Bowl-Turning Basics

You don't have to be a master on the lathe to turn a useful, handsome bowl

BY RICHARD RAFFAN

The beauty of a well-balanced bowl lies in subtle details. A bowl that’s meant to be used should invite human touch. Making one isn’t beyond the means of even a beginner, as long as he’s armed with a nice piece of wood and a few design concepts. And unlike other woodworking projects that require joinery and glue-ups, you can turn a small bowl in an hour or two.

Taken in profile, the upper half of the bowl is turned with a gentle concave curve. The lower half is shaped with a reversed curve. Under typical overhead lighting, the reversed curve creates a shadow that emphasizes the bowl’s form. The angle where the two concave curves intersect has a practical function, too: It provides a wide lifting surface. A shallow foot lifts the bowl, both physically and visually. And on the inside, the rim is undercut slightly, emphasizing the form and a sense of containment.

A center-screw faceplate is a quick way to fix wood to the lathe for shaping the outside profile. When the bowl is remounted by its foot and is hollowed, I use a set of step jaws, which accepts three different foot diameters. I use a ½-in. spindle gouge for shaping the profile and a deep-fluted ⅛-in. bowl gouge for hollowing. A ⅝-in. spindle gouge comes in handy for detailing the foot. I use scrapers to clean up tool marks and tearout. For this bowl, a pair of 1/4-in. or 1/2-in. scrapers is used, one skewed for the outside curve and the other radiused for the interior. For sanding, I use handheld sandpaper and a portable drill fitted with sanding discs.

First, rough out the profile
Mount a bandsawn disc on a screw-center chuck. Set the lathe’s tool rest about center height at an angle across the bottom corner.

Use a firm grip and a light touch

The keys to tool control lie in using your whole body to guide the tools and not forcing them. Never force a tool's edge into the wood. Let the wood come to the tool. Ease the tool into the spinning blank and let the lathe do the work.

I prefer to keep my lower hand on a tool’s handle near the ferrule. The rest of the handle gets tucked under my forearm, which makes the tool feel like an extension of my arm. My upper hand keeps the tool on the tool rest and fine-tunes the trajectory of the cut. Try to keep the handle against your side, and move with the tool so that your weight is behind it. This way, in the event of a catch, your body can absorb the impact.

A gouge should slice—not rip or scrape—wood. In most cases, the cutting edge performs best when presented at about 45° to the surface of the workpiece. To get a clean cut with a gouge, hold it horizontally, pointing in the direction of the cut, and keep the bevel against the wood. The position of the bevel is important for control because it acts as a secondary fulcrum (the primary is the tool rest) from which to pivot the edge. The moment the edge enters the wood, there should be a
The outside profile of the bowl is shaped first. Begin by taking material off the corner. Don’t worry about tool marks at this point; just rough out the shape with a \( \frac{1}{2} \) in. spindle gouge.

True the edge of the base. Have the gouge on its side with the flute facing the base. Squeeze the edge into the wood. When the ticking noise stops, you have a trued edge.

True the rest of the base. Rotate the gouge so that the flute faces outward, and take a light shear cut from the rim to the center.

of the blank. Spin the blank by hand to make sure it clears the tool rest. You may be tempted to true the outside of the disc first. Don’t bother. Instead, begin by removing waste at the corner just above the foot, using the \( \frac{1}{2} \) in. spindle gouge (see the left photo above).

Place the gouge on the tool rest and roll it over to about 45° with the bevel facing the wood and the handle dropped about 15° to 20° below horizontal. Plant your left hand firmly on the rest over the tool, using it as a fulcrum against which the tool can pivot as you start the cut. Position your fingers so that they deflect the shavings. Move the handle with your body rather than with your hand: You’ll get more power and control with less effort. Once the edge is cutting, start to squeeze the tool left along the rest with your left hand. By squeezing with the left hand as the edge pivots left, you take a broad sweeping cut, and you can adjust the thickness of the shaving by rolling the tool slightly with your right hand (see the drawing on p. 70). This is a shear cut: As the tool moves forward, it slices into the wood. You’re hopping away lots of material, and the surface will develop ridges. Adjust the rest frequently to maintain a gap of \( \frac{1}{2} \) in. or less between it and the workpiece. Don’t worry about the quality of cut at this stage. All you’re doing is roughing out the profile (see cuts 1 through 7 in the drawing on p. 70).

Shape the base and foot next

For a bowl to sit properly, its base must be perfectly flat, or better yet, slightly concave. I use the \( \frac{1}{2} \) in. spindle gouge to rough out a smooth surface against which the bevel can rub. Any blemish on this surface will be telegraphed to the cutting edge. If you get chatter marks, you need to go back to a smooth section of the curve, usually near the base, and start again, riding through the bumps and across the dips.

