

Turning a Natural Edge Bowl

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Ralph Mosher 5/26/2011

Agenda

- **From log to natural edge bowl**
- **Tools**
- **Preparing the blank and mounting on the lathe**
- **Turning the outside profile**
 - Adjusting the valley and wing height
 - Discuss tool control
- **Turning the inside profile**
 - Re-centering bowl blank
 - Wall thickness
- **Finishing the foot**

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Thanks to

Lou Stahlman, for his grammarian work

Dave Smith for his Photography

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Figure A



Figure B

- The tools**
- Figure A**
- 4 jaw scroll chuck
 - Tailstock center
 - 4-prong drive center
 - Awl
 - Wood chisel



Figure C

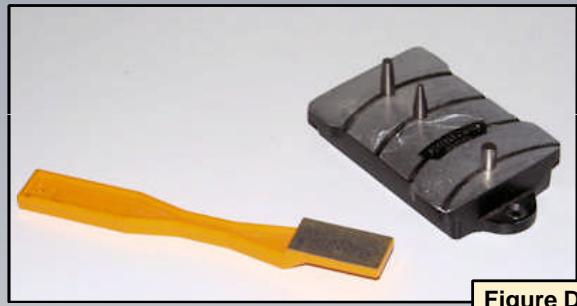


Figure D

- Figure B**
- Scraper
 - Ellsworth Gouge
 - Traditional gouge

- Figure C**
- Tape measure
 - Scale
 - Calipers

- Figure D**
- Diamond hone
 - Burnisher

- Figure E**
- Lathe



Figure E

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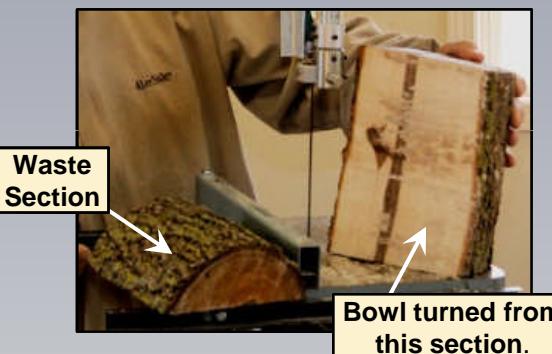
Cutting the log on a band saw.

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Natural Edge Bowl Step 1

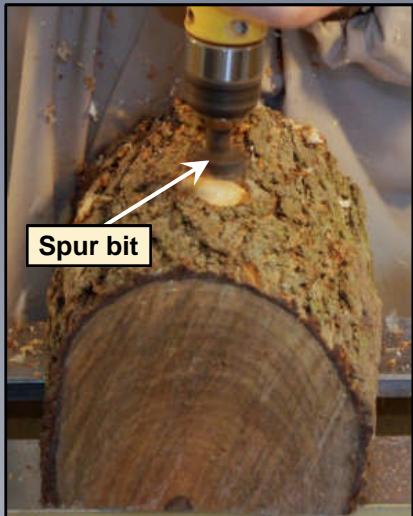
Select a log and cut it lengthwise on one side of the pith. Carefully chose a log size that is not intimidating to turn. The dimensions of the one I'll turn this evening is 11 inches long and 8 inches in diameter.



The natural edge bowl is turned from the larger section containing the pith. The pith side will be the bottom of the bowl

Leaving extra wood containing the pith allows for cutting a tenon to hold the work for turning. This tenon will be cut away later.

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Natural Edge Bowl Step 2

For a solid connection between the drive center and wood, remove bark where the drive center will be located. Be safe when turning. Bark is a weak point. The drive center must be set in solid wood. I use a drill with a multi-spur bit to remove the bark.



Remove a large enough area of bark to allow repositioning the drive center for bowl centering adjustment later. I use a stub drive center or 4-prong drive center.

Faceplates are attached in a fixed position so would not be useful for this application.



Spur Bit



Stebcenter



4-prong center

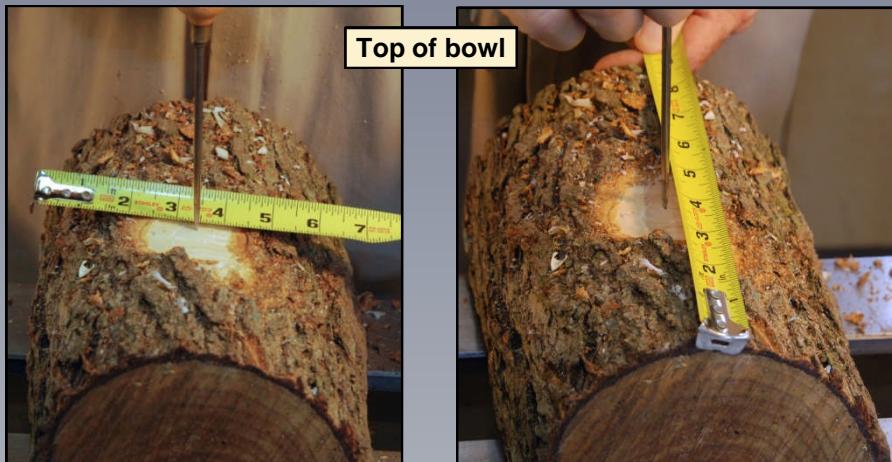


Face plate

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Natural Edge Bowl Step 3

Locate a rough center point for both the bark side and flat side of the log and mark with an awl. A rough measurement from left to right and end to end is adequate at this point. These measurements will be refined later.

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Figure 1

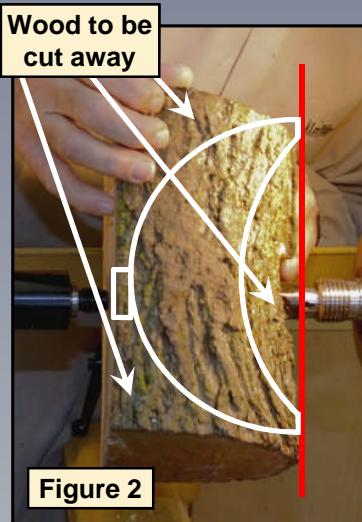


Figure 2

The white outline in fig. 2 is a rough estimate of the shape of completed natural edge bowl.

