"KNOTTY" HEADWEAR: HOW TO NET A MEDIEVAL CAUL OR SNOOD by Giraude Benet
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A Brief History of the Hair Net in the 14th Century:

Based on pictorial and archaeological evidence, the hair net (known in various costume texts as a caul, crespine, crespinette, fret, or the post-period term snood) began to make an appearance on the heads of the fashionable women of England as early as the 11th century, and reached its peak of popularity in early to mid 14th century. As you can see in figures 1 and 2, the hair net was worn with a barbette (a wide linen band, which appears to be folded as it passes under the chin) and filet (a narrower linen head band). It could be worn with or without a couvre-chef, or veil. The net was most likely pinned to the barbette and filet as a way to help keep it securely on the head.

fig. 1   fig. 2

This style of hair dressing must not have been looked upon with favor by the Catholic Church, given its depiction in illuminated psalters of the period. The Oremsby Psalter (now in the Bodleian Library) shows an illuminated initial with the figure of a fox, decked out in a hair net, barbette and filet (fig. 3). A psalter in the collections of St. John's College, Cambridge has an illumination of a serpent with the head and arms of a woman coiled around a tree (fig. 4). Like the fox in the previous example, the woman is wearing a hair net, barbette and filet. Given these examples, the hair net worn without a covering veil must have been seen by some as very naughty (and knotty!) headwear indeed!

fig. 3   fig. 4

By the late 14th century and early 15th centuries the hair net had evolved into the elaborate reticulated headdress (fig. 5). Network caps, made with heavier cords and constructed differently than the earlier English examples were popular in 15th-century Italian fashion, as seen in the famous portrait of Beatrice d'Este (fig. 6).

fig. 5

fig. 6

This does not mean that the hair net was not worn in later periods, however. The paintings of Lucas Cranach the Elder from the early 16th century shows many women wearing hair nets, including beaded nets, as part of their hair dressing.

fig. 7
Detail from
Hercules and Omphale, 1537

fig. 8
Detail from
Judith Victorious, 1530

fig. 9
Portrait of
Margarethe von Ponickau. 1526

Netting Tools and Techniques:

Tools and materials: The basic tools and materials to start netting are few and relatively easy to acquire. To start, you will need:

- A netting shuttle or needle
- A mesh or gauge stick
- Your desired string, yarn, or thread
- A clamp, pole, or some other item or surface upon which to anchor the work

Netting shuttles are tools used to produce netting for fishing nets, hammocks, or net bags.

Netting needles are much finer, and are used to produce the type of netting necessary for hairnets. Both can be acquired for around $5.00 from Lacis (http://www.lacis.com) and many other online stores.
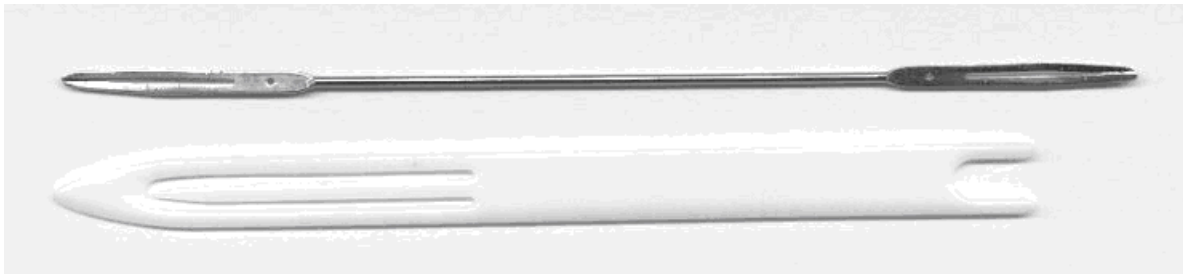

fig. 10: netting needle (top), netting shuttle

Netting needles can be improvised if you have more creativity than money. One very useful improvised netting needle can be made by taping two six-inch upholstery needles together, as seen in figure 7:

fig. 11: netting needle made of two upholstery needles taped together

Not only is this a very workable netting needle, it is also good to use with delicate threads, or threads that have gold or silver filaments wrapped around the outside. A regular netting needle can cut the gold or silver filaments as the thread is wound on or unwound from the needle, and this type of constructed netting needle is very gentle to the thread.