The trick to getting flowing curves using a scraper is to have the radius of the edge slightly tighter than the radius of the curve you want to cut. Only a small portion of the edge contacts the wood at one time. You’re just asking for a catch if you try to cut with the entire edge of a wide scraper. Use scrapers only to stroke a surface, letting the wood come to the tool rather than forcing the edge into the wood. The angle at which a scraper is held to the tool rest also influences its performance. If you hold a scraper horizontally on the tool rest, it doesn’t cut very aggressively. Many beginners think the solution is to apply more pressure. The result is usually a catch. Lift the handle up slightly and just brush the scraper against the wood.—R.R.
**Mark the size of the foot.** With the lathe running, lay the dividers on the tool rest and center them over the foot. Scratch a shallow groove onto the foot using only the left leg of the dividers. If you're on the money, the right leg of the dividers will line up, too. If it doesn't, make another mark. Don't let the right leg of the dividers touch the spinning workpiece.

**Clean up the corner of the foot.** With the 3/4-in. spindle gouge on its side, remove material right up to the lines left by the dividers.

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**Steps to Turning the Outside of the Bowl**

Rough out the profile using a 1/2-in. spindle gouge. A 1/4-in. spindle gouge is used for detailing the foot.

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The base and foot (see cut 8 in the adjacent drawing). It's easy to remove more wood than necessary when truing the base, so here's what to do. Lay the tool on its side as you did for the roughing cuts, then gently squeeze only the tool's edge into the rim of the base (see the middle photo on p. 69). Don't push the handle away. Hold it firmly against your body while cutting. Once the tick-tick-tick noise stops, you have a trued surface. With the edge of the base trued, roll the tool 180° so that the bevel rubs the wood for a shear cut from the edge into the center (see the right photo on p. 69).

Then use a pair of dividers to transfer the chuck-jaw diameter to the workpiece (see the left photo above). Next, make cuts 9 and 10 in the drawing using the nose of a 3/8-in. gouge (see the right photo above). The fingernail grind on this tool enables you to get into corners and tight spots. Start the cut with the gouge on its side, with the bevel aligned in the direction of cut (the flute will face away from center). The handle should be dropped 35° to 45° below horizontal; use your left hand to pin the tool firmly to the rest. For maximum control, bring the edge through an arc into the wood by raising the handle and then moving the tool forward across the rest only when the handle is near horizontal. If the gouge isn't right on its side, a catch is near certain as the wood bears down on the unsupported inside edge. Go gently in cuts 9 and 10 in the drawing, gradually reducing the diameter of the foot until you reach the marked diameter.

**Finish the profile with a few final passes**

Once the foot and base are complete, finish the bowl's profile (cuts 11 and 12) with a series of shear cuts. Using the 1/2-in. gouge,
Finish shaping the profile. Working from the base of the bowl to the top, take a series of shear cuts with a gouge (left). Clean up using a scraper (right).

Hand-sand the profile. Keep your hands on the lower half of the bowl; the motor cover makes a good arm rest.

**Work from the smallest to largest diameter.** The portion of the cutting edge doing the work lies 45° to the wood.

To start the cut, use the same arcing technique as you did when turning the foot. If you get chatter marks, you're pushing the tool too vigorously into the wood. If the bevel isn't rubbing, you will get ridges. You cannot start a shear cut right at the top of the foot with a ⅛-in. gouge because there isn't room to rest the bevel. Take a very delicate shear cut against the grain here using the long nose of the ⅛-in. gouge, or try the right corner of a square-end scraper.

Cut the upper curve in from each end to limit the possibility of unsupported grain splintering, particularly on the top edge. Again, start the cut with the ½-in. gouge on its side and bring the edge through an arc into the wood. A good shear cut will leave the surface ready for sanding (see the left photo above), but you're not always that lucky. If there are patches of slightly torn grain, try shear scraping (see the middle photo above). Sanding out torn grain can take hours.

I generally hand-sand the profile (see the right photo above). Work through the grits beginning with 100, then on to 150, 220, 360 grit and finer if you feel so inclined. With the sanding completed, stop the lathe and slop mineral oil liberally over the bowl's surface. Then hold a block of soft beeswax against the spinning wood to build up a thin layer. Last, apply a soft cloth to the spinning bowl, which melts the wax into the pores. This is a safe finish for bowls that will be used for serving food.

**Remount the bowl and hollow it.** The wonderful thing about the new chucks introduced to the market in the last few years is that they allow you to remount the bowl by its

**It's always best to err on the side of caution and start the lathe at a slow speed.** Seemingly solid blanks of wood, which may have internal splits or voids, can explode if run too fast.

Bowls up to 10 in. dia. can be started at about 700 rpm to 800 rpm. Once the blank is trued and balanced, you can go up to a maximum of 1,200 rpm. Blanks under 7 in. dia. can safely be spun at 1,200 rpm to 1,500 rpm, even when roughing. But if you feel nervous or the blank vibrates violently, lower the speed. And always stand well clear of the line of fire when first turning on the lathe.—R.R.
Rechuck the bowl by its foot. A four-jawed chuck with step jaws won’t mar the workpiece.

