WOODTURNING FUNDAMENTALS

American Association of Woodturners
May 2018 • Vol 7 Issue 2

Spindle Gouge
... it can turn anything!

Yo-yo
Plates
Cherry
Rolling Pin
Safety Gear
Lofstrom on Biomechanics

AAW AMERICAN ASSOCIATION OF WOODTURNERS

WOODTURNING FUNdamentals

Dedicated to providing education and information

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Stepping Up to the Plates

Explore!

Click the blue box to follow the link and learn more....
but it only works when you are also logged into the AAW website, woodturner.org

This May 2018 issue of AAW's *Woodturning FUNdamentals* includes a tight little project for building bowl-turning skills: wooden plates. They're useful, they don't use a lot of wood, nor take a lot of time. So, as Ted Rasmussen suggests on page 26, don't stop at just one. Make a set, they're great practice.

After photographing the plate project with Ted, I took his advice and plowed onward to the table-setting shown here. I soon learned that there are several ways to turn the rim and that plates aren't so easy to make flat (and which is better, a central hill surrounded by a moat of gravy, or a central pool?). Not to mention such conundrums as what's a good finish for food (page 29), and does it ever make sense to serve juicy beets on light-colored oil-finished maple (uh, no)?

Second coat of walnut oil gleams on maple plates and cherry bowls. I learned a lot about chucking, turning, and making sets that match, haha.

Continuing the theme of learning to turn by making useful things, there's a rolling-pin on page 18, and a challenging off-axis cake-and-pie server on page 34. Plus, for a different kind of useful, try spinning your first yo-yo, page 36.

Fresh finish reveals un-flatness.

After plates I made salad bowls sawn from an 8/4 (50mm) plank of cherry (page 32). I tried recess chucking, as Ted demonstrates on page 28, plus mounting the blank on a screw chuck to turn a tenon-foot. But that's getting ahead — we'll go from plates to small bowls in the next *FUNdamentals*, August 2018. Meanwhile, stay sharp and have fun in the workshop.

—John Kelsey, Lancaster, PA

Explore!

The AAW archive spans more than 30 years of woodturners sharing their skills and experiences. Last year the complete archive became available to members online, via the Explore! utility you can access on AAW's main website, ***woodturner.org***. This issue of ***FUNdamentals*** includes many direct links to Explore!, blue boxes like the one atop this page—click the box, and you should be taken directly to the PDF. This feature works whenever (but only when) you are also logged into ***woodturner.org***.

Spindle Gouge: Very Versatile Tool

1 The cutting tip of a spindle gouge has a characteristic fingernail shape.

2 Looking from the end, the profile of the cutting edge resembles the crescent moon.

3 In side view, the bevel is ground at a 40° angle (measured from the flute).

Spindle gouges, readily identified by their fingernail shape, are best for cutting beads and coves in long-grain work, where the grain of the workpiece is parallel to the lathe axis. These versatile tools are also used to rough down stock, make V cuts, and hollow end-grain boxes.

Beads and coves are the most common elements in spindle-turning. All spindle designs can be broken down into combinations of beads, coves, V cuts, and fillets or flats.

A spindle gouge is measured by the diameter of the round rod the tool was manufactured from, which typically ranges from 1⁄4" to 5⁄8" (6 to 15mm). The shape and depth of the flute, along with how the bevel is ground, determine the tool's cutting properties. Looking directly down the shaft of a spindle gouge, the profile of the cutting edge resembles the crescent moon as it wraps around the flute. The depth of the flute reaches about midway through the rod, and its width equals the rod's diameter. The rounded portion of the flute creates the curved cutting edge that cuts the wood.

Most spindle gouges have a fingernail or swept-back profile at the cutting edge. When looking at a spindle gouge with the flute facing up in the 12 o'clock position, the edge is usually shaped with the tip rounded and the edges curved toward the handle, a profile that resembles a fingernail.

The radius of the tip can vary; woodturners grind the shape of the tip to fit specific needs. For instance, if you were using the spindle gouge for cutting coves, a traditional spindle gouge with a gently rounded tip would be efficient. However, if you tried to cut deep V cuts with the same tool, the bottom cutting edge could make unwanted contact with the wood and a tip that is more pointed would work better.

What to buy

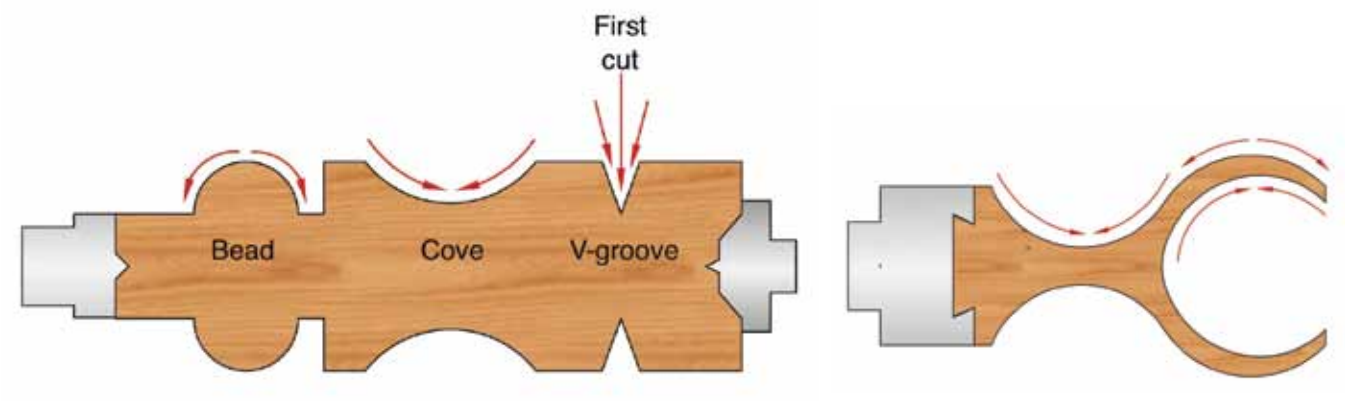
Beginners should purchase a 3⁄8" or 1⁄2" (10 or 13mm) spindle gouge with a fingernail grind and a gently rounded tip. The bevel angle should be in the range of 35° to 40°. This is a useful general-purpose tool and this profile and bevel angle is a good compromise between cutting-edge retention and the ability to reach into tight intersections.

— Joe Larese

You can turn anything

Master turner Richard Raffan uses a spindle gouge for much of his work. Raffan says, "If you are limited to just one tool, that's the one. You can turn anything with a half-inch spindle gouge."

Spindle Gouge: Grain Direction



Cut direction. In spindle turning the grain of the workpiece runs parallel to the lathe axis. Red arrows show direction of cut, generally from large diameter to small, so the tool bevel is always supported by the wood grain. The cut direction is reversed inside an opening, such as the goblet. All of these basic cuts can be made with the spindle gouge.

Which Way to Cut

In spindle turning, with the grain of the workpiece running parallel to the lathe bed, it is best to cut downhill (from large diameter to small).

You can understand this by trying two contrasting approaches to cutting a cove. If a cove were cut from both sides downward toward the middle, the wood fibers being cut would be supported by fibers underneath them, resulting in a smooth surface.

Conversely, if a cove were cut in one sweep, going down one side and up the other, the upward cut, from small diameter to large, would be going into endgrain fibers, which are more apt to tear when cut head-on. Also, the unsupported fibers at the very end of the cut (at the top of the cove) would tear out as the tool exits.

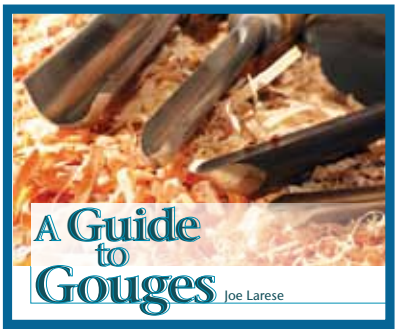
Thus, when cutting coves, V-grooves, beads, shoulders, and tapers while spindle turning, the best results will come from cutting from large diameter to small.

—Kip Christensen

What's the difference? Top, round-nose scraper at 70°; middle, bowl gouge at 55°; bottom, spindle gouge at 40°.

EXPLORE!

Click the blue boxes to find out more...



Spindle Gouge: Cove Cut

1 Cove Start with the spindle gouge flute on its side, in the 3 o'clock position. Position the tool handle low, with the bevel square to the lathe axis.

To make a cove cut with a spindle gouge, start with the flute turned on its side, in the 3 o'clock position. Begin with the tool handle fairly low, the tool securely anchored on the toolrest, and the bevel at 90° to the wood. Make a light cut by lifting the tool handle slightly and advancing the tip of the cutting edge into the wood until a small shoulder appears.

As you continue the cut, swing the tool handle horizontally and rotate the flute upward. At the end of the cut, the flute should be facing up, in the 12 o'clock position.

—Kip Christensen

2 Cove Lift the handle slightly to advance the cutting tip into the wood.

Scooping ice cream

Think of cutting a cove like scooping ice cream out of a carton with a spoon, but never going past the halfway point (always a good idea when eating ice cream, too). Cut from the rim to the bottom of the cove, downhill, with the grain. As the cutting edge of the tool moves from the rim to the bottom, the flute should be rotated from pointing toward the middle of the cove to almost straight up. Doing so keeps the bevel rubbing and prevents catches. Raise the tool handle to control the depth of the cove.

— John Lucas

3 Cove As the cut gets deeper, swing the tool handle to horizontal and square to the axis, and rotate the flute upward toward 12 o'clock.

Spindle Gouge: Bead Cut

1 Bead Start with the spindle gouge handle swung low and to the side, the flute on its side in the 2 o'clock position. Aim the bevel in the direction you want to cut.

Begin the bead cut with the bevel of the spindle gouge gliding on the wood just behind the cut, with the flute rotated away from the wood to about the 2 o'clock position. Swing the tool handle sideways during the cut to maintain proper bevel contact. The cut ends with the tool handle lifted to horizontal and swung sideways at 90° to the lathe axis, the bevel fully on its side in the 3 o'clock position.

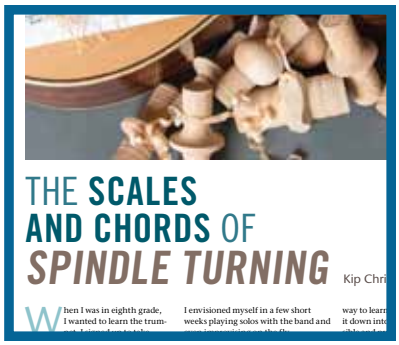
Bevel contact is important, but it should be light. Start the cut safely by gently touching the heel of the bevel on the wood and then lift and/or rotate the cutting edge into the wood to pick up a shaving. As you advance the tool, pay attention to what happens if you pivot the bevel away from the wood and too far toward the cutting edge: the tool will dig in and make a nasty backward spiral. If the tool is pivoted too far away from the cutting edge (toward the heel of the bevel), you will lose the shaving and get no cut.

