Turning a Matched Set of Bowls

Patternmakers' tricks for consistent shapes

by Arthur F. Sherry

Getting the most from an outstanding piece of wood by making a one-of-a-kind bowl is part of the woodturner's art. But turning a good matched set of bowls can be an equal challenge, calling for careful planning and execution. A matched set, to me, means consistent shape more than anything else. Bowls can be made of different woods, or be inlaid with elaborate designs. Yet if their shapes are the same, we instinctively know they belong together. Here are some patternmakers' tricks and templates that will help you turn a series of bowls, or almost anything else, exactly alike.

Wood never stops moving as its moisture content changes, of course. Plan to use dry wood, or your bowls will become oval after they have been turned. I frequently rough-turn bowls, then let them dry for a few days to stabilize before I finish turning. I've found species such as mahogany and walnut to be particularly stable, but you can apply these techniques to more highly figured species, too.

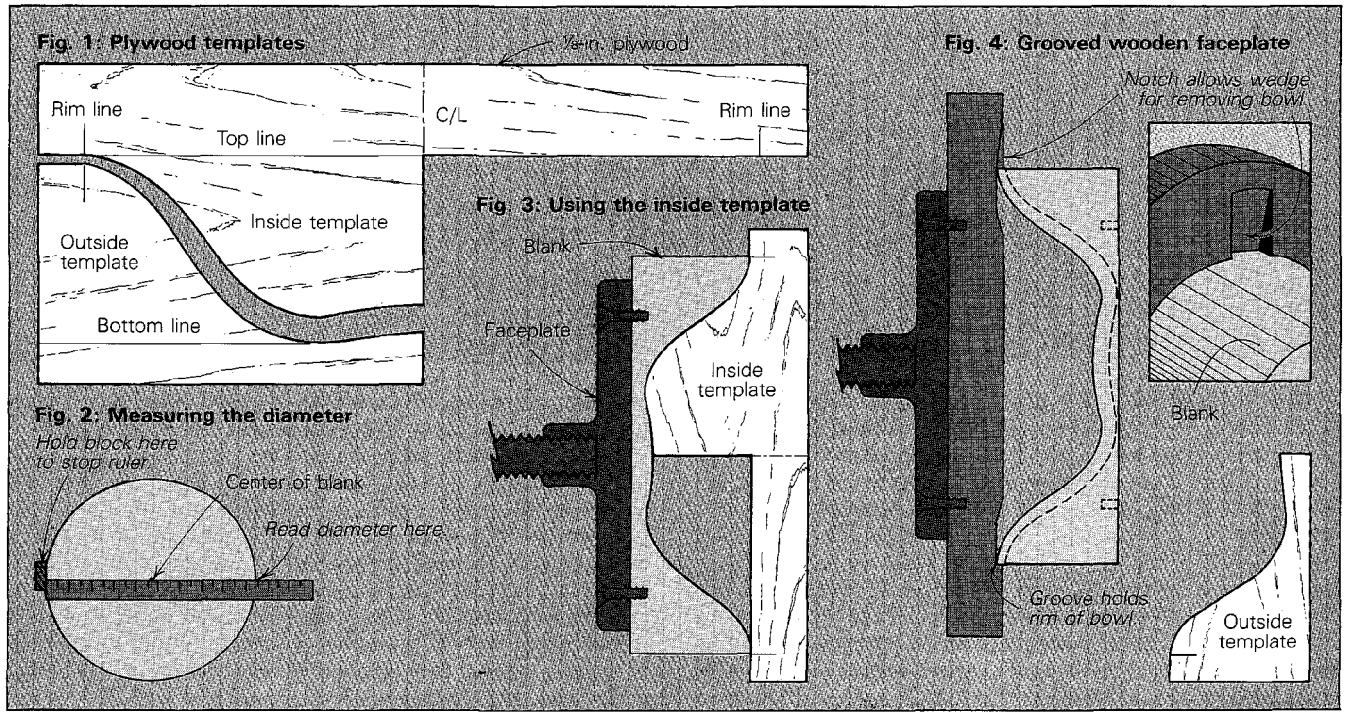
Start by designing the shape on paper. Then transfer the layout to a squared piece of ⅛-in. plywood (figure 1). Lay out the centerline of the bowl, marked C/L. Then, with a knife, scribe lines for the top and for the bottom of the bowl, perpendicular to the centerline. Draw the cross section of one half of the bowl on the template, and scribe rim lines (parallel to the centerline) to mark the outside diameter of the bowl. Notice that the side of the rim should be left at least ⅛ in. thick, so that after the inside has been turned you can mount the bowl as shown in figure 4, for turning the outside.

