WOODTURNING FUNDAMENTALS

American Association of Woodturners
February 2019 • Vol 8 Issue 1

Perfect Sphere

...it's all about grain direction

7 skill-building projects

Treasure box
Magic wand
Napkin ring
Egg cup

Lathe & grinder setup
Which finish?
Endgrain hollowing
Maple wood

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

WOODTURNING FUNdamentals

February 2019 Vol. 8 No. 1

Cover: Bill Wells nibbles the ghostly not-sphere off the true sphere. Page 28.

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2x4 softwood bowls challenge turning club

tiny.cc/2x4bowl

EXPLORE!
Click the blue box or scan the QR code to follow the link .... but it only works when you are also logged into the AAW website, woodturner.org

AAW member and FUNdamentals reader Carl Ford is program director for the Nutmeg Woodturners League, Brookfield, CT. Carl writes:

The Nutmeg 2×4 Challenge was based on your recent article on turning bowls out of softwood 2x4s (Explore! box, top right). We invited members to turn bowls and bring them to our January meeting. Everyone who brought in a bowl got a raffle ticket for a $50 gift certificate.

Our club has done this once a year (or so) for a long time. It works well! We get lots of participation and it is fun to see what people create.

New people often don't have access to hardwood. Thus in the past our club has passed out wood to get the challenge started. But not this time — 2x4s are easy to get so everyone could supply their own.

People were encouraged to explore different rim options and bowl shapes, and to bring in multiple bowls. Each bowl got a ticket for the raffle, with a six-ticket limit per person.

We know our guys, we had to tell them, NO glue, except maybe a glue block for mounting on the lathe. Bowls must fit within a 4" x 4" x 2" (10 x 10 x 5cm) box, they could not glue up 2x4s into a bigger blank. But paint, stain, burning, and other surface enhancements were allowed.

We had really good club participation. Lots of people brought in bowls, often two or more. Some people brought in hollow forms and plates. I was blown away by the bright colors.

Nutmeg turning club members discuss their 2x4 challenge bowls, based on the softwood bowl in Woodturning FUNdamentals v7#3.

Club member Carl Ford, who posed the challenge, blogs about his own challenging adventure: carlford.info/blog/2018/12/nutmeg-2x4-challenge.

Lathe setup and adjustment

by Kurt Hertzog

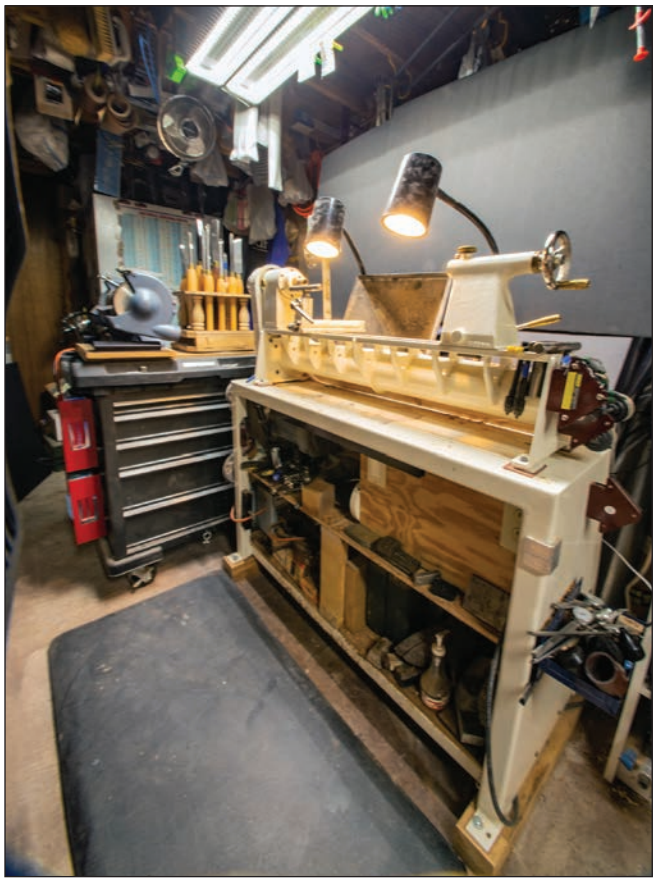
Your lathe is the heart of the turning shop so you'll want to set it up carefully. A new lathe may require assembly and removing preservative greases; an old one will need to be dusted off, cleaned and lubricated, and checked for missing parts. If you don't have the owner's manual, look for it online.

Floor plan

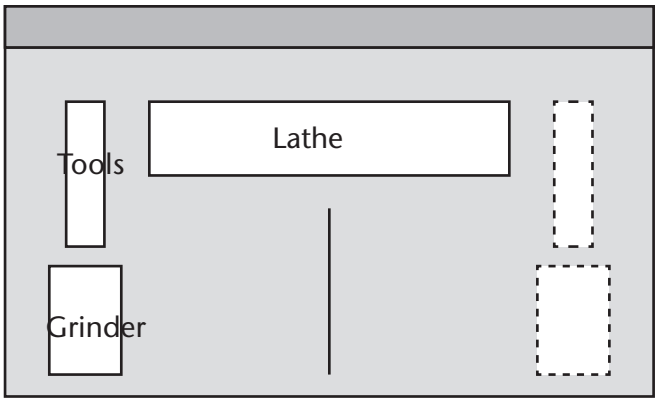
Placing your tool storage and grinder adjacent to the lathe will make sharpening and tool changes easy and efficient.

I prefer having the lathe parallel to a wall. The wall supports a contrasting backboard for visibility, and helps control chips for easy cleanup. For the right-handed, tool rack and grinder work best on the left side; lefties the opposite.

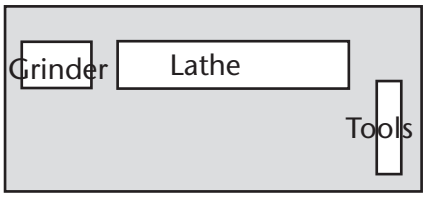
Some turners prefer the grinder adjacent to the headstock of the lathe, *below right*, with tools to the right or sometimes behind the turner. It's less convenient, and not safe when the lathe is running, to reach over the lathe for tools, *bottom right*.

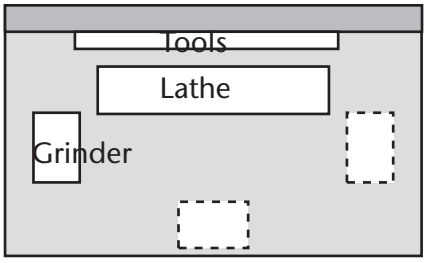


A good setup — For safe, efficient, and fun turning you need a height-adjusted lathe, anti-fatigue mat, grinder adjacent, convenient tool storage, dust extraction, and good light.



Basic setup — Lathe parallel to wall, tools and grinder nearby to right or left.





Not so good — It's not convenient nor safe to reach over the lathe for tools.

Light

Daylight — Natural lighting is ideal when it is available. For evenings and dull days, supplementary overhead and focused task lighting can assist.

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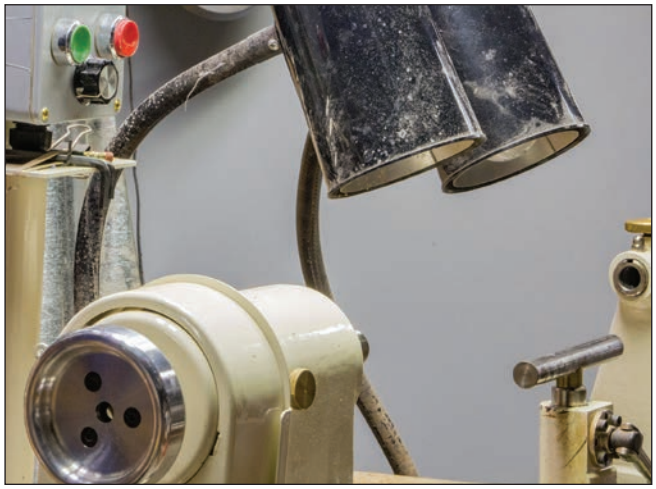
LED light — Overhead LED fixtures are economical, fast on, and cool running. In this setup, the light support mounts to the lathe stand and also supports a tool bar and a roll of background paper for visibility.



Task light — Get good task lighting for your work zone. Gooseneck lamps work well, whether clip-on, bolted on, or magnetic base.

Backing board

Contrast — Being able to see well and discern shape subtleties requires good lighting and contrast. A plywood backing board spray-painted grey could also help manage wood chips.

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Spindle height

Right height — The turner can stand upright and present the tool comfortably. This helps with back fatigue.

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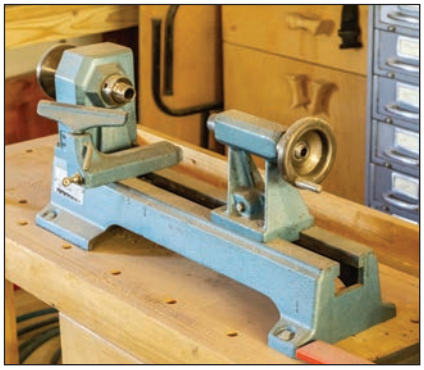
Elbow height — Start with the lathe spindle at elbow height. Adjust to suit your own body and style. See also The Seated Turner, next page.

Change height — Blocks raise the lathe. Build a low platform to raise the turner. Be certain to include the mat thickness in your calculation.

Adjustable stand — Many manufacturers offer an adjustable stand for their lathes. Also available are generic adjustable stands capable of fitting virtually any mini-lathe.



Bench — Small lathes may be just right when bolted to a workbench; adjust upward with blocks, or "downward" by standing on a mat or low platform. As little as 1/4" (6mm) can make a discernable difference.

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Wood stand — Sturdy shop-made stand can be tailored to the turner's height and preferences. This one was built from select 2x4s planed smooth and square, and joined butcher-block style with glue and screws.

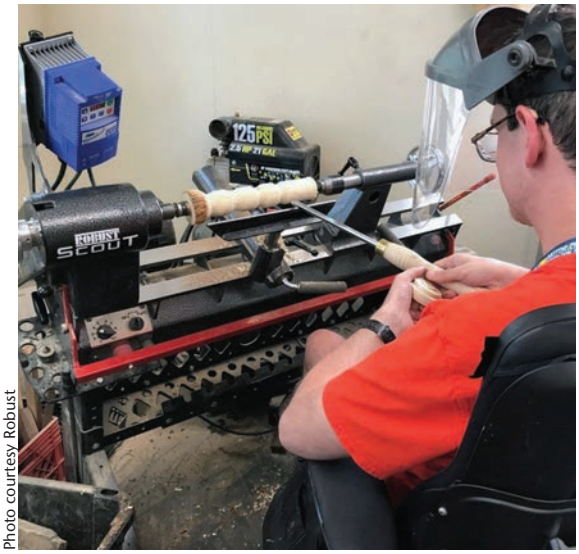


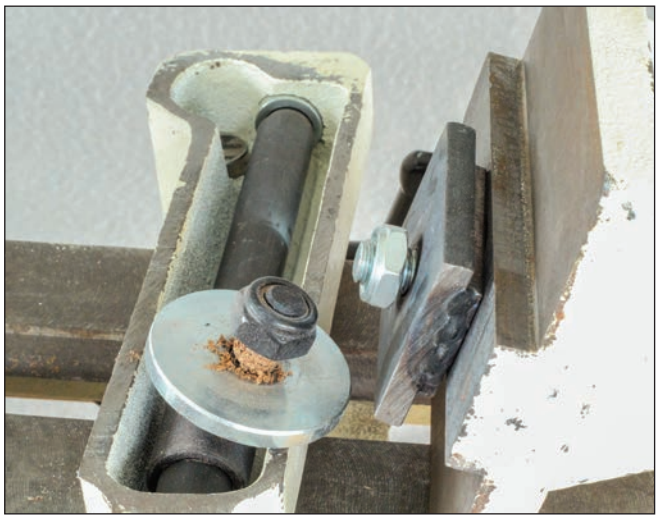
Photo courtesy Robust

The Seated Turner

A good starting height is lathe axis level with the turner's elbow when comfortably seated in the work chair. It helps to have adjustable height, plenty of between-center distance for the legs, and the ability to tilt the lathe about 15° forward to compensate for the standing turner's overhang.

