Bandsaw Tension • Cyanoacrylate Glue • Spalted Wood Health and Safety

AMERICAN WOODTURNER

Journal of the American Association of Woodturners

Kendama

Woods of Wisdom

Will Bellucci

Rachel Scheffel

Bandsaw Safety

August 2011 vol 26, no 4
woodturner.org
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Members' *Gallery*

Clay Foster

Ripple and Connections are my most recent series. Jimmie Dale Gilmore's version of the song *Ripple*, written by The Grateful Dead, inspired me to create the Ripple series. The lyrics are evocative and enigmatic, open to individual interpretation, and generally appealing. The music has a simple rhythm, with gentle surprises of unexpected phrasing—just the kind of muse I need late at night to attempt a haiku in wood and stone.

The Connections series is the culmination of all the images, shapes, textures, and materials I have employed in my lifetime as a maker, but it relies most heavily on the shape of Mayan temples. Almost thirty years ago, I visited the Mayan ruins at Tikal in Guatemala. The pyramid shape of two temples at opposite ends of a courtyard dominated all the other structures. Their presence embodied the essence of structures that last, materials that hold up, and designs that endure. The memory of their form is something I put in my pocket years ago and it has just begun to emerge as a design element for almost everything I make.

—Clay Foster

Connections #3, 2011, Wood, concrete, pigment, 24" × 19" × 8" (61 cm × 48 cm × 20 cm)

AAW Permanent Collection

Purchase Award, AAW Permanent Collection Committee/POP Committee

From the Instant Gallery, Saint Paul

Vessel detail

Ripple #9, 2010, Wood, stone, pigment, 8" × 18" × 5" (20 cm × 46 cm × 13 cm)

Detail of a bowl in a style frequently used by Clay, 2009,
Wood, brass wire, grout, 5" × 11" (13 cm × 28 cm)

Ripple #20, 2011, Wood, stone,
brass wire, grout, 6" × 19" × 5½"
(15 cm × 48 cm × 14 cm)

Connections #2, 2011, Wood,
concrete, brass wire, grout,
21" × 22" × 8" (53 cm × 56 cm × 20 cm)

Temple I, 730 C.E., Stone, 154 feet (47 m) high

Dedicated to providing education, information, and organization to those interested in woodturning

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ON THE COVER

Cover – Arnold Ward, Kendama, Photo: Jeffrey Fusario

Back Cover – Douglas Fisher, *Expectations,* 2011, Big leaf maple, steel base, 16" × 1½" (40 cm × 4 cm)

From the Editor

Anyone who has used cyanoacrylate (CA) glue knows how easy fingers can get stuck together . . . as well as to a variety of objects in the shop. Stories abound. In his article on CA glue, Bill Blasic provides sound information about the uses and precautions for this bonding agent.

The project article on making a kendama is timely and Arnold Ward, who knows and uses this toy, shares his long-time experience.

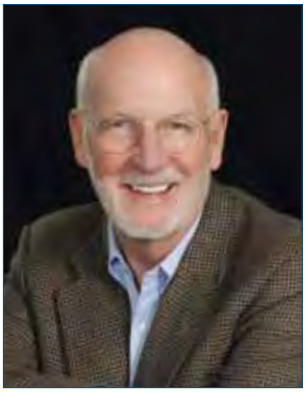
Woodturners regularly use bandsaws. Mark Duginske's and Keith Tompkins' articles will help you understand, adjust, and safely use a bandsaw.

I confess I have avoided using spalted wood because of a perceived notion that the spalting itself was harmful to lungs. Sara Robinson debunks several myths about spalted wood and provides scientific evidence that this natural treasure is no more dangerous to healthy people than wood dust itself. Instead of the usual photo of myself, I have included an image of a turned and carved sculpture I made a few years ago from spalted maple. It's about 9" (23 cm) in diameter.

The look of the spalting is dramatic, but several punky areas were troublesome. Thanks to a generous application of CA glue, the punky spots hardened enough to accept a finish and blend with the surrounding wood.

—Betty Scarpino

President's Letter



It is time again for all members of the AAW to exercise their right and privilege to vote in this year's AAW Board of Directors' election.

