Simple Bowl and Finishing the Finish
Demo notes for
Tri-County Woodturners
By
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When you turn wood that is side grain you will get about 1/8 of a revolution that is end grain on each side of the bowl. You may know these areas as the rough areas that refuse to sand out easily. They are generally worse on the inside than they are on the outside of a bowl. They happen because you are not cutting cleanly when the tool and the wood come to these areas. This may be because you have gone from cutting to scraping or you are trying a "pull" cut. None of these will give a satisfactory finish. When you damage the structure of the wood while roughing the shape you damage the wood fiber up to ¼" deep. Can you sand that much out? Why would you want to sand that much? Here is the fix, start making the finish cut at least ¼" before you get to the finished dimension.

How do you make a "finish" cut: It is a push cut with the gouge in contact with the tool rest and the wood. The tool is supported and controlled by your right hand. Your left hand add weight to the tool onto the tool rest, it does not push the bevel toward the wood, therefore your tool bevel "floats" on the wood.

Tool grind angle is around 40°, this will allow you to float the bevel almost all the way to the bottom, stop the cut before the shaft of the gouge touches the rim of the bowl. To finish cut from there to the bottom center you need a different gouge with a steeper angle cutting edge to allow clearance for the tool at the bowl rim.

If the cut you have on the surface of the bowl is a "finished cut" then the sanding becomes more fun.

Sanding is a finishing technique not a shaping technique, throw away all of your 36 grit paper. The coarsest paper that you should use is 120 grit. Don't skip grits, it is 120, 220, 320, 400, 600, etc. The reason that you don't skip grits is that the actual size of the individual piece of "sand" of the lower grit as compared to the next higher number grit is about a factor of two, for example 120 grit is 1.8 times larger than 220 grit and 220 grit is 1.8 times larger than 320 grit. But 120 grit is 3.2 times larger than 320 grit. Start where you need to, i.e. for a really good finish cut with minimal marks, start at 220. Usually anything over 320 on wood is petting the goldfish, the harder the wood or shinier the finish the higher the grit to finish. Whenever you put sandpaper to rotating wood you will create scratch marks! That is how sand paper works. What you want to avoid is those circular marks that you just don't seem to be able to sand out with finer grits. There are several ways that turners have used to get around the circular marks:

1. Always keep the sandpaper moving. This is a true statement but if you have the sandpaper held by your mark 1 fingers and you are moving it to the left you will eventually run out of wood. So what do you do, you start going the other way. Ok, bear with me for a minute, if your finger was moving toward the headstock at some speed and then you reversed direction and started moving toward the tailstock at the same speed what was the speed of the sandpaper at the moment between the two directions? It was standing still! You got the circular marks, no way around it!

2. With keep the sandpaper moving in mind, put the sanding disk into the angle head drill and have at! Ok, you avoid those pesky circular scratches but you seem to go through a lot of sandpaper. The number 1 enemy of sandpaper is heat. With the lathe moving the wood and the drill moving the sandpaper, any boy scout can tell you friction will eventually start a fire!

3. So far the best answer that I have found is a set of home made self powered sanders. These little beasties are really easy to make and they work. Plans attached. They derive their motion from the wood being sanded, the speed is controlled by where the sanding disk touches the wood – the closer to the center the faster the relative motion between the sandpaper and the wood. They are cooled as they spin by air moving over the surface of the sandpaper caused by the rotational velocity of the sandpaper and because no single spot is in constant contact the heat builds up slower.
    a. In addition to long lasting sand paper the scratches left by the sandpaper are always at an angle to the circumference. This fact makes them much harder to see.
    b. Since you will never match exactly the above angle by the next grit paper the sanding marks disappear quicker

Finishing

Not so fast there sport! Look at the surface of your wood do you see those pores? If you don't fill them you will see them in the finished product. If the finish is shiny they will stand out like an owl face in the middle of a counter top! Sanding sealer applied with a small amount of fine sandpaper (finer than the last grit) will usually fill them in a couple of applications. You have to wait for the sanding sealer to dry then sand again through the grits. Oak and that type of ring porous wood will require paste fillers and burlap to level the surface, then sanding sealer and sanding.

Once the wood is filled and sanded again to a suitable finish then you can start to finish the piece. What to use? What is the intended use of the object? The following are some examples:

1. Art work with surface embellishment or carving, flat or semi gloss finish, to be displayed inside a glass case. Any finish will do. Shellac or lacquers are generally used and the object is buffed to attain some shine or steel wool (0000) to achieve flat or semi gloss. The object will not be handled therefore durability is not required of the finish.