—Kip Christensen

2 Bead Lift and swing the handle to advance the cutting tip. Rotate the flute toward 3 o'clock.

3 Bead As the cut gets deeper, swing the tool handle toward horizontal and square to the lathe axis, and finish with the flute fully on its side at 3 o'clock.

EXPLORE!
Click the blue box to find out more...



Spindle Gouge: Shoulder Cut

The spindle gouge is capable of making fine finishing cuts on endgrain, as when cutting a shoulder on a spindle or the bottom of an endgrain box. Here's how to control this cut:

1. Mount a 2-1⁄2"- (6.4cm-) diameter blank about 6" (15cm) long between centers. True the blank and use a parting tool to create a deep 90° shoulder that faces the tailstock.

2. Set the toolrest between 1⁄8" and 1⁄4" (3 and 6mm) below center height and align it with the lathe bed about 1⁄2" (13mm) from the workpiece.

3. Using a 3⁄8" (10 mm) or 1⁄2" spindle gouge with a fingernail grind, place it on the toolrest and sight down and line up the angle of the bevel to match the squared surface of the blank. Maintain this angle throughout the cut.

4. Rotate the tool so that the top edges of the flute line up vertically. The flute is considered closed (Photo **1**).

5. Position the handle so that the tool is level with the floor. This will allow just the very tip of the gouge to start the cut.

6. Position the tip about 1⁄16" (1-2 mm) from the edge of the shoulder and place your thumb on the toolrest to act as a stop.

7. With the lathe running about 1,000 rpm, move the tool tip straight into the blank about 1⁄8" (3mm). Once the cutting edge has penetrated the wood, the bevel will be supported (**1** and **2**). Continue to push and now slightly rotate the gouge to open the flute. This will allow the lower curved cutting edge of the gouge to cut and the flute will efficiently eject the shavings. Continue pushing the cutting edge into the work while maintaining light bevel contact with the freshly cut surface (**3, 4**). As the cutting edge approaches the intersection, slow down and rotate the flute back to its closed position.

As you continue the exercise, make sure to keep the tool level and with each cut, line up the angle of the bevel with the shoulder of the blank. Because there are only three movements (pushing forward and opening and closing the flute), this cut is relatively easy to master.

—Joe Larese

1, 2 The start of a shoulder cut with the spindle gouge shows the bevel in line, the flute closed, and the gouge tip at the centerline of the work. Turner's view (top), tailstock view (bottom).

3, 4 The midpoint of the shoulder cut shows the flute opened slightly and the lower portion of the edge cutting higher than the centerline. Turner's view (top, tailstock view, (bottom).

5 The start of a shoulder cut on the drive side with the spindle gouge shows the bevel in line, the flute closed, and the gouge tip at the centerline of the work.

Spindle Gouge: Sharpening

by John Lucas

A spindle gouge is probably one of the easier tools to sharpen. However there are several different spindle gouges on the market; photo **1** shows a range. Sharpening is a little different depending on the tool configuration and how you want to shape its edge.

The three main types of spindle gouges are the flat or stamped, round, and detail. The flat gouges are usually stamped to shape and are wider than they are thick. The round spindle gouges are ground from round bars. The detail gouge is usually also ground from round bars but the flute is very shallow.

Sharpening angle

What angle to sharpen? Well that could be an all-day discussion depending on what and how you turn. However, I prefer spindle gouges with a more acute edge than bowl gouges. Typically my spindle gouges are ground from 35° to about 45° when measured from the flute down across the bevel, photo **2**.

The simplest way to sharpen spindle gouges is on a platform using a grinder. Set the platform to the angle you want and then simply rotate the gouge handle. This is how they often come from the factory. Personally I prefer to have a more rounded edge. The corners from the factory grind can catch easily so I like to round them off. To grind the corners back, lay the gouge on the toolrest and start in the center with the flute up, photo **3**. Instead of just rotating the handle, swing it a little to the left, photo **4**, and right, **5**, so that it rounds off the corners. This gives more of a fingernail-shaped tip that is less likely to catch.

Detail gouge

I sharpen the detail gouge the same as the round gouge but often at a more acute angle so that I can reach into really tight areas; this is where the detail gouge shines. The nose on a detail gouge is often smaller and it's very easy to grind it to a point instead of having a nice round nose. Just grind on the nose a little longer while swinging the tool handle.

Rounded heel

I always grind off the bottom or heel of the bevel on all tools, including spindle gouges. The heel of the bevel can leave a burnish mark on your turning that shows up as a light colored ring when you apply finish. Rounding off the heel so it doesn't have a sharp corner eliminates this problem.

I prefer a very short main bevel on most tools, photo **2**, because it gives me better control and a better feel for the cut. After grinding the main bevel I simply tilt the tool up and grind a secondary bevel, leaving the main bevel about 1/8" (3mm) or 3/16" (5mm) wide. After forming this secondary bevel I simply round off the heel of the bevel. So my tools have three bevels, though most people would be quite happy with the main bevel and the rounded heel.

Honing

The cutting edge will be greatly improved by honing with a diamond hone. I use a 600 grit diamond hone to do this, photo **6**. Try to stay flush with the bevel so as not to round the edge. I also use a cone-shaped diamond fish-hook sharpening tool to polish the inside and get rid of the burr raised by the grinder, **7**. This makes a very sharp edge for the last cuts, to leave the cleanest surface.

John Lucas makes shavings in Tennessee.

EXPLORE!

Click the blue box to find out more...

ASK AN EXPERT

Measure sharpening angle?

Q What do you mean by bevel angle and grinding angle and sharpening angle? Are these the same? How do you measure the grinding angle of a turning tool? What's the simplest gauge or protractor or whatever to use, where do you put it on a scraper, and on a gouge, and on a skew?
—*Larry Green, Bethel CT*

A Basically, grinding angle is the included angle of the steel measured from the top of the tool. And yes, bevel angle, sharpening angle, and grinding angle are all the same, though there is some disagreement over how to measure it.

The scraper is the simplest. If you take a length of steel with a rectangular cross section and grind it flat and square across the front, that would be 90°. Most turning scrapers are ground less than 90°, somewhere between 70° and 80°, as in **1**. Some would call that 10° to 20° off square. For the sake of having the same language, and on our AAW forums this seems to be the majority view,

1 Plant the base of the protractor on top of the tool and move the arm to touch the ground bevel. Read the angle, this heavy scraper is 70°, at the mark on the arm.

1 Spindle gouges. The fingernail shape is characteristic, with a finer, more pointed tip for detail work.

2 Bevel angle. Top, 35° bevel, with rounded heel. Bottom, short 35° bevel with three secondary bevels.

3 Sharpening. Start in the center with the flute facing up.

4 Sharpening. Swing the handle right while rotating the flute.

5 Sharpening. Swing left while rotating the flute.

6 Hone bevel. Stroke it on a 600-grit diamond plate.

7 Hone flute. Conical fish-hook sharpener removes burr from inside the flute.

Explore!

Click the blue box to see John's gouge-sharpening video...

Spindle Gouge: Three Coordinated Arcs

Cutting the left side of a cove illustrates the combination of the cutting arcs. Vertically, the tool handle moves upward; laterally, to the left; and rotationally, counterclockwise, with the flute twisting from 3 o'clock to 12 o'clock. Reverse these directions to cut the right side of a cove.

When making curved cuts such as beads and coves, it is necessary to move the tool in three controlled and coordinated arcs to maintain bevel support, control the depth of cut, and create a smooth curve. These three arcs determine the starting position and approach angle of the tool.

Vertical Arc

When cutting a bead, the tool handle will begin low and will be raised as the cutting edge approaches the end of the cut. When cutting a cove, the reverse: the tool handle will begin higher and will be lowered toward the end of the cut. So vertical arc refers to lifting or lowering the tool handle, depending on the type of cut you are making.

Horizontal/Lateral Arc

Horizontal, or lateral, arc refers to the movement of the tool handle from right to left or from left to right. When cutting a bead with a spindle gouge, the tool handle will begin at an angle of 45° to 60° to the wood and at the end of the cut will be closer to 90°. When cutting the right half of a bead, the tool swings from left to right. The same lateral motion is at play when cutting coves.

Rotational/Rolling Arc

When cutting the right half of a bead with a spindle gouge, the flute starts near the 12 o'clock, or fully open position, and is rotated nearly to the 3 o'clock (closed) position by the end of the cut. For the left side of a bead the flute will end near 9 o'clock. When cutting a cove, the same principle applies but in reverse. The flute will start facing the 9 or 3 o'clock position at the top of the cove and be rotated toward 12 o'clock at the bottom of the cove. Rotate the flute by twisting the tool handle.

The real challenge is to control all three arcs simultaneously. This takes a lot of practice.
—Kip Christensen

EXPLORE!

Click the blue box to find out more...

Spindle Gouge: Practice, Practice, Practice

Beginning turners are often taught to practice cutting beads and coves by turning a "bead-and-cove stick," or a row of alternating beads with coves and fillets (flats) in between. However, turning a full bead requires only two cuts, a right half-bead and a left half-bead. Muscle memory for making these cuts will develop faster not by turning a series of beads or coves, but rather by repetitively turning half-beads and half-coves.

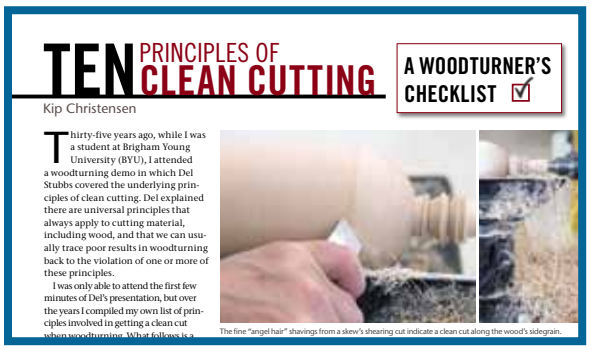
Start with a species of wood that turns easily — poplar, cherry, walnut, or ash for example. Choose a straight-grained stick that is about 2" (5cm) square and 6" (15cm) long. Mount the piece between centers, begin at the tailstock end, and work toward the center. Regardless of which cut you are practicing, take very light cuts of about 1/32" (1mm) per pass and go to a depth that leaves a diameter of about 1" (2.5cm) at the bottom of the cut.

Within minutes, you will have made many right-sides practice cuts before you reach the center of the workpiece. When you do reach center, start from the headstock end and make left-sided cuts to center once again.
—Kip Christensen

Practice cutting beads and coves with the spindle gouge by making many repetitive left-side and right-side cuts.

Spindle gouge makes fine, curly shavings.

EXPLORE!
Click the blue box to find out more...



TEN PRINCIPLES OF CLEAN CUTTING

A WOODTURNER'S CHECKLIST ☑

Kip Christensen

Thirty-five years ago, while I was a student at Brigham Young University (BYU), I attended a woodturning demo in which Del Stubbs covered the underlying principles of clean cutting. Del explained there are universal principles that always apply to cutting material, including wood, and that we can usually trace poor results in woodturning back to the violation of one or more of these principles.