Many seated turners find short tool handles to be versatile and comfortable.

Banjo, tailstock



Cam, nut, washer — The locking nut and washer on the bottom of the banjo and tailstock control the tightness and position of their lockup handles. You want an easy slide and secure lock, with the handle ending where it's convenient and not in your way. I prefer the levers to lock pointing downward at 45° to the bed.

Lathe bed

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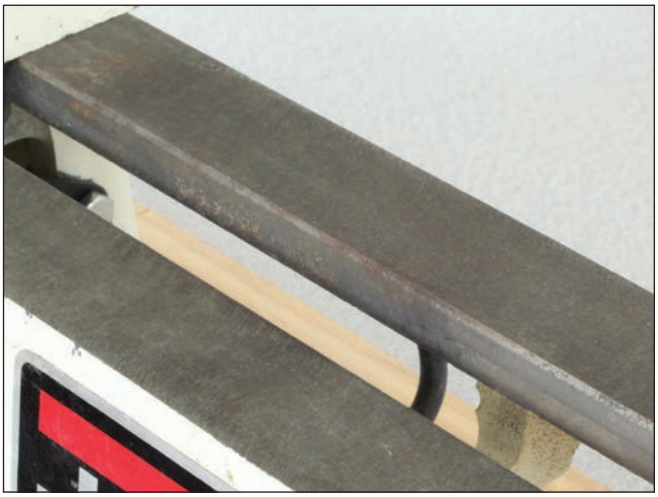
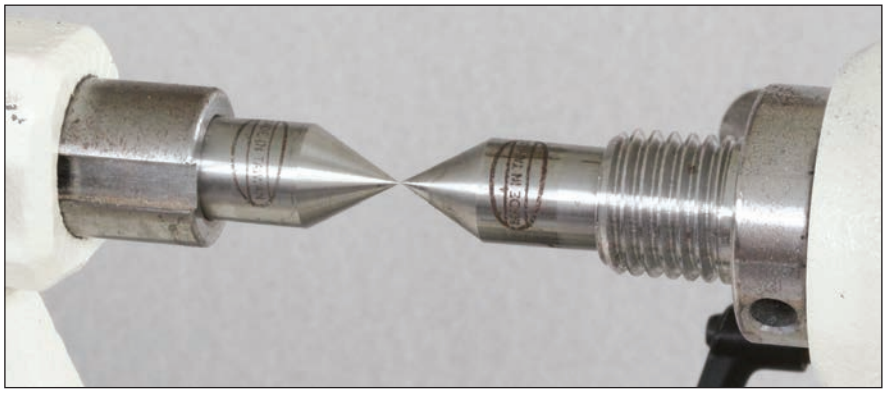
Wax it — Waxing the ways prevents rust and helps the banjo and toolrest slide smoothly. Your lathe may also benefit from filing any dangerously sharp corners, edges, and burrs.

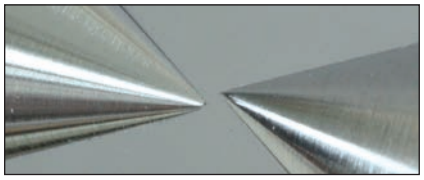


Don't wax it — Wax can induce tailstock slippage under pressure. Some turners prefer a little tarnish for resistance.

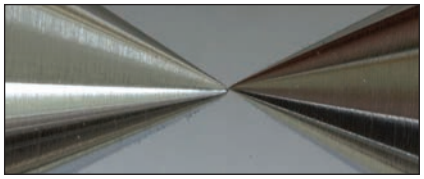
Alignment



Alignment — Mount a pair of sharp-pointed centers and slide them together. Lock the tailstock, and inspect alignment from all angles. Because the tailstock moves, there's always a bit of play.



Not close enough.

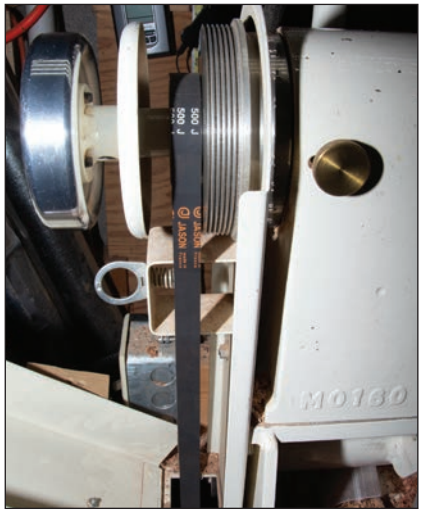


You probably can't get it perfect but you can get close.

Headstock — Sometimes it's enough to just loosen the headstock bolts, shift within the hole tolerances, and re-tighten. Note the slop in how this headstock fits the lathe bed.

Shims — For height or tilt misalignment, add shims made of tape, foil, or paper. It's also possible to file the bolt holes a bit larger, and to file the machined surfaces on the bottom of the headstock.

Drive belt(s)

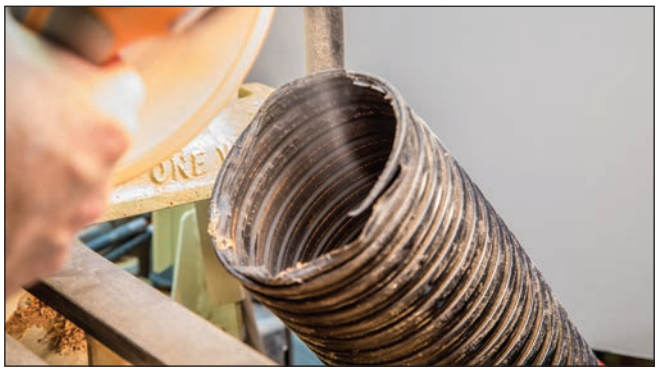


Pulleys — Inspect belts and pulleys for alignment, side chafing, and looseness. You may need to shift and tighten the pulleys on their shafts.

Tension — Pinch belts together in the middle to assess tension. A small amount of slack helps tracking, reduces stretching fatigue, and slips in a hard stall. The most common error is too tight.

Dust extraction

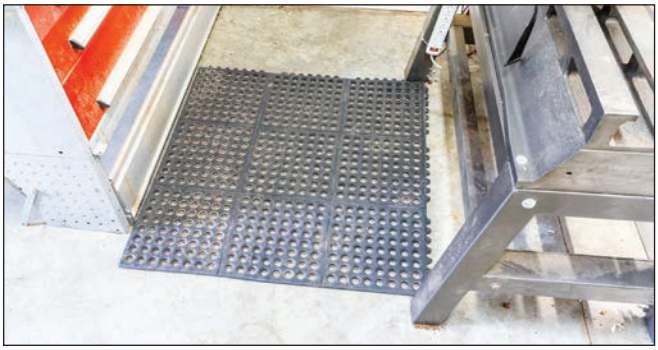
Dust hood — Breathing dust particles too small to see poses a serious long-term threat to your health. It's best to extract the dust and chips right behind the work, drawing air from the front.



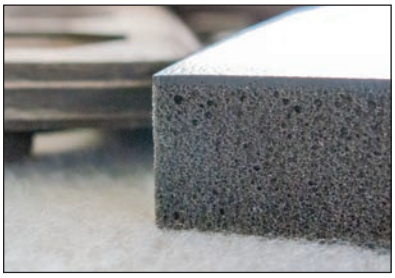
Not fancy — The bare vacuum hose extracts a visible plume of sanding dust. There are many different designs for dust hoods. You won't intercept it all, so also wear appropriate personal protection, a dust mask or filtered-air faceshield.

Noisy machine — Locating the dust collector outside the workshop reduces noise and exhausts the unfiltered small particles away from the turner.

Floor mats



Floor mats — Standing at the lathe tires you out. Anti-fatigue mat intended for food service has flexible spacing dimples and large holes for easy cleanup. Mats designed for shipping fragile high-end electronic assemblies are expensive, but very comfortable, below.



Comfy — Tech industry closed-cell foam mat has protective hard shell.

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Grinder setup and adjustment

by Kurt Hertzog

The grinder is essential for sharpening steel tools, so having it nearby and readily accessible will encourage you to touch up quickly and often. Regardless of size, speed, and manufacturer, setup fundamentals will help nearly everyone be more efficient.

Your grinder will be easy and safe to use if it is securely fastened to a bench or stand. The grinder spindle should be about elbow height, same as the lathe for both standing and seated turners. To maintain portability, mount to a baseplate that can be clamped in each location.

Most woodturners find that sturdy, easily-adjusted toolrests and aftermarket sharpening systems add value. Aftermarket fixtures should be mounted to the same baseplate as the grinder itself, so that they can travel with it.

CBN vs AlO2

CBN stands for cubic-boron-nitride, extremely hard granules bonded onto a steel wheel body.

AlO2 stands for aluminum oxide wheels, typically grey but can be colored white, pink, etc., depending on composition.

CBN advantages:
— cuts on the face and on some, the side too;
— wheel doesn't change shape or size with use;
— expensive but can last a lifetime.

AlO2 advantages:
— traditional and widely available;
— clogs, can be dished, wears, and needs dressing;
— inexpensive but does wear down in size.

Mounting

Bench – Mounting the grinder on a bench secures it from sliding and provides storage for accessory fittings.

Baseboard – Rubber feet stabilize the baseboard under this transportable grinder.

Shopmade stand – The right height depends on the turner's height. You can make a sturdy stand from 2x4s glued and screwed together.

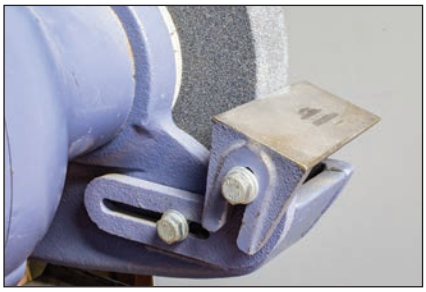
Whichever you choose, most turners favor 8" dia. wheels, rather than 6" or 7", running 1725 or 3450 rpm on a 1HP motor. Good starting grits are 80 for reshaping tools, and 180 or 240 for touching up an edge.

Grinder toolrests

Toolrests — The toolrest needs to be positioned correctly and rigidly to provide a stable and repeatable platform. It should be large enough to support long turning tools yet small enough for short tools, too.

Adjustable — Good setup has grindstones mounted at proper height, interchangeable toolrests that lock in place, and safety covers.

Flimsy — Cheapo grinders have small, flimsy toolrests and wheel shields.



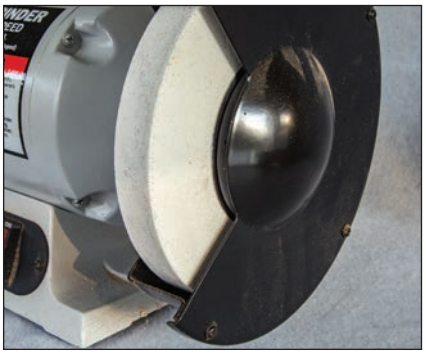
Solid — Cast iron rest has a large platform and bolts securely in place.

Versatile — Aftermarket accessory packages offer specialized toolrests and tool-holding jigs.

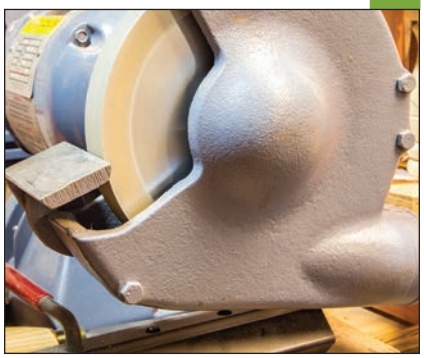
Bolt lock — High-end setup has CBN wheels with robust bolt-locking guards, adjustable tool platforms, and bright task light.

