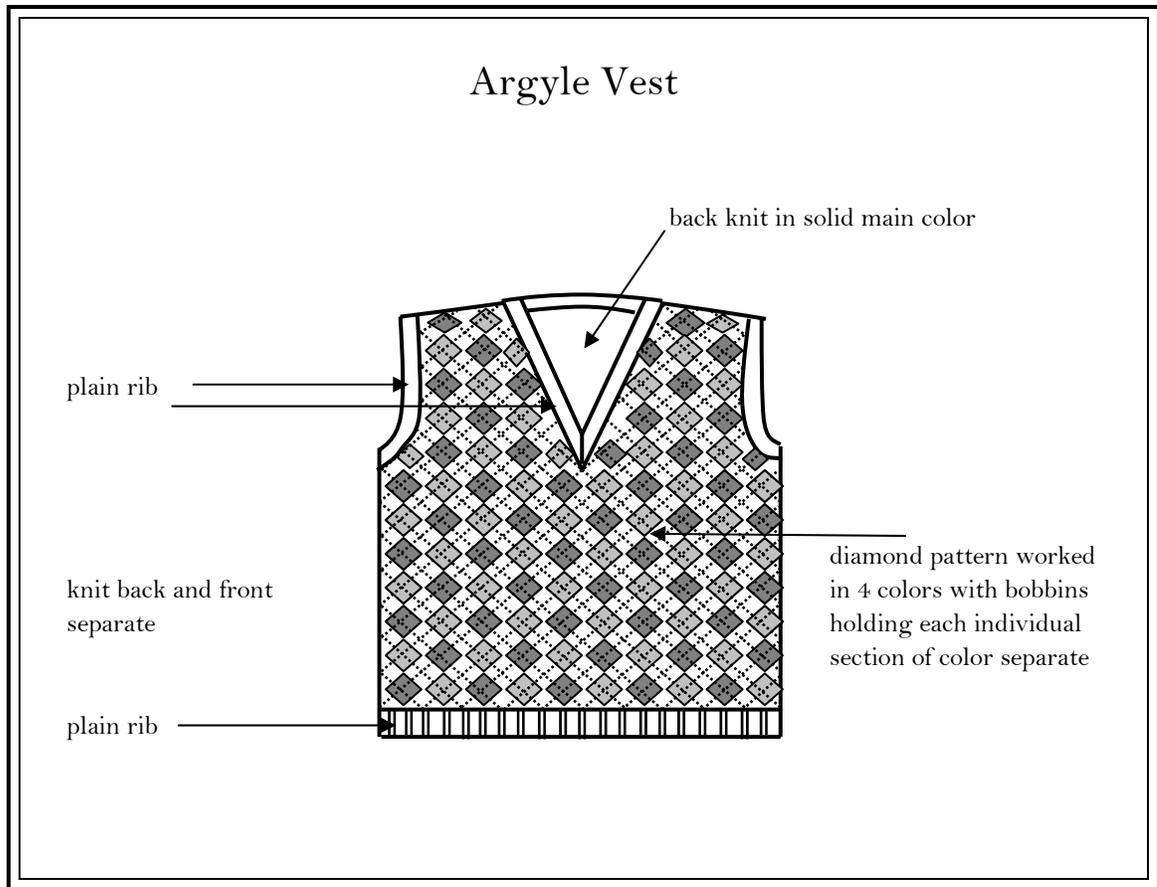


Figure 86: Argyle Sweater Vest Schematic

Construction Elements

- cast on at bottom edge of sweater front, rib-knit lower edge
- knit the argyle diamond pattern over the front / the individual color sections must each be given its own separate bobbin of yarn / when a new color is used it the brought under the color before it to lock the stitches and eliminate holes
- shape armholes / at the point of the v-neck opening, work the left and right front separate
- shoulders are slightly sloped / work back in solid color / sew pieces together
- rib knit armholes and V-neck opening

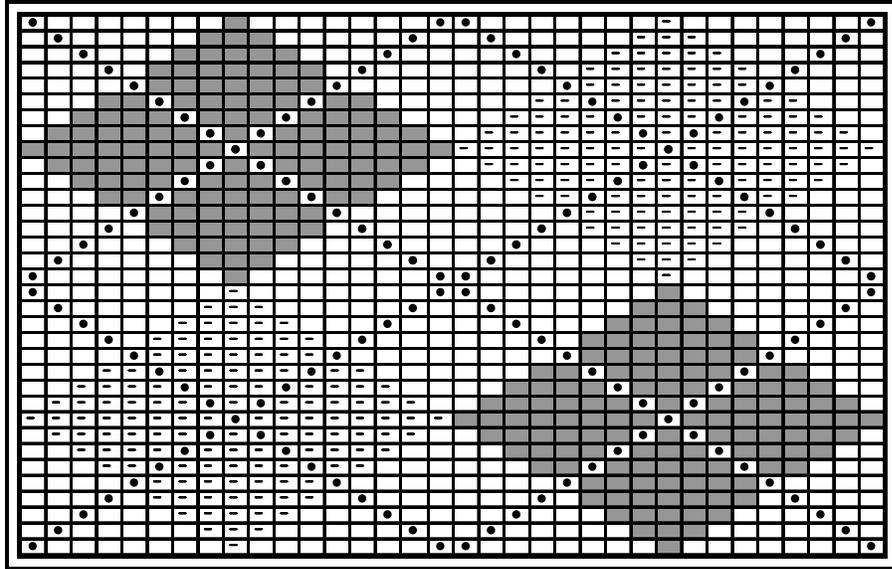


Figure 87: Argyle Knitting Graph



Figure 88: Argyle Knitting Sample

Above is an example of an Argyle knitting pattern recreated from Compton's book: The Complete Book of Traditional Knitting (1983, pg 54). The pattern is generally worked in 4 different colors.

	Argyle Sweater Vest
Region	Scotland
Date of Origination	1900s
Yarn Gauge	8-12 stitches per inch
Yarn Content	wool
Yarn Color	varies
Knit in Round or Flat	worked flat
Bottom Edge Design	rib
Underarm Gusset	none
Armhole Shaping	shaped armhole
Cuff Design	none
Neck Opening Design	v-neck in rib
Collar Design	none
Two-Color Patterning	knit in diamond patterns using 4 different colors with fine diagonal lines knit through the diamond shapes
Stitch Patterning	stockinette
Other	<p>Arglye knitting was first used for stockings. Originally tartan plaid wovens were sewn together for stockings and it was found to shape the calf better if it was turned on the bias. This created diamonds out of the woven squares and when the stockings began to be knit the pattern followed through. The Argyle is knit in the flat in two pieces. The back is solid and the front is patterned. Bobbins are used to keep the yarn colors separate.</p>

