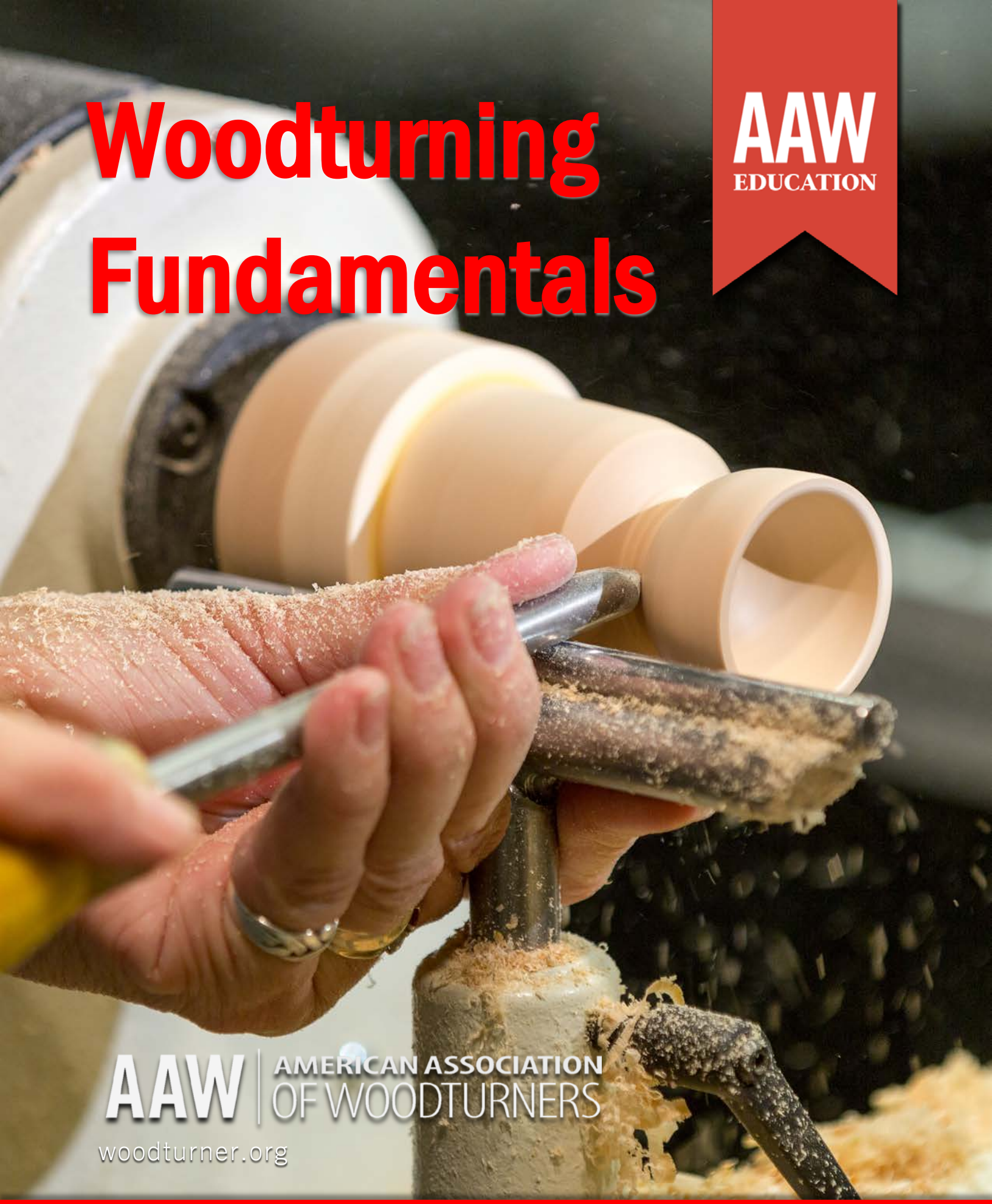
Woodturning Fundamentals

AAW EDUCATION



AAW | AMERICAN ASSOCIATION OF WOODTURNERS

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July 2014 | VOLUME 3: ISSUE 4 | Safety | Projects | Tips | Techniques

Woodturning Fundamentals
TABLE OF CONTENTS

AAW EDUCATION

July 2014 - Volume 3: Issue 4
Features

Woodturning Fundamentals
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A Note About Safety:
An accident at the lathe can happen with blinding suddenness. Respiratory and other problems can build over years. Take precautions when you turn. Safety guidelines are published online at http://www.woodturner.org/?page=Safety Following them will help you continue to enjoy woodturning.

Cover photo: Andi Wolfe

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WELCOME

A Note from the Woodturning Fundamentals Chair

We are pleased to announce that AAW is launching a new program called **Turning to the Future** to attract full-time students ages 10 to 25 to woodturning.

Please share this information with student turners and any teacher who incorporates woodturning into their arts, crafts, and science curriculums. Key features of the program are listed below.

Turning to the Future

Who

- Students ages 10 to 25
- Teachers/instructors who are American Association of Woodturners (AAW) members and teach hands-on woodturning classes to students ages 10 to 25

Purpose/Objectives

- Raise awareness of woodturning for students
- Inspire students to turn and create wood art and craft for the rest of their lives
- Raise general awareness of American Association of Woodturners (AAW) and educational mission
- Support teachers/instructors who teach hands-on woodturning classes

Benefits

- Students may register for a free, online American Association of Woodturners (AAW) membership which includes six issues of the *American Woodturner* journal and *Woodturning Fundamentals* per year in electronic format, as well as access to the single largest collection of woodturning information and resources anywhere in the world.
- Teachers/instructors who have enrolled will receive a “promo code” which they will provide to their students so that the students may register for a free, digital AAW membership.

Eligibility

- Students ages 10 to 25 are eligible
- Teachers/instructors should be American Association of Woodturners (AAW) members and teach a series of hands-on instructional woodturning sessions to students ages 10 to 25

To Apply

- Students may register for a free, online student American Association of Woodturners (AAW) membership by clicking on the following link: https://aaw.site-ym.com/general/register_member_type.asp Next, under "Select your membership level below" click "Student" from the list of member types. Then, follow the instructions to apply and enter the promo code provided by your teacher/instructor.
- Teachers/instructors may enroll in Turning to the Future by completing the application at http://www.woodturner.org/?page=TurningtotheFuture.

I would like to thank Linda Ferber for her efforts to develop and implement the **Turning to the Future** program and for making the free, online student membership a reality. Linda and I are very excited about sharing woodturning with a new generation, as well as the potential for growing the number of students who are members of the American Association of Woodturners.

We are always interested in receiving your comments and suggestions for *Woodturning Fundamentals*. Please send your comments and suggestions to linda@woodturner.org or to me at denis@woodturner.org.