End shields

Grinder wheel-mounting nuts are reverse-threaded to help prevent loosening under load, but it happens. Composite wheels sometimes break up. End shields protect you from these risks, keep them in place.



Safety — End shields, even flimsy ones, protect against wheels coming off or breaking up.



Sturdy — A properly installed end shield still allows plenty of access to the side of this CBN wheel.

Personal protective equipment

Do not count on the small plastic shields provided with the grinder to protect your eyes. You need to wear safety glasses with side shields, goggles, or a face mask. There is no such thing as too much eye protection.

Grinders also throw off noxious dust containing steel, glass, and abrasive particles. Put on a good filtering mask as a matter of course and at a minimum. Many turners invest in an industrial-quality powered filter helmet with HEPA filter.

You can capture some of the metal debris with high-strength magnets stuck to the grinder's iron, as close as possible below the action.

Protection — While somewhat cumbersome and pricey, a self-contained, powered filter helmet using a HEPA filter provides excellent breathing protection.

Task lighting

If your grinder is permanently mounted to a location in the shop, you can install effective task lighting. If you have a mobile grinding setup that moves, try a magnetic base gooseneck trouble light. You can position it as needed. Some turners prefer clip-on or magnetically attached battery powered LED lights. Err on the side of too much light rather than too little.

Good light — Plenty of task lighting at the grinding station is key. Some grinders have a flexible lamp wired to the grinder switch.

Equalize — Intentionally moving the sharpening position on the face of the wheel can equalize wear and minimize gulleys.

Wheel tools — Grinding wheels can be flattened and cleaned with a devil stick, a star wheel, or a diamond dresser.

Keep your grinder sharp

Composite abrasive wheels wear unevenly and pick up debris. They need regular dressing to restore their flat, clean surface. CBN wheels don't wear and no dressing is required.

A diamond dressing stick or star-wheel dresser abrades the surface of the wheel, breaking up the smooth and plugged surface to expose new sharp grits.

The devil stick and star wheel dresser work but are from the past and can be aggressive. A light touch using the diamond dresser will dress the wheel.

Repeated grinding can dish out a gully, but dressing also flattens the wheel surface. To avoid creating gullies in your wheel, try to equalize wear by using a slightly different position each time you sharpen.

Dressing — Clean the wheel by lightly traversing the diamond dresser back and forth across its face.

Dressed — A properly dressed wheel will be flat across the face and dull in appearance, without embedded metal particles.

Kurt Hertzog, a long-time AAW member and past board president, lives in Rochester NY. A prolific woodturning author, he likes to turn ornaments and pens. For more, see kurthertzog.com.

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Why finish? Which finish?

Bewildering array of finishing products

by Mark F. Palma

I grew up in a family that owned a hardware store. Every day after school I reported for work. The housewares aisle had row after row of furniture polish. It was a big selling item and every week it seemed we restocked the shelves. On Sundays, when the store was closed, we went in the car to visit someone. The smell of furniture polish was always prevalent in those well-kept homes.

So what does this have to do with wood finishing? Well, I think some woodturners put a finish on turned items out of a sense of obligation, rather than a sense of purpose. Not all turned work needs a finish. Wooden bowls have been around a long time, with fragments dating back to at least 700 BC. Some wooden ware may have been finished by the Chinese (tung oil) and Egyptians (pine tree sap) around 2500 BC, but most finishes didn't become widely available until the 1600s. Shellac and varnish started being used in the 1700s. So for a long time wood was either left unfinished or some home brew was used. The point is, tight-grained wood can be used for food without finishing, and has been unfinished for a lot longer than today's finishes have been available.

When I teach wood finishing classes I always say we finish to "protect, enhance and beautify our work." Then I take out a can of Lemon Pledge! A good finish should protect the work from dirt, skin oils, contaminants, and environmental risks. It should enhance the design, shape, wood specie, and use of the piece. It should be something we can apply in a home shop without specialized equipment or risk to our health. Lastly, it should be user friendly and make life with the piece a pleasure, not a pain.

There is no one perfect finish for everything. Every finish is a compromise of this list of wants. However, we can get most of what we want with some experimentation. So let's look at a few ideas to help you find an acceptable finish for your tastes and style of work.

A fresh way to think about finish

I start the decision tree on finish by asking questions. My first question is always, what do I want the work to look like aesthetically, and how should it be enjoyed by the recipient? Is it to be used, or to sit on a shelf? This question drives the entire decision-making process.

Next I ask, can the finish change the natural color of the wood? If yes, then many finishes are available to be considered. If not, then your finish options are limited to certain water-based varnishes, acrylics, and wax.

If the color of the wood can be altered, usually made darker, then you can look at the diameter of the work. If it is smaller than 2" (5cm) in diameter, a lathe-applied friction finish might be best. I do not suggest friction finishes for larger work. That's not an absolute limitation, but a practical one, because at larger sizes friction polishes are hard to work into the wood well and you may get uneven results.

So, your work is over 2" and you are OK with the piece changing color, now what? My next question is, do I want the finish to sit on top of the work or feel like it is embedded into the work? Surface finishes I reserve for work that will not be put to use in the home and are strictly for aesthetic enjoyment. Even if it is destined for a shelf or collection it may or may not get a surface finish, but if it's to be used, it will get a penetrating finish from me.

Friction polishes

Polyurethane bias

In the 1960s alkyd oil varnish was what everyone used, then in the 1970s people switched to polyurethane varnish like it was the greatest finish in the world. It was tough, had a decent shelf life, didn't smell like turpentine, and brushed out well. It became everyone's go-to finish and soon you couldn't get oil varnish anywhere.

Many of us did something else with wood before we started turning. Whether it was home improvement projects, crafts, or furniture, we probably used polyurethane as the finish. So when we started turning, we turned to polyurethane as the natural choice. I am

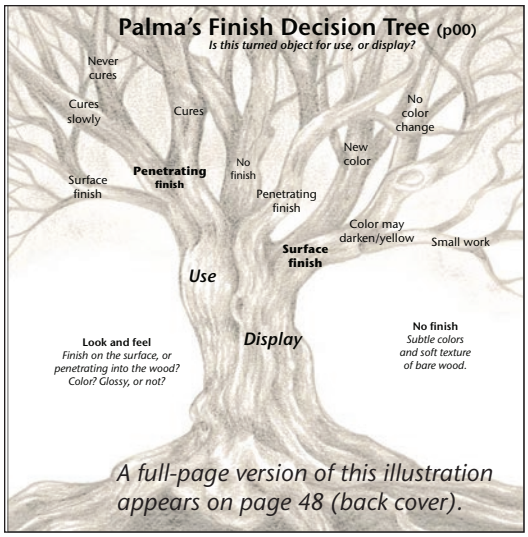
not saying that polyurethane is a bad finish. Rather, I am asking you to consider if it is the best finish for your work.

Polyurethane for turned items certainly is a tough surface finish with a range of gloss options. It can be found in any hardware store or big-box home center, and it is inexpensive.

However, also consider a few negatives to polyurethane. First, its long open time allows it to pick up airborne dust and to sag if applied too thickly. It feels like plastic, which it is. As a surface finish it is susceptible to damage if moisture penetrates the work. Polyurethane failures usually result in the finish coming off in scales, with the underlying wood either water spotted or exhibiting discoloration and decay. Finally, it isn't something the recipient can easily repair.

So if you make work to sit on a shelf and not be used, polyurethane is fine. If you want people to use your turned work, or enjoy its feel, polyurethane might not be in first place.

-- Mark Palma



Palma's Finish Decision Tree

Questions to ask

Destiny: Is the object for use, or display? Does it really need any finish?

Color: May it change, should it change, or must it stay the same?

Look and feel: Should the finish be felt on the wood surface, or should the surface feel like wood? Glossy, satin, in between?

For Use

Penetrating finish that cures completely
- *Oils, oil blends*
- Easy to apply
- Stable, durable, repairable
- Color may darken/yellow
- Feels like wood
- Safe for food

Penetrating finish that cures very slowly
- *Pure tung, raw linseed oil*
- Easy to apply
- Not stable, durable when cured
- Easy to repair
- Color may darken/yellow
- May feel gummy
- Not safe for food until fully cured

Penetrating finish that never cures
- *Mineral oil, walnut oil*
- Color may darken/yellow
- Easy to apply
- Fragile, may need frequent renewal
- Some are edible
- Difficult to remove/replace

For Display

Wood color may darken
Penetrating finish
Surface finish
- *Varnish, shellac, lacquer, wax*
- Stable, durable
- Many degrees of gloss
- Some are easy to apply, some not so much
- Not easily repairable
- May feel like plastic
- Safe for food when fully cured

No Color Change
Surface finish
- *Water-base polyurethane, acrylics, wax*
- Limited choice

New Color
- *Paint, stain, dye*
- Many choices both surface and penetrating
- May be combined with clear top-coats

Small work (<2" dia.)

Friction finish on lathe
- *Shellac, wax*
- Quick to apply
- Not durable
- Not easily repairable
- Uneven results on larger work

No finish?!

Sometimes no finish could possibly improve upon the subtle colors and soft texture of bare wood.

Surface Finishes

Surface finishes sit on top of the work. The vehicle or solvents may have some minor penetration, but that is really a side effect as opposed to the purpose of the finish. The goal of a surface finish is to form a continuous barrier between the environment and the object. Some can be applied on a slow-turning lathe, but most are applied off the lathe. They may be applied by aerosol, brush, or rag. Some common surface finishes include:

- Shellac
- Lacquer
- Polyurethane
- Wiping varnish
- Acrylics
- Water-based finishes
- Hybrids such as oil-modified water-based urethane
- Cyanoacrylate (CA)
- Wax

Surface finishes can block dust, skin oils, ultraviolet light rays (UV), and all types of airborne contaminants away from the work. Surface finishes also come in many levels of gloss, so right out of the container you can obtain the gloss you desire if you follow the manufacturer's instructions, generally stirring cans and shaking aerosols. All finishes except gloss include flattening agents designed to dull the finish. These flattening agents are usually heavier than the finish itself, so they tend to settle to the bottom of the container.

Most surface finishes are designed to be built up in multiple, thin coats. So read the manufacturer's instructions carefully. Some finishes recommend a minimum cure time between coats. Some require the opposite and want another coat within a certain time period, or require scuff sanding to roughen the surface if too much time has passed.

All surface finishes cure from the outside in. So the finish will seem dry before it has fully cured. There is a difference. Dry means that the surface has formed a skin and airborne surface contaminates will no longer stick; cured means all the vehicle has evaporated from the work.

Surface finishes

The longer a surface finish takes to cure, the more risk of dust and surface contaminants landing on the work and causing the finish to have small bumps.

Penetrating finishes

For purposes of this article I am referring to oil finishes that cure as penetrating finishes. So I am setting aside oils that never harden. What falls into the never hardening category? Mineral oil, butcher block oil, and most cooking-based oils including walnut oil do not harden and I do not recommend them as finishes. Why not mineral oil? Besides never hardening it is really a temporary finish, yet it contaminates the work and precludes later putting on a hardening finish. So if you put mineral oil, or another non-hardening oil, on something, you will need to put it on all the time.

I also caution users who turn to two other oils—raw linseed oil (RLO) and pure tung oil. These two oils do not cure quickly, needing up to 30 days in a proper environment. Given this long drying time, the oils may leach out of some open-grain woods and pool, becoming gummy. Also, these finishes are susceptible to surface and environmental contamination during their long curing period. RLO and pure tung oil can give a great finish, but there are more practical options for the home turner.