A **mesh stick** is a round or flat stick of consistent width necessary to keep the loops of the netting a uniform size. The width of the mesh stick will determine the size of the openings in the net (the openings in the mesh will be twice the width of the mesh stick). The mesh stick must be wider than the netting shuttle or needle being used, or else net won't be large enough to pass the shuttle or needle through to tie the knots! Mesh sticks can be made of wood, metal or plastic. A double-pointed knitting needle works well as a mesh stick if it's of the correct diameter. Wooden craft sticks (the ones that look like popsicle sticks) are also an alternative, although they tend to be a little splintery. "Quilters Press Bars" found in

the quilting section of most fabric stores make great mesh sticks. They come in a pack of five widths, all good for netting, although you will probably want to cut them in half to make them a more useable length.

Thread. The surviving hairnets shown in the book Clothing and Textiles c.1150-c.1450 are all made of a lightly plied, fine silk Z- or S-ply thread. The nets in this book are described as being varying shades of brown, but this could be due to their age and time in the ground before discovery. Other surviving hairnets, especially the embroidered hairnets found at St. Truiden, Belgium, are described as being in various colors, so a color thread would also be period.

It's important to use plied thread with a twist for netting. The twist in the thread is what helps the knot "lock" and remain tight. Netting knots should be firm enough that a piece of netting can be cut to size without the fear of the knots in the piece coming undone in any way. To start out with, I recommend size five or size ten crochet cotton. It's easier to work with for beginners, comes in a variety of colors, and it's very easy on the pocketbook. Avoid rayon threads and yarns! Although they look gorgeous, this is a very slick fiber. Your knots won't stay firm and your loops will slip, resulting in a very uneven net!

If you do decide to use silk, I recommend that you use reeled silk and not spun silk. Not only is this the most period material, reeled silk is strong enough to hold up to the tension that you will subject it to while netting. Spun silk can break with annoying frequency, so if you do use it for your netting, be prepared for the challenge.

How to anchor your work: Most small netting projects are suspended on a loop of string or cord called a "foundation loop." In the 13th and 14th centuries, women sometimes anchored their foundation loop to the top of a short staff (fig. 9). This is a very good anchor to use, since you can keep the netting at any level which is comfortable for you to work with, and it's very portable.

fig. 12   fig. 13 detail of netting stand

The Basic Netting Knot:

The basic knot used in netting from ancient times to the present is the "sheet bend." The following diagrams show how to make this knot:
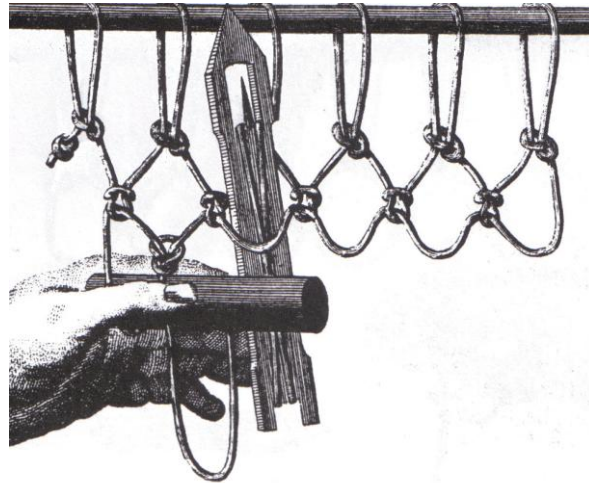
fig. 14

Come back up behind the mesh stick and run the thread through the mesh in the row above that you're going to tie the knot in.
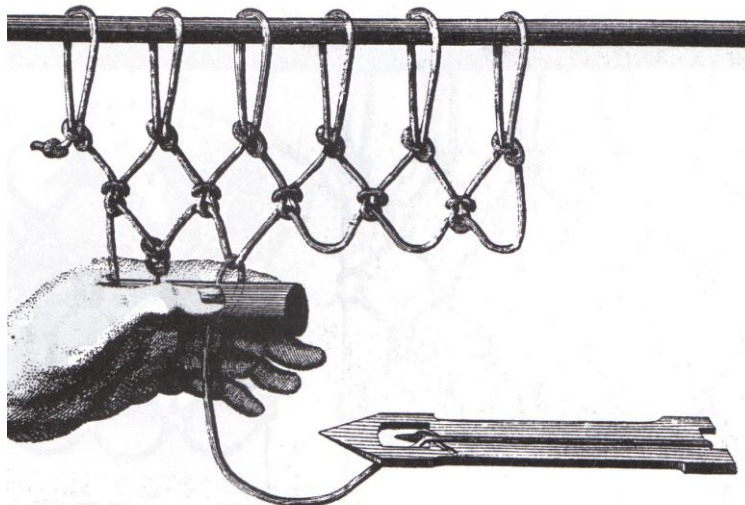
fig. 15

