WOODTURNING FUNDAMENTALS

American Association of Woodturners
May 2021 • Vol 10 No 2

- *Cut a log to maximize bowl blanks*
- *Evaluate cracks in blanks*
- *Turn quirky trees*
- *Decorative inlay for hand mirrors and more*
- *Turn a plant stand*

AAW | AMERICAN ASSOCIATION OF WOODTURNERS
WE ARE TEACHING THE WORLD TO TURN

WOODTURNING FUNdamentals

May 2021 Vol. 10 No. 2

Linda Ferber

Philip Cottell

A Note About Safety

An accident at the lathe can happen with blinding speed, while respiratory and other problems can build over years.

Take appropriate precautions when you turn. Safety guidelines are published online at tiny.cc/turnsafe. Following them will help you continue to enjoy woodturning.

AAW | AMERICAN ASSOCIATION OF WOODTURNERS
WE ARE TEACHING THE WORLD TO TURN

WOODTURNING FUNdamentals

Woodturning FUNdamentals
is published by the
American Association of Woodturners
222 Landmark Center
75 5th Street W.
St. Paul, MN 55102-7704
651-484-9094
Toll free: 877-595-9094
memberservices@woodturner.org
woodturner.org

The AAW strives to cultivate an organization built on mentorship, encouragement, tolerance, and mutual respect, thereby engendering a welcoming environment for all. For more, tiny.cc/AAWDiversity.

Cover: Rip-cutting a log to extract a bowl blank. D. E. McIvor/Hinterlands, photo.
*Turn to page **5** for more on this topic.*

Welcome

The tendency to hoard wood generally arises a short time after the budding woodturner completes a few successful projects. Give away a few of your early works and the recipients will likely call with word of a tree down in the neighborhood. Simultaneously, you may develop a Pavlovian response to the noise of a running chainsaw, which manifests itself as a need to find the source of the sound, and inquire if you might assist with the disposal problem associated with all that wood.

This natural urge in woodturners is shortly followed by the discovery that wood, handled or stored improperly, readily converts itself into firewood. Solving this problem is a broad topic with lots of variables. Dale Larson presents two articles that will start you in the right direction for converting your raw material into useful blanks (p. 5 & p. 38).

A piece of wood embodies the history of the tree, including the stresses the tree experienced right through the time it was felled and hit the ground. It is inevitable that in spite of good handling and storage practices, you are likely to end up with some checked or cracked blanks. Turners in this situation face the dilemma of investing time and material expense into trying to save the blank, or tossing it onto the firewood pile. This is not just a question of economics; it's also a question of safety. It is not hyperbolic to say people have died trying to turn unsound wood. Mark Palma takes on this topic and offers his insight into evaluating cracks and checks in blanks (p. 24).

Moving beyond foundational challenges, this issue presents several engaging projects. Phil Cottell's quirky trees are a great project for anytime of year (p. 31). Linda Ferber lays out a systematic approach to including decorative inlays in your turning—a great way to add a personal touch to a project (p. 11). John Lucas's drill guide will lead to more interesting enhancements for your work (p. 19).

Enjoy!

—Don McIvor, Editor

Dale Larson

Bowl Blanks From a Tree

by Dale Larson

Photos by Randy Rhine

There are many ways to cut bowl blanks out of a tree, but the systematic approach that I take uses the tree efficiently and produces stable, aesthetically pleasing bowl blanks. If you have a chainsaw and are willing to put it to work, I will explain how to evaluate a tree to determine where the best bowl blanks lie in wait. If you buy bowl blanks, my approach will improve your skill at evaluating the opportunities within the stock available for purchase. The goal is to predict what your finished bowl will look like before a gouge even touches the surface of the blank.

Timing is everything

When I get green wood, it becomes my top priority until I get the subsequent blanks roughed-turned. Unprocessed green timber never improves with time. The longer the log sits, the more cracks it will develop, fungus will move in and cause discoloration and loss of luster, and insects will tunnel into the wood. For the log I processed for this article, I cut the blanks on a Thursday and rough-turned them on Friday, and this was during a relatively cool and humid part of the year.

I use an emulsified wax solution during warm weather to coat the end grain as soon as I make the cut. I will also spray water on the blanks and cover them with a tarp until I can rough-turn them. In my experience, a cherry bowl blank cut in July will show visible cracks within an hour. If the blank checks I will have wasted my time in locating the wood and cutting it up.

Prioritize the cuts

I almost always start by cutting up the most highly figured part of the tree. If the tree has burls, that is where I focus my initial efforts. I cut the crotch pieces next, followed by the lowest part of the trunk where it transitions to

Chainsaw Safety

The procedures in this article rely on a chainsaw. Detailed guidelines for the safe use of this both helpful and dangerous tool is beyond the scope of this article. The price of using a chainsaw without appropriate precautions can be high, even deadly, either for the saw operator or observers who are too close to the action. When I am using a chainsaw, no one is allowed to be close to me or to hold the piece of wood I am cutting.

EXPLORE!

Use the AAW's Explore! feature to find chainsaw safety articles in the AAW archives. Following one of the links at right to read A. J. Hamler's article on chainsaw safety ("Play It Safe") is a good place to start.


Play It Safe

tiny.cc/Hamler

Orient the blank(s)

1. *Three possible bowl orientations are drawn on the butt of this log. Note that all options exclude the pith, the source of much of the tension in a tree.*

the stump (often the location of fiddleback figure). I then work my way up the trunk, leaving the limbs for last. Limbs are full of stress and typically have both the poorest figure and the poorest turning quality. My theory is that if the chainsaw gives up before I do, the best wood from the tree should already be in the back of the pickup.

Dissect the tree

The yellow poplar in the accompanying photos lies in my driveway, and knowing I have ample time to finish the task, I decide to cut the straight-grain blanks first. Measuring the tree's diameter, I decide to make 14" (36cm) bowl blanks. I slice a few inches from the butt of the log to remove any checking and to help understand the grain pattern. I then cut the first round 15" (38cm) long, which will provide leeway to bandsaw the blank to its final 14" diameter.

Get the pith out

A stable form for a utility vessel will require leaving the pith out of any blank. Checking originates from the pith, so excluding this area eliminates a predictable source of stress in the wood. With that in mind, there are three basic orientations for blanks from straight-grain wood (**Photo 1**). I have roughly marked the grain lines to illustrate how they are oriented in each blank. The blank on the bottom will yield my favorite grain pattern. It is flat-sawn with the center of the bowl aligned with the bottom of the curve of the growth rings. This blank will yield a pleasing, symmetrical grain pattern mirrored in each side of the bowl—a pattern I call butterfly grain.

Quarter-sawn blanks lie on both sides of the pith. For the species of timber that I use, I rarely make quarter-sawn bowls because, to my eye, the resulting grain pattern is not as appealing—the grain lines run straight through the bottom of the bowl and show little or no curl, eyes, or any of the other variants that make wood visually appealing. The exception is when I can

acquire a species with strong medullary rays such as our local Oregon white oak (Garry oak). The grain in quarter-sawn oak can far outshine its flat-sawn relatives.

Natural edge?

The top blank in Photo 1 can be used to make a natural-edge vessel, or the outer edge can be removed for a smooth rimmed bowl. The grain orientation running through this blank will produce an approximately round or oval grain pattern in the bottom of the finished bowl. I usually evaluate the blank and consider whether the outer (bark) edge will yield a balanced shape, and if so I will keep the outside intact for a natural-edge bowl. Here I decide against a natural-edge form.

Slash-sawn

Yet another orientation is possible, an arrangement I call slash-sawn, although the grain orientation approximates rift-sawn dimensioned lumber (**Photo 2**). The slash-sawn blanks will distort significantly while drying, sometimes to the point of being unworkable, and the finished bowl will simply not be as attractive as the flat-sawn bowl. It is true that more of the log will be lost in taking the one flat-sawn blank instead of two slash-sawn blanks. Turner and teacher Lane Philips' mantra is "don't trade volume for beauty," and I too encourage taking the best blanks out of the tree, not the most blanks.

Balance and cut

I balance the round on wood blocks to prepare it for cutting, ensuring the round is stable and will not roll during the cuts (**Photo 3**). I orient the cut lines vertically, as cutting straight down is easier and more accurate than attempting an angled cut.

Watch the grain direction

2. *These blanks would have a slash-sawn orientation. The bowls will be likely to warp or split beyond use because of the asymmetrical orientation of the grain within the blank.*

Cutting straight-grain

3, 4. *The log should be solidly braced and elevated above the ground. Orient the log to cut vertically. The log is typically most stable when it's intact, so partially complete each cut before returning to finish separating the blanks.*

I make all the parallel cuts, stopping each cut short of exiting the log (**Photo 4**). Before I make the first center cut, I mark the location of the pith on the far end of the round. This guides my cut to keep it moving parallel through the block with the pith line. Having the grain oriented straight through the blank

Ripping Chain

Because most of my cuts are with the grain, I use a rip or skip-tooth chain on my chainsaws. These chains also work for cross-cutting, and they are less prone to clogging from the long curls generated by the rip cut. A secondary benefit of a rip chain is that when it is dull, it has half as many teeth to sharpen as a standard chain.

is important to the appearance of the finished bowl. The prettiest bowl pattern has the grain parallel to the bottom of the bowl. If I have to choose between making the cut parallel to the pith line and the bark line, I generally cut parallel to the bark line to preserve the desired grain orientation.

The quarter-sawn blank rests on my cutting bench, a 22"- (56cm-) high jig that minimizes my stooping and saves wear-and-tear on my back (see Sidebar). I cut outside the checks around the pith; I will get two quarter-sawn blanks out of the slab. I did not cut through the slab because the support blocks underneath the blank are in the wrong location. A through-cut in this situation could pinch my bar.

Quarter-sawn "waste"

Depending on the size of the log, you may choose to excise a single plank spanning the center width of the log and encompassing the pith, or you can take a narrower swath as shown above. This plank will be quarter-sawn—with the grain direction running vertically through the narrow dimension. Although this can be the least spectacular in terms of appearance, quarter-sawn lumber tends to be dimensionally stable and highly desirable for furniture components. In a wider piece it's also a highly useful grain orientation for turned container lids as it tends to resist warping. So use a bandsaw or chainsaw to remove the pith section, wax the ends of your quarter-sawn boards, and put them to good use.

Extract the blank(s)

5. *With carefully planned and executed chainsaw cuts, the blanks are ready for the bandsaw table, where the bowl blanks are cut round from the square chainsawed blanks. From left: a flat-sawn, natural-edge blank (but in this case, with the bark eliminated), a quarter-sawn blank, and a flat-sawn blank.*

Bandsaw ready

The three basic straight-grain blanks sit on the work bench, bandsaw ready (**Photo 5**). The flat top and bottom offer two stable surfaces for the bandsaw table. Trying to cut a round bowl blank with a round or irregular face on the bandsaw can lead to an unsupported and dangerous cut.