Cut out, file and sand the template to shape. If I am making more than a few bowls, I copy this template onto another piece of plywood and use the master only for the final fit. I never touch the master to the spinning bowl.

To turn the inside of the bowl, screw the blank (bandsawn round) to a faceplate and mount it on the lathe. Turn the block to the final height of the bowl, plus 1/64 in. for final sanding. Next turn the diameter, and stop to check it with both a square (so that the side is perpendicular to the face) and a ruler. I measure with a ruler, as shown in figure 2, instead of using calipers, because calipers have a tendency to give a little—a ruler is more accurate. First, mark the center of the blank while the bowl is turning, then stop the lathe and hold the ruler so it crosses the center point. If you stop the end of the ruler against a small wooden block held against the side of the bowl, the ruler will line up exactly with the edge of the rim.

You can hollow the inside of the bowl quickly at first, checking your progress with a template copy held against the spinning work. But stop the work often to check the fit as you approach the final form, as shown in figure 3. Keep in mind that the centerline of the template must end up at the center of the bowl, and that both rim lines on the template must line up with the rim of the bowl.

Stop turning when the inside of the bowl is about 1/16 in.



full of these final marks, then switch to the master template. Rub the edge of the template with a little chalk or a crayon. Stop the lathe and rock the master back and forth in the bowl, gently transferring chalk to the high spots. Carefully turn away the marks, stopping and checking after every cut, until the master deposits an even spread of chalk along the profile of the bowl, but still about $\frac{1}{64}$ in. full of the reference points. Sand down to the line, using from 180-grit to 360-grit sandpaper, but leave the outside rim square so it can be mounted in the next step. Take every bowl in the set to this stage before proceeding.

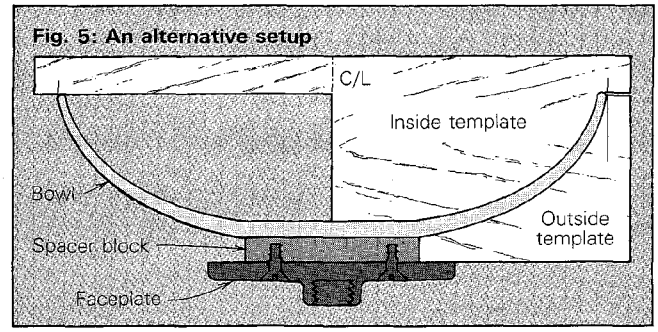
To turn the outsides, begin by scribing a line that shows the location of the bottom of the rim. This will be the reference line for the outside template. Then check the diameters of all the bowls. There's always some slight difference, sometimes due to wood movement, sometimes to that last pass with the sandpaper. Select the smallest and turn a shallow groove in a wooden faceplate so that the rim of this bowl fits tightly (figure 4). There is no room for error here. Cut the opening with a skew chisel until its outside is slightly smaller than the rim of the bowl. Then turn the chisel over and rub, rather than cut, the last few thousandths away, until the bowl fits tightly and is difficult to remove.

We will hold the bowl in with a few tiny spots of glue, then use little softwood wedges or give it a light rap with a hammer to pop it out of the groove after the turning is done. Make some shallow notches in the faceplate before you glue the bowl in, so you will be able to get the wedges beneath the bowl's rim.

Mark a circle on the blank, approximately the size of the bottom of the bowl. Then turn the underside of the bowl using the center and rim line as guides, testing as before, until the chalk shows no more high spots. Switch to the master template and finish the bowl. Remove it with the wedges.

Enlarge the groove in the faceplate if necessary, to fit the next larger bowl, then repeat the process. When all the bowls have been turned, I use files and a piece of sandpaper glued firmly to a block to shape the rims, and I check the curve of the outside edge with radius gauges (standard sheet-metal templates). Because matched bowls are usually used for food, I finish them with a non-toxic finish such as Constantine's Wood Bowl Seal, or a vegetable oil.