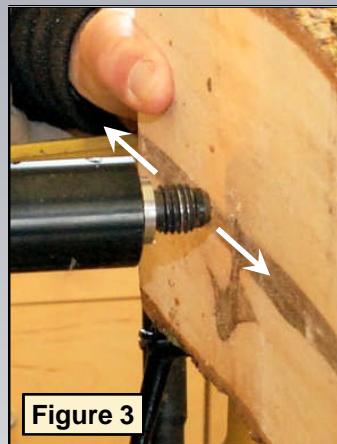


Figure 3

Natural Edge Bowl Step 4

Mount the log section between centers on the lathe with the bark at the headstock end. Be sure the points of the head and tail stock centers are located in the log center marks as previously determined (fig. 1).

Rotate the log to a vertical orientation. An initial rough adjustment may be required to bring the bark side of the log perpendicular to the ways of the lathe (Shown by the red line in fig. 2). This rough adjustment is made by moving the tailstock center along the centerline of the log section parallel with the pith (fig. 3). The position of the headstock center remains fixed for this adjustment.

This adjustment may require further refinement after wood is cut away from the ends of the log.

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Begin shaping the bowl.

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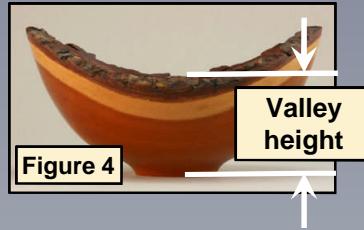


Figure 4

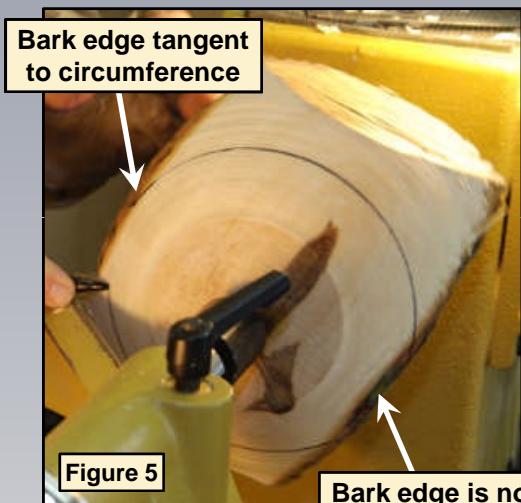


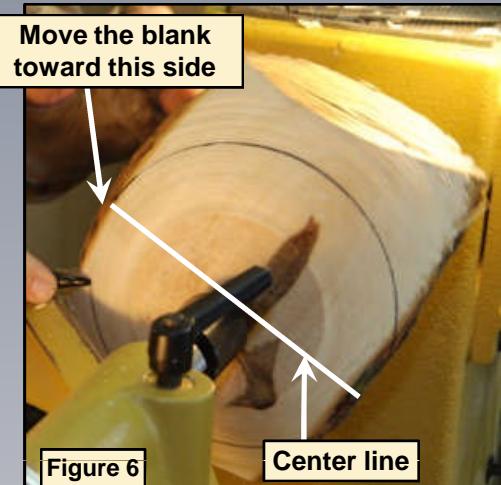
Figure 5

Natural Edge Bowl Step 5

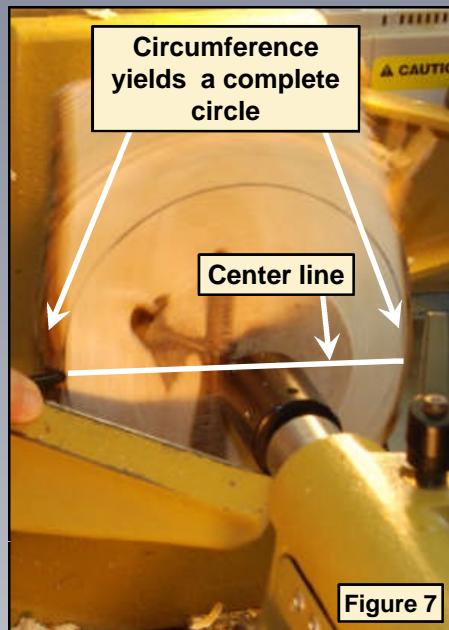
Establishing the valley height.

The valley height of a natural edge bowl is shown in figure 4 and should be the same on both sides. To establish this height, begin shaping the bowl from the bottom, cutting wood away until the bark area is reached (fig. 5).

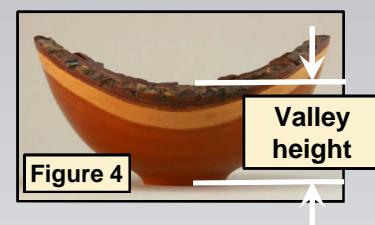
Draw a circumference passing through the bark edge of the bowl blank (fig. 5). The circumference should yield a complete circle. If not, further adjustment of the blank between centers is required. This example fails the test. Therefore, further adjustment is essential for identical valley heights.



Before adjustment



After adjustment



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Natural Edge Bowl Step 5 (cont.)

Establishing the valley height.

To make the essential adjustment, loosen the tail stock while holding the bowl blank firmly to the headstock center.

To adjust the valley height, using the **headstock center** as a pivot point, move the blank toward the bark through which the circumference passes. Move along a line intersecting the tailstock center (fig. 6) and extending to each valley.

Make a light cut along the bark edge and recheck for symmetry. A few tries may be required. When the adjustment is correct, the circumference will yield a complete circle (fig. 7).