There are lots of penetrating oil finishes available at home stores, specialty woodworking stores, and a myriad of online sources. There are so many, with names that range from descriptive to obscure, that if you are confused, don't be alone, we all are confused. Some of the finishes you may run across may have names such as these:

- Danish oil
- Tung oil blend
- Tung oil
- Boiled linseed oil
- Woodturners polish
- Aussie oil
- Utility finishing oil
- Woodfinishing oil
- Finishing oil
- Varnish oil
- Gunstock oil
- Outdoor oil
- Waterlox
- Teak oil
- Arm-R Seal
- Sealer finish

Although there are differences from one brand to another, and in their individual traits, they have some common characteristics. Most are some form of processed oil. They are usually based on an oil that has been treated to cause it to interact with oxygen and harden or cure after exposure to air. Most often the oil is heated in an oxygen-deprived environment, so it is starved for oxygen. When you release it from the container and put it on the work, it starts absorbing oxygen and curing. The more open-pored the wood, the lower grit you have sanded to, the more deeply the oil will penetrate and the longer it takes to cure.

Many oil finishes are not a "pure" anything, but a blend of several products. Tung oil is thick, so it's often cut with mineral spirits to make it flow. Ironically, the can may not say that. Some oils have polyurethane or some surface finish mixed into them so that they build into a thicker coat. Some appear to have very short shelf lives, while others last in a partially full can for up to a year. Some are blended with waxes, which is likely to interfere with any subsequent finish.

Favorite penetrating finishes

Non-hardening finishing oils

Where to begin?

So where do you start? If you belong to a woodturning club, see who has the best finishes when work is passed around at show-and-tell and ask for some guidance. If you have access to a great paint store or specialty woodworking retailer, go ask them. They often have open cans they use for demos so you can smell the finish and maybe see it put on a sample board. If you are stuck with going to a home improvement store or hardware store, buy a small can and try it. The main point is to make an intentional decision, not an accidental one.

Mark Palma lives in Cameron, WI.

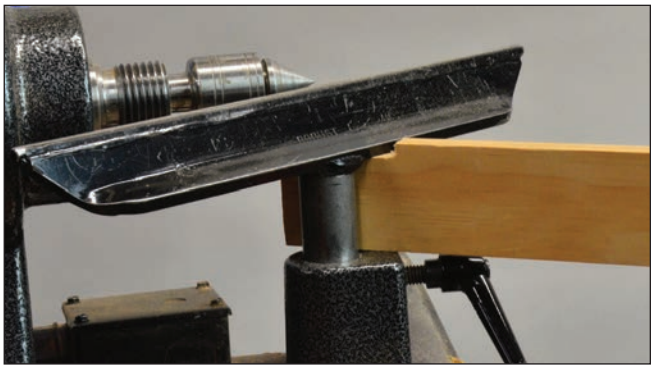
How do I know toolrest height?

Q How can I know the height of the toolrest? It's way out from the center of the lathe, I know the cutting edge will work best on center, but I don't have a point of reference for exactly how high center is.

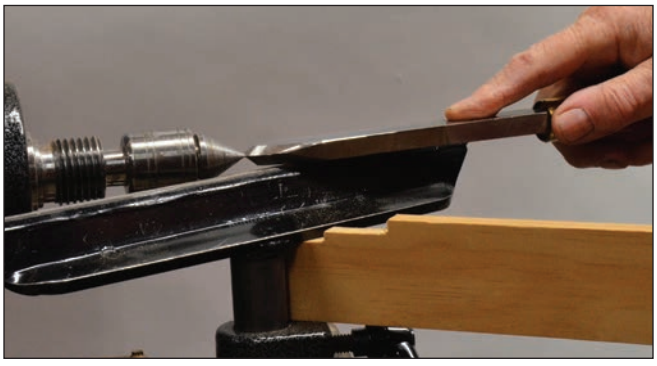
A Trust your fingers.
Put a cone center in the lathe headstock and bring the toolrest up to it. Now wrap two fingers around the toolrest post and learn how it feels in your knuckles on dead center, and also how it feels when dropped 1/8" (3mm) and 1/4" (6mm) below center.

That doesn't work for your arthritic gnarly-fat sausage fingers? Make a wooden step gauge, one step for center and a second step for 1/4" or so below, as in the photos.

Fingers — Bring the rest up to a cone center, wrap fingers around the post, and learn how it feels. You'll quicky become able to judge center and the thickness of a tool below it.



Gauge — The step gauge guarantees the rest is on center.



Step — The gauge step lowers the toolrest by the thickness of this scraper, positioning the edge at center height.

Many figure variations in maple wood

by Dave Schell

Maple wood is one of the most common woods found in the United States and Canada. There are more than 125 varieties of maple in the world. Maple has several common names including sugar, black, red, silver, birdseye, hard, soft, rock, bigleaf, striped, paperbark, and Norway. Boxelder is also a variety of maple.

Maple is a choice wood for furniture, flooring, bowling alleys, butcher blocks, pool cue sticks, archery bows, and baseball bats. Maple wood is prized for its flexibility, strength, and beauty.

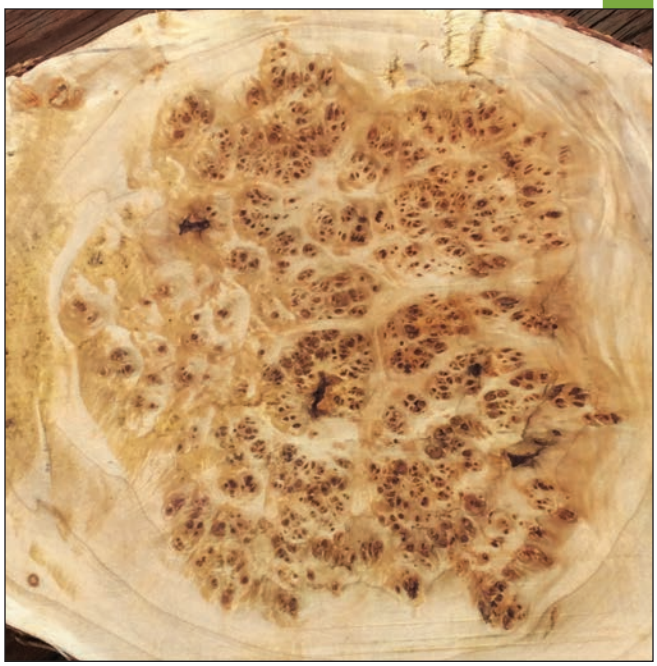
Maple is also known as a tone wood, which means it is sought after for use in musical instruments, such as acoustic guitars, violin backs, cellos, drums, and select woodwind instruments.

Let's not forget you can't enjoy pancakes without delicious maple syrup!

I love to turn maple wood because of the variations that can be present in the wood.

Color – In general maple is very light reddish brown or tan in color, but I have found maple logs that have a dark heartwood and creamy sapwood, similar to apple, giving a perfect contrast to bowls. You can find maple with a mix of light and dark colors in the grain and be surprised every time you open a log.

Ambrosia & Flame – Ambrosia maple and boxelder (flame) have colored streaks thanks to



Burls may appear on any species of maple.

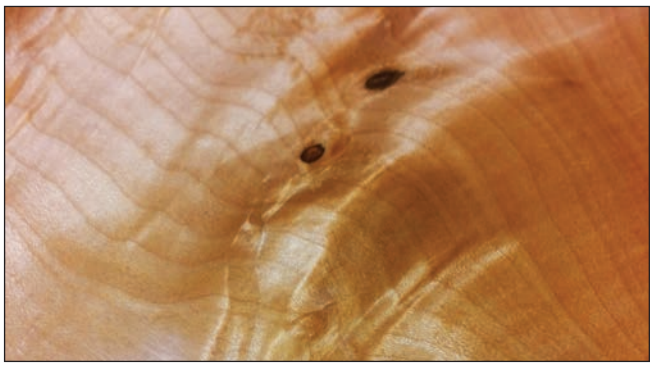
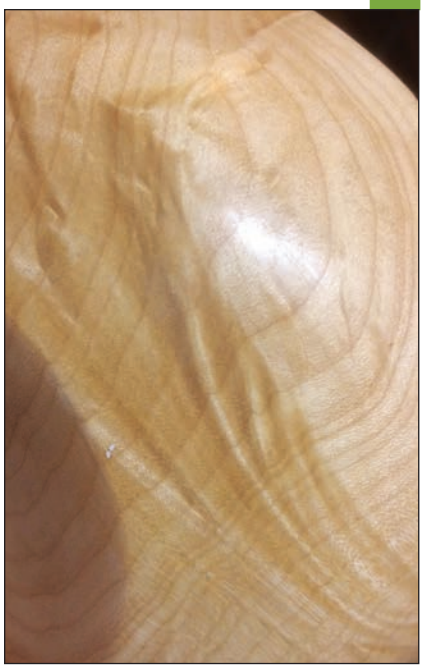


Figure in maple bowl by Dave Schell.

Color — Maple can be very colorful. Dave makes these pendants from bowl scrap.



Maple firewood.

the ambrosia beetle, which brings fungus into the wood, causing the color changes. Brown streaks in maple are named "ambrosia" and red streaks in box elder are named "flame." Both coloring features make beautiful bowls.

Figure – Frequently, you can find superb figure in all maple varieties. The two most frequent are **curl** and **quilting**. Curl looks like grain going perpendicular to the normal grain pattern. Quilting makes the wood appear wet, without any grain pattern. Curl is more common than quilt, but both are highly sought after for creating a piece with that extra special something that makes someone's eyes pop when receiving it as a gift.

Birdseye – Birdseye maple can be described as small bulging circles that look like bird's eyes. I have found curl, quilting, and birdseye in big-box store lumber for the same price as any other maple lumber.

Burl – Burls are growth gone wild and may apear as bowl-shaped bulges on the tree trunk. Perhaps the most talked-about maple burls are the bigleaf variety. Some woodworkers say bigleaf maple burl is more decorative than other maple burls. But I think ANY burl is worth it and will make a stunning piece, if used properly.

The best thing about maple, because it is so common, is it frequently can be found along the road after homeowners remove a tree. Search out the crotch pieces to find beautiful feathering. Look for wrinkling in the bark. If there is wrinkling, you have a very good chance of finding curl or quilting. Inspect the ends of the pieces to look for ambrosia or flame. If you find two small holes in the bark, those may be caused by the ambrosia beetle, and the coloring might be inside.

I enjoy turning maple and find, in general, it is an easy wood to turn and it finishes beautifully. Because there are so many varieties of maple, I don't bother with the exact species, unless I can be sure of what it is. If I am getting maple from an arborist, I ask the variety so I can label it correctly when I go to sell the piece.

Sugar maple, which grows in every eastern state except Florida, is also known as rock maple, hard maple, and sweet maple. Red maple, which grows even more widely, is also called swamp maple and soft maple. It's the maple leaf of Canada. It is noticeably softer than hard maple. Silver maple, bigleaf maple, and Norway maple are also soft compared to sugar maple, but they are still hard woods.

Curl runs at right-angles to the wood grain.

Birdseyes seem to be scattered at random and can show up anywhere.

I enjoy turning maple with dark heartwood and lighter sapwood for the contrast it gives. If the wood is the same color, I may paint the edge of the bowl or pierce it to add more interest. I have found that boxelder is a softer maple variety and can tear out when turned dry. The red flame of a boxelder will eventually fade in the light.

If I have pieces with curl or quilting, I attempt to make shallow bowls or platters to show off the figure. Burls make beautiful hollow forms. When I use a burl, I tend to pick out any bark inclusions and keep the voids in the wood to add extra character. I use small figured pieces to make wooden pendant necklaces.

I encourage everyone to search their local Craigslist "Free" category and keep an eye out for "Free wood" or "Free firewood," and contact the poster to ask them if it's maple. Always keep a spot open in your vehicle's trunk just in case you see some wood in a yard and decide to knock on the door to see if it's maple.

Flame — Red figure in boxelder eventually fades in the light.

Dave Schell lives in Mount Joy, PA, instagram.com/imakebowls/*. Photos page 20, 21 by Dave; photos this page by AAW editorial staff.*

Spheres
Build skill and train your eye

by Kip Christensen
process photos by Stephanie Staples

Wood collection — Boxelder spheres by Preston Christensen are 3-1/2" (9cm) in diameter.