2. Craft items for use. Salad bowls, honey dippers, cups, etc. These should be finished with something that will not leave a taste or develop a taste over time. This is generally referred to as "food safe" finish. Here is the deal; all of the modern finishes are food safe once they are cured. Mineral oil cannot spoil or go rancid; olive oil can spoil and go rancid. Which one would you like to eat your salad out of? If you want to build a gloss finish I suggest that you use one of the "salad bowl finishes" on the market.

3. Objects that are for display and that will get handled – most of your stuff! You can put the range of finished surfaces on these items from dull to high gloss. The medium used for finish should be tough. Lacquer, clear acrylic, varnish, super glue are all acceptable:
    a. Lacquer – easy to apply and is relatively fast drying. Can be sprayed or brushed. Must be sanded between coats to level but because the new coat will dissolve the surface of the previous coat you can build thickness by spraying several coats after minimal drying time. Then allow a day to dry and sand to level and spray again. Because the last coat will dissolve the surface of the previous coat it is hard to get that perfect finish from lacquer. After it is thoroughly dry it can be leveled with a wet sanding process then buffed to achieve brilliance. Usually a carnauba wax coat is the final finish. Caution buffing will burn through the lacquer without special care.
    b. Acrylic – about half way between lacquer and varnish. I don't like the ones I have tried, they smell bad.
    c. Varnish – also easy to apply but requires longer drying time. The finish is much tougher than lacquer. Each coat of varnish requires sanding because varnish will not stick to dry varnish it is too slick. Varnish will require at least 5 coats to build a layer that is thick enough to sand level and polish. Leveling an polishing are easier because the varnish is tougher. Use a wet sanding technique to achieve a final surface then buff to the gloss required. Carnauba wax is also used for final finish and can be reapplied as required.
    d. Gunstock finish – I have had very good results with Birchwood Casey's, Tru-Oil® Gun Stock Finish. This can be found on line at www.birchwoodcasey.com, at some of the larger Wal-Mart's, sporting good stores and gun shops. This finish is applied off of the lathe with a fingertip. Dip the fingertip into the finish then rub

onto the wood. Keep doing this until the whole surface is coated. Let dry according to the bottle directions and steel wool between coats, this product will develop an acceptable film after about 5 coats. For the last coat(s) use a small (1-inch) cotton ball wrapped inside a ladies nylon stocking. Stroke in the direction of the grain and maintain a wet edge. Don't try to repair marks; you will have to do another coat. This finish takes a long time to get to "finished" but it is very durable and you will notice that it is "self leveling". The actual stuff is made of catalyzed Tung oil, made by heating Tung oil in a nickel container in the absence of oxygen to some magic temperature then cooling and bottling without oxygen. I get it in the smallest size and plan on it lasting less than a month after it is opened. The internet price is 3 oz for $6.80.

4. Quick finish on small items – Hut wax. I use this finish when demonstrating and I want a finished article from the demo. I use some type of lacquer for a sanding sealer then apply the Hut wax by rubbing it on the wood while on the lathe 1000 rpm. Use caution this wax is hard and can damage some of the softer hardwoods. Hut is very acceptable for ebony, not so much for mahogany. Once you have transferred a good amount of the Hut wax to the object then use a paper towel, not a rag, doubled over several times to create friction heat sufficient to melt the wax. It takes a lot of heat to melt the wax. Once the wax starts to melt I chase it down the piece that I am finishing. Very tight spots can be reached using a small thread or string. Don't wrap it around anything you can't afford to loose, like your finger!

5. Super glue – Caution this stuff will stick to flesh right now. Keep a vat of debonder handy, like within reach if both hands are stuck to the lathe! This stuff can be applied using a sponge dental swab. These swabs have a small amount of glycerin in the sponge and this keeps the super glue from hardening right away. Use thin CA and the dental swab to apply. This can be done on the lathe with it running at about 1 to 10 rpm. Splashes on the glasses will leave spots that can be removed with the debonder. Don't get CA on you and don't breath the fumes, they contain cyanide! Let the glue harden then sand to level. Doing this several times will build a very hard finish that can be polished to a very high gloss. Once the CA is hardened it is a hard plastic material and will take a very high gloss. It is expensive and you will use lots of it on punky wood, but it does strengthen the punky wood.

Whatever project your are finishing remember this, the finish ain't finished till it is finished!

Credit Stu Batty for the 7-woodturning rules. Request a copy from him at stu@stubatty.com he will e-mail you a copy. If you saw him demo at either the FWS or the Central Florida woodturners you will understand better. If not then put him on your list of folks that you want to see.

High strength rare earth magnets www.amazingmagnets.com

Roller blade bearings www.vxb.com

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