WOODTURNING FUNDAMENTALS

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Woodturning FUNdamentals

Dedicated to providing education and information to those interested in woodturning.

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222 Landmark Center
75 5th Street W.
St. Paul, MN 55102-7704
651-484-9094
Toll free: 877-595-9094
inquiries@woodturner.org
woodturner.org

Executive Director
Phil McDonald
phil@woodturner.org

Program Director
Linda Ferber
linda@woodturner.org

Gallery Curator
Tib Shaw

Gallery Website
galleryofwoodart.org

Marketing & Communiations Director
Kim Rymer

Editor, *American Woodturner*
Joshua Friend

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Front and back cover photos: Andi Wolfe

Photo: Andi Wolfe

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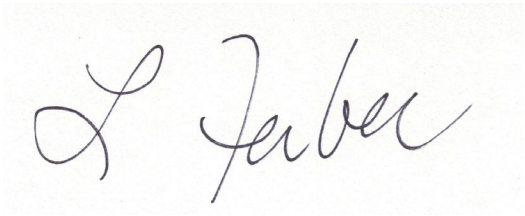
Hello fellow turners!

Woodturners love green wood and all the challenges it poses. When turning green wood goes right, the rewards are outstanding. This issue of Woodturning FUNdamentals focuses on green wood and improving your drying success. Plus, you will be able to build skills through the Turn a Perfect Egg project, and find both ideas and encouragement through the tips and techniques sections for a productive visit to your shop!

As always, Woodturning FUNdamentals invites you to submit your questions, tips, projects, and problems. Every turner develops techniques that work. They also run into frustrating obstacles from time to time. Know you're not alone! Please send your submissions to us at linda@woodturner.org.

I welcome your suggestions and concerns.

Stay Sharp and Turn Safe,



Linda Ferber
linda@woodturner.org

TURN A PERFECT EGG

A great project to develop spindle turning skills.

Walt Wager

We all know what an egg looks like, don't we? So it should be a simple task to turn a wooden egg on our lathe. Well, maybe not as simple as it sounds, but it is a great project to develop spindle turning skills, so let's get started.

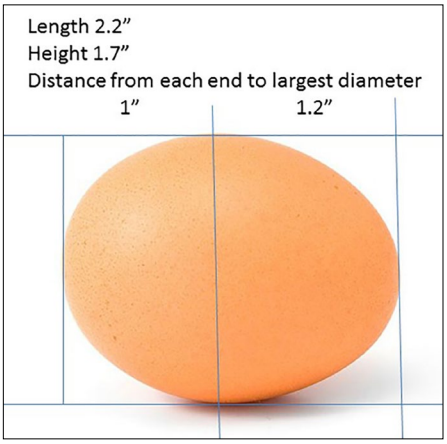


Photo 1 - Egg diagram

What are the dimensions of a standard large AAA egg? Well, I measured a supermarket egg and I got 2.2" X 1.7". The largest diameter is 1" from the blunt end, and 1.2" from the more pointy end (Photo 1). I was actually surprised that the largest diameter is as close to the center as it is.

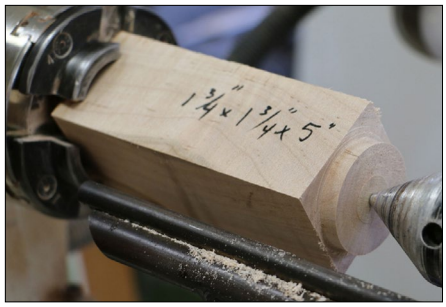


Photo 2 - Maple blank 1 3/4 x 1 3/4 x 5”

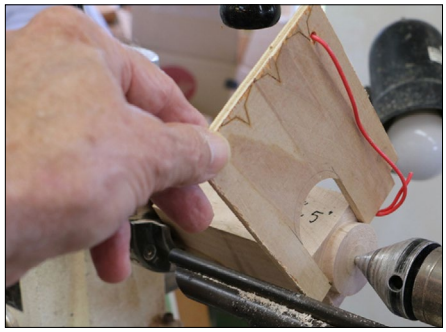


Photo 3 - Homemade gauge for checking tenon size

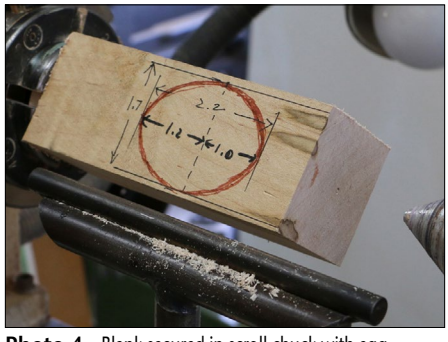


Photo 4 - Blank secured in scroll chuck with egg dimensions

Photo 5 - Defining the ends of the egg with a parting tool.

Photo 6 - Roughing to round and final diameter with a spindle roughing gouge.

Photo 7 - Redrawing the location of the largest diameter.

Begin with a 1 3/4" x 1 3/4" x 5" blank, and put a tenon on one end for holding the blank in a scroll chuck (Photo 2). I use a homemade gauge to check the size of the tenon (Photo 3). As a right-handed turner, I usually turn with the blunt end of the egg to my right; this maximizes my tool control. Draw two lines on the blank marking the length of the egg, and then draw a third line at the egg's largest diameter (Photo 4). It will be only slightly closer to one end than to the other. Define the ends of the egg with a parting tool (Photo 5), cutting about 1/2" into the blank.

Rough the blank to round using a spindle roughing gouge. Of course your pencil marks will be gone but the ends of the egg will still be defined and you can redraw the line marking the largest diameter (Photo 6, 7).