I was only able to attend the first few minutes of Del's presentation, but over the years I compiled my own list of principles involved in getting a clean cut when woodturning. What follows is a

The fine "angel hair" shavings from a skew's shearing cut indicate a clean cut along the wood's sidegrain.

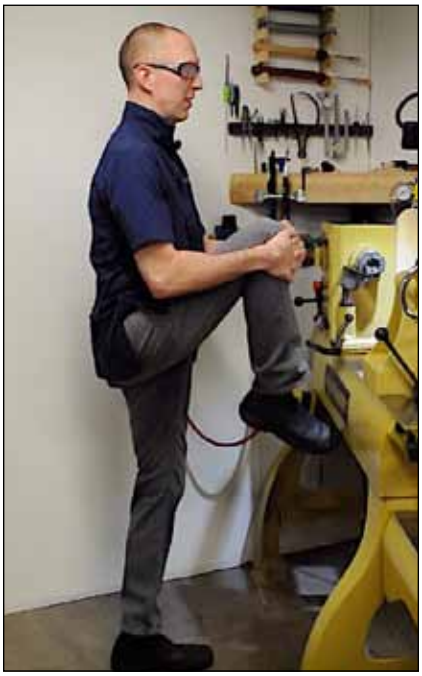
Biomechanics and Body Movement at the Lathe

AAW Editorial Staff, with Eric Lofstrom

1 Proper shoes and foot position form a good foundation for using your whole body to greatest benefit while turning.

As an accomplished woodturning artist with education and experience in sports medicine and kinesiology, Eric Lofstrom knows a thing or two about stance and body movement at the lathe. He approaches time at the lathe similar to how a yoga practitioner approaches the mat: striving for awareness of both his physical and mental state. You might have heard the adage, the best safety tool is between your ears. Eric's mindful approach takes that sentiment to heart, maximizing mental acuity not only for safety but for precision and woodturning efficiency.

Eric notes the basic premise: "Every little movement at the end of the tool is actually initiated through your feet and your stance." In tool presentation,



2, 3, 4 Stretching before and during a turning session can help prevent and alleviate body tension and pain.

5, 6 Squatting and extending your legs, with the tool an extension of your body, controls the tool's cutting edge.

there is not much control to be had in using just your arms, elbows flailing away from your body. Plus, the wrong stance and motion can lead to fatigue and pain. Following are Eric's tips for good body position and movement, from a biomechanics standpoint.

Note, these tips are intended for use in turning spindles, or work held between centers with the grain running parallel to the lathe bed. In the accompanying video, Eric illustrates the principles using a roughing gouge and parting tool, but the same concepts apply to the skew chisel and other spindle-cutting tools.

Warm up, focus

Woodturning is a physical activity, and it pays to begin with physical awareness. Take a moment to consider how your body feels. Stretch your legs and arms as needed. Eric recommends waking up your legs with some stretches and weight-shifting balance exercises. See photos **2, 3, 4** and the accompanying video for full descriptions of balance exercises.

Stretching before and during a turning session can help prevent and alleviate body tension and pain.

Eric also emphasizes setting your mind to the task at hand. It helps to eliminate clutter from around your lathe and shop, so you can minimize distractions and focus on your intended action at the lathe.

Stance and dance

Since working at the lathe involves the whole body, Eric recommends starting with a solid stance. With a reliable foundation, you can maintain better balance. Stand with your feet about shoulder width apart or a little wider, with your feet splayed out slightly (as shown in this article's opening image).

Eric's lathe dance motions are simple and based on only two movements, as shown on the accompanying video:

1. Squatting and extending your legs down and up will move the tool out of and into the wood, allowing you to affect the diameter of your turning (photos **5, 6**).

2. Gliding left and right from the legs and hips carries the upper body smoothly for cutting a cylinder.

With the tool handle tight on your hip, the cutting edge will move in close relation to your body, like a

7 Biomechanical inefficiency. Elbow disengaged from core. Eric prefers to position his right hand further up the tool handle, near the ferrule, and hold with a light grip.

"Every little movement at the end of the tool is actually initiated through your feet and your stance."
—Eric Lofstrom

telegraph transmission. Combining the two motions allows you to form tapers, beads, and coves. This approach engages and relies upon your core strength and helps to avoid fatigue-causing actions, like extended arms, hunched shoulders, or craned neck.

Spindle roughing gouge

Many turners grip the roughing gouge handle tightly at its end, but Eric suggests holding it somewhat loosely near the ferrule, with the end of the tool handle against your hip. With this setup, the tool will act as an extension of your body, and you'll gain better control. If you hold the roughing gouge handle at its end, tool control fades quickly as fatigue sets in, and undue stress is placed on your shoulder, elbow, and wrist, which can lead to overuse injuries such as tendonitis (**7**).

Roughing a spindle between centers is a simple matter of doing the stance and dance. With feet apart, squat, engage the tool on the toolrest, rub the bevel, then extend your legs to engage the cutting edge with the spinning wood. When you have begun the cut, glide to the right or left, maintaining even, relaxed shoulder height. Your ferrule hand can easily twist the tool to point the flute in the direction of the cut.

Essentially, you are using your body to control the tool in two directions. When you move your body up and down, the tool responds forward and back (affecting the diameter of the workpiece); when you move left and right, the tool follows along just as smoothly as your body is moving.

Parting tool

Eric's controlled use of the parting tool involves the same principles as the roughing gouge, except there is no left to right movement. The parting tool is intended for reducing the diameter of a workpiece only, so it plunges into the wood according to your body's up and down movements.

For both tools, elbows are relaxed and kept close to your body. Extending your arms away from your core would cause the tool to become disengaged from your body movement. Your body can move more smoothly and with less fatigue than your arms alone can. Fluid motions result in fluid, controlled shapes.

EXPLORE!

Click the blue box to view Eric's video...

Height of lathe spindle?

Q What's the right height for my new lathe? I'm going to build a stand and don't want to get this wrong.

A Proper lathe height is important for reducing body stress during turning. To determine the proper height of your lathe, stand in a relaxed posture and note the distance from the floor to the center of your elbow. This measurement should correspond to the height of the lathe's spindle from the floor. If you determine your lathe is too high, you may need to build a wide platform to stand on. If your lathe is too low, raise it up with blocks under the legs.

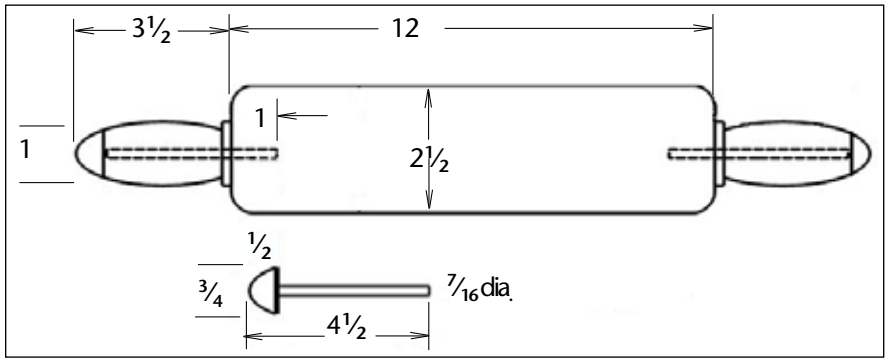
—Eric Lofstrom

Learn to Turn, Turn to Learn

Classic Rolling Pin

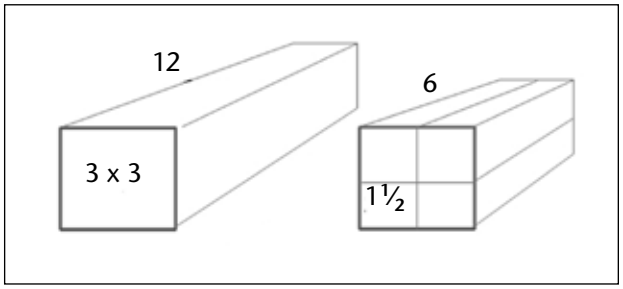
by Walt Wager

A rolling pin is a common piece of kitchen equipment. My wife uses a round bat, 1-3/4" (4.5cm) in diameter and 20" (50cm) long. But I remember one from my childhood that had handles with the roller in between. So here I will design a rolling pin that has a 12" (30cm) roller with 4" (10cm) handles, as shown at **1** and **2**. The handles will be attached by a turned wood pin that fits loosely through the handle and is glued into the roller.



1 Classic rolling pin has free-turning handles mounted on turned pins. You could detail the handles in a dozen distinctive ways.

Woodturning is a problem-solving activity — there is no single way to do anything. This project attends to the skills you would apply using a mini or midi lathe and their basic equipment: faceplate, live center, and spur drive. Skills include securing the wood between centers, roughing to round, using the spindle roughing gouge, 1/2" (13mm) or 3/8" (9mm) spindle gouge and parting tool, and turning to a specific diameter. You'll also need 1/2" (13mm) and 7/16" (11mm) drill bits, a vernier caliper for checking diameters, and a straightedge for checking flatness.



2 Cut blanks for the roller, two handles and two pins from a 3" x 3" x 18" billet.

For turning blanks you need the roller at 3" x 3" x 12" (7.5 x 7.5 x 30cm); two handles 1.5" x 1.5" x 4" (3.7 x 3.7 x 10cm) and two pins 1" x 1" x 6" (2.5 x 2.5 x 15cm). Pine or spruce 2x4s are 1-1/2" (38mm) thick and 3-1/2" (9cm) wide, you could glue two pieces face to face for the roller blank. Better yet, buy a piece of kiln-dried maple or cherry that is actually 3" x 3" by 18" (9 x 9 x 46cm). First cut the blank to 12" (30cm) for the roller, and 6" (15cm) for the handles and pins. Blanks for the two handles are each 4" (10cm) long and the pins are 6" (15cm) long.

Mounting the blank

The rolling pin is a spindle turning project. This means the grain of the wood is running parallel to the length of the lathe. Start by drawing diagonals from the corners on the end of the blank to find the centers.

Drive center — Tap the spur drive into the end of the blank, **3**, using a wood mallet or dead-blow hammer. Then bring up the tailstock with the live center to hold the other end.

Tool rest — Set the tool rest at or slightly below center as in **4**, so that when the tool touches the wood it cuts at or slightly above center. Turn the blank by hand to be sure it clears everything before you switch on the motor.

3 Center and tap the drive spur into the end of the workpiece.

4 Spindle turning - the grain of the wood runs parallel to the lathe axis.

Lathe speed — The speed depends on the diameter of the wood blank, the balance of the wood, and the condition of the wood. In each project this will probably be different, so for safety's sake check the speed setting BEFORE switching on. This is a small-diameter workpiece, so if the lathe has an electronic speed indicator, 900 - 1200 RPM should be fast enough. If you don't have an electronic speed indicator, you probably have a range of speeds posted for various belt and pulley combinations.

