

Early Naalbinding: Stitches of the Tarim Mummies

Kings College 2008
Canton of Glaslyn

A.S. XLII

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Introduction

This workshop is intended to introduce interested parties to the basic materials and techniques for producing various hand-knitted articles such as bags, socks, caps, and gloves. The main focus will be on learning the two earliest documented stitches (circa 1000 BCE). It is my hope that everyone who participates in this workshop will be appropriately infected with this previously dying craft and aid in its global resurgence. Please take what you learn, enjoy, and pass it on!

Background

The most commonly recognized term for single-needle knitting (with some argument) is naalbinding. This Scandinavian term has been borrowed into English as there exists no specifically comparable term. In addition, it has been generally adopted in the archaeological community to identify the technique rather than the pantheon of other terms used in the past, such as single-needle knitting, Coptic knitting, needle-looped netting, etc.

However, naalbinding is by no means a uniquely Scandinavian craft—although it has survived there to this day in its more complex forms. In fact, naalbinding predates the Viking age by more than thirteen centuries. The earliest extant samples, other than fragments, were found in the Tarim Basin (western China) and have been dated to 1000 BCE¹. Among those burials was an extraordinary find of a man, currently believed to be of pre-Celtic lineage, interred with 10 hats. Most notable of those were four knitted caps. To date, I have been able to locate published sketches or photos of only two. Figure 1 shows a sketch of an “onion dome” cap², which I have reproduced (refer to Figure 2). Figures 3 and 4 show a sketch³ and a photo⁴ of a brown beret from the same burial.

FIGURE 2.7

Two of the hats found at Cherchen, ca. 1000 B.C. *Left*: A tent-shaped cap of red-flecked brown wool. *Right*: A helmet-shaped hat of white woolen felt, decorated with 2 horn-like rolls of white felt.

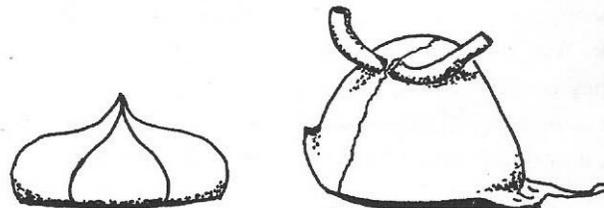


Figure 1. Sketch of Tarim "Onion Dome" Cap



Figure 2. Reconstruction of Tarim "Onion Dome" Cap

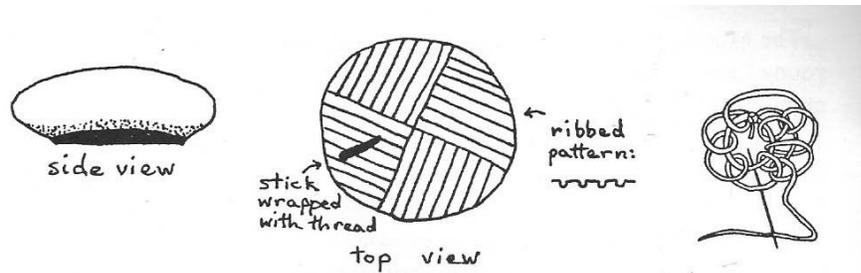


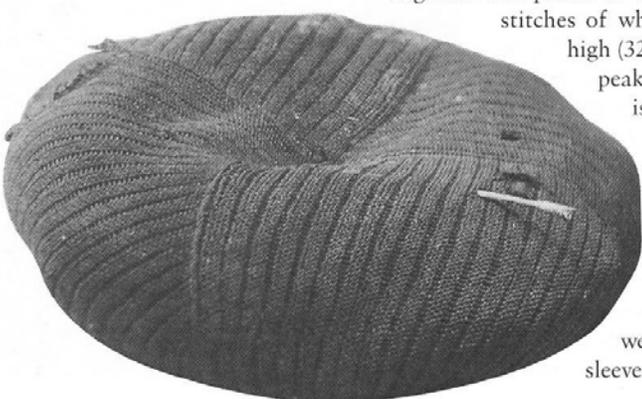
FIGURE 2.6

A beret-shaped hat constructed in *nalbinding* technique from dark red-brown woolen yarn, worked in a pattern of ribbed quadrants. *Nalbinding* uses a threaded needle (unlike knitting) to make loops interlocking with the previous row of loops (right), in an ever-increasing spiral starting from a little circle in the center.