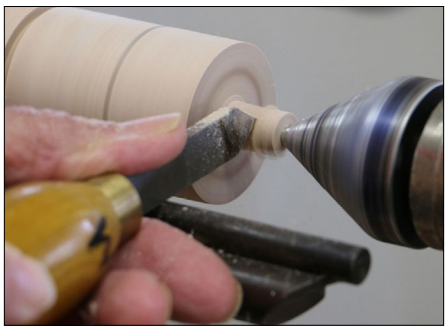


Photo 8 - Remove extra wood on blunt side of the blank.

Photo 9 - Cutting from the diameter line to the blunt end of the egg.

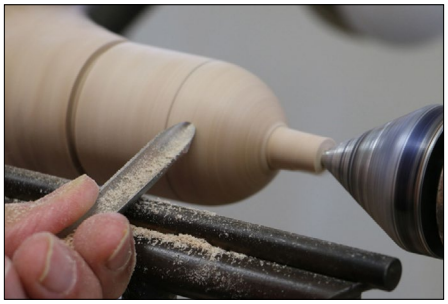


Photo 10 - Start the cut with the bevel on the wood and the flute in the 1 o'clock position (open flute).

Photo 11 - Rotate the flute as you cut the curve, like cutting a large bead.

Photo 12 - End the cut with the flute in the 3 o'clock position (closed flute).

Using a spindle gouge, begin to turn the curve on the right side of the egg. Start at the corner and "nibble" a bit at a time. Begin with the flute open and as you move it toward the right, begin closing the flute and moving the handle away from you in an arc. It is a combination of closing the flute and swinging the handle away from you toward the right that creates the curved surface on the egg. Complete the blunt end of the egg with a final cut that begins at the slightly off-center line you have drawn and ends at the far right. You have actually turned part of a large bead.

Photo 13 - Starting on the pointy end.

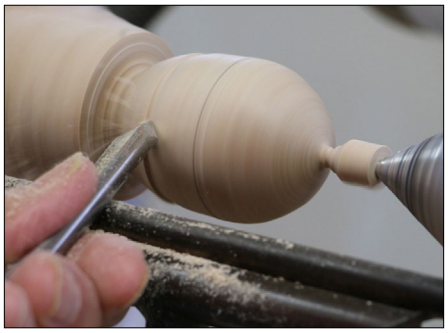


Photo 14 - Shaping the pointy side.

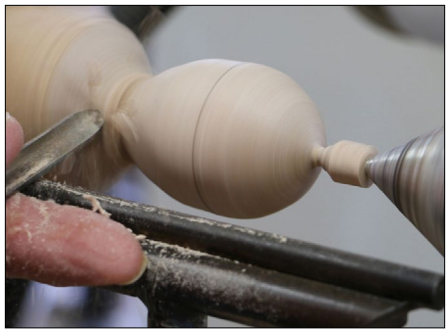


Photo 15 - Make a relief cut - cutting away wood on the headstock side of the blank so that you can get the spindle gouge around the end of the egg.

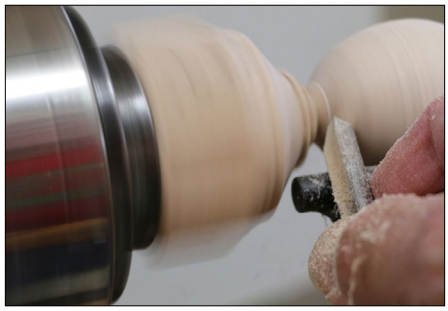


Photo 16 - Finishing the cut on the pointy end.

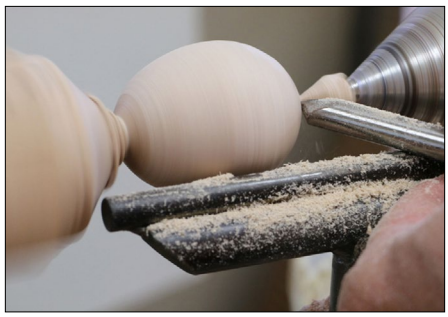


Photo 17 - Cutting off the tailstock nib.

Repeat the process on the pointy end of the egg, nibbling a bit at a time and ending with a sweeping curve to the left. For right-handed people, this side of the egg/bead is often more difficult. Because the motion of closing the flute and swinging the handle toward the left is necessary to complete a curve, your own body will be in the way of completing this arc. You have a few options: Stand to the left so your body is not in the way of the cut; switch the tool to your left hand to complete the arc; use a skew which does not require your moving; use a spindle gouge with a very short handle. Do not part off the egg just yet; leave about ¼". Then proceed with sanding the entire piece.

Photo 19 - Sanding the blunt end.

Photo 22 - Putting egg in Jam chuck.

Photo 20 - Cutting the egg from the blank with a Japanese pull saw.

Photo 23 -Sanding the egg in a jam chuck.

Photo 21 - Jam Chuck

Photo 24 - Turned Eggs

To sand the blunt end, I start with 150 grit abrasive, then 220, 320, 400, and finally, 600 grit (Photo 19). I use a Japanese pull saw to remove the egg from the headstock end (Photo 20), but I could part it off with a thin parting tool. At this point you could simply sand the unfinished end with sandpaper. However, to get a better surface, I put the egg into a jam chuck to sand the pointy end (Photo 21).

The jam chuck is hollowed so that the egg fits into the opening almost up to the largest diameter (Photo 22). The inside diameter of this jam chuck is 1 ½" (Photo 23). Pushing the egg into the jam chuck will secure it for sanding. The finish of your choice could be applied at this time; however, I often choose to enhance the eggs with dye, marbling, or pyrography (Photo 24).