The AAW Board is made up of nine elected directors. Each director serves a three-year term and may run once for reelection. Terms are staggered, so there are three new (or reelected) directors each year, three who are serving in the second year of their term, and three who are serving in the third year of their term. Directors are volunteers and are not paid for their service on the Board.

Exercising your right to vote is your opportunity to influence the future of the AAW. We have six excellent nominees this year, and your votes will determine which three become your directors. Candidate statements and a paper ballot are part of this issue of *AW*. If you prefer to vote electronically, please visit the AAW website at woodturner.org/BoardVote to do so. Your vote must be cast electronically or postmarked no later than October 21, 2011.

Now, let's talk for a moment about safety. Turning wood on a lathe is one of the safest forms of woodworking; however, it is not without hazards. Good safety practices will significantly reduce the dangers. For example, it is not safe to be anywhere near a lathe in operation without wearing eye protection. For many turning activities, full-face protection is advised.

I never operate my own lathe without a full-face screen and a short-sleeved turning smock (so there are no sleeves to become entangled). If there is a maintenance problem with my lathe, I fix it before using the lathe again. I keep my work area well lit, and I wear a dust mask whenever I am sanding or cutting dusty timber. Dust in your lungs is cumulative and some woods can be toxic.

These are a few of the safety considerations we should all be aware of to protect ourselves against injury. The AAW website offers excellent guidelines and resources on lathe safety. Every woodturner should review safety guidelines frequently and practice them always. Your well-being depends on it!

With warm regards,
Tom

Remember to Vote! AAW Board Election

Photos and statements of the six nominees running for election to the AAW Board of Directors appear on pages 5—7. Please read the statements and then vote for up to three candidates.

There are two options for voting: (1) by electronic ballot, which is available on the AAW website at woodturner.org/BoardVote or (2) by paper ballot, which is included in the plastic bag with this journal. The ballot contains your name and membership number. Tear off the ballot where instructed, put it in the enclosed envelope, affix a stamp, and mail the ballot. ***Your vote must be cast electronically or postmarked no later than October 21, 2011***.

We encourage you to participate in the voting process and hope that you take the time to help make this election turnout significant.

Candidates for the Board

The Nominating Committee is pleased to present the following six candidates to the AAW membership for their consideration. There are two ways to vote: (1) by electronic ballot, which is available on the AAW website at woodturner.org/BoardVote or (2) by paper ballot, which is included with this issue of the journal, along with a self-addressed envelope.

We encourage you to participate in the voting process and hope that you take the time to help make this election turnout significant. Your vote must be cast electronically or postmarked no later than October 21, 2011.

—Kurt Hertzog, Chair, Nominating Committee

Dale Larson, *Oregon*

This is my thirty-third year of woodturning. I joined AAW in 1989 when I attended the third annual AAW symposium in Seattle. I can honestly say that symposium changed the path of my life. Since then, I have attended fifteen symposia. In 2007 when the symposium was held in Portland, Oregon, Tom Reiman and I were the local liaisons. We coordinated the numerous local committees that it takes to make the symposium a success.

I have been a member of the Cascade Woodturners Association since it started in 1990. Twice I served as president. Since 1993 I have hosted woodturners from all over the world in my shop for our chapter demonstrations. Additionally, I host an open shop once a month. New woodturners are invited to attend, where we teach them how to sharpen tools and assist them in a project. Education of woodturning is the core mission of AAW, and I strongly support education programs. We need to continue to draw in new and younger members to have a strong organization.

Woodturning has taken me all over the United States and internationally. Many of my contacts and invitations are due to the friends I have met in the AAW and the education I have received along the way from the AAW.

I am currently serving my first term on the AAW Board. One of my primary roles for the last two years is coordinating the annual symposium. In this role, I get the honor of working with woodturners from all over the world. Additionally, during this past year, I was the lead Board member on updating our Bylaws.

The past two years have been a period of change within the AAW, as we grow into a truly international organization. I am keenly aware of the Association's history and its future goals. Please vote for me for another term as a member of the Board of Directors of the AAW.

