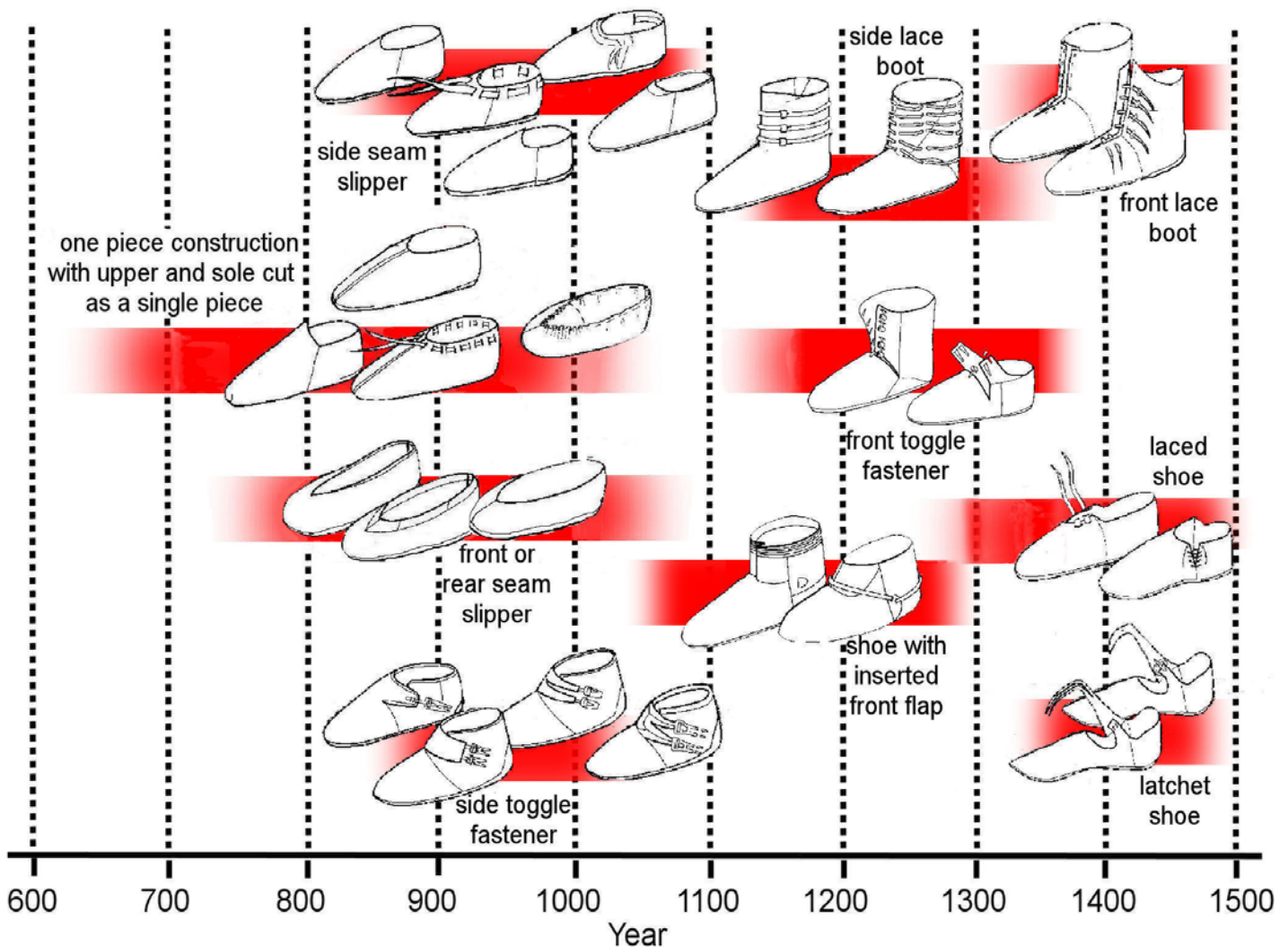


Whilst many re-enactors are happy to try sewing clothing, making shoes tends to be viewed as a difficult task only suited to experts. This isn't a detailed guide on how to become an expert shoe maker; It's a set of notes about my own self taught methods which evolved to help me to make good looking and serviceable replica shoes using a minimal set of tools and basic skills which should be within the ability of any re-enactor used to sewing their own costume.