Table 21: Argyle Sweater Vest Characteristics Chart

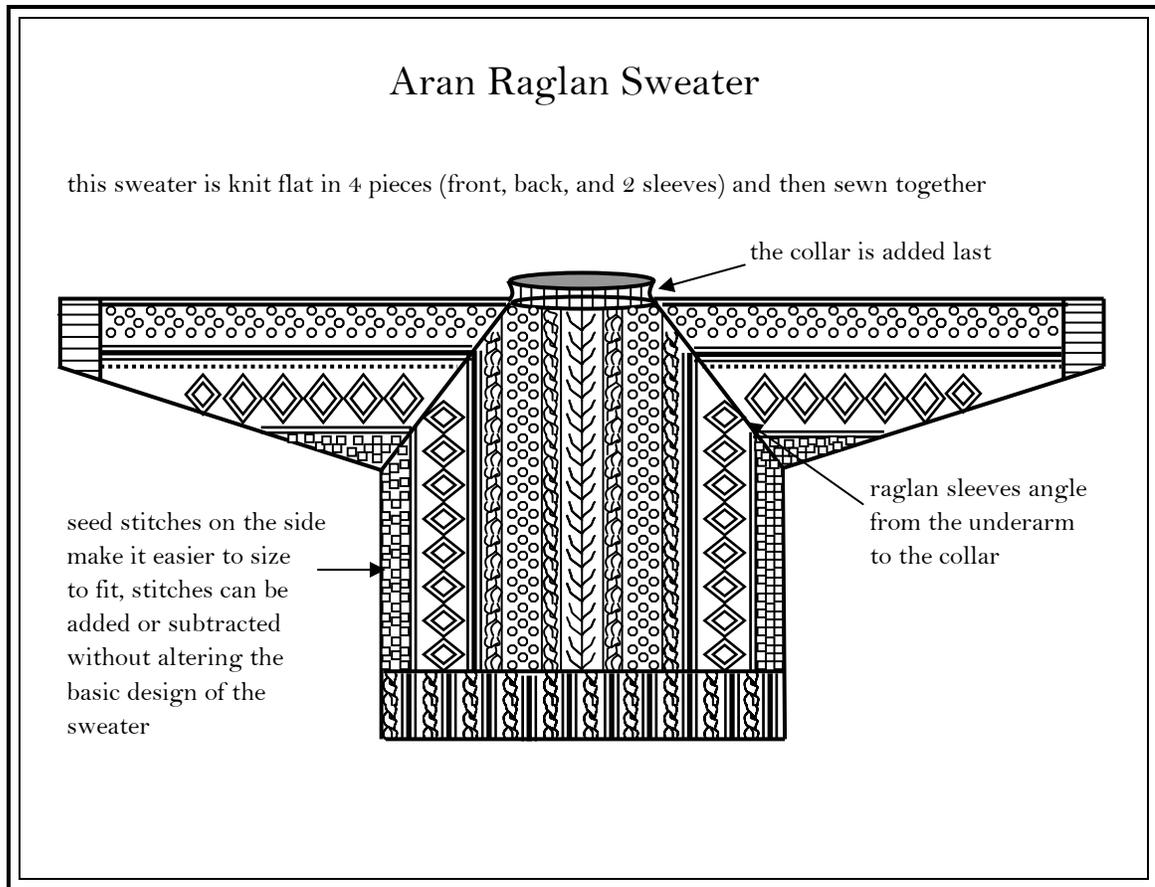


Figure 89: Aran Sweater Schematic

Construction Elements

- the sweater was knit in four pieces in flat construction
- the bottom rib was sometimes cabled, sometimes ribbed, sometimes both
- the rib stitches were generally twisted for strength
- the pattern placement required consideration as to stitch count and balance
- there is generally a center panel pattern with other patterns mirroring outward toward the side seams
- the side pattern is simple so it is easy to add to or subtract sts for sizing purposes
- the collar is the last element in the design and is generally cabled, ribbed, or both

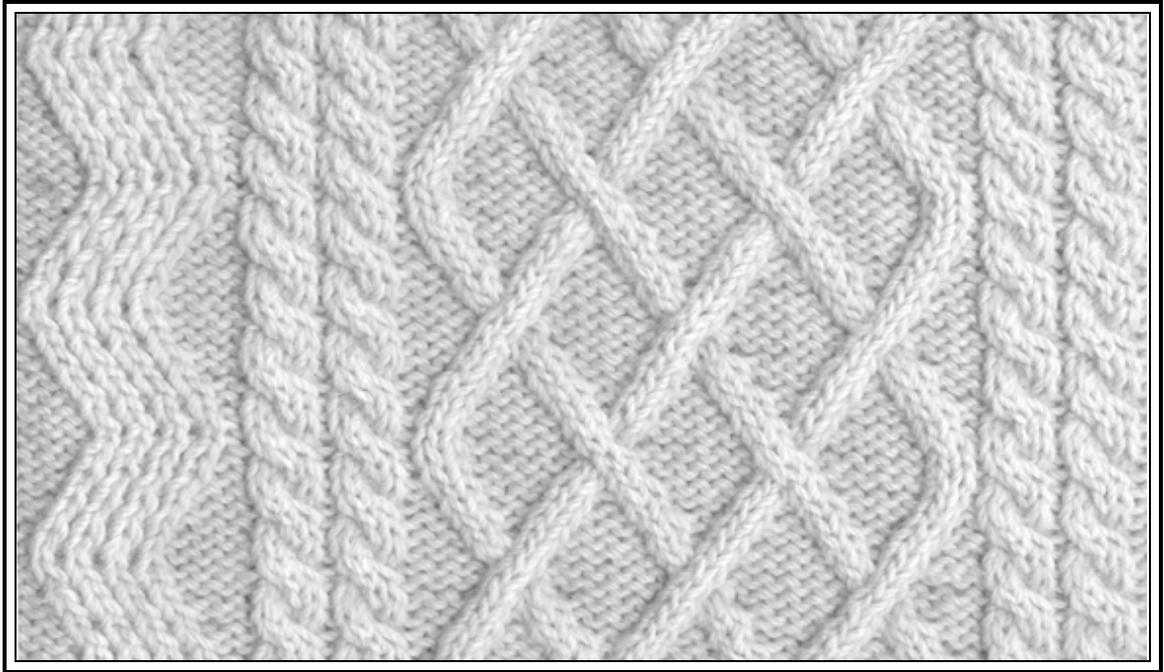


Figure 90: Aran Island knitting sample taken from a sweater purchased in Ireland, 1977

There was a distinct evolution of the Aran styled sweater from its predecessor the Fishermen's Guernsey sweater of Great Britain. Initially Aran sweaters of the 1930s were constructed like the typical guernsey style of knit in the round with underarm gussets and the sleeves picked up and knit from the top down. The next phase was a joining of the two styles during the mid 1930s to the mid 1940s were many different design concepts were sampled with. They were partially knit in the round and partially flat. Some incorporated saddle shoulders, the gusset was dropped, new patterns were developed, bobbles inserted. The final product stood as a sweater designed to be reproduced in mass for resale. The raglan sweater became well recognized and was highly marketable from the late 1950s onward (Starmore, 1997).

