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Obscure Textile Techniques

Nancy Waterhouse

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Nancy E. Waterhouse

"Obscure Textile Techniques"

Candidate for Master of Fine Arts Degree
College of Fine and Applied Arts
Rochester Institute of Technology
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Thesis Proposal for the Masters of Fine Arts Degree

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Rochester Institute of Technology

Title: Obscure Textile Techniques

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My thesis will concentrate on the research and execution of various textile techniques which are part of a rich textile history, but presently seldom used. I suggest that a vital aspect of textile conservation should be to perpetuate techniques through actual use; they should not exist solely on paper or as ancient fragments. The purpose of my thesis work will be to execute a series of functional and non-functional textiles in selected obscure techniques, presenting them in my personal, contemporary treatment. My hope is that the work may serve to renew interest in these techniques and therefore help insure their utilization in modern textiles.
Acknowledgements

This thesis and the four years of study at Rochester Institute of Technology which it represents have been an exciting and fulfilling experience for me. I would like to thank my mother, Martha Waterhouse, for her constant and supportive interest in my work. I am indebted to my advisors. Warm thanks are extended to Donald Bujnowski of the Textile Department for his sensitivity, energetic enthusiasm and inevitable sense of humor. Max Lenderman, also of the Textile Department, has been a stimulating instructor, offering doses of criticism and encouragement at crucial moments. I thank Bill Keyser of the Woodworking Department for the sense of perspective he brought to our discussions as the thesis work progressed. Finally, I am indebted to the special weavers of R.I.T. who created an inspiring atmosphere in which to work and develop.
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Introduction

Textiles offer an extremely broad range of varying techniques to be explored and adopted as tools by the contemporary artist. I have been particularly fascinated by those techniques which today appear little used or have become primarily associated with past textile traditions. The designation "obscure" technique is necessarily limited to the scope of my own experience and the resources available to me, and should be understood in this context.

In most cases the areas I chose to explore involved techniques which are fairly simple in principle, but requiring patience in large amounts. Craftsmanship, intricacy and delicacy of design and execution have become characteristic of my work and I felt particularly comfortable with the processes I selected to study. In most cases I tried to analyze the essence of a technique and preserve its integrity in my work. I felt I wanted the work to represent a subtle pairing of tradition and contemporary spirit.

My intention in this paper is to discuss the techniques from a historical and aesthetic viewpoint. Personal observations and conclusions about actual process execution or information of particular interest will be offered as a supplement to existing literature on the subject. It is not my intention to explain to the novice the fundamentals of a technique; sources listed in the bibliography give more than adequate descriptions of processes referred to in this paper.
Knitted Bags--Spiral and Blue

The original idea of creating a knitted object occurred to me while leafing through a book on knitting which gave examples of the large variety of stitches possible in this technique. It seemed to me that contemporary knitting utilizes the basic western knit and purl and tends to avoid the rich textural variety possible with other more complex stitches.

I decided to experiment with knitting two-ply silk cord in small samples on numbers zero and one needles. Because I felt texture would be the main quality I wanted to exploit, I chose to use silk cord whose smoothness and sheen would accentuate surface variations resulting from the different stitch structures. The small needles and resultant firm fabric also lent themselves to making a strong textural statement. Intrigued by the idea of working tubularly on four needles without seams to achieve a round form, I decided to make a pair of small bags that would be jewel-like in color and sparkling texture.

Most authorities place the original source of knitting in North Africa and the oldest surviving knitted fragment is from Syria dating about A.D. 250. The stitch used in the Syrian piece was a crossed stitch, generally believed to be the earliest form of true knitting. Cross knitting, because of its unique structural twisting of looped

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threads, gives a firm and less stretchy fabric than uncrossed knitting. In appearance cross knitting is very similar to cross-knit looping work of the Peruvians of the Nazca and Paracas cultures (third century B.C. to third century A.D.) which was done with a single threaded needle.