Eggs can be smaller or larger than the one I turned for this article, but the process is still the same no matter what the size. Turning an egg will challenge you to cut down hill, keep the bevel on the wood, and make a continuous cut from left to right and right to left. This egg project also gives you spindle practice for several shapes: half sphere, gentle curve and a tapered point. Although eggs are a bit challenging, the end result is gratifying, and they make great gifts. Give it a try; I know you can do it.

Author

Walt Wager is a 15-year member of AAW. He is currently a woodturning instructor and coordinator of Camelot's Woodworking Studio at King Arthur's Tools in Tallahassee, FL. He can be reached at waltwager@gmail.com. His website is waltwager.com.

So You Want to Turn a Bowl...

Robert F. Lyon

Bowls are perhaps the easiest, and at the same time the hardest, object for the woodturner to make. They are the easiest because almost everyone can make a hollow in a piece of wood and call it a bowl. But, is it a really good bowl?

The first "bowl" was perhaps the two cupped hands of primitive man scooping drinking water from a stream or lake. According to Greek mythology, the first bowl was shaped over the breast of Aphrodite. Chinese potters of the Sung Dynasty were masters of bowl making, carefully forming their wares showing a strict harmony between lip, body, and foot. Korean and Japanese bowls tend to be more informal and often use forms and textures that suggest they were made quickly, often leaving tool marks evident in the surface of the clay. It is no accident that we use anthropomorphic terms to describe bowls and other vessels and their parts. People have often sensed that these forms have a symbolic similarity to the human body. Terms such as lip, neck, waist, and foot all suggest a sensation of wholeness in a composed piece that can be felt but is often hard to describe.

Bowls have evolved greatly over time, and now come in many materials, shapes and sizes. While it's easy to find generic, mass produced and often ugly bowls at the local discount store, making good bowls, or making good bowls great, is something that takes years of practice. Many craftspeople have spent their entire career making similar forms over and over searching for the perfect combination of form and material. It is only through the constant repetition of bowl making will the concepts of line, shape, proportion, and feel, come through in a unified statement. However, it's not the repetition alone, it has to be done with the eyes open, and the mind alert to the subtle nuances that make a good bowl great.

Although there are no hard, fast rules for how a bowl should be shaped, over the years certain shapes have developed and these tend to be favorites with woodturners and vessel makers in many other media, such as clay, metal and glass. The "S" curve or ogee curve creates a soft look in the finished bowl and tends to be somewhat formal in appearance. These bowls, when turned with very small feet, tend to border on the artistic rather than the utilitarian side. The parabola-shaped bowl lends itself to utilitarian purposes and can often be seen on tables holding fruit or in the kitchen laden with salad. Bowls that are fairly wide across the bottom are also often used for utilitarian purposes. A wider foot makes these bowls more stable on the work surface. Bowls turned with very small feet, tend to have a light airy feeling, while wider feet have a more stable feeling (and in fact are more stable) lending themselves to utilitarian function.

A bowl with an ogee shape appears more formal than other styles.

The parabola shape of this bowl lends itself to art or utilitarian purposes.

Bowls that are wider at the base make good utilitarian pieces.

Of course, some bowls don't have a foot at all and simply sit straight onto a table or other surface. The calabash bowl is an example of this style. There is an elegant simplicity in the appearance of the calabash bowl, and it is equally at home as either a piece of art or as a utilitarian turning.

The calabash bowl provides for a lot of interior volume.

The bowl turner also has choices in whether or not the bark should be left on the bowl or removed. By deciding to leave the bark intact, the turner is moving into the realm of asymmetrical design, and away from what is commonly thought of as utilitarian purposes. However, asymmetrically designed bowls, with or without bark, can still be used for utilitarian purposes depending on the makers intended function.

Leaving the bark on a turning is often an interesting option.

A few years ago, I was invited to be an artist in residence at a school in South Korea. As a gift for my host's mother, I brought a newly made wooden bowl that I thought was pretty good. I was told several days after presenting her with the gift, that she thought the bowl was beautiful, but it didn't feel right in her hands. The Koreans have a long history of bowl making, and they use and handle bowls on an everyday basis. Her statement made me rethink how I judge bowls and other utilitarian ware. This realization comes after both undergraduate and graduate degrees in ceramics, and teaching ceramics, glassblowing and sculpture at the college level for many years. Good bowls are not as simple as they appear.

You often hear people suggest, "look through books" for form ideas. While books are helpful reminders of shape and form, nothing is as good as seeing them in person. Seeing them in person gives you a true sense of the object's scale, texture, and proportion. Instead of solely relying on books, I recommend that you look at utilitarian objects of all kinds, wood, ceramic, glass, and metal - in person.

Go to museums and galleries. Look at how the artists have used combinations of line, shape, form, and material to form an artistic statement. Handle the pieces if possible, because picking them up will tell you how the weight is distributed, how smooth the lines are, and how it feels to be used and handled. Take a picture of those you believe are particularly good, or better yet, make a sketch. Drawing is a much better media as it helps combine the skills of the hand and eye, something that will be essential when you return to your lathe and try to make a bowl for yourself. Most importantly, learn to distinguish the best from the good, and the good from the bad. Because ultimately, you have to be the judge of what you show and what ends up as firewood.

So, do you still want to make a bowl? I certainly hope so, if for no other reason than it is a pursuit that will last a lifetime, providing countless hours of challenge and pleasure. ■

Author

Robert F. Lyon is an artist and woodturner working in South Carolina. www.robertflyon.com.

More on Bowls

The AAW offers members access to our complete library of publications through **AAW EXPLORE!,** an online tool to help members locate woodturning information, projects, articles, tips, and more, by quickly and easily using keywords. For more information on bowl turning, we suggest the following articles. Search **AAW EXPLORE!** using the author's last name or the first few words of the article's title.