	Aran Raglan Sweater
Region	Aran Islands, Ireland
Date of Origination	1940s for Aran / late 1950s for Aran raglan
Yarn Gauge	varies depending on the stitch pattern
Yarn Content	wool
Yarn Color	creamy white
Knit in Round or Flat	worked flat
Bottom Edge Design	ribbed or cabled
Underarm Gusset	none
Armhole Shaping	raglan
Cuff Design	ribbed or cabled
Neck Opening Design	rounded opening
Collar Design	ribbed or cabled
Two-Color Patterning	none
Stitch Patterning	numerous stitch patterns ranging from cables, bobbles, honeycomb, diamonds, zig-zag lines, bramble stitch, plaited braides, moss stitch, ect.
Other	The Aran sweater evolved out of the earlier fishermen's Guernsey of Great Britain. Initial sweaters were constructed like the guernsey, but later evolved into encompass guernsey styled as well as raglan sleeved sweaters. Raglan style sweaters were popular in the 1960s and the Aran sweaters followed in suit to be more commercially viable. Aran sweaters were a highly desirable export from Ireland

Table 22: Aran Raglan Characteristics Chart

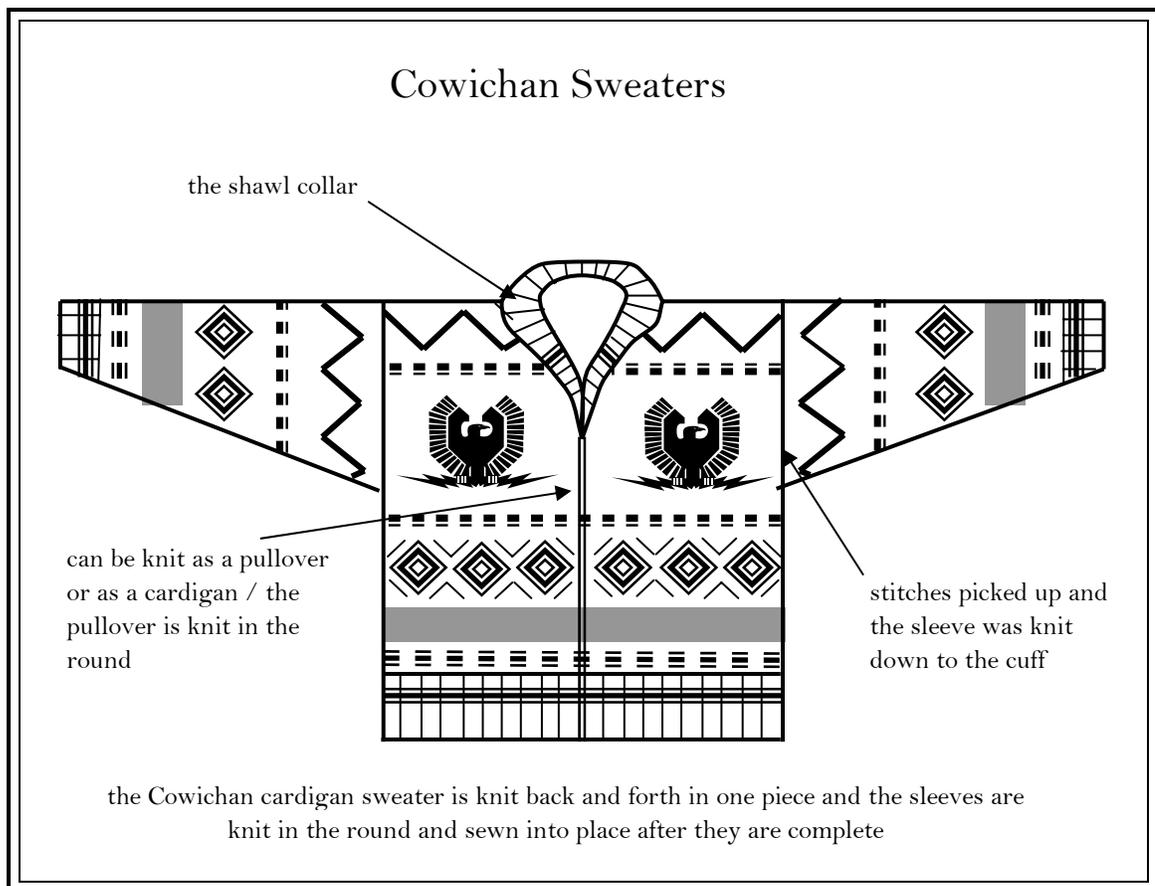


Figure 91: Cowichan Sweater Schematic

Construction Elements

- the pullover was knit in the round (knit back and forth for cardigan)
- the bottom rib was knit 2 purl 2 around / sometimes a stripe was knit in the rib
- at the underarm the knitting was divided and front and back knit separate
- V-neckline and straight up armhole openings
- the shoulders were sloped by making 1/3 stitch count decreases over three rows
- the back neck stitches were knit back and forth in garter stitch (all rows knit), increasing and the beginning of every row until the desired depth of collar achieved / the back collar stitches were cast off
- the front collar were knit in garter stitch incorporating the back collar and decreasing down to the point of the V-neck, a stripe was added to echo that in the waistband
- the sleeve stitches were picked up at the armhole and knit down to the cuffs