Cutting the crotch

I cut a 15"- (38cm-) round from the tree that includes the crotch section (**Photo 6**). In the area between the two limb pith lines will lie an expanse of interlocked feather grain or crotch figure, and I have attempted to cross-cut the log below this region. A straight line connects the pith of the limb to the pith of the tree. As with the previous round, I orient this line vertically for cutting. I mark the pith at the end of the round and transfer the mark to the top of the log where I will use the location to guide my cut (**Photo 7**). I also mark any checking to avoid around each pith, of which there is little in this log. **Photo 8** shows the approximate orientation of the three blanks I could extract. If this were expensive or rare wood I would separate the bottom bowl blank first, but because this blank will be flat-sawn and straight-grain, I decide to forego extracting it.
I make the center cut first, stopping short of cutting completely through the log (**Photo 9**). Then I slice off each side before returning

Cutting crotch section blanks

6, 7. *As with the straight-grain log, the crotch section is cut apart vertically. Transferring the location of the pith to the top of the log on both ends, as well as drawing the vertical line to the pith, guides the central cut.*

8, 9. *The top two blanks promise the most figure, while the bottom blank will likely be fairly plain. The author decides to sacrifice the bottom blank to optimize the dimensions and location of the upper two forms.*

to finish the center cut. I always saw from the upper end of a crotch section where the most prized feather figure lies. The feather will taper off towards the bottom of the cut, so if my cut wanders a little there is less likelihood of losing the best figure.

Figure 1 shows how the feather figure bowls are oriented in the tree. The side view in this illustration shows the location of the pith, which I intend to bisect with my cut. The bowl bottoms are oriented towards the center of the tree, placing the feather pattern in the bottom of the finished bowl.

With the crotch section halved, I mark out the best patterns with my calipers and highlight the pith lines with red chalk (**Photo 10**). Cutting the blanks along the pith lines yields two bowl and two spindle blanks. The feather figure lies

Finding the feather

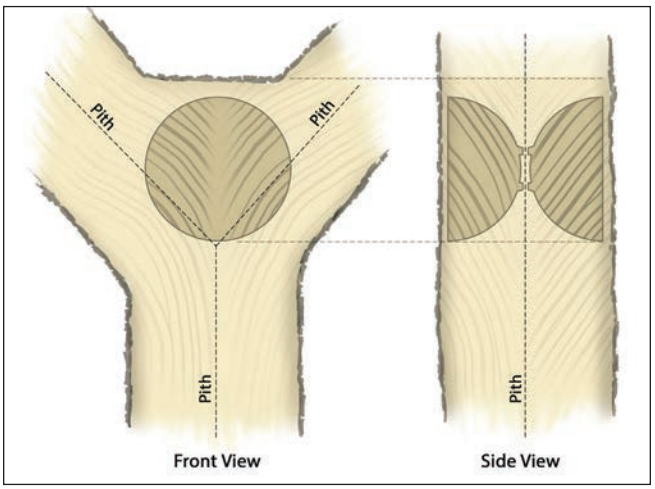


Illustration by Robin Springett

Figure 1. *The feather pattern occurs between the pith lines and the crown of the crotch. The figure is typically strongest at the top and tapers off towards the bottom where the pith lines meet.*

Mark and cut high figure blanks

10, 11. *Although this particular log has little feather figure, the amount of fiddleback figure below the limb is a pleasant surprise.*

above the pith line of the limb and to the right side of the trunk pith line (**Photo 11**). This crotch did not have a big feather area. Harder to see in the photos is that the weight of the limb has compressed the wood at the junction with the trunk to create fiddleback figure, which I have shaded with a marker. These blanks are now ready to be bandsawed and rough-turned.

Tweak the orientation

I will make my final adjustments to the forms for grain alignment as I rough-out the blanks between centers, an approach I learned from John Jordan. Turning between centers gives me an opportunity to make final adjustments to the bowl blank and possibly correct mistakes made during chainsawing.

There are many advantages to working green wood, including salvaging local timber that may not be commercially available. Cutting your own blanks offers the chance to optimize blank size and grain patterns. Turning green wood generates less dust and requires less physical effort than seasoned wood. With experience processing my own trees, I rarely buy a bowl blank. I find I am no longer willing to give up control of this part of the creative process.

Dale Larson is a founding member and past president of the Cascade Woodturners in Portland, Oregon. Dale served on the AAW Board from 2009 to 2014, both as symposium chair and president.

Recommended reading

To dive deeper into this subject, try Reading the Wood *by Michael Elkan and* Turning Green Wood *by Michael O'Donnell.*

Explore!

Use the AAW's Explore! tool, or click on the boxes, or scan the QR codes to learn more about processing logs for bowl blanks.

tiny.cc/Lylechainsaw

tiny.cc/Bandsaw

Inlayed WHIMSICAL Hand Mirror

By Linda Ferber

I recently acquired a collection of buttons that inspired me to start using these little curiosities as inlay on small turnings. I have dabbled in jewelry making for a while, and I quickly discovered that I could place buttons in a turned recess and use them as I would beads. What excitement and playfulness; I embarked on a journey adding buttons to hand mirrors, jewelry, jar lids, and refrigerator magnets.

Making small items is not necessarily easier or faster because attention to detail is critical. There are always design considerations. All edges should have a slight curve or chamfer so the item is pleasing to handle (or wear, in the case of jewelry). But the investment in turning stock is small, so if you don't like your design, little more than time is lost.

Stock

My hand mirrors are designed to lie on a dresser or slip inside a purse or backpack; as such, little material is needed. I turn the mirrors from spindles, and I look for pieces that I can turn down to 2-1/2" (6cm). This will leave a 1/4" rim around the 2" (5cm) mirrors that I purchase for this project. I select stock that is no longer than 4" (10cm). Keeping the length short helps avoid the chatter created when a blank extends far beyond the chuck's grip. A 4" blank will yield three mirrors.

Round the blank

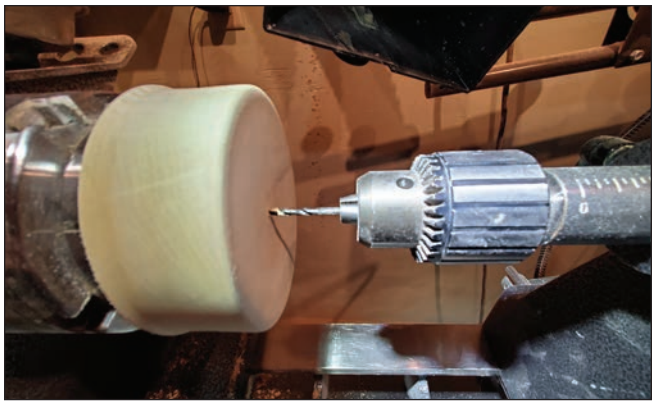
Find the centers on each end of your blank, mount it between centers, and use a spindle roughing gouge to turn the blank down to 2-1/2". In production mode, I will rough out a half dozen cylinders at a time (**Photo 1**).

Using a parting tool or skew presented flat in a peeling cut, create a tenon on one end to mount in your contracting chuck jaws. For most jaw

Turn a cylinder

1. *Turn your blank(s) to a cylinder and create a tenon on one end to fit your four-jaw chuck.*

Mark center, cut button recess



2. *Drill a small hole through the center of the blank as a reference. The diameter of the hole is not critical.*

3. *Cut a recess for your button. Frequently measure the depth of your cut to ensure your button is set to the desired depth. A small ruler or purpose-made depth gauge does the job.*

profiles, you'll want a slightly dovetailed tenon with a square shoulder against which the top of the jaws will rest.

Mount the cylinder in the chuck and position the tool rest to access the tailstock end of the cylinder. You're ready to cut the first recess to accept a button inlay on the glamor side of the mirror frame.

Cut the recess

True the end of your cylinder with a spindle or a bowl gouge. This side of the mirror can be slightly concave, convex, or perfectly flat, but regardless of the profile, aim for a smooth, continuous surface off your cut. My design choice tends towards a slightly concave profile.

Mark the center as a reference for rechucking. I use a drill chuck and a 5/64" (2mm) bit to drill a reference hole through the center (**Photo 2**). The hole will be hidden under the button and the mirror.

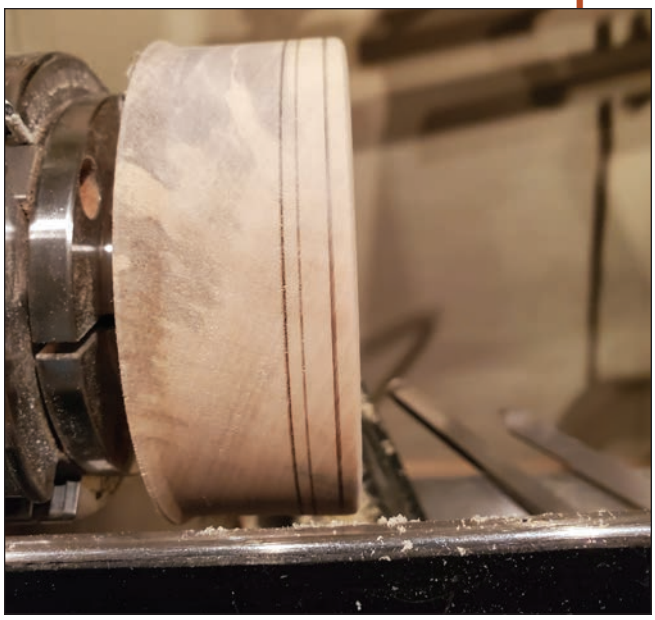
Measure the outside diameter of your button with Vernier calipers and transfer this measurement to the blank to give you an accurate layout line for your inlay. You can also use a ruler to transfer your measurement, but this is a bit more trial-and-error.

With a skew or parting tool, create a recess about 1/8" (3mm) deep. Check the fit by holding your button against the wood with the lathe off. Yes, turning a recess can take as much fussing as making the lid for a box. Sneak up on the fit, taking small cuts to increase the diameter of the recess until the button just fits.

Once the correct diameter is established, increase the depth of the recess to accommodate your design. If you set the button flush or slightly recessed into the surface, the mirror may rest securely on a flat surface without rocking off and landing on the floor. But ultimately, the depth you inlay the button is an artistic design decision. I measure the depth with a small tool purpose-designed for this task (**Photo 3**). I find most buttons have a somewhat concave shape, so the bottom of my recess needs to follow this same profile. My goal is to have the recess the same depth as the button with a complementary curve to match the button profile.