Turning the roller

Use the spindle roughing gouge and the ABC approach to turning:

Anchor, make sure the tool is on the rest before engaging the wood.

Bevel, lower the handle and contact the bevel on the wood before engaging the cutting edge.

Cut, raise the handle until the cutting edge engages the wood, keep the gouge at this angle as you start to cut.

The **spindle roughing gouge** can quickly remove the corners from the blank and can make a nice smooth cut along the blank. Angle the tool so that the cutting-edge leads in the direction you are cutting so that it shears the surface as you move it along the tool rest, as shown in **5** and **6.**

5 (left) Stand easy and brace the gouge handle on your body. Lift the handle to cut.

6 (above) Aim the gouge in the direction you want to cut and guide it along the tool rest.

My left hand cradles the spindle roughing gouge, with my index finger running along the tool rest. I push the gouge across the face of the roller by shifting my weight from one leg to the other. Your posture and stance in front of the lathe should enable you to anchor the tool against your body and move your whole body in a

7 Check the diameter of the roller with a vernier caliper, and its flatness with a straightedge.

8 Remove tool marks with a sanding stick made by gluing sandpaper to a flat board.

[Roller, continued]
rocking motion, in this case from left to right. This stabilizes the tool for a smoother, more even cut. Because my toolrest is shorter than the blank, I won't be able to round it all in one operation. Instead I'll move the toolrest toward the headstock and do that end, then move the toolrest toward the tailstock and do that end.

Check the diameter of the roller with a vernier caliper, and check its flatness with a straightedge, **7**. Go back with the spindle roughing gouge to remove any high spots; this probably is the most difficult part of the whole project. When the roller is straight across the top you can remove tool marks with a sanding stick.

Make a sanding stick by gluing a strip of sandpaper to a flat piece of wood, **8**. Make it at least 2" (5cm) wide. With the lathe turning about 300-400 rpm move the sanding stick across the roller to knock off any high spots. Start with 100 grit, then 150, 220, and finally 320 grit.

Boring the roller

One of the most important parts of this project is accurately boring holes in the roller and the handles. This is easy if you are working on a longer lathe with the workpiece in a scroll chuck and a drill chuck in the tailstock. If you have a mini-lathe its bed probably will be too short, so the holes will have to be bored off the lathe. You can do this with a portable drill, but it would be more accurate using a drill press.

Bore a 7/16" (11mm) diameter hole, 1" (2.5cm) deep, in each end of the roller. Secure the roller in a vise and use a level to check that it is aligned with the drill bit. In photo **9**, I am using a Forstner bit to bore this hole. If you are using a twist drill it will be easier if you bore a 1/4" (6mm) pilot hole first, then the 7/16" (11mm) hole. Get the hole as straight and perpendicular to the end of the roller as possible.

9 A vise holds the roller on the drill press table; the level checks for vertical alignment.

10 Use the drill press to bore through the handle blanks.

11 Jam chuck. Mount it on a faceplate and turn a centering nub.

12 Mount the handle between centers and turn toward the tailstock as far as possible.

13 Reverse the blank and use the spindle gouge to shape the wood.

14 Aim the gouge bevel in the direction you want to cut.

Turning handles

The next step is to turn the handles. First, bore a 1/2" (13mm) hole through the handle blanks. The hole through the handle is larger than the hole in the roller so that the handle can rotate on the 7/16" (11mm) pin. Photo **10** shows using a twist drill that is long enough to go all the way through. Bore about an inch at a time and back the drill out to clear the chips.

Now the spur drive won't be useful because of the hole in the handle, so make a jam chuck by screwing a piece of wood onto the faceplate using 1-1/2" (38mm) screws. Use wood screws or pan-head screws for metal, but do not use drywall screws because they are brittle and might break. Turn the jam chuck round with a tapered nub for the blank, **11**. Use a **parting tool** to form the nub. Now the blank for the handle can be secured between the jam chuck and the live center.

Use the spindle roughing gouge to make the blank round. You won't be able to get the gouge right up against the jam chuck, so just do the end toward the live center, **12.** Then remove the handle from the jam chuck, turn it around, and remount it. Now rough the handle down to its final maximum diameter of 1-1/2" (38mm).

Diagram **1** shows a handle tapered at each end, but this is your opportunity to be creative. Photo **13** shows using a 1/2" (13mm) **spindle gouge** to shape the handle. The flute of the spindle gouge starts in the open position at 12 o'clock, with the bevel resting on the surface of the wood. Aim the bevel in the direction of the cut. As you raise the handle, you'll pick up the cut. Move the cutting edge forward by pushing the back of the handle, **14**, while twisting the flute to a closed 9 o'clock position at the bottom of the cut.

When using the spindle gouge, remember the ABC approach. Put the tool on the tool rest, put the bevel on the wood, then raise the handle until the cutting edge contacts the wood and starts to cut. Start at the largest diameter and cut downhill to the smallest diameter. As shown in **14**, leave about 1/8" (3mm) toward the live center, to be parted down to 3/4" (20mm) diameter to match the pin end.

15 Sketch the pin on the blank; there's plenty of extra wood.

16 The parting tool makes a shoulder to define the head of the pin, with extra for clearance.

17 Rough the pin to round then bring it down to final diameter with the parting tool.

18 The shaft of the pin is complete.

19 The spindle gouge forms the head of the pin.

20 rotate the flute on the curve to take fine cuts, leaving a neck.

Turning the pins

The pin goes through the hole in the handle and is glued into the roller. Start by securing the pin blank between centers. The 6" long blank is longer than you need, so you have room to work at both ends (**15**). The head of the pin is toward the tailstock.

Rough the pin blank to round using the spindle roughing gouge. The largest diameter of the head of the pin will be 3/4" (2cm). After roughing the pin to round, use the **parting tool** to pare down the head of the pin to 3/4" (20mm) diameter for a length of 3/4", photo **16**.

The rest of the pin will be 7/16" in diameter. Use the parting tool to pare away the wood, **17,** and check the diameter often with a caliper. When using the parting tool for this operation start it so that the bevel is rubbing on the spindle and raise the handle so as to slice the wood down to the desired diameter. The pin now looks like photo **18.**

Round off the head of the pin with a spindle gouge. Start at the largest diameter and cut toward the tailstock, rolling the flute from open (12 o'clock) to closed (3 o'clock) as you go (**19, 20**).

The final step in turning the pins is to cut the waste off the pin, **21**. Since the pin is between centers it is easier to use a saw than to try to part it off while the lathe is running. The completed pin looks like the one in photo **22.**

21 Saw through the neck to remove the pin from the lathe.

22 The completed pin.

Assemble and finish

To finish the project, I stained the handles with aniline dye and coated them with polyurethane, photo **23.**

Gluing the handles — Be careful when you glue the pins into the roller so you don't also glue the pins to the handle or the handle to the roller. One way to do this is to take a smaller diameter dowel and put the glue on that dowel, then to put the dowel into the hole on the roller and spread the glue around (**24**). Clean off any excess on the end of the roller with a paper towel. Use a good waterproof glue, or epoxy.

Assemble the rolling pin by putting the pins through the handles and then insert the pins into the roller. They should fit snugly, but leave a small gap between the roller and the handle so they turn freely.

Walnut oil finish — The completed rolling pin is ready for a food-safe finish. For kitchen utensils I like walnut oil finish, which is heat-treated and not the same as walnut oil for cooking. Just wipe it on, leave it for whatever time the product label specifies, and wipe off any excess that has not penetrated the wood. Walnut oil dries slowly to a soft sheen but is said to be safe even before it has fully cured. The finish, which has almost no odor, can be freshened up with another application at any time.

This classic rolling pin is an heirloom that can be passed on from generation to generation.

23 Polyurethane varnish dries on the dyed handles.

24 Use a small dowel to spread waterproof glue inside the hole.

25 Though a utilitarian project, the roller handles still offer a nice opportunity for creative decoration.

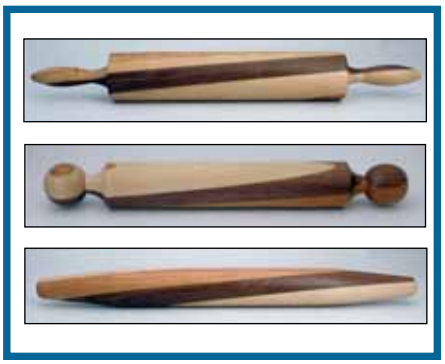
Walt Wager is a 16-year member of AAW. He teaches woodturning classes in Camelot's Woodworking Studio in Tallahassee, Florida (woodturner.com). His website is waltwager.com and he can be reached at waltwager@gmail.com.

EXPLORE!

Click the blue box to see Walt's spindle-turning video...

EXPLORE! Click the blue box to find out more...

Learn more about rolling pin designs, and how to make a laminated blank like these, in Joe Johnson's FUNdamentals article, *Three Rolling Pin Designs*. Click the blue box to bring up the PDF.



File cabinet stores tools and gear

I made a robust lathe-tool storage system by salvaging a sturdy metal filing cabinet from a dumpster at a local university. The three full-extension drawers are very functional for this application. My tools need to be moveable so I can pull them out of my garage into the driveway for work, so I added casters. I attached PVC tool holders to the cabinet, but first I mounted plywood to the metal cabinet, and then attached the PVC tube sections to the plywood. Because I have many lathe tools, I mounted holders on all three sides of the cabinet, and doubled up on the back side to accommodate turning tools as well as a few accessories that would not fit in the drawers. A simple flat top surface with dividers provides immediate put-down storage for a few tools while turning. The drawers store drive centers and a variety of wrenches and knock-out tools (top), tools rests (second drawer), chucks and jaws (third drawer).

—Robert R. Llewellyn, Memphis, TN

Pen storage

When I started turning pens I used a floss case from a craft store. Not long after, spilled the case and eight sets of bushings. Needed a better system: 35mm film canisters. The rack is from lotion tubes; another answer is screw-top containers from craft stores. The drill rack has bits in pen storage tubes marked with size.

—John Kaner, Anchorage, AK

Tool shelf for midi-lathe

I have seen an attachment on a Rikon lathe for the spur, live centers, knock-out bar, and allen wrenches - and I needed something similar on my Delta 46-460. I took a piece of 1 X 6, notched one side to sit flush on the side of the lathe below the spindle bore, and drilled holes to hold the knock-out bar, spur, live center, and chuck key. I used epoxy to attach the wood, after grinding off the paint on the side of the lathe. I used clamps to hold the block while the glue was drying.
—Lisa Benton, Florida

Epoxy holds wood tool shelf on end of midi lathe. .

