

Three-Piece Goblet - Basic Steps - Dave Landers

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Turn a Bowl

Pick a small, nicely figured piece of wood - I often go with a burl with a nice, interesting natural-edge. About 3" diameter is a good starting point, maybe around 2" tall.

The first decision is natural- or turned-edge. For me, this often comes down to the figure. A burl should have good figure near the surface, and the surface is often "interesting", suggesting a natural edge. But look at the sides and bottom of your blank - does the figure go deep enough or will it all end up as highly-figured shavings? Sometimes, it's better to capture what figure you can in the bottom of the bowl, and skip the natural edge.

Chuck the piece between centers with the bottom of the bowl at the tailstock. Having the bowl between centers now allows you to adjust its orientation to get the best result - figure, edge, etc.

Live edge: Turn at least the wood around the rim to round (remove any "air"). Look at the natural edge - is the rim balanced? Compare high and low spots, move the live center location till you achieve the desired balance. No high spot to high or low spot to low. I try to match 2 or 3 highs and/or lows.

Turn a small bowl shape. For a natural edge, it is best to cut from "air to wood" - that is, cut into the rim, towards the bottom of the bowl. This will help keep the rim clean and unbroken, especially if you're trying to keep the bark. You don't have to cut the whole bowl this direction, just until you get past the edge to solid wood.

Leave a small (maybe 1/16" tall) tenon on the bottom that fits your chuck. Shape the tenon into a small "bead detail". Aim for the right size (diameter) to match the chuck jaws "perfect circle" size. This will avoid marks from the jaw corners (that happens if the tenon is too large). The bead can be left on (if not marred by the jaws) or removed later. Even if I plan to remove it, I keep the tenon small so I have less wood to remove later (when re-mounting might be "sketchy" due to a thin bowl with tiny "stub" on the bottom).

Cut a 1/4" tenon "stub" on the bottom to fit into a hole we'll drill in the stem. I sharpen the top edge of a 15/64" wrench, use that as a combination scraper and sizing gauge (15/64 so the tenon is slightly under 1/4" - I want these tenons to provide glue surface and alignment, but don't want to risk breaking things with a press-fit).

Sand carefully so as not to round over the natural edge. Sanding with the lathe running is a good way to kill the edge (it can also be painful when that natural edge hits your fingers). I usually sand these small pieces to 800 grit.

Turn the piece around and mount in the chuck.

Bring up the tailstock for support and cut as much as you can inside the bowl. Mainly I want to reduce bouncing and banging from cutting thru the natural edge. Once you've done what you can, remove the tailstock.

I next turn the inside of the bowl to about $\frac{1}{4}$ " thick. Too thick for the end result, but I'm aiming for a consistent wall thickness all the way down. It's easier to get consistent when you have plenty of material to work with.

Now, with a consistent $\frac{1}{4}$ " wall, if you take away a consistent $\frac{1}{16}$ " (for example), you'll have a consistent $\frac{3}{16}$ " wall. And so on. It's easier to see the "shelf" of material you're removing than see the wall thickness remaining. This technique helps me achieve a thin bowl with little worry about going thru the sides or bottom.

Again, sand carefully.

Base or Foot

I like the base to be the same material as the bowl (from the same piece of wood if possible, or at least same species). Makes for good continuity between the two. For a 3" bowl, I usually aim for about a 2" base or a little less. If you can match some details (like natural edge bits) between the bowl and base, so the base "echos" the bowl, even better.

I often start with a piece about $\frac{3}{4}$ " thick so I can grasp it in chuck jaws, leaving maybe $\frac{1}{4}$ " exposed to work with.

I cut a simple dome curve for the top of the base, round the outside edge, and undercut it a bit so it will "lift" off the table.

Using a $\frac{1}{4}$ " straight-cutting router bit in a jacobs chuck, drill a center hole about $\frac{1}{16}$ " deep. This will receive a tenon in the stem.

Note the threads-per-inch in your tailstock quill. Mine is 16 TPI, so one revolution of the handwheel is $\frac{1}{16}$ ". So I advanced the bit till it starts cutting, then turn 1 revolution to get a $\frac{1}{16}$ " deep hole. Your quill may be different - look it up or measure it, it's handy to know.

Sand.

To turn the base over and do the bottom, make a faceplate. It should be dished out to match the curve you put on the base. And leave a $\frac{1}{4}$ " x $\frac{1}{16}$ " tenon in the bottom of the dish-out for alignment of the base. Make sure the base fits on the faceplate without rocking. The more surface area contact you have, the less chance the base will slip and burn or burnish (which will require some re-cutting or sanding).