John Morand, *Ontario*

Fellow wood turners, I am running for the Board of the AAW to give something back to the organization that has changed my life. I am a semi-retired environmental lawyer and strategic planning consultant. I am married to Juliet Fullerton; we share an interest in woodturning.

I have been turning wood for the past eleven years and am a member of the Kawartha Woodturning Guild where I am heavily involved, along with others, to build our club to well over 100 members. I enjoy the camaraderie and learning opportunities. My work can be seen at johnmorand.com. I still have much to learn and the AAW plays an important part in that learning curve.

Our studio is located in Port Hope, Ontario, where I provide woodturning instruction to a cross-section of people, including individuals with treatable mental diseases such as depression. There is nothing like the smell, texture, and feel of a turning to make one feel good and the day that much better.

I have been a board member and chair of a number of local, national, and international organizations and would like to bring that experience to the AAW to assist in its growth and new directions. As a ten-year board member and former chair of the International Economic Development Council based in Washington, D.C., when I make a commitment, I deliver. I currently serve on the board of an art gallery and a Lions Club.

I established one of the first Tourism and the Arts conferences in Canada and have served on a number of public boards where I have been active in the areas of finance and governance.

As former city manager, corporate executive, and management consultant, I have much to offer as a professional manager in the development of policy as the AAW moves forward.

More candidates on next page ▶

Paul Omilon, *Saskatchewan*

I have been a professional woodturner for more than twenty-two years and a member of the AAW since 2007. In recent years, there has been tremendous growth in the Association in terms of membership, the continued development of our educational programs, and the positive changes to our journal from black and white to full color and from four to six issues per year.

As a founding director and Vice President of the South Saskatchewan Woodturners Guild, I have been working with our membership to promote our organization to become a chapter of the AAW. Changes to our bylaws and application to the AAW were completed in May this year.

I have been teaching woodturning at our local arts education facility for the past four years. Recently I had the privilege of teaching spindle turning to a grade 12 class as part of their applied technology program. This was an exciting experience for me and was in keeping with the goal of our guild to expand access of our youth to the woodturning scene. The future of our organization lies in the encouragement and development of our youth programs.

My twenty-seven years in law enforcement (CSI-type work), along with twenty years as a Business Development Manager and VP provide me with a wealth of experience in working with large and small organizations. The organizational and operational skills developed during my professional career would serve the AAW Board well in managing our continued growth in the coming years.

The focus of the Association must be to serve all levels of membership needs and development and I would work together with other members of the Board of Directors to that end. Much has been done in the twenty-five years of our Association and much more can be accomplished through our continued growth and development.

I would consider it an honor to serve as a member of the Board of Directors and ask for your support and vote.

Binh Pho, *Illinois*

Three years ago I was elected to the Board of the AAW. These past three years were challenging and sometimes rough, yet many things were accomplished.

The eight other Board members I served with were all involved in updating AAW's Bylaws, originally created in 1986. The revised Bylaws better fit our current status as we continue to progress and grow. *American Woodturner,* journal of the AAW, increased from four to six issues annually. Membership in the AAW has steadily increased, reaching almost 14,000 members last year. We now have more than 330 local chapters. Our national symposium continues to gain recognition in the craft and art world. The Youth Program is attracting many young turners. Professional Outreach Program activities are well received and address a segment of our membership essential to a diverse outreach. I serve on that committee. Our Educational Opportunity Grants (EOG) return to our membership valuable help for addressing AAW's core mission of woodturning education. Liability insurance coverage for AAW-related woodturning activities is provided to all AAW members. The Board is committed to continuing that benefit.

We are all familiar with the term *growing pains*, and as Board members, we have had our share. As our organization continues to expand and mature, along with that growth will come additional issues to resolve. I would very much like to stay for a second term to finish the job we have begun. The Board's next major task is to ensure that oversight and governance issues are established and resolved so that the AAW has a firm foundation for continued growth and prosperity. We can build our future together, and I ask for your support.

Greg Smith, *Michigan*

My father introduced me to woodworking at an early age. Woodturning has been my passion for fifteen years and I have participated in the AAW for most of that time. I am a founding member and was president of a local woodturning chapter for six years, and currently I serve as a committee member and mentor for new turners.