Figure 3. Sketch of Tarim Beret

125. Beret-type hat recovered from Zaghunluq.

felt and a mid-seam had a rolled piece of felt in the fr (like a cartoon viking) and there were two flaps for fastening the hat to the chin. Still another ha



together two pieces of thick stitches of white high (32.7 cm) peak with is also de sl f t b tl eac were at sleeves; th

Figure 4. Photo of Tarim Beret

It is significant to note that these two caps are done using the same technique, i.e., naalbinding, but two different stitches. Learning these two stitches is the objective of this course and the subject of the following construction notes.

Materials

Naalbinding simply requires a large-eye needle and wool yarn. My personal preference is to use 100% wool, regardless of the weight; however, other blends are also suitable so long as they have some wool content. The principal difference in using blends is they will not easily break by hand and may require scissors. The main reason for using yarns with wool content is to allow for felting.

Naalbinding varies substantially from modern knitting in that a single needle is used to pass the entire thread through each loop. As such, naalbinding uses numerous short lengths of yarn. The most direct way of connecting the separate lengths together is by felting, which will be discussed more a little later. Done properly, the yarn appears to be one continuous length when in fact the thread is not. This characteristic may well have lent to the mis-identification of early textiles as knitting, which is being corrected throughout the archaeological community for all “knitting” finds prior to the 12th century⁵.

The large-eye needles distributed in this course are made of wood craft sticks and will have a limited lifetime. The student is strongly encouraged to keep the needle smooth—a fingernail file works quite nicely—and work to get a needle of harder material such as bone or horn. Some examples are shown below⁶. Although these have been identified as “pins” from the Anglian period at Fishergate House and Blue Bridge Lane in London, UK, they are clearly naalbinding needles...their width makes them poor for sewing but great for naalbinding since it helps to maintain the gauge. Also, a well-used naalbinding needle will form a slight curve to fit the operator.



Figure 5. Naalbinding Needles from Fishgate House, London, UK

Stitches

Two stitches have been mentioned thus far. For simplicity, I will refer to them as the buttonhole stitch and the Tarim stitch. The buttonhole is a common stitch in sewing and embroidery. While the resulting textile will vary significantly from any sewing application, the mechanics are the precisely the same. The Tarim stitch is so named since the finds discussed above are the earliest extant artifacts, and the common practice of the archaeological community is to title an item based upon the oldest dated find.

The buttonhole stitch was used to construct the beret (see Figures 3 and 4); the Tarim stitch was used to construct the “onion dome” cap (see Figures 1 and 2). In particular, the Tarim stitch has the appearance of modern knitting...undoubtedly also adding to the confusion on finds prior to the 12th century.

The sections that follow will discuss each in order of complexity. Also, the buttonhole stitch is used in both stitches to form the foundation row and add stitches to a row.

Construction

Buttonhole Stitch

This a straight-forward stitch, which should be familiar from sewing and embroidery. In naalbinding, the buttonhole stitch can be used by itself to construct a rather loose, stretchy textile or as the foundation for the Tarim stitch covered later.

Step 0

Decide what you want to make. Not really a step for many but an essential part of deciding which of two foundation approaches you will use: chain or loop. To that end, is the finished product in the form of a tube or bag? For example, a sock, cap, or bag has a rounded, centered portion, e.g., toe, which lends itself to start with a ring. On the other hand, a sleeve or coif is tubular, which lends itself to start with a chain.

In the following steps, you will find to parallel sets of sketches. Those on the left are for left-handed students; those on the right are for the rest of us. The directions are effectively the same but with some consideration given to dominant hand.

Foundation Chain – Step 1

Make an overhand knot as shown in Figures 6a or 6b (as appropriate).

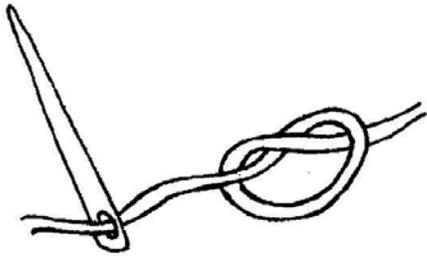


Figure 6a. Overhand Knot (left handed)

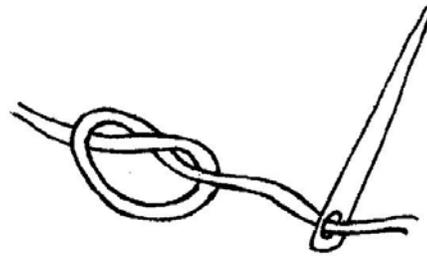


Figure 6a. Overhand Knot (right handed)

Foundation Chain – Step 2

Firmly grasp the knot between your thumb and index finger, and insert the needle as shown in Figures 7a or 7b. Then, draw the needle through the loop as shown in Figures 8a or 8b.