TV mount tool rack

An inexpensive, widely available, heavy-duty TV mount bolted to the shop wall does the trick. It can be pulled out to have tools in a convenient spot for working, and pushed back out of the way when not needed.
— Martin Smith

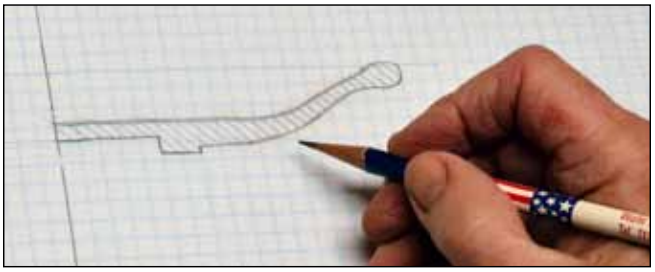
1 With recess chucking, you can turn plates from 3/4" wood, 7" (18cm) to 10" (25cm) diameter.

Plate(s)

AAW Editorial Staff
with Ted Rasmussen

Because it's a simplified bowl, a hardwood salad or dessert plate of 8" to 9" (20 to 24cm) diameter is a great practice project. You can turn a useful and/or decorative plate from almost any hardwood board or plank, **photo 1**, whether rough-sawn or planed smooth. Turning a few plates will develop your bowl-turning skills with only a small investment in time and materials. Practicing on a set of small plates not only builds bowl-turning tool skills, it also introduces the knack of making shapes that match (**2**).

Plates are crossgrain turning, the wood orientation chosen for most bowls, too. This means the long fibers of the wood run at right angles to the axis of the lathe. Consequently, clean cuts (**3**) can be made on the face of the wood because the fibers are supported ahead of the tool. However, attacking edge-on would be digging into unsupported wood fibers, certain to tear and splinter.



2 Draw. Begin by drawing the cross-section of the plate, on 1/4" (6mm) graph paper. The base diameter should be at least one-third of the full plate. The chucking recess should be 1/8" (3mm) deep.

3 Tools. This demo project was turned using these three tools, from left: 1/8" (3mm) parting tool for starting the chucking recess, 3/8" (10mm) bowl gouge for shaping, 1" (25mm) scraper for finishing.

4 Trace a disk template, or use a compass, to lay out the disk. Be sure to mark center.

5 Bandsaw the blank. Steer with hands to the sides, never in the path of the blade.

6 Screw a faceplate to the blank and mount it on the lathe, to turn the back side of the plate.

Preparing the blank

The plate shown in the photos was bandsawn (**4, 5**) and turned from 1" (2.5cm)-thick walnut lumber. Blanks for plates and shallow bowls can be bandsawn using flat lumber from 3/4" to 2" (2-5cm) thick, planed smooth or rough from the mill. Using regular kiln-dried hardwood short-circuits the complex processes of harvesting and processing your own wood. You can make useful and handsome wooden plates from any close-grained hardwood.

The grain orientation of the wood relative to the lathe axis determines how it can be mounted on the lathe. This project demonstrates a basic two-step mounting sequence for crossgrain work that many turners find quick and effective:

1 Mount on faceplate, **6**, to turn the back and chucking recess;

2 re-mount by expanding scroll chuck, **13**, into the recess, to turn the front.

7 Stand like a soldier and anchor the bowl gouge firmly on the tool rest. Lift the handle to cut.

8 True the edge with the bowl gouge by cutting into the face of the wood, toward the headstock. The portion of the edge that does the cut is directly supported on the toolrest.

9 True the face with the bowl gouge, cutting from the center toward the edge.

10 Groove to start he chucking recess, with the parting tool.

11 Excavate with the bowl gouge and heavy scraper.

12 Chucking recess and plate back. The bowl gouge and scraper teased out the plate's ogee profile.

First the blank is screwed to a faceplate on what will be the open side, for turning the back or outside including a chucking recess (**10, 11, 12**). The recess is used to re-mount the workpiece on an expanding scroll chuck to turn the front side (**13, 14, 15**).

Chucking recess

A chucking recess can be turned in wood as thin as 3/4" (2cm). This typically results in a low foot profile, and it facilitates hanging decorative plates on the wall.

Which chucking method you choose naturally depends on what equipment you have, but it's also a function of the wood thickness and the design of your plate. One alternative would be to turn a chucking tenon, either for the scroll chuck or to glue to a block mounted on a faceplate. A chucking tenon might require thicker wood, but it can be finished into a foot that raises the plate off the table.

The plate in the photos was turned using just three tools (**3**): swept-back bowl gouge for shaping and hollowing, heavy scraper for smooth finish cuts, and parting tool for starting the chucking recess. A

13 Expand the scroll chuck into the chucking recess. The right-sized recess matches the nearest-to-circular setting of the chuck jaws.

14 Hollow the plate with the bowl gouge. Aim the flute in the direction you want to cut, with the bevel skimming the just-cut wood.

15 Bevel. To keep the bevel gliding, raise the handle of the gouge as you arc toward center.

16 Push cut with bowl gouge. With the handle almost level and the flute at 2 oclock, the bevel glides across the wood, and the shaving peels off the wing.

17 End the push cut at the center of the plate. Consider whether you want it level or dished, but be careful not to turn into the chucking recess.

small plate is a great project for really investigating the bowl gouge, and trying out the different ways it can cut (**16, 17**).

The plate shown in this exercise was turned by eye from a sketch. If you wanted to make a matching set of plates, you could make a cardboard template, even if you believe that you can't draw. Just make a practice plate. Then saw it in half on a diameter, **18**. This is a great way to evaluate your practice work, and better yet, you can draw a template by tracing around the cut profile.

18 It's practice, saw it and see. You can learn a lot by sacrificing a practice plate. Saw it in half and see how closely it matches your drawing. Then turn another.

Safe finish for food?

Oil finish, varnish finish, lacquer, wax, what's safe for food dishes and utensils? They all are, provided they've been correctly applied and given anough time to cure.

But how can you tell? First, is the finish hard to the touch? And second, can you smell it? The nose is your best defense. Sniff and if you get any whiff of finish or solvent, it's not yet cured.

Some turners favor heat-treated walnut oil, a light finish that soaks into the wood and has hardly any odor. It's slow to dry and not very durable, but it's easy to reapply and renew.

For a more durable food finish, try two or three coats of polyurethane wiping varnish thinned 50-50 with its label-approved solvent. For more food-safe finish discussion, click the blue Explore! box around Bob, at left.

EXPLORE! click the blue box...

Sniff test. Finishing expert Bob Flexner sniffs the finish. If there's any odor, it's not yet cured. Let it sit to complete the curing process before you use it with food.

Centering jig for bowl bottom

by Betty J. Scarpino

1 The finished bottom blends and flows with the body of this popcorn bowl.

Of the three elements of a bowl – rim, body, base – the design of the bowl's underside is most often ignored. Practically, why bother if the bowl sits properly and functions well to hold salad, fruit, or cereal? Popcorn bowls, though, feel just right when they conform to your hand. Also, we woodturners like the idea that the bottom of a bowl has received as much consideration as its rim and base.

There are a variety of techniques and methods for turning bowl bottoms. The centering jig method offered here is inexpensive, safe, easy to accomplish, and doesn't require a lot of time. This method works for regular bowls, not natural-edge vessels. Rims that curve inward require a deeper centering groove and centering can be a bit tricky, but it can be achieved.

The bowl shown here was turned on a faceplate following the same sequence detailed in *FUNdamentals* v7#1 (Feb. 2018). First turn the outside with a flat foot by screwing what will become the open side to the faceplate. Second, reverse and remount by gluing the flat foot to a glue block mounted on the faceplate. Photo **2** shows how turning the block down to a tenon gives you tool access to most of the bowl. You can remove the bowl by splitting or hand-sawing the tenon. With your bowl turned, finished except for its bottom, and off the lathe, measure the thickness of the bottom so you know how far you can cut into it– you are aiming for a bowl, not a funnel.

2 The bowl is mounted on a glueblock for turning the inside. Reducing the thick glue block to a small tenon allows tool access to most of the bowl's body.

To make the centering jig, locate a flat, wide board that is at least 1" thick and wider in diameter than your bowl's rim. Bandsaw a disk from the board and screw it onto a faceplate. I use a 2"-thick board and a dedicated faceplate so I can use the disc multiple times. Use screws long enough to securely hold the disc, but short enough so you don't cut into them when turning a groove; this is only a consideration with small-diameter bowls. I have used plywood for smaller bowls, but it is risky because the layers could separate when spinning on the lathe. A sound piece of solid wood is much safer.

Measure the outside diameter of your bowl's rim. Transfer that diameter to the disc while it slowly spins on the lathe. Turn a groove that is just deep enough so the rim of the bowl can be centered, upside-down, onto it. You may have to stop the lathe, try the fit, and adjust the diameter of the groove several times (**3**). The point is to center the bowl but not to create a jam-fit, because a too-tight fit, even a moderately tight fit, can crack a thin bowl.

Hold the bowl onto the jig with one hand while you bring up the tailstock to hold the bowl in place, thus freeing both hands. I have a series of center points for my live center, so I swap the pointed one for one that is slightly concave (inset above). That avoids making a small hole in the bowl's bottom, **4**.

Using good-quality masking tape, tape the bowl onto the jig, **4**. Use plenty of tape and wrap it from side to side around the bowl and the centering jig. Before removing the tailstock, and with the lathe speed moderately slow, turn on the lathe to check the security of the bowl. You may want to leave the tailstock in place for the entire process, but I find that's not necessary, as long as I am careful not to get a catch.

Turn the bottom of the bowl and shape it to flow with its interior curve, **5**. Sand, and then remove the bowl from the lathe. I rarely have residue from the tape, but if you do, gently scrape it off with a chisel, then hand-sand.

Betty J. Scarpino lives, turns, and writes in Indianapolis. Visit her website at bettyscarpino.com.

3 Turn a shallow groove in the centering jig to fit the rim of the bowl. The groove locates the bowl, but not with a tight jam fit.

4 Advance the tailstock until the live center holds the bowl on the lathe. Tape the bowl to the disc. Use mild pressure from the live center and take light cuts.

5 Blend the body of the bowl so it flows smoothly into the bottom. With the bowl bottom turned and sanded, the bowl is ready to be removed from the lathe.

Domestic Hardwoods

Cherry

by Dave Schell

Dave's cherry tree, left, and typical cherry bark , above.

When I became interested in turning wood, I asked local woodturners, at craft and art shows, which wood was the best to start turning. "Cherry ... It's easy to work, plentiful, and cheap" was the most popular answer. They were right.

Cherry wood is abundant and one of the most common woods in the United States. Most hardwood dealers have inventories and the price is usually near the lower end of the range, at least here in central Pennsylvania.

Cherry is used frequently for fine furniture, flooring, cabinetry, toys, and turned items. It's usually straight-grained and can be finished to a high polish. The wood is easy to work and can be machined, carved, nailed, glued, and turned with stable results when dried. Most cherry from the same trunk is uniform in color. Cherry sometimes has pitch pockets, which can show up as black streaks that may interfere with a good finish.

