Tuesday, October 12, 2010

Kjaere Venner,

I've put together a talk based on my turning projects, which I call "Eat Like a Viking." The title is from one of these emails where I talked about turning replica Viking bowls, and where if you "Eat Like a Viking" you would eat out of a bowl. In the talk, I first walk everyone back through time to the Viking age using turned objects from different times. Then when we are back at Viking times, I talk about turned wooden bowls, cups, toys, and tools. I've given the talk several times to Sons of Norway lodges, and a middle school. Recently, Elspeth joined me so we added textiles and food.

However, there was always a problem; I would bring the objects to the talk in a cardboard box. Obviously that was not very Viking like, and aesthetically unpleasing (unless you are part of our modern packaging institutions), so I built a Viking chest. This missive tells the story of making my Viking chest (well actually two chests).

Chests in the Viking and medieval period can be grouped into three types, a six board chest during the Viking age, a chest with corner posts a couple of hundred years later, and a chest with dovetailed corner joints several hundred years after that.[1]

The Viking six board chest consists of a bottom with a tenon into the ends, front and back sides doweled to the end pieces and bottom board, and a lid which may or may not be rounded. The ends and sides are slightly inclined to add strength to the joints.

I used three Viking chests as models for my chest, two chests in the Oseberg ship burial,[2] and one chest from Gotland filled with tools and called the Mastermyr chest.[3] (The Mastermyr chest was found on the island of Gotland Sweden in 1936 when a farmer plowing a recently drained bog hit the chest wrapped in a chain with his plow.)

My first chest was long and narrow to use for camping. I inclined the ends but not sides, did not attempt to reproduce the joints but just butted the pieces together, and used a flat lid with modern hinges. I used the cheapest wood I could find, edge glued pine. I screwed the sides to the end and bottom pieces, not doweled. It took me two days to make this first trial chest. The result is quite nice, shown in the next picture.

The chest worked quite well. Being narrow, each outfit or item was packed in a linear fashion down the length of the chest. Instead of searching through one item after another in a box where each item was stored on top of each other, now each item was placed by itself so finding any one item just consisted of opening the lid. Needless to say, that was a pleasant surprise.

For a chest to carry my turned replicas to my talks, I wanted a more authentic chest, so I used the Mastermyr chest as inspiration. First I used oak as the wood. Next I tried to make the chest dimensionally similar to the Mastermyr chest. Then I made the hinges. And finally I attached the hinges with nails. I'll discuss each of these items in the following paragraphs.