- **"Twenty Ways NOT to Turn a Bowl,"** by Nick Cook, *American Woodturner,* vol 21, no 1. You'll learn why the spindle roughing gouge and skew chisel are not safe for bowl turning.
- **"Faceplates-A Simple Solution to Attachment,"** by Jim Rodgers, *American Woodturner,* vol 24, no 1, an overview of what you need to know about faceplates.

- **"Turning Your Very First Bowl: Old-Time Shop Teacher Demonstrates a Basic Path to Success,"** by John Kelsey, *American Woodturner,* vol 29, no 4, offers basic bowl turning setup, detailing equipment, and process.
- **"Scrapers: A Eulogy,"** by Richard Raffan, *American Woodturner,* vol 27, no 2, You'll learn methods for using scrapers for clean cuts on bowls.
- **"Turning Lumber: Bowls and Plates from Rough-Sawn Boards,"** by Betty Scarpino, *American Woodturner,* vol 9, no 2, offers several solutions to safely remounting dry-wood bowls for returning bottoms.
- **"Real Woodturners DO Use Scrapers,"** by Russ Fairfield, *American Woodturner,* vol 18, no 1. You'll learn more about the effectiveness of burrs on scraper edges explained in detail.

How to Dry Wood:
A Beginner's Guide

Dr. Sara (Seri) Robinson

Wood and water have a very complex relationship, and wood drying deals with every aspect of that relationship. Below is an introduction into how drying affects wood and tips for how to dry wood so it doesn't crack.

Types of Water in Wood

Water exists in two states in wood, bound and free. Bound water is water that is in the cell walls, bound to the -OH groups that dangle from the cellulose (cellulose is a polymer of glucose and glucose is a sugar...basically water binds to some of the sugars in wood). Water always binds first to the cell wall before filling up the inside of the cells. The water in the cells is called free water, and it is this type of water that is first lost from the cell upon drying.

So, there are two types of water, bound and free. Let's start with a completely dry cell. A cell with 0% moisture content (MC) has no water, bound or free. Now we move our wood cell out of the oven in which it was drying. BOOM, it hits the air. There is moisture in the air (called relative humidity, or RH). The wood INSTANTLY starts absorbing moisture from the air.

Water binds to the -OH groups. This fills the cell wall and the cell expands to accommodate the water. Somewhere right around 30% MC, the cell walls of most wood species become completely saturated with water and can't take any more. It is at this point that the cell lumen, the inside space of the cell (think the open, inside area of a straw), begins to fill with water.

But this water, the water that fills the cell lumens, doesn't come from the air. It takes liquid water to fill up a cell lumen, so this water would have to come from something like rain, water-saturated ground, etc. And the RH of the air has to be quite heavy, around 80%, to saturate a cell wall to 30% MC. With me so far? Yes? Good.

Wood Drying, Stage I

You have cut down a tree, or taken a fallen log from the forest floor. Said log contains both types of water, and is well above 30% MC (this is a magic number, this 30%. Remember that). You take the log home and stick it in your garage. Months pass. The wood doesn't crack, but it is still drying. You are a genius! You have magically managed to get your wood to stabilize without doing a thing. You are so proud of yourself.

Wood Drying, Stage 1

But wait. Another month passes. Now your log has split down the middle and warped beyond recognition. What happened?

What happened is this. Wood cells shrink and swell only within the cell wall. Once the cell wall is saturated (around 30% MC), the inside of the cell just fills with liquid water, but the cell can't get any bigger because the wall itself is already as big as it can get. Think of a balloon inflated to capacity. You could replace the air in the balloon with water but it would never get any bigger, because the rubber can only get so big. It is the same with wood.

That prized log is now yours.

When you brought your wood home, it had an MC higher than 30%. Maybe 50%, maybe 110% (MC is a funny thing; it can go above 100% because of how the math works). A change from 50% to 45% does not change the dimensions of the wood. So water is rapidly evaporating from the surface of the wood, but the cells are staying the same size.

Wood Drying, Stage II

The time of reckoning is at hand. The second your wood hits the fiber saturation point (our magical 30%), all the free water is gone. All that is left is the bound water that is stretching the cell walls. As the bound water evaporates, the wood cell walls start to shrink. This makes the wood shrink as a whole.

Unfortunately for everyone who works with wood, water is lost first from the outside of the wood. In order for the inside to dry, water must move from the inside to the outside to evaporate. Wood likes to have an even MC throughout the piece, so it will constantly move water to try to equilibrate both with itself and the surrounding air.

But what does that mean if you have cells shrinking on the outside, but cells still swollen on the inside? Wrap your hands around a hot dog and give it a good squeeze. Squeeze too hard and the hot dog smashes. The same thing can happen with wood.

Drying rack for bowls

Wood Drying, Stage III

Enormous pressure has built up on the inside of the wood as the shell has dried and is compressing the inside. Cells are being crushed. This stage is called 'case hardening', and is a classic error phase of the beginning woodworker. Those scanning moisture readers only read moisture at the surface, so many people purchase them, scan their wood, then mistakenly think it is dry. Remember, just because wood is dry to the touch doesn't mean it is actually dry! It may just be dry on the surface.

The good news is, water from the inside is moving slowly to the surface. This will re-swell some of the outside cells and relieve some of that pressure. If you followed a proper kiln schedule (these are available online), you dried your wood nice and slowly—slow enough to allow moisture to move out from the center before the cells on the outside completely dried. If so, you probably didn't honeycomb your wood, which is what those internal separations and cracks are called.