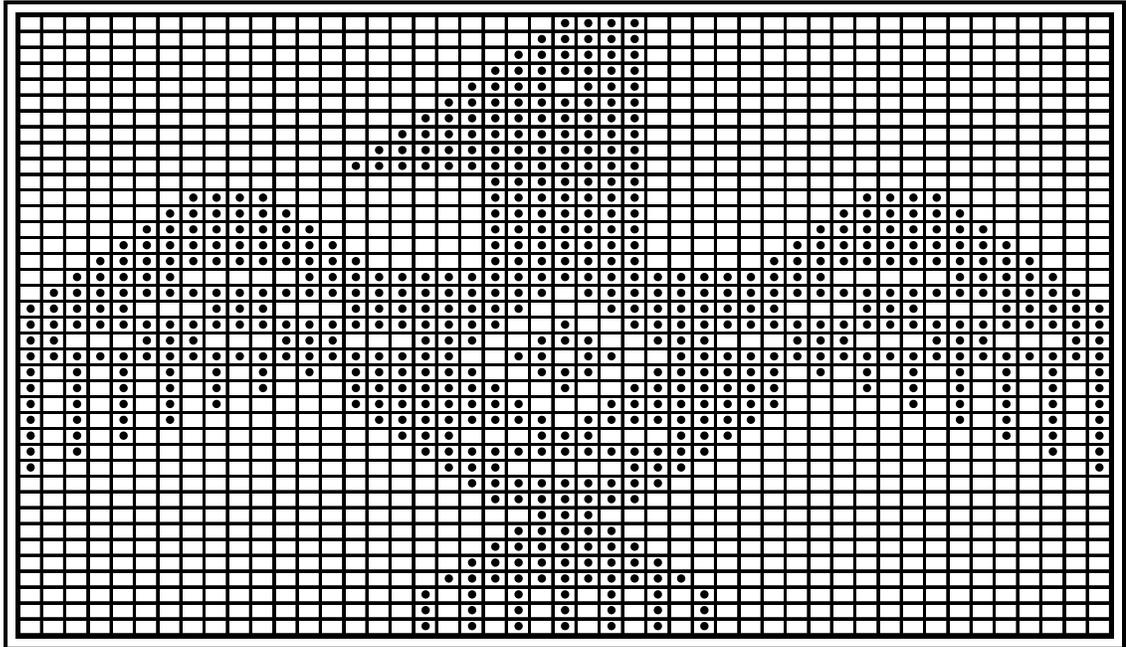


Figure 92: Cowichan Knitting Eagle Graph

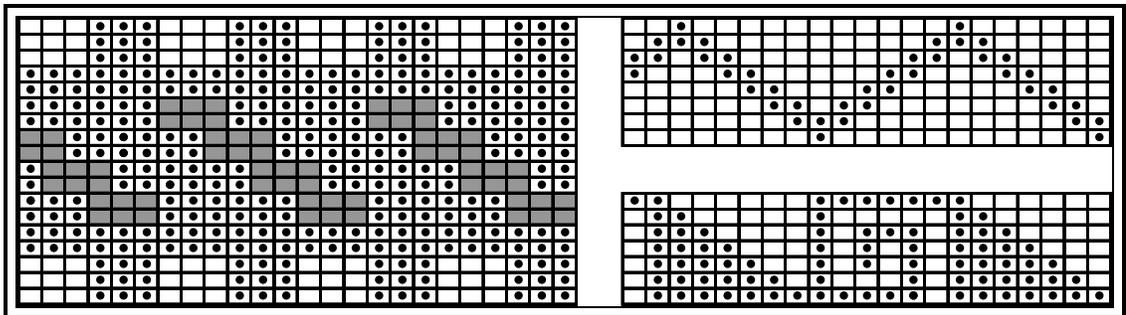


Figure 93: Cowichan Knitting Graphs

Above are Cowichan knitting graphs recreated from Gibson-Robert's book: Knitting in the Old Way (1985, pgs 117 and 118). Cowichan patterns range from geometric bands to animal and sea-life motifs to plant motifs to patterns taken from hand woven baskets and cloth. The fabric was dense (coat-like) since the floats were all woven in, the yarn was thick, and knitting was done with needles smaller than normally required.

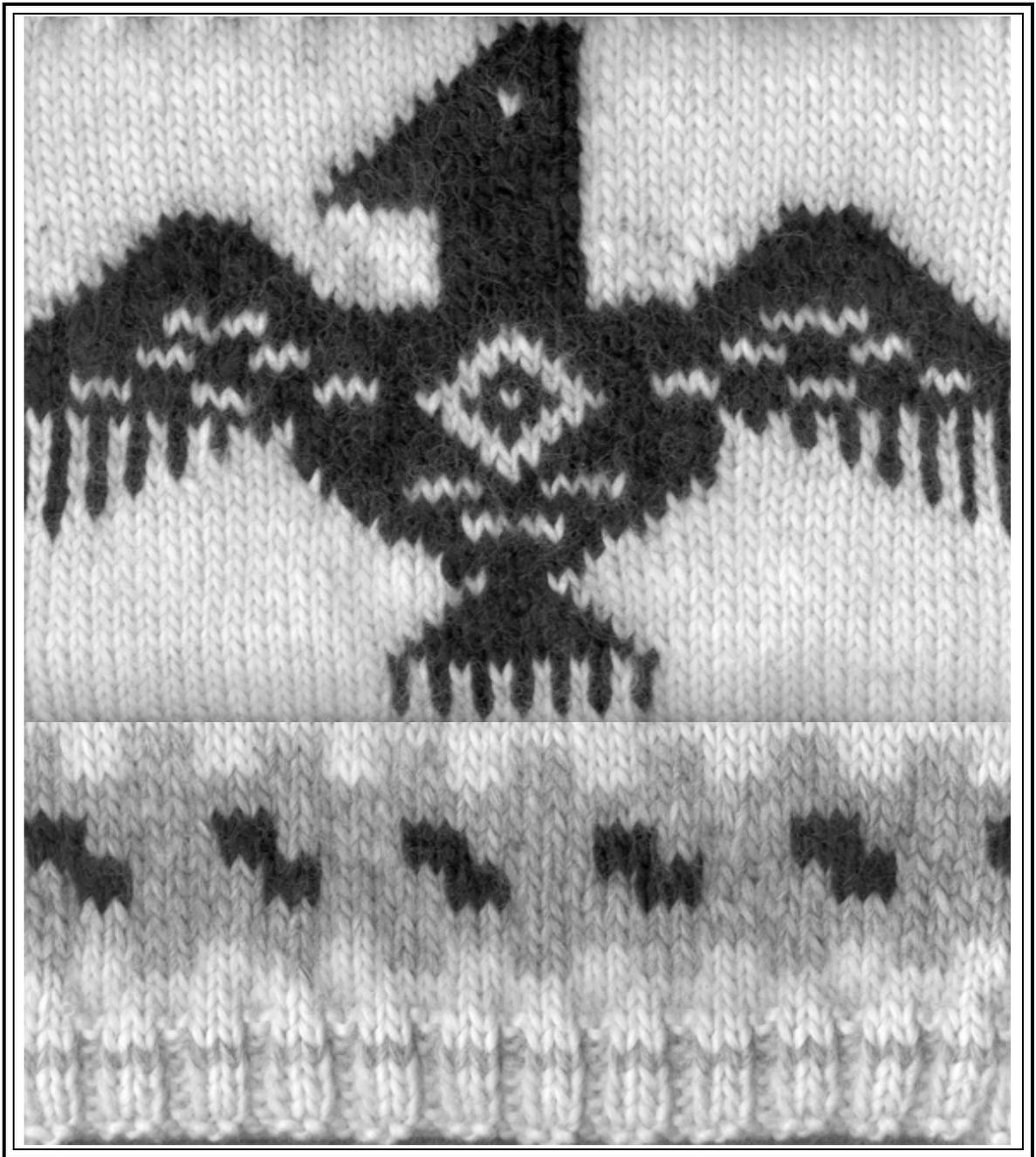


Figure 94: Cowichan Knitting Sample

Above is an example of a Cowichan knitting pattern recreated from Gibson-Robert's book: Knitting in the Old Way (1985, pgs 117 and 119). The sample was large enough it had to be presented in two pieces.