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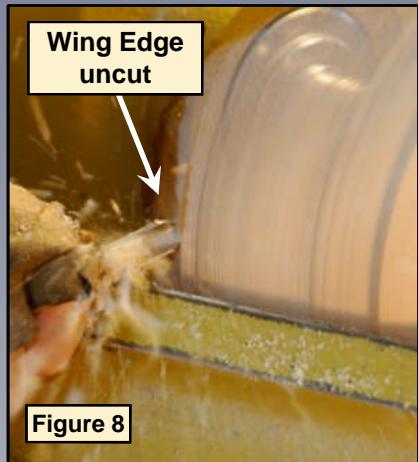


Figure 8

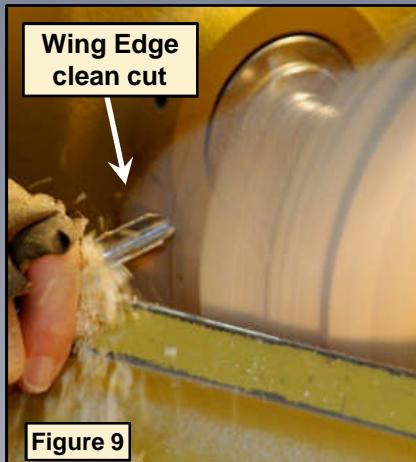


Figure 9

Natural Edge Bowl Step 6

Establish the wing height.

The wing height is shown in figure 12. Carefully begin with light cuts through the wing tip ghost image (fig. 8) Continue making several light cuts a short distance along the bowl profile, from the headstock toward the tailstock, until each wing has a fresh, clean cut (fig. 9).

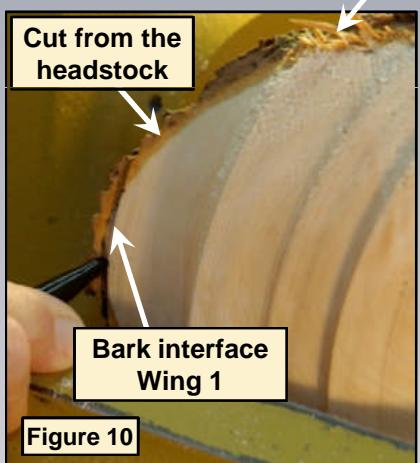


Figure 10

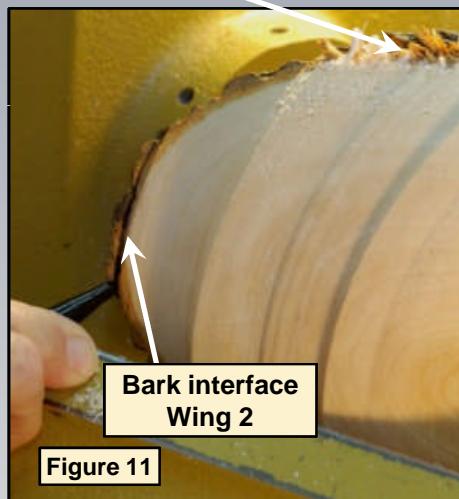


Figure 11

In my experience, when cutting in the bark area, it is best to cut toward the axis of rotation until the low side is reached. This will help prevent the bark from being damaged by the gouge. (figs. 10 and 11).

A circumference is also used to establish equal wing heights. When the wings have a clean edge cut the circumference should pass through the bark on both wings. (figs. 10 and 11). In this example no wing height adjustments were necessary.

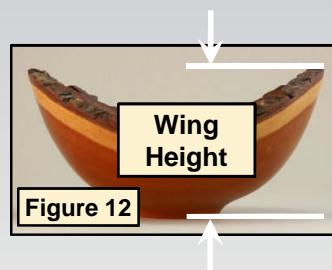
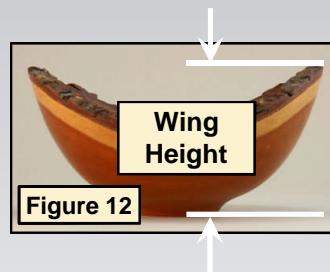
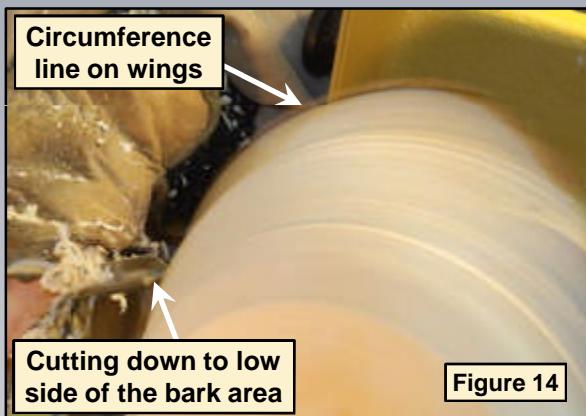
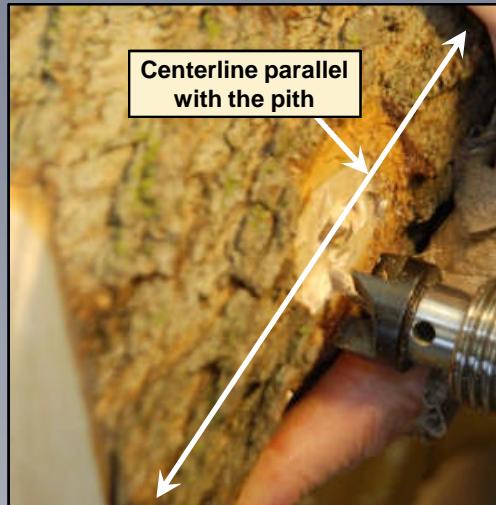


