"Burl to Bowls: Harvest, Section and Core a Burl into Multiple Bowls."

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1. **Choose and section the burl-** Phil will show how to observe and choose good burls, identify two kinds of burls, and then use cardboard discs to visualize the best use of the burl, aiming for the largest bowls and the highest yield from each burl.
2. **Shape and mount the burl-** Using chunks of burl and slides, he will show how to use the band saw to create a flat base for the bowl blank, cut a circle at the edges of the cardboard disc, and mount between centers on the lathe.
3. **Turn the outside, remove the core and turn the inside of the bowl-** he will mount that bowl blank onto the lathe, use the McNaughton coring system to turn multiple bowls from each wedge, and finish turn each individual bowl.

1. Find and Harvest the Burl-

Where to find burls. Move to Wisconsin or Minnesota, Washington, Oregon, New England, the Carolinas, any place with lots of deciduous woods. Some places are better for finding burls. You can certainly buy burls, and most of the specialized hardwood dealers will sell them to you. They will be expensive, several dollars a pound. Often, big leaf maple, because it's common enough to be commercially viable, or lodgepole pine burls, though I don't care much for softwood burls.

But there are burls available near to you. I get calls from all over the country, deep in the woods, people looking to sell their burls. They tend to have unreasonable expectations because of what they've heard, but they're anxious to sell and with the burl cut off, the clock is usually ticking

So, how to connect with sellers? I love small town newspapers, tree services, Craigslist, loggers and sawmill operators. My two best sources right now are road-men for large timber companies harvesting millions of board feet of timber, and seeing lots of burls, which are just in the way of the loggers. An art show of your burls will snag some people. Talk to people. Put up a note card on a bulletin board at Woodcraft or Rockler or your local wood store. Ask around your club. Put up a website and tag it carefully for burls, spelled in lots of ways (burrows, burrs).

Beware of burls that are too old, dry or cracked. Buy eyed burls if you can, not layered burls. I find oak too hard and brittle, and box elder or cottonwood burls amazingly hard enough for good turning. Burls are more-dense than the rest of their species because the wood is compressed by the process. If the sapwood is gone from the burl, or the bark may be gone or hanging loose, it has been drying at least a year. Longer than that, the burl will be cracked and a challenge and perhaps not worth the trouble.

What to pay? Most of all, I need to know what my yield of bowls will be worth and work backward to what I can get out of a burl- one bowl or 100 bowls, what size and quality? You'll make some mistakes but it gets you in the game. Some people would rather trade for bowls.

Eyed vs. Layered Burls

An "eyed" burl, whether small or large, will generally be dome-shaped and symmetrical, not random. Will include no branches, or very few. Most likely on Black ash, cherry and boxelder. Not likely on hard maple. Now it may be multiple domes, stacked almost on top of each other. Almost all big burls have developed from several smaller ones, so you can often see where they have pushed against each other and formed seams, which will often have bark inclusions, bark which has been rolled into the joint as the burl grew. Under the ground, that will be dirt, and lots of dull saw blades and tools. I will use my wire brush and shovel to get as low as possible though. The best Boxelder burls are often very close to the ground.

If you cut the burl, leave some extra length (6-8") in the trunk beyond the burl to prevent cracking. If the burl is too large to handle, look carefully to decide where to cut it. Those seams

are good choices, or removing parts of the log that aren't burled. Trim them off. Or just avoid those prime parts of the burl, to anticipate where your best bowl blanks will be. Usually, I'm making my cuts toward the pith of the log.

I wait as long as possible to cut the burl, unless they are too big to handle, because in the full burl with bark protection, they are less likely to crack and that keeps my options open. Definitely, use green wood sealer to protect any cut surfaces, and since burls are not clearly side-grain or end-grain, you should seal every cut surface, and then dry them a month or more, keeping them dry and out of the sun. In freezing weather, my garage keeps them from drying, or at least slows them down. If I want to dry them immediately, I need them in my warm shop.

My best trick is cardboard disks that help me visualize the bowls. I turn my bowls with a bark-edge, so the tops of the bowls are the outside of the burl and position the disc to keep the bark edges even. I use an awl to position each of these disks, and then I use a chain saw to cut them apart, or the bandsaw if they are smaller.