Put the base in the faceplate and bring up the tailstock - holding the base in place via friction. Turn away the unnecessary wood down to your desired base thickness. Turn and sand smooth a rim or foot around the outside edge. Don't worry about the middle yet.

Use tape to attach the base to the faceplate, taping around the rim or foot you just sanded.

Now you can remove the tailstock and complete the center portion of the bottom.

Stem

Spindle turning is a great way to learn how your gouges cut. Things are just more obvious when you're cutting a cylinder - compared to trying to figure out what's going on down inside a bowl. The actions of the gouge, the way the bevel cuts, etc are the same - just easier to see on a spindle. So if you're not a natural spindle turner, spend some time making "bead sticks" or even "toothpicks". Experiment with various ways of presenting the cutting edge to the wood. See what works. If it is scary, just turn down the speed.

The stem I usually like to make is two large coves (think golf tees) with a small bead in the middle.

I mount a square piece of straight-grained maple in pin jaws. Start with something about 6" or 7" long, $\frac{3}{4}$ " square. If you don't have pin jaws, you can just remove the jaws from your chuck and grab the wood with the jaw slides. Chucking a spindle (vs using a drive center) allows it to be driven without pressure from the tailstock.

Rough the wood to round.

Face off the tailstock end. This will be the top, attached to the bowl. Give it a slight concave end. Use the $\frac{1}{4}$ " router bit to drill a $\frac{1}{16}$ " deep hole in the end.

Bring up the tailstock (with a cone center, preferably) in the bottom of the hole.

Leave yourself enough room at the chuck-end to safely turn a tenon on the bottom (without running into the chuck). Mark what will be the bottom end of the stem.

I next turn away the diameter in the middle section down to a good diameter for a bead.

Find the midpoint of the stem and mark what will be the center of the bead. Then mark the left and right sides of the bead. Cut a V-groove to the left and right of the bead. This is both decorative and gives your gouge "someplace to go" while forming the bead.

Lots of ways to cut a bead, but for the best gouge control practice, I start with the gouge flute-up, with the gouge tip on top of the bead (your marked center point between the left and right v-grooves). To cut the right side of the bead, you have to roll the gouge over from flute-up to flute-right. At the same time, you need to lift the handle so the gouge moves from top-of-bead to the spindle center-line (side of bead). And at the same time, push the gouge handle to the right - the gouge will cut in the direction of the bevel, so you need that bevel to end up perpendicular to the lathe axis so the side of the bead will be straight. Doing the left side of the bead is the same, except the gouge needs to be pulled to the left. If you're right-handed, this means you're pulling the gouge into your body - make sure you're out of the way before you start the cut. Left-handers it's the same, just opposite.

Three things to do at once, in a small space. Great practice, and if you can do this, you should be able to make any gouge do any cut.

I use a small tool rest and wrap my hand around it so my fingers provide support (like a steady-rest) to the wood. My fingers on the spindle also allow me to feel small bumps etc that I can't see.

After the bead is cut, make a large cove between the top of the stem and the right-side v-groove. Cut a chamfer on the top of the stem.

Next, copy that large cove on the bottom half of the stem. Except it's backwards - so this is more good practice (one side is cut left-to-right, the other right-to-left - different directions but you want to end up with matching curves).

Add a chamfer on the bottom, and use a parting tool to cut down towards a 1/4" tenon, but we don't need to make it just yet - just want to define where the bottom is and get access around the corner for sanding and dye.

Stem Sanding

I sand stems to 800 grit. I move the tool rest back and rest my right-hand wrist on it. My left elbow rests on the headstock. I bring both hands together under the stem so I have them supporting each other, the stem, and sandpaper. If you're left-handed, or your headstock is such that you risk running into the chuck, you can reverse the grip with your right elbow on the tailstock.

Stem Color

I like a black stem - I usually don't want figure or grain in the stem to distract from the wood I chose for the bowl.

I use India Ink for color on the stem. And rubber/latex/nitrile gloves to avoid color on my hands.

Use a few drops of india ink and a small square of paper towel to wipe the stem. Turn the lathe speed way down so you don't spray yourself with ink. Make sure to get ink into the bottom of the v-grooves and around the corners at each end. And use the edge of a towel to remove any excess in the grooves.