A small chamfer on the edge of the recess adds a finished appearance. A slight curve makes this

Mark the hand mirror depth



4. *Calculate the total depth of your hand mirror and mark the side of the blank. Here the line nearest the tailstock indicates the total thickness of the mirror.*

look intentional and offers an escape for a little excess glue.

Shape the edge

You need to shape the outside edge of the mirror with two purposes in mind. Because this is a hand mirror, you'll want to make the outer edge comfortable to hold in the hand as well as pleasing to the eye. But the outside edge must also fit securely in Cole jaws, which will hold the blank to turn the side with the mirror. I aim for a flat profile on the outside edge with a gentle quarter bead transition to the mirror face.

Measure the depth of your recess and add this number to the thickness of your mirror, then factor in a little material to separate the two inlays—this is the total thickness of your project (**Photo 4**). I like at least a 1/16" (2mm) of material between the mirror and button. If the hand mirror is too thick it will feel clunky, something to avoid in an item that should sit comfortably in a hand. Mark a line around the outside of your cylinder equal to the thickness of your hand mirror.

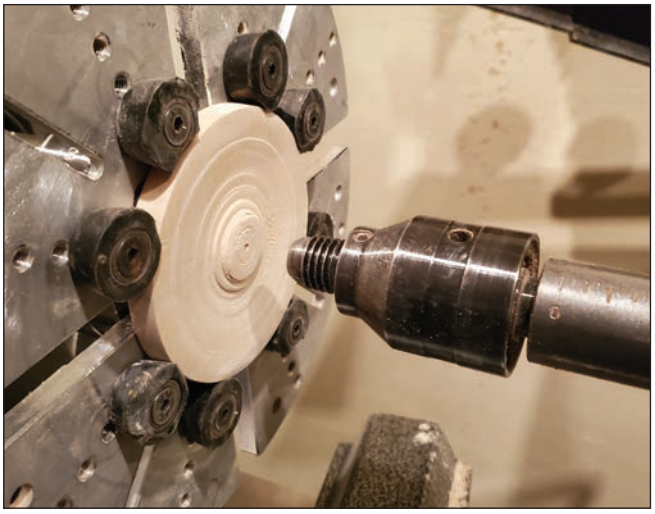
Use a parting tool to cut a groove about 1/2" (13mm) deep on the headstock side of your line. You can use a parting tool or skew presented flat to cut the quarter bead and soften the mirror-side edge, but a small spindle gouge or shearing cut with a skew will leave a better surface.

Sand the side, the transitional edge, and the back, paying attention to the edges of the recess and the edges of the cylinder. Deepen the parting cut, widening it as necessary to create clearance for the parting gouge. I like to finish parting with the lathe off using a Japanese saw, which minimizes tearout. If you are in production mode, turn the remaining two mirror frames while the cylinder is still on the chuck.

Re-chuck the blank

Using a chuck with Cole jaws, re-mount the blank with the mirror side facing out (**Photo 5**). I find that placing my index finger over the small pilot hole in the blank's center and lightly tightening the jaws helps center the blank. You can also bring up the tailstock with a live

Reverse mount



5. *Turn the blank around, remounting it in Cole jaws. The tailstock will help center the blank.*

Beware the "perfect fit"

6. *It's tempting to go for a precise fit for the mirror, but the wood needs room for seasonal movement. Otherwise, you'll likely get a cracked mirror.*

center positioned in the center drill hole in the blank. If you are still having trouble, check the Cole jaw bumpers to make sure they are clean and aren't trapping debris. Securely tighten the jaws. I typically run the lathe at a relatively slow speed while using Cole jaws—just fast enough to get clean cuts.

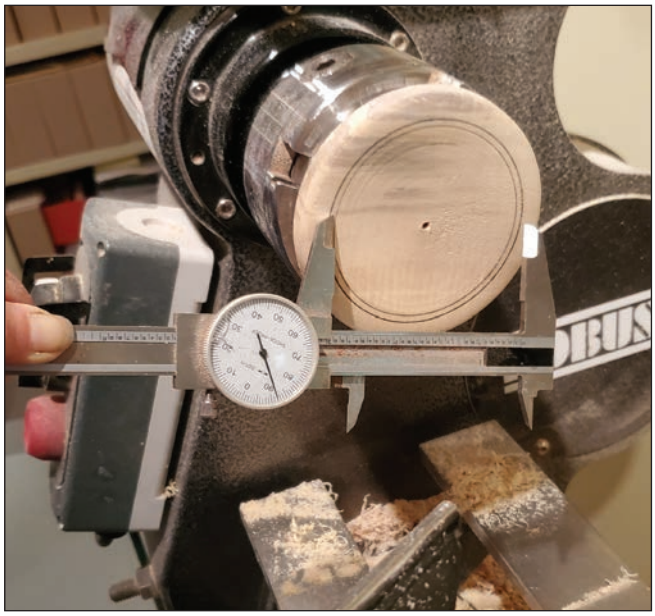
Mirror recess

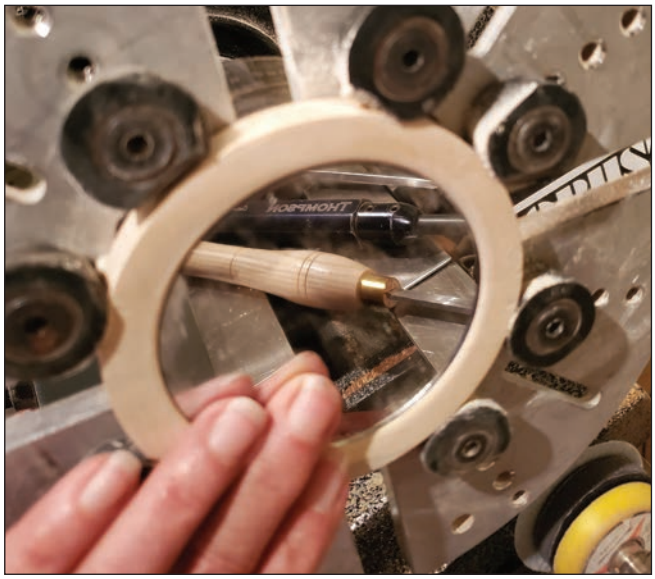
With the blank chucked mirror side out, evaluate the 1/4" interior face. While you don't want to cut into bumpers, you can make sure the surface is clean all the way to the point where it will meet the mirror. If you were successful cutting and sanding this face before parting from the blank, you're good to go. Otherwise, take a moment to address this surface with a scraper or light cuts from a gouge.

While it's tempting to cut a tight recess for the mirror, my experience has been that results in a lot of cracked mirrors (**Photo 6**). The wood will expand and shrink in response to seasonal humidity changes; the mirror will not. It is best to incorporate a little tolerance into the mirror recess to accommodate wood movement.

Measure the diameter of the mirror insert with your calipers and transfer the measurement to

Mark & cut the recess





7, 8. *Transfer the diameter of the mirror to the frame face. Cut the recess slightly oversized to accommodate wood movement, and check that the mirror sits without rocking.*

the face of the blank (**Photo 7**). I cut the recess about 1/16" wider than the mirror (**Photo 8**). An alternative is to undercut the side walls, which still provides room for wood movement but hides the gap from view. You can perform this cut with a skew on its side, though I typically use a parting tool presented just shy of the caliper line and sneak up on the cut,

Assemble components

9. *Gather the mirror, frame, button, and adhesive. Use the adhesive judiciously, as any that squeezes out will need to be cleaned up after curing.*

pausing frequently to check the fit of the mirror against the opening. Just be careful handling the mirror—it can be easily scratched in a shop full of metal tools and wood chips.

The mirror recess needn't be uniformly flat across its face. You do need a good 1/4" flat surface around the perimeter to adhere to the mirror, but from that point inward the interior can be slightly concave. Just don't cut too deep, recalling that in this case there is only 1/16" of material separating the mirror from the button.

There's no need to sand the mirror recess, but do make cuts you can be proud of and aim for even depth. You will want to lightly sand the transition from the recess edge to the face of the mirror frame.

Assembly

I recommend wearing latex gloves when working with glue. You don't need much adhesive to secure the mirror or the button, and applying too much results in messy squeeze-out that you have to clean up.

The small size of this mirror makes it unnecessary to apply glue to the entire surface. I use E6000 glue or clear silicone caulking covering the outer edge but leaving about 1/8" or slightly more on the outer edge with no glue, with a good thick line (**Photo 9**). Press the mirror down using a wooden craft stick and wiggle it a bit in the recess to help spread out the glue. Check the alignment of the mirror in the recess and try to position it so that any gap around the perimeter is uniformly distributed. Verify that the mirror is flat in its recess. Apply a few pieces of blue tape to hold the mirror in place while the glue dries. I use the same process to secure the button in place.

Finishing

After the adhesive sets I move on to finishing. I inspect both sides to look for glue squeeze-out and clean it up with orange air freshener (see following page). I inspect the mirror to make sure it is centered and flat with no scratches. A quick cleaning with window cleaner helps with inspection. I like to use Renaissance wax to leave a nice hand feel on the mirror. A final inspection and it is ready to put in a small bag for sale or gift giving. The bags can be found at craft stores or online.

If you don't own a set of Cole jaws, you can still complete this project with the help of a range of conventional chuck jaws. I have made these mirrors by starting with square blanks cut to the appropriate thickness on a bandsaw. I draw lines between the corners to locate the center on both sides and mount the blank between centers in spindle orientation. Alternatively, you can use double-sided tape to secure a blank on a faceplate with the tailstock brought up for support. These chucking methods provide good access to the outside edge for shaping.

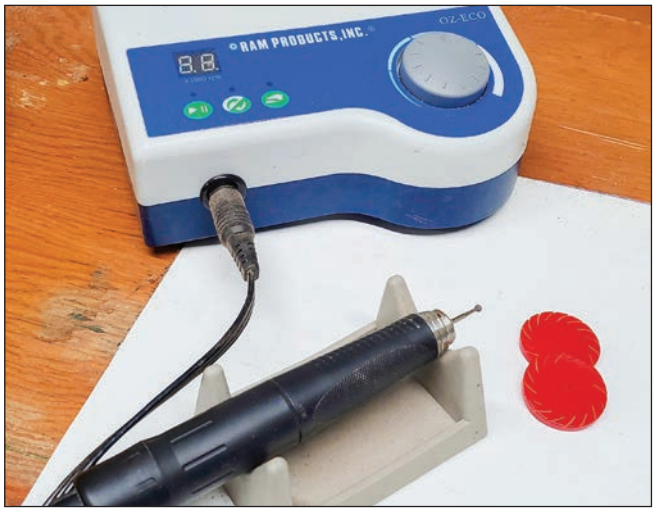
Recessed button projects are a fun diversion and give you a new mission when prowling thrift stores or garage sales. Design alternatives might include layering two or more buttons or inlaying other objects like poker chips or pins. Mix and match sizes, colors, and textures to complement your wood choice—that's where the whimsy and fun begin!