Measure the depth of the bowl. Leave about \(\frac{1}{2}\) in. thickness in the base.

Push the drill bit into the hole left by the screw chuck. A depth drill is simply a \(\frac{1}{4}\) in. or \(\frac{3}{8}\) in. bit jammed into a shop-made handle.

**STEPS TO TURNING THE INSIDE**

Hollow out the inside after remounting the bowl by its foot. Take progressively deeper cuts using a deep-fluted \(\frac{1}{2}\) in. bowl gouge.

Foot without leaving any marks (see the left photo above). That’s why it’s possible to finish the outside completely before tackling the interior. I own several sets of step jaws, which will clamp around any size foot, 8 in. or less.

After remounting the bowl, true the top using a bowl gouge on its side. Then drill a depth hole in the center of the bowl. The depth hole does two things. First, it establishes the depth to which you will hollow, saving constant stops to measure as you go. Second, it removes the center of the blank, which is difficult to turn and is the source of many catches.

A depth drill can be made by inserting a \(\frac{1}{4}\) in. or \(\frac{3}{8}\) in. twist drill bit into a shop-made handle. Measure the amount of the bowl that needs to be hollowed, leaving about \(\frac{1}{2}\) in. of material in the base, and mark the depth drill. Use your thumb as a marker (see the middle photo above). Then turn on the lathe and push the bit into the hole left by the screw-chuck center until your finger reaches the workpiece (see the right photo above). When withdrawing the tool, watch out: The metal and shavings get surprisingly hot.

Now you can get on with the hollowing using a deep-fluted \(\frac{1}{2}\) in. bowl gouge (see the left photo on the facing page). Usually I work from the rim toward the center (see the drawing at left). The real hazard here is the tool kicking back as you start the cut, but this is easy to avoid if you start the cut with the gouge on its side and the flute facing center. If you start with the gouge flat and the flute up, it will catch every time. To start the cut, drop the handle 30° to 40° below center, then raise the handle to bring the edge through an arc into the wood, just as you did when roughing out the profile. Once the tool is in the wood, keep the bevel rubbing and rotate the tool very slightly counterclockwise to get larger shavings.

It’s best to rough-cut the bowl, then assess the situation. So before taking cut 17 (see the drawing), use calipers to measure the
thickness of the wall and base. If you have a problem with the bowl running out of true or being off center or warping, now is the time to fix it by truing the upper curve of the profile. This bowl is designed with a flat rim. It’s important that the inner and outer lips of the rim be turned on the same axis or the rim will be elliptical and look terrible.

When you come to the final shear cut (17), the bowl wall is somewhat flexible, so if you push too hard you’ll have chatter marks unless you have your hand on the outside of the bowl to equalize the pressure of the tool. On the final cut with the 1/2-in. gouge, go as far around the curve as possible in one sweep with the bevel rubbing. Then switch to scrapers, which are easier to control, to finish the curve and bottom of the bowl. Aim for a 3/8-in.-thick rim. Slim the wall thickness slightly on either side of the profile angle.

It is possible to shear cut right to the bottom of the bowl with a gouge, but I prefer the better control of a wide scraper with a radius slightly less than the curve of the bowl (see the middle photo above). You’ll find cutting a broad curve easiest using a broad-radiused scraper rather than one with a narrow, round nose. Although the scraper is 1 1/2 in. wide, use only about 1/2 in. or less of the edge at a time; otherwise, a catch is likely. This is not a molding tool. Keep the tool flat on the rest and sweep the edge through a broad arc to keep the curve flowing. Cuts should be light. Don’t even think of scraping up the side toward the rim: The thin wall will flex and catch, and the bowl will likely blow apart. (With practice, you can shear-scrape this area.) Any small ridges or chatter marks in this area can be eliminated by heavy sanding.

**Sand and finish the inside**

I power-sand the inside of the bowl using cloth-backed self-adhesive discs mounted in a handheld drill (see the right photo above). The power tool not only speeds up sanding, but it also helps maintain the sweep of the internal curve, especially across the bottom where hand-sanding often leaves a bump at the center. Right-angle drills are the easiest to control, but you might not be able to justify the expense for just a few bowls.

If you do hand-sand and a bump develops across the center, stop the lathe and rotate it slowly by hand, sanding across center using a soft sanding pad to back the abrasive. A piece of foam rubber or rolled-up cloth works well. This ensures that the very center gets as much attention as the rest of the inside. Finish the inside of the bowl as you did the exterior, with mineral oil and beeswax.

Wood is a wonderful knock-about material. A bowl like this handled with care will survive us all and look better for use. Wash it using detergent and hot water. And remember that whilst the first dent or stain of daily use is a minor disaster, a thousand make a patina.

**Apply the finish.** For a food-safe finish, apply mineral oil and beeswax to the bowl, then burnish to a sheen with a clean rag.

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