Sincerely,

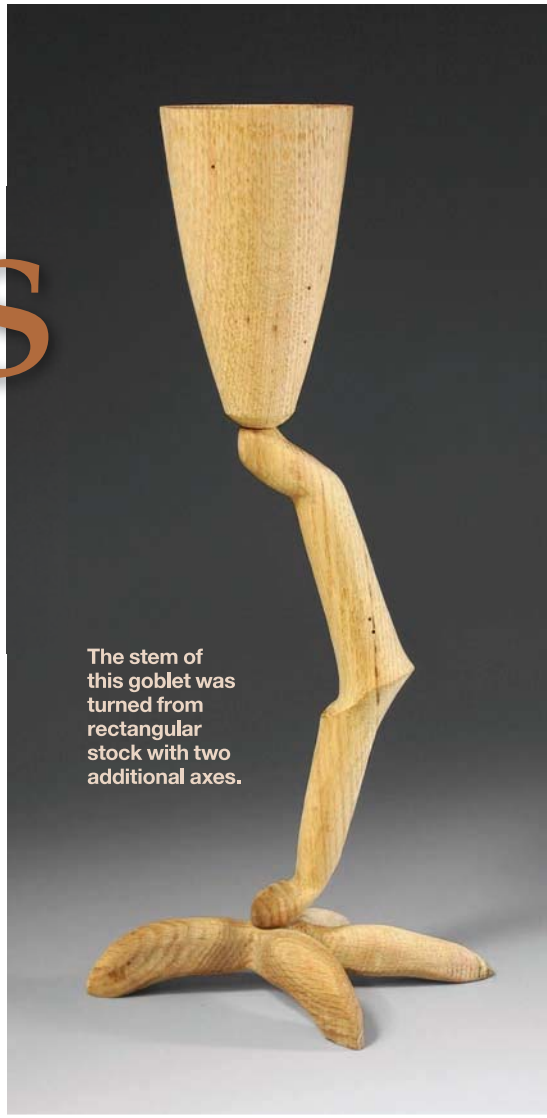
Denis Delehanty
denis@woodturner.org

A systematic approach to

Multi-Axis Turning

Many woodturners find that multi-axis turning is difficult to figure out and is an even bigger challenge when trying to predict the outcome. Understanding the reasoning behind multi-axis turning is the first step to proficiency.

By Barbara Dill



The stem of this goblet was turned from rectangular stock with two additional axes.

For years, I've been intrigued with multi-axis spindle work. Although the candlesticks and bottle stoppers I turned were fun and whimsical, asymmetrical forms were a diversion from the symmetrical shapes I usually produced on the lathe.

My initial multi-axis shapes were similar—mostly beads and discs of varying construction. Candidly, I had not explored the many options that this turning style has to offer.

That all changed in the spring of 2006 when I attended Mark Sfirri's three-day workshop at Virginia Commonwealth University in Richmond. I was impressed with how Mark had taken the concept of multi-axis turning to heights I had not imagined.

Note: This is the first of a two-part series on multi-axis turning. In the Winter issue, we'll show how to create some pleasing variations. But first, some important concepts.

Now, months later, after spending many hours experimenting with these concepts, I have found a way to systematically conceptualize and categorize multi-axis spindle turning.

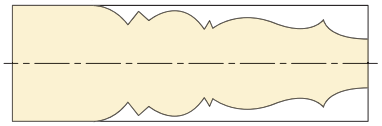
Two variables

Traditionally, architectural turnings are spindles made by using one axis (**Drawing 1**). When the spindle is turned on one axis, the outcome is a spindle that's ideal for a chair or an architectural feature. Beads, coves, and straight lines add visual interest.

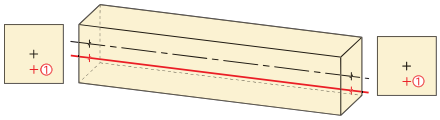
Just as traditional spindles are made by changing the shape (cutting beads, coves and/or straight lines), multi-axis spindles are accomplished by changing the axis as well as the profile:

1. Placement of the axes. One or both ends of the spindle are moved from the center axis to a different axis. The distance and direction in which the new axes are placed

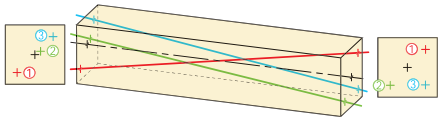
Drawing 1



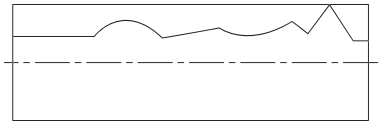
Drawing 2



Drawing 3



Drawing 4



relative to the center axis is one major variable inherent in multi-axis turning.

The axis is considered *parallel* when each end is moved the same distance and direction from the center axis (**Drawing 2**).

The axis is considered *twisted* when each end is moved in different directions and/or distances from the center axis. **Drawing 3** shows but one of many ways to move the axis by twisting it.

2. Line, curve, or angle on the spindle. On architectural spindles, coves, beads, or straight lines create a shape. This is true as well on multi-axis spindles (**Drawing 4**).

Predicting results

One of the challenges of multi-axis turning is predicting the result when the axis is changed or when a certain cut is made. When trying to think more clearly about this, I realized that the way to look at it was to not focus on the axis or the cut. (I tried this approach and could not make sense of it.)

A goblet based on a circular-type bead (bottom) and a twisted arc shape

Each of the spindles *above* are circular outcomes. The spindle on the *right* was made with parallel axes; the rest have twisted axes.

Each spindle *above* is an arc outcome. The third spindle from the *left* has twisted axes. The other three have parallel axes.

I finally realized that the results or outcomes need to be seen as the primary focus, and the ways the spindle is manipulated (or what is done to the spindle or the variables) need to be seen as the factors that create the result. So, the results (the final product) depend on the things that have been done to the wood (cause and effect).

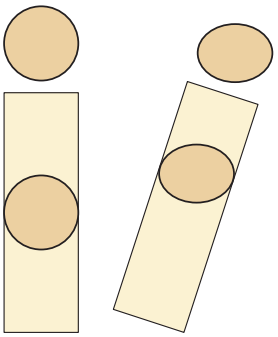
After getting past this hurdle, you can then conceptualize that there are two basic and stunning types of results that occur when turning a multi-axis spindle. Each of these outcomes can occur when using any of the various ways to mount and shape the spindle, as shown on the following page.

If you take a close look at the end results of many spindles, it becomes clear that the horizontal cross sections are either circular or arc-shaped. The difference is a result of whether or not the new axis has been partially cut, creating an arc, or cut deeply enough to create a cylinder.

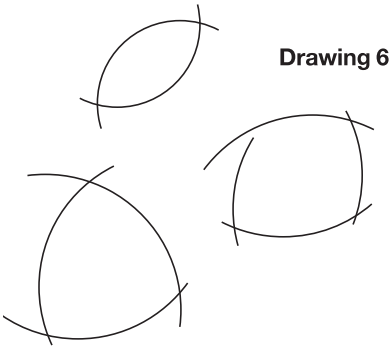
To explore this further, look at the **circular** or oval-shaped outcomes. These occur when the axis is turned to a fully round shape. Beads, coves, or straight lines are then turned in the newly formed cylindrical axis. The result is that the horizontal cross section of this spindle is a shape that is a full 360-degree circle or oval. The oval is made when the cylinder is on an angular axis (**Drawing 5**).

The **arc-shaped** category of outcomes happens when the new axis is partially turned and an arc is created. These arcs intersect, resulting in the shape of a lens with two or more points when the horizontal cross section is viewed (**Drawing 6**).

Drawing 5



Drawing 6

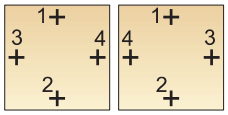


Outcomes

It helps to create the various types of results and keep the samples for references. The table below represents only a sampling of outcomes. If you make a board and categorize your samples, you will discover variations you haven't yet explored. This or a similar organization will help you explore design ideas.