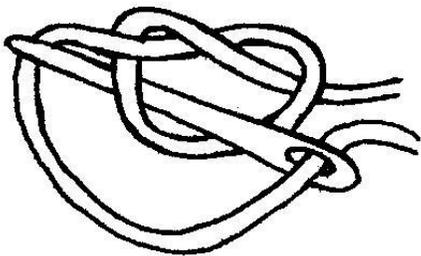


Figure 7a. Start 1st Buttonhole (left handed)

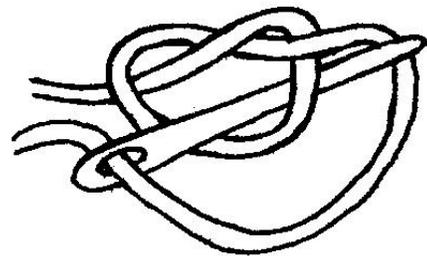


Figure 7b. Start 1st Buttonhole (right handed)



Figure 8a. Finish 1st Buttonhole (left handed)



Figure 8b. Finish 1st Buttonhole (right handed)

Congratulations, you've just made your first buttonhole stitch!

Foundation Chain – Step 3

Forming a chain is now easy as repeat the process. Firmly grasp the last stitch between your thumb and index finger, and insert the needle as shown in Figures 9a or 9b. Then, draw the needle through the loop as shown in Figures 10a or 10b. Draw the loop down taught but not tight. If you draw down too tight, you will have difficulty forming the next stitch. Again, use a large bore needle like the sample and let it set your gauge.

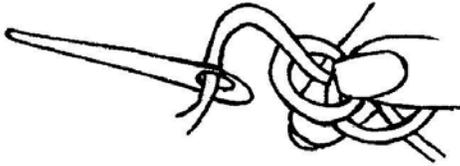


Figure 9a. Start Buttonhole (left handed)



Figure 9b. Start Buttonhole (right handed)

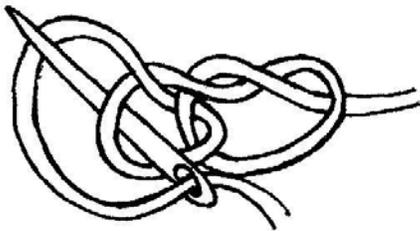


Figure 10a. Finish Buttonhole (left handed)

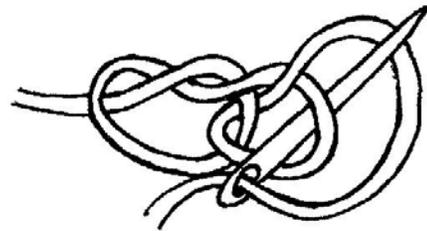


Figure 10b. Finish Buttonhole (right handed)

Foundation Chain – Step 4

Repeat the process as many times as necessary to get the length of chain you need. For example, if you are making a cap, the chain should be large enough to go around your head. If you are making a mitten, the chain should fit around your wrist. Your chain should resemble that shown in Figures 11a or 11b.



Figure 11a. Form Chain (left handed)



Figure 11b. Form Chain (right handed)

Foundation Chain – Step 5

Now, close the chain to form the foundation for a tube. Firmly grasp the last stitch between your thumb and index finger, insert the needle in the first stitch as shown in Figures 12a or 12b, and draw through.

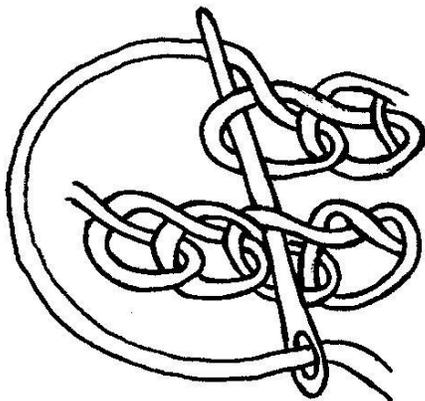


Figure 12a. Close Chain (left handed)

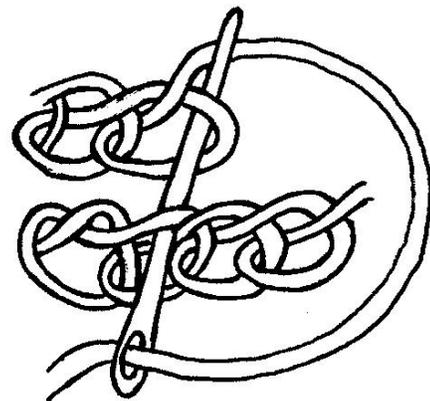


Figure 12b. Close Chain (right handed)

Examine the chain loop carefully at this point. The chain will tend to roll and if the chain is not closed so that it lies flat, you will end up with a mobius...a never-ending loop. While a mobius makes a nice enough scarf, it does not lend itself well to making a tube for a cap or sleeve. Congratulations, you have made your first foundation chain!