I will look carefully at the burl and try to "read it." Seams, cracks, and ant holes will all indicate a place to cut the burl apart. Sometimes the deciding factor is what size of blanks you want. With my longest McNaughton cutters, I can core a bowl 14" wide, but not very deep. If I want deeper, I will narrow my bowl. The biggest burls will be two bowls deep toward the center.

Don't forget that in sectioning the burl, you need to leave extra space between cardboard circles because you're not cutting from a flat surface, but a curved-in-upon-itself shape. I choose for the most valuable blanks first and give them priority.

2. Shape and Mount the Burl

My last shaping cuts on the bowl blank will generally be on the bandsaw, which is more complicated than a barrel-shaped bowl blank from a tree trunk. My goal is to cut a flat base parallel to the outside edges of the bowl, then cut a circle to trim off waste and speed up the turning process. Mark the center of the circle top and bottom and use the chisel to cut down to bare wood for the driving center. The driving center will be pounded in to the bark side.

To find that flat bottom, the intermediate step is usually to find or cut a flat at a right angle to the bark top large enough to use the band saw to cut another right angle to flatten the base. That will make you decide the depth of the bowl. Getting started especially, be modest about bowl size and depth. It will often mean you get another bowl blank from the bottom which you can make good use of for a flat-topped bowl or smaller items. Think safety. For a safe bandsaw cut, you need the wood supported beneath the blade. Sometimes it's best to tilt the table.

The burl figure in the log is generally a cone toward the center, so it is common that my largest bowl blanks, which are curved in profile, often include some of the surrounding non-burl wood, though it is often highly figured because of its proximity to the burl. That's especially true on the biggest bowl of the stack. As I get deeper into the stack, the bowls will be fully in the burl cone and therefore all high-quality burl.

3. Turn the outside of the bowl, cut out the core and turning the inside

The orienting of the bowl blank can be quite fussy. A burl by definition is a pretty random shape, unlike a barrel shaped half-bowl blank. I will make my best guess as to the driving and tail centers positions for best use of the wood, but very often I will shift them as I turn closer to the final shape. I want to keep the bark edge as level as I can and I will also move the centers if it will help to make better use of the wood. That is, if there's a flat on one side and not the other, I may move one center or both to shift the wood to remove less wood.

Find your balance between a chuck diameter able to hold the bowl firmly and the base size of the final shape you want. If you need to, use a larger diameter and then trim it off after the inside is complete. I like a small base on my bowls and am willing to risk something to get there.

My best advice for good cutting is to cut up from the base, move from larger cuts to smaller, from roughing and more tear out to very fine shavings and no tear out. I often start with a pull cut on my Ellsworth sharpened bowl gouge, then move to push cuts at the top edge and then drop the handle to improve the surface with a shearing cut. I finish and refine the surface with a dedicated shear scraper.

With regular natural-edged bowls, I avoid any cracks in the log that I might have to fix. Not worth it. But with burls, I am often filling cracks with super blue and either matching or contrasting wood dust. I generally do my last gap filling of wider cracks and thin glue in hairline cracks just before my last cut or two so I can clean up the extra glue on the surface.

Why use the McNaughton? For flat-topped salad bowls, the Woodcut or Oneway are better choices. Unless you're turning burls or valuable wood, coring itself isn't usually worthwhile, because it limits design options. But if you're turning natural-edge burl bowls, McNaughton's the only choice. Because of the uneven top surface and bark and therefore a big overhang before I'm even cutting the solid wood, I need the McNaughton for its greater reach and its flexibility for a variety of shapes, especially deeper, narrower shapes. It's messy and scares people. You can probably get a good deal on a McNaughton set because so many people who buy them have a scary first experience. Lots of dusty ones out there. Not easy, but the results are wonderful.

Coring tips- Against McNaughton's suggested procedure, I core from the outside in, first cutting off the largest bowl. It means cutting a new chuck flange each time, but I'm harvesting the most valuable outer bowls first, because the inner ones are much less valuable.

Line up the toolrest base roughly in line with the coring tool. If the banjo is sideways, it will tilt and drop the point of the cutter.