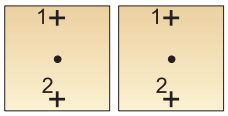
PARALLEL AXIS — ARC TYPE

STRAIGHT LINE



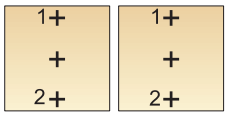
4 parallel axes at 90°

CURVED LINE



2 parallel axes

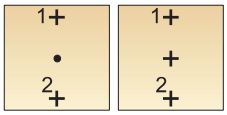
ANGULAR SHAPE



2 parallel axes

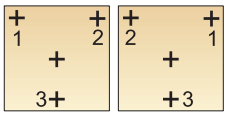
PARALLEL AXIS — CIRCULAR TYPE

STRAIGHT LINE



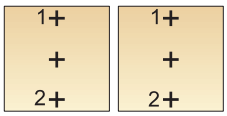
2 parallel axes

CURVED LINE

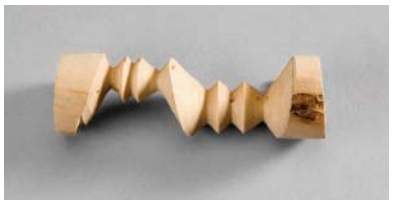


3 parallel axes

ANGULAR SHAPE

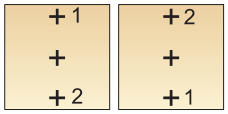


2 parallel axes



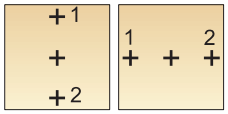
TWISTED AXIS — ARC TYPE

STRAIGHT LINE



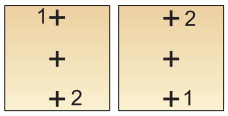
2 twisted axes

CURVED LINE



2 twisted axes at 90°

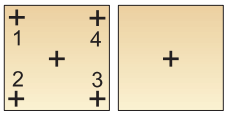
ANGULAR SHAPE



2 twisted axes

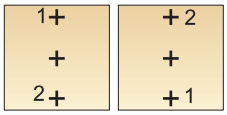
TWISTED AXIS — CIRCULAR TYPE

STRAIGHT LINE



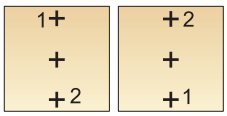
4 twisted axes

CURVED LINE

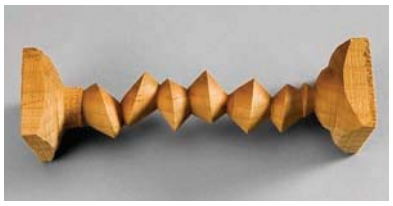


2 twisted axes

ANGULAR SHAPE



2 twisted axes



Photos: Timothy J. Park Photography

This side of the chart contains samples in the category of outcomes in which the horizontal cross sections are arc-shaped. This happens when the axis is changed and the cut merely forms an arc shape on the wood rather than going deep enough to create a cylindrical shape. All the variables can be used to create this outcome.

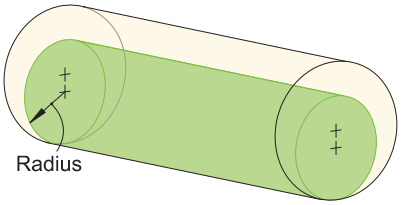
The examples *above* include samples in the category of outcomes in which the horizontal cross sections are circular. This occurs when the axis is changed and the cut goes deep enough to create a cylindrical or circular shape on the new axis. The new axis is then used to form various shapes. All the variables can be used to create this outcome.

Explore 8 Variations

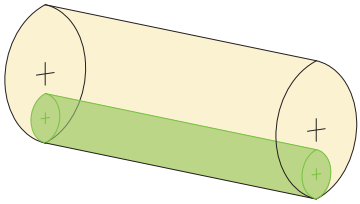
The positioning of axes affects size, shape, and angle. Here are a few of the variations.

1 The distance of the axes from the center.

The green areas on the drawings *below* represent the solid wood that is seen as the spindle spins. The area of the spindle that is not a part of the solid wood is the "air wood."

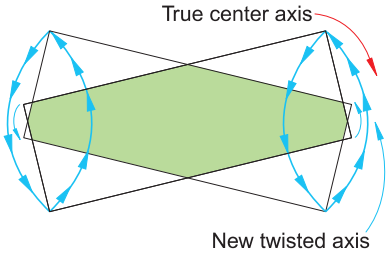


The closer the new axis is to the center axis, the larger the new diameter will be. This makes it harder to create an arc-type turning since a shallow cut will create a cylinder fairly quickly.

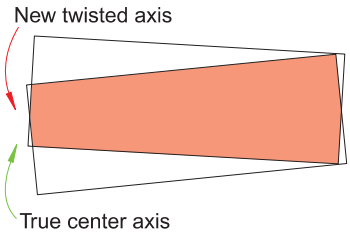


The closer the new axis is to the outside of the spindle, the smaller the diameter will be. Since the cut will be in the air wood, the arc outcome is easier to achieve with the new axis closer to the outside of the spindle.

2 Twisting of one end or both ends of a spindle.



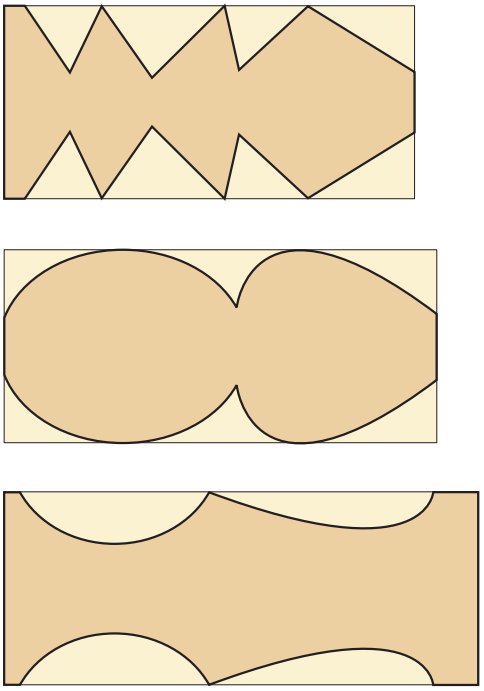
The red line represents the true center axis; the blue line is the new twisted axis. The axes in this drawing are both moved in equal and opposite directions from the center axis.



The green line is the true center axis. The red line is the new axis. In the drawing *above*, only one end is moved from the true center. The slashed lines in the drawings indicate solid wood seen as the spindle turns on the lathe.

This spindle is a circular type with a twisted axis. On the right end, the axis is in the center. The left end has six axes that are placed in a circle around the center axis. After a cylinder is created on each new axis, a bead is turned. The discs connect each axis.

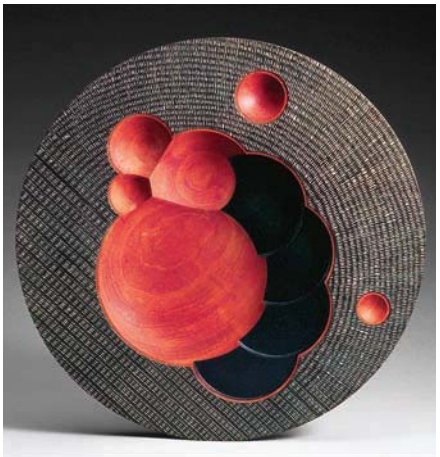
3 Symmetry of the curve or angle.



Examples of changes of symmetry of lines, curves and angles

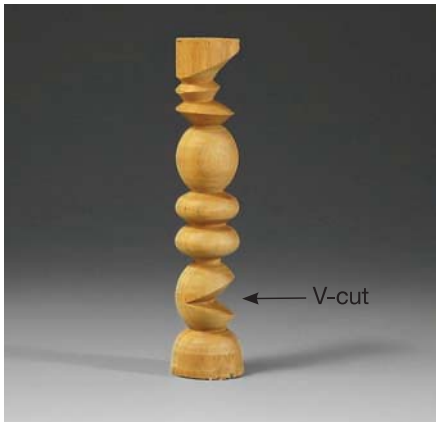
4 The size and orientation of the stock.