I decided to utilize the cross knitting principle in all of my knitting, particularly because my goal was a firm surface. Most contemporary knitting employs uncrossed western knit and purl stitches; my work used crossed western knit and purl. In crossed western knit stitch the needle is inserted into the back of the stitch and the yarn is brought under and over the needle. In crossed western purl the needle is also inserted into the back of the stitch and yarn is brought over and under the needle. It is the placement of the needle into the back of the stitch, rather than into the front of the stitch as in uncrossed knitting, that causes a twisting of loops and hence a firmer, less springy fabric structure (see diagram page 4).

After experimentation with different stitch combinations I decided on three different pattern blocks to be used in the blue bag. The design of the bag was in rows of offset blocks of alternating pattern moving horizontally around the bag. Vertically, one block remained the same throughout while the other block alternated stitches every other block (see diagram page 6).

Decreasing to shape the bottom of the bag was done within the vertical knit band. This was the logical place to decrease as other areas of the bag involved slipped and picked up stitches and decreasing in these areas would have altered the patterns and made holes. As the
Crossed and Uncrossed Knitting

Crossed Knitting

Uncrossed Knitting
bottom became very small I changed to straight knitting because the number of stitches on the needles were too few to support any readable pattern.

The following is a breakdown of the stitch blocks:

**Block A**

row 1  (PPP KKKKK)
row 2  (same as 1)
row 3  (PPP, PulPw, Kl, P3Tog, Kl, PulPw)
row 4  (same as 1)

**Block B**

row 1  (PPP, Kl, Yf, Sll, Yb, Kl, Yf, Sll, Yb, Kl)
row 2  (PPP KKKKK)
row 3  (same as row 1)
row 4  (same as row 2)

**Block C**

row 1  (PPP KKKKK)
row 2  (same as row 1)
row 3  (PPP KP KP)
row 4  (same as row 3)
Blue Bag Pattern Block Sequence

A B A B A B A A
C A C A C A C A
Explanation of abbreviations:

P = cross purl
K = cross knit
PulPw = pick up one purl wise
P3Tog = purl three stitches together
Yf = yarn front
Sll = slip one stitch
Yb = yarn back

The second bag, the green spiral bag, utilized the same silk cord as in the blue bag, only this time I dyed it in skeins which ranged from a light shade at one end to a dark shade at the other end. In the knitted bag this produced a subtle horizontal banding which emphasized the roundness of the form and also produced a visual counter-movement to the spiraling design.

The stitch sequence was composed of two continually repeated blocks:

Block A (K3 P11)
Block B (K3, (P1, S11) X5, P1)

In order to spiral the design, the number of stitches cast onto the needles allowed for five complete sequences of blocks A and B per row, minus one stitch. To complete one row of the sequence 140 stitches were needed. By casting on only 139 stitches the last stitch of the final block B in any row always occurred under the first stitch of the row above. Once the cycle was established, the patterns needed only to be continually followed and the spiraling occurred automatically.
The braid handles on both bags were eight strand round braids. Yarn take up proved to be in the ratio of four to one, that is, for every foot of braid four feet of cord per strand were needed. To facilitate the working of the braid, I wound the cord onto four pairs of bobbin lace bobbins and worked on a pin board held flat on a table (see diagram page 9). Tensioning of cords for a uniform braid occurred at the end of each sequence of left and right bobbin movements. Because the beginning of the braid was a clean start with no raw edges, the final cut ends of the braid were needle spliced back into the clean end and whipped to form a continuous handle. This final step was done after threading the braid into the eyes made in the neck of the bag to carry the braid.