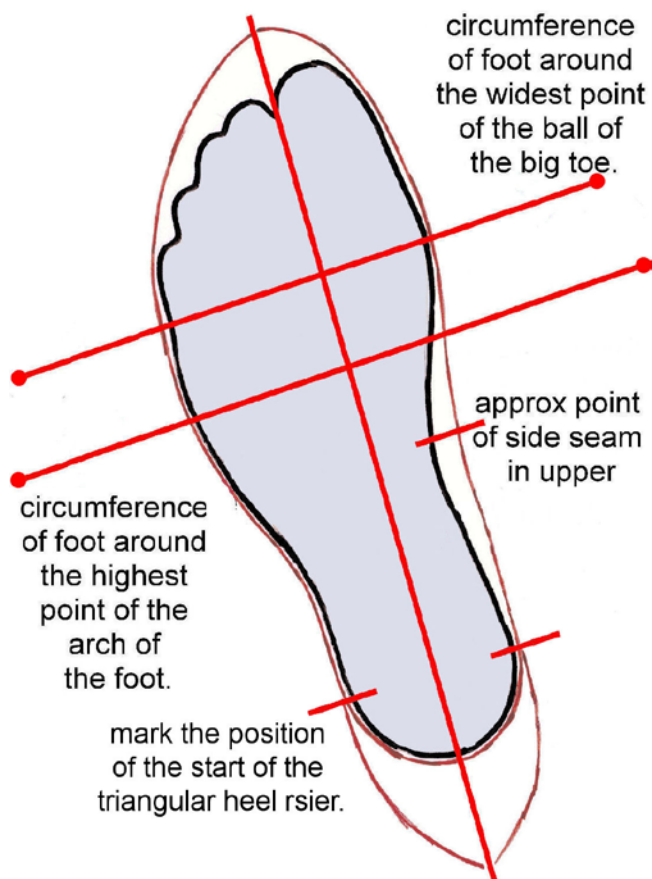
In order to make your own pair of replica Viking period turnshoes it is of course necessary to understand what we mean by the term turnshoe, and I suppose to a lesser extent the term Viking period. Put simply a turnshoe is any shoe that is sewn together inside out and then "turned" right way round to force the seams inside where they are less likely to be worn or abraded in use. This traditional way of making shoes is radically different and somewhat simpler than the methods used in modern shoe construction, and it is this simplicity that I would suggest makes making a pair of turnshoes an attainable goal for somebody with basic sewing skills but no previous shoe making experience.

With regard to the term Viking period, it can mean many things to many people. Here in England it is commonly taken to mean from the first attack on Lindisfarne through to the Norman conquest - roughly speaking the ninth, tenth and first half of the eleventh centuries. Elsewhere in Europe it can cover far longer from the early Migration or Vendel periods through to what we in England would consider the Middle Ages or High Medieval. It is important to choose a particular style suitable for the date you are portraying. So whether buying shoes or making your own you should not select a design just because you happen to like the look and style, or because someone has written the word "Viking" on the label. The chart below, although somewhat simplified, provides approximate periods over which the archaeological data suggests some styles of shoe were commonly in use. It does not cover every find, and makes no allowances for regional differences or odd exceptions to general trends, so please treat it as nothing more than a loose overview. In other words also do your own research into what is or isn't appropriate for use within your own re-enactment society.



In my opinion the hardest part of making a turnshoe is not the actual construction but adapting a pattern to fit your own foot. Much of the cutting and fitting of period shoes was done around wooden lasts, however if we are to simplify construction to avoid such complex methods our pattern making must be that much more accurate. Period turnshoes would not have been as close fitting or provide the same level of comfort as modern shoes, and having no cushioned sole or heel is going to take some getting used to on modern paved surfaces. Nevertheless, if they were crippling to wear, or so loose and sloppy they became a trip hazard our Viking ancestors would not have worn them and so you will need to decide for yourself what degree of fit and comfort you are expecting or are willing to tolerate.