After a few minutes that first coat will be pretty dry. But it will have probably raised the grain, so I sand again with my last grit (800). Then another coat of ink. Sometimes, I just wet-sand with 800 grit and the india ink (depends on how the wood is taking the ink).

Parting off the stem

Next, we need to create the 1/4" tenon (using the wrench again), and under-cut the bottom of the stem a bit concave.

Before parting off the stem, loosen the tailstock so the live center still provides support but is not adding any pressure towards the headstock. It should be loose (wiggle a bit) but still keep the stem from whipping side-to-side. Now, if you part off the stem, it won't be pushed into the headstock and break. If this worries you, just cut it off with a fine tooth saw.

Glue-Up

For the glue-up, we'll use the lathe as a clamp. We'll hold the cup on the headstock-side and the base on the tail.

First, sand down the two ¼" tenons (on the stem and the bowl) so they fit in their mates. Don't be tempted to power-sand these or you won't have any tenon left. A sheet of 120 or 220 paper glued to a flat piece of wood works great.

Turn a scrap piece of wood to fit into the bowl. Use some shelf liner or paper towel or something for padding.

Next, make a flat disk for the base to sit on. Drill a hole so it fits over your live center (it just needs to be held by the tailstock, there are many ways to do this but this is simple).

Next, I mix up a bit of 2-part epoxy, something with a long working time so there's time to get everything just right.

Off the lathe, add a little bit of epoxy to the top of the stem, and fit it to the bowl. Take it apart and see where the glue went. Add (or remove) epoxy till you get even coverage without squeeze out. Denatured alcohol and a paper towel will help clean up excess. Do the same for the base.

Tape or otherwise hold the bowl on the scrap in the headstock. And tape the base to the disk in the tailstock.

Bring them together with the stem in the middle and apply gentle pressure with the tailstock.

Rotate the piece by hand and observe if the stem wobbles. Adjust the bowl and base till it spins true (if it spins true, it will stand up straight once the glue dries).

Next, I look at features/grain/etc in the bowl vs base, and rotate the base if I want some particular alignment.

Leave it for the glue to set up overnight.

I usually finish these with spray lacquer.

Tool and Equipment List

Most of these items can be found in multiple places, like woodworking, big box, or hardware stores. I've provided links for convenience and/or to the thing I was actually using.

Cindy Drozda Live Center w/ Cup and Cone tips -

<http://www.cindydrozda.com/html/LiveCenter.html>

Steb Center aka Safety Drive Center -

<https://www.woodturnerscatalog.com/p/107/4396/apprentice-Safety-Drive-Center>

Also available from other makers (like Sorby) but the above is what I use and is economical

Bowl Gouge - 1/2" (mine is a Henry Taylor M42, I use an Ellsworth grind) -

<https://www.woodturnerscatalog.com/p/129/6894/henry-taylor-M42-Stay-Sharp-Bowl-Gouge>

Spindle Gouge - 3/8" (mine is a Crown Pro PM, ground with a 35° or 40° bevel angle) -

<https://www.amazon.com/dp/B001V9KP0Y>

Thin Kerf Parting Tool (mine is a Sorby) - <https://www.amazon.com/dp/B001DVP45G>

Robust 6" Comfort Rest -

<https://www.woodturnerscatalog.com/p/111/5511/robust-6-Inch-Comfort-Tool-Rest>

Router bit 1/4" straight - <https://www.amazon.com/dp/B07QLGWS5P>

15/64" Wrench (Ignition Wrench) - <https://www.amazon.com/dp/B00HQBWF0E>

Or get a set for about the same price - <https://www.amazon.com/dp/B08KZV4N56>

You can also probably find one at your local big box, hardware or auto parts store

Green Masking tape - Scotch #2060 - Rough Surface aka Concrete Brick & Grout -

<https://www.amazon.com/dp/B07MHNG47G>

Vicmarc VM100 Chuck, standard jaws -

<https://www.woodturnerscatalog.com/p/100/328/vicmarc-VM100-Chuck-w-Jaws>

Or - <https://www.packardwoodworks.com/lathes-acc-fourjaw-vm-vic100.html>

The VM120 and pin jaws I was using are also available from the above suppliers

West Systems G-Flex epoxy - <https://www.amazon.com/dp/B002IZFPQE>

Speedball India Ink - <https://www.amazon.com/dp/B003IGK1OI>

A pint is a lot of ink... consider sharing or look for a smaller container