Be very careful to arrange the cutting point exactly at the center line. If your curved cutting tool is bent at all, you will need to raise the tool rest. As you near the center, that is essential.

I find the cutting is less "grabby" if I "tremble" the tool for short, controlled cuts.

As I'm holding the tool, I put my left hand over the toolrest, often controlling its rotation. The right hand is very important. It must keep a constant pressure up against the toolrest stop, not hard pressure but even. It would feel more natural to push down, but you need to **push up** or the tool will jump.

Avoid sharpening the tips too often by protecting from bumps and from the bark. I use a straight parting tool at first, usually carbide, to cut through the bark and uneven top surface to protect the edges of my HSS curved cutters.

I tend to work from straight to slightly curved to full curved as I work into the bowl. A big reason for this is I like to leave the tail stock in place as long as possible, to compensate for using a smaller chuck diameter. I also get deeper bowls if I don't have to cut up so far in the blank to get a larger chuck diameter.

I dry the wood for a month or two beforehand so I don't get a bath, but a mistake beginners make is to wait too long and use burls that are too dry and hard. That will be much more difficult.

Listen as you are cutting. Because the McNaughton tool rest "gate ring" can rotate, it often moves to make contact with the wood and you'll need to shift the whole tool rest over.

Cut as thin as helpful or as you dare, to yield a good number of bowls. You need to leave enough thickness that you can "clean up" the surface for a final finish. If you are going to dry the bowls and "twice turn", you will need much more thickness and yield fewer bowls. I like the "old leather texture of burl bowls that finish drying after the single coring and turning process.

Use the smallest set of McNaughton curved blades that you can. Over 10" or so, you'll need the large cutters, standard cutters in-between, and less than 6", the smaller cutters work wonderfully. The larger the overhang, the more complicated everything is. To learn to do this, start with smaller bowl blanks.

By measuring and marking the exposed length of each coring blade, I can use a measuring tape to monitor my progress toward the bottom. Line up the tape with the handle of the cutter.

Stop often to clear the wood chips. Leave some clearance but too much can mean chips build up, clog, and stop the motor (or break something), especially if the wood is wet.

As I approach the bottom of the cut, I measure often to avoid going through the bottom. I find that easier cutting wood is more dangerous for me because I cut too fast and "oops." Measure often and test if the middle core is getting wobbly. I can often do some twisting or a sharp blow with a mallet to break off the last bit of the bottom.

Finish off the inside of the bowl as usual, roughing cuts, finishing fine cuts, (negative rake) scraping to refine the surface and then sanding with medium-to-fine Velcro power discs, then oiling and setting that bowl aside as I proceed with the rest.

Remounting for removing the next bowl

One of the big advantages of coring a nest of bowls is that the outside of the inside bowls come off the coring system almost ready to go. I remount the removed core onto the same slots on the driving center. On the bottom, I center the tailstock point, sometimes using the bandsaw to cut off the bottom cone of the core to prepare it to become a new base and chuck flange. Balance between using a small chuck and making a deeper bowl or a larger chuck to hold on better.

Tips for outside and inside cuts-

Coring will force you to break a rule for turning the insides of bowls- "To provide good support and avoid chatter, leave more thickness at the base and finish off the top inner sections of the bowl before proceeding deeper." With coring, if you core thin to the bottom, you will need all your tricks to keep the top inside edge from chattering. You will need to cut with minimum pressure, or even use a gloved hand or a bowl-steady-rest to support your cuts.

Design-wise, I like small bases and curves that "stay alive," that is, keep curving one direction of the other and don't go flat.

Your biggest challenge design-wise with coring is that your bowls may all have the same simple-curve shape. I often mix-up my simple curves with ogees and with taller and lower bowl shapes. It means that the bowls I'm not coring, I will definitely turn lots of other shapes- more closed forms, even hollow vessels, wing bowls, tall shapes, and flared rims.

I wish you well with your woodturning. This information, photos and video will be on my website **philholtan.com**. I'd also invite you to my shop to spend the day learning from scratch or tuning up your skills. Or, we could use the McNaughton system to core out your burl.