	Cowichan Sweaters
Region	Vancouver Island, Canada
Date of Origination	late 1800s
Yarn Gauge	3 1/2 - 5 stitches per inch
Yarn Content	wool
Yarn Color	natural wool colors: white, cream, brown grey and black
Knit in Round or Flat	pullovers knit in round, cardigans knit back and forth
Bottom Edge Design	ribbed with or without stripe
Underarm Gusset	none
Armhole Shaping	straight
Cuff Design	ribbed cuff with or without stripe
Neck Opening Design	V-neck
Collar Design	shawl collar
Two-Color Patterning	bold geometric bands, animal, bird, and sea-life motifs, vines and leave bands, diamonds, ect.
Stitch Patterning	stockinette knit
Other	<p>The Cowichan sweater is a heavy, dense coat-like sweater made solely of hand-spun yarns and knit entirely by hand. The shawl collar distinguishes this sweater and is knit together in three sections.</p> <p>The Cowichan sweater is the only "true folk sweater" designed in North America (Gibson-Roberts, 1985). This sweater was developed on Vancouver Island, Canada after learning knitting techniques from Scottish settlers.</p>

Table 23: Cowichan Sweater Characteristics Chart

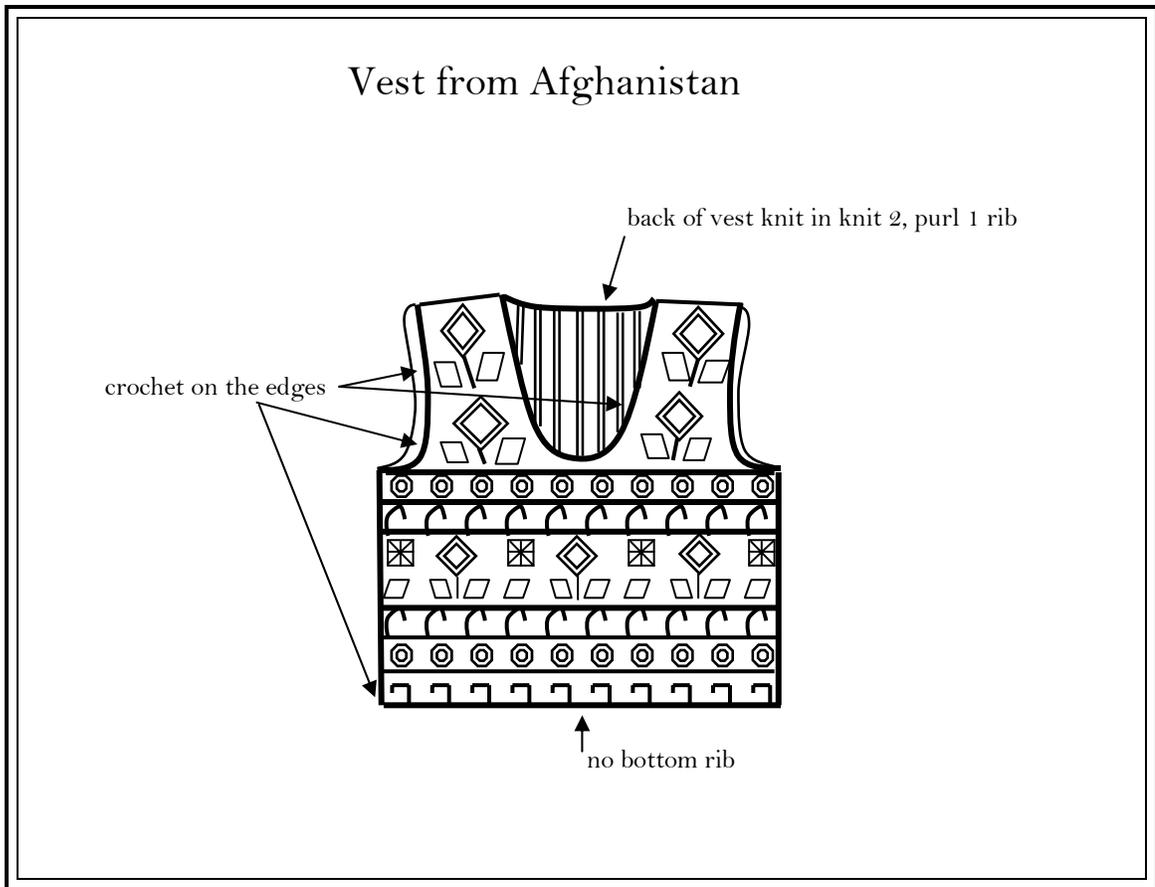


Figure 95: Vest from Afghanistan Schematic

Construction Elements

- all of these elements are based on close examination of a photograph
- the back and front are knit separately and it appears that the front two-colored work *may* have been sewn onto a solid grey ribbed vest
- there is no ribbing on the lower edge of the vest
- the armholes and neckline have been crocheted around in
- there appears to be three rows of garter stitch on the bottom edge of the vest (this prevents the edge from curling) since there is no lower ribbed band, this would be necessary if you desired a flat edge