Pull the thread back down over the top of the mesh stick, then pull the thread tight so that the top loop is pulled into a tight "V" and the bottom of that "V" is sitting on top of the mesh stick.   (From this point on in the knot tying process, you will want to keep a firm and consistent tension on the net you're working with. This is the secret to getting a good, even mesh. Just don't pull so hard that you break any threads!)

Anchor the working thread firmly in place on the mesh stick by pinching it on the stick between the thumb and forefinger of your left hand.
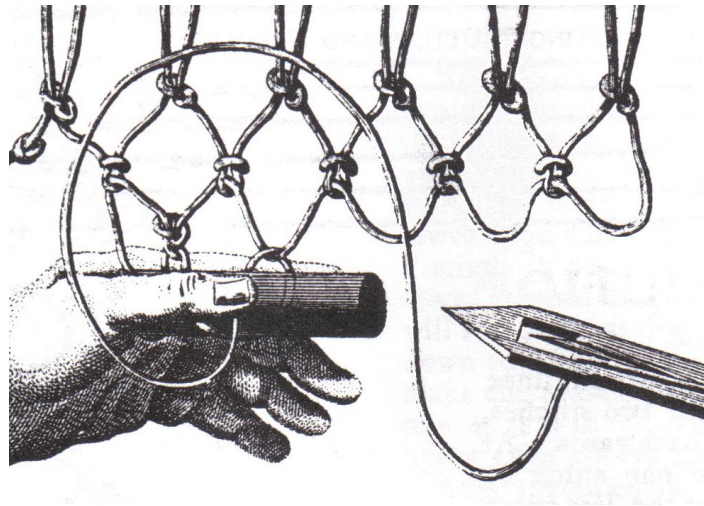
fig. 16

Swing the working thread back behind the joint of your thumb, and up over the mesh you are knotting into.   This will help in making the sheet bend knot.
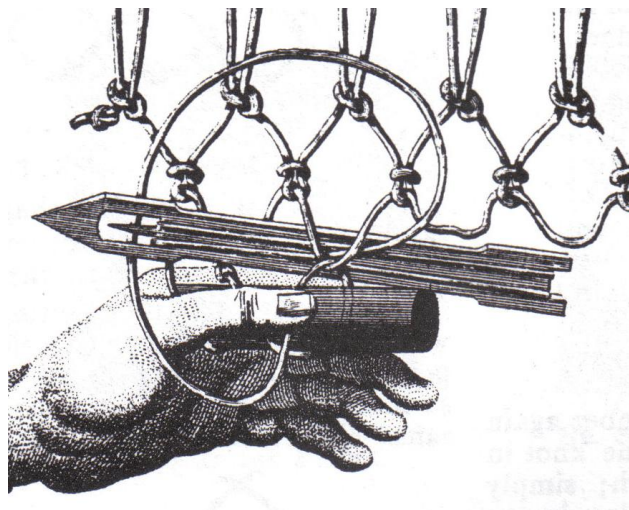
fig. 17