Foundation Ring – Step 1

Make an overhand knot as shown in Figures 13a or 13b (as appropriate).

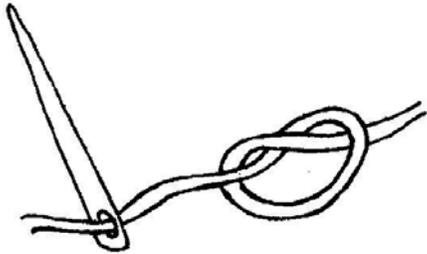


Figure 13a. Overhand Knot (left handed)

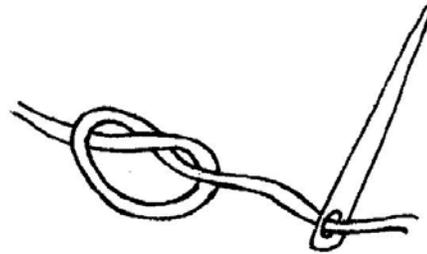


Figure 13a. Overhand Knot (right handed)

Foundation Ring – Step 2

Firmly grasp the knot between your thumb and index finger, and insert the needle as shown in Figures 14a or 14b. Then, draw the needle through the loop as shown in Figures 15a or 15b.

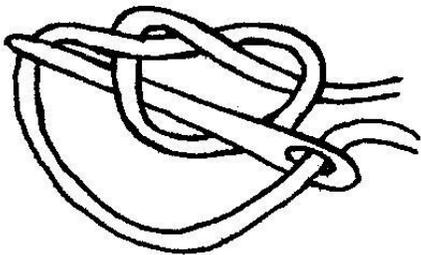


Figure 14a. Start 1st Buttonhole (left handed)

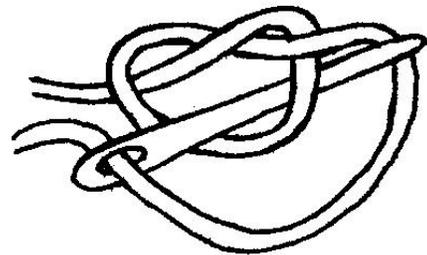


Figure 14b. Start 1st Buttonhole (right handed)



Figure 15a. Finish 1st Buttonhole (left handed)



Figure 15b. Finish 1st Buttonhole (right handed)

Foundation Ring – Step 3

Repeat the previous step to form a ring of stitches...5 to 10 is a good start. Firmly grasp the knot between your thumb and index finger, and insert the needle as shown in Figures 16a or 16b. Draw the loop down taught but not tight. If you draw down too tight, you will have difficulty forming the next stitch. Again, use a large bore needle like the sample and let it set your gauge.

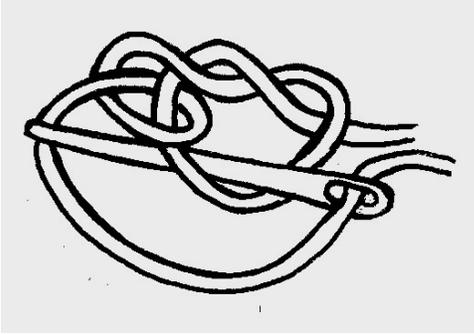


Figure 16a. Start Buttonhole (left handed)

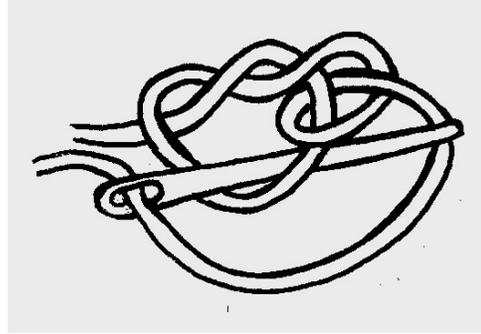


Figure 16b. Start Buttonhole (right handed)

Buttonhole Fabric

From your foundation chain or ring, build up continuing rows of buttonhole stitch. Left-handers will work from right to left; right-handers will work from left to right. With the needle pointed away from you, insert the needle in a loop in the foundation row as shown in Figures 17a or 17b, and draw through. Make sure the working thread is under the needle.