Undoubtedly the best way to make a pattern for cutting a new pair of turnshoes is to start with an existing but worn out pair of comfortable old turnshoes you can unpick and open out flat. If you have this option I recommend making your first pair of shoes this way as a means of learning a few techniques, or at least use it for basic dimensions to ensure a good fit. However this does pre-suppose you already have a well fitting pair of old turnshoes and merely want to replace them. If you don't have a pair of existing shoes to work from you are going to have to draw your own pattern from scratch. This involves applying the measurements of your own feet to a generic pattern.

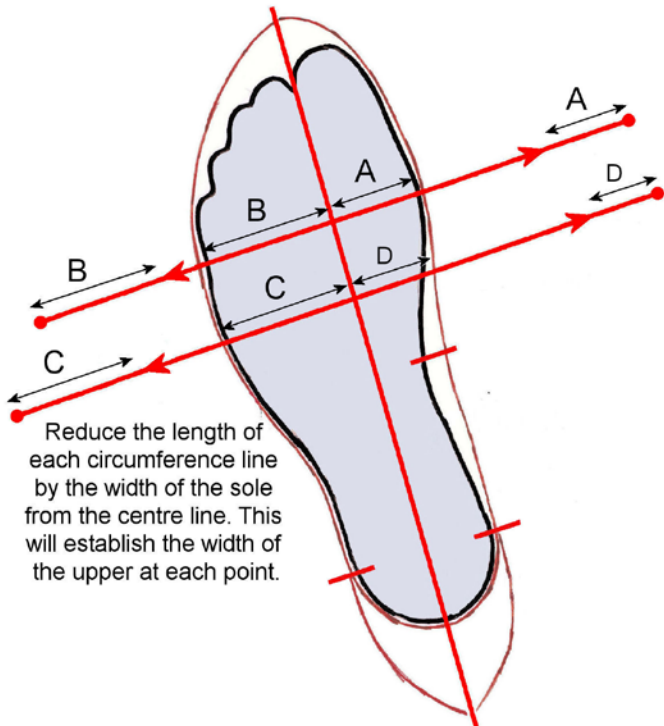


You will need to stand barefoot (or wear period socks/hose if these are part of your normal kit) upon some newspaper or old wallpaper and get somebody to draw around your own feet. When you have done this you will need to draw a straight line from the middle of the heel through the gap between your big toe and the adjacent toe so as to form the centre line of the sole. This line dictates the position of the point of the toe of the sole, and if desired the point of the triangular heel riser. Smooth out the shape of your foot to create the shape of the sole taking care to add a little length at the toe which is often the tightest part of the shoe. If you like to add modern cushioned insoles to your turn shoes add another 2-3mm outside of the shape you have drawn. If a heel riser is required, take care to make this at least as wide as the heel otherwise the back seems will dig into your feet as you walk.



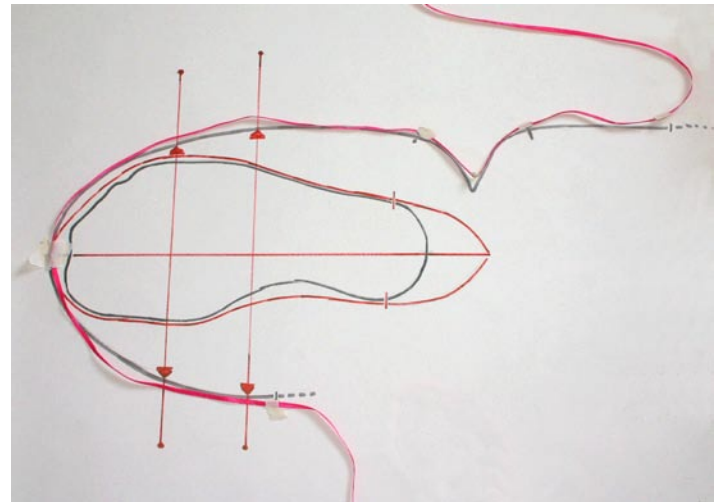
Next take a long length of ribbon or string and tie a knot at roughly it's mid point. This will be used to measure the dimensions of your foot at various places, these dimensions are needed for marking out the shape of the upper. Mark two lines at right angles to the centre line of the sole. One line should be at the widest point of the foot, usually the ball of the foot. The other line should be at the highest point on the arch of the foot. Lay your string across one of these lines with the knot at the centre point where the lines cross. Hold this string in place with masking tape or other low tack tape at the edges of the sole leaving the free ends of the string extending past the width of the sole. Stand back on the paper pattern and string and then lift the free ends of the string up to meet on top at the mid point of your foot. Mark on the string where they meet, then lay the string back flat along the line on the paper sole and transfer these distances to the paper pattern to denote the circumference of the foot at each point. It is important the knot remains stuck to the central line to ensure we get the correct distance to either side of the foot. If we don't, although the upper will be big enough, it may twist the shoe out of shape. All of this is complex to describe but very straight forward to do, so I hope you have followed my attempt to describe the process.