The size and orientation of the turning stock make a big difference in the outcome. Some turnings are triangular bowls and some are large sculptural forms using multi-axis methods. There are unlimited design possibilities.



Michael Werner's 11¾"-diameter platter "Tosca" platter includes 11 different axes. This piece was a 2006 *Niche* Award finalist.

5 One type of multi-axis technique superimposed on another type.



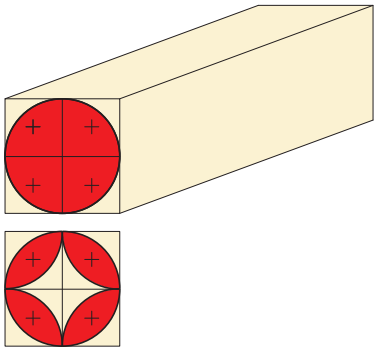
This is a twisted multi-axis circular form with a V-cut superimposed on the bottom bead from a parallel axis.

6 A combination of circular and arc-shaped ideas on the same spindle.

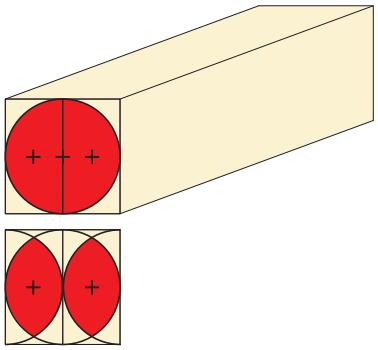
Here's one variation: The bottom bead, *left*, is a circular type and the right profile is an arc shape that is twisted.

Tom Crabb's three-axis hollow form from wormy maple takes its design cues from a Native American double-neck wedding vessel. 8½×5".

7 Assembling wood to make a split (inside-out) turning.



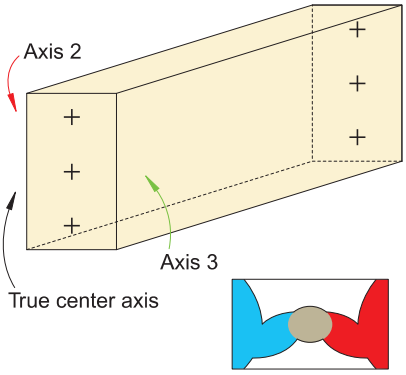
Four square spindles are turned together and then each rotated two to four times. This creates four identical spindles. In the drawing *above*, two sides were turned.



Two rectangular spindles are turned together and then rotated to create a second turning. This creates two identical spindles. The axis of split turnings can either be in the center or twisted. Split turnings create arc-type results.

Mark Sfirri's whimsical baseball bats are signature multi-axis pieces.

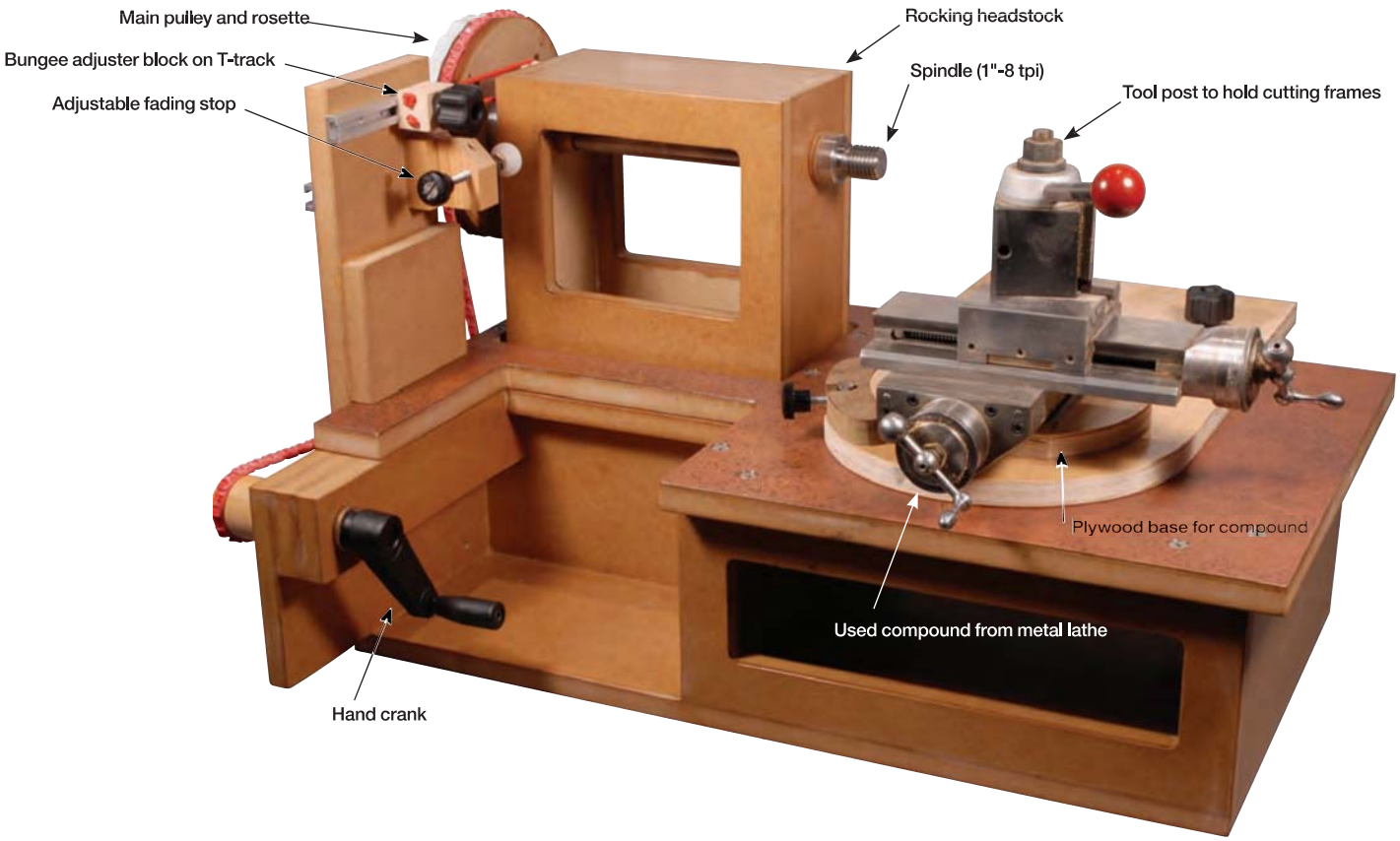
8 Starting with a rectangular (instead of square) spindle, allowing an increase in the angles between the axes.



The Yale University Art Gallery commissioned Mark Sfirri to build a bench with multi-axis work for public seating. Purple heart and ash; 27×68× 20½".

Barbara Dill (bdill6@verizon.net) is a full-time woodturner living near Richmond, VA. She teaches woodturning at the Visual Arts Center in Richmond.

Build Your Own Rose-Engine Lathe



Ready to dive into ornamental turning? Before you can begin, you'll need a rose-engine lathe.

Get started on building your own rose-engine lathe with a plan modified from a design by Paul Fletcher, an accomplished and ingenious ornamental turner from the United Kingdom. Paul's original design was based on cutting all the pieces from a half-sheet of ¾" medium-density fiberboard (MDF). With Paul's permission to publish his ideas, the design has been updated to streamline the construction and to incorporate as many standard parts as possible.