Take the netting needle behind both legs of the top loop, but keep it in front of the working thread. This is important, since this is what will make your knot. Once you've got the shuttle out from behind the top loop, start to pull, taking up the slack of the loop you made over the joint of your thumb. Do not let go of the thread under your thumb!
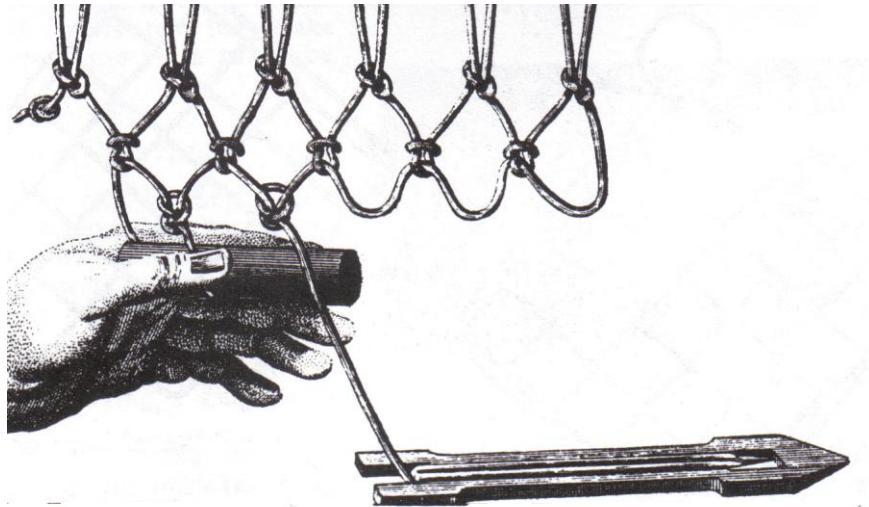
fig. 18

Keep the tension on the working thread tight, and ease the anchored part of the thread out from under your thumb until the knot snaps tight. If you have done everything correctly, the knot should form right on top of the mesh stick.

(If you're left handed, hold the mesh stick in your right hand and the netting needle or shuttle in your left hand. Instead of working your rows from left to right, work them from right to left, taking the working thread behind the top loop from left to right instead of from right to left as shown in the diagrams above.)

Do make sure that when you tighten the knot that the bottom of the top loop becomes part of the knot, or else the knot will be able to slide. This takes a bit of practice, but it helps if you pinch the threads together slightly above the mesh stick, and then pull towards you and slightly up as you finish tightening the knot. If your knots look like the illustration on the right, the knots will slide around and your meshes won't stay even.



correct knot   incorrect knot

Increasing, Decreasing, Adding New Thread, and Other Useful Information:

How to increase a row:

As in knitting, sometimes it is necessary to increase the number of loops in a row. This is especially true in medieval hairnets, which frequently start at the crown with a certain number of loops, and then increase to double that number after several rows. The modern way of increasing is to knot two meshes in the same loop. The period way of increasing is to make the extra knot into the row above (see illustration).
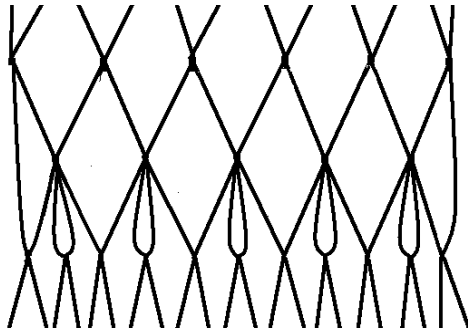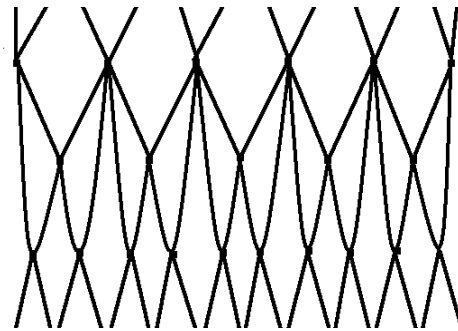
modern increase   medieval increase

How to decrease a row:

To decrease the number of loops in a row, tie one knot through two adjacent loops, tying them together.

Adding a new thread:

When your netting needle is out of thread, the best knot I've found for joining the new thread onto the last of the old is a type of lacemaker's or weaver's knot. I'll describe it as best I can! Fill the netting needle with new thread, then make a loose slip knot at the end of the thread (make the slip knot so that it "slips" when you pull the thread coming from the needle, not the trailing end). Loop the slip knot onto the old thread, and push it as close as possible to the last knot you made. Pull the slip knot tight, and give it a firm tug until you feel the old thread "pop" into the slip knot. Give the joined threads a gentle tug to fully tighten the knot. If made correctly, this knot is very firm and doesn't seem to slip, so you can clip the loose ends very close to the knot, making the join in the threads very difficult to see in your finished net.

Other ways to add the new thread is to tie the first knot with the new thread over the last knot made with the old thread.

A plastic or metal yarn or tapestry needle, of the sort used in knitting, is handy to have when you are getting close to the end of your working thread. You can remove the last length of thread from the netting needle, thread it through the eye of the yarn needle, and tie a few more knots before having to refill the netting needle. This is a handy technique to use, especially if you are working with silk and want to minimize waste.