Now comes the complicated bit as we must reduce the length of these cross lines by the width of the sole. Measure the width of the sole from it's centre line to it's edge, then measure back in the same distance from the end of the cross line and mark this point. Having done this for each end of both cross lines we will have defined the critical dimensions of the upper

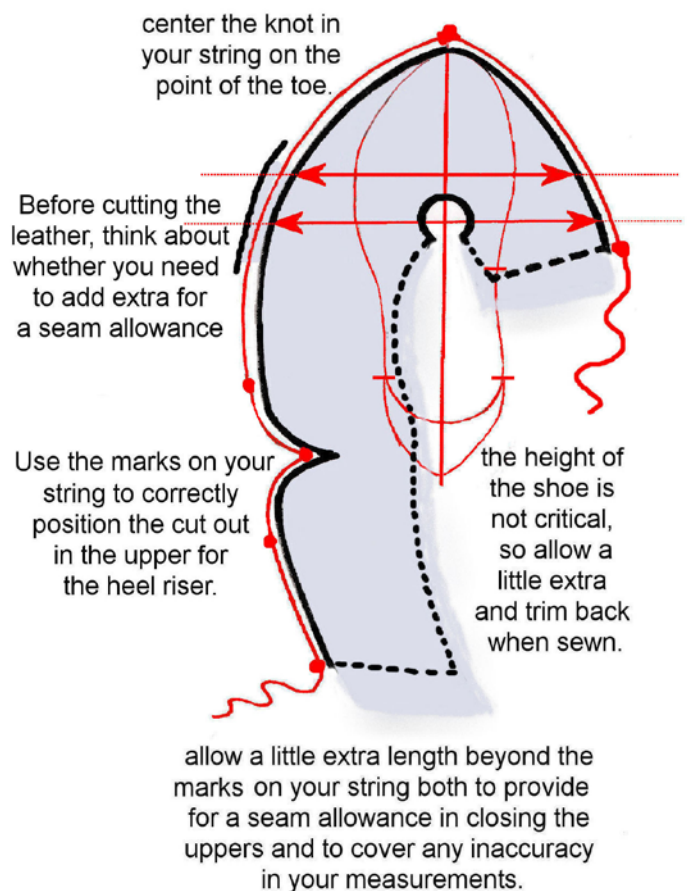


When drawing the shape of the upper it is important that the length of it's outer edge is exactly the same length as the outer edge of the sole, otherwise they won't fit together. To do this take your piece of string, tape the knot to the point of the toe of the sole then carefully lay it around the outline of the sole you have drawn. Mark the string where it reaches the point you would like the seam in the upper to be (usually on the inside of the foot at about the arch). Mark the other end that passes all around the sole where it too meets this desired seam line. If the sole has a triangular heel riser, then mark on the string the points where the heel riser starts and ends and also the position of it's pointed tip.

Without un-fastening the string from the toe end of the sole, gradually open out the string to try produce the shape of the outer edge of the upper using one of the patterns at the end of this guide for help. The modified ends of the two cross lines marked on the sole will give you the width of the upper at these key points. Use the marks on the string to adjust the length/shape of the outer edge of the upper to correctly position things like the cut out for the heel riser or the join in the uppers. Once happy with the shape of the string sketch in this line to mark it on to the paper pattern.