Like any fruit wood, large cracks can form when drying. You will experience dimensional shrinkage when air drying. I have found that thicker pieces of cherry warp less, but thinner pieces easily warp. If you are turning wet bowls, leave them around 1" thick to avoid too much warping. When wet, you can turn a thin-walled cherry bowl and let it dry to an oval shape. They are eye-catchers to customers!

"Cherry" wood covers a wide variety of trees. Typical cherry bark is distinct with smooth patches and horizontal lines across the bark (these are called lenticels). Bark color varies from grey to brown, depending on the variety of cherry tree. While most people may think of cherry as the fruit variety, there are several ornamental trees in the cherry family that produce flowers but not fruit. I have turned several cherry varieties and found no major difference in the turning process.

My favorite type of cherry is black cherry. Black cherry has a distinct pleasant cherry smell when turning and the wood figure is prevalent in crotch pieces. The heartwood can be a darker red/brown and there can be prominent dark streaks through the wood. Black cherry bark is distinctly different from typical cherry bark and may look more like maple bark.

The color of cherry can vary. When initially cut, the wood can be white, cream, or light pink. When exposed to sunlight, the wood darkens into a range of reds and oranges. The darkening can continue for a long time, and items that sit in sunlight on an interior table can be darker than items made from the same tree that haven't been exposed to sunlight. When I purchase cherry for woodworking projects, I prefer to purchase from a lumber yard that stores wood outside, where the sunlight has been deepening the color.

Cherry bowls by Dave Schell, fork or crotch figure with burned edge at left, burl at right.

Cherry wood can be quite boring. Since it is very straight-grained, the final look can be too bland for some turners (yes, me). One of the ways I enhance cherry bowls is by creating a burnt edge along the rim. When final sanding, hold a piece of 320-grit sandpaper firmly against the rim and do not move it until you smell the wood heating up and you see smoke. Wear gloves, as your fingers will get very hot. If done properly (it takes practice), you will have a beautiful dark rim to contrast the plain, straight-grain of the cherry wood. I like to finish cherry with oil and paste wax.

Cherry is well known for burls. Burls are growths on a tree that may form for a variety of reasons including as a response to stress caused by disease, insects, or damage. Cherry burl is prized for its beauty.

I enjoy using cherry wood for salad bowls, chip/snack bowls, small platters, honey dippers and jewelry pendants. Because it is so common, people have seen it before and can relate to it. Many people have cherry kitchen cabinets, so items made from cherry fit nicely into a kitchen. Cherry burl items are wonderfully decorative and eye-catching.

Because cherry wood is mostly straight-grained, it is perfect for long, spindle-turned items. Bedposts, candlestick holders, rolling pins, and wands are just a few items you can turn that will look fantastic in cherry wood.

As with all woods you turn, you should be aware of any toxicity; check the AAW recommended website for wood toxicity (wood-database.com/sweet-cherry/).

Cherry wood is great to use when starting your turning adventure. Because it is a very common wood, the items may sell more easily than unfamiliar exotics. It is plentiful, easy to turn, and takes a great finish. Not only do I use cherry for turning, I use it for cutting boards and other woodworking projects. I enjoy it so much, that I bought a dying cherry tree from someone's yard! I drove past this tree for years and each year, it was dying a little more. One day, I got up the courage to knock on the door and offer to pay to remove the tree and have it delivered to my house. Two weeks later, my wife asked me why there was a tree in our yard. The rest is history to come.

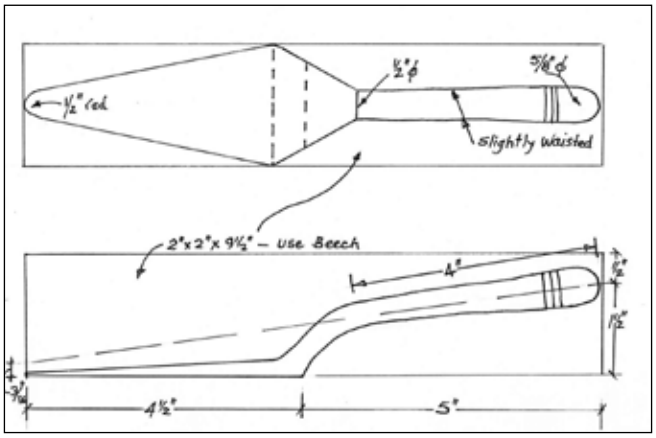
If I ever have someone ask me what type of wood they should try when starting to turn, I'll answer the same way it was answered for me. "Cherry ... It's easy to work, plentiful, and cheap."

Dave Schell lives in Mount Joy, PA and is a web designer by day and bowl turner by night and weekends. Email dave@imakewebpages.com or view his work online at instagram.com/imakebowls/

Off-Axis One-Piece Pie Server

by Michael Hamilton-Clark

1 The one-piece wooden pie server can be made by off-axis turning and bandsawing.



This interesting project came about in response to a request from my wife who asked if I could make her a pie server out of a single piece of wood. She has several servers with wooden handles on metal blades and she thought it would be nice to have an all-wood one. After a bit of thought I realized the handle could be made by off-axis turning, with the blade and haft (which connects blade and handle) formed by bandsawing plus some carving and sanding.

After looking at various pie servers, I thought that a blade width of 2" (5cm) would be sufficient, so some of my 2" x 2" stock could be used. The blade length and haft could be based on the existing servers, which indicated that, allowing for final removal of turning centers, a 10" (25cm) long blank should suffice. I made up a full-size drawing, **1**.

Layout

For the wood, I chose beech because it is used for a variety of kitchen items such as spoons, rolling pins and cutting boards, and I had some fair-faced 2x2 from a pepper mill project. I cut a 10" length.

On one end face, to be the blade tip, draw a line across 3/16" (5mm) above the lower edge — enough wood for a 1/2" (13mm) Steb center — and mark the middle along it. On the other end face, to be the handle end, draw a line across at 1/2" (12mm) down from the upper edge — adequate for the handle end — and mark the middle.

Next step is to bring these lines around the corner to make marks on the side face and then draw a sloping line to join them. This will be the axis for turning the handle. Now you can draw the profile of the server on the side of the block (photo **2**).

Form the haft

Mount the workpiece with the small drive center on the lower center point, what will become the tip of the server's blade. Set the tailstock live center on the upper center point, photo **2**.

Now you can form the handle using the spindle roughing gouge and spindle gouge, **3**. After sanding, I burned three grooves toward the end using a guitar string garotte, photo **4**; you might turn small beads instead. Remove the workpiece, saw off the nubbin on the end of the handle, and sand out the scar.

From now on, it's work on the bandsaw. First define the blade by sawing out the large block of waste, **5**. Next, shape the transition between the turned haft and the flat blade by cutting beneath and alongside the handle, photo **6**. Finally, saw the triangular form of the blade with its rounded tip, photo **7**, and sand the blade all around.

2 Mark turning center points on the ends, extend to front face, and join to show handle turning axis. Draw the overall side view on the block.

3 Shape the server handle using a spindle roughing gouge and regular spindle gouge. Be sure the toolrest clears the off-axis block.

Transition and finish

Use a round wood rasp to clean up the transition between blade and haft, working carefully so as not to raise the grain. Sand it smooth with 120 grit then 220 and finally 400 grit. I applied tung oil as a food-safe finish, three successive applications (**8**).

My wife was very pleased with the completed piece. The blade length and width were good for the average pie or cake, it felt nice to use, and the handle had an attractive slope to it. The oiled finish brought out the wood grain very well and is easy to wipe clean.

If I were to make more — and I may well do so for sale at a craft fair — I think I'd buy a curved carving chisel to make the shaping of the haft both easier and a bit better profiled. Some pyrography on the haft might also be a nice finishing touch.

4 Decorate the handle end with burned lines, grooves, or small turned beads.

8 Three applications of tung oil give an amber glow to the pale beech wood.

5 Bandsaw the waste from the server blade.

6 Saw carefully to shape the transition between blade and haft.

7 Saw the triangular shape of the blade with its rounded tip.

Basic Yo-Yo

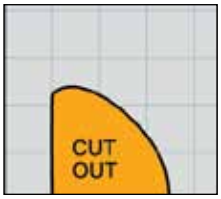
By Richard Dlugo

Balance: a good, wobble-free yo-yo needs to have identical sides.

The yo-yo is a fun toy for kids and adults who sometimes just need something simple to get over everyday stresses. For woodturners it's a small project that can help you learn tool control as well as challenge you to duplicate its two sides.

What does it take to create a yo-yo? Sounds simple enough to turn two sides and join them together. Then add a string and off you go. What's not so simple is creating two *very equal* sides. For a yo-yo to spin without wobbling the sides have to be the same size and shape, and they must be assembled parallel. If one side is thicker or bigger, the yo-yo will tilt off center and not spin properly.

In my earlier life as a professional musician I would spend a lot of time practicing before performing. Woodturners could take a lesson from musicians and spend some time practicing. That's especially true here, trying to create those identical sides. A sharp, half-inch spindle gouge will make the job easy (page **10**). As always, for safety be sure to wear your safety glasses, faceshield and dust mask.

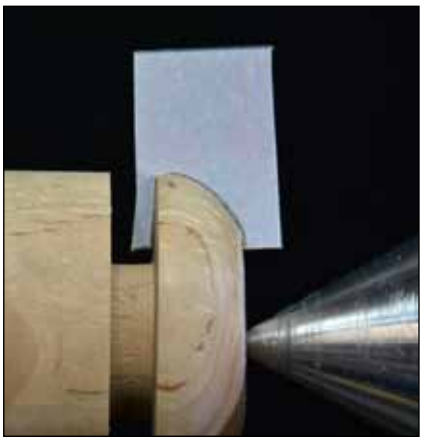


1 Practice template, cutout is 5/8" wide; 1/4" grid.

Practice

For practice, mount a scrap blank that's roughly 2-1/2" (6.4cm) in diameter and 6" to 8" (15-20cm) in length between centers. Next print out or trace the practice template in **1** and cut it out. Printing on index card stock adds some stiffness to the template vs. regular paper. You'll practice turning only the curved part and checking your work with the template as shown in **2.**

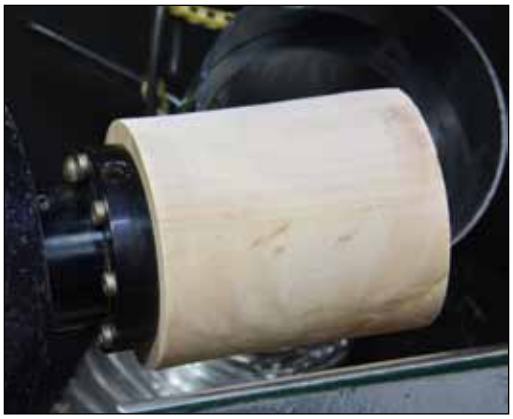
Tool presentation is the key to success with the spindle gouge. **3** shows the point of the gouge in the wood, which is wrong and surely will cause a catch or other



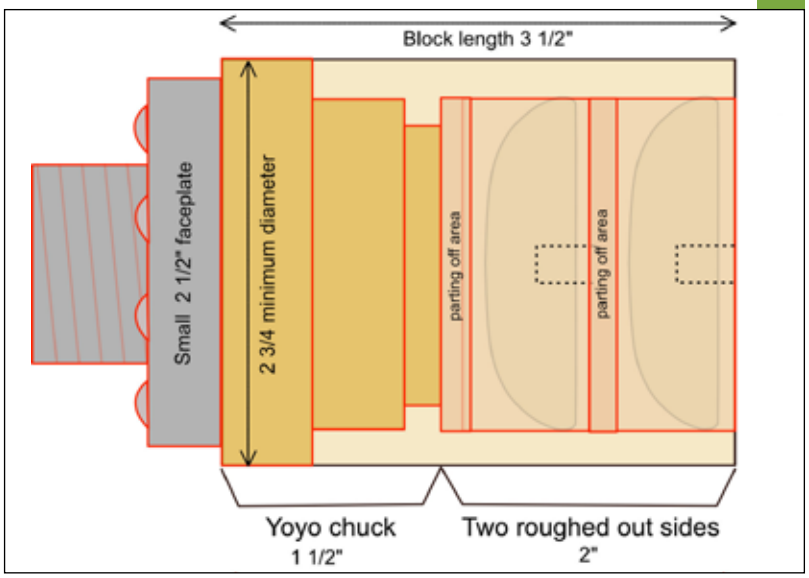
2 Cut a filecard template and practice turning a few yo's.