Wood Drying, Stage IV

An equilibrium is reached between the MC inside the wood and in the outer shell. Pressure begins to release from the inside. Some formed cracks may close at this point, and those that do close are not likely to reopen, but will be points of decreased strength in the finished piece.

Wood Drying, Stage V

The remaining extra moisture moves from the inside of the wood to the shell. The shell is swollen again but the inside is dry. In this stage, the pressure is reversed, with the inside of the wood trying to shrink but the outside being swollen and not allowing the shrinkage. This is the final (and most devastating) cracking stage. With the tension from the inside, the wood literally tears itself apart as it tries to shrink internally, and pulls against the bloated shell.

Wood Drying, Stage VI

At last, final equilibrium is reached. All of the wood is at the same MC, and is equilibrated with the RH of the surrounding air. As long as the RH of the air doesn't change, the wood will not change any more, either.

How to Avoid all the Cracking

Cracking happens while wood dries due to the forces that build up in wood as the drying stages progress. A kiln schedule is a drying schedule, specific for each wood species that gives heat and relative humidity conditions on an hour to hour basis over several weeks. Some hours the heat may be higher or lower, dehumidifiers may run or sprinklers may run (sprinkling the top of the wood can help prevent case hardening). The kiln schedule's entire purpose is to guide you through drying without getting cracks. The schedules have been well researched and, if followed properly for each wood species, completely prevent cracking. Some, like those for sugar maple, can also affect what color the wood changes to when drying. For sugar maple, a whiter color can be achieved with one method of drying, and a richer brown color with another.

Air drying is a terrible method to dry wood as it does nothing to help regulate evaporation of water from the wood. If you are serious about working with green wood on a semi-production scale, it is worth your time to set up a kiln with a space heater and some sprinklers. Kiln plans and schedules can be downloaded for free from the internet. ■

Author

Dr. Sara (Seri) Robinson holds the Gene D. Knudson Forestry Chair, and is an assistant professor of wood anatomy in the Department of Wood Science & Engineering at Oregon State University. Her primary research areas are in spalted wood and wood sculpture, and she is heavily invested in helping woodturners better understand the science of their material. She created and runs the woodturning program at Oregon State University, and has written the quintessential resource for spalted wood: Spalted Wood. The History, Science, and Art of a Unique Material. You can learn more about Dr. Robinson, her research, and her programs at http://www.northernspalting.com

Turning Green Wood

Sam Angelo

In the last issue of Woodturning FUNdamentals (#6-3), several woodturners described their processes for drying green wood and keeping it from cracking. This month, Sam Angelo, who lives in Worland, Wyoming, describes the process he uses. Sam admits that Wyoming is very dry and the temperatures are extreme, falling to -35 degrees in the winter and rising to 105-110 degrees in the summer. Average rainfall is only about 8".

Sam Angelo in his workshop in Wyoming.

I find that turning green wood is not only a joy, but it costs a lot less money! Although there is a market for buying dry bowl blanks, my idea of fun is to grab a chain saw and scavenge whatever is offered. Where I live in central Wyoming, the most common woods are box elder (I especially like the box elder burl), elm, American ash, walnut, and Russian olive (this wood tends to crack very easily). Moisture content of a newly felled tree can average from 30% to 200% of the actual weight of the piece of wood. So learning to monitor the moisture level of the wood with a digital meter will increase your success in turning wet wood.

The process I use is not a short one, averaging from five to six months before the piece is ready to finish turn, but I get satisfaction from knowing I am reclaiming wood. Water escapes more quickly from end grain than it does from "side grain." Left unattended, a green log will dry starting at the surface, while the interior remains at a higher moisture level. When I bring home a newly felled log, I prefer to cut it into blanks I can use and core the blanks into as many bowls as possible. Although the shavings do tend to plug up the kerf, (kerf defines the width of the saw blade) wet wood is fairly easy to cut. Once cored, you have two choices. You may rough-turn the bowls or turn them through to completion. Whichever choice you make, place the completed or rough-turned bowls into a paper bag or box and pack them with damp shavings. The entire drying process will take about six months. If your wood selection and preference are for an organic shape, omit the bag process and let nature take control.

I check the contents of the paper bag after 1-2 weeks replacing the damp shavings with dry shavings. I wait for another month or two before checking on the turnings. I remove all the shavings, take a moisture reading, and put the pieces back into the bag or box. Moisture meters specifically for measuring the moisture content of wood are available online and range in price from about $15 to $100. The meter, which usually has two sensor pens, is fairly accurate when measuring rough-turned pieces. When the pens are applied to the surface of the wood, a digital display gives the moisture content of the wood. When the moisture content matches the general atmospheric moisture level, the piece is ready to be finish turned.

Weighing the wood throughout the drying process is a good option if you do not have a moisture meter. When the weight of the piece stabilizes for a total of about two weeks, the rough-turned blank can be completed. When the piece has reached a stable moisture level suitable for my area, I will often simply remove the blank from the bag and put it on a shelf. I'm in no hurry and when I get a little spare time, the blank is there waiting to be turned.

A word of caution: if the piece has begun to split or crack, I discard it. Turning cracked wood is not a safe practice.

I lose very few pieces following this process.

When a bowl blank is substantially more elliptical than round, the bowl has "turned the corner" and not likely to split. You can now be more aggressive with this bowl in the drying process. Check with a moisture meter to insure that that the moisture content has stabilized then begin to finish turn your blanks.

Guidelines For Drying

- An even wall thickness that is 10% of the diameter of the rough-turned blank is an accepted guideline.
- A base that is thicker than the walls will lead to more splits when drying.
- A more abrupt angle from the base of the piece curving into the walls will also lead to more splits.
- **Speed Is The Enemy:** Bowls are lost to splitting because of moisture escaping from the wood too rapidly.
- Remove as much of the pith from the bowl blank as early in the milling process as possible. ■

Sam enjoys turning burls and tries to utilize every bit of the wood.