I am the current president of a local cooperative art gallery where my planning and organizational skills continue to be put to good use. I have been active as an adult in the Boy Scouts of America, as a scoutmaster and volunteer on the local, district, and national levels.

My thirty-five–year career in the auto industry has taught me how to work with people and use my management and organizational skills, so often needed in volunteer organizations. I have been an active member in the clubs and organizations to which I belong. My work experience has included program management and leadership roles in ventures within the United States and abroad. I participated in the organizational planning and development of business plans for GM's new Saturn division in the 1980s.

I have been on the symposium video staff for six years and been involved with the transition from the volunteer staff to the current paid staff. I also served on the youth program staff.

The opportunity to serve on the AAW Board of Directors would allow me to use my skills to help manage the AAW. Representing the diversified membership is perhaps the biggest challenge and is the place where my skills could best be used.

Day-to-day guidance of the organization, so that it continues to meet the needs and expectations of individual members and follows its mission statement and other guiding principles, is why I am interested in serving on the Board of Directors.

Cassandra Speier, *Tennessee*

I am the current Vice President of the AAW, a member of the Executive Committee, and Chairman of the Instant Gallery. I am running for a second term on the AAW Board of Directors, and am asking for your support.

As I considered the decision to run for a second term, I realized how naïve I was when I ran for the Board the first time. I have learned this is hard work and consumes a great deal of personal time. As a member of the Board, I became steward of the organization and its members. The decisions I made during the past two and a half years will affect the organization in both small and substantial ways. It is a very real responsibility.

I have also discovered how much I love this organization. I love what it brings to the novice turner, to the hobbyist, to the professional, and studio artists. I am constantly amazed at the depth of generosity with which these turners share the wealth of their experience.

It is with this new perspective that I ask for your support in running for a second term. I have spent my professional career working in healthcare companies evolving from small privately held start-ups into large, publicly held organizations. An important component of this evolution is to think like a Fortune 500 company, yet retain a small-company feel by avoiding unnecessary bureaucracy, and most important, by staying very close to one's constituency. The AAW has experienced a similar growth in the last two and a half years, and I like to believe I have had some small part in keeping us on the right track. And there's more to do.

If elected, I will continue to be a stabilizing force on the Board, and will work diligently to help the AAW achieve its goals. My business background, leadership talents, and passion for woodturning will be an asset in the ongoing mission of the AAW to make the art of woodturning accessible to everyone who finds wood irresistible. ■

Demo Day for a New Lathe

The Massachusetts South Shore Woodturners (local chapter of the AAW) formed in 1996 at Hank Cahill's shop in Abington, MA. The group currently consists of almost sixty active members who attend the monthly meeting, as well as the monthly hands-on session. Once or twice a year the club hosts a special event and invites a high-profile professional woodturner to attend and opens it to club members and nonmembers. We keep the cost low for these events and hope to break even. Our primary focus is learning about woodturning and having an enjoyable event.

The club had a problem, however, that needed to be solved: We didn't have a large lathe. We own several mini lathes we use for hands-on sessions and for various demonstrations, but we needed a larger lathe. We have use of Hank's old General, and while it is a solid lathe, it has its share of problems. We tune it up regularly, but invariably something breaks during a demonstration. The time had come for a solution.

No one was going to give us a lathe, and we did not have enough surpluses in our treasury for buying the sort of lathe we wanted. A committee was formed to investigate the best course of action: fix the General or purchase a new lathe. The committee was charged with recommending a solution, as well as deciding how much money we needed to raise and creative ways to raise it.

What did the club want in a lathe? Reliability, inboard capacity, and price were primary considerations. Since we had tried several times to fix the General, with limited success, the committee decided that if we could raise enough money, a new lathe was a better course of action. The first rule of fundraising is to set a goal that is difficult, yet achievable. We had determined our goal: a new lathe and keep the cost at about four thousand dollars.

How would we come up with that amount? Sometimes it felt like we were pulling teeth just to collect the $20 annual dues. We could impose a one-time fee to each member, but we did not think club members would look favorably on this approach.