General netting hints and tips:

While you're learning the basics of netting, it is easier to work with the knots spread out a bit on the foundation loop so that the loops of the net all appear very distinctly. Once you are comfortable with the technique, however, try to work with the knots as close together as possible on the foundation loop. This will make it easier to get a more consistent tension as you work so you make more evenly-sized loops in your net.

If you find that you have skipped a loop in a previous row, or failed to make a complete knot in a previous row, this can be corrected. You will need to cut away all the loops made after the flaw and the flawed loop itself, join a fresh working thread to the loose end of the last correct loop, then proceed with the net. If the flaw is not noticeable, however, you can finish the net and leave the flaw in place.

Also, there are many variations on the basic technique for making netting. The one I'm teaching is the one that works best for me. If you delve deeper into the bibliography at the end of this handout, you'll see what I mean. Each book gives a slightly different way of using the foundation loop, of tying the basic knot, etc. Experiment, and use whatever technique that works best for you!

Casting Directly onto the Foundation Loop:

Once you have some practice tying the basic netting knot, you will want to try starting a netting project by casting the first row of loops onto the foundation loop, but not in the same way you did with the practice square. This creates results that are more consistent with the features of surviving medieval hairnets, and the method of starting I recommend if you are aiming for greater authenticity. The illustrations below show a net being cast onto a dowel, which will also work as a foundation if you plan to make a flat piece of netting.
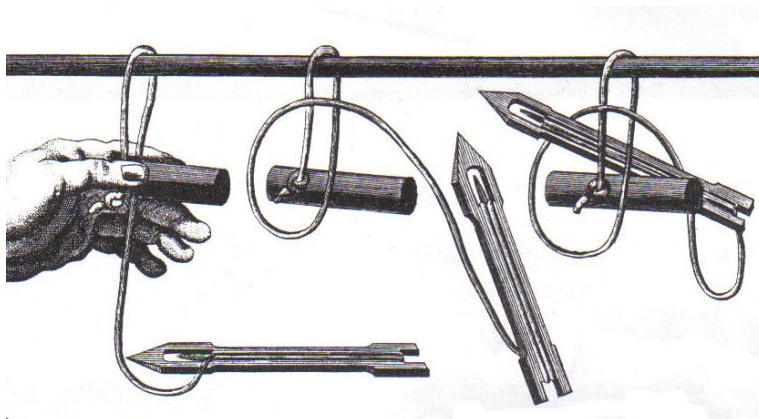

fig. 19

Tie a knot into the end of the working thread, bring the thread around the foundation, and then hold both parts of the thread onto the mesh stick with your thumb to form a loop. Proceed to tie a sheet bend around this loop as if it were a regular mesh. Since you are not tying these knots into a mesh, they do not lock the same way and *can* slip. This why you need to tie a knot in the end of the working thread for the first knot…this will prevent the end of the thread from slipping out of the knot. If you use care, though, and tie them firmly, the knots will remain relatively stable until after you finish the second row of net.
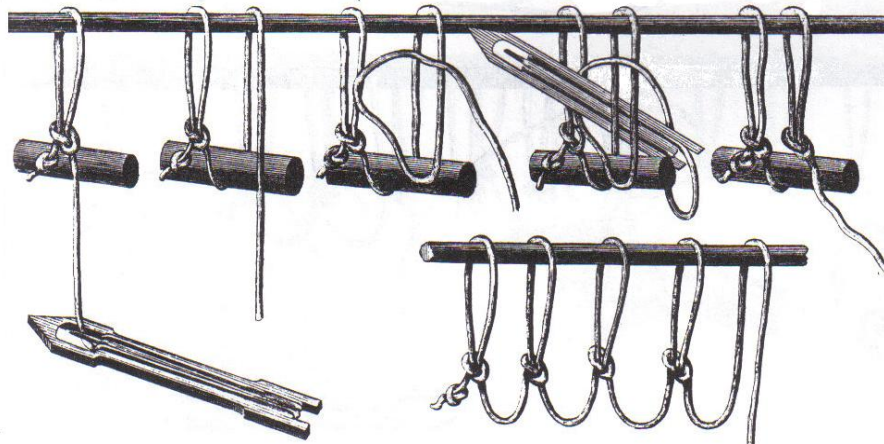
fig. 20

After you have tied the first knot, bring the working thread under the mesh stick, then behind and over the foundation to form the next loop you will use for the second knot. Pinch both sides of this loop onto the mesh stick, and tie a sheet bend around this loop. Repeat until you have cast on the required number of meshes to start your netting project.