Once rough turned, the bowls are placed in a box packed with the damp shavings.

Sam's rough-turned blanks may have the bark on them or off.

Author

Sam Angelo is currently the president of the Worland Wyoming Woodturners, a local chapter of the American Association of Woodturners. He spent 38 years in public education and has produced in excess of 90 videos on all aspects of woodturning. Now retired, Sam continues to turn daily, write, teach, and demonstrate woodturning.

Have You Tried This Wood Yet?

Dave Schell

The bark of the coffeetree has a rusty red color next to the sapwood.

You have probably seen many turned items in exotic woods, such as ebony, ironwood, zebrawood, bubinga, and various burls. They look awesome, but can also be expensive to turn. I am a firm believer that local woods can also make eye-catching pieces without the expense of using an exotic wood. Have you ever thought about the variety of woods that may be available in your own community?

This article is going to describe one wood I discovered while visiting a local business only three miles from my home. The wood has become one of my favorite woods to turn and is unique to my area, so the bowls I create from it usually sell quickly. Besides the wood I discuss in this article, there may be a multitude of woods available in your neighborhood or local community if you just learn how to educate yourself on discovering new species to turn. The best part is that they could be FREE if you talk to the right people and become a little patient.

The wood I've discovered that has quickly become one of my favorites is Kentucky coffeetree (Gymnocladus dioicus). The tree is found primarily in the central part of the United States (Western Ohio, Indiana, Illinois, Missouri, Northern Kentucky). I am very fortunate! I live in South Central Pennsylvania and have purchased a property with six or seven coffeetrees that are 100+ years old.

I discovered the trees while walking on the property and picking up the seed pods and leaves trying to identify what they were. The seed pods are long and dark brown and the leaves are similar to walnut and butternut. The bark is also similar to walnut and butternut, but there is a distinct reddish interior of the bark just outside of the cream colored sapwood. I have seen walnut trees and butternut trees before, but the reddish bark interior is what drew me to this tree. It was so unique, I had to take a few pieces home to turn.

The first time I turned the wood, I was amazed at how the colors contrasted with each other and how the rings of the wood stood out. One piece of wood gave me four different colors—red bark, a cream sapwood, a darker heartwood, and darker rings!

The fun with my first few bowls was short-lived, however, and I almost burned all the rest of the wood I had. My first three bowls cracked in several places. I quickly discovered that this wood is easy to turn, but difficult to avoid cracks. When I say "crack," I don't mean hairline cracks. I mean 1/8" x 1/4" cracks that you can clearly see through. The wood cracks quickly if not dried thoroughly before turning. Once I learned to wait and dry the wood before I turn it, the cracking disappeared and the pieces turned out beautifully. Unlike other woods I've turned, the items did not tear out as much as I expected and did not require excessive sanding time. When sanded to 400 grit abrasive, the items polish up quickly and look superb when using a simple oil finish.

Keeping the bark on the turning makes a bold statement when the piece has finish applied.

When possible, I attempt natural edge bowls to keep the red bark as an eye-catching element. I sometimes have to glue bits of the bark to the edge of the bowl, but the bark usually sticks and does not require gluing.

I can keep the walls of my bowls thinner (5/16" or 3/8") with this wood and do not notice much movement in the wood if the wood is dry. The rings really stand out and the bowls are always eye-catching at a show.

Even without the bark, the wood of the coffeetree makes a beautiful turning.

As with all woods you turn, you should be aware of any toxicity. I checked the AAW recommended website for Wood Toxicity (The Wood Database: Wood Allergies and Toxicity: http://www.wood-database.com/coffeetree/). I also turned to the University of Kentucky's Horticulture Division to get information about this tree before I turned it (http://www.uky.edu/hort/sites/www.uky.edu.hort/files/pages-attachments/GYMNOprint.pdf) and discovered that parts of the tree (seed pods and leaves) have some toxicity. The tree was at one time, the state tree of Kentucky. The USDA also had information about this tree (https://plants.usda.gov/plantguide/pdf/cs_gydi.pdf).

I did not notice any odor with the wood once it was dry, but when it is freshly cut, there is a distinct mildew-like odor, which lasts a few days. The grain is straight when cut into boards and the wood can be used for any wood project. I've used it for boxes, cutting boards, and am planning a table with a larger slab. When I went back to the property to cut more wood, I talked with an elderly neighbor who described how many, many years ago the seed pods were used to make a version of coffee, hence the name "coffeetree." It was very common for the families in the area that weren't as well-off as others to harvest the beans, roast them and use them as a coffee replacement. He said it wasn't the best "coffee" he ever had, but it wasn't the worst. I would encourage everyone to search out this tree if you live where it may grow. Look for the seed pods on the ground as a clue; you may be standing beneath one. If the tree has reddish bark near the sapwood, grab your chainsaw. ■

Common Name(s): Kentucky Coffeetree, Coffeetree
Scientific Name: Gymnocladus spp., Gymnocladus dioicus
Distribution: Eastern North America
Tree Size: 65-100 ft (20-30 m) tall, 2-3 ft (.6-1 m) trunk diameter
Average Dried Weight: 42 lbs/ft3 (675 kg/m3)
Specific Gravity (Basic, 12% MC): .53, .67
Janka Hardness: 1,390 lbf (6,180 N)
Modulus of Rupture: 10,500 lbf/in2 (72.4 MPa)
Elastic Modulus: 1,420,000 lbf/in2 (9.79 GPa)
Crushing Strength: 6,600 lbf/in2 (45.5 MPa)
Shrinkage: Radial: 4.1%, Tangential: 7.6%, Volumetric: 11.9%, T/R Ratio: 1.9
Yields seed pods that are 5–10" long and green in color, turning brown, that persist through the winter. Coffeetree is fluorescent when viewed under a blacklight, glowing a bright yellowish green.

Author

Dave Schell lives in Mount Joy, PA and is a web designer by day and bowl turner by night and on weekends. Email Dave with questions at dave@imakewebpages.com or view his work online on his Facebook page: http://www.facebook.com/imakewebpages or Instagram: https://www.instagram.com/imakebowls/.

The Benefit of a Well Made Tenon

Jim Piper

Have you ever made a tenon for a scroll chuck only to reverse your bowl and discover it doesn't turn true? If you understand what shape and dimensions are required for a tenon to fit the jaws of your chuck most securely, and then make the tenon accurately, your bowl will turn truer and reduce the time required to retrue it.

Most of my experience is with dovetail jaws. They pull the jaws tight against the base of the tenon as they are tightened around the tenon, which creates the best potential for a true fit. Profile jaws clamp straight in against the tenon compressing the wood with the serrations of the jaws and are less likely to clamp with as much accuracy.

The inside of dovetail jaws, the clamping part, is smaller in diameter around the base of the tenon and larger in diameter around the end of the tenon. When the tenon is properly formed, the larger diameter of the end of the tenon will not pass through the jaws, holding the work securely in the jaws of the chuck.

It is best, when possible, to make the tenon the appropriate diameter to fit the jaws when the chuck is scrolled in nearly all the way. Scroll chuck jaws are manufactured in a completely circular form and then cut into four separate jaws that slide toward the center of the chuck as they tighten around the tenon. Vicmarc jaws form a perfect circle when there is a 2mm gap between adjacent jaws to allow for the kerf of the saw blade that was used to cut them into four jaws. When cutting a recess in a bowl blank for the outside of dovetail jaws to expand into, make the recess just larger than the jaws when they are completely closed. When the jaws are expanded beyond a true circular form, they will still hold, but your work is more likely to turn true when the jaws make contact completely around the tenon. ■

Author

Jim Piper
jimpiper@me.com
V.P. Cascade Woodturners

Grippy Gloves to the Rescue

I use jam chucking for final shaping when I'm making boxes and I often have a hard time pulling the small lid off the jam chuck with my bare hands. I have discovered that "Grippy" gloves work like a charm. Essentially, the gloves have textured latex grips and can be purchased in the garden section of any hardware store. I have also used plain latex dishwashing gloves with the same result.

In addition to using these gloves when I am removing a tightly fitting lid from a jam chuck, I find that these gloves are handy when holding onto a small piece while using a belt or disk sander. I've even used them to hold onto pieces while using my buffing system.

Dawn Herndon-Charles
Wheaton, IL

Grippy gloves can be found in the gardening section of most hardware stores.

Dishwashing gloves are equally effective.

Mount Natural-Edge Bowl Blanks

Use a Forstner or spade drill bit the same diameter as your spur center to drill a hole about ½" to ¾" (13 mm to 19 mm) deep in the center of what will be the top or inside of your bowl blank. When you mount the wood, the spur center will act like an extra hand to hold the piece so you can use two hands to draw up the tailstock. Additional benefits include creating a flat surface when turning a natural edge and removing punky bark or sapwood to get to the solid wood below. Also, the wood is less likely to fly off the lathe, even if it is unbalanced.

Steve Schwartz
Fredericksburg, VA

Snap Ring Pliers for Penturning

I am a beginning turner but I have already learned something that I think might help other penturners like me. While inserting tubes into pen blanks one day, I came to the conclusion that there had to be a better way than to use a drift pin punch or an insertion tool, both of which are often messy. I thought of snap ring pliers, a tool that exerts pressure both in the expansion and compression mode. So I got mine out and set them on the expand function. It worked like a charm.

Snap Ring Pliers exert pressure in the expansion and compression mode. The pliers make holding the brass tubes and inserting them into pen blanks a lot less messy.

By using the snap ring pliers, I found that not only did I have better control of the brass tube, but I no longer had to handle the tubes with my fingers when putting glue on them. I inserted the tips of the pliers into the end of the tube, gave a slight squeeze, and when I inserted the tubes into the blanks, I could set the depth I wanted. When I released the pressure on the pliers, the tube stayed in place – nice and neat, and no glue on the fingers. The pliers sure made putting the tubes and blanks together much easier and a lot less messy.

David Vance
Russellville, AR

Lighted Mag Eyes

I'm not saying that I'm getting old, but for the past few years, I've found that I need a lot more light to see clearly, and occasionally, a lot more magnification than regular glasses can provide. So, I'm passing on a tip that I learned from Gene Colley, Director of Canyon Studios, Copper Canyon, TX.

I often used a Mag Eyes magnifier to see detailed work better. That helped but there still was not enough light to see clearly. So, at a local sporting goods store, I purchased a light that is designed to fit on the bill of a cap. It is designed for night fishing. You could use one of the headlights attached to an elastic headband, but the batteries make it a bit heavy. The cap light uses 4 LED light bulbs and 2 thin wafer-like batteries.

I attached the light to the top of my magnifier with a generous glob of hot melt glue, and while the glue was still soft, I adjusted the light to illuminate the field in the direction of my work. Now I'm able to see detailed work more clearly.