The technique of cross knitting and utilizing pattern and textural variation of combined stitches offers wide scope for experimentation to the contemporary fiber artist. Cross knitting, being structurally firm, suggests the possibility of three-dimensional work using stiff fibers. Because fiber quantity for a knitted piece can easily and accurately be calculated from a small sample, dyeing of threads before knitting offers the opportunity of creating controlled patterns and effects. The ancient method of felting cross knitting to form a dense, strong cloth is another area which needs exploring. The creative possibilities of cross knitting are many and hopefully those who are curious will investigate this interesting technique.
Eight Strand Braid Setup on Bobbins
Blue Bag
Spiral Bag
Ikat Sash

Much of my textile work has been involved with the luminous effects possible when one dyes the threads for a project, and it was natural that I should be attracted to the resist patterning technique of ikat. Because the technique is tedious I necessarily had to limit the scope of my project. I decided to make a sash—a bold and brilliant, warp patterned cloth to lavishly encircle the waist.

It is known from warp ikats found at pre-Colombian grave sites that Peruvians were early practitioners of ikat. Examples of ikat fabrics survive in Japan today dating from A.D. 500. Other cultures, including Africa, the Middle East and Indonesia have long practiced ikat. Though the geographic span of ikat is wide, most cultures reserved this special technique for prized and ceremonial fabrics.

Characteristic of traditional ikat is the careful binding of threads to give a controlled pattern. Contemporary fiber artists tend to work in a more spontaneous manner, usually obtaining random splashes of color. Industrial printing of warp threads prior to weaving has made ikat effects possible for mass production. The handweaver also has been attracted to the painted warp technique. I feel there is no substitute for the rich effect of a true hand bound ikat, and it is important to carry on this tradition. Painted or printed warps always have a duller, flatter surface; color sits on the fabric and just does not penetrate the fibers as in true ikat.

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The design concept for the sash was of an over-all simple repeating motif over which were superimposed narrow stripes that would visually "float" above the patterned area. I wanted to achieve a strong contrast between the stripe and patterned area, and to accentuate the boldness of the piece I planned the color in the pattern areas to range in a smooth transition from pale pink to deep red. Threads were set densely to achieve a warp face fabric which would give the most bold and sharpest ikat effect.

Because the stripes were totally different colors than the pink/red areas, I had to prepare two separate warps. I dyed threads for the narrow stripes and warped them according to sequence. Each stripe was a narrow, separate warp section that was added to the patterned warp only as I wound the two warps onto the loom together. The patterned warp was wound as one unit and folded carefully into three equal sections. This "skein" was dyed by dipping to produce a gradation of color from pink at one end to red at the other end. The warp was later stretched out and bound with rayon selvage according to my pattern design, and dyed in a brown dye bath. The bindings were then removed, the stripes laid into the appropriate places and the warp wound onto the loom.

I wanted one end of the sash to have uncut warp ends on the finished piece, that is, to have a looped fringe. To do this I first wound the warp onto the cloth beam, threaded the heddles and tensioned at the back beam. The whole warp was then carefully wound onto the back beam and weaving commenced at the end which would remain uncut.
As I worked on my ikat sash, more than a few people commented on the large amount of time necessary to complete the piece. It was a slow process, but I knew the effects I wanted could be achieved no other way. I felt the time was justified by the end result. It is difficult to place a value on time, and I have tended to be concerned with quality in my work for the sake of quantity. If the truly beautiful effects of a controlled, hand bound ikat are to survive as a viable contemporary textile tool, artists will have to consider the question of time expenditure and perhaps not be so eager for a quick result.

Contemporary interpretation of the ikat process can go beyond applications in woven cloth. Exciting results can be achieved in applying the technique to bobbin lace, knotting, netting or braiding. Once the fibers are prepared and measured for the particular project, binding of areas and dyeing are done. Depending on the fabric structure, a myriad of effects are possible.
Ikat Sash
"Lace" is a broad term which describes a range of open work textiles made by any of several different techniques. There is needle-made lace, crocheted and knitted lace and knotted lace. It is even possible to create lace-like fabrics on the loom. Bobbin lace, in principle related to plaiting, emerged as a prominent craft in fifteenth and sixteenth century Europe. As the fashion appeal for lace blossomed, so too did the technical sophistication of the art. The industrial revolution virtually put an end to hand made lace as machine made laces were much cheaper. Fortunately, bobbin lace has always been practiced as a folk art in Eastern Europe where it survives today.