Figure 12

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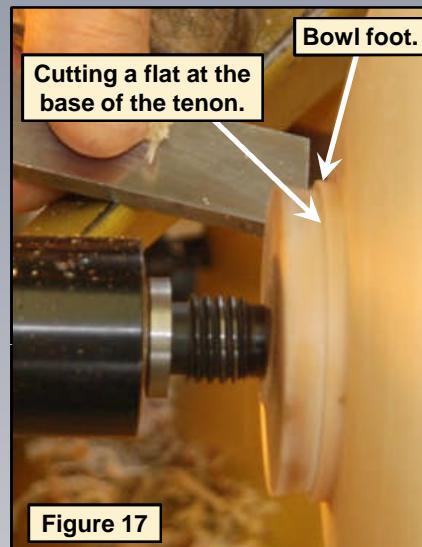
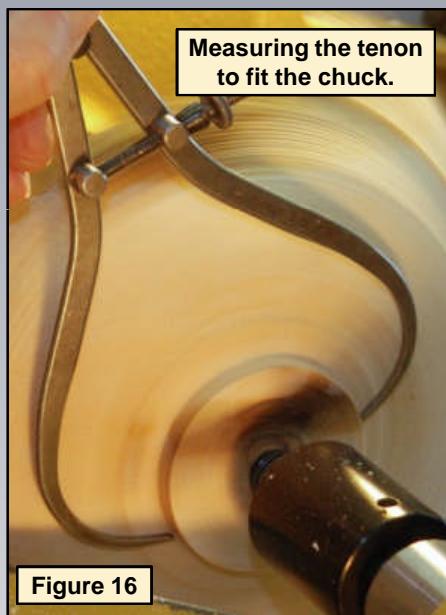
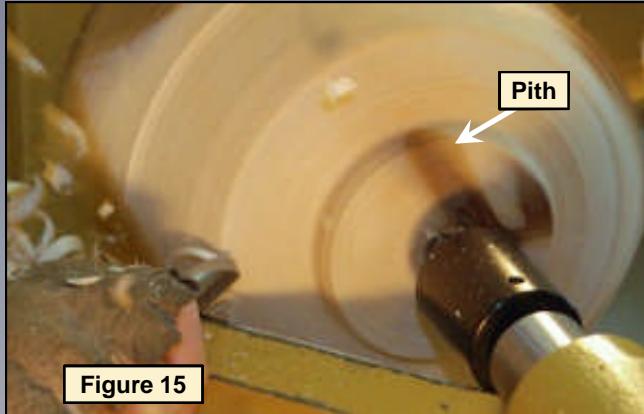


Natural Edge Bowl Step 6 (cont.)

If the circumference is not in the same plane for both wings, further adjustment of the blank between centers is required.

To adjust the location of the blank between centers for the wings, loosen the tailstock while holding the bowl blank firmly in the tailstock center. With the **tailstock center** as a pivot point, move the blank toward the bark through which the circumference passes. Move it along a line intersecting the headstock center point (fig. 13) and extending to each wing.

Take a few light cuts a short distance from the headstock toward the axis of rotation and recheck the adjustment. A few tries may be required here as well. When this adjustment is correct, the top of both wings will be the same height (fig. 14).



Natural Edge Bowl Step 7

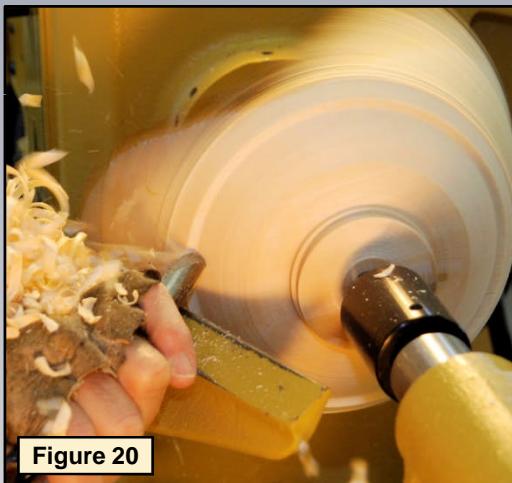
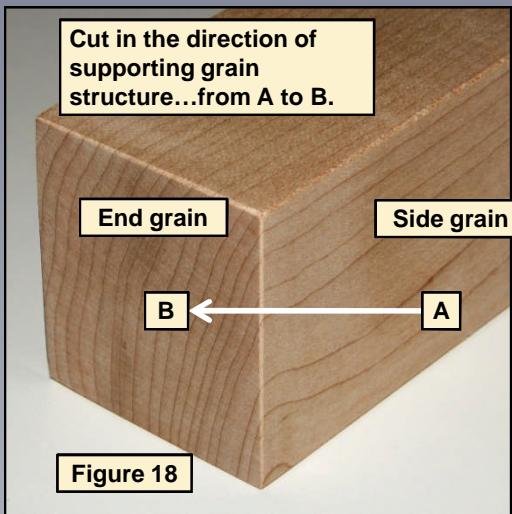
Cut a tenon for mounting.

Cut a tenon on the bottom of the blank for mounting in a 4 jaw scroll chuck. The tenon should be as large as possible for the available chuck. I use a VicMar 4 jaw chuck with dove tail jaws that can be opened to 2-5/8". Cut the tenon to extend past the pith (see fig. 15). Carefully measure the tenon to fit the maximum opening of the chuck being used (fig. 16). I use a scraper to cut a flat surface for the chuck jaws to sit against at the innermost end of the tenon (fig. 17). The tenon will be removed later. A foot for the bowl may be cut beyond the tenon if desired (fig. 17).

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Natural Edge Bowl Step 8

Form the outside shape.

Rough cut the basic outside shape of the bowl. Traditionally, a bowl is cut in the direction of the supporting grain structure to prevent tear out (fig. 18). To meet this condition, the outside cut direction for an open form is away from the axis of rotation while the inside cut is toward the axis of rotation.

There is an exception when turning a natural edge bowl with bark. To preserve the bark, cut from the tip of the wing in the bark area (fig. 19). Cut from the axis of rotation in the wood only area (fig. 20). Finally, blend the two areas together with a shear cut using a gouge (fig. 21). I use a gouge with a traditional grind for this blending cut.