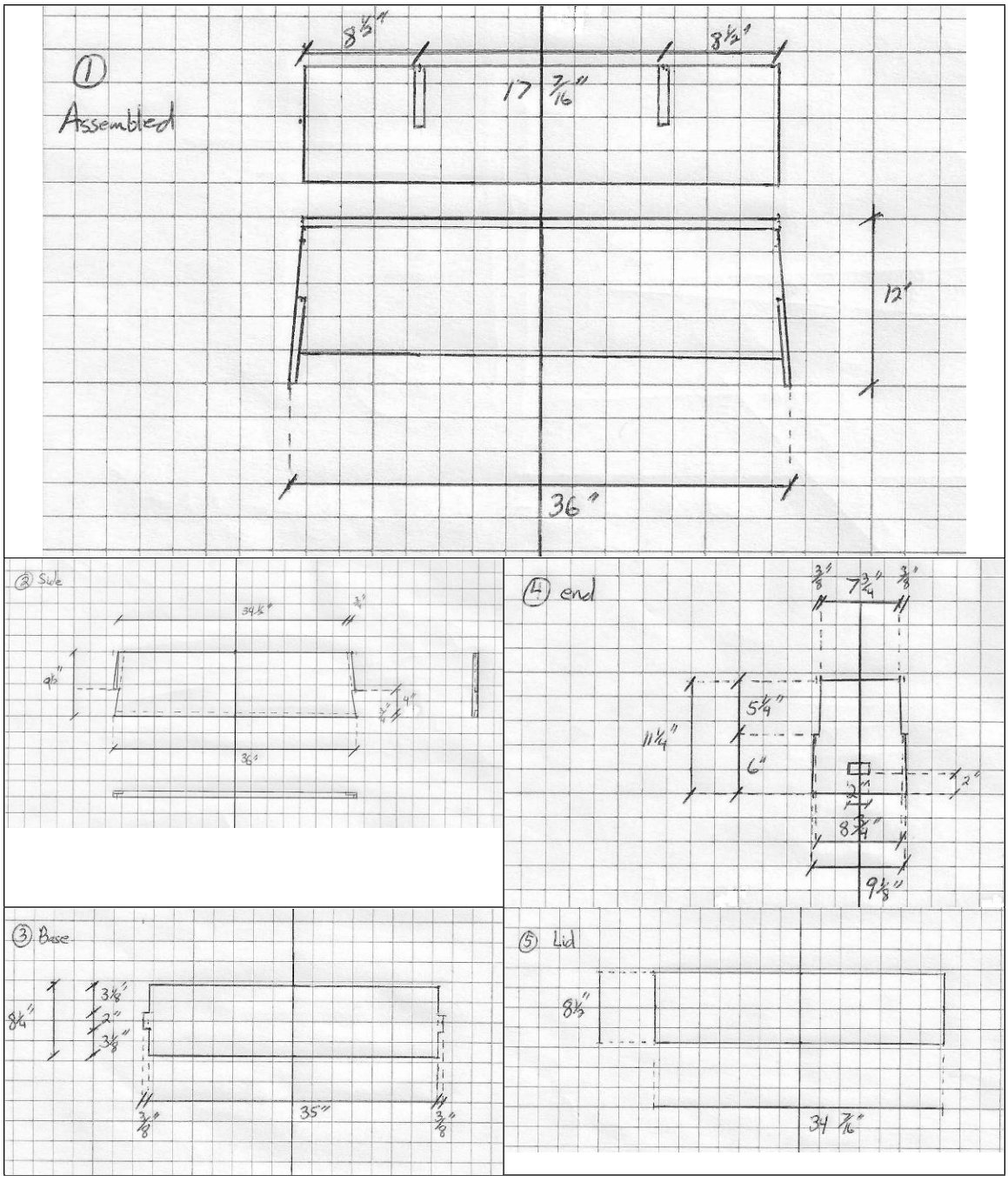
The Chest

The wood I used is ¾" thick oak. The six boards are 9 ½" wide and 36" long. They come from a local building center. If you examine the wood before you buy, you can select pieces that are solid or one piece rather than edge glued. These dimensions are similar to those in the Mastermyr chest, but not an exact match. The greatest differences are the original lid was 1 ¼" thick while my lid is ¾" thick, and the ends were 10 1/3" wide while my ends are 8 ¾" after assembly. Basically my chest is 1 ½" narrower than the original because I used a standard size piece of oak, so I did not have to go to a larger

width board. I checked to make sure my bowls would fit in this size chest and they do, so I went ahead with this size.

Mastermyr Chest cm(inches”)	My Viking chest (inches”)
Side	
86.0-88.5 x 20.5 x 1.8 (33.9”-34.8” x 8.1” x 0.71”)	(34.5”-36” x 9.5” x 3/4”)
87.5-89.5 x 20.9 x 1.8 (34.5” - 35.2” x 8.23” x 0.71”)	
End	
22.4-26.2 x 1.8-2.5 x 24.2 (8.8”-10.3” x 0.71”-0.98” x 9.53”)	(7.75”-9.125” x 3/4” x11.25”)
21.5-26.3 x 23.8 x 1.8-2.7 (8.46”-10.35” x 9.37” x 0.71”-1.06”)	
Lid	
88.5 x 24.0 x 3.2 (34.84” x 9.45” x 1.26”)	(34 7/16” x 8.5” x 3/4”)
Assembled length	
96.72 (38.08”)	(36”)
Assembled width	
26.23 (10.33”)	(9.35”)
Assembled height	
23.77 no lid (9.35”) no lid 26.97 with lid (10.62”) with lid	(11.25”) no lid (12”) with lid

Here are the drawings of the pieces of the chest.



The bottom is attached to the end pieces by a tenon through a square hole, and the bottom board also slides into a groove in the end piece. The sides are doweled to the end pieces and the bottom piece. The ends are doweled to the bottom piece. Interestingly the ends were apparently not doweled to the sides in the original, so I did not do that here.

Here is a front view of my Viking chest.

Here is a back view of my Viking chest.

I finished the oak with linseed oil and bees wax.