Once the technique is mastered, bobbin lace affords the contemporary artist much freedom of design and choice of materials to be worked. The delicate appearance of lace can be deceiving: the open spaces of bobbin lace are created by a continual network of firmly twisted threads which lock the forms securely in place.

I saw bobbin lace as an opportunity to translate a preliminary linear drawing into a fiber work. I wanted to "draw" with the bobbins and thread by working in a direct, linear manner. The path of the lace tapes was to mimic the meandering and playful quality of my original ink drawing.

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I made a large (eighteen inches by twenty four inches) box pillow packed with sawdust and covered with muslin on which to attach my design and work. I used whole stitch (twist, cross, twist) throughout the piece which created a maximum of openness while remaining structurally extremely strong because the active pair of bobbins was locked in from above and below with each movement. The small round holes created by the stitch and resultant "porous" character appealed very much to me. My thread was buttonhole silk of two types: one thread was softly twisted and highly reflective, the other was a firmly twisted silk of matt surface.

Following the easy flow of my drawn lines from thick to thin, I worked the bobbins essentially in one of two ways. The lace tape could be widened by adding an extra twist or two in the movements of the active bobbins as they travelled between the passive pairs and thereby increase the distance between individual passive bobbins (see diagram page 18). The tape could again be made narrow by reversing this procedure and eliminating extra twists in the active pair. By increasing the twisting actions of the passive bobbins at any time, elongation of the tape structure and narrowing would occur (see diagram page 18). As these changes in bobbin movements took place the shapes of the holes created also changed. As if being squeezed, when the tape elongated, the holes formed reflected this movement and became oblong themselves.

This quality seemed to impart an uncanny sense of growing and vitality to the lace structure. When I wanted to increase the width of the tape without altering the quality of the holes, I merely added
Effects of Active and Passive Bobbin Twisting on Lace Structure
additional passive bobbins. In this way the tape became fuller, but the porous nature of the lace in that area remained consistent. In order to intensify the linear nature of the lace, contrasting shades of purples and browns were chosen for the passive threads which visually separated into parallel lines within the lace network.

After having worked the total line drawing I proceeded to fill the large spaces with lace of pale shades of green and white. Following the contours of the spaces, I began a narrow tape in one corner and worked around the edge of the opening until the tape joined to the beginning again. Thereafter the inside edge of the tape being worked was attached by crochetage to the outer picot of the adjacent tape. In this way a solid lace filling was made of concentric tapes following previously established contours.

Once the technique of bobbin lace is understood the points of departure for the modern artist become limitless. Traditional laces were confined to a fairly narrow treatment of the technique. Because almost any material which can be reduced to a flexible fiber form, be it paper, metal, grasses or reeds, is suitable for bobbin lace, the technique has the potential to assume a totally new character. Choice of fiber is only a starting point for invention. As the painter has the freedom to create the subtlest of color nuances, so the lacemaker can select with the utmost freedom whichever color he chooses at any point in the piece. The dyer/lacemaker has an unlimited palette and at the same time complete control of the use of color. As a textile technique bobbin lace affords a flexibility of designing and execution
unique to the fiber world and it is this feature which should attract contemporary artists.
Lace
Vest and Buttons

Vest and Buttons is the result of my interest in a knotting technique known as Cavandoli which produces a very firm fabric. It seemed an ideal method of constructing buttons, and I designed a vest around five decorative and functional buttons.

Decorative knotting, which utilizes many different knots to form lace-like fabric structures, is a very old craft. We know from carved stone friezes that it was practiced by ancient Assyrians who used it as a clothing embellishment. Later the Moorish invasions of Spain and population movements due to the crusades dispersed this technique throughout Europe.