Flat Netting vs. Circular/Spiral Netting:

To make a flat piece of netting, when you reach the end of a row, you remove the mesh stick from the row you just created, flip the work over so that the working thread is again on the left side, and then start the next row. Most hairnets from the medieval period, however, are made from tubes of netting (netted in a spiral) that are gathered at one end and stitched to a length of braid at the open end.

It isn't much more difficult to make circular/spiral netting than it is to make a flat piece of netting. When you reach the end of your first row of netting, simply start the second row by bringing the end of the first row around to meet the start, and make your next knot into the first loop of the first row, as shown in the illustration:
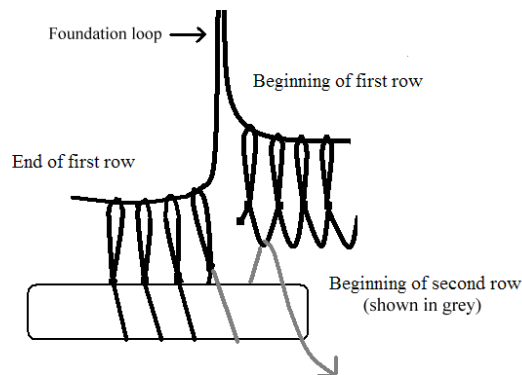
At first, the place where the spiral begins will be slightly more difficult to work with, but after a few rows you won't notice it at all.

Basic Circular Hairnet:

Tools required:

- Netting needle
- 3/8 inch wide mesh stick, or a size 3 double-point knitting needle

Make 45 to 50 meshes onto a foundation loop.

Continue to net in the round using the spiral netting technique for 30-35 rows, or until the tube of net is as long as desired. Finish the net as described further below.

Easy "Rectangle" Hairnet:

You can also make a hairnet out of a flat rectangle of net, kind of like a "lunchroom lady" hairnet.   While I can't document any period hairnets made in this fashion, this is an easy project that can be made with very basic netting skills (and I promise you won't look like a lunchroom lady when you wear it with your garb).

Tools required:

- Same as above

Make 40 meshes onto a foundation loop. Continue to net until you have a rectangle 40 meshes wide and approximately 60 meshes long.

Gather both ends by running strong threads through the loops at the ends and tying them snug, which will make a hammock-like bag. The ungathered sides of your net will now form the edges of the hairnet, which can be finished off using any of the finishing methods described below.

How to finish off a hairnet:

For the circular hairnets, finish the crown of the net by running a length of thread through the first row of loops, pulling it tight, and tying it off securely.

The authentic way to finish off the open end of the net is to stitch it to either fingerloop or tablet-woven braid. The way I do it (learned from Emmelyne de Marksbury) is to take a length of braid and measure it to fit your head plus extra to tie. Tie the braid to fit your head comfortably, then stitch the net to the braid starting a few inches to one side of the knot in the braid, and finishing several inches to the other side of the knot. Undo the knot, then thread the unstitched braid through the remaining unstitched loops. This makes the net adjustable, and easier to put on. (If the loops of your net are too small to thread the braid through, you can add a section of larger loops with a single or double thread to form a "casing" for the unstitched ends.)

The quick way to finish off the net is to run a length of braided threads through the last row of loops like a drawstring, and tie the braid to fit your head

The modern expedient for finishing off the net is to take a length of round elastic, run it through the last row of loops, and tie it off so that it fits your head comfortably without sliding off. This isn't authentic, of course, but it's an alternative for those who prefer it.

Making a starter chain: The easiest way I have found to begin a netting project is to begin with a "starter chain" of meshes. The advantages of this method as opposed to any other are that the knots in the loops or meshes of netting won't slip like knots tied directly on the foundation loop can do, and it's easier to spread out the meshes so that you can more clearly see the mesh you will be tying your next knot in. This is NOT to my knowledge a period way to start a net, but it is a good method to use to learn and practice netting.