This simple plan for a rose-engine lathe is capable of doing precision work, yet it is easy to build in a home workshop. A number of machines have been built, and feedback has continued to improve the design. More are being built every month. A kit, including machine parts (see *opposite*), makes it easier for anyone to build their own.

Bonnie Klein and her husband, Robert Purdy, built one from these plans. "We've been experimenting with rose-engine work for nearly 10 years," Bonnie said. "We are amazed at the capabilities and potential of this fascinating machine. This homemade lathe offers exciting new opportunities for creative and artistic expression.

What's involved

The basic rose-engine lathe will get you started on the journey to enjoying ornamental turning for an investment of $250 to $300 in materials and machined parts.

The rose engine consists of a **base** and a **rocking headstock**. The headstock is hinged on a set of simple, adjustable pivots below the table surface. A spindle passes through the headstock and runs in bronze bushings. The outboard end of the spindle has a flange to mount a turned pulley, which in turn holds a rosette. Another step-up pulley carries the belts that go from the spindle pulley to the hand-crank pulley. An upright supports two pieces of T-track. One

T-track holds the rubber, which rides against the rosette; another holds the block that adjusts the bungee cord that supplies tension to the headstock.

Once you have all the parts, it should take about two days to cut, glue, and assemble the entire lathe. If you or a friend has a metal lathe and mill, you should be able to easily make the seven machined parts for the rose engine. Or, use our kit source (supplied with website plans). Consider this lathe an affordable platform to begin exploring ornamental turning. If there is sufficient interest from AAW members, follow-up articles can describe advanced capabilities already designed to be added onto this rose-engine lathe.

There are few critical dimensions in the design of this homemade version. However, before you start experimenting, you should consider building one as close to these plans as possible: Many subtle aspects are not obvious until you have used a rose engine. Once you have used the lathe and understand how it works, modify the design to suit your needs.

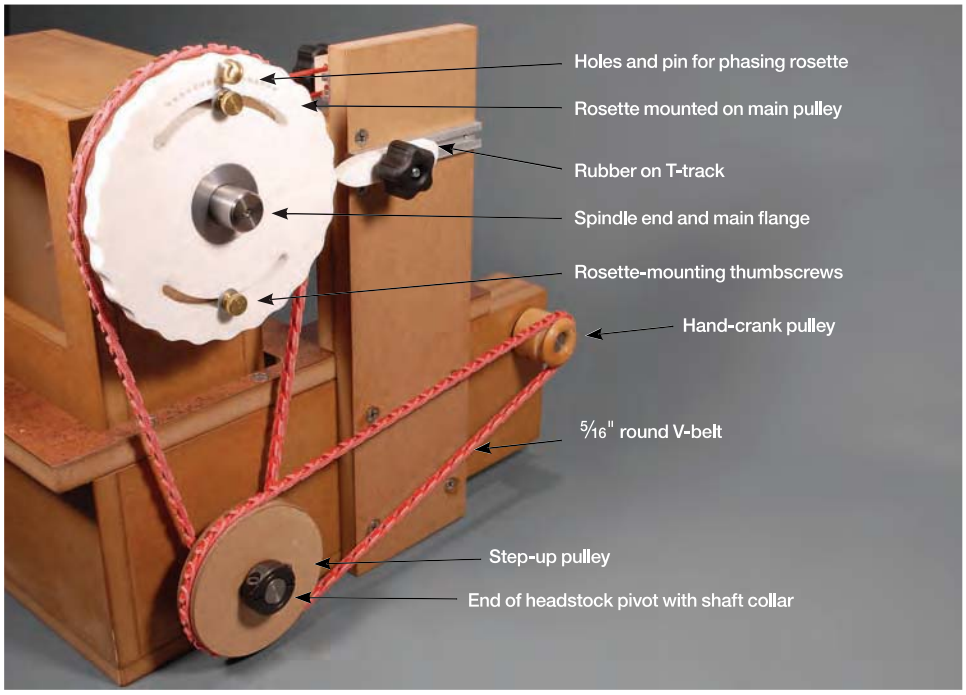
The plans for the lathe (see below) include details to allow phasing of each rosette, as well as the adjustable fading stop for the rosettes. These two simple features open up the pattern options that you can produce on your rose-engine lathe.

In addition to building the basic lathe, you will need to build or buy some type of slide rest to manipulate the cutting tools around your work. And finally, you will also need at least one cutting frame to do the work. The plans include some options for both of these.

—Jon Magill

Square-lidded box

Perhaps the most intriguing quality of the rose engine is its ability to produce work on a lathe that is not round. Instructions for making a box like this would require an entire article, as well as a few tools you might not have when just getting started with your rose engine. But rest assured—this box was made entirely on the homemade rose-engine lathe described.



AAWWEB

Free plans on AAW website *The complete step-by-step plans, construction drawings, parts list, sources, and details about a parts kit for the rose-engine lathe are available free to AAW members at* ***woodturner.org***

Click here and scroll down to "Spring 2007" (you will need to log in with your user name and password).

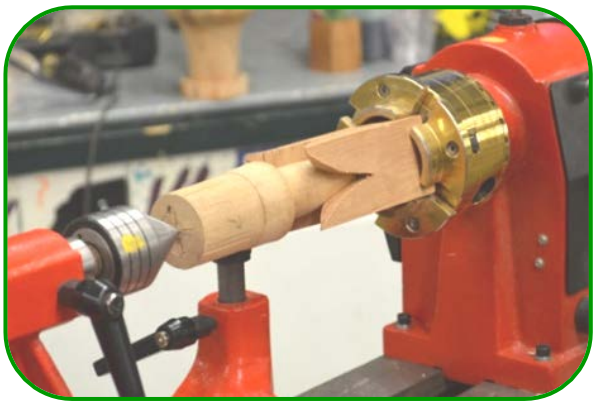
Jon Magill (jon@magill.com) is an ornamental turner who lives in Clinton, Washington. Jon is a member of the Seattle Chapter AAW and Ornamental Turners International, an AAW chapter dedicated to ornamental turning. Jon will present sessions on building and using the rose-engine lathe at the AAW symposium in Portland.

FANCY FLOWERS

Turned Flowers

Jim Yonkers did a demo on making four different types of fancy flowers on the lathe at the Central New York Woodturners' April meeting. For each flower, he started with a hardwood block approximately 2" by 2" by 4" or 6" long. He decided which was the stem-end and which was the flower-end of the block of wood based on wood grain. His philosophy is to experiment and quickly be creative with these wood turning techniques.

4-PETAL TULIPS: First drill a ¼" hole in the stem-end of the flower and then a 1 ½" hole in the flower-end (flower-end needs a hole that is about 75% of the diameter of the piece of wood).



Then layout and mark each flat side of the flower-end with a deep 'V' shape to represent the space between the petals (the petals are the corners of the wood piece). The 1 ½" center hole should extend to below the bottom of the 'V' shape you layout. Cut out and remove the deep 'V' shape using a band saw.

Chuck the piece on the stem-end and bring the tailstock into the 1 ½" hole (with appropriate live center).

Round off the piece and shape the flower and petals and then taper into a rough stem. Reverse the piece using a jam chuck that you made to fit into the open flower with the jam chuck wood piece held by your scroll chuck. Bring the tailstock up to lightly fit in the ¼" hole in the stem-end of the flower (do not over tighten or the stem will split).