Cavandoli is a logical extension of the single self-locking knot, the hitch. In its widest application decorative hitching was used for making fringes, lace, borders and bags which were characterized by an open work structure. Areas of unknotted threads which were allowed to curve at will were combined with sections of hitching which served to lock into position unknotted threads.

Cavandoli produces a distinctly different effect because the hitches are worked in close rows without open spaces between rows. At all times the choice of thread action is only one of two possibilities: vertical or horizontal hitching (see diagram page 23). When vertical and horizontal threads are two different colors, a patterned surface

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Horizontal and Vertical Hitching

Horizontal Hitching
(Vertical cord is passive)

Vertical Hitching
(Horizontal cord is passive)
characteristic of Cavandoli is possible. The single thread which travels back and forth across the vertical threads can be active or passive at any time, that is, it can be a knotting thread or a knot-bearer. The same holds true for the vertical threads. Vertical hitching occurs when the vertical thread is active or knotting; horizontal hitching occurs when the horizontal thread is active and hitching over the passive vertical threads. Any two color design which can be graphed out can be applied to this technique, assigning vertical hitching to one color and horizontal hitching to the other color.

To make buttons I worked small strips of Cavandoli knotting in silk cord. The strips were $1\frac{1}{2}$ inches wide and $2\frac{1}{2}$ inches long. I folded them in half to form a thicker, firmer and more substantial button. The vertical ends were worked into the interior of the button after the three open edges were invisibly sewn together. After stitching the buttons onto the vest front band, corresponding loops were made for each button using buttonhole stitch worked in alternate directions to counteract any twisting.

The vest itself was decorated with quilting using long machine made running stitches, imitating in shadow the linear motif of the buttons. The inner layers of the garment were cotton flannel. In order to eliminate bulky seams, edges were joined by close zig-zag stitching of edges butted up together. These seams were later concealed under the black facing trim on all edges.

The total garment was conceived of as a functional piece, designed for easy wear. It is reminiscent of Japanese field clothing in its
somber coloring and tracks of abstract stitching. I chose a bright red lining as it seemed appropriate to have a warm color on the inside, and I found the surprise of inner brightness a pleasant contrast to the stark outer view.
Vest and Buttons

![Image of a vest and buttons]

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Vest and Buttons Detail
The inspiration for a second piece in Cavandoli knotting came from looking at photographs of ancient Peruvian hammered gold squares which had been sewn onto cloth as an adornment. The lovely range of color on the weathered metal excited me and I wanted to create a piece of "textile gold." Using Cavandoli to produce a lattice fabric and silk cord to give lustre and brilliant color, I made my Pectoral in a surge of enthusiasm.

This piece is structurally more sophisticated than the buttons, although an extension of that preliminary project. Squares of Cavandoli knotting were formed, beginning in one corner and working down one row at a time, progressing across the piece toward the right side. The top two left squares of knotting were placed adjacent to each other at right angles and their ends were interwoven using bobbin lace cloth stitch to facilitate the process (see diagram page 29). The ends which were then hanging free became once again vertical and horizontal knotting members, and the piece progressed continually in this manner.

In order to produce a mottled, weathered gold coloring I wound small skeins of silk cord and dipped them in shades of gold and brown dyes. By tying off areas and redying, one skein had spots of several different colors. In the knotted fabric these spots produced smudges of color randomly. I used thread from different skeins for vertical members and a contrasting gold shade for the horizontal member. I could then introduce highlights of varying colors by knitting with the horizontal cord which was usually a passive knot bearer.
Layout for Cavandoli and Interweaving
From this second Cavandoli piece I gained further insight into the possibilities of the technique. It is ideally suited for designing in small units which can later be joined to form a more complex structure, either flat or three-dimensional. Though I chose to work in silk cord, the knotting can be worked in any fairly pliable fiber. Incorporating interweaving and the resultant contrasting surface into Pectoral gives rise to thought on other techniques which could be substituted for knotting at any point in a piece. Braiding or bobbin lace and Cavandoli could easily be worked interchangeably. Because the technique is extremely strong and durable it is perfect for large three dimensional applications. The rich "beaded" surface of this technique retains its character regardless of scale.
Pectoral
Since the sixteenth century the process of creating delicate lace-like fabrics by openwork embroidery has been practiced. Until recently three distinctly different techniques were lumped together under the term "openwork embroidery." In the 1977 Textile Museum Bulletin the three processes were clarified by several textile curators who based their findings on sixteenth, seventeenth and eighteenth century examples. Withdrawn element embroidery involves actual removal of selected warp or weft threads from cloth to form design areas of dense or sparse mesh. Cut fabric work involves cutting away of fabric which has been previously bound by edge stitching. Deflected element embroidery, the area of my special interest, is the process of working embroidery stitches so tightly that the warp and weft threads are forced together creating openings in the fabric.