Spheres are fun to turn, plus they offer important instruction regarding symmetrical curves and grain direction. That's because there's a clever swap of turning axis in the middle of the process.

1. The blank — Start with a square-section blank with a bit of extra length - this one is 3" x 3" x 4-1/2" (7.5 x 7.5 x 11.5cm). Mount between centers. Remove the corners with the spindle-roughing gouge, handle low and flute rotated to about 2 o'clock.

Starting with the wood grain parallel to the lathe axis, you'll turn a smooth cylinder and rough out the sphere by eye. It's great practice cutting symmetrical half-beads either side of a centerline. Then, midway in the process, the turning is remounted with its grain perpendicular to the lathe axis. The rotating circular cross-section of the cylinder now reveals the sphere's final shape. And by the time your sphere is completed , you'll have had to read and turn the wood grain in every different orientation.

This article is adapted from American Woodturner *vol. 31 no. 4, August 2016.*

2. Rough to round — Remove the waste by making a series of short cuts with the spindle roughing gouge, beginning at one end and progressing toward the other.

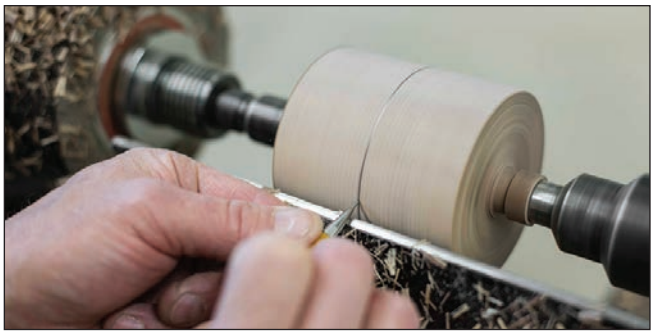
3. Plane smooth — To smooth the cylinder and remove any remaining flats, make end-to-end planing cuts with the roughing-gouge handle low.

4. Transfer diameter — With the lathe off, caliper the diameter of the cylinder. Support the caliper on the toolrest and, with the lathe turning slowly, press it into the wood to transfer the diameter. This marks the length of the sphere.

5. Part — Part down to about 3/4" diameter, on the outside edges of the layout lines. Begin the parting-tool cut with the tool handle low for a peeling angle. Raise the handle to make the cut, and widen the cut so the tool doesn't bind.

6. Peel the waste — Remove the waste with a skew chisel. Lay the skew flat on the toolrest and hold the tool handle low.

7. Efficient cut — The peeling angle efficiently shaves the spinning wood and leaves a smooth surface.



8. Centerline — The result is a smooth cylinder whose length equals its diameter, supported on the lathe by two stubs. Measure and mark a clear centerline. This line remains in place until you sand it off at the end.

Explore!

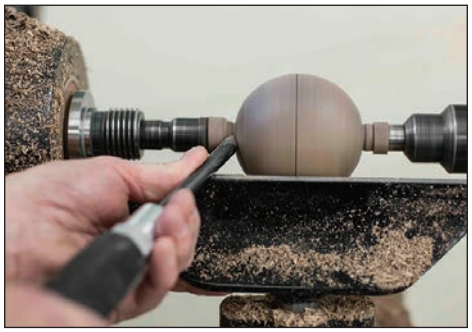
tiny.cc/spherejig

Click the blue box or scan the QR code to follow the link and learn more about spheres....

9. Bead cuts — Turn one half of the sphere by making several bead cuts with a spindle gouge. Make all cuts downhill toward the ends, rolling the gouge as the cut advances.

10. Turn by eye — Make shearing cuts with the bevel gliding on the wood behind the edge. The gouge rolls from open, flute facing up, to closed, flute almost to 3 o'clock.

11. Symmetry — It's not critical that the sphere be perfectly shaped at this stage, but eyeball it close and try for symmetry. For control near the bottom of the bead, switch from the large gouge to a small detail gouge.



12. Cup centers — Shopmade centers (page 30) allow the sphere to be rotated and mounted in any orientation, so the mounting stubs can be removed and the shape refined. But you must pay attention to grain direction — here perpendicular to the lathe axis.

13. Remove stubs — Carefully use a small gouge to remove the stubs that held the workpiece between centers. Make sure the toolrest is far enough away for the stubs to clear. After removing the stubs, adjust the toolrest close to the emerging sphere.

14. Ghost sphere — With the stubs removed, as the not-yet perfect sphere spins between cup centers, you'll see the ghostly blur of excess wood around the solid sphere shape. The solid shape is perfectly circular, because it's the cross-section of the original cylinder on its new axis. Pare away the ghostly blurred wood, and the sphere is what remains.

15. Crossgrain — When the long grain is oriented perpendicular to the lathe axis, make shear-scraping cuts uphill from small diameter to large. This allows cutting into sidegrain rather than into endgrain.

16. Long grain — When the long grain is oriented parallel to the lathe axis, cut downhill from large diameter to small, taking fine shearing cuts with the bevel gliding on the wood.

17. Grain askew — With the grain oriented on a bias, or askew to the lathe axis, treat the cut as if the grain is perpendicular to the axis, as in **15** above, and use a shear-scraping cut to move uphill from small diameter to large.

18. Sanding smooth — During the sanding process, the sphere can be rotated and remounted several times in the cup centers while progressing through the abrasive grits.

❐

Another way to skin a sphere

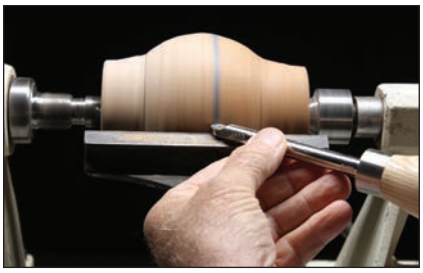
by Bill Wells

Whenever I tried turning spheres, I seemed to lack the artistic ability to turn a smooth circular profile. After reading the article by Kip Christensen, page 24, I developed a procedure that works for me. Instead of trusting my eye, I use a carpenter's contour gauge. Lacking dedicated cup centers, I remount the workpiece with glued-on waste wood disks. And I made a simple PVC cup to hold the work for sanding.

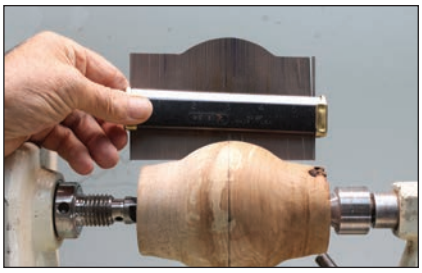
The key to my method is accurately locating and marking opposite midpoints on the workpiece centerline. Now follow the photos.

1. Mark midpoints — Turn a cylinder, mark a centerline, and measure around to find and mark two opposite midpoints.

2. Contour gauge — Copy the profile at the centerline. The portion shown is enough to capture the curve.



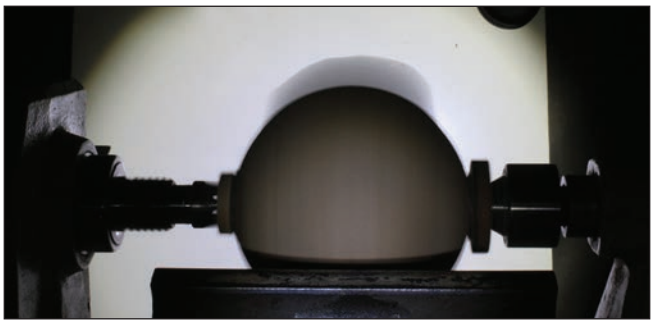
3. Turn the shape — Start from the centerline and turn in sections. Here I'm using a round carbide-insert tool.



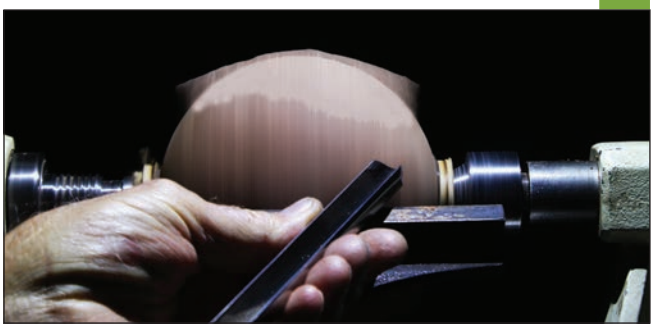
4. Check the curve — Contour gauge shows high spots, mark them and pare them away.

5. New centers — Make two small waste wood disks with a center hole. Hot-glue the disks on the two marked midpoints.

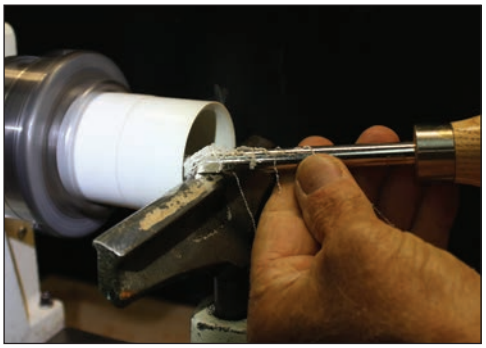
6. Remount — Use the center holes in the waste disks to remount the workpiece on its new axis.



5. Ghost image — With the lathe ON, the two stubs show as a blur beyond the solid sphere-to-be.



6. Trim the blur — Use a spindle or bowl gouge to remove most of the waste wood. Finish with a sharp scraper.



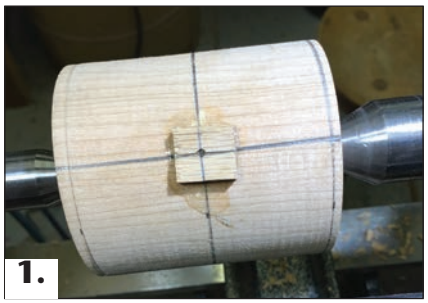
7. PVC chuck — Hold the PVC fitting in the scroll chuck and true it up using a straight carbide-insert tool. Trim a 45° bevel where the PVC will meet the sphere. PVC diameter should roughly equal sphere radius.

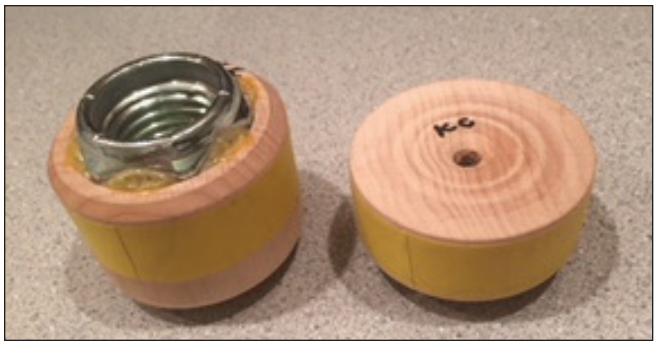
8. Tailstock pad — Disk of rubber glued to an MDF disk presses the sphere against the PVC chuck without marring the surface.

9. And sand — Be sure the sphere doesn't slip on the PVC cup, lest it burn a dark ring.

... and another spherical approach

Joe Varga, of the Central Wisconsin Woodturners, carefully draws end- and centerlines on the starting cylinder, to precisely locate the turning centers. He glues small squares of wood to the cylinder, to give the centers a place to bite, **1**. Then he rotates the worpiece on its axis without any preliminary shaping, **2**, and goes straight for the sphere, **3**.





Lathe side — Drive piece, left, has glued-in nut to fit spindle. Tail piece, right, has conical hole to fit cone point on live center

Sphere side — Tapers on both pieces lead up to turned cups that press against the sphere. Make them half the sphere diameter.

Shopmade cup centers hold spheres on lathe

For turning spheres you can buy cup centers made from aluminum or plastic, but I prefer shopmade wood centers. The simple version shown in the photos is fairly straightforward to make. Mine is based on a nut that fits the1" x 8tpi lathe spindle, with a tail cup held in place by the live center. This design doesn't require dedicated hardware, besides a nut to fit your lathe spindle. I've also made them to fit over standard drive and tailstock centers (below right).