This takes a bit, and perhaps if this is your first attempt, a lot of trial and error to get a smooth curve of the correct length, especially if you are trying to match the shape of a cut out at the heel to take the heel riser. I will strongly recommend that although you should mark the point you expect the closing seam in the upper to be, you actually cut the upper a little longer, both to allow for a seam allowance and also to allow minor adjustments later on. Similarly the shape and height of the top edge of the upper does not need to be marked exactly at this stage. Once done this should give you a pattern for both parts of your shoe.



Made traditionally the pattern does not need to be very accurate as the leather can be trimmed to shape to fit the wooden last. In simplifying the construction to avoid using wooden lasts, accurate pattern making is vital and so the outer edge of the upper must be exactly the same length as the outer edge of the sole. Before cutting your leather think about where you do and do not need to leave a seam allowance. If you are sewing a thick sole with an edge/flesh stitch (see later) you won't need a seam allowance on the sole. However it is most probable that you will need to allow approx. half a centimetre outside of the outline of the upper to allow the shoe to be sewn together and turned. As mentioned, the height of the shoe up the side of the foot is not something that needs to be cut exactly at this stage. Most Viking shoes were cut to about the height of the ankle but as the exact height and shape can be trimmed after the shoe is sewn and turned it is merely advisable to leave enough height to provide plenty of leather.

Each style of shoe has its own idiosyncrasies when cutting a pattern. I have for this introduction focused upon perhaps the most typical; A simple slip on slipper constructed from a separate sole and upper made with a side seam and characteristic heel riser. These shoes are wide spread geographically and cover the main period of Viking occupation in England. Subtle variations may include the shape of the throat and they may or may not be fastened with a draw string about the ankle. If you can make a pair of these shoes then you should have learnt enough to cope with other different styles

Accept that you will not get a perfect fit with the first pair of shoes you make. Note also that with wear your shoes will stretch, so what may start out a little tight may soon end up a little too loose. As you wear your first pair of shoes, jot down where you need to add or remove a fraction of a centimetre of leather. Go back and amend your paper pattern prior to making a second pair of shoes. Date and keep all your old paper patterns, along with all the notes about how each fitted. They will form a useful reference each time you need or wish to make new pair of shoes enabling each pair to be modified to get a better and better fit.



Having drawn our pattern we need to think about the leather we are going to use to make the shoe. Most types of leather available in the modern world will be unsuitable. Mainly because most modern leathers are extensively dressed to produce a very smooth, polished, shiny surface which may also be dyed an even colour. Having dealt with many genuine Viking turnshoes when working as an archaeological conservator I can state with a fair degree of confidence that we need to be using leather with a slightly more irregular surface texture, grain pattern and growth marks. I have two different friends both of whom make a full time living out of making reproduction shoes for re-enactors, both of whom claim that they can't sell shoes made from these "character" leathers as their customers dismiss them as looking "cheap". Consequently don't assume that the shoes you are trying to make should be like those for sale at re-enactment fairs. These people make what their customers will buy and struggle with the educational aspects of persuading people to buy what's authentic.



We also need to think about the method of tanning used to create the leather. Modern nickle/chrome tanned leathers won't soften when soaked, making it difficult to turn thick shoes. Traditional veg-tanned cattle skin will soften in water making it easier to work with. Cordwain (sheep/goat skin) showed a brief spell of popularity in England around the twelfth/thirteenth century and was more popular in Scandinavia, but nevertheless most turnshoes were made from cattle hide. As far as we can tell, and allowing for a fair bit of variation, uppers were typically thin, less than 2mm thick whilst the soles were a little thicker at around 3-4mm. Given the surfaces we tend to walk on in the modern world, most re-enactors prefer more substantial shoes with thicker uppers and a sole about 4-6mm thick. Turning a shoe made from thick leather is difficult, making good veg-tanned leather essential. Veg-tanned leather will normally be available in un-dyed and un-waxed condition which is how we want it. The final colour and appearance of the leather will darken and change a lot once we "stuff" and waterproof the finished shoe so don't feel you need to buy dark brown leather to make dark brown shoes.