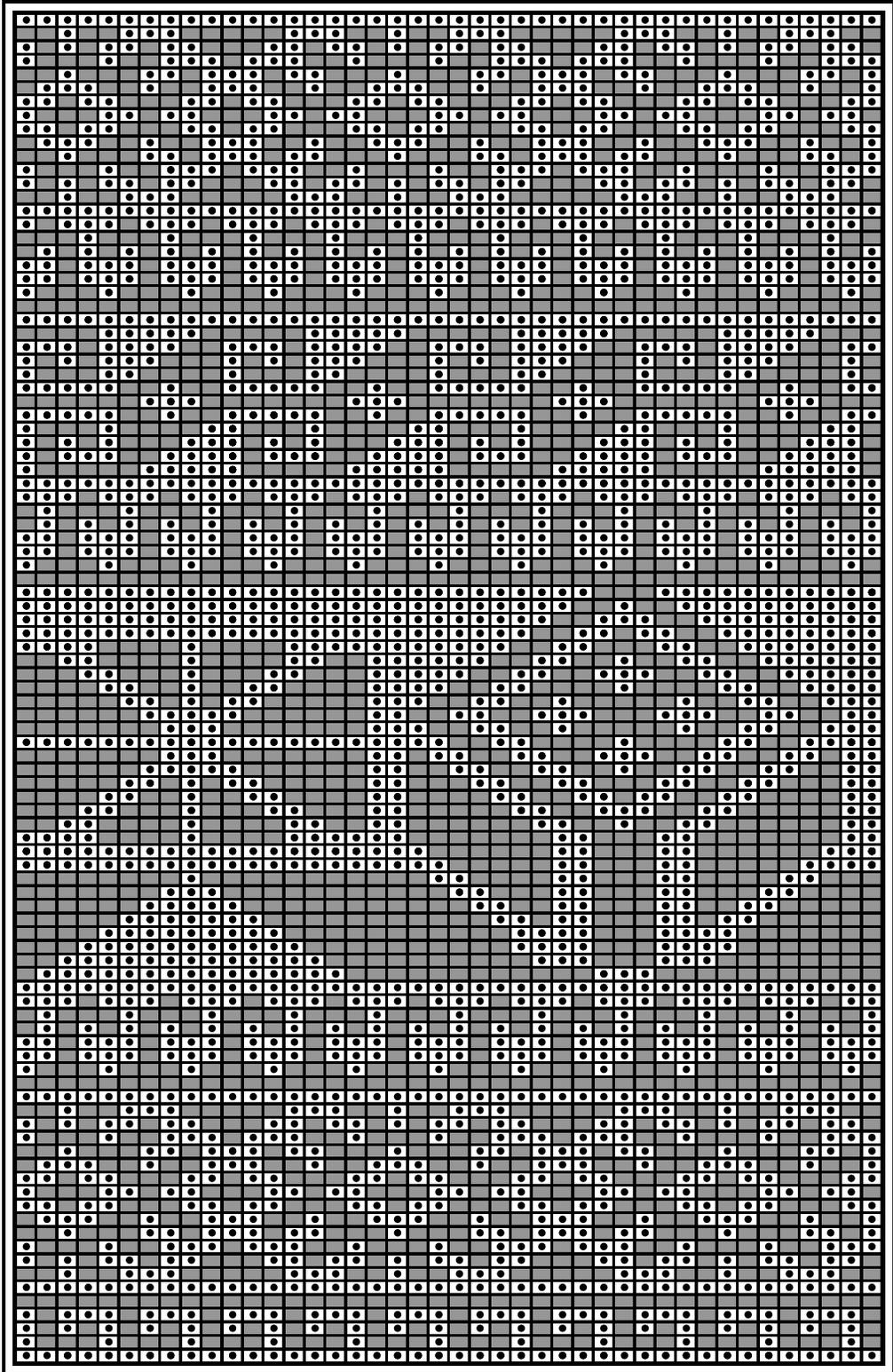


Figure 96: Afghanistan Knitting Graph



Figure 97: Afghanistan Knitting Sample

Above is an example of Afghanistan knitting pattern recreated from Harvey's book: Traditional Textiles of Central Asia (1996, pg 88). The pattern was derived from a close examination of a photograph of a vest. The stitches were counted and recorded.

	Afghanistan
Region	Central Afghanistan
Date of Origination	unknown
Yarn Gauge	unknown
Yarn Content	unknown
Yarn Color	black and cream
Knit in Round or Flat	knit flat
Bottom Edge Design	three rows of garter stitch
Underarm Gusset	none
Armhole Shaping	rounded
Cuff Design	none
Neck Opening Design	rounded V-neck
Collar Design	none
Two-Color Patterning	stylized tulips, curled horns, floral geometrics
Stitch Patterning	stockinette
Other	<p>This vest from Afghanistan is said to be the work of the Hazara that live in central Afghanistan. They live in a mountainous region and have developed knitting skills to keep warm. They are reported to be considered for their fine pattern Fair Isle knitting as well as chain stitch embroidery skills. Men, women and children are all involved in the production of knit garments.</p>

Table 24: Vest from Afghanistan Characteristics Chart

CHAPTER V

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

This figurative journey across the globe in search of the roots of sweater design has been filled with many revelations, some frustration and the potential for so much more research. After delving into all that was possible, many design elements were exposed; even though the process of finding material on the individual areas was surprisingly difficult.

Without being in the presence of the King Charles I Waistcoat, the actual knit structure was not discernable, and I think that it would be a nice addition to chart and reproduce the design. The same is true of the European Brocade Jackets. With time and geographical limitations erased, this study could have detailed further sweater structures and balanced the charted information throughout the paper.

The goal was to create a flow chart of the developments of sweater design and to follow new leads across the map; however, the idea fell apart when the boundaries and dates of new designs began to blur and the chart became more of a table of supposition than one based on actual data.

Revelations came in the way of the Korsnäs sweater of Finland and complexity of the sweater structure. The combination of large areas of crochet and strong splashes of vivid colors were a new direction that I had not visualized before. It is common enough to see edges of sweaters trimmed with crochet, but these sweaters used crochet in a much greater percentage over the entire garment. The sweater was designed so that it could be worn either backward or frontward since both sides are the same. The tightness of the handwork and the elements of design were a marvel. Further research

on this design would be beneficial, and had I the means I would attend the symposium on the Korsnäs sweater in Helsinki in the summer of 2003. What the Korsnäs sweater does is open our thoughts to new combinations of textiles in the manufacture of a single garment. As in the example of the jackets of Dalarna, Sweden, with the combination of vadmal cloth and knit, designers should consider other combinations that could blend in a particular fabric structure or garment. Perhaps a shift in scale or gauge would be a twist worth considering.

I had always avoided knitting in the argyle pattern before it came time to knit the samples for this thesis. Now I know why. The constant shifting of yarn and fine diagonal lines make the argyle pattern much better executed on machine than by hand. I found the history of the evolution of the tartan stocking, to knit stocking, to sweater thought provoking. It would be an interesting study to take fabric, shift it to the bias, and see what patterns develop.

Digging through the literature on one specific topic to this level illustrates why research has to be thoughtfully placed in perspective and balanced by other works on the same subject. It would have been much easier to do a cursory review of the subject and to be so completely wrong with conclusions. As an example, after reading all that was available on the subject of Aran knitting and saving Starmore's book for the very last, I smiled at the mythic nature so many before her gave to the production of the Aran sweater. Perhaps it was merely a stroke of commercial genius at play to heighten the interest in the Aran sweater; many are swayed by an interesting tale when considering a purchase. Nevertheless, it did show the necessity of following all research leads.

With the discovery of the Afghanistan vest an entirely new direction, albeit risky with the current global conditions, came into focus. I realized that there is a whole world of pattern design that is not available for most people in the apparel design industry. The patterns were fresh and different, and I found myself longing to understand more about knitting in this region of the world. A study on knitwear design in Afghanistan would be noteworthy.

There is a world of modern sweater design that is both interesting and innovative that had to be put aside for another day. Modern designers such as Kaffe Fassett, who was trained as a fine art painter, and who took up the art of knitting while on a train ride in Great Britain after he watched a woman knitting away. Fassett's sense of color and voracious appetite for combination of yarn, color patterns, and design drove the knitting industry into new directions. Alice Starmore continues to redefine the classics while pushing the limits on new design. Jean Moss combines pattern variations while sculpting sweaters into form fitting shapes. Liz Collins shreds preconceived notions of knit fabric combinations and Kathryn Alexander works the Finnish entrelac technique to new hand-dyed yarn heights. All of these designers and more are there to study and to learn from.

This grass roots study of the origins of hand knit sweater design can be very useful to the machine-driven technology of modern knitwear design. Being able to visualize the construction of a garment can put a designer into the working cog of the modern knitting machine. Patterns and shape from hand knits can translate over to the computer-generated knitwear industry. As an example, the Shima Seiki WHOLEGARMENT© machine design technology is based upon the construction of a glove knit upside down, with the cuff being the neckline and the fingers being the

sleeves and body of the sweater. It was a clear understanding of the construction of a glove that catapulted the Shima Seiki Corporation into this new technology. I believe that careful consideration should be given to how design was influenced in the past and used to promote innovative design of the future.