Deflected thread embroidery developed in fifteenth and sixteenth century Europe. It most likely began as a practical way of imitating the more laborious needle-made laces which were in style at that time. The practice of deflected thread embroidery in the twentieth century has remained popular only in areas of Scandinavia.

My approach to this technique was one of selective omission. The traditional stitches are so many and so varied it seemed essential
to limit myself to using only a few stitches in order to maximize textural and light qualities which are the essence of the technique.

After weaving a balanced warp and weft cloth of 40/2 unbleached linen, I worked a grid of border and inner squares in a stitch most commonly called "cobbler filling." Next I chalked my design into the plain weave squares. These shapes were finely outlined in coral stitch which served as a guide for embroidering the filling and clearly delineated the form's edge for a crisp appearance. The shape filling stitch was tightly worked satin stitch in rows over four warp or weft threads, depending on the direction worked. Light falling on the shapes produced two different light effects because of the different "grain" resulting from the horizontal and vertical lines of the embroidered areas.

Deflected thread embroidery is an extremely direct method of stitchery. The process requires designing which relies for impact on a thorough understanding of the relationship between stitch and texture and light. It takes experience to develop sensitivity in this technique whose simplicity is deceiving. Perhaps it is the challenge of deflected element embroidery which will attract new needle artists to it.
Cloth
The techniques I chose to explore are ones that, within the scope of my environment and personal knowledge, exist either in a purely traditional context or else are just seldom used today. In some cases I feel the technique has lost appeal because it is laborious and today's fast paced world has little patience for it. All of the processes offer broad scope for contemporary interpretation and are therefore viable textile tools. I do not hold with clinging to past traditions out of an irrational sense of nostalgia. Rather, I view the techniques I explored as wise ancestors. They represent the experimentation and subsequent conclusions of earlier craftsmen from whom we can still learn and be inspired, serving as stepping stones beyond tradition.

As my thesis work progressed, I became increasingly aware of a personal need not to become creatively hampered by over-emphasizing the role of technique in my pieces. It is not enough to skillfully execute a process and obtain a visually pleasing result. I came to feel that personal creative fulfillment as well as achievement of my goal of perpetuating a technique could only be realized when my work embodies a special inner vision. My work must speak of craft, technique, material and hands but also express that fragile exceptional quality, be it a sense of force and dynamism, spirit of invention or delicate subtlety. At this point in my education and development as a craftswoman, awareness of my creative goals and striving for them is of more value than assessing whether or not I have achieved them.
In retrospect, I feel the scope of the work I undertook should have been confined to a less broad area. The challenge of becoming facile in five different techniques and producing finished pieces was at times overwhelming. My creative energies were often splintered by the diversity of the processes explored. By hindsight I would choose to focus on a single technique. This approach would allow an intimacy with a fiber process which enables a more total investigation. As I completed one piece I felt new ideas sparked by the original work but time did not allow me to pursue them. A constructive continuity of creative exploration was hampered by the diversity of techniques explored. However, the sense of perspective I now have of the work completed provides a firm base for new works. My interest in examining a single technique, to fully stretch its bounds and mine, provides a fine beginning for further work.
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