1. To begin a starter chain, take the working end of the thread on your netting needle or shuttle, wrap it twice around the mesh stick, and tie a firm knot. Remove the mesh stick. This will be your starter loop.

2. Tie a foundation loop of sturdy string or cord through the starter loop and anchor it securely.
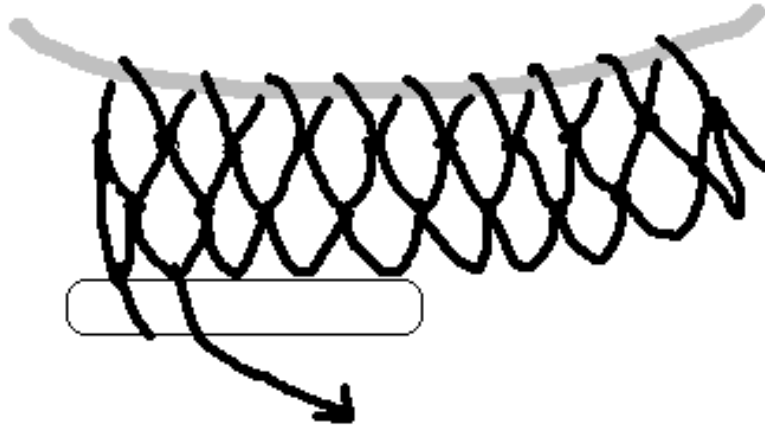
3. Position the working thread on the left (or on the right, if you're left-handed), with the knot half way up the side of the starter loop. Using the mesh stick as a gauge, tie a sheet bend knot in the bottom of the starter loop, forming a new mesh. When you pull the knot tight, it should form on the top of the mesh stick.
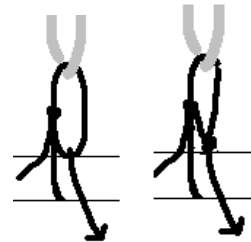
4. Pull out the mesh stick, and turn the mesh over so that the working thread is again to the left. Make a sheet bend knot in the bottom of the mesh you just made. Repeat this step until you have twice as many knots in your starter chain as the number of meshes needed in your first row of netting.
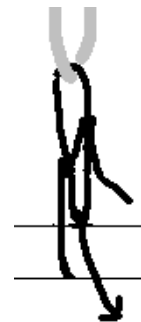
5. Remove the starter chain from the foundation loop, but DO NOT cut off the working thread from the end.

6. Run a new foundation loop through one side of the starter chain, making sure that the working thread is on the bottom row. The starter chain now forms your first two rows of meshes in your project.

7. Position the new foundation loop so that the working thread is to the left, and start the next row of meshes. If you are going to continue your work and make a piece of rectangular net, you will not need to remove the mesh stick. As you work your next row of meshes, the loops you make can remain wrapped around the mesh stick. You can scoot these loops around to a more comfortable position for your hand as the stick fills up, and even move the first loops off of the end of the mesh stick if it gets too full.

When you reach the end of the row, remove the mesh stick, turn the net so that the working thread is again at the left of the piece, then start the next row in the same manner, always working from left to right.

(I'm including this in the handout by popular demand. I teach the basic netting knot by having everyone practice by knotting onto a piece of netting made using the starter chain method. Many people have asked me how to make a starter chain, so here it is.)

SOURCES OF ILLUSTRATIONS:

Figures 1 and 2: Handbook of English Medieval Costume by C. Willet Cunnington and Phyllis Cunnington. Boston: Plays, Inc., 1969.

Figure 3: The Book of Costume, Vol. I by Milla Davenport. New York: Crown Publishers, 1948.

Figure 4: Textiles and Clothing c. 1150-c.1450 by Elisabeth Crowfoot, Frances Pritchard, and Kay Staniland. Woodbridge, England: The Boydell Press, 2001.

Figures 5 and 6: Accessories of Dress by Katherine Morris Lester and Bess Viola Oerke. Peoria, Illinois: Chas. A. Bennet Publications, 1940.

Figures 7, 8, 9 Paintings of Lucas Cranach the Elder, as noted.

Figures 12 & 13: Artes Minores: Dank an Werner Abegg edited by H von M Stettler and M. Lemberg. Bern, Switzerland

Figures 14-21: "Filets de Peche, de Chasse, &c". from Encyclopédie, ou Dictionnaire raisonné des sciences, des métiers et des arts, 1751-1772

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