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APPENDICES

DEFINITION OF TERMS

The following terms are defined as they have been used during the course of this study:

Allover Patterns are patterns that repeat themselves evenly over the sweater. They do not have the striped or banded appearance of some pattern repeats.

Angora is the hair of an angora goat or an angora rabbit. This is a fine, lightweight and relatively expensive fiber that is often combined with other fibers to lessen the cost and stabilize the fabric. Angora adds to the drape of a fabric

Aran is a hand knitted garment of flat construction, composed of vertical panels of cabled geometric patterns and textured stitches. On each piece of the sweater there is a central panel, flanked by symmetrically arranged side panels. The use of heavy, undyed cream wool is a classic – though not essential – component of the style.

Argyle is a Scottish pattern derived from the original tartan woven stockings worn in Scotland. Argyle patterns are diamond shapes in various colors with diagonal lines running through the diamonds.

Armhole is the opening where the sleeve is sewn into, or the opening of a vest where the arm goes through.

Basketweave patterns (in regards to knitwear design) are patterns created by the juxtaposition of squares of knit stitches against squares of purl stitches in a checkerboard pattern. At a glance, the fabric looks like the reeds of a basket as they work over and under the frame of a basket.

Bavarian Sweaters are sweaters developed in Austrian/German Alpine region. They are knit customarily in cream colored wool with twisted, trailing stitches. They are form fitting, scooped necked and often knit without sleeves.

Boat Neck is a straight across neck opening without any shaping.

Bobbins are plastic forms or cards used to wind individual yarn segments on to keep them from tangling together while knitting.

Bobble is a knitted knot or cluster of stitches used in Aran and Tyrolean knitting.

Bohus Stickning is a Swedish cottage knitting industry known for exquisite angora-wool blend sweaters. Bohus Stickning was in operation from the 1930's to 1960's and was owned and operated by Emma Jacobsson.

Border Patterns are patterns that outline the bottom, cuff, neck opening or cardigan opening of a sweater.

Brocade Knitting was created to mimic the rich color patterning of brocade weaving. Bold color patterns are blended with fine materials of silk, gold and silver. Purl stitches are added to emphasize color-work.

Button Bands are the bands that run up the front opening of a cardigan where the buttonholes are worked. They may also run across a shoulder seam or neckband for the placement of buttonholes.

Cast-On means to create stitches on the knitting needle in preparation to begin knitting.

Circular Needles are knitting needles that have points at either end but with a flexible section in the center so that the points may come together and fabric can be knit in the round.

Cable is a reversal in the order that stitches are knit that creates a twist or braid into the knitting.

Cardigan is a sweater with an opening up the front. Cardigans usually have closures of buttons or clasps to bring the sweater together when desired.

Carding is a process where yarn fibers are aligned either by machine or by hand through a series of combing in preparation for spinning. Carding lines up the fibers and cleans out unwanted debris from the fiber.

Collar is an optional extension of the neck opening.

Cowichan Sweaters are thick sweaters produced by the Salish Indians on Vancouver Island, Canada. They are distinguished by their shawl collar techniques and bold designs taken from basket weavings.

Crew Neck is a curved front neck opening which is usually two to three inches deep. It can either have a straight or shaped back neck.

Crochet is a form of needle work that uses a hook to create successive loops of yarn.

Cuff is the lower portion of the sleeve.

Denier is a weight-per-unit length measure of any given material. Finer yarns are represented by lower numbers and thicker yarns are represented by larger numbers.

Damask Knitting is created by the juxtaposition of knit and purl stitches to create patterns that are similar to damask weaving patterns.

Fana Sweater is a Norwegian sweater design that incorporates stripes of two contrasting colors with flecks of the opposing color within each band. The lower edge

and cuff generally have a checkerboard pattern and the shoulder area is generally knit in the eight-point star design.

Fair Isle Knitting is a stranded form of color knitting developed in the Shetland Islands of Great Britain, knit on circular needles, producing color bands of pattern without ever using more than two colors at one time in any given row.

Felted Knitting is knitting that has been felted in a process of heat variations, moisture, and agitation of the yarn so that the fibers tangle, shrink and mat to form a compact material.

Floats are the yarns that travel across the back of knit fabric when they are not in use to create the pattern work.

Gansey is a close fitting sweater produced in Great Britain which has been knit in the round with underarm gussets, generally in blue wool, and worn by fishermen.

Gauge is the number of stitches that are knit in any given inch of knitting

Grafted knitting is the sewing together of two pieces of knitting.

Guernsey is a term that can be used interchangeably with the word Gansey.

Gusset is a diamond-shaped section of knitting added to the underarm area of a sweater that increases the flexibility of the sleeve and adds to the durability and comfort of the sweater.

“Knit Flat” applies to knitting that is worked back and forth switching from knitting with the right-side facing and then knitting with the wrong-side facing.

“Knit in the Round” applies to knitting that is worked in a tubular fashion, with the right-side facing at all times, on a set of circular needles or on set of double-pointed needles.

Korsnäs Sweater is a highly patterned and colorful traditional sweater of Finland that incorporates both knitting and crocheting in the construction of the garment.

Lopi is a soft, unspun, and untwisted Icelandic yarn.

Lusekofa is a Norwegian term that translates to “lice-patterned cardigan” This was a pattern design that was generally worked on a black background with dots of white across the knitted fabric.

Main Body is the description of the sweater that covers from the top of the lower ribbed section of the sweater up to the yoke of the sweater.

Nalbinding is an early pseudo-knitted fabric produced with a single eyed-needle looped into a fabric and back out again without live stitches being held on another needle.

Nightshirts are sweaters that were worn close to the body but are not considered to be underwear.

Open Work in knitting applies to a stitch pattern where holes are created in the fabric by knitting stitches together on certain rows to create gaps in the knitting and then wrapping the yarn around the needle on other rows to replace those stitches lost. The combination of these two creates little holes or “open work” seen often in lace knitting.

Österbotten Sweater is a Finnish sweater design knit mainly in white with strong contrasting geometric patterns on the shoulders and cuffs. The main body of the sweater has flecks of the contrasting color similar to the Norwegian Lusekofte sweater.

Peerie is a Shetland word for “small” and is used to describe 5-7 row, two-colored patterns used in Fair Isle knitting.

Picot-Edge is a border pattern that uses a row of open work to create bumps across the outside of the knitting.

Pullover is a sweater that has to be pulled over the head to put on since it is not opened in the front as cardigan sweaters are.

Raglan describes a sweater that has an angled shape running from the underarm to the neck opening of the sweater. This shape is created by balanced decreases both on the sleeve and body of the sweater that when sewn together run in a diagonal line.