A block of maple about 2" x 2" x 3" (5cm x 5 cm x 7.5cm) will make both cups. Bore a centered hole in one end to fit your spindle nut. Fit and glue (epoxy or Titebond III) the nut in the hole, after taping to keep glue off the threads.

Now you can use the nut to mount the workpiece onto the headstock spindle. Turn it to a cylinder, and face off the end. This end will fit on the tail center, so turn a cone-shaped hole for the cone point to go into. Bore a hole to fit on a screw-center faceplate, so you can remount later on. Part through, leaving the tailstock piece about 1-1/4" (3cm) long.

Finally, turn a matching taper and cup hollow in the working side of both parts, as shown in the photos. For this final shaping the tailstock piece can be mounted on a screw center using the bored hole; you could instead grip it in the scroll chuck.

--Kip Christensen

Cup centers are seen from headstock, above, and tailstock, right.

Previous version — Regular live center and drive spur were glued into poplar cup centers.

Rotating Spheres—
a multiples challenge

by Mark St.Leger

Rotating Spheres

This project yields a display stand for four 2" (5cm) spheres. Gently spinning the top sphere makes all four spheres spin simultaneously. I first saw this done by turner Jim Bowman from Ohio many years ago.

Spheres: four @ 2" (5cm) dia., maple or any hardwood.
Base: ½" x 5" (12mm x 13cm) disk, any stable material (I used Corian®, which can be turned using scrapers).

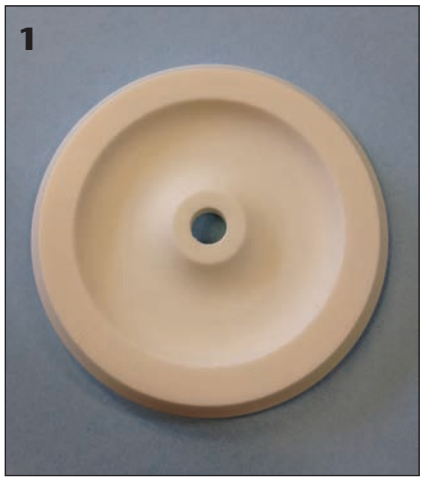
There are many ways of mounting a 5" (13cm) disk, such as turning a recess on the bottom for chuck jaws to grip, or double-face tape on a faceplate. You could drill a ½" (12mm) hole in the center and make a jam chuck, then cover the mounting hole with a turned cap.

First true up the disk and lay out the cove. For a 2" (5cm) sphere the center is 1" (2.5cm) diameter and the cove is 1-3/8" (3.5cm) wide by ¼" (6mm) deep, **1**. You want the sphere to be riding the rail only, and not touching the bottom of the cove, **2**.

Get close, then sneak up on it by testing three spheres on the stand. There should be a 1/8" (3mm) gap between the spheres, **3**. This will allow all four spheres to rotate.

Now you're ready to stack all four spheres, gently spin the top sphere, and watch all four rotate in synch. Have fun!

Mark St. Leger is active in the Blue Ridge Woodturners Club in Virginia, and teaches widely.



Base — For 2" (5cm) spheres, the cove is 1" (2.5cm) inside dia., 1-3/8" (3cm) wide.

Riding the rails — The sphere doesn't hit bottom.

Gap of 1/8" (3mm) allows all four spheres to rotate.

❐

Egg cups introduce endgrain hollowing

by Nick Cook

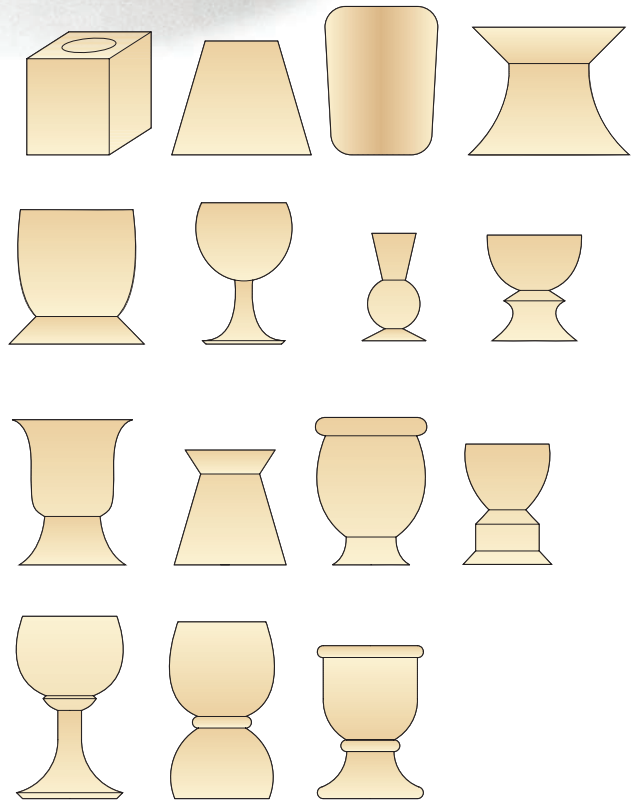
An egg cup is a worthy project for both beginners and intermediate turners. In addition to incorporating spindle technique into a practical project, it introduces endgrain turning without the pressure of turning a lid (as many boxes require).

It's fun to design your own profile, and there are a few you can copy or use as starters here.

This project requires three lathe tools: a 3/4" (2cm) or 1-1/4" (3cm) spindle roughing gouge, a 3/8" (1cm) spindle gouge, and a parting tool.

You may also prefer to make finishing cuts with a roundnose scraper; if you are using carbide-insert tools, the round one does most of the job, with some help from the pointed detailer. You will also need a scroll chuck to hold the blank for endgrain hollowing.

For turning stock, select a 4½"-long (11cm) piece of 2½"-square (6cm) soft maple.



Prepare the blank

With a straightedge or center-finder, locate the centers on each end of the blank. Use an awl or centerpunch to make a dimple at each center. With a mallet, tap the drive center into one end of the blank and place the drive center into the spindle of the lathe.

Bring up the tailstock with the live center to the other end of the blank. Lock the tailstock in

Roughing down — Spindle roughing gouge removes corners off the blank.

Planing cut — Make a smooth cylinder from end to end.

Tenon gauge — Size the gauge to your chuck's best grip.

place and turn the hand wheel to apply pressure to the end of the blank. Lock the quill in place.

Place the toolrest parallel to the blank, about ¼" (6mm) from the corners and just below the centerline. Lock the toolrest in place and rotate the spindle by hand before turning on the lathe.

Set the lathe speed at 1000 rpm and turn on the machine. Use a spindle roughing gouge to turn the square down to a cylinder, as shown above. With a parting tool, turn a 1/4" x 2-1/8" (6mm x 5.5cm) tenon at one end of the blank. A gauge like the one shown will speed the sizing.

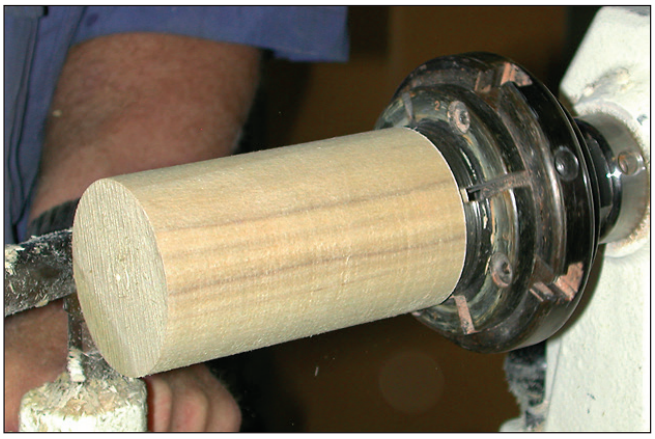
Turn the egg cup

Remove the blank from between centers and remove the drive center from the spindle. Slide the tailstock to the right end of the bed and remove the live center.

Mount the blank in the scroll chuck and screw the chuck onto the spindle. Position the toolrest parallel to the blank, 1/4" away and just below the centerline.

Lock the toolrest in place and rotate the spindle by hand to ensure clearance.

Turn on the lathe and make a peeling cut across the end of the blank with the spindle gouge.



Remount — The scroll chuck fits tight around the chucking tenon. This end has been squared by a paring cut with the spindle gouge.

Take the fear out of catches

Part of the woodturning learning curve is experiencing catches and learning tool control to avoid them. You can overcome the fear of catches by selecting a cup drive (also known as a dead cup center or safe driver) for spindle projects. Instead of a nasty catch, a cup drive—when coupled with light tailstock pressure—will stop the spindle. This method also minimizes damage to the turning stock.

The cup drive allows the turner to take a piece on and off the lathe without centering problems and reduces the probability of a piece being thrown off the lathe.

Shaping the bowl — The neck between cup and base will be at the center of the cylinder.

Hollowing — To hollow the end grain, push the spindle gouge straight into the center of the workpiece. Rotate the flute to about 10:30 o'clock, and pivot toward the rim.

Stop the lathe, measure from the right end back to 4" (10cm), and make a mark. Make another mark at 2" (5cm). Start the lathe and make a 1/4"-deep parting cut at each mark.

The center mark defines where the bowl meets the stem, and the left mark defines the bottom of the finished egg cup.

Now, shape the outside of the egg-cup bowl. Use the spindle gouge to create your own details at the rim of the bowl and at the base of the bowl. Leave enough stock at the bottom of the bowl to support hollowing the interior.

Complete the outside — Shape the base and detail it with the spindle gouge.

Experience endgrain

Stop the lathe and position the toolrest across the end of the blank and about 1/4" below the center. Hold the spindle gouge level and perpendicular to the end of the blank and push the tip of the tool about 1/4" into the endgrain.

Next, rotate the flute of the gouge to about 45° to the left and push the handle to the right. This will push the tip of the tool toward the rim of the blank. Work to within 1/4" of the rim (about 1½" (4cm) inside diameter). Repeat until you reach a depth of 1½" to 1¾" (4 to 4.5 cm). If necessary, refine the surface with a roundnose scraper. Aim for a uniform wall thickness of 1/4".

Reposition the toolrest to fine-tune the outside of the egg cup. Use the parting tool to reduce the top of the stem down to the finished diameter. Create transition details with the 3/8" spindle gouge.

Continue turning with the spindle gouge to reduce the rest of the stem to the desired diameter and detail the foot of the egg cup.

Apply finish — Use a paper towel to coat the wood in finish, and to wipe off excess.

Parting off — Finally, cut the egg cup from the waste inside the chuck.

Sand and finish

Before parting the egg cup from the chuck, sand and finish all exposed surfaces.

Always remove the tool rest before sanding at the lathe. Start with 150-grit sandpaper and finish with 220 grit. Remove all sanding dust with a paper towel.

With the lathe turned off, apply polyurethane wiping varnish with a paper towel to all exposed surfaces. Allow the finish to penetrate for 5 to 10 minutes, then wipe off the excess. Turn on the lathe and burnish the surfaces with a clean, dry paper towel.

Use the parting tool to separate the egg cup from the waste in the chuck. Make the cut slightly angled toward the top of the cup to create a hollow in the bottom.

Sand the bottom by hand and apply finish.

Nick Cook turns wood and teaches in Georgia.

A treasure box for someone to enjoy. The wood grain runs parallel to the lathe axis, with the box hollowed out of endgrain.

Learn to Turn, Turn to Learn

Treasure box in endgrain

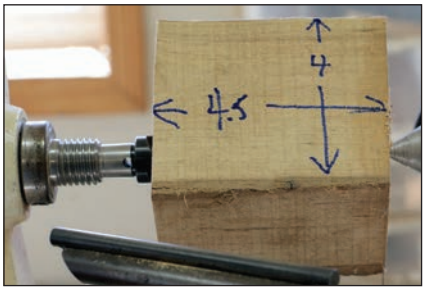
by Walt Wager

This simple box will become the home of someone's special treasure. There are basically two types of boxes, those with a tight-fitting lid that take two hands to open, and those with a loose-fitting lid that can be lifted off easily with one hand. This box has a loose fitting lid so it will sit on a dresser or table and can easily be opened with one hand.