First, we simply asked for donations and received about a thousand dollars, a great start. After going through the typical list of fundraisers—bake sale, car wash, and fundraising dinner—we came up with the idea of Demo Day. The committee arranged to have six of our club members each do a one-hour demonstration of their specialty on Saturday, and on Sunday they would give hands-on workshops on the previous day's demonstration, sort of a micro symposium. We set the price at $25 per person, per day, $35 for lunch included. We arranged for a large number of raffle prizes as well.

We stressed from the start that the *membership* was going to be purchasing the lathe and by having group activities, everyone gets something out of it.

The lineup of demonstrators:
Nigel Howe, *A Basic Bowl*
Ian Manley, *Segmenting*
Nigel Howe (filling in for Angelo Iafrate), *Using a Boring Jig*
Bob Trucchi, *A Threaded Box*
Rich Friberg, *Architectural Turning*
Ken Lindgren, *Surface Embellishment*

Each session started and ended on time, held the audience in rapt interest, and generated lots of discussions during the breaks.

Interest was high during our demonstration days.

The group was split about fifty-fifty with members and nonmembers. Prizes were given to the first person to sign up, as well as to the person who traveled the farthest.

One member solicited raffle prizes, which raised more than $400.

Everyone had an enjoyable weekend, proving that with imagination and effort, we can accomplish our goal. The total attendees on Saturday, forty-five, and the amount raised, $2,500, meant one thing: It was time to start doing some serious lathe shopping. ■

Bob Trucchi

Forum Contest Winners

Michael Gibson, Cynthia Gibson,
Masala Chai, 2011, Pear, 6½" × 6" (17 cm × 15 cm)

The challenge for the latest AAW Forum contest was for two or more individuals to create a collaborative piece. Emphasis was to be on the overall form, and the interaction between the two or more disciplines should complement the entire piece.

Kurt Bird, Forum moderator, designs and coordinates the contests. Molly Winton judged the May contest. To enter the next contest and view all the entries, visit the Forum section of the AAW website at woodturner.org.

Congratulations to the winners!

First place, Michael Gibson and Cynthia Gibson

Second place, Robert Davis and Mary Davis

Prize Drawing for AAW Members

One of the many benefits of membership in the AAW is our monthly prize and year-end grand prize drawings. Thank you to the vendors that donated this year's prizes, which include tuition scholarships, $100 certificates, sanding supplies, DVDs, chucks, grinding jigs, and lathes!

When you patronize our vendors, please thank them for their support of the AAW. Visit our website at woodturner.org/org/mbrship/drawings_winners.htm to see each month's prizes and winners.

At the end of 2011, we will draw another name from our membership roster to give away a Powermatic 3520B lathe. That winner will name a local chapter to win either a JET 1642 or five JET mini-lathes. The Powermatic and JET lathes are donated by Walter Meier Powermatic/JET. Included is free shipping in the continental USA, or up to a $500 allowance for international winners.

2011 Donors
(Others may be added during the year.)

Anderson Ranch Arts Center
andersonranch.org

Arrowmont School of Arts and Crafts
arrowmont.org

Trent Bosch
trentbosch.com

John C. Campbell Folk School
folkschool.org

Craft Supplies
woodturnerscatalog.com

David Ellsworth
ellsworthstudios.com

Hunter Tool Systems
hunterwoodturningtool.com

Mike Mahoney
bowlmakerinc.com

Oneway Manufacturing
oneway.ca

The Sanding Glove
thesandingglove.com

Thompson Lathe Tools
thompsonlathetools.com

Walter Meier Inc. Powermatic/JET
powermatic.com and jettools.com

Call for Demonstrators AAW Symposium 2012

Deadline: October 15, 2011

The AAW's 26th annual international symposium will be held at the San José Convention Center in downtown San José, California, June 8–10, 2012. Visit the AAW website (woodturner.org/sym/sym2012) for complete instructions on how to submit your application. For more information or assistance, contact the AAW office at inquiries@woodturner.org or call 651-484-9094 or 877-595-9094 (toll free).