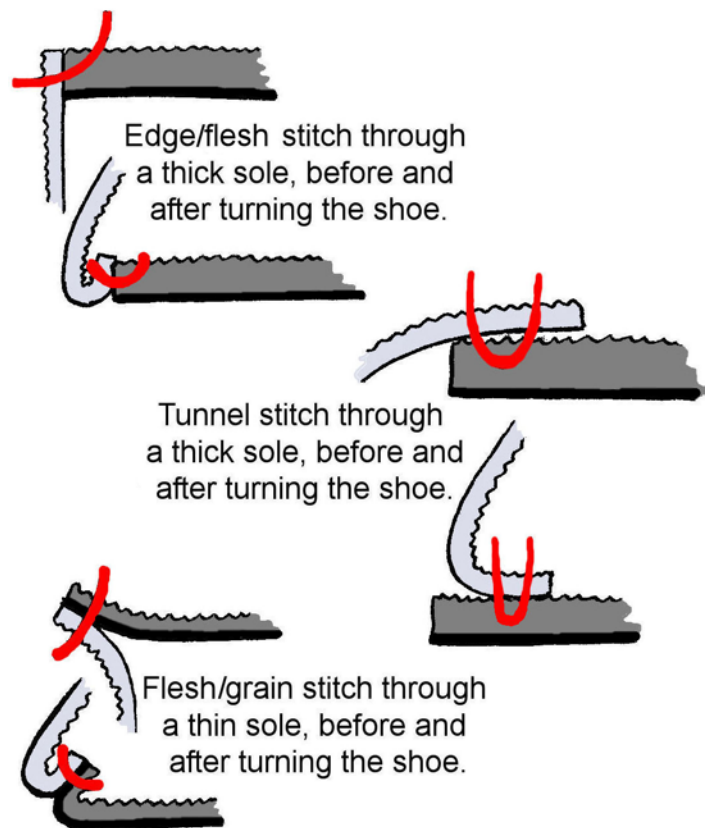
Different people have different methods of transferring their paper pattern to the leather. I like to lay my paper pattern onto the hide and trace around it with a leather workers over-stitch wheel. This leaves a row of tiny, evenly spaced pin pricks in the surface of the leather. Using a cutting mat or old wooden board and a heavy duty craft knife with a new blade fitted I can then cut the sole out exactly along this row of dots. With the upper this row of dots will form each stitch hole and as such I will cut about half a centimetre outside of this dotted line so as to create my seam allowance. Marking the exact line to be stitched and allowing extra leather outside of this for the seam, is more accurate than adding a seam allowance to the paper pattern and guessing just how far inside this to pierce the stitch holes. Having cut out the upper, I will use the awl to open up each stitch hole around it's edge.



It may be stating the obvious to some people but when dealing with novice shoe makers attempting their first pair of shoes, many people get themselves into a lot of difficulty through muddling up left and right. Like modern shoes Viking shoes were made differently for each foot, so a right shoe is clearly different to a left shoe. If your feet are pretty much the same size then it may be acceptable to make a pattern for one foot, cut this out, then simply turn this the other way up to trace and cut a mirror image for the other foot. If you know your feet are different you may want to make two different patterns. Whatever you do clearly label both the paper patterns and the cut leather to distinguish left from right. When taking into consideration the extra complication of sewing the shoes inside out it can be very easy to get muddled and end up sewing a left upper to right sole or end up with one part of the shoe the wrong way around once turned.

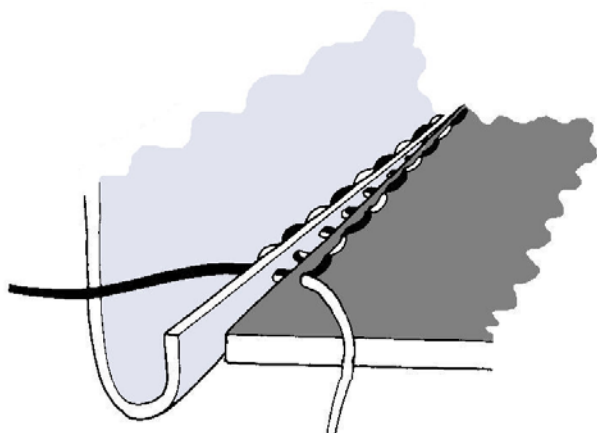
With respect to sewing leather it has two sides referred to as flesh and grain. The grain side is the less rough outer side which shows the creasing, growth marks and pattern from hair removal, the flesh side is the inside of the animal with the rougher suede finish. The finished shoe should have the grain side of the sole and upper outermost. This generally means sewing them with suede or flesh sides outermost before turning.