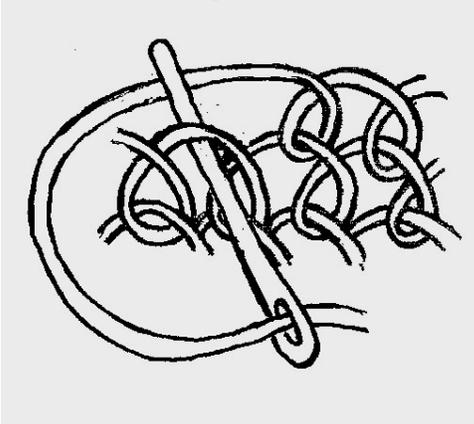


Figure 17a. Buttonhole Fabric (left handed)

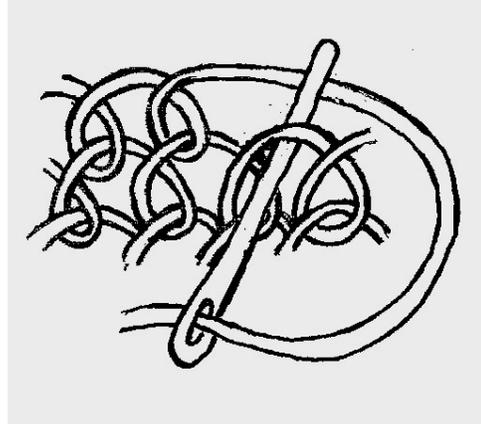


Figure 17b. Buttonhole Fabric (right handed)

Tarim Stitch

The Tarim stitch is the most commonly found stitch with respect to time period and geography. The stitch was designated by Margrethe Hald as “mesh” stitch⁷, and closely resembles modern knitting. In naalbinding, the Tarim stitch is built up from a foundation ring or chain of the buttonhole stitch. So, you need to have completed the steps above for the buttonhole up to the *Buttonhole Fabric* section.

Tarim Stitch Fabric

From your foundation chain or ring, build up continuing rows of buttonhole stitch. Left-handers will work from right to left; right-handers will work from left to right. Insert the needle from sewing hand to holding hand under the X in the previous row as shown in Figures 18a or 18b, and draw through.

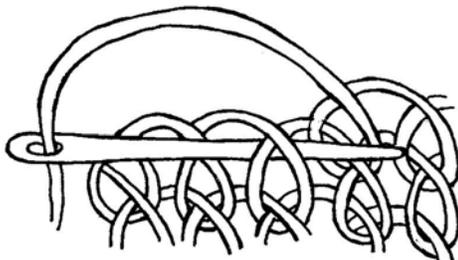


Figure 18a. Tarim Stitch Fabric (left handed)

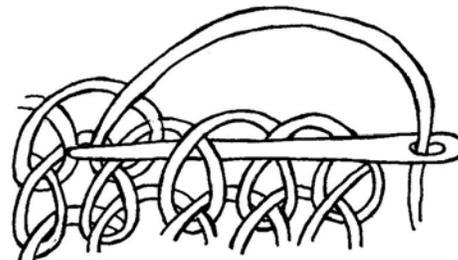


Figure 18b. Tarim Stitch Fabric (right handed)

Adding and Subtracting Stitches

In order to expand a row and allow the fabric to grow, stitches must be added. Both stitches employ the same method of adding a stitch. A buttonhole stitch is added to the fabric as shown in Figures 19a or 19b.

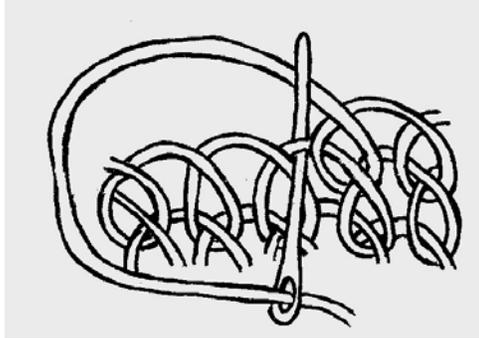


Figure 19a. Adding a Stitch (left handed)

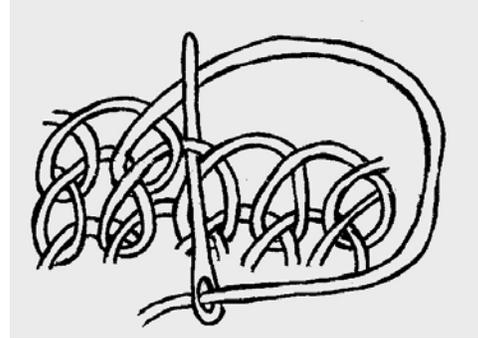


Figure 19b. Adding a Stitch (right handed)

In order to reduce a row and allow the fabric to shrink, stitches must be subtracted. Both stitches employ the same technique of subtracting a stitch. Skip the next stitch as shown in Figures 20a or 20b.