Fig. 5: An alternative setup



Once you understand how templates work, you can vary their use. A single-mounting setup that lets you work on the rim more easily is shown in figure 5. Its drawback is that the bottom cannot be as easily shaped. You have to glue uniform spacer blocks to the blanks and allow for their thickness in laying out the design on the template.

You can also take the guesswork out of long turnings. Just use several smaller templates along the length of the turning, each with its own set of reference points on the straight sections. If your lathe allows you to remove and replace your turnings accurately, do each step on all the turnings before proceeding to the next; if it doesn't, make a list of the steps so you can repeat them exactly in order.

As in all woodworking, accuracy on the lathe is as much a state of mind as it is a procedure. Templates will show you when you have gone far enough, but only your skill as a turner will prevent you from going too far. □

Arthur F. Sherry, of New York City, has completed four years as an apprentice patternmaker, and is now a partner in South Family Furniture, making custom furnishings.

Walnut-oil finish is safe for food

by Antoine Capet

A few hundred years ago, rubbed oil made do as a finish for everything from the cogs in wooden clocks to the gear on old sailing ships. When we think of rubbed oil, most of us probably think first of linseed oil, which is the most prevalent of the traditional oils, at least for outdoor items such as gateways and for seafaring. Yet many of us shy away from using it on bowls or other receptacles for holding food because modern, fast-drying linseed oils usually have poisonous chemical additives. The odor of linseed oil, also, while pleasant on a tool handle or in an artist's studio, quickly takes away one's appetite.

There are several other oils that can be used instead. A classic book on finishing, *Lexique du Peintre en Batiment,* by Le Moniteur de la Peinture (Paris-Liège, 1935-36), lists other natural oils and their drying capabilities:

Oils, high drying capability—linseed, poppy, tung, walnut, hemp, sunflower.

Oils, moderate drying capability—colza, soya.

Oils, no drying capability—olive, peanut, almond, castor, grape pips.

Some of these rule themselves out. Tung oil is not edible, poppy oil (from artists' supply stores) is exorbitantly priced, and hemp oil is unobtainable these days. I've left the moderate-drying oils alone, because they seem to have no advantages. Olive oil, often mentioned as a salad bowl finish, has the drawback of never drying.

Walnut oil, though, the traditional French furniture polishing oil, deserves a closer look. It is not only edible, it is delicious. And it can be bought in health food stores and specialty food shops at a price that compares favorably with modern finishing oils.

Walnut oil's pleasant odor and nontoxic qualities are in sharp contrast to some other finishes I've tried. One commercial salad-bowl finish, though certified safe for bowls, has a strong smell of petroleum distillate that persists for a long time. Another "certified safe" finish requires that you wait 30 days before actually using the object.

There are additional advantages to using walnut oil on functional objects. Quick and soft finishes, waxes for instance, poorly resist spilled coffee, wet hands and damp fruit. Walnut oil takes these things in stride. Many hard-film finishes can chip, crack or peel away,

but walnut oil penetrates deeply, and will conform to a dent without losing its ability to protect against moisture.

What then is wrong with it? Walnut oil requires time to build into a decent finish, ruling it out in a cabinetmaking shop that seeks a quick, high gloss. But for many of us, making things for our own pleasure, this is not so important.

I use walnut oil without a sealer, because it accentuates the figure best when allowed to penetrate deeply into the wood. I made some tests on fenceposts and found little difference in its drying time (about the same as raw linseed) whether I added small quantities of drier or not. But I found a pronounced acceleration when the oil was applied hot. It can be heated for a few minutes in a saucepan, about one-quarter full, until fumes begin to thicken. There's always a danger of fire, of course, but people safely fry with hot oil every day.

The smoother the surface texture, the less oil the object will absorb, and the faster it will shine. You can use a paintbrush to apply the oil, but it's better if you dip the wood, because the end grain will gulp up vast quantities, ensuring protection against future checking. Work the oil into the wood, rubbing surplus from the sides around into the end grain. After a day or so, polish it at high speed on the lathe.

I usually wait two weeks before giving the wood a second application, then two or three months, then a year or more between further treatments. □

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Turning goblets

by J.H. Habermann

Turning a goblet presents a few problems, but once you see your way around them, the job becomes easy.

Design: Some turners have enough confidence to let the shape evolve as they work, but I generally pick a shape I like—a favorite wineglass, for instance—and trace it with a device similar to those in *FWW* #18 (p. 83), a pencil mounted on a base that follows the profile of the glass to make an outside pattern.