The Hinges

To make the hinges I asked Danr, one of the participants in "theforge" replica project,[4] and he talked me through and helped me make one hinge. The steps are:

- Take some bar stock, about 1" in width and 10" long, and heat the center and narrow the center by shaping and pounding on the horn of the anvil.
- Once narrowed, you heat and bend it so the two wide ends overlap.
- Flux with borax, that's 20 mule team borax, and heat to almost melting, and forge weld the two overlapping sections together by striking sharply. If done correctly, when you strike molten metal, white hot and glowing metal flies out in a horizontal pattern to the sides of straps.
- Next Danr punched some holes in the hinge.
- At this point I did not have time to finish the other side of the hinge, or the second hinge, so I took them home. Over labor day I went to Janvier's and used his forge and Mary and Jason's forge to complete the hinges. Needless to say, my second hinge did not come out as nice as the one where Danr directed and helped me. However, it is forge welded together, and it does work. So now onto the second part of the hinge.
- Take some bar stock and heat and pound a tail in the end.
- Heat and insert into the forge welded hinge loop, and bend the tail over to close the opening.
- Next, heat and slightly shape the side of the hinge with the tail to fit over the top of the lid.
- Finish by cleaning the hinge with a wire brush, heat and immerse in oil to darken and seal the surface, and coat with linseed oil. I don't know how the origin hinges were treated, if at all, but this process seemed to produce a more pleasing color and I hope it protects the hinges somewhat from rusting.
- Complete the second hinge by following the above steps.

The first hinge that Danr helped me with turned out quite nice. The second hinge I made myself was not quite as nice. I had some problems with the forge welding, and when I finally welded it, I had not straightened the hinge so it had a slight curve in it. I was worried that if I tried to straighten after welding I might break the weld so I left the curve in. (This also allows me to easily distinguish between the two hinges.)

Here is Janvier's forge with the crew set and ready for a day of blacksmithing. Mary and Jason's forge is not set up yet in this picture. The posts and canvas roof are temporary, but conveys the impression of what the final permanent structure will look like. Janvier made the joints at the top of the posts after those of a grind building.

Forge welding is quite an experience. You heat the metal to almost melting, then quickly hammer the pieces together, with molten metal flying outward producing the image that most people think of when working on a forge.

This is a close up view of the hinges before mounting, and a view of each hinge after mounting on the chest.

Here are the hinges mounted on the chest.

The Nails

Mounting the hinges onto the chest was done with forged nails. The nails on the Mastermyr chest were clinched, that is the tips were bent over and around so they re-entered the wood from the back side. This method of attaching hinges greatly increases the holding strength of the nails.

My first reaction was to head over to Janvier's forge to make some nails. You take a square bar stock, and heat and taper to produce the cross section of forged nails, see the next picture.

Next you check the length by inserting the tapered stock into a form. We copied a form from the Mastermyr chest by taking a railroad spike, cutting off the heat, and drilling a

hole into it. After using the form, Janvier believes that a conical hole would work better, and more closely resemble the holes in the form from the Mastermyr chest.

Then we heat and part the nail from the stock while holding the tapered section in the form.

The final step is to set the form on the anvil with the tapered nail in the hole, and form the head by pounding while red hot. This was the step that seemed to be the hardest.

The following picture shows the first nails we produced.

I wasn't happy with our first attempts at nail making, so I looked for other sources of forged nails. There are a few blacksmiths who make and sell forged nails.

Another option was to use cut nails.
The history of nails is actually quite interesting. Nails go back in time thousands of years, to 3000 BC, and were an important part of ancient civilizations. One more recent example is that apparently the Vikings on their expedition to the New World at their exploration base at L'Anse aux Meadows set up a forge to make nails from bog iron.[5] This suggests that at least one of their ships was damaged and needed to be repaired before sailing back to Greenland. Whether they had decided to winter at L'Anse aux Meadows so they had more time to explore Vinland and repaired their ships during that time, or whether they had to repair their ships and so had to spend the winter while making nails and timber is not know with certainty. Nevertheless they did make nails at L'Anse aux Meadows for their ships.

Nails are also part of our American history. Thomas Jefferson set up a forge to make nails and sold them to help get his plantation financially stable. At that time most nails came from England, so Jefferson was able to compete at an advantage to the more costly nails that had to be shipped over from England.

And during the war of 1812 the supply of nails was cut off, so Americans began producing nails for the duration.