Though there are lots of variations on exactly how the upper can be attached to the sole the following diagram covers the three most common methods found in period shoes. Perhaps the most common is the edge/flesh stitch, here the awl makes an angled hole in the edge of a thick sole and comes out the flesh side of the leather. A more complex and difficult to sew variation on this is the tunnel stitch where a curved awl is used to pierce a very thick sole, the entry hole in the flesh side comes back out the same flesh surface it went in, trapping the thread in the body of the leather. Perhaps the simplest means of sewing a shoe is the flesh/grain stitch. This only works with thin soles but treats the leather as you would woven fabric; that is you put the two outer sides together and sew straight through them, turning the seam inside when complete.



With later Viking/Medieval period turnshoes it is common to see more advanced techniques involving additional strips of leather inserted into the seams. Much of this can be very interesting to those with a desire to undertake an in depth study of period shoe making. However, for the benefit of those who simply want a first pair of shoes I do not intend covering rands, turn welted construction the use of wooden lasts the rendering of tallow, the making of code to proof the leather and thread or any other of the more accurate yet complex period techniques the novice shoe maker is unlikely to consider. A full in depth study of period shoe making would entail much more that I myself have yet to attempt .

In terms of thread for sewing your shoes we have a few choices. Some of the earliest shoes were sewn with woollen thread which quickly rots and the shoes fall apart. Most shoes were sewn with waxed linen thread which will still rot and fall apart. Some were laced with thin leather or sinew thong. Study of surviving shoes from the period shows that repairs were a regular necessity. If you value authenticity and want the full experience of caring for your shoes then use wool or linen thread and take care to wax it well. If/when the novelty of mending shoes starts to wear off you may want to consider modern alternatives. Nylon thread will not rot, but as it is much stronger you do need to take care not to rip the leather when tightening each stitch as you sew the upper to the sole. Most commercial producers of replica turnshoes use synthetic sinew which is based upon waxed nylon. I certainly found that when I switched to using this that much more of my time was freed up for tasks other than mending my shoes.



Though examples of a wide range of types of stitch can be found in period shoes one type dominates in terms of attaching upper to the sole and that is saddle stitch. This basically entails putting a needle on each end of your thread and using each end to sew two simultaneous yet opposed running stitches through the same set of holes, one sewn from each side of the leather. This provides a firm fastening to hold the shoe together when turned, and if one stitch rots the other will still hold, at least for a little while longer.

However, whilst I talk about “sewing” this isn’t actually an accurate description. Unless you happen to have immense strength and dexterity in your fingers, sewing thick leather is impossible. What we actually must do is use a sharp awl to pierce holes in the leather for each stitch, the needles then act as nothing more than a guide to help lace the threads through these holes. Traditionally boars bristles were attached to the ends of the thread which were flexible and allowed the thread to be laced through the holes. I favour curved needles, as even with a pre-made hole you may still need a good grip on an otherwise smooth needle to pull the thread through the leather.



When we come to sew our shoes together the first few stitches are always going to be problematic as we need about five hands to hold everything in place. This is where nailing and shaping the shoe around a proper wooden last may make the job easier. However, lasts really aren’t a necessity so don’t worry about getting the tension right immediately, just get the thread through all the holes for the for the first three or four stitches, then tighten these up to pull the shoe together. By the time the first dozen stitches are done the sole and upper should hold together sufficiently to make all the remaining stitches easier.

With respect to using the awl to pierce the holes for sewing, I stated earlier that I start by using an over-stich wheel to mark the positions all of the holes around the outer circumference of the upper as part of cutting the pattern out of the leather. Having cut out the upper I then use the awl to open up each stitch hole. However I do not pre-mark or pierce the corresponding stitch holes in the sole at the time I cut it out. Whatever your best intentions if you try to pierce all the stitch holes in both the upper and sole at the start, once you come to try sew the shoe together you will find that as the leather moves and stretches around the curves of the shoe, the two sets of stitch holes won’t line up.