Tips & Tricks for Button Inlay

Button selection

Rifling through a treasure box of buttons to mix and match colors and sizes is great fun. You can go for contrasting or complementary colors depending on your design concept. To stack two buttons, I look for two that will form a close fit—one inside the other—so that it looks like they were made as a single object. I often put pairs in a small bag to keep them together until the perfect piece of wood presents itself. Cutting off the shanks helps you get a better idea of fit. I wait until I am doing the final assembly before I glue the buttons together.

Texturing buttons



A Dremel or microcarver can add interesting texture to a plastic button. Adding texture is also a great way to disguise a blemish on an otherwise attractive button. Try carving uniform lines, random patterns, or scribbling. If this technique is not successful on your button you have not lost anything.

Adhesive clean-up

OdoBan Real Citrus Air Freshener will clean up any excess glue around your insert. Hard to believe but this spray removes adhesives, from store price tags to excess glue on your insert. The pleasant orange scent is a bonus.

Button prep

Used buttons often show some grunge. Soap and water work well for plastic buttons, and a soft nylon brush removes stubborn grunge. If the button is not suitable for submersion in water, the best you can do is a gentle brush to remove as much dirt as possible.

Shanks will be in your way for this project and should be removed. I use a wire cutter called the Steel Grip 6" Carbon Steel Diagonal Pliers. Cut as close to the bottom of the shank as you can, bending stubborn metal shanks back and forth until the metal fatigues and fails. On a few metal buttons I have found the shank holds the entire thing together, so you might lose a few.

Linda Ferber retired from her position as AAW's Program Director. She is the founding editor of Woodturning FUNdamentals.

Toolrest Extension

By Michael-Hamilton Clark

My wife recently asked me if I could make her a tapered French rolling pin. She had come across one in an on-line article and wanted to see if it really did make for thinner pastry.

I did some research and found several woodturning sites with details and lengths ranging from 18" to 20" (46cm – 51cm). I chose 18" as I happened to have a slightly longer piece of black walnut that would give me a little waste material for chucking.

There was, however, a challenge. My toolrest is only 10" (25cm) long, requiring me to stop my cut to move the rest. While this is a common step in turning longer spindles, interrupted cuts are rarely as smooth as continuous cuts. For both functional and aesthetic reasons, I wanted the rolling pin to feature one long, continuous curve.

A simple solution came to mind—attach a suitable length of angle-iron to my toolrest... somehow. I had some 1-1/2"- (4cm) mild steel stock on the rack and chose a 20"- (51cm) long piece. I centered and clamped it on the toolrest to drill a 3/8" (10mm) hole through it and the toolrest. I secured the angle-iron in place with a 5/16" (8mm) bolt with the nut underneath the toolrest (**Photo 1**).

I was able to turn the 1-1/2" diameter cylinder for the rolling pin and then taper down the outer 4" (10cm) of each end to 1" (25mm) (**Photo 2**). Sanding to 220-grit and an application of walnut oil completed the job and I parted off and hand-sanded the ends.

My wife was delighted with the rolling pin. A swivelling motion engages the end tapers and it does indeed enable rolling out thinner pastry. Satisfaction all 'round and I now have an easy-to-install toolrest extension, should I ever need one again.

Michael Hamilton-Clark lives in the Fraser Valley, BC and has been turning for 15 years after retiring. He is a member of the Fraser Valley Woodturners Guild and the AAW. His work is sold through craft shops and at shows and can be seen at www.alberystudiowoodturnings.com.

Drill rest & attach extension

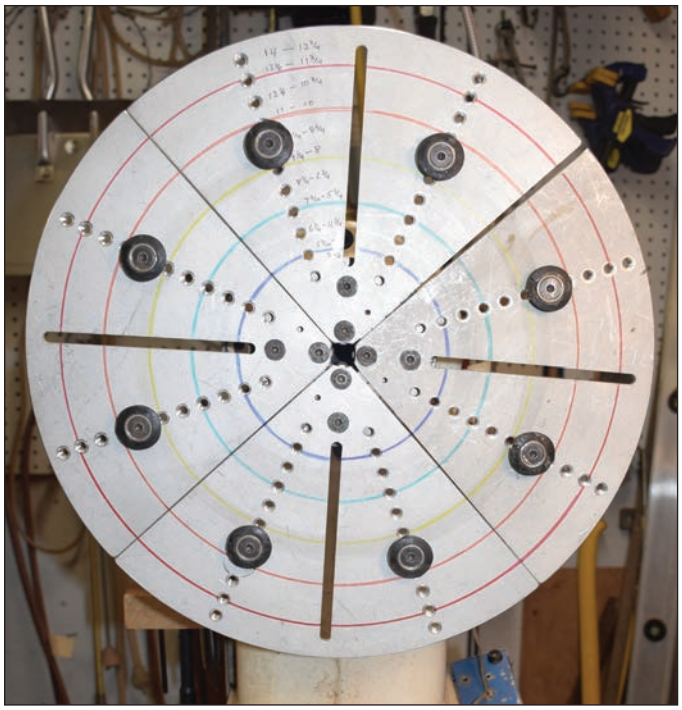
1. *Secure a length of angle-iron to your roolrest with clamps and drill through both the rest and the iron stock. By locating the hole over the post, the securing nut will be out of the way when engaging a tool and the toolrest with an underhand grip. Bolt the extension in place.*

Test spin

2. *The extension is easily removed for smaller turnings. It can also be exchanged quickly with extensions of other lengths.*

Color Coded Cole Jaws

I use jumbo Cole jaws on my four-jaw chuck to finish bowl and platter bottoms. Deciding where to place the bumpers was something of a trial and error for each piece. In addition, making sure that the bumpers were all at the same radii meant counting the holes from the end for each bumper. To solve the first problem, I measured the minimum and maximum diameter when the bumpers were placed at the same radii around the jaws. I marked these limits in pen next to holes on one jaw, as seen near the top of the picture. To make sure I was putting all the bumpers at the same radii, I drew colored bands around the face of the jaws. Now I need only look for a similar color band rather than counting the number of holes. When I set up the jaws, I first measure the diameter of the turned piece, check the diameter against the ranges marked on the jaws, and then move the bumpers following the colored bands.



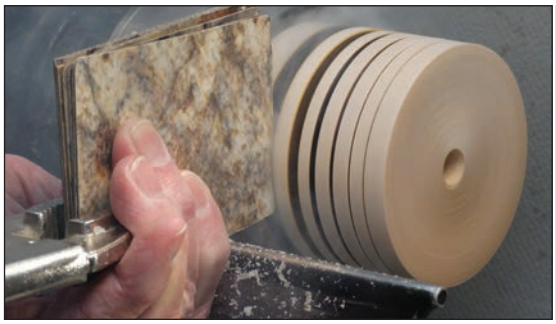
—Dave Buchholz, New York

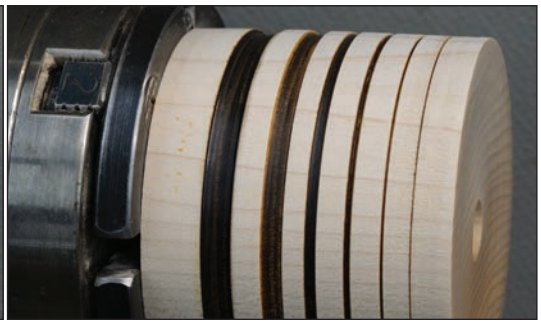
Accent Lines with Formica

For years I have used wire and wood strips to burn accent lines. Some turners are also aware that for the basket illusion effect, thinned-down Formica is prepared for burning lines by reducing the thickness using an abrasive grinder or a drum sander. "Necessity is the mother of invention," so when I needed a 1/4"- (7mm-) wide burned flat area with sharp edges on one of my turnings, I put the Formica method to the test.

I first cut a series of grooves in a spindle blank for guidance. I started out with thinned Formica, moved to standard Formica, and then added one thickness of Formica to each pass. Once I reached four layers, I used locking pliers to hold the sandwiched layers together (**left**). At six layers of standard Formica, I reached the 1/4" burned flat area that I needed (**right**).

—Larry Sefton, Tennessee





A Drill Jig for the Lathe

By John Lucas

Many years ago, I was building a flat wood clock and the plans showed how to drill holes for the numbers and insert a dowel. Cut and plane the dowel flush and you had a clock face. When I got into woodturning, I naturally wanted to do the same thing. I turned a face for my clock and carefully drew all the lines and measured and marked for drilling the holes on my drill press. I glued in the dowels and put the clock back on the lathe and turned the dowels flush.

When I got a new lathe with an indexing head, I wondered if I could complete the whole operation on the lathe. I designed and built a device to hold my drill bit aligned with the work and used the indexing wheel to position the divisions. The jig worked so well I started using it for other tasks, like adding round decorations to other projects.

The opening shot shows a few of the drill guides that I've built. Now let me show you how to build and use one. I'm sure you will come up with even more ideas for how to put one to good use.

The guide

Select a 1" – 2" (25mm – 50mm) square piece of wood about 6 – 8" (15cm - 20cm) long depending on the swing of your lathe. The objective is to be able to adjust the height of the guide so that the drill hole is on center to make use of the indexing feature. Mount the blank between centers and resist rough-turning the entire piece round! You only need to turn a 4" – 5" (10cm – 13cm) cylinder on one end to mount in your lathe banjo.

Drill one or more holes through the square end corresponding to the diameter of the drill bits you plan to use. You can do this on the lathe by mounting a drill chuck in the headstock and pushing the piece of wood into the drill with your tailstock quill (**Photo 1**). This should drill a hole perpendicular to the square side. A

1. *Use the force of your tailstock quill advancing into a revolving bit to drill a guide hole. Make sure the bit is smaller than the Morse taper of your quill.*

drill press will be a little more efficient at this particular task—use it if you have one.

That's all there is to building the drill guide. I prefer a hardwood like oak or ash, but in a pinch I have used pine and it works for one or two uses.

When I decided I was going to do a lot more of this type of work I built a drill guide with a metal tool post and off set it so that I could reach more places (**Photo 2**).

In use

The only thing easier than building the guide is using it. Just place the drill guide in your banjo. Put a drill bit in the guide and align it with the hole you want to drill. Chuck your chosen bit in a hand drill and bore the hole (**Photo 3**).