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Figure 22

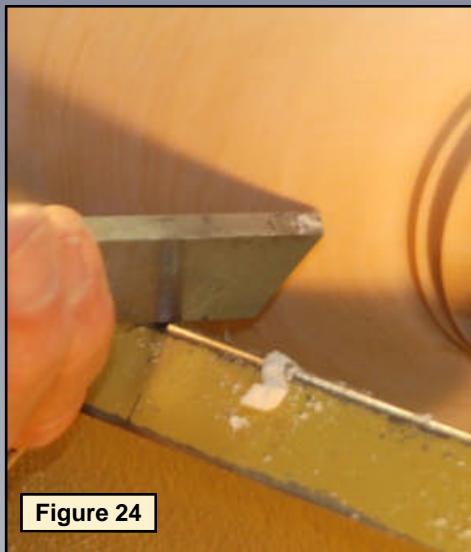


Figure 24



Figure 23

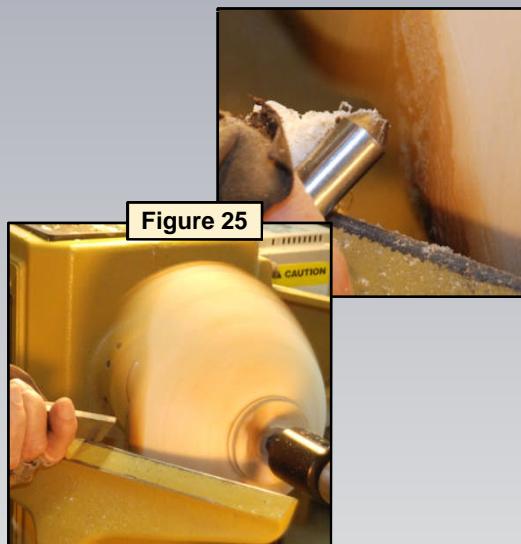


Figure 25

Natural Edge Bowl Step 9

Refine and finish cut the outside profile.

Finish cut the outside profile of the bowl, first with a gouge (figs. 22 and 23) then a scraper (fig. 24) using a light shear cut with both. This cut is away from the axis of rotation and can continue through the bark area (fig. 25). **It is important to use a light cut to avoid tear out of the bark.** The light cuts should produce shavings as in figure 26. The final outside profile (fig. 27).



Figure 26



Figure 27

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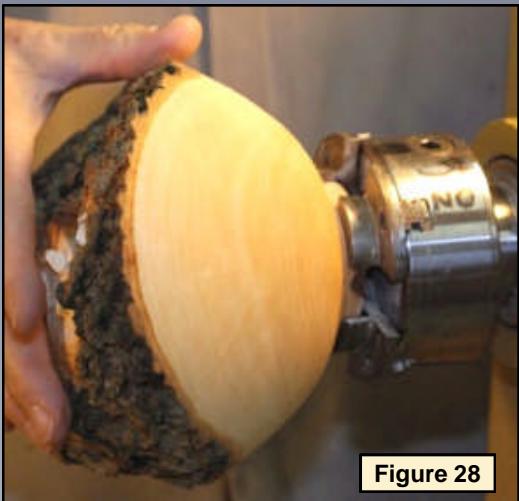


Figure 28

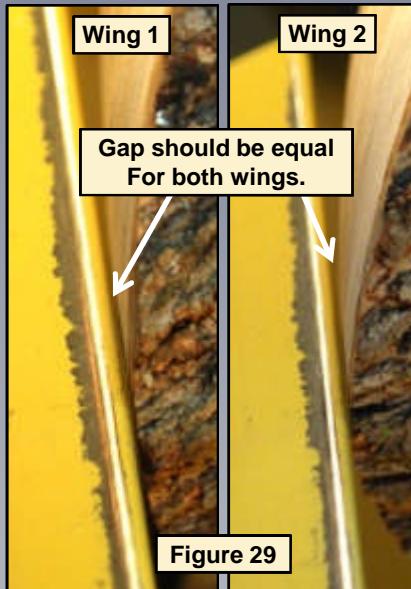


Figure 29

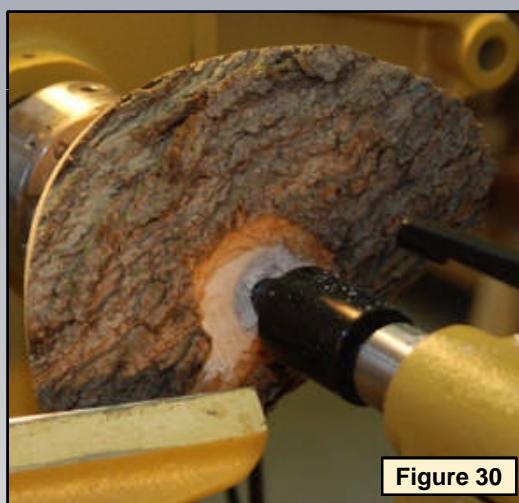


Figure 30

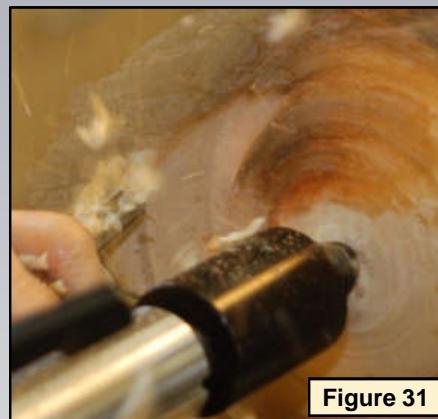


Figure 31

Natural Edge Bowl Step 10

Finish the inside of the bowl.