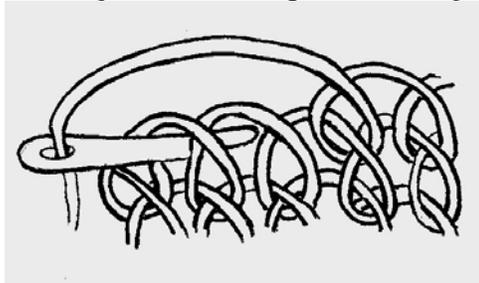


Figure 20a. Adding a Stitch (left handed)

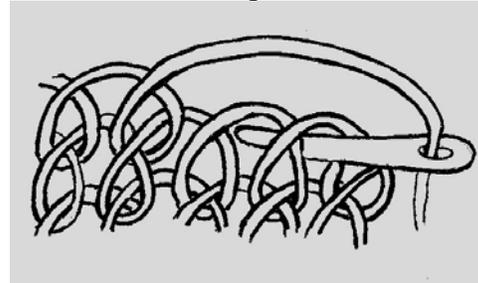


Figure 20b. Adding a Stitch (right handed)

Joining Threads by Felting

The last construction technique is joining the threads. As noted earlier, the simplest way of moving from one thread to another is by felting threads, which have some amount of wool. The process is simple but still takes some practice. Done well even Mistress Seam-checker will be hard-pressed to find your joins.

Felting – Step 1

When you reached the end of your working thread, pull off a length of thread from the skein of yarn and thread the end closest to the skein into your needle.

Felting – Step 2

Tease out, i.e., separate the fibers, both ends for approximately 1½”.

Felting – Step 3

Wet both teased ends liberally with spit.

Felting – Step 4

Lay the teased ends over each other their entire length, i.e., 1½”.

Felting – Step 5

Holding the new working thread in your sewing hand, carefully twist the thread with your holding hand so that the wet threads continue the overall twist of the yarn. Twist the wet threads together tightly until they are approximately the same size as the remainder of the thread.

Felting – Step 6

Place the wet threads between the palms of your hand, preferably the thick part, and rub them together. Work up your speed gently until you are quite vigorous...your palms should feel hot from the friction.

Felting – Step 7

Check the area you were felting. It should be approximately the same diameter as the yarn, i.e., not lumpy, and it should look smooth...no stray threads sticking out. If you have strays or the threads did not felt properly, repeat the process of wetting and rubbing.

Acknowledgements

I would like to thank Mistress Alix Tiberger of Aachen for all her help and patience in learning these techniques, and most especially her *sketches*. Also, I would like to thank Her Excellency, Mistress Xene Theriane, for her continued support and sponsorship in my various artistic endeavors.

Contacts

Please feel free to contact either myself or Mistress Alix, if you have any questions regarding these techniques:

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<u>Mistress Alix</u> :	alix_tiberger@yahoo.com	http://www.geocities.com/alixtibergera

Notes

¹ Elizabeth Wayland Barber, PhD, *The Mummies of Ürümchi*, pg. 33.

² Elizabeth Wayland Barber, PhD, *The Mummies of Ürümchi*, pg. 33, figure 2.7.

³ Elizabeth Wayland Barber, PhD, *The Mummies of Ürümchi*, pg. 32, figure 2.6.

⁴ J. P. Mallory and Victor H. Mair, *The Tarim Mummies*, pg. 214, figure 125.

⁵ Elizabeth Wayland Barber, PhD, 323/259-2838, barber@oxy.edu, personal communications.

⁶ Steve Ashby and Cecily Spall, “Artefacts & Environmental Evidence: Bone, Antler, Ivory and Horn Objects”, http://www.archaeologicalplanningconsultancy.co.uk/mono/001/rep_bone_obj.html.

⁷ Margrethe Hald, *Ancient Danish Textiles from Bogs and Burials*, pg. 283.