3 Wrong. Bevel not rubbing wood, heading for a catch.

4 Right. Gouge bevel glides on just-cut wood.



5 Screw the blank onto a faceplate, long grain parallel to the lathe axis, and turn a smooth cylinder.



6 The yo-yo sides are rough diameter 2-1/2" and finished diameter 2-1/4".

damage. You can see daylight between the tool point and bevel. In **4** observe how the bevel is resting on the wood so that with a slight lift of the handle it will start cutting nicely. Practice this method until you're comfortable with it.

Use a parting tool to create enough working room between the practice curves. Start the curve with the tool level at the top of the curve. Move to the right by pushing gently into the curve while also rotating the tool clockwise. Glide the bevel along the wood and you should see clean shavings peel off the edge.

Work on the curve until it matches the cutout of the template. Cut several practice curves and compare them to the template. Once you get the hang of it, go for the real thing.

Cylindrical blank

This project is made from a wood cylinder divided into two yo-yo sides and a yo-yo chuck for re-mounting the sides. The diagram in **6** shows how the blank is laid out. The grain of the blank is parallel to the lathe axis.

The mounting method illustrated in **5** uses a small 2-1/2" diameter faceplate to hold the wood firmly in place. If you have a 4-jaw scroll chuck you could use it by simply adding a tenon on the left end of the blank. However with the 4-jaw chuck, as you start cutting at the far right away from the chuck, bring up the tailstock to help support the work, at least for the first two sides.

I recommend starting your first yo-yo with a softer wood like cherry, poplar or soft maple, which is what's shown in these photos. The blank shown was 2-3/4" square (7cm) and 3-1/2" (9cm) long. The 2-3/4" dimension had enough clearance for screws on my 2-1/2" faceplate. If your faceplate is larger, be sure your blank safely fits with at least ½" (12mm) clearance between the screws and the edge of the wood. Cut the left end of the square blank flat so it mounts without wobbling. Then screw it onto the faceplate, mount it on your lathe and turn a clean cylinder.

Cut two sides

Start by cutting two sides from the blank, oriented with the flat side to the right as shown in the shadowed overlay in **6**. Size, flatten and bore each side, then part it off. You'll turn the curved faces by remounting each side on the yo-yo chuck that will be made from the blank stub remaining in the chuck.

Using a divider set to 2-1/4" (5.7cm) mark the finished diameter of the blank by touching ONLY the left point to a spinning workpiece. If you touch the right point to the spinning blank the divider can be grabbed out of your hand and tossed up at

7 A divider marks the finished diameter. Only the left (forward) point touches the wood.

8 The skew chisel peels the wood away. With the bevel rubbing, raise the handle to cut.

9 A carbide-tipped scraper also leaves a clean, smooth surface.

10 Part a shallow groove to limit the first face.

11 The carbide-tipped half-round scraper makes a smooth surface on endgrain.

12 Use the straight part of the tool to check the end for flatness.

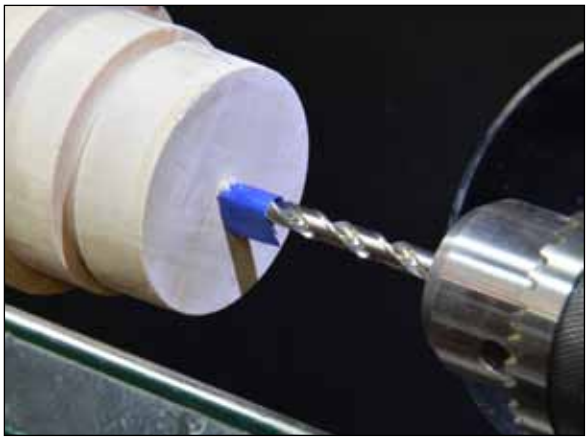
you, **7**. Align the right point that is NOT touching the blank with the shallow mark left by the point that is touching the wood.

Now you can use a peeling cut with a skew, **8**, or a scraping cut with a carbide tipped tool, **9**, to size the first side to the guideline you just created with the dividers. Use the parting tool to cut a shallow recess an inch from the right of the blank, **10**.

Work the right end of the blank until it is perfectly flat. You can use a scraper or a round carbide-tipped tool to get a nice smooth surface on the endgrain, **11**.

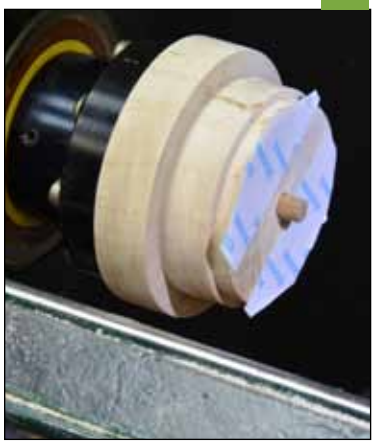
Stop the lathe and check flatness with a straight edge or a straight part of your tool (**12**). This surface will be the inside of the yo-yo so it should be smooth.

Mount a drill chuck in the tailstock to bore a 1/4" (6mm) hole for the axle, 1/2" (13mm) deep, **13,** next page). Drilling on the lathe ensures the axle hole is centered and square to the yo-yo. Sand the end smooth. Part off the blank at the shallow recess you formed earlier. Set it aside while you duplicate another blank in the same way for the other side of the yo-yo.



13 Tape flag indicates the depth of the hole. Boring on the lathe is very accurate.

14 Bore the chuck for a short dowel.



15 Double-stick tape will anchor the yo-yo side on the chuck.

Make the chuck

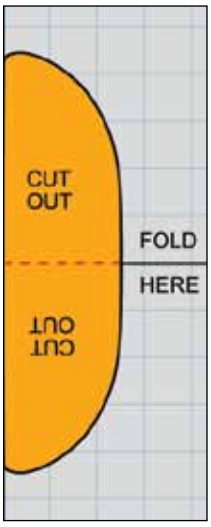
After both sides have been cut, use the wood remaining in the chuck to create a simple yo-yo chuck, **14**, for remounting, shaping and finishing those blanks. This chuck can be saved for additional yo-yos you'll make after being thrilled with your first one. Turn the yo-yo chuck with a 2-1/4" diameter section to help you size both sides equally. Add a small recess at the right side, giving you access to cut a small curve on the inside edge of the sides so the string will not catch. As with the yo-yo sides, be sure the chuck face is flat and smooth.

Bore a 1/4" (6mm) hole in the center of the yo-yo chuck, to accept the 1/4" (6mm) dowel on which you'll remount the sides. Apply a couple of lengths of double-sided tape to the chuck face and firmly press one of the sides into place, **15** and **16.**

16 Press the yo-yo side blank onto the chuck.

Sides template

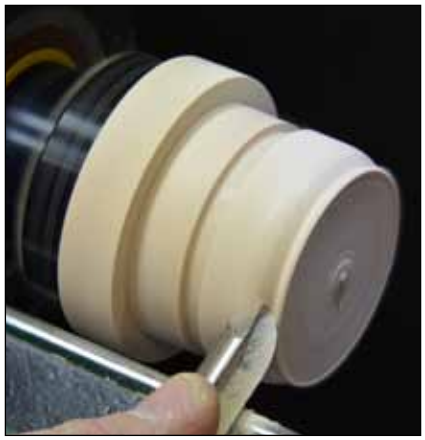
As a template was used in the practice session, now it's time to print or trace and cut out a full-sized template for the sides, **17**. Cut the rectangular template from some index card stock, fold it in half on the center, and cut out the shape of the blank,**18**. Folding it in half insures that both the top and bottom curve of the template will be equal. As you work the curves for the side, stop the lathe often and compare your cuts to the profile of the template. Keep working the curve until it matches the template.



17 Full-size template, 1/4" grid.

18 Print out the full-size template onto heavy paper or file card, fold it in half for symmetry, and cut it out.

19 Anchor the gouge on the tool rest, plant the bevel onto the wood, and raise the handle to start the cut. The flute is fully open at the top of the curve.



20 Round the workpiece by lifting and pressing toward center while gliding the bevel on the wood. Rotate the tool handle to close the flute during the cut.

21 The gouge flute approaches the 3 o'clock position as the cut continues toward center. Take fine cuts and pause often to check against the yo-yo template.

Shaping the sides

In Photos **19, 20** and **21** note how the gouge is rotated to the right as the curve develops. If you prefer you can also shape the sides using a scraper or carbide tipped tool as shown in **22**. Stop the lathe often to check progress against your template, **23**. Don't forget to cut and sand the inside corner to a small curve so the string won't catch.

After the side is finished sand it smooth following grits up to about 320. Success! Photo **24** shows the two matched sides.

Finishing

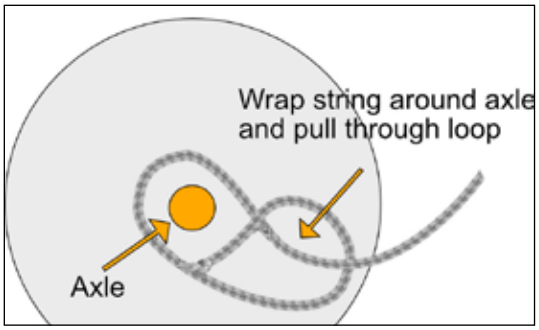
Now it's time for decoration or finish. You can use fresh tape to remount the finished sides on the yo-yo chuck for decorating.