Once you have traced the outline and allowed ¼ in. for the walls, you can plan to drill out most of the inside with Forstner or multi-spur bits chucked in the tailstock. This will save wear and tear on your turning tools as you remove the difficult end grain. Determine from your own pattern which size bits to use and how deep to drill, as shown in figure 1. Use calipers to measure the diameter of the glass at several points, then mark these dimensions on a template made from hardboard.

Wood: You can make almost anything into a goblet. Even native "weed trees" such as sumac work well. Goblets don't require scarce, chunky turning blocks; offcuts from furniture wood can be used. You can laminate thin stock either vertically or horizontally to get enough mass—just don't try to glue end grain. And leave some extra length. This allows you to turn a stub tenon for mounting the work in a wooden faceplate. You wouldn't want to waste this precious depth on a bowlturning blank, but here it doesn't matter.

Turning: Glue the stub tenon into the faceplate, aligning and clamping it with your tailstock, as in figure 2. When it is dry, rough-turn the outside of the top of the goblet, referring to the caliper sizes on the template, but do not turn the narrow stem yet. Chuck the appropriate drill bits in the tailstock, and drill out as much of the inside as you can.

Fig. 1: Hardboard template, drilling guide

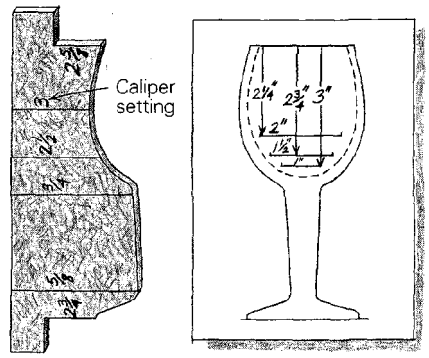


Fig. 2: Stub-tenon mounting

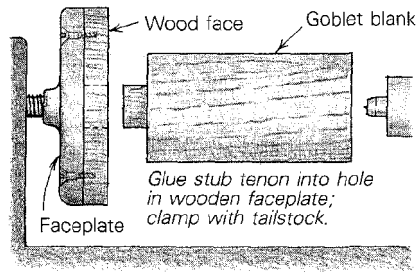


Fig. 3: Shopmade scraping tool

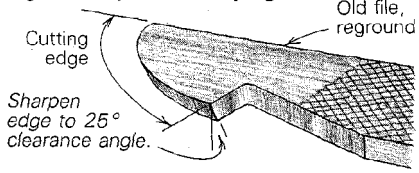
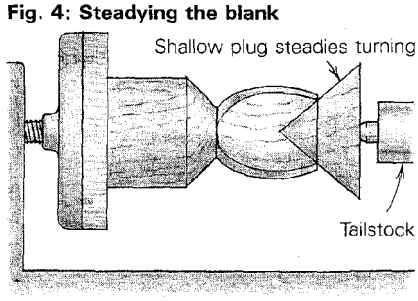


Fig. 4: Steadying the blank



True the inside by hand. Turners generally look down on scraping tools, but there's a lot of end grain in a goblet, and this is where scrapers excel. Commercial side-cutting scrapers such as Sorby's work well, but you can make your own by grinding old files, as shown in figure 3. I use my thumb and fingers as a thickness gauge.

When the inside of the goblet is true, insert a shallow plug (figure 4) and draw up the tailstock for stability. This will save you a lot of blown-up goblets as you turn the stem.

Using a combination of calipers and the template, turn the stem and clean up the shape. When I am duplicating a series, I make a full template that slips over the entire goblet while the lathe is stopped. This solves the problem of registering a half-template.

Before final-sanding, partially part off the base. Point the parting tool slightly toward the tailstock. This will give you a concave bottom that will be more stable.

Sanding and finishing: You will get far fewer circular scratches if you use an orbital sander to sand the work while it is turning. Work down to 280-grit, reversing the lathe once in a while if you can, and finish up with steel wool and a final polish with a handful of chips.

You will need to seal the goblet if you plan to use it. I have had great success with John Harra's DPS (deep penetrating sealer), which plasticizes in about a week. If you want a higher gloss, you can finish over this with a natural drying oil, or you can use commercial salad-bowl finishes. □

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