Doweling tips

There are some tricks to aid with drilling the hole exactly where you want it to be. The first tip is to use an index wheel of some sort (**Photo 4**). If your lathe doesn't have indexing, you can make your own guide or buy one of the commercial index wheels. Using an index wheel, you can easily divide your circular piece into any number of positions for drilling holes. I prefer to use my homemade index pin to position the wheel. You can see it under the yellow Flutemaster wheel.

Commercial dowels are rarely perfectly round—glue a slightly oval dowel in a round hole and it's pretty obvious. One solution to this problem is to make your own doweling jig. This is a piece of steel plate with a hole drilled through it matching the dowel size you need. Having

Indexing Pin

For more on building a shopmade indexing pin, check out the author's August 2019 article in *American Woodturner*, 34(4):24-25.

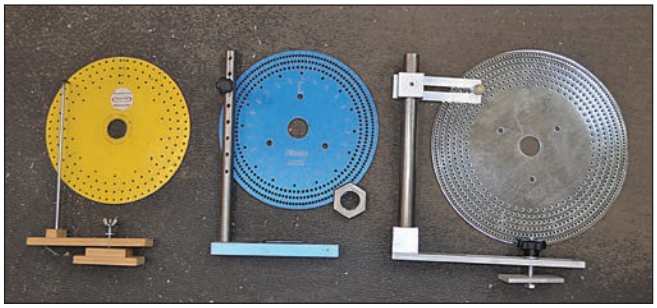
Design variation

2. *Many variations on this simple theme are possible. This metal and wood jig is intended to be more durable, and it features an off-set post that provides more options for positioning the guide.*

Using the guide

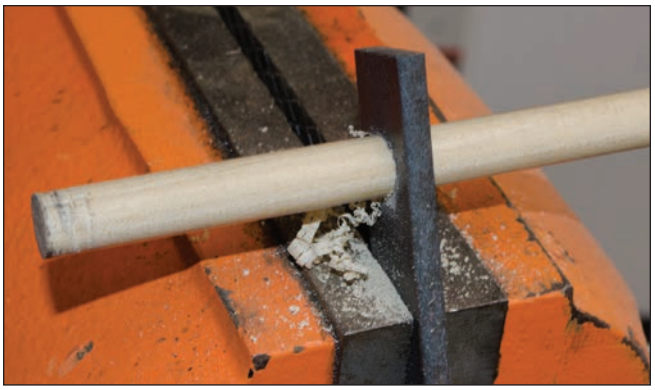
3. *The guide is mounted in the banjo in use, replacing the toolrest. Note the use of an indexing guide and pin, mounted behind the chuck.*

Index wheel adds precision



4. *From left, the Flutemaster wheel is the least expensive and does a great job, but you have to build some sort of index pin holding device. The Alisam is well made and the quickest to set up. The Chefware Kit is the most versatile and easiest to use.*

Make your own dowels



5, 6. *Make a doweling jig from a small piece of bar stock. Enlarge the upper length of the hole to make starting the dowel stock easier--it's the bottom 10 percent (or so) of the hole that does the actual sizing. You'll need a firm clamp or vise, as force is required to drive the dowel stock through the hole.*

7, 8. *An alternative approach is to purchase a commercially made plug cutter. With the aid of a drill press you can take an assembly line approach. Plugs can be broken free or cut free with a bandsaw.*

drilled the initial hole, you enlarge the top 90 percent of the hole with a slightly over-sized bit (don't drill all the way through!). The enlarged hole helps start the dowel stock (**Photo 5**). You may have to taper the first 1/4" (6mm) of the dowel to make it easier to start. Then you simply push or drive the dowel through this hole and it comes out perfectly round and sized to fit (**Photo 6**). If you start with a square billet or a dowel that is too large you may have to drill a series of holes from large down to the size you want and drive the dowel through each one to gradually reduce its size.

Another option is to purchase a drill plug bit (**Photo 7**). There are two styles on the market. One makes a perfect straight sided plug and the other makes a tapered plug. The tapered plugs fit your holes perfectly and don't leave any gaps. The downside to these is your piece must be finish-turned and all you have to do is level the plug to the surface. If you start removing too much wood for additional shaping you can cut into the tapered portion of the plug and leave an unsightly gap. The straight-sided plugs fit the holes pretty darn accurately and you can easily cut into them and not get a gap. I use these when I want to cut a slight concave or convex area in the plug after it's glued in.

To make the dowel plugs, you simply take a piece of wood and drill a series of plugs. The plugs remain attached at their base to the stock material, and you can often pop them loose using a flat blade screwdriver to break the wood across the grain. I prefer to use my bandsaw and just cut a slot across the bottom of the plugs and they fall out (**Photo 8**). I prefer to slightly round-over the bottom end of the straight-sided plug to make it easier to install in the holes. I use my disc sander for this but be careful; it's easy to erase your fingerprints when holding

these short dowels—don't ask me how I know. The plug cutters offer the advantage of being able to drill into endgrain and produce plugs with a distinctly different appearance. Endgrain also soaks up dye differently than facegrain, producing even more contrast.

I often make my own dowels because I like to drill the hole at an angle to the face of the piece, and this orientation requires a longer dowel. When I turn the angled dowel flush, the dowel appears to be oval. I often use this trick to mark the 12, 3, 6, and 9 o'clock positions and use the round dowels for the other numbers. The angled dowel can also be used decoratively as on this hand mirror (**Photo 9**).

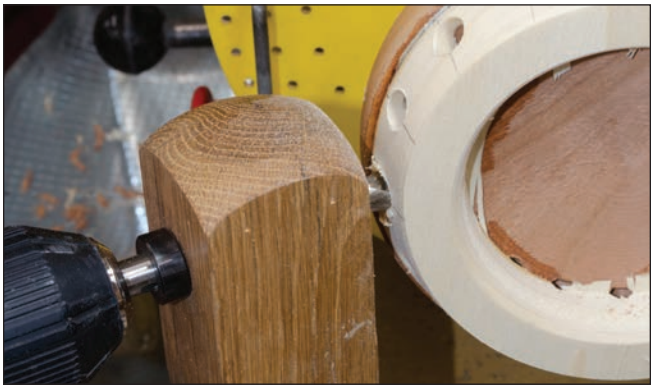
Drilling holes at an angle can be difficult because the drill bit will try to wander. I glue a scrap piece of angled wood to my project oriented so the drill bit can start square to the scrap wood before reaching the project. This prevents the bit from wandering and minimizes tearout. After gluing the dowels in, I turn all of the scrap away (**Photo 10**). Another variation is to drill all the way through a piece and insert long dowels (**Photo 11**). Turning away material to expose the side of the dowels creates an interesting appearance (**Photo 12**).

There are many other options. You can drill into a project at random or you can lay out a pattern for dowels such as this ornament sphere (**Photos 13, 14**). I'm not sure about the Christmas spirit, as after placing the dowels it strongly resembled a naval limpet mine.

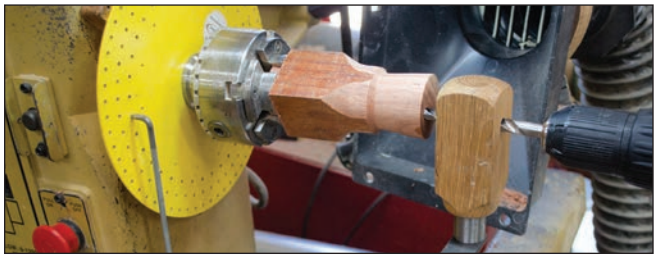
I have a gazillion other ideas for how to use dowels in turnings and by now you probably do, too. I hope this makes it easy for you to add them to your projects. If you have any questions, feel free to contact me.

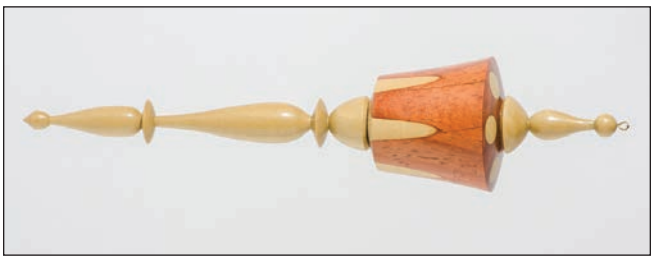
Drill angled holes

9. *Inserting dowels into angled holes creates visual interest by deviating from the expected roundness of turned objects.*



10. *To create angled holes for dowels, use a shopmade jig to align the drill bit and prevent it from wandering.*





11, 12. *Another approach is to drill straight holes for the dowels, then turn the object to reveal the inserted dowel. With the blank cut at an angle, the dowels themselves appear to vary in diameter.*

Turn away excess material

13, 14. *The dowels in this ornament were laid out systematically—you can see the carefully drawn grid pattern on the blank and the resulting ordered appearance.*

Retired photographer John Lucas (seen at left with his drill guide) has been working in wood for more than 35 years and also dabbles in metalworking. He enjoys modifying machines, making tools, and sharing his knowledge through written articles and videos. He has taught classes at John C. Campbell Folk School, Arrowmont, and The Appalachian Center for Craft.

❐

Evaluating Cracks, Knots, and Voids

By Mark F. Palma

Character and *design opportunity* are just two of the terms used to describe flaws in our turning blanks. Wood is an imperfect material. It expands and contracts in response to humidity changes, grows irregularly, and can dry unevenly. All these traits bring natural beauty to wood, but also set up stresses that may cause the wood to crack, check, or split. Knots are generally visible on the blank. Voids, pitch pockets, and other flaws are not always visible on the exterior of a blank but reveal themselves during the turning process.

Evaluating Cracks

I divide cracks into two categories—aesthetic and fatal. Aesthetic cracks affect the look of the wood, but do not threaten its structural integrity or you as the lathe operator (**Photos 1, 2**). Aesthetic cracks are usually small or surrounded by sound wood. Often, they are drying checks or small areas that can be annoying, but nothing more. Most aesthetic cracks do not penetrate all the way through the turned work. Fatal cracks present a risk to the structural integrity of the turning, creating the possibility that the blank may break apart during turning (**Photo 3**). Such cracks usually

Aesthetic cracks

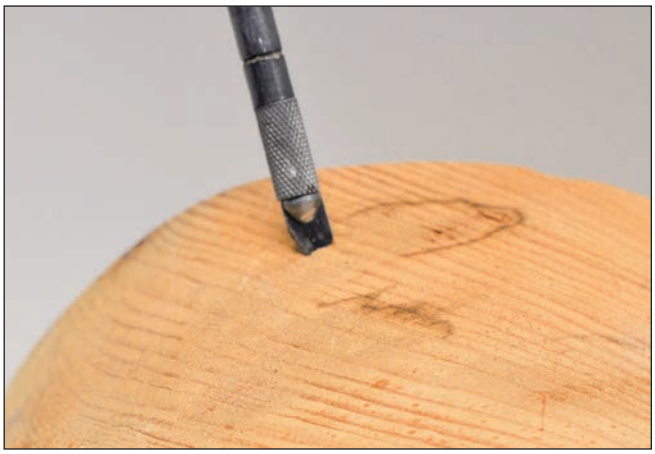
1. *The crack in the side of this oak blank could be filled, though longterm stability is questionable because the crack extends through the rim. A better option might be a butterfly (or Dutchman) inlay. If the piece is intended for a long life of food service, consider using a different blank.*

2. *These cracks can be easily turned away, although the blank will lose an inch or more in diameter.*

Fatal crack

3. *The central crack in the bottom of this bowl is fatal. The structural integrity of the blank is compromised and it could fly apart on the lathe. If a fill could be effected, it likely would fail due to seasonal humidity changes.*

Probe the crack



4. *Use a thin, flexible piece of metal to probe the crack. This will help you evaluate how far the defect may penetrate. Keep in mind this is a subjective test, as some cracks may be too tight to admit the probe, but still persist deep into the wood.*

penetrate all the way through the work, but this is not always detectable by eye.