Rib / Ribbing a combination of knit and purl stitches used in knitting that draws the fabric in tighter and gives the fabric an elastic quality. It is used generally around the bottom edge, cuffs, or neckline of a sweater to help draw the edges of the knitting in.

Right Side is used to describe the outside of a fabric that faces you as you wear a garment

Schematic is a drawing of the basic shape of the sweater design.

“Seaman’s Iron” is a term used to describe the type of yarn used to knit a fishermen’s Guernsey sweater. The yarn is generally a tightly twisted, 5-ply navy blue yarn that is strong and durable.

Selbu Sweater is a highly patterned two-colored Norwegian sweater that was developed by Marit Guldsetbrua Emstad in the 1800’s. Patterns ranged from reindeer, moose, dancing figures, and stars, to name a few.

Shawl Collar is a collar style developed by the Cowichan knitter’s that used stitches from the back of the neck opening to build up in a series of knit rows with increases on either end to create a deep rolled over collar. The front is knit in a series of back and forth rows to meet the back of the collar with decreases made down to the point of the v-neck front.

Shetland Wool is fine wool produced on the Shetland Islands, Great Britain, that is used in Fair Isle knitting as well as the knitting of Shetland lace.

Shoulder Seam is the joining of the front and the back of a garment at the shoulder edge.

Sleeve is the part of a garment that covers the arm.

Spedetröja is a sweater produced in Skane, Sweden. The name spedetröja is derived from the Swedish word “speda” which translates into “knitting needle”. A spedetröja sweater utilizes the textural effect of juxtaposing purl stitches against knit stitches.

Steek is a bridge used in Fair Isle knitting that allows a knitter to work two-color designs with the right-side of the sweater facing them at all times. The steek is a set of extra stitches created that will later be cut into to open up areas of two-colored knitting.

Stockinette is a knit fabric created where all of the right-side stitches are knit and all of the wrong-side stitches are purled.

Tubular Knitting is knitting worked in the round, creating a tube of fabric.

Turtleneck is a collar that is made as an extension of the crew neck. Turtle necks are usually ribbed and are folded over halfway to form a double neckband.

Two-Colored Knitting is color pattern work created when two colors are knit in pattern across a row. The color not in use is floated across the back of the work or woven into the knitting to capture the long floats.

Twinned Knitting is a type of Swedish knitting where two ends of yarn are alternated whether in the same color or two different colors. With each stitch, the yarn ends are twisted around each other. Twined knitting creates a stiffer, thicker, less elastic fabric but is far more durable than regular knitting.

Twisted Stitches are stitches that shift order by knitting the second stitch on the left hand needle before the first one and then dropping them both off the needle at the same time. This alteration of alignment of the stitches creates a jog in the knitting and is used to create lines and cable-like effects in knitted fabric.

Tyrolean Sweaters developed just before the 20th century in the Austrian/German Alpine region. Tyrolean sweaters incorporate cable and bobble patterns similar to Aran sweater design along with accents of colorful embroidery.

Ullared Sweaters of Halland, Sweden are tightly knit red and black sweaters developed in the 1800's with diagonal two-color patterns. Occasionally the wearer's initials were knit on the chest area in a rectangular box or just above the rib on the lower right of the sweater front.

Underarm Seam is the seam that runs from the underarm portion of the sleeve to the cuff.

Vadmal Cloth is a woven and then felted wool cloth usually green in color that was used in conjunction with knit sleeves to create sweater-jackets

Waistcoat was a term used to describe a sweater worn in the 1600's and 1700's.

Welt is the bottom band area of a sweater.

Wrong Side of a knit fabric is the back side of the fabric or the side that is worn against the body.

Yoke is the chest and above portion of the sweater.

INTERWEAVE PRESS

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September 11, 2002

Gail Lambert
8325 Fountain Park Drive
Raleigh, NC 27613

Dear Gail:

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Page 95	Blue Shimmer
Page 97	Blue Shimmer Chart

A History of Hand Knitting:

Page 21	Greek Woman
Page 49	The Buxtehude Madonna
Page 78	King Charles Waistcoat
Page 79	Damask Waistcoat
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September 19, 2002

Gail Lambert
8325 Fountain Park Drive
Raleigh, NC 27613

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Gail Lambert

From: Marketta Luutonen [marketta.luutonen@pp.inet.fi]
Sent: Wednesday, August 28, 2002 12:09 PM
To: gal@nc.rr.com
Subject: Re:

Hello
This is the name of my book and it is translated in abstract: Rustic product as a conveyor of meaning. (A study of Finnish pullovers)
Photograph on page 126 comes from a newspaper. So I have any original picture but if you can only take a copy from my book and mention the source, it is ok.
Next June 23-26.6.2003 it will be in Vaasa Nordic knitting symposium with information of Korsnäs sweaters and much more. You can ask anna-majja.backman@loftet.fi
This summer the symposium was hold in Sweden and from USA (Texas) was with us Carol Rhoades.

With best greetings

Marketta Luutonen

yksityinen sähköpostiosoitteeni on muuttunut!

Marketta Luutonen, Ph.D, Doc.
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Tel. work. +358 9 75191975
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GSM +358 40 7084447
Address: Matruusinkatu 3 B 18
FIN-00160 Helsinki

From: [Gail Lambert](#)

To: marketta.luutonen@kti-taito.fi
Sent: Wednesday, August 28, 2002 6:27 PM

Marketta,

Could you please translate this into English for me?

Kansanomainen Tuote Merkityksenkantajana: Tutkimus Suomalaisesta Villapaidasta.

Thank you,

Gail Lambert

8/28/2002

Gail Lambert

From: Susan Gleerup [SG@Hoest.dk]
Sent: Tuesday, October 01, 2002 3:19 AM
To: gal@nc.rr.com
Subject: Knitting in the Nordic Tradition

Dear Gail Lambert,
thank you for your email in which you ask for our permission to include 3 photos from the book in your paper.
We hereby give you our permission to include the 3 photos on pages: 15, 62 and 63 in your paper, as long as it will not be for commercial use.

Best wishes
HØST & SØN

Susan Gleerup
Secretary

Gail Lambert

From: Naomi [n.pritchard@thameshudson.co.uk]
Sent: Monday, September 23, 2002 7:59 AM
To: gal@nc.rr.com
Subject: TRADITIONAL TEXTILES OF CENTRAL ASIA by Janet Harvey, p 88 plate 109

Dear Gail Lambert

Thank you for your e-mail of 29 August. I am sorry not to have been able to reply earlier. As far as we are concerned we have no objection to you reproducing the illustration you need in your Master of Science thesis for North Carolina State University, provided it is not for publication in any form whatsoever and provided you acknowledge the book, the author and ourselves as the publisher.

With best wishes for your thesis,

Naomi Pritchard

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September 19, 2002

Gail Lambert
8325 Fountain Park Dr.
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Please contact me if you have any questions.

Sincerely,

Carolyn Mandarano
Sr. Managing Editor
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