It is generally desirable to turn boxes out of dry wood. They can be turned in either spindle or crossgrain orientation. I prefer spindle (long grain running parallel to the lathe bed) orientation because if the wood is still losing moisture it will shrink concentrically with the top. A box turned in crossgrain orientation is more likely to warp and the opening become slightly oval. If this happens the lid will only fit loosely in one position.

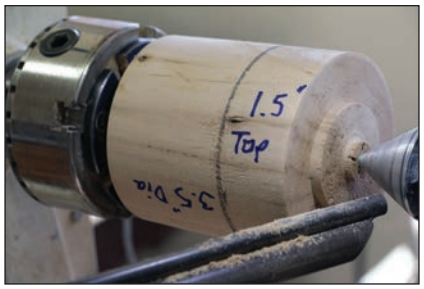
Walter Wager's website is waltwager.com.

Preparing the blank



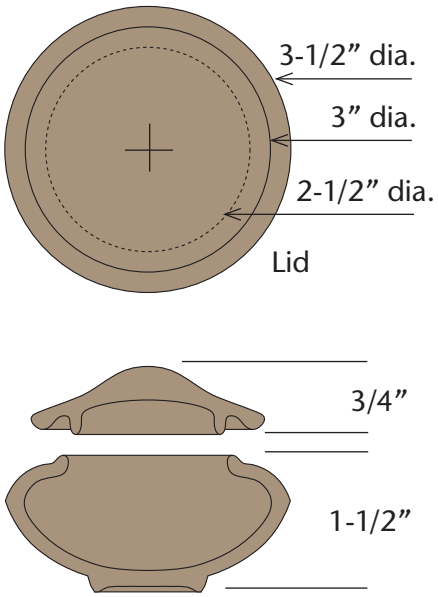
Start with a block of wood between centers in spindle orientation. Here I'm using dry sweet gum.

Rough the block down to a diameter of 3-1/2" (9cm) and put a tenon on one end for the scroll chuck.

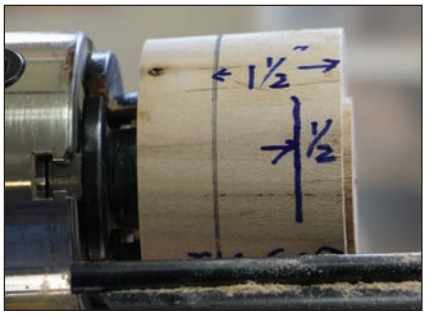


Remount the workpiece in the scroll chuck and cut a tenon on the other end, marking off 1-1/2" (4cm) for the top (lid).

Shape the box



Divide the blank in thirds. With a parting tool, part off the tailstock third, which will become the box lid.



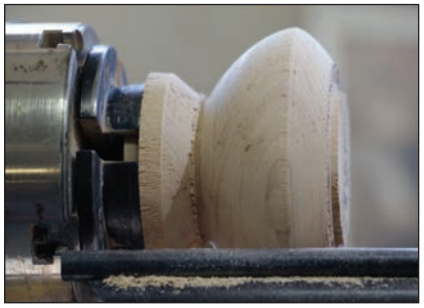
The box is 1-1/2” (4cm) deep and the curve starts about a third of the way down from the opening. The wood between the chuck and the bottom line is waste.

The opening of the box is 2.5” (6cm) in diameter. The box looks good in many different sizes if the proportions are kept about the same as this.

Use a parting tool, or bedan, to reduce the waste wood, making it easier to visualize the box depth and shape.

Shape the top third of the box to the opening, using a 3/8” (1cm) spindle gouge. Get a clean cut by putting the bevel on the wood and rolling the corner as you would a bead.

Shape the bottom two-thirds of the box using the 3/8” spindle gouge, cutting downhill from largest diameter to small while rolling the gouge flute in the direction of cut.



In profile, the curve of the box changes direction at the one-third point.

Hollowing endgrain

Endgrain hollowing is always easier if you drill a hole to the inside bottom of the box. The foot of the box is about 1-1/2" (4cm) so I used a 1" (2.5cm) Forstner bit to drill the hole about 1-¼" (3cm) deep. If the bit has a point, be sure to figure it in.

Pull the 3/8" spindle gouge from the center hole to the inside rim of the box. Cut at the horizontal center, with the flute rotated to about the 10 o'clock position.

Continue this hollowing cut until you reach the bottom of the hole you drilled. Carefully flatten the bottom without cutting much deeper.

Widen the inside of the box. Notice where the tool rest has been moved. When hollowing into endgrain, start at the opening and establish the thickness of the walls, then cut from the bottom out and up to the widest dimension.

Final cuts with a detail gouge leave a small rim at the opening of the box.

Explore!

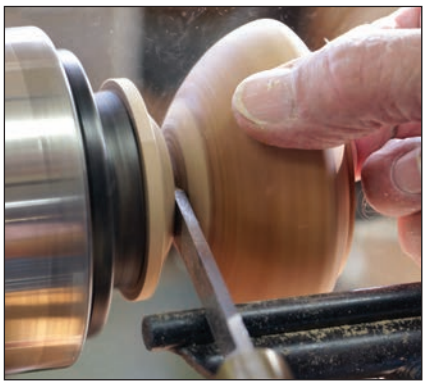
Click the blue box or scan the QR code to follow the link and learn more about hollowing small bowls and pots.

tiny.cc/hollowing

Finish box body, part off

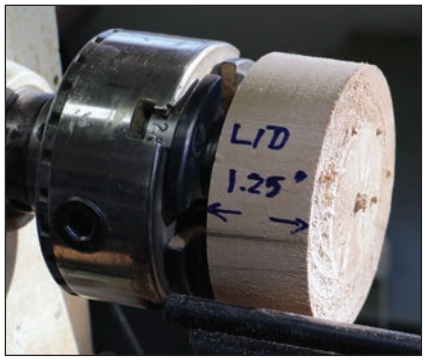
Sand the inside and the outside of the box and finish the box body now, on the lathe.

Thin coat of sanding sealer stiffens the fibers for a final sanding.



Part the box from the blank. Don't worry about the outside bottom, it will be finished later.

Inside of lid



Mount the blank for the lid in the chuck.

Caliper the inside diameter of the box opening.

Transfer the opening diameter to the bottom of the lid.

Cut a tenon that will fit into the box.

Test the fit.

Hollow out the center of the lid. Make the inside edge of the tenon parallel to the lathe axis so it can be expansion-mounted on the scroll chuck.

Finish box bottom

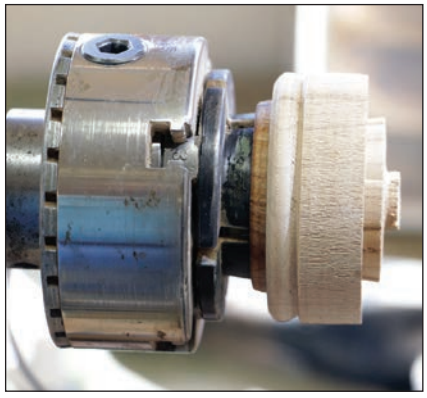
Use the lid as a jam chuck to complete the box bottom. A piece of paper towel or a wrap with tape can tighten the fit.

Bring up the tail center and use the 3/8" spindle gouge to undercut the bottom and form a shallow foot.

Sand the bottom of the box and apply finish. Here a 2" (5cm) sanding disk on a drill smooths off the last little nub.

Complete the lid

Apply sanding sealer to the inside of the lid, to harden the fibers before final sanding.



Turn the lid around on the chuck, expanding the jaws into the lid's tenon recess.

Before shaping the outside of the lid, bring up the tailstock for safety.

Shape the top using the spindle gouge, cutting from the outside toward the center.

Form the handle (knob) on the top, or add a knob made of some other wood or contrasting material. Sand and finish.

Turning sequence — endgrain box

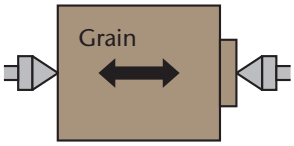
The box body and lid both come from the same **long-grain** block mounted on the lathe in spindle orientation. The box body will be hollowed into **endgrain**, and the visible wood figure will flow right through both box and lid. Good block size: 4" x 4" x 4-1/2" (10 x 10 x 11cm) in the direction of the lathe axis.

In spindle orientation wood can be cleanly cut with the grain, but not against it. The treasure box grain direction - parallel to the lathe axis - governs the sequence of steps.

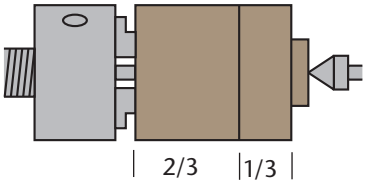
Chucking tenons are the key to scroll-chuck box projects, along with, whenever possible, bringing up the tailstock for support. It's usually most efficient to sand and finish as you go, at least through sanding sealer, to prepare for an off-lathe top coat.

Endgrain box by Walt Wager is sugar pine, the knob on the lid is ram's horn. Walt notes that regardless of scale, dividing the workpiece in thirds at each juncture will make a good-looking box, as in **2** and **4** below.

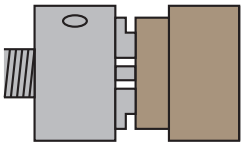
1 Mount block between centers. Turn cylinder with chucking tenon.



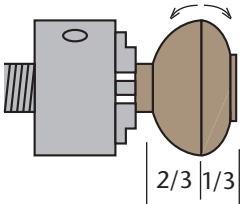
2 Remount in scroll chuck, make 2nd tenon, divide in thirds to mark lid.



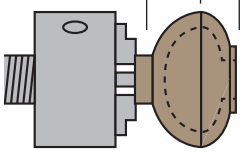
3 Part lid from body. Reduce waste to make clearance.



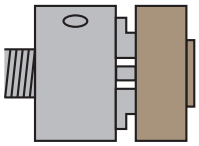
4 Shape outside of box body and form opening. Divide in thirds again, cut from large diameter to small.



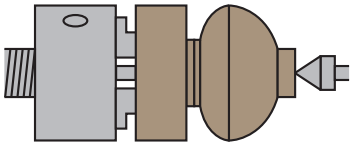
5 Hollow inside, cutting small diameter to large. Sand and finish.



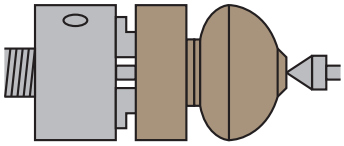
6 Mount lid. Turn tenon to fit box opening.



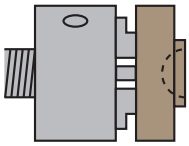
7 Fit box on lid tenon, bring up tailstock for support.



8 Pare box tenon and shape box foot. Sand and finish.



9 Reverse and remount. Shape, sand and finish inside of lid.



10 Reverse again. Shape, sand and finish outside of lid.

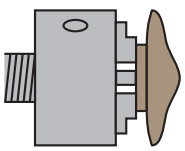


Illustration by Robin Krats

Napkin rings, and chuck

by Jerry Hubschman

Napkin rings offer a quick project that doesn't require thick turning stock, and because they're usually made in sets, you get a bit of practice. You'll also make a simple expansion chuck to safely hold the ring blanks on the lathe.

Bored, then turned — Napkin rings are turned crossgrain from scrap boards.

Leftover boards and scraps 2-1/2" (6.5cm) to 3" (7.5cm) square and up to 1" thick are ideal for crossgrain rings. I favor napkin rings 1/2" (12mm) to 1" (2.5cm) wide. If you are more comfortable with spindle-turning techniques, then start with square stock that you can bore endgrain and part off.