Mount the bowl in a chuck and check the centering (fig. 28). Set the tool rest at center height parallel to the ways of the lathe leaving a small gap ($1/8"$ to $1/16"$) between the tool rest and the wings of the bowl (fig.29). Adjust by loosening the chuck and moving the bowl half the distance of the widest gap toward the tool rest. Once the gap is equal for both wings, tighten the chuck on the tenon. Bring up the tailstock for stability while turning (fig 30). Begin removing wood from inside the bowl blank near the tailstock and work toward the rim (fig.31). To do this I use a gouge with a traditional grind.

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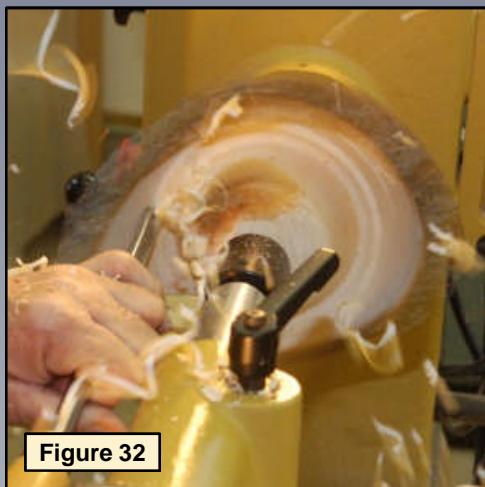


Figure 32

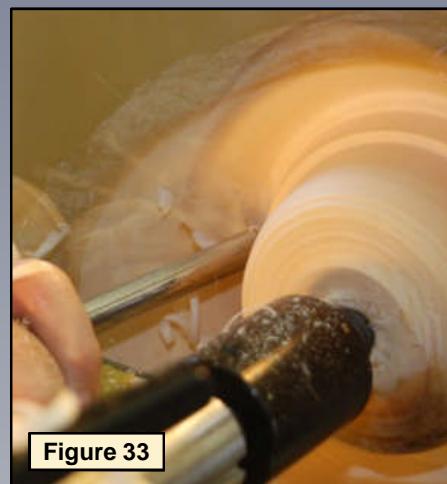


Figure 33

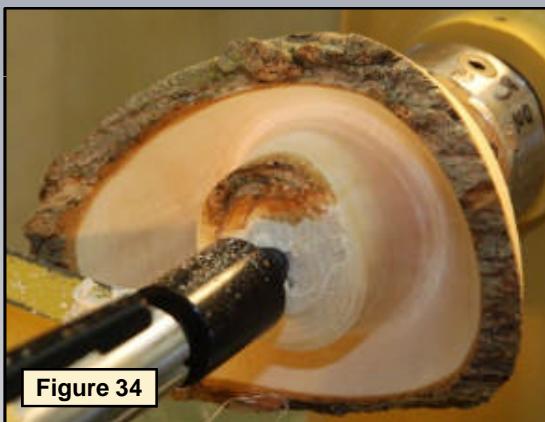


Figure 34

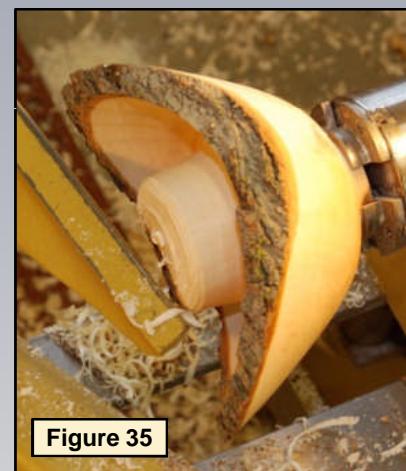


Figure 35

Natural Edge Bowl Step 10 (cont.)

Finish the inside of the bowl.

Continue to remove wood from inside the bowl, alternately cutting wood from inside the rim (fig. 32) and down the center from the tailstock (fig. 33), until wood is removed to a point below the bark region as shown in figure 34. Leave a little extra thickness to the bowl rim at this point for later cutting to final size. Also, leave as much wood as possible in the center of the bowl for stability while later finishing the rim to its final thickness. Remove the tail stock and locate the tool rest for working inside the bowl (fig. 35).

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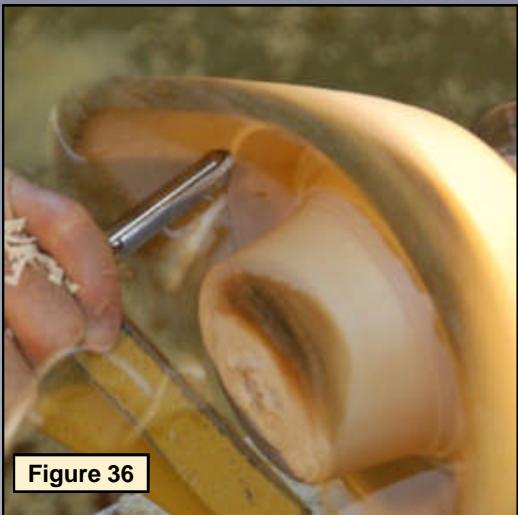


Figure 36

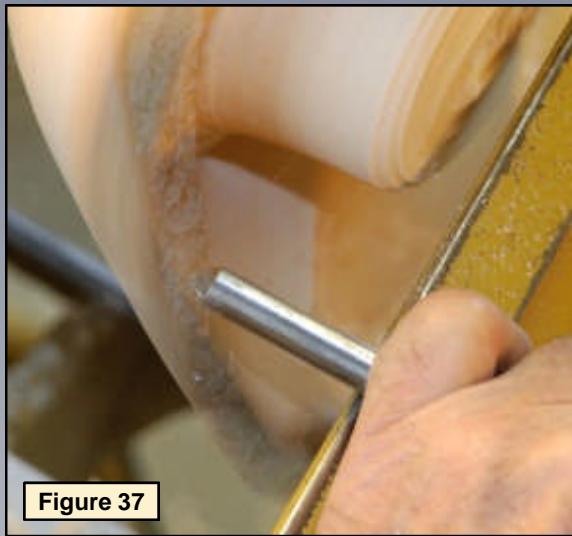


Figure 37



Figure 38

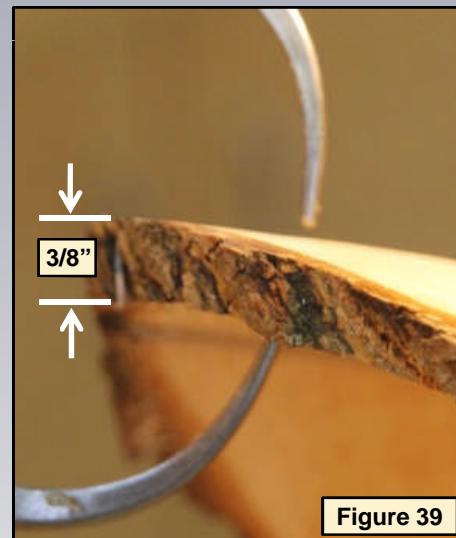


Figure 39

Natural Edge Bowl Step 10 cont.

Finish the inside of the bowl.

Before removing the wood in the center of the bowl, finish cut the wall to its final thickness. Make several light cuts on the interior of the bowl from the rim past the bark region. Be sure to check for constant thickness after each cut (figs. 36 and 37). Once I have established a constant wall thickness from the top of bark on the wings to past the valley bark, I make a single final finishing cut of constant depth down the wall (fig. 38). The final wall thickness for this example is 3/8 inches (fig.39).

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Figure 40

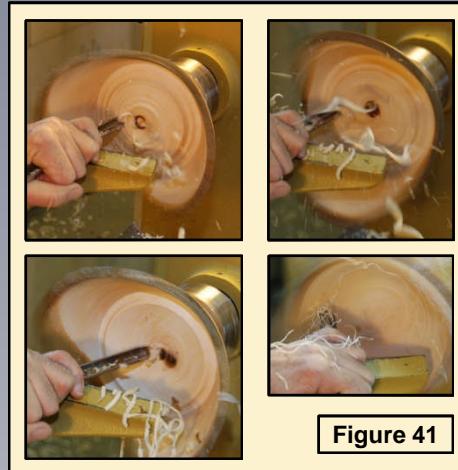


Figure 41

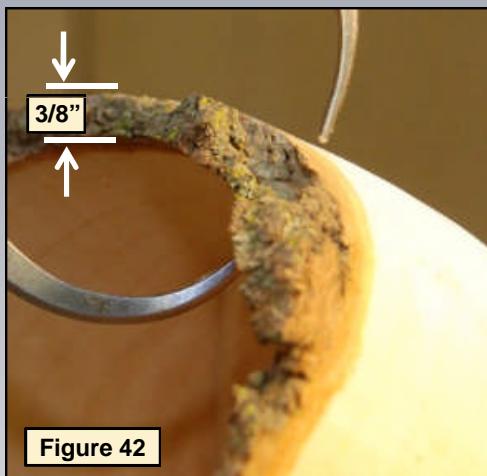


Figure 42



Figure 43

Natural Edge Bowl Step 10 (cont.)

Finish the inside of the bowl.

Once the wall thickness has been finalized in the bark region, the remaining wood, including the center mass, can be cut away as in figures 40 and 41. Continue to maintain a constant wall thickness to the bottom of the bowl (fig. 42). Make a light finishing cut to refine the interior surface (fig. 43). Be sure not to leave a bump or valley at the bottom.

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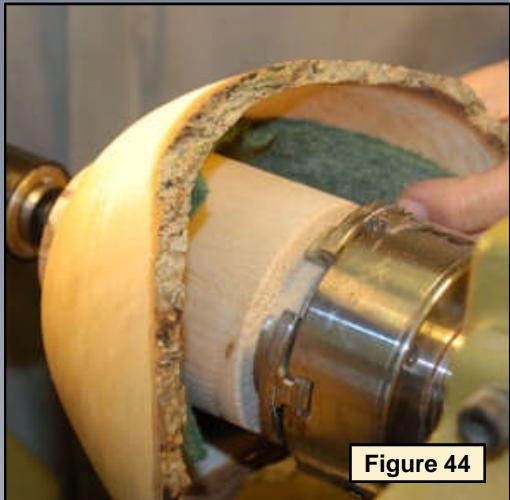


Figure 44

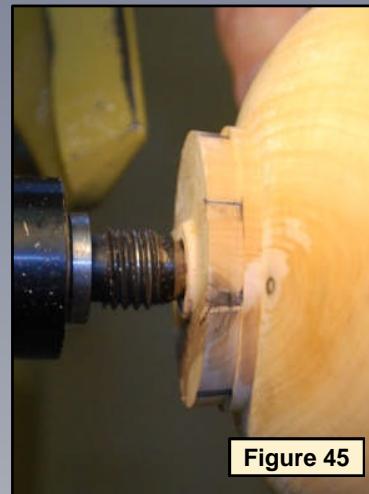


Figure 45

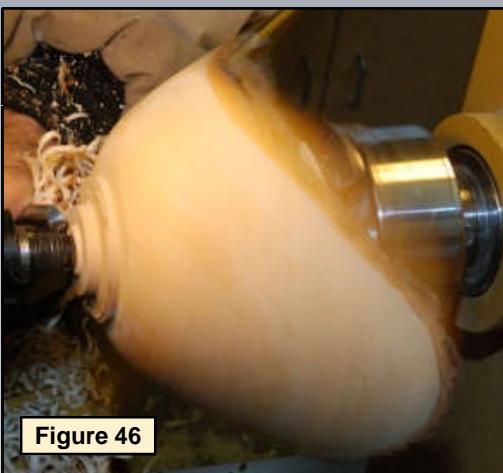


Figure 46



Figure 47

Natural Edge Bowl Step 11.

Remove the tenon.

Rechuck the bowl using a padded wasteblock in the headstock (fig.44). Bring up the tailstock placing its center in the original tailstock center hole (fig. 45). Check the bowl centering and adjust for trueness if necessary. Turn the tenon off to the base of the foot as shown (Figs. 46 and 47).

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Figure 48

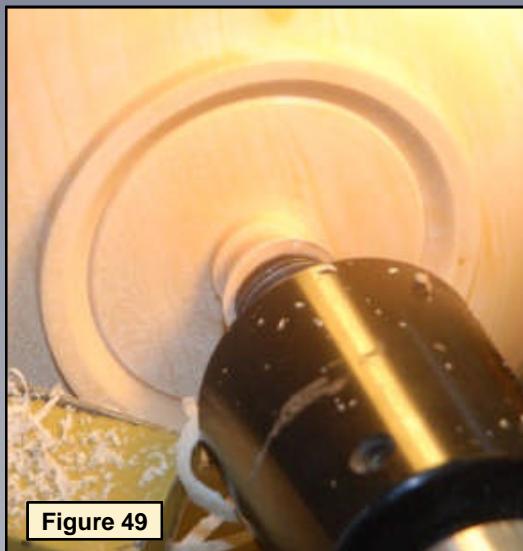


Figure 49

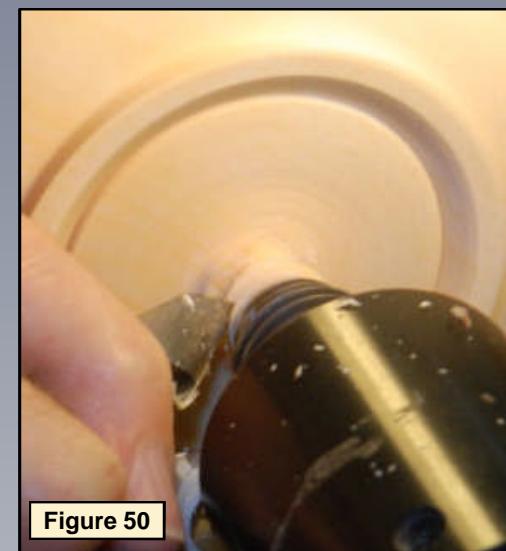


Figure 50



Figure 51

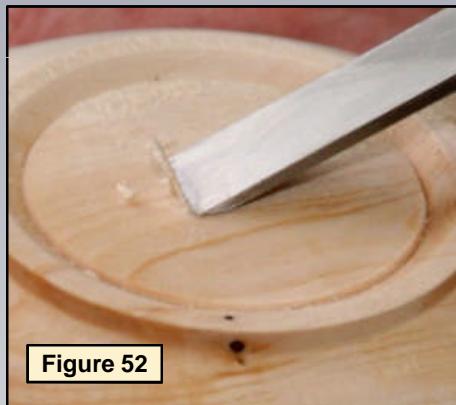


Figure 52

Natural Edge Bowl Step 11 cont.

Finish the bowl bottom with a detail of your choice. The bottom should be inset a small amount from the foot rim for the bowl to sit flat (figs. 48 and 49). Cut as much of the remaining wood as possible from the tailstock tenon (fig. 50). Remove the bowl from between centers and with a chisel cut the tenon flat with the rest of the base (figs. 51 and 52).

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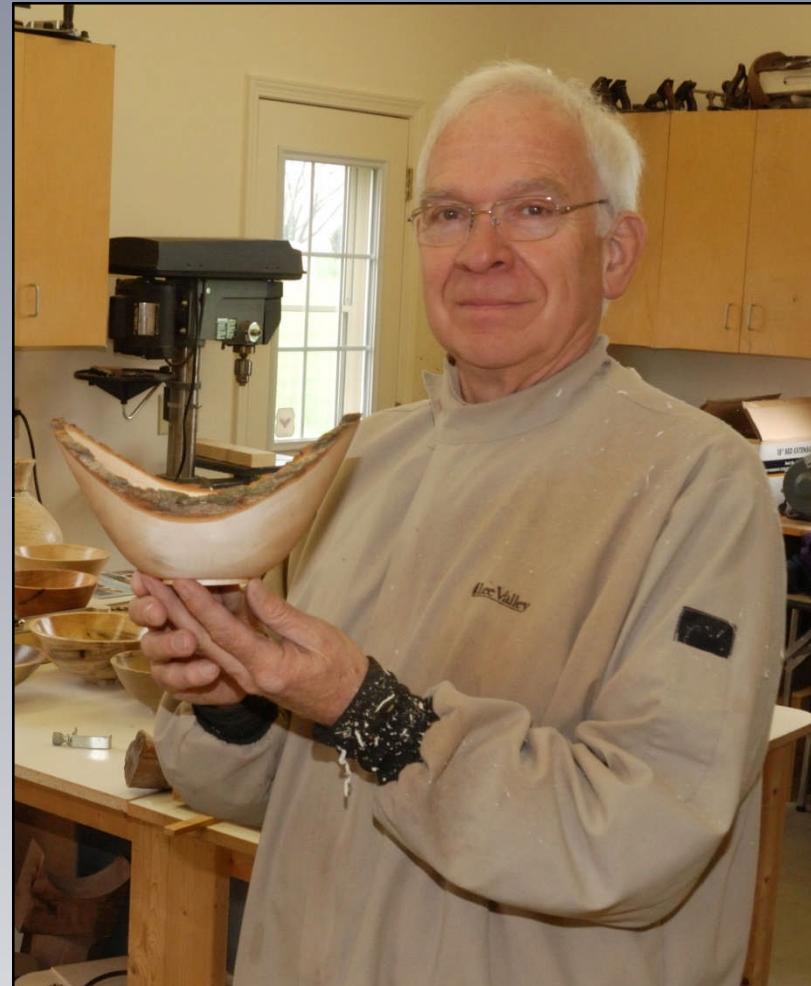


Natural Edge Bowl Final Step



Sand the rough chisel cut. Bring your work to "Show and Share"!

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