Bill Berry
Deer Park, TX

Storage for Small Blanks

I have been turning only two years and until I'm ready to tackle larger projects, my passion has become pens, letter openers, bottle stoppers, fan/light pulls, kaleidoscopes, and other small items. In order to organize the various blanks I have accumulated (totaling more than sixty at this time), I created a wood blank storage system using 4" (10cm) PVC pipe.

I cut the pipe into 6" (15cm) lengths and sanded the front edge with my belt sander to smooth the rough edges. I made supportive sides to hold the stacked cylinders in place. To do this, I screwed two strips of wood with a channel in them to my countertop (channel facing up), placed thin panels into the channel, and screwed the panels to each side of the upper cabinets. My storage system comprises sixty cells, but of course you can create whatever number your space allows.

I attached labels below each tube and covered them with packing tape for durability. You could also laminate a sheet of printed labels and cut them apart. My labels identify the type of wood and the country/region the wood came from, as I have found customers are interested in knowing that information when they purchase my products.

Darcie A. Didden
Oakland, AR

Ask the Expert: Wood Filler

Q I am turning a Russian olive bowl. What grain filler do I use for the soft, porous grain spots? I want the surface to be glossy smooth. Help!

Ernest Kuhn
Kennewick, WA

A Ernest, the answer depends on whether you need to fill the grain or what we call pores in the wood such as those in ash, oak, and mahogany, or are you trying to fill in soft or punky areas? To get a really glossy finish, all depressions in the wood such as pores, dents, the low punky areas, etc. have to be filled so the entire surface is level. One way is to simply apply a finish. Let it dry and then level it with 400 grit abrasive so only the low spots are glossy. Repeat this process until you sand and there aren't any more glossy spots or low spots. Continue to apply another coat or two and you will have a very glossy piece. On some finishes you will then have to finish the finish to make it look like glass. For this process I use automotive scratch remover followed by swirl remover and hand rub it. Both of these products are available at most automotive stores. The hand rubbing is easier if the piece is still on the lathe, hand turning the piece.

This process will take a lot of coats of finish, particularly if the finish is thin. Some people will use pore filler or grain filler that can be purchased from the better woodworking stores. You may need to tint the filler to match your wood. This is a paste about the thickness of toothpaste. Wipe it on and then use cheesecloth to wipe it off going across the grain and leaving only what's in the grain. It may take two or three applications to really level the grain. Then apply as many coats of finish that it takes to get the desired gloss. This process of using grain filler followed by finish also works well if the area to be filled is slightly concave.

If your problem is punky areas in the wood, then I can make two suggestions. One is to soak the problem areas with thin CA glue. This will harden the area and allow any finish to sit on top instead of soaking in. For larger areas, I use thinned lacquer. I thin the lacquer to about 50/50 with lacquer thinner and brush it on the area. I prefer to use a disposable foam brush. It may take two or three coats but it dries fast so it doesn't take too long. You should do a test to make sure lacquer is compatible with your finish, and only apply in a well ventilated area. You can also use thinned shellac, which is compatible with most finishes. All of these tips and suggestions require time and attention to detail. A glossy finish requires attention; only the smoothest surfaces will give good results. Any slight flaw in the surface will be magnified by any finish.

John Lucas
Sparta, TN

John Lucas is a retired photographer, has been working in wood for about 35 years, and also dabbles in metalworking. He also enjoys modifying machines, making tools, and sharing his knowledge through written articles and videos. He has taught classes at John C. Campbell Folk School, Arrowmont, and The Appalachian Center for Crafts.

Milling Logs into Bowl Blanks Using a Chainsaw

with Sam Angelo, Wyoming Woodturner (TRT 11:05)

You may access this video using AAW's Video Source. Simply type, "Milling Logs," into the search box and click the magnifying glass icon to the right of the search box.

If you have difficulty using the embedded hyperlink of Video Source, paste the following link into your browser http://aawvideosource.org/php/link.php?t=video_detail&f=link&i=362.

A Note About Safety

An accident at the lathe can happen with blinding suddenness. Respiratory and other problems can build over years. Take the appropriate precautions when you turn. Among the most important of these is the use of face shields, safety glasses, and dust masks. It is important to observe all manufacturers' safety guidelines. Following manufacturer's safety guidelines and information will help you continue to enjoy woodturning years into the future. Chainsaws can be very dangerous. If you are not experienced with a chainsaw find someone who can instruct you. Be very careful. Safety is YOUR responsibility.

Little Stadium
Cindy Pei-Si Young
Taipei, Taiwan

Burnt Ash with Turquoise
Jim McLain
Socorro, NM

5-Sided Box
Bill Ooms
Prescott, AZ

Walnut HF
Michael Foster
Springfield, VT

Kansas City Substitute
Michael Alguire
Datil, NM

Weed Pots, 4 Sides Turned, Sides C and D
Mike Maffitt
Olive Branch, MS

Engage with the AAW Forum Community!

The AAW Forum is a volunteer member-moderated community ideal for sharing work and ideas, obtaining feedback, and connecting with other woodturning enthusiasts.

We encourage you to register for the AAW Forum, ask questions, seek advice, and submit photos of your work. Your work could be the next "Turning of the Week!" Click here to visit the AAW Forum.

Submissions

Want to share your work in Woodturning FUNdamentals? Please send your high-resolution images along with title, size, and materials used to linda@woodturner.org.

Want to "pay it forward?" Woodturning FUNdamentals welcomes other content including tips, projects, and informational articles. Please send your content ideas to linda@woodturner.org. The deadline for submissions for the **November** issue of Woodturning FUNdamentals is **September1, 2017**. Please note: All content submitted may be subject to edit.

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Woodturning FUNdamentals

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

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222 Landmark Center | 75 5th St W | St Paul, MN 55102
877-595-9094 (toll free) | woodturner.org