

## **Cluster #12B – Bowl Turning**

### **Introduction**

This cluster teaches how to turn a simple bowl using basic tools like the 5/8" sweptback wings bowl gouge, a 5/8" snub-nose bowl gouge, a 5/8" round nose scraper, and a 3/16" parting tool. You will also learn how to sharpen these tools.

### **Preparing the blank**

We will start with a 6" by 6" by 4" hardwood bowl blank. After you have decided which side will be the bottom of your bowl and which will be the inside, use dividers to scribe a six inch diameter circle on the face of the blank that will become the inside of your bowl. Use the band saw to cut your square bowl blank into a round shape following the circle you just scribed onto your bowl blank. Since you will be mounting the blank onto the lathe using a screw chuck, drill a 5/16" pilot hole about one inch deep in the very center of face of your blank onto which you scribed a circle. Be sure to drill your hole perpendicular to the face that will be flush against the face of the lathe chuck.



### **Mounting the Blank onto the Lathe**

After you have mounted the screw into the lathe chuck, screw your bowl blank onto the screw. Make sure the bowl blank is firmly attached to the screw chuck.



Next, slide the tailstock with the live center attached up to the bowl blank and lock the tailstock in place. Now crank the live center into the very center of your bowl blank and secure the live center.



## Tools

You will use four tools to make your bowl:

From left to right:

1. Parting tool
2. Round nose scrapper
3. Snub-nose bowl gouge
4. Swept-back wings bowl gouge



## Sharpening Turning Tools

When turning hardwood it is critically important your tools are razor sharp. Fortunately, it is easy to sharpen lathe tools. Before sharpening any lathe tool ensure the face of the grinding wheel is perfectly flat. If it is not, use the diamond encrusted dressing tool to flatten it. When sharpening lathe tools always set the grinder to its slowest speed.

Notice that each lathe tool has a bevel ground into its tip at a specific angle. The trick to sharpening lathe tools is to set up the grinder so that the bevel of the tool is held against the cutting wheel at an angle that matches exactly the bevel of the tool. The picture at the left shows a bowl gouge set up to be sharpened. Notice the articulating arm that holds the bowl gouge has been set up so the bevel of the tool sits flush against the grinding wheel. Once the grinder and tool holders have been set up properly, swing the tool from side to side while holding the tip of the tool flush against the grinding wheel.



Pictured below is a round nose scraper ready to be sharpened. Notice the tool rest has been set so the bevel of the tool sits flush against the grinding wheel. When you have the tool rest set to the correct angle, sharpen the tool by swinging it from one end of the bevel 180 degrees to the other end while gently rubbing the tip of the tool against the grinding wheel.



## **Turning the Outside of Your Bowl**

Set the tool rest so that it is at the center of your bowl. Set the speed of the lathe to about 750 RPMs. Once you have roughed out your bowl, you can increase the revs to 1,500 to 2000. Start removing the right corner of the blank using a side-ground, sweptback wings 5/8" bowl gouge. Move the bowl gouge from right to left. If right handed, use a pulling cut with the handle of the gouge below the cutting tip and the flute oriented 45 to 60 degrees left of vertical. The flute of the gouge will face the direction of cut. The bevel of the gouge is not riding on the wood in this cut. At this point the bowl blank is too uneven to support the tool's bevel.

If you are right handed, place your left hand near the gouge tip and pull the gouge toward you.



Alternatively, you might want to use an overhand push grip, shown here. Put downward pressure on the tool rest and apply steady pressure to control the line of the cut.



Close-up of the roughing cut gouge and wood contact. The shaving comes off the lower tip and left side of the gouge.



Taking a lighter finishing cut with the bowl gouge angled higher up on the blank with the bevel rubbing. The shaving comes off the lower tip of the gouge.



The shavings produced from the finishing cut. The finish cut is a shearing type cut and can produce fine tight curled shavings.