Leave the bottom part of the stem large enough to stay stable with the tailstock point and part off to your desired length after finishing the sanding. Start sanding the piece while on the lathe and finish it by hand. Finish with any clear varnish or oil, or finish with colored stain or paint.

5-PETAL FLOWER: With one end of the piece held solidly in a scroll chuck and the tailstock pulled up to the piece, round off the piece and make a goblet shape. Leave the stem fairly heavy at

first. Remove the tailstock and hollow out the goblet. Sand the goblet-end inside and outside. Then begin to slim down the stem to the desired thickness. Sand it as needed, and part off the piece at the desired stem length. Drill a ¼" hole in the stem end of the flower.

Layout and mark five petals evenly around the goblet end of the piece.

Insert your piece into a clamping device so it is stable for the next step. Using a motorized carving tool, like a Dremel, **carefully and safely** remove the 'V' shaped spaces between the petals. Hand sand the piece as needed. Finish with any clear varnish or oil, or finish with colored stain or paint.

FLAT FLOWER: With one end of a 4" x 1" piece held solidly in a scroll chuck and the tailstock pulled up to the piece, round off the piece. Mark ½" spaces down the length leaving about 1" in the scroll chuck.

Using a parting tool, cut into the piece every ½" down its length leaving 5/8" diameter of material. Remove the piece from the chuck and layout and mark petals on the tailstock end of the piece. The petals should end at the 5/8" inner diameter of the piece. Now carefully hold the piece vertically with a vise grips or other tool (on scroll chuck end). Cut the entire 4" length of the piece into the band saw blade to remove the "V" between the petals. Move the tool each time and cut the next 'V'. **This must be done very slowly and carefully on the band saw!** After all spaces between the petals are removed, put the piece back on the scroll chuck using the tailstock to center the piece up again. When securely tightened into the chuck, remove the tailstock and part off the first ½". Resurface the remaining end as needed, and part off the next ½". Repeat this until all ½" segments are parted off up to the waste-end in the scroll chuck. Hand sand the pieces as needed. Drill a 1/8" or ¼" hole into the edge of a petal on each flower to place a wire inside as the stem of that flower. Finish with any clear varnish or oil, or finish with colored stain or paint.

RUFFLED FLOWER: Using a green tree branch about ¾" diameter and 6" long, put it solidly in a scroll chuck

and use the tailstock to center the piece. Round the piece out and remove the bark. Remove the tailstock. Apply the heel-end of a skew to the free-end of the stick to peel back very thin layers of

wood about ¾” long that are still attached to the piece. These ruffles of

wood shavings are cut in layers that progress toward the center of the stick on its free-end until most of the end is ruffled. These ruffles are meant to look like multi-layered flower petals. When the effect you want is achieved, turn a tapered base to the flower and part it off from the stick. Repeat the process to make more than one flower from a stick. Dip the flower in a finish of your choice or spray paint a color on the petals. Drill a 1/8” or ¼” hole into the stem to place a wire inside to hold that flower.

Central New York Woodturners
Submitted by Chad Dawson
Photos by Andy Loconte & Barbara Raymond-LaPrease

May Meeting Challenge Photos
Left to Right
Top Row: Larry Prunotto, Mel Taber
Middle Row: Charlie LaPrease, Mike Malecki
Bottom Row: Don Lum (People’s Choice), Chad Dawson, Jim Yonkers

CYANOACRYLATE ADHESIVE

CA Glue Applications in Woodturning

Cyanoacrylate (CA) glue is the generic name for a group of fast-acting, strong acrylic adhesives. Ethyl and methyl cyanoacrylate are commonly used CA adhesives used in general and in woodworking applications.

Manufacturers use proprietary additives to alter the properties of the adhesives and/or to extend shelf life. Common commercial names include Super Glue, Krazy Glue, Insta Glue, Stick Fast and others. These adhesives have broad industrial, hobby, medical, veterinary and household applications. I will confine this article to a discussion of safety issues in working with CA adhesives, CA glue accelerators, CA glue de-bonders and their applications in woodturning.

SAFETY

I am starting this discussion about CA glue with safety because there are significant safety issues in working with this family of adhesives. CA glue is classified as non-toxic or low-toxicity by many manufacturers because a "cured" product is inert, but **DO NOT BE MISLED!** Liquid CA glue is nasty stuff and care must be taken when working with it! That said, I believe that cyanoacrylate glue is safe to work with when appropriate safety measures are **ALWAYS** followed.

- **Always read the safety and caution information that comes with the products that you are using.**
- **Always store in closed containers and keep safely away from children.**
- **CA glues, CA glue activators and CA glue de-bonders are flammable and releases toxic fumes when burned.**
- **Do not smoke when using any of these products and keep them away from an open flame.**

EYE PROTECTION

ALWAYS use eye protection when working with CA glue! Full face shields are recommended. CA adhesives are severely irritating to the eye. CA glue is water activated and bonds instantly to eye glasses, eyes and contact lenses. CA glue fumes are irritating to the eyes. **DO NOT HEAT** CA glue as this increases the toxic fumes. Always work with CA glue in a well-ventilated area so that the fumes are blown or sucked away from people.

Avoid "Pen Turner's Glasses." Most eye glass lenses are made of plastic, CA glue will bond to these lenses and **CANNOT** be removed (ask me how I know). Eye glasses are expensive. **ALWAYS** wear a face shield to protect your eyes and eye glasses when working with CA glue.

VAPORS

CA glue vapors are **irritating to mucous membranes and to the lungs**. CA glue vapors can trigger severe asthma attacks and difficulty breathing. About 5% of the population can become sensitized to CA adhesive fumes after repeat exposure and develop flu-like symptoms. **DO NOT** breathe CA glue fumes! **ALWAYS** use CA glue in a well-ventilated area and limit your exposure to the fumes as much as you can. Use a fan to blow the CA glue fumes away from yourself, other people and animals, or use a vacuum system to suck fumes away. This is especially useful when applying CA glue finish to pens and small objects.

SKIN REACTIONS

CA adhesives are irritating to the skin and **may cause allergic skin conditions**. It is best to avoid contact with your skin. With careful use, it is possible to minimize contact with the skin.

CA Glue and Heat Production

Be aware that CA glue reactions are **exothermic** (heat generating). Some CA glue reactions generate enough heat to cause significant burns and a few can even cause fires. These exothermic reactions also release tissue irritating fumes.

CA glue reacts with cotton and some natural materials such as leather and wool in a rapid and very strong exothermic way that may produce serious burns and fire. The CA glue reaction with cotton products may generate enough heat to cause burns, release toxic fumes and ignite into flames. **DO NOT** wear cotton or wool clothing, and especially do not wear cotton gloves when working with CA glue. Test paper towels before using them with CA glue. Place a drop of CA glue on the paper towel and observe the reaction. If the paper towel smokes do not use it with CA glue. Try another brand.

CA GLUE ACCELERATORS

Accelerators are used to speed up the bonding and curing process of these already fast acting adhesives. Acetone and other chemicals are used in commercially available accelerators. All CA glue accelerators are **highly flammable** and **irritating to the skin, eyes and respiratory system**. They may cause systemic **toxicity** when adsorbed through the skin or respiratory system. These systemic effects may include dizziness, drowsiness, loss of consciousness and damage to lungs, liver and kidneys.

ALWAYS use CA glue accelerators in well-ventilated areas. **DO NOT** breathe the fumes and avoid contact with the skin.