Call for Entries
2012 Annual Juried Member Exhibit
"A Walk in the Woods"

In honor of California's many majestic forests, the theme for the 2012 member exhibit is "A Walk in the Woods." Do you see the forest or the trees? Explore this theme with creativity! All AAW members are eligible to enter this juried exhibit, which will premiere at the 2012 AAW Symposium in San José, California, before traveling to other venues.

Entries will be accepted online November 1, 2011, through February 3, 2012. The link for submissions will be provided in the October journal and will be announced on the AAW website in October.

Questions? Contact Tib Shaw at the AAW Gallery of Wood Art, tib@woodturner.org or call her at 651-484-9094.

Guidelines

1. The exhibit is open to any AAW member.
2. Entry fee is $30.
3. You may submit up to three pieces for consideration ($30 total entry fee).
4. Work must be created at least in part on the lathe.
5. Work must have been created in the past 24 months.
6. An artist statement describing how the piece fits the theme is required. Statements may be edited for length and clarity.
7. A 45% commission will be charged on sales made during any of the exhibition venues.
8. Work will stay with the exhibit through multiple venues.

9. When packed for shipment, the maximum box size (two × width, plus two × depth, plus the length) may not exceed 108" (270 cm).
10. No more than three digital images per submission are allowed: one or two images of an overall view, and one image showing significant detail of the piece. Uploaded images should be in jpg or tif format, high resolution (300dpi), no larger than 1,000KB in file size, and 7" (18 cm) on the largest dimension. ■

Winners of the 2011 Best Chapter Newsletter/ Best Chapter Website Contest

Congratulations to the following AAW local chapters for winning the newsletter contest.

- **First Place:** Mid-South Woodturners Guild, Memphis, midsouthwoodturners.com, Mike Maffitt, editor
- **Second Place:** Woodturners Guild of Ontario, Ontario, wgo.ca, Peter K. Kaiser, editor
- **Third Place:** Tennessee Association of Woodturners, middle Tennessee, tnwoodturners.org, Randy Thompson, editor

Congratulations to the following AAW local chapters for winning the website contest.

- **First Place:** Central Indiana Chapter, Zionsville, Indianapolis, cicaaw.org, James Purciful, webmaster
- **Second Place:** Mid-South Woodturners Guild, Memphis, midsouthwoodturners.com, Mike Maffitt, webmaster
- **Third Place:** New Mexico Woodturners, Albuquerque, nmwoodturners.org, Dave Stein, webmaster

More information about these contests can be found on AAW's website at woodturner.org/community/chapters/chapter_contests_2011.htm. ■

Chapter Collaborative Challenge 2012

For the 2012 American Association of Woodturners 26th annual international symposium in San José, CA, the chapters and membership committee will again sponsor a Chapter Collaborative Challenge (C3).

Each AAW chapter is invited to submit one collaborative work created by as many chapter members as possible, with a minimum of six participants.

Rules

- The work can be any turned object, functional or not.
- The size and weight limits of the collaborative pieces, including the packing container and all packing materials, will be those set by UPS for a single standard box *(see sidebar)*. Assembled pieces may be larger but must fit in the single standard-size box. Size restrictions apply regardless of commercial or chapter delivery.
- The name of each participant must be on the work or on an accompanying nameplate.
- At least one chapter representative must be in attendance at the symposium to be responsible for displaying and return shipping of the entry.
- Any electrical/electronic devices in the piece must have an obvious power switch for safety and noise reduction. However, the AAW cannot guarantee that electricity will be available where the collaborative challenge is set up.

Each chapter must specify in which category they would like their piece to be judged. Choose from one of the following:

- Artistic
- Mechanical/Technical
- Fantasy

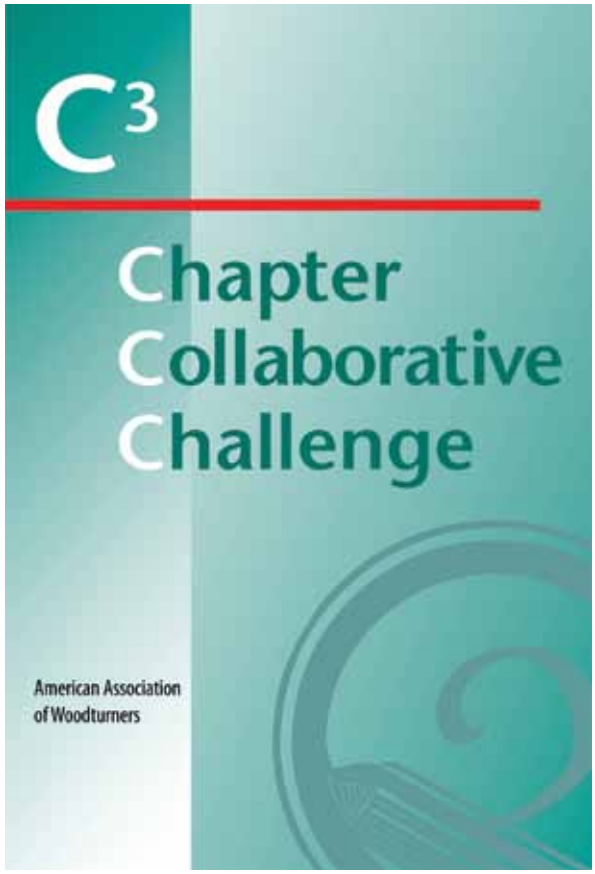
Four prizes will be awarded as follows:

- Best in Show plaque
- First Place plaque for each of the three categories

The pieces will be prominently displayed during the symposium in an area near the Instant Gallery. During the symposium, attendees will be invited to select, by ballot, their choice for Best of Show and their favorite piece in each of the three categories. Votes will be tallied prior to the banquet, during which the winners will be recognized.

In addition, the chapter's name will be engraved on the Collaborative Challenge perpetual plaque, which lists the winners since the 1998 symposium. The plaque resides in the AAW office in Saint Paul. All entries will receive a certificate of participation.

Collaborative Challenge pieces may be offered for sale. Shipping the work to the buyer is the joint responsibility of the chapter and the buyer. ■



- Standard packages can be up to 108" (270 cm) in length or up to 165" (420 cm) in length and girth combined.
- The packages can be up to 150 lb (70 kg).

UPS package size is determined by adding the length (the longest side of the box) and the girth (2× width + 2× height). Details of this measurement can be found at ups.com/content/us/en/resources/ship/packaging/.

Remember to Vote! AAW Board Election

Photos and statements of the six nominees running for election to the AAW Board of Directors appear on pages 5—7. Please read the statements and then vote for up to three candidates.

There are two options for voting: (1) by electronic ballot, which is available on the AAW website at woodturner.org/BoardVote or (2) by paper ballot, which is included in the plastic bag with this journal. The ballot contains your name and membership number. Tear off the ballot where instructed, put it in the enclosed envelope, affix a stamp, and mail the ballot. ***Your vote must be cast electronically or postmarked no later than October 21, 2011***.

We encourage you to participate in the voting process and hope that you take the time to help make this election turnout significant.

In Memoriam: Joan Gilmer Kelly

Joan Gilmer Kelly passed away on May 17, the result of an accident that occurred while she was turning wood. Joan was a dedicated, talented, and respected woodturner. Teaching art was her career; woodturning was her love. She joined the AAW in 2004 and was active in woodturning organizations.

Board member Warren Carpenter remembers his friend Joan, "Every time our paths crossed, Joan's smile showed her love of life and of woodturning. She was in a hurry to quit her day job, but never in a hurry while turning. She wanted to experience every bit of the joy of cutting the wood to create a work of art! Now, when I get ready to turn on my lathe, I do a safety check—my memories of Joan affect my own turning activities."

Cassandra Speier, AAW Board Vice President, speaks fondly of her friend, "Joan was a brilliant artist. She had a BFA from the Memphis College of Art, and taught art in the public schools. She became involved in woodturning, joined the Mid-South Woodturners Guild (MSWG), and soon became a loyal, committed, and well-loved member. She created works of pure art, as well as lovely useful objects, which were exhibited in numerous local and regional fairs and galleries."