Consequently I will only pierce the next stitch hole in the sole once the previous stitch has actually been sewn and tightened. I do this by passing the awl through the pre-made hole in the upper to ensure perfect alignment. Similarly it is wise to start sewing the upper to the sole at the point where there is the tightest radius or point as this is where it is most difficult to adjust the shape and fit if you find your measurements aren’t quite accurate. This usually means starting at the point of the triangular heel riser and working forwards towards the toe of the shoe. If the shoe has no heel riser than it is best to start at the slightly pointed toe and work back to the more rounded heel.



There is no standardised method of finishing off stitches, either at the end of a seam, or simply the end of a length of thread. My favoured method is to simply pass one of the two ends of the thread back through the previous stitch hole, knot the two loose ends together with two or three secure knots and trim off any surplus thread. If you need to continue sewing then it can be advisable to start the next piece of thread two or three stitches back from where you knotted off the last piece. By overlapping the sewing this way you further reinforce the potentially weakest part of the seams

When you have sewn most of the way around the sole to attach the upper you can trim the excess leather off the ends of the upper and sew closed the side seam. The stitching for this should start at the top edge of the upper and work down towards the sole. Working this way you do not get an unsightly or uncomfortable knot at the top of the upper seam. Furthermore it makes it easier to attached the closed upper to the sole



Turning a shoe inside out, or more precisely turning an inside out shoe the right way round can be difficult. If you've only used thin leather this may not be quite so problematic but with a decent thickness of sole you will definitely need to soften the shoe first. If placed in luke warm water, veg-tanned leather will bubble gently as it soaks up the water and softens. It may take a few minutes for it to stop bubbling but it can take more than an hour for the wet shoe to fully soften. This should make turning the shoe a little easier, though allow for the use of much foul language the first time you attempt this as without practice you will quite literally swear it is “#*@\$#%*!” impossible.



Forcing the sodden shoe the right way around may stretch the leather, so it is important to mould/shape the wet shoe to shape as it dries. Traditionally this would be done by forcing the wooden last back into the turned shoe. If you can tolerate it, the best way is to wear the wet shoes and squelch about the house or garden for the afternoon allowing the shoe to mould to the shape of your foot as it dries. If not, put a plastic bag inside each shoe and pack them with scrunched up newspaper. As they dry they will become more and more rigid which is something we will deal with by “stuffing” the leather.

All manner of things can be used to stuff the leather to both waterproof it and soften it to return it's flexibility. These range from simple cooking oil, to tallow, lard or beeswax. Just keep applying these until the leather will soak up no more and you are happy call the shoes finished. Don't be surprised if over a couple of days you can get a new pair of shoes to drink all of a small bottle of vegetable oil as the leather will hold a lot of stuffing. It is this oiling and waxing of the leather that will also turn the pale leather the rich red/brown hue we associate with traditional leather. A general part of day to day care of your shoes will be the occasional re-application of another coat of oil or wax, just as you would periodically polish any pair of leather shoes.

Once the shoe is turned the right way round and has been oiled or waxed to make it flexible again there may be a few finishing touches to deal with; You may wish to add toggles or cuts slits to apply a draw string or you may want to carefully trim the leather around the opening of the shoe to provide a more comfortable fit at the ankle. One point I will mention is the finishing of the opening. Many period shoes have stitch holes around the top edge showing the existence of some sort of whipping. Though it is very rare for the thread to survive, some have argued this was just a whip stitch to reinforce the leather and stop it from stretching, others have argued it held a leather thong or cord to strengthen it. A couple of examples from York show a decorative/strengthening top band of fine leather held on with these whip stitches. It is also conceivable that a reinforcing cord could be stitched inside such a top band.

Making yourself some decent shoes will take a little time, but as the leather and other materials used in a single pair of shoes should cost only around £10-£15 at the time of writing, hand stitching your own will almost certainly be a lot cheaper than even the most reasonably priced, budget pair of machine made replicas. What is more, if properly made from a decent quality of leather, and if they are well cared for, not only will they look better, they will almost certainly last longer than the cheap budget pairs of turn shoes that many re-enactors buy and wear out on a regular basis thinking them to be an economic deal.