CA GLUE DE-BONDERS

De-bonders dissolve cured and un-cured CA glue. Acetone is the classic de-bonder, but other chemicals may be present in commercial de-bonders. All CA glue de-bonders are highly flammable and are irritating to the skin, eyes and respiratory system and may cause systemic toxicity when absorbed through the skin or inhaled. These systemic effects may include dizziness, drowsiness, loss of consciousness and damage to lungs, liver and kidneys.

De-bonders may be used to remove CA glue from skin, but remember that de-bonders are toxic to humans and are absorbed through the skin. It is best to use appropriate caution when working with CA glue and not get it on your skin!

ALWAYS use CA glue de-bonders in well-ventilated areas. **DO NOT** breathe the fumes and avoid contact with the skin. If used on your skin, wash the area immediately after successful separation.

CA Adhesives Application in Woodturning

Ok, finally it's time to discuss some of the many ways that cyanoacrylate adhesives may be used in wood turning.

Shelf Life

CA glue has a short shelf life. For this reason we order relatively small amounts frequently, in order to assure fresh product for club members. When stored **unopened** in a refrigerator, CA glue will last for about two years. Because CA glue is very moisture sensitive, it is recommended that the glue be allowed to come up to room temperature before the container is opened in order to avoid moisture from condensation.

If the CA glue will be used within six months it may be kept at room temperature in the shop.

Sealed, unopened CA glue may be stored in a freezer indefinitely. Allow the CA glue to come to room temperature before opening.

DO NOT refreeze after thawing because condensed moisture will ruin the glue.

Viscosity & Set-up Time

Viscosity refers to the thickness of CA glue. CA adhesives set quickly. As a general rule, the thinner the CA glue the faster it sets. Said another way, the thinner the CA glue the shorter the working time to align the pieces being glued. Conversely, the thicker the CA glue the slower it sets and the longer the work time. For example, when gluing pen tubes into blanks, thin CA glue would be a poor choice because it will usually set up before the tube is in position in the blank. Thick or gel viscosity CA glues have long enough set times to permit proper alignment of parts.

Gap Filling Properties

CA glues have poor gap filling properties. However, CA glues may be mixed with sawdust, shavings, powdered stone, metal filings, etc. to fill gaps.

Wicking
Wicking or capillary action is the ability of a liquid to flow, unaided, into narrow spaces. For example, woodturners want good wicking ability to flow CA glue into cracks. Thin CA glues wick very well, while thick and gel CA glues wick little or not at all.

Bond Characteristics
CA adhesives produce very strong bonds. There are however, some limitations.

As opposed to many other adhesives, a very thin layer of CA glue is more effective than a thick layer.

While CA glue produces very strong bonds, it has relatively poor shear strength. This means that a lateral (from the side) force can break the bond. This property is useful in woodturning as work pieces can be glued to glue blocks and removed relatively easily with lateral force. Most CA glues form very brittle bonds. This can lead to joint failure, especially when lateral force is applied.

Flexible (rubberized) CA glues are available. These formulations reduce brittleness and improve shear strength.

Heat Resistance
CA glues are not high heat resistant. CA glue will "melt" on exposure to heat at levels that may be generated from sanding and polishing operations.

Brian S. Saunders
San Diego Woodturners

BASIC FIRST AID

First Aid for Woodturners

DISCLAIMER - The following information is an overview of basic first aid. It is not meant to cover all situations, or be a substitute for good judgment or care from your physician. Always err on the side of seeking treatment from your doctor, an urgent care center or emergency room. Of course, for life, limb or vision threatening situations call 911.

1. **Cuts & Scrapes** - Minor cuts and scrapes need careful cleaning with soap and water to remove contamination, then application of antibiotic ointment and a dressing. If there is contamination that you can't remove, exposed bone, joint, muscle or tendon, seek emergency room care. Bleeding should be controlled with direct pressure for 10-minutes. If bleeding cannot be controlled, get medical help. Numbness past the cut may indicate nerve injury and loss of active motion may indicate a tendon injury, so seek medical care for either of these. If the cut can easily be closed with a butterfly or steri-strip tape after cleansing, then dress as above. But if the edges won't come together, you probably need stitches.
2. **Burns** - Minor burns need to be placed under cool water for 20-minutes to remove the heat and then dressed as above. If there is blistering or dead skin, seek emergency help.
3. **Eye Debris** – If you get debris in your eye, don't rub the eye. Pull your eyelid up and down several times and blink. If the debris doesn't come out, use an eye wash. If that doesn't help or there is foreign material embedded in the eye, cover both eyes (yes, both) and seek emergency help.
4. **Splinters** – Clean the area around the splinter and use a magnifying glass. If the splinter is tiny, it will probably find its way out on its own. If it's bigger, clean the tips of fine tweezers with alcohol and remove it. If you can't get to the end of the splinter, clean a needle with alcohol and tease the skin away from the tip of the splinter and then use the tweezers remove it. If you can't get it all out seek help.
5. **Amputations** – Use direct pressure to control bleeding and apply a dressing. If the part is hanging on, leave it attached. If not, wrap the part in gauze, put it in a clean ziplock-type bag and place the bag on something cold from the refrigerator and in a small cooler or bag and seek immediate medical attention. Don't use ice (it can cause frostbite). If more than a finger has been cut off, do the above and call 911.
6. **Fumes & Dust** – If you have trouble breathing while working with fine dust (the reason you always should wear proper breathing protection) or solvents, get to fresh air immediately. If that doesn't help quickly, call 911.
7. **Fractures** – If you suspect you have broken a bone, splint the area using a Popsicle stick, board or rolled-up magazine wrapped with a gauze roll, ace wrap or tape and seek emergency care. If there is bone sticking out, cover it with clean gauze and go to the emergency room immediately.

Marty Gottesman, MD
Central Ohio Woodturners

FIRST AID KIT

Woodturners Kit

Woodturners are at risk of injury from many sources in their shops. I have put together a first aid kit that is designed for the needs of woodturners. Adapt it as you see fit. It's what works for me.

1. **Band-aids** Have a few of each size from small to large. Include the ones made for knuckles and fingertips since these are frequent areas of cuts, scrapes and burns.
2. **4x4 Gauze pads** for larger wounds and cleaning cuts.
3. **Scissors, tape & gauze wraps or ace bandages** for securing dressings
4. **Antibiotic ointment** such as Neosporin for cuts and burns
5. **Steri-strips or butterfly bandages** to hold small cuts together
6. **Tweezers** (such as "Tweezerman" brand point tweezers which have a tip fine enough to pluck a single hair) and a magnifying glass for splinter removal and alcohol to clean tweezer tips
7. **Eye wash** with an eye cup to wash out debris
8. **Betadine** (if not allergic to iodine), **chlorhexidine** or even **soap and water** for cleansing wounds
9. Clean plastic **Ziplock-type baggies** for amputated digit(s)
10. Clean disposable **gloves** for universal precautions

Marty Gottesman, MD
Central Ohio Woodturners

SAFETY FIRST

Spin It!