Evaluating a crack can be like trying to figure out how deep a mudpuddle is by looking at it. Grab a thin metal probe (flexible is a bonus) and evaluate the opening (**Photo 4**). A dental pick or a hobby knife are usually handy in a turner's shop. Some cracks are evident before you start turning. By taking the wood to the bandsaw or chainsaw, you may be able to cut away the crack to reveal sound wood.

If you want to verify that you've removed all the compromised wood, cut a thin slice off the end that was cracked and flex the slice to see if it reveals cracks. If it does, remove more wood. Cracks near the pith are a sign that you are not removing enough of the center pith area of a tree. Do not be stingy removing wood attempting to get a bigger blank than the wood is telling you is really there. Many turners fall victim to this practice.

Some cracks are difficult to evaluate. They are small on the surface and difficult to probe. Try probing them at several points to evaluate the wood. Sometimes you need to remove a little material by turning at a slow speed and then reevaluate the blank.

Never compromise your safety for a cracked piece of wood! If the crack is either dictating how you will mount the wood on the lathe, or a piece of the blank could fly off the lathe, throw away the wood. There is other wood, so prioritize safety first. Tap on the blank with a hammer and listen to the wood. If the area near the crack has a different resonance than the surrounding solid wood, the blank is likely unsafe.

The more challenging situation occurs when wood looks sound, but a crack emerges during turning. This hidden danger can go unseen as the wood spins dizzily on the lathe. Unlike cracks that come from moisture leaving the wood during the drying process, internal cracks are often caused by some event during the tree's lifetime (such as how it was felled). In my region of Wisconsin, there have been two significant tornado touchdowns and unusually high wind events in recent years. The commercial sawmills will not buy trees from local woodlands because of the stresses these trees have experienced. Many trees look fine, but have separated internal rings (ring shake), or long splits hidden within the trees.

Stop your lathe and examine any object you are creating. In addition to evaluating shape and the finish off your tool, also look hard for cracks. If you see one, tap on both sides of it with the side of your tool, or probe its depths to determine its dimensions. Take another pass with the tool and stop the lathe and reexamine the defect. Is it getting larger or smaller? If it is shrinking, can you safely turn through it and still have a salvageable design? If it is getting larger, use some common sense. Evaluate the situation carefully.

The CA fix

Cyanoacrylate (CA) glue is a helpful tool for woodturners. It comes in several viscosities,

Choose the right filling tools

5, 6. *Cyanoacrylate is available in a variety of viscosities to fill various needs in the shop. Applicator tips are handy for getting the CA exactly where you want it. Keeping a can of CA debonder within reach is a wise idea.*

from thin-to-gel thickness (**Photos 5, 6**). Thin CA will wick its way into a hairline crack, as well as stabilize the wood around a knot or a soft void. This is a popular way to address these situations and many times achieves a good result. Use caution when you resort to medium or thick CA as a solution to a crack. Building up thin layers is usually preferable to laying in a thick layer of CA.

CA and wood move at different rates, and this can cause your CA patch to separate from the surrounding wood. Wood moves seasonally with humidity changes. CA (and resins) cure into polymers—plastic—and are inert, meaning they do not interact with their environment and do not gain or lose moisture. Also, recognize that some oily tropical woods tend not to bond well with CA glue.

There is some debate as to how long CA maintains its integrity. Filling a small crack in a turned object that will sit on a shelf may be a good application for CA. Filling a significant crack in a bowl designed for daily kitchen use is a riskier proposition. In addition to humidity-related issues, cured CA is brittle and one drop on the floor could cause the filled crack to fail. *Use CA for what is good for—filling small non-structural cracks and voids.* If you find yourself using CA to try to save a piece, consider whether you're really serving yourself and your customer? You may be better off to throw the blank away, regardless of how much time you have invested.

Filling alternatives

There are compounds that work well with knot holes or voids in wood. Slow-setting epoxy resin can be used alone, tinted, or combined with a variety of filling materials. Note that this discussion pertains to epoxy resin, not a two-part epoxy glue. Epoxy is stronger than CA and can be more elastic, better accommodating seasonal wood movement. That is why boat builders use epoxy to join critical wood components or coat the outside of wooden vessels. Crushed soft stone (such as turquoise or calcite), seashells, brass metal particles (make friends with a locksmith and you will have a lifetime supply of brass key filings), and glitter are some examples of materials often found in turned work (**Photo 7**). Epoxy can also be color tinted for

Fill the crack

7. *A non-structural void in your blank is an opportunity to add interesting fill. Choose material that can be sanded flush with the wood surface, like non-ferrous metal or soft semi-precious stones.*

an interesting aesthetic effect. Slow-set epoxy allows adequate time to incorporate fill material or color tint.

Acrylic resin can also be used as a filler. Some acrylic resins require a vacuum pot to cure the pour without bubbles, while others will stay open long enough to allow the bubbles to escape. Some creative turners take wood and completely submerge it in resin and cast a blank that can be more resin than wood.

Carefully follow the instructions that come with the resin, weigh the components with care (do not eyeball levels in a cup) and experiment with a test board before you commit to your prized turning. A test board is easy to create with a Forstner bit on a block of scrap wood (**Photo 8**). Keep track of your recipes so that you can replicate the ones you like best.

Recognize that wood is a dynamic material and often moves in ways that are hard to predict. Fillers can separate from the wood, so try alternatives and keep notes to identify successful techniques.

Make a sample board

8. *Use a Forstner-style bit to create shallow recesses in a sample board. Add fill material and epoxy resin to create a reference sample board.*

Embracing cracks

The indigenous craftsmen of the Hawaiian Islands were adept at working with cracked wood. Those craftsmen made calabash style bowls that saw hard, practical use for decades or more. Cracks were repaired by stitching across the crack or inlaying one or more dovetail patches to bridge the gap. The repairs were often a work or art in themselves and kept a vessel in serviceable condition. Maybe we can learn something from their approach?

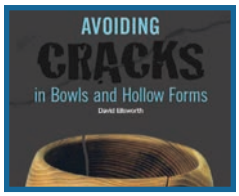
Mark Palma is a cook, woodturner, educator, prolific writer, and reformed attorney in Cameron, WI.

Explore!

To learn more about working with cracks, use the AAW's Explore! tool, click on the boxes, or scan the QR codes.

http://tiny.cc/Belcher

http://tiny.cc/Hockenberry



http://tiny.cc/EllsworthCracks

http://tiny.cc/CarpenterEdge

Elegant Plant Stand

By Dave Schell

I decided to create this piece as I looked at the plants sitting on our kitchen windowsill and thought, *These could be at different heights to create visual interest*. This would also allow us to add more plants to the space or put in a plant that could drape over the container.

This is a quick project that can take advantage of the kinds of cut-offs most of us accumulate. The project also has a free-form element, allowing you to create your own design, as long as the bottom of the stand is heavier than the top. I took inspiration from the smooth flowing elements and simple design of Nambé candlesticks.

Materials

Choose a plant container with a base smaller in diameter than your turning blank. I prefer to use a small planter for this project because it won't take up much space, and there is less chance of tipping.

Consider how high off the sill or counter you'd like the plant to stand. This is free-form, so you can make a plant stand any height you want. I prefer something at least 8" (20cm) high. The higher you make the plant stand, the wider you should make the base to help prevent tipping. I like to use scrap pieces of highly figured wood to make the piece more interesting. In this project I'm using a piece of curly maple.

Mount the work

Mount the blank between centers on your lathe. I chose to use a faceplate on the bottom of my piece because I will add felt to the base that will hide the screw holes. You could also turn a spigot on the bottom and mount the blank in a four-jaw chuck, or simply capture the blank between a drive center and live center in the tailstock. I prefer the stability of a faceplate for this project.

Rough-turn the stand

Use a spindle roughing gouge to bring the blank to round and start shaping the form. Early in the process, I determine proportions and mark the top, middle, and bottom. The top will hold the planter. The bottom will stabilize the piece. The middle will be the thinnest element and doesn't have to be the geometric middle—it's just the location of the narrow waist. You can position this part higher or lower, but if you shift it too close to the bottom, you create a high center of gravity and increase the chance of the piece tipping.

Measure for a good fit

Measure the bottom diameter of the plant container. The base of the plant container sits inside a recess in the top of the stand. You could make the top flat, but the plant container could easily slide off.

Hollow and test fit

If you are using a chuck or faceplate, you can remove the tailstock and take gentle cuts with a bowl or spindle gouge to create the recess for the planter. Make the bottom of the recess flat to create the most stable resting place. You can accomplish this with good tool control and a gouge, but a slightly radiused scraper is a more forgiving tool. Again, take gentle cuts as a catch could easily pull the workpiece out of the chuck or compromise a faceplate mounting. Verify that the planter fits before moving on.

Shape & sand

Bring the tailstock back up (not pictured) and shape the outer diameter of the plant stand's top. Finish shaping the plant stand in the design of your choice. This is the greatest thing about this project! Your design can evolve in response to the appearance of any interesting grain figure you'd like to highlight.

Sand the plant stand. With figured woods, I like to use a pencil to mark the wood and then make certain I sand away all the pencil marks. I find this helps reveal whether my sanding efforts address the entire surface, which can be hard to discern against high figure.

Apply a finish

I use a simple combination of tung oil and paste wax. It brings out the grain figure and helps keep the water from soaking into the wood when the plant is watered.

Dave Schell lives in Mount Joy, PA and is a Main Street Executive Director by day, and bowl turner by night and weekends. Email Dave questions dave@imakebowls.com or view his work online at: imakebowls.com, facebook.com/imakebowls or instagram.com/imakebowls.