On flat wood, use a compass to lay out the finished rings, inside diameter of about 1-1/4" or 1-3/8" (3 to 3.5cm) to match your Forstner or multispur bit. To produce a nice clean hole, drill a 1/16" (1.5mm) pilot hole through the center of the ring. Then break the surface by boring 1/16" into one side before reversing and boring through from the other side. The shallow pre-boring scribes the wood and prevents tear-out. Pre-boring deeper than 1/16" would leave a ridge, complicating internal finishing. After center boring, cut the blanks free and saw off the corners (**1**).

1. Boring — Drill a pilot hole and bore the wood 1/16" deep on one side, top, then flip over to bore through before sawing apart.

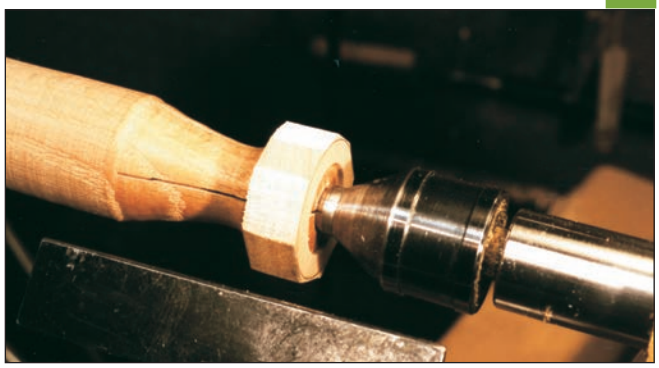
Turn the rings

The crossgrain orientation suggests that you use bowl-turning tools. But these rings are small and spindle speeds high, so you can use any tool that you like, except a roughing gouge. The final shape is up to you.

Mount the blank on the jaws of the shop-made expansion chuck (**2**). Bring the tailstock live center up to meet the chuck and apply pressure to expand it (**3**). Now you can rough the blank to approximate finish size with a 3/8" (1cm) bowl gouge (**4**).

Stop the lathe, release pressure by the tail center, and reverse the ring on the chuck to finish the near side. If you prefer narrower rings, make the bearing surface of your expansion chuck narrower as well. This will allow you to turn with a very slight undercut on each side.

2. Ring on chuck — The bandsawn blank fits onto the expansion chuck.



3. Expand chuck — Bring up the live center to press against and expand the chuck jaws.

Apply finish

The simple turning of napkin rings usually requires little sanding. Depending on how clean you bored with the Forstner bit, you may want to sand the inside surface.

Your choice of wood will influence the finish but these rings are small, try an on-lathe shellac-wax friction polish. Off the lathe, finish the inside using a cotton swab. Finally, apply a coat of thinned satin polyurethane varnish. Then hang them up to dry.

Jerry Hubschman, a retired biologist, is a member of the Central Ohio Woodturners.

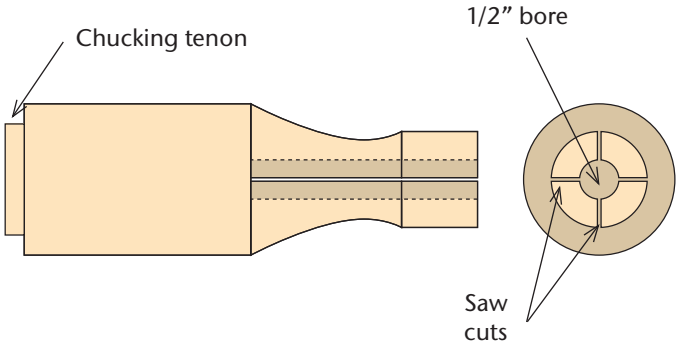
4. And turn — The expansion chuck gives easy and safe access for turning the ring.

This article is adapted from American Woodturner, Summer 2004.

Making the expansion chuck

The expansion chuck is a 6" (15cm) long cylinder of straight-grained hardwood — ash is tough and flexible — turned slightly undersize for the rings. The cylinder is then center-bored and cross-sawed. Pressure applied by a live center in the tailstock will spread the quadrants enough to grip the previously bored ring blank.

The diameter of the scroll-chuck mounting end should be large enough to provide a sturdy base; a chucking tenon helps ensure that. The body should be sufficiently long to allow the gripping surface to expand when pressure is applied by the tailstock. The napkin ring inside diameter and width dictates the size of the gripping surface. The 1/2" (12mm) center bore works with a 60° x 3/4" (2cm) cone found on many live centers.



Magic wand casts a spell

by Dave Schell

With the resurgence of Harry Potter wizard movies, this simple project is a perfect gift or special surprise for kids. I've also sold wands to adults who are into cosplay and visiting themed amusement parks.

The project can be completed in 15-20 minutes and is a great way to use up some scrap wood from woodworking projects, or cutoffs from wood when making bowl blanks. You can use any wood, though I have not had much success with palm because of its grassy grain structure.

Make a spindle blank approximately 1-¼" x 1-¼" x 14" (3 x 3 x 36cm) or as long as you want to make your wand. I like to use wood slightly longer than my lathe toolrest, **1**, so I don't need

1 — I use the toolrest as a rough measuring tool and make the spindle blank a little longer than the toolrest.

2 — Find the center using the "X" method from corner to corner.

3 — The scroll chuck traps the corners of the spindle blank.

4 — Tailstock center bites the marked X.

5 — Rounding the spindle.

6 — Narrowing down the shaft of the wand. Notice I stop at the end of the toolrest.

7 — Pointed end complete and handle roughed.

to move the banjo during the project, allowing me to create several wands in a short time.

The first thing I do is find the center on one side of the spindle blank, **2**. This will help stabilize my blank as I turn.

I use my scroll chuck to secure one end by wedging the corners of the spindle blank in the gaps between the chuck jaws, **3**. I use the dead center on my tailstock to secure the other end, **4**. Don't make the tailstock too tight. If you put too much pressure on the tailstock, the wand can snap. It may take a few tries to see what the proper pressure is for your style of design.

Once I have the piece secured, I fix my banjo to the center of the wood. This will serve as a guide to the length of my wand. To start, I round out my spindle blank using a roughing gouge, **5**. To make successful wands, it is best to round the blank to a uniform size before you start narrowing the pointed end. It helps keep the stress of the wand more uniform.

Once the entire spindle is round, start to slowly narrow the wand into the shape you desire, **6**. There is no right or wrong with this. I usually play some music and let the music help me decide where to push in and feel where the wood grain is letting the tool work easiest. Take time to narrow down in small increments until you are comfortable knowing how the spindle will react. There is a lot of pressure on the spindle blank as you narrow down. If the wand will break, it will break during this step.

8 — The skew chisel creates popular honey dipper lines.

9 — The round-nose scraper adds smooth curves.

I usually make the wand handle about half the total length. I finish the pointed end first, **7**. Once the pointed end is complete, I work from the center back to the handle to complete the wand. That takes pressure off the wood and prevents broken wands.

You can use any tool you have in your arsenal to add flair to your wand. There is no right or wrong. My customers like the honey dipper look with lines created with the skew chisel, **8**.

I use different sized round-nose scrapers to make curves in the handle, which adds smoothness and allows for easy gripping, **9**.

When you think the wand is complete, it is complete. I have made more than 60 wands and they all look different. I have discovered that honey dipper wands sell well and wands with more design elements sell quicker, **10**.

I finish-sand using grits 120, 180, 220, and 320. Since children are most likely going to be handling them, I try to sand as smooth as I can. I then finish using tung oil, my oil of choice. Use a small paint brush to reach into all the nooks and crannies of the design. I don't worry about using any wax on these wands; a 320-grit sand with oil makes a nice finish.

One thing to remember is to not make the pointed end of the wand too pointy. I blunt the ends because the wand can also be a weapon for small children. Each wand is different but all the ends are blunt.

This is a great project when you only have a few minutes in the workshop or need a quick gift. You can also make wands in bulk as a fundraiser for a youth group or community event.

Dave Schell lives in Mount Joy, PA, and belongs to Lancaster Area Woodturners.
instagram.com/imakebowls/

10 — Dave's finished maple wand. The punk rock he listened to was great inspiration!

❐

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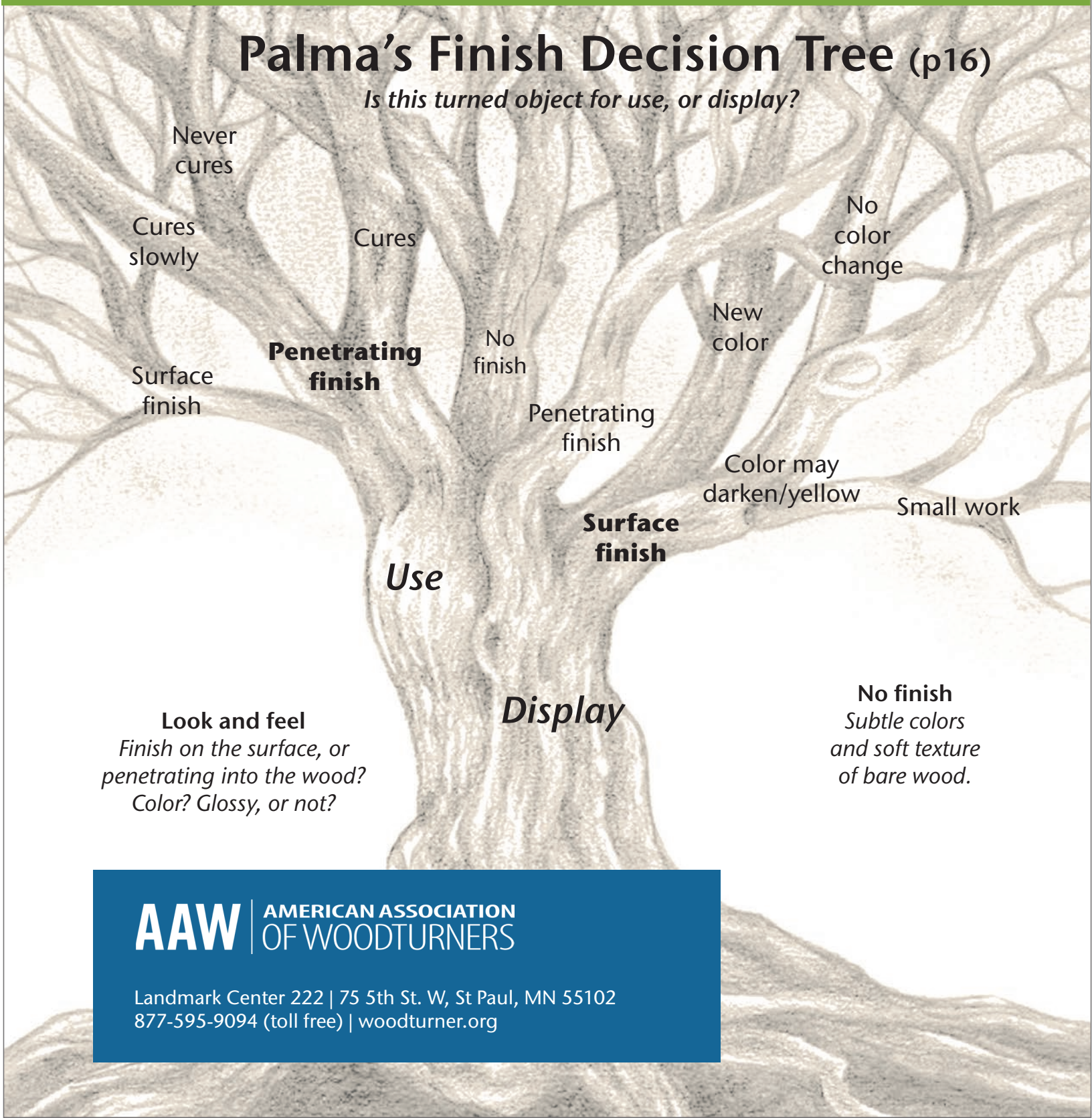

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