About the late 18th century an alternative way of making nails was invented. Sheets of iron were produced, and cut into strips. These strips were fed into a machine that cut the nails out of the sheet and produced a head in one operation. This resulted in nails that had two tapered sides, and two parallel sides. The machine was automated, so it produced nails one after another with the only human intervention being operator loading of the strips. Thomas Jefferson also produced cut nails beginning in 1796 as well as his forged nails.

In 1819 a company called Tremont Nail Company in Massachusetts producing cut nails was formed. This company is still operational today, producing nails mainly for restoration or special ornamentation.[6]

In the late 19th or early 20th century brad or wire nails started to be produced. These are the nails we are all familiar with today. A roll of wire is feed into a machine where the point and head are cut and formed. Because the cross section is round, these modern nails do not have the holding power of either cut or forged nails. But the ease, rate, and cost have make wire nails the most common used today.

Tremont makes a cut nail to resemble a forged nail, so I bought a lb from them. I also bought some from Rockler, but they were identical to those from Tremont so I assume they originally came from Tremont. (You can also order forged nails from Amazon but the heads don't appear to be that close to forged nails to my eye.)

The Tremont wrought iron nails do somewhat resemble forged nails, so I decided to use them to mount the hinges. (Janvier and I decided that we need to practice some more to make better forged nails ourselves.) Here is a picture of the Tremont wrought iron nails next to several of our forged nails.

Finally I mounted the hinges with the nails. The nails are clinched, that is they protrude through the wood and the tips are bent back to re-enter the wood from the back side. I

curled the tip of the protruding nail over a round nail set, then backing the nail with a small maul, I hammered the nail until flat.

Conclusions

It took me 3 days to complete the wood chest, a half day with Danr making one hinge, another two days at Janvier's forge and using Mary and Jason's forge to complete the first hinge and make the second hinge, another day making nails, and another half day to mount the hinges and finish the chest. This work was spaced out over a period of 3 months. I did not include the time reading Arwidsson and Berg's book on the Mastermyr chest, planning the dimensions, the angles, and the cuts to make the chest, or looking up the history of nails and finding references to making forged nails.

So there you have my story of making my Viking chest. I'm actually quite happy with how it turned out, and it works well to transport my turned objects to my Scandinavian turning talks.

The chest at my Sons of Norway talks has produced as much interest as some of my turned objects. (I think for my next chest I'll make one that is only about 2 feet long, thus reducing the wood cost by 40% since a side and end can come from one piece of wood, and making the chest easier to carry and transport.) This was a very interesting and satisfying project, although when I started it I did not appreciate the detail and history

and expertise in both woodworking and blacksmithing that was required to complete the chest. That of course made the project even more interesting and satisfying.

Hilsen, Owen

Views from the Flowage: From time to time I send emails to family and friends chronicling events on the flowage. Sometimes I relate the latest news, other times I include information (mainly for my education since I have to look up what I include), but my favorite topics are humorous in nature (well, I try to make them humorous). Recently I have been turning replicas of medieval and Viking wood items. Please reply if there is something you find interesting, or if I make a mistake, but do not feel obligated to reply. Thanks, Owen.

[1] http://www.greydragon.org/library/chests.html

[2] Arne Emil Christensen, Anne Stine Ingstad, and Bjorn Myhre, “”Oseberg Dronningens Grav, Var arkeologiske nasjonalskatt I nytt lys,” Chr. Schibsteds Forlag A/S, Oslo 1992, pages 90-92.

[3] Greta Arwidsson and Gosta Berg, “The Mastermyr Find, A Viking Age Tool Chest from Gotland,” Larson Publishing Company, Lompoc,CA, 1999.

[4] “In 2000 members of “theforge” decided to make Replicas of the Mastermyr Find to display at the ABANA 2002 conference to be held in LaCrosse Wisconsin.” By member of “theforge”, an Internet list server dedicated to blacksmithing sponsored by ABANA.

[5] Birgitta Linderoth Wallace, “Westward Vikings, The Saga of L’Anse aux Meadows,” Parks Canada and Historic Sites Association of Newfoundland and Labrador, 2006, pages 59-63.

[6] The Tremont Nail Company, “The History of Cut Nails in America,” Division of W.H. Maze Company, Elm Street, at Route 28, P.O. Box 111, Wareham, MA 02571, http://www.tremontnail.com/about.htm .