The torn end grain area of the blank after using a heavy roughing cut with the bowl gouge. This area needs to be gone over with a freshly sharpened tool taking light cuts to get past the depth of the torn grain. Torn grain like this will not sand away. This area will always have a different look and feel

compared to the rest of the cleanly cut wood if you try to sand instead of cut the wood fibers.

You are not trying to finish the surface of the bowl at this point. After you reverse the bowl into the chuck jaws, you will turn the finished surface.



Now position your tool rest so that you can cut a tenon about 3/8" deep and 2" in diameter into the bottom of your bowl. Use your bowl gouge to rough out your tenons. Since you will have to undercut your tenon you might want to use your parting tool to finish the undercut.

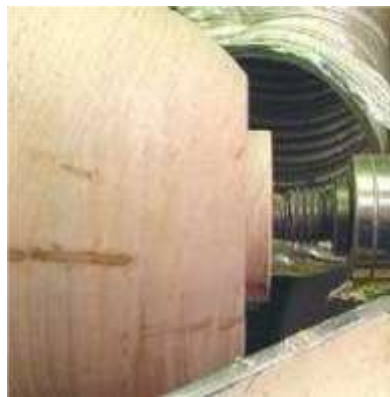
Cutting the tenon to fit in the chuck jaws.



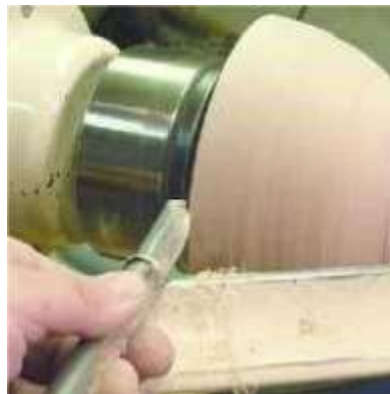
Cutting in toward the tenon to form a square or slightly undercut shoulder against which the chuck jaws can seat.



The finished slightly undercut tenon and square shoulder.



Avoid nasty cuts by rounding off sharp edges with the lower flute of the bowl gouge.



Use the bowl gouge with the sweptback ears to make a shear-scraping cut. Position the sweptback bowl gouge so that it is angled about 45 degrees to the wood surface with the top flute nearly touching the wood. The shear scrape is a light finish cut used to remove ridges or very slightly torn grain. The gouge moves along the wood surface refining the shape and removing any high spots. The gouge can move back and forth over the wood surface.



Stop the lathe and check the wood surface to see which direction gives the best results.



You can see from this view the top flute of the gouge just clears the surface. This is a scraping cut and will dull the gouge quickly so be prepared to sharpen often for best results.



Once the final shape of the outside of the bowl has been achieved, you can sand the exterior of your bowl. Reduce the revs to about 850 so you don't burn your paper. Start with 80 grit paper, and proceed with 120 grit, 180 grit, and then to 220 grit. After sanding your bowl, apply a coat of sanding sealer, Danish oil, wipe-on poly or the like.





### **Excavating the Inside of the Bowl, Sanding It, and Parting It Off**

Reverse the blank and grip the tenon in the chuck jaws. The outer edge of the jaws should contact the shoulder of the tenon for best support. The larger diameter contact area of the jaws gives better lateral support. This does not mean the foot will be this large on the finished bowl. Visualize the shape of the foot in the finished piece being inside the larger area chucked in the jaws. Never let the chuck or faceplate dictate the shape of a bowl or vessel. Removal of excess wood at the bottom comes later.



Using your swept-back wings bowl gouge to true the wood surface and shape the bowl profile now.



Shear scraping to remove any torn grain. You can leave the tailstock in for support until time to start hollowing. Your blank has cross grain and the wood could split parallel to the face of the chuck if a big catch occurs.



Clean cut wood surface.



Once you have the outer shape you want you can begin hollowing out the inside of your bowl.

Set the tool rest so the center of the gouge, with the handle horizontal, hits the bowl at the center or slightly below it. If the gouge's tip hits above center, the handle will have to be raised to cut the center and that gets uncomfortable if your lathe spindle height is already high.

Start excavating the interior of your bowl by inserting the snub-nosed gouge (not the sweptback wings bowl gouge) gently into the center hole with the flute about 45 to the left of vertical and the bevel resting on the lower right rim of the hole. The handle of the gouge is below the tip and is swung about 45 degrees to the right of the centerline. Now pull the tool to the left making about a 1/8" deep cut. Stop your cut when you get to about 3/4" from the rim. Now use your parting tool to cut a shoulder about 1/8" deep and 1/4" wide 3/4" in from the rim. Next, use your snubnosed bowl gouge

to cut from left to right. Orient your tool so that the bevel sits flush against outside edge of the channel you just cut. The flute should face about 45 degrees to the right of vertical. Make your cut by firmly pushing your tool into the bowl while riding the bevel. Push the bowl gouge in the direction you want to cut, using the handle of the tool to steer the cutting edge in the desired direction. The flute of the gouge faces the direction of cut. Next, make a cut from the center to the outside, after which you will cut a new shoulder using your parting tool and then use your bowl gouge to make a cut from the outside to the center. Repeat this process until your bowl has been excavated. Always cut downhill riding the bevel.



The flute of the gouge is rolled back slightly up to allow the cut to come off the lower edge near the center of the gouge.

When you have completed your first cut, use the parting tool to cut a new step in the outer ring. Once a step is cut in the surface of the wood it acts as a stop to keep the gouge from trying to catch and run to the outer diameter of the bowl edge. Push or sweep the gouge toward the center. Come back to the top of the bowl; make a cut closer to the outer edge and sweep to the center again.



Continue hollowing the bowl until you get close to the wall thickness you want in the top area of the bowl. Leave the bottom section of the bowl thick at this stage.



The long bevel on this gouge interferes in the cut by rubbing on the bowl wall. Accordingly, we grind off part of the lower bevel.



Checking the wall thickness.



The finish cut surface on this section of the bowl. Check to make sure there are no torn grain areas and then continue to hollow further toward the center.

Do not allow the trailing bevel of the gouge to leave burnished ring marks in the wood either. Try for a uniform clean-cut look to the wood surface. Sanding and applying finish will go much easier if you do.



Remove the cone of wood left of the center.



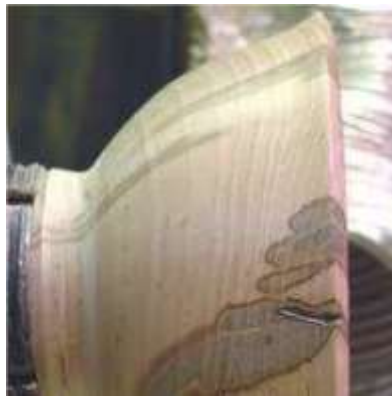
The center of the bowl spins at slower feet per minute speed than the outer edge. Slow the advance of the gouge to compensate for the change. Take your time and remove the center. The curve on the inside should be continuous from side to side without bumps and flat spots. Use your fingers to feel for flat areas and if found take light cuts to remove them.



At this point you will likely want to use the round nose scraper to smooth the surface of your bowl. Make very, very light cuts with this tool.

Sand both the outer surface and inner surface of the bowl after power sanding through 220 to 320 grit. Any further sanding with finer grit paper you can do by hand.

Now part off the bowl from the tenon using a parting tool. Alternatively, you can sand off the tenon using the stationary sander to remove the bulk of the tenon and then use the small drum sander to finish the bottom of your bowl. Lastly, finish your bowl with wipe-on poly. Now part off the bowl from the tenon using a parting tool.



Alternatively, you can sand off the tenon using the stationary sander to remove the bulk of the tenon and then use the small drum sander to finish the bottom of your bowl. Lastly, finish your bowl with wipe-on poly, tung oil, lacquer or the like.