When you mount a piece of wood on your lathe,
Adjust the tool rest up nice and close.
Admire the rough wood one last time before you turn it into something completely different, and
Reach for the switch to turn the lathe on…

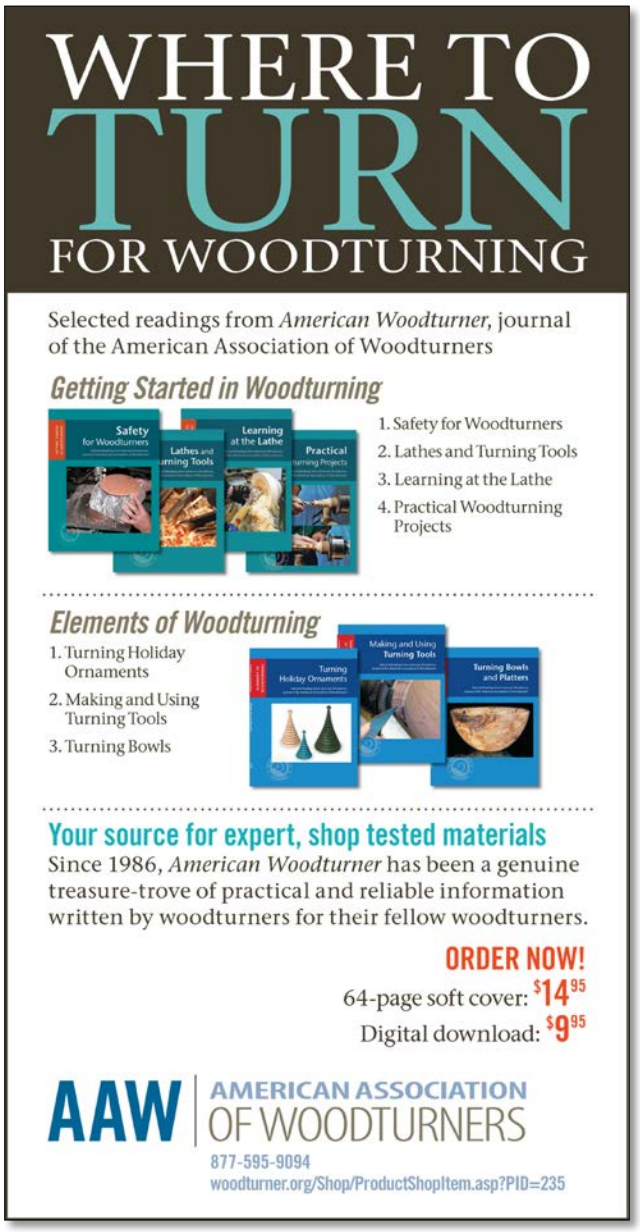
STOP. DON'T DO IT!

SPIN IT FIRST.

Rotate the wood by hand to make sure it clears the tool rest. The chunkier the wood, the more important this is. If you only turn 1/16" ego sticks maybe, just maybe, you don't need to make this a habit.

But if you do boxes, bowls or turn any irregular shapes, remembering to "spin it" can save your wood, your lathe and, most importantly, your fingers and face.

Harvey Rogers
Cascade Woodturners
SWASafteyOfficer@gmail.com



https://aaw.site-ym.com/store/ListProducts.aspx?catid=283168&ftr=

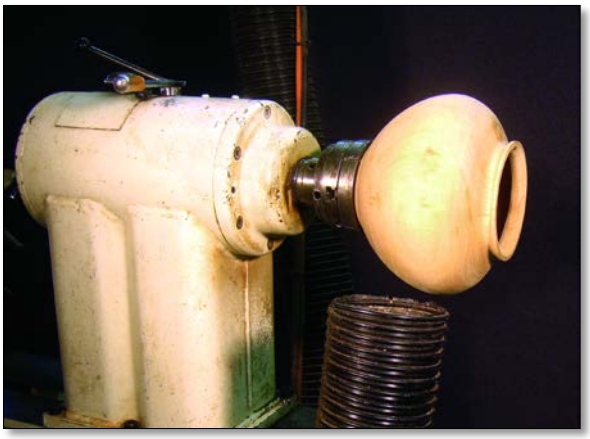
SHOP TIPS

Dust Collector Port

In order to collect sanding dust effectively from power sanding, the collector port needs to be close to the sander – usually within a foot or so. The best position for the collector port varies with the size and shape of the work-piece being sanded, but when you are turning, the collector post needs to be well out of the way. As such, the port should be easy to move to various positions as needed.

I have adopted a simple solution as shown in the photo below.

It employs a piece of flexible hose, a steel hose clamp, and a small rare-earth magnet. To implement it, connect the hose to your dust collector plumbing or portable dust collector and fasten a band clamp about 10” from the free end of the hose (the best position may depend on the size and layout of your lathe). Epoxy the rare-earth magnet to



the band clamp. To ensure a good bond between magnet and band, sandwich the band between the magnet and a steel washer as shown in the photo below.

The magnet can be stuck almost anywhere on the lathe to bring the port to the desired position. The hose can be brought to either the back or the front of the lathe (I prefer the front).

Dennis J. Gooding
Grants Pass, OR

Paint Your Cole Jaws

For both the small and large cole jaw chucks, either paint or use a red marker along the edge of the four jaws. This shows where the edge of the jaws are and makes it a little more safe.

Dannette Peltier

SAFETY MESSAGE

Safety Message Video

This clip is from Ron Gerton's presentation on safety from the AAW 2013 Symposium in Tampa. Ron is a retired mechanical engineer with more than 30 years of experience in the nuclear field. Ron's message is to always work safely and to share safety tips. (TRT 1:19:29) Video link: https://vimeo.com/100177535 (Tip: If you have trouble accessing the video directly from this document, you may copy the video link and paste it directly into your browser.)

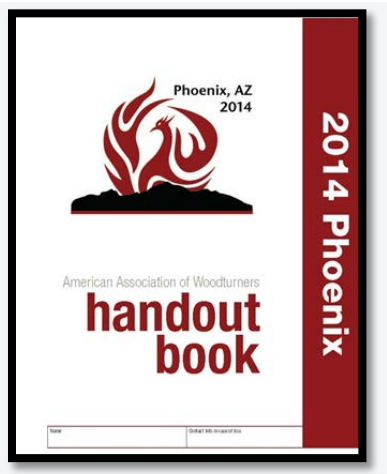
A Note About Safety

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.

SAFETY MESSAGE

Safety Message Video

Safety Tips: Be Safe Be Smart, a video from the AAW 2013 Symposium in Tampa. In this video clip, Steven Marlow shares his experience with safety glasses and face shields. (TRT 1:23) Video link: https://vimeo.com/100206599 (Tip: If you have trouble accessing the video directly from this document, you may copy the video link and paste it directly into your browser.)



Get AAW's 2014 Symposium Handout Book!

It's loaded with how-to instructional materials and tips for projects including Segmented Turning 101 (Andy Chen); Ornamentally Turned Hexagonal Boxes (David Lindow); Square to Round Bowls, Vases & Hollow Forms (Rudy Lopez); Leaf Bowl (Neil Scobie); and more from AAW's 2014 talented roster of demonstrators. Plus, you get demonstrator biographies and photographs of their work for just $25. Visit our online store.

MEMBER GALLERY

Central New York Woodturners

Charlie LaPrease
Maple Burl Platter

Bob Pastel
Tiger Maple Platter

Bob Ireland
"Hidden Emotions"
Two-Sided Platter
English Walnut & Maple

(Reverse Side)

Mel Taber
"Crowded Room of Friends"
Oak, Red Mallee Burl, Brown Mallee Burl, Color Ply, Indian Rosewood, Buckeye Burl, Box Elder

Jerry Holbrook
Cherry Handled Platter

Rod Castle
Peppermill
Butternut & Padauk

Chad Dawson
Three-Legged Stool
Oak

Andy LoConte
Liberty Bell
Cherry & Walnut

Ed Siegel
Wedding Goblet (Irish Wedding Blessing Translated into Hebrew)
Cherry

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 September issue of *Woodturning Fundamentals* is August 15, 2014.

Please note: All content submitted may be subject to edit.