There's a lot of options here, limited only by your creativity and what materials you might have available. You could leave it natural or color it with dye or markers. Metallic acrylic paints will make for a snazzy decoration. Using a sharp-pointed tool, you could cut some rings on the surface and color them in. Because this project uses end

22 A sharp scraper refines the surface.

23 The yo-yo side closely fits its template.

24 A good match!



25 For best results, find string that's made for yo-yos. You could also make your own string; a web search will turn up a number of helpful articles.

grain orientation you could use a chatter tool to create patterns and then color them with markers just as you may have seen done with spinning tops. I recommend using a low VOC spray lacquer for a nice finish.

Assemble and string

Assembly is rather intuitive as all you have to do is connect the sides with a short 1/4" dowel. Simple as it looks, be sure the sides of the yo-yo are parallel and the spacing between sides is just right. I recommend using as a spacer a looped piece of #12 copper wire with the insulation left on. The loop shape helps keep the yo-yo sides parallel as you press them together and the wire's thickness is perfect for the spacing.

Buy yo-yo string online from one of the woodturner supply companies that sells yo-yo kits, or maybe from a local hobby shop. It's pre-twisted and just the right size, making things a lot easier. The drawing at **26** shows one method of attaching the string by twisting open a loop at the end and drawing the rest of the string through it. There are other methods including simply untwisting the end of the string and looping it over the axle. If you search the web or go to my yo-yo webpage you'll see links to other methods of stringing and determining the proper length of the string.

Yo-yos make great gifts for kids and grandkids, though you might want to practice doing a decent throw before you give it away...just to see if it all works as planned. Have fun and if you did this right when you throw the yo-yo down, it should come right back up!

You can find printable files of the templates for this article and my August 2017 detailed article on my website, richarddlugo.com/yo-yos. There are also some links on stringing, throwing and other interesting yo-yo sites.

EXPLORE!
Click the blue box to find out more...

Coloring Wooden Eggs with Magic Markers

by Linda Ferber

Our family decided to put a twist to our Easter egg coloring traditions. The egg decoration was intended to be a collaboration of three generations including our two youngest, Bode and Miller. We all participated in the shop to create our special turned and decorated eggs.

First, I turned the eggs, following Walt Wager's instructions (see Explore!, next page). I recommend sanding the eggs through all the grits to at least 400 for best results with the coloring process.

The turned eggs would be colored on the lathe by the kids with the design overlaid in Zentangle style patterns. I have several Zentangle books, but you can easily get inspiration by Googling. You will quickly learn that doodle-based Zentangle is breaking down shapes. You can easily learn this process without being able to draw, since doodles are just idle scribbles.

Everyone would have a part in selecting colors for their portion, and the resulting multilayer overlay would add depth and dimensions to the finished eggs. Supplies for this project included brush-style pens suitable for use while the egg is on the lathe, and marker-style pens for the top design. This project

Bowl of eggs decorated by Linda's grandchildren, using markers both on and off the lathe.

Kids love to color eggs with the lathe turning slowly. Linda has used a variety of archival pigmented inks.

Zentangles.

combined several styles of pens and markers with water-based, pigmented ink.

We used a combination of the following pens: Tombow dual Brush Pen, which features a firm yet flexible brush tip, Sharpie fine tip pens with archival ink, rollerball with waterproof ink for smoothness and consistent color, Faber Casteel Pitt artist pens that are waterproof and acid-free, Copic markers with alcohol-based permanent ink, and Micron markers with permanent pigment ink.

Each pen was selected for its unique features. The Tombow was used on the lathe, its paint brush tip essential for getting even color coverage without damaging the tips. Each egg also received several coats of Krylon fixative spray, to prevent color bleeding.
In preparation for the big day, I set up my small Bonnie Klein lathe on a low table, a perfect height for the kids without having to use risers. The kids were ready for their first lathe experience, well equipped with instructions, apron, and faceshield. The coloring went well though the youngest was so anxious he could hardly wait for his turn. And with only a few minutes of experience, Bode quickly became the teacher for his younger brother.

After the coloring excitement, we went back to the big lathe and turned the tenons from the eggs, lightly sanded the ends, and selected patterns. Don't stress over color selections, this is all about fun and creating an intense blast of color and pattern. We selected a leaf, a spider web and a half-circle patterns.

Each pen or marker works differently, depending on the color and hardness of the wood, so experimenting is helpful. It's important to have a well-prepared surface for good color flow. Layering results in intense color and interest. The harder tight-grained woods do accept color better, but grain movement or chatoyance also creates a wonderful effect.

Use permanent-ink pens and brushes to draw Zentangle-style designs on the kid-colored eggs. A light spray with varnish or laquer keeps the colors from running together.

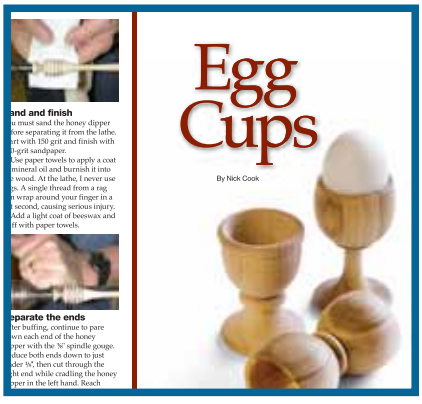
The final finish is up to you; I start with Krylon fixative spray and then apply Renaissance wax, but Deft spray would work as well.

Share your turning passion. Create memories with your family with a fun day in the shop coloring eggs that will be treasured. In the spirit of a true collaboration, each person contributes and has their voice, and don't be surprised when you find yourself the student.

Linda Ferber is AAW's program director and the founding editor of Woodturning FUNdamentals.

EXPLORE!

Click the blue boxes to find out more...




1 Glasses


2 Goggles


3 Faceshield


4 Splash shield


5 Shield & respirator

Protect Yourself with Personal Protection Equipment

by Lauren Zenreich

Unlike shop protection equipment, like a dust collector, "personal protection equipment" means things you can do and wear in the shop to protect yourself from harm, or at least minimize the risks.

Take off any jewelry like rings, bracelets, necklaces and earrings, which can dangle and get caught in the machinery. Wear closed-toed shoes to protect your feet in case anything drops on them. If your hair is long, tie it back.

Wear a smock or turning jacket to protect your clothing from shavings and also to hold your mobile phone, which I also consider to be personal protection equipment. I zip the smock closed and turn up the collar. Shavings go everywhere, they even make their way into my closed pockets. I don't want long sleeves that can get caught. If I wear something with long sleeves, I roll them up or snug them at the wrist.

I especially want to protect my vision, breathing and hearing. I hope the samples that follow, demonstrated by my friend Sydney, will help you choose what is right for you.

Impact

Impact is when you get hit by a flying object. It can be anything from sawdust and shavings, to something pen-blank size, which is what faceshields are for, to heavy impact, something baseball-size or bigger, which is the most dangerous.

But even small impacts can be disastrous; it doesn't take much to damage an eye. To minimize the possibility of a heavy impact, use common sense and look closely at the wood and the lathe parts before, beginning, and during a project. If something seems sketchy, trust your instincts: stop or slow down.

Safety glasses (**1**) are worn like glasses to protect your eyes. Plain glasses are not good enough protection. They should fit snugly and have side shields and can be worn over your regular glasses. A similar approach is to wear safety goggles (**2**). Either should be worn under a faceshield.

A faceshield (**3**) should protect your face as well as the crown of your head. The headband should be adjustable and the visor replaceable. This one has a full face frame, so it's sturdy. The splash shield (**4**) is designed only to protect against liquids. It doesn't offer much protection in a turning environment.

A faceshield can be worn over eye and breathing protection (**5**). Look for a faceshield that meets the ANSI Z87.1 Standard for Safety.

6 Nuisance mask

7 Dust mask

8 ½-mask respirator

9 Snorkel

10 Snorkel & faceshield

Dust protection

As we turn and sharpen, there is dust and all sorts of things floating in the air that we definitely don't want to inhale. The most dangerous particles are the ones we can't even see. They can lead to allergies, lung disease, and even cancer.

Nuisance dust masks (**6**) offer virtually no lung protection. A better option is a face mask that is rated for particle filtration (**7**). Some dust masks can filter out volatile or organic compounds such as oil-based sprays. They come in multiple sizes and should fit snugly on the face and can be molded at the top of the nose.

Photo **8** is a ½-mask respirator. It uses cartridges marked with a NIOSH rating that determines their use and effectiveness. Note that mask respirators depend on a good seal against the face, and may not be well suited for turners with beards.

The Resp-O-Rator (**9**) is a snorkel-like apparatus with a HEPA filter on the end of each tube. You hold the breathing part in your mouth in front of your teeth. It is light weight, comes apart to put it on, and the breathing part is washable and replaceable. It comes with an attached nose plug to help some people breathe through their mouth. There are no batteries to run down, it works well with a beard, and it fits well under a faceshield (**10**).

My personal favorite is a full-face respirator helmet (**11**) This is called a Powered Air Purifying Respirator (or PAPR for short). A fan passes air through a filter, over my head, and out around the loose-fitting face seal. The positive air pressure keeps the dust out (**12**).

Some respirator helmets are self-contained, and some have a hose that goes to a blower/filter pack worn around the waist, or tethered to a larger HEPA filter. The battery may be within or on top of the helmet, or worn at the waist (**13, 14**).

A full-face respirator helmet affords protection by combining the functionality of a helmet, faceshield, and respirator all in one. The helmet is comfortable and works well with beards. The visor is replaceable and can be washed, but don't try wiping the dirt away with a dry cloth lest it scratch and become unusable. Some helmets have flip-up visors.

11-14 Powered Air Purifying Respirators, aka respirator helmets.

11

12

13

14

15 Ear muffs, ear plugs.

16 Noise-cancelling earbuds.

Hearing

It's important to listen to your turning.... but things can get very loud in the shop, especially when a dust collector is running. I can use noise isolators such as ear plugs or ear muffs, but that also eliminates most sounds and I may not be able to hear my turning.

Ear muffs can be part of the respirator helmet, or worn separately.

My favorite hearing protection are noise-cancelling earbud headphones. Because they have active noise cancellation, I can still hear what I'm turning, but electronics dramatically reduce the sound of our dust collector, which normally sounds like a jet engine.

Another important safety consideration is that I can attach my cell phone to these headphones. I can listen to music at a low volume or pause my turning to take a phone call. But most importantly, if I find myself suddenly on the ground, I can push a button and ask my phone to call 911.

In our shop, we don't turn on the lathe until the dust collector is on and all of our protective gear is in place. Although some of this gear can be expensive, I consider it a good investment in our health and safety.

I hope I've given you something to think about. Check out more of the AAW instructional videos. Thanks for joining me. Now go turn safely and have fun.

Lauren Zenreich is an AAW member and a member of WIT, Women in Turning, who has been turning for seven years. She loves turning smaller objects to use as canvases for embellishments. This article is adapted from her AAW video, click the image below to view it.

EXPLORE!

Click the blue box for more about safety...


Woodturning
SAFELY
It's safe and fun, until suddenly it isn't
John Kelsey

EXPLORE!

Click the blue panel to see Lauren's video...