Quirky Trees

by Philip Cottell

Quirky trees can brighten a mantel piece or a diorama display, such as for a model railroad or LEGO layout. Made from freshly cut wood that would otherwise become fireplace logs, the raw material can usually be had for no cost beyond the time and effort to collect it. Turning is the only significant process involved, and (a real blessing) there's almost no sanding or dust.

I discovered this idea about eight years ago while making twisty, microwaved, cone-shaped Christmas ornaments from madrone. Having managed to wreck one of the ornaments while turning, I set it aside on the workbench, standing on its tenon. After a few days, I noticed that it looked very much like a small, twisted tree. So I began making trees, which evolved into different styles, sizes, and colors. Since then, I've made thousands, and they have been welcomed at shops and shows. The process has evolved, and I have found this to be the best approach so far.

Design

Everyone has their own concept of what a tree should look like. These design suggestions are the ones I tend to use, but often override, depending on features the wood presents as turning proceeds. Trees can range in size from 8" (20cm) to 12" (30cm). Rarely do mine exceed 13" (33cm) because of the dimensions of my microwave.

The forms can evoke conifer, broadleaf, or Christmas-tree styles. For conifers, the crown is either one third or two thirds of the tree height. For broadleaf trees, the crown is about one third of the tree height. Christmas trees have a more conical shape, with branch whorls almost to the base. Knot patterns are welcome in the trunk of the tree, less so in the crown. A broad base, rising in a concave curve to a narrow stem at the bottom of the crown, cuts across the annual rings to give a pleasing upward swoop to the grain pattern. The stem continues through the crown to the top of the tree, in a long, gradual taper. Colors can be anything from red through violet—these are decorative art objects, so they don't have to appear realistic.

Wood

Many species can be used, and fruitwoods are particularly suitable. Other hardwoods such as oak, maple, and madrone serve as well. The only softwood I've used is yew.

Whatever species is selected, it should be freshly cut, sound, and free of visible cracks. Any existing cracks will open during drying, producing a crown with splits and even a shredded appearance; some don't mind this look, but I keep these seconds for unsigned give-aways. One might expect that small logs of about 4" (10cm) diameter and 13" length would make a good tree, and sometimes this works out. However, retaining the pith in the center of the blank encourages radial checking and will reduce your success rate. A better choice is to start with a log of at least 8" diameter. This can be split lengthwise on the bandsaw or with a chainsaw to yield four or more billets of 4" cross-section and 13" length. The pith is at one edge, the wane at the opposite, and both will be removed during turning.

It's best to prepare only as many billets as you can process in a day to avoid checking or the need to end-seal. The blanks can be sprayed with a little water containing a few drops of bleach and kept in a plastic bag until you're ready to turn.

Wedges

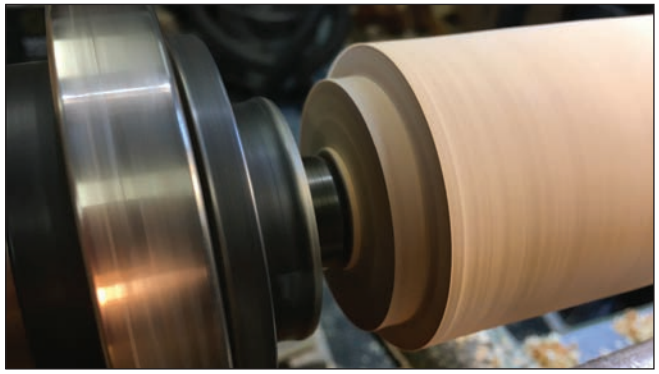
In addition to turning tools, you'll need to prepare a few dozen wooden wedges for bending the branch whorls. These need to be immediately at hand when the tree emerges from the microwave oven. They can be sawn to 1-1/2" (4cm) length from 3/8" (10mm) dowel material, then held in a vise and carved to create a wedge-shaped point at one end. About 20 are required for a 12" tall tree.

Turning

Establish cross-section centers at each end of a billet and mount it on the lathe between centers (**Photo 1**). With the toolrest clear of the blank, start the lathe slowly, gradually ramping up to a comfortable speed. Round the billet, increasing speed as it becomes balanced (**Photo 2**). Inspect the blank to decide which end will become the base of the tree, then make a substantial tenon at that end to fit in a 4-jaw chuck (**Photo 3**). Remount the blank and grip

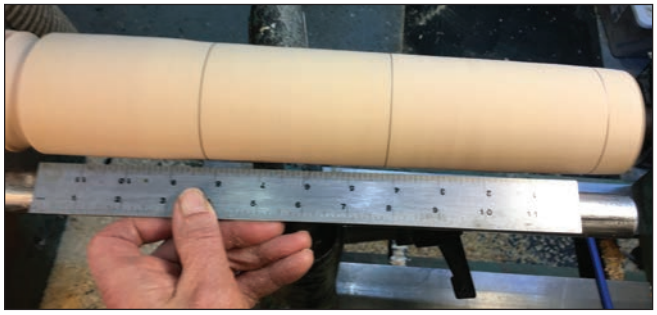
Chuck & bring to round

1. *Find the end centers and mount the blank in spindle orientation.*



2, 3. *Use a spindle roughing gouge to round the blank and a parting tool to create a tenon for mounting in a 4-jaw chuck.*

Layout & shape



4. *Lay out your design on the roughed-out blank.*

5. *Define the base of the tree using a parting tool.*

6. *Shape the top of the tree with a spindle gouge or skew. Leave about 1/2" of waste material for support at the top.*

the tenon firmly in the chuck while aligning the tailstock point in the top center hole, using only moderate pressure—the treetop will not be able to withstand much axial force.

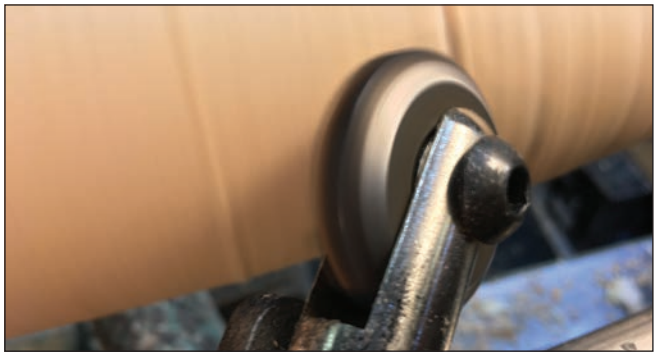
Decide the style, proportions, and shape of the tree, bring the toolrest close, mark your key transition points, and begin shaping with either a spindle roughing gouge or a spindle gouge (**Photo 4**).

Use a parting tool to cut a roughly 1/2"-(13mm) deep groove about 1/4" (6mm) above the chuck jaws to define the base of the tree (**Photo 5**). For a conifer form, shape the top of the tree with a convex-curved profile, coming toward a softly pointed top, but allowing for about 1/2" of waste beyond where the top will be (**Photo 6**). Leave substantial material in the trunk for stability. For a broadleaf tree, turn a rounded or oval-shaped crown, again allowing for trim waste at the top.

Texturing

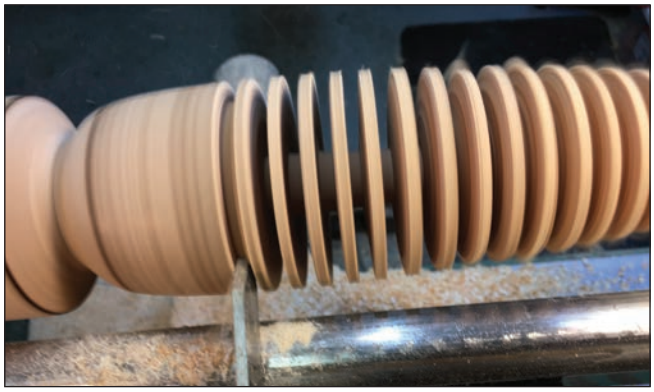
Texturing isn't required, but if you have a texturing tool using it will add visual interest by roughening the branch whorls. Texturing also speeds up the scorching step for wet wood. To apply texture, move the toolrest back to provide clearance for the rowel, and pass the texturing tool across the crown's surface once in each direction (**Photos 7, 8**).

Add texture



7, 8. *Use a texturing tool to add an organic feel to the branch tips.*

Define the whorls & trunk



9, 10. *Create the whorls using a parting tool.*

11. *Shape the trunk with a spindle gouge or skew.*

Branch whorls

Considerable time is spent using the parting tool in this project. If you have more than one, sharpen them all to about a 45-degree included angle. Bring the toolrest close and begin cutting the first whorl about 1/2" down from the tree top, starting just below the waste material (**Photo 9**). This portion of the stem can be about 3/16" (5mm) diameter. Cut with the tool sitting squarely on the rest, holding it with thumb on top, two fingers below. Use a tangential cut, cutting through an arc to minimize both vibration and the amount of force required. Because the wet wood will try to grab the tool, advance the cut by alternating between two adjacent cuts totalling about 3/16" in width for the inter-nodal space. Aim the tool carefully—if a whorl gets cut through, it's back to the billet stage. Gently riding the rotating surface of the blank with the left hand reduces vibration and the risk of breakage. The branch whorl should be about 1/8" (3mm) or a little less in thickness. The thinner the whorl, the more reactive it will be in drying—but also the more fragile. The stem at this point begins its gradual increasing taper toward the base of the crown. Continue making whorls to the crown base (**Photo 10**). The last one can be a bit thicker to better resist the heat of scorching. With practice, one can run the lathe at full speed while making the whorls.

Shape the trunk

Shape the trunk so that it curves gently upward to meet the base of the crown with the same diameter as the last stem portion within the crown (**Photo 11**). Part in more at the base of the tree, leaving about an inch of holding wood.

Stop the lathe and check that the chuck is still gripping the tenon securely. Then back away the tailstock to access the top of the tree. At low rpm, and with light support from your left hand, use a small skew to create two false whorls in the top, then cut off the waste to reveal the completed tree (**Photos 12, 13**).

Scorching

Although we're using wet wood, clear the surrounding area of any potentially flammable material. Have a charged fire extinguisher handy, and spread a moistened cloth towel across the lathe bed to arrest any sparks (you can put a sheet of plastic between the towel and lathe bed to discourage rust). Use a gas cylinder torch to scorch the trunk in painterly strokes to darken the surface evenly, highlighting the grain, with no excessively burnt spots. Then scorch the outer edges of the whorls in both

Add false whorls

12, 13. *Create a pair of false whorls at the top of the tree--these do not extend to the depth of the central spindle. Using a skew and with light support from your left hand, part-off the top.*

directions, playing the flame across, not into them—it's important to preserve moisture for the next step (**Photo 14**). Take care not to knock the burner nozzle against the whorls; this could result in a broken whorl, and a return to the billet stage. Set the burner down where the hot nozzle is not touching or pointing at anything flammable. Cool the tree by spritzing it with water, then part-off from the tenon, loosely holding the crown—not the trunk to avoid smearing the scorched-grain pattern (**Photo 15**).

Finish the parting cut at the base by slightly under-cutting the form. This creates a concave base that will encourage the tree to stand without wobbling. I leave a 1/4" nub connecting the tree to the waste block, which I finish parting with a saw. The remainder of the nub is easily removed with a curved knife or rotary burr.

Steam bending

Thoroughly wet the tree, then place it in an unsealed plastic bag, which acts as a steam chamber, and pop it into the microwave oven (**Photo 16**). About one minute at 70 percent power should be sufficient to heat a small tree; about 1-1/2 minutes for a larger one. Experimentation is necessary, as microwave units vary in their power delivery. Once heated

Char tips & part the base

14, 15. *Angle the nozzle of a torch to char the outer edge of the whorls. Reduce the waste attaching the tree to the chuck, slightly undercutting the base. Part-off with the parting tool or cut the final 1/4" of material with a small handsaw and the lathe off.*

Warp the branches

16, 17. *Place the top of the tree in an open plastic bag—the idea is to create a steam chamber. After microwaving, quickly insert pre-made wedges between whorls to bend the branches.*

and steaming, there is a risk of scalding your hand, so tip the tree out onto a soft surface rather than reaching into the bag to grab it.

Woods like madrone and fig bend so much on their own that there is seldom a need to wedge the whorls. Most other species will require wedges to give an interesting warped look. Wedges must be inserted while the tree is hot and steaming. You get only one chance as the lignin becomes too stiffened by repeated heating. Begin near the top of the tree, about the third whorl down—the first two are too short to bend readily. Insert two wedges in each space using only finger pressure to avoid breaking the whorl. You can add wedges in a spiral pattern, or opposing pairs for different effects (**Photo 17**). Set the tree aside to dry and start another.

Drying

When the wedges fall out on their own the tree is sufficiently dry for further processing. Removing the wedges too soon will lead to spring-back where the whorls will try to return to their original unbent form.

Depending on the season, air drying can take two or more weeks. This can be reduced to about two days using a food drier at the low heat position. A standard drier, with all trays removed except the base one, can accommodate about eight standing trees at a time.

Finishing the bottom

The only sanding required in this project is to the bottom of the base. A 2"- (5cm) diameter, 220-grit disc on a sanding pad held in an electric drill does the job in about a minute. To avoid possible damage to the edge of the base or to the sandpaper, grasp the trunk, brace the crown against your thigh, and sand from the center of the tree to the far edge. Rotate the tree about 10 degrees and sand again from the center outward until the whole bottom surface is smooth. Set the tree on a flat surface to see if it rocks; if so, sand off the high spots along the edge until it sits flat.

Sign the bottom, identifying the locale and species. Seal the bottom at this point with a clear acrylic or lacquer spray, or for more efficient use of the spray finish, wait until there are a number of trees to be sprayed together.

Adding color

Some people prefer the uncolored, natural wood look. I set aside a few of the most interesting of the quirky trees with swooping branch whorls, bent stems, or engaging knot patterns for that audience. But most of my trees receive some color treatment with a wood dye. There are many good dyes available. I use

Mohawk products, which are intense, light fast, quick drying, and relatively inexpensive. They come in quart containers. I use red, yellow, blue (all others can be derived by mixing), and green for convenience. Most common are green or red colored trees, some blue (spruce) or blue-green, yellow (maple and aspen in fall), purple (plum), orange (maples), and yellow-green for broadleaf trees in spring. Woods having a white or light natural color show the dye colors to best advantage. Only the crowns are dyed, not the trunks. Dye can be thinned with denatured alcohol, using proper precautions because it's flammable.

Pour a small amount of dye into a plastic tub (like an ice cream container) with a wide opening, and use a turkey baster to gently squirt dye onto the crown while grasping the base. There will still be some wicking and splattering onto the trunk. This can be touched up once the dye has dried using a dark-brown wood dye or acrylic paint and a small paint brush. I recommend buying a half dozen basters and assigning one to each color. Check carefully that all surfaces within the crown have been successfully colored, then set aside the tree for the alcohol carrier to evaporate.

Clear coat finish

When the dye is dry and touch-ups completed, set the tree(s) up outdoors for sealing using a clear rattle-can acrylic or lacquer spray (**Photo 18**). For health reasons, you don't want these vapors in your workshop. Sealing keeps any charcoal or dye from rubbing off on peoples' hands. Follow the product manufacturer's guidelines, giving each tree two coats.

For the Christmas-tree style, usually colored green, red or blue, an additional light spray of white or silver paint simulates snow.

Storage and handling

The main risk in storage and transport is that whorls of adjacent trees can become interlocked and break. Prevent this by putting each tree into a clear plastic bag. Liberal use of plastic bubble wrap to line and layer storage and delivery boxes will help avoid damage. Broken whorls can be repaired with CA glue, but rarely invisibly. I keep these to give away to shop visitors, who will look past the defect since it's free.

While many people will be pleased with a single tree on their shelf, some will want a copse of various sizes, designs, and colors. It's satisfying to see people respond to these unique tree sculptures—something they've not seen before, that are also affordable. It's my hope that showing how to make quirky trees will benefit other woodturners, in the same way as I have benefited from the willingness of the turning community to share their experience with me.

Phil Cottell is a retired forest scientist, living in Brentwood Bay, Vancouver Island BC with his wife Donna, and their smooth collie, Raven. He is a founding member of the Island Woodturners Guild, an AAW Chapter, and has served on the executive. Phil welcomes feedback at plcottell41@gmail.com.

Apply finish

18. *Seal in the dye and charcoal with a clear-coat acrylic or lacquer. Protect your health by performing this operation outside or in a vented spray booth.*

Processing Green Bowls

by Dale Larson

Green turning a wood bowl starts with a piece of wet wood. Wood degrades when it dries too quickly and therefore unevenly, so the objective is to exert control over the rate of this process. I rough out a bowl, let the piece dry, then remount the bowl and finish turn it. Here are a few tips that will help you through the process.

Get on it

The first rule is to get the tree as soon as it is cut. Checking begins as soon as the endgrain is exposed to air. The checks will be too small to see at first but will quickly widen into visible end and radial checks. As soon as you cut the block, put sealer on the endgrain (such as Anchorseal, Sealtite 60, or an equivalent house-branded product).

Rough-turn ASAP

Rough-out the bowl as soon as you can. A solid block of wood will release internal stress as it dries, resulting in splits and cracks. A roughed out bowl can "move" to relieve the stress and is less likely to crack as it dries.

Some heft is good

The general rule of thumb is to turn the rough wall thickness to ten percent of the overall diameter. That means a 10" (25cm) blank will have a 1" (25mm) wall. But there are times to deviate from the rule, and as you work with a variety of species you can develop a sense of what each will require. Stable woods like black walnut can be left a bit thinner. Madrone burl and apple move a lot—you'll need to leave those blanks thick enough to find "round" in their dried and warped forms. Too thick of a blank will prevent that necessary wood movement that relieves tension without cracking.

Wall thickness. *Aim for a wall thickness that's about 10% of the blank's diameter.*

Lot number. *Note the date and tree, source, or some other identifying feature to track all the wood from a single tree.*

Try dating it

Mark the date and source of the wood on the bottom of the bowl. A pencil works great. This will allow you to track all the bowls from a given tree over time. When one bowl is ready to turn, generally all of the blanks from the same tree will be ready.

Wax on

I use cheap paste wax on the endgrain on both the inside and the outside of the bowl. I don't use Sealtite at this stage because it soaks into the endgrain. When the bowl dries the Sealtite soaked endgrain will have to be turned away. Paste wax performs as well but doesn't penetrate.

Wax the endgrain. *Focus on sealing the endgrain; that's where moisture loss is fastest. Coat both the inside and outside engrain surfaces.*

Stack 'em

The drying process starts by stacking the bowls on dry stickers in the coolest place in my shop, the floor. Wet bowls stacked without air flow will mold and spalt. Check the bowls every day or two for the first two weeks. Immediately fill small endgrain or foot cracks with thin CA glue. (Bill Luce uses thick CA glue and sawdust to build a "scab" over the crack. The advantage here is that the thick CA glue doesn't soak into the endgrain of the wood which will have to be turned off later.)

Stacked blanks. *Stickers maximize air flow between blanks. Take care to allow room between blanks for air movement as well.*

Bag 'em

Cracks tell me the bowls are drying too fast. I will move them into garbage bags with dry shavings. This slows the drying process and lets the wood equalize its moisture content. The dry chips will absorb the moisture from the blanks.

Every couple of days I'll take out the damp chips and put in dry chips. The bowls may go in and out of the bags several times before they are stable. I leave them in the bags 3 to 4 days then put them back on the stickers on the floor.

Mold patrol

If a blank starts to mold it is drying too slowly, so I will move the blanks into the heated part of my shop. I want to get the surface moisture off the blanks. Be careful, because too long in a warm dry location can crack the blank at this stage. I also spray the blanks with a mixture of 50:50 mix of household bleach and water. This kills the surface mold. The bleach doesn't penetrate enough to affect the wood color.

To the racks

As time passes, I check the bowls less often. Generally, after six weeks the bowls are stable and I know I have won the battle. They are not dry enough to finish-turn at this time and they will continue to move. I move the bowls up on the racks around my shop and forget about them.

How long does it take to dry the blanks? Depends. Depends on the time of the year. Depends on the species of wood. Madrone burl (that has been boiled) and big leaf maple dry in as little as 4 to 6 months in the summer. Oregon white oak and California black oak take 18 to 24 months.

Dale Larson has been turning bowls for forty years. He is a founding member and past president of the Cascade Woodturners in Portland, Oregon. Dale served on the AAW Board from 2009 to 2014, as both symposium chair and president.

❐

Woodturning FUNdamentals

is an informative digital publication and online learning portal aimed at new turners. Whether you're starting a new hobby or plan to become a pro, the projects, techniques, tips, videos, and resources in Woodturning FUNdamentals *will help you build essential knowledge and skills. The AAW publishes* Woodturning FUNdamentals *digitally, four times each year and free to members.*

John Kelsey

John Kelsey turned these two bowls from the same log. Note how the grain pattern varies depending on whether the foot is placed near the pith (as with the natural-edge bowl at top), or oriented towards the outside of the log (as shown in the lower bowl). The color contrast between sapwood and heartwood will also influence the visual weight of the turning. (Ella Rose collection).

AAW | AMERICAN ASSOCIATION OF WOODTURNERS

WE ARE TEACHING THE WORLD TO TURN