According to woodturner John Hart, "Joan was a gifted woodturner and active on the online forum, World of Woodturning (WoW). She left a legacy of beautiful and artistic style, as well as an imprint of her personality."

The Joan Kelly Memorial Fund, created by Woodturners America in conjunction with MSWG, is accepting contributions to honor Joan's memory (woodturners-america.com). The money will be made available as grants for other clubs to design, engineer, and build shields for turning demonstrations. Joan's memory will live on to help ensure the safety of her fellow woodturners. ■

Cindy Bowden, AAW Executive Director

Joan Kelly, turned sculpture

Safety An Ingrained Approach

The recent death of Joan Kelly, a long-time AAW member, brought to the forefront the topic of safety. Internet forums were buzzing with messages, statements, and questions about safety. The AAW Board of Directors discussed safety policies at its last face-to-face meeting. Local chapters are instituting stricter safety guidelines for demonstrations and regional symposiums.

There are a variety of approaches to incorporate safety into your woodturning endeavors. They range from simply giving lip service to safety to adopting an ingrained approach that touches all aspects of our lives, keeping us free from harm.

As an organization, the AAW provides ample safety information to its members. The website includes safety guidelines for woodturners. The journal prints a blurb about it in every issue. Is that enough, though, to truly help woodturners be well informed about safe practices?

In much the same way that wood grain forms the structure of the material, safety is an integral component of the content of *American Woodturner*. For instance, it is not enough to say, "attach the wood to the lathe in a safe manner." We need to know how to determine "safe manner," as well as understand the various options for achieving it. Here are just three examples of instructive content that can help readers develop an informed approach to attaching wood: (1) Richard Raffan's article on chuck jaws (vol 25, no 6), (2) reminders within articles to use the tailstock for support when roughing out bowl blanks, and (3) the article on drive centers in the June journal.

This issue contains an article on bandsaw safety. One of the author's points is to keep the tension on your bandsaw set properly. But how do we know what "proper" means? A companion article discusses bandsaw-blade tension.

What approach do you have for keeping your woodturning practices safe? Is it ingrained or do you simply give lip service to safety? Over the years, almost every aspect of safe woodturning practices has been covered in the pages of this journal. All those back issues are available for AAW members, online (woodturner.org). Inform yourself, be safe, and enjoy turning. ■

Betty Scarpino, Editor

Bert Marsh Remembering a Woodturner

Photos courtesy *Woodturning* magazine

I became a woodturner in 1992 and began studying the many forms that could be created from wood, using a lathe. At the top of my list of artists whose work I found compelling was Bert Marsh. The title of his book, *Bert Marsh: Woodturner,* reflects his simple and direct approach to this craft (Guild of Master Craftsman Publications Ltd., 1995).

I traveled to England in 2005 on a trip organized by Mark Baker (editor of *Woodturning* magazine), who asked what I would like to do on my free time while there. I wanted to visit Bert, who I felt I already knew from having spent a decade looking at his work. Bert seemed surprised with the visit, "Why is an artsy guy like you wanting to visit a woodturner like me?" I replied, "The foundation of any great work is its form, and I have admired your work for long time." And with that exchange, we became friends.

In his book, Bert discusses the inspiration for his forms, which were mostly drawn from the domes and shapes of architectural elements in the Brighton's Royal Pavilion. During my visit, he took me there. The architecture was absolutely magnificent, and as we were walking around, discussing how woodturning inspiration can be taken from things that surround us, I came to appreciate his work even more.

Years later, Bert visited Chicago for a woodturning event and stayed with me for a week. One day when I was away at work, he mowed my lawn on my riding mower. He loved cutting the grass, explaining that he could cut the grass in his yard in two minutes with a weed whacker. When he was not playing in my yard, he turned wood, leaving behind a few pieces that we agreed should be collaborations.

Bert was a member of The Worshipful Company of Turners in England and won many prestigious awards. His work inspired countless woodturners, just as he inspired me. He was a big supporter of the AAW, especially the EOG program to which he always gave a vessel, stipulating a 100 percent donation.

Last year Bert started having heart problems and eventually he was no longer able to turn. After many trips to the hospital and consultations with a cardiologist, he was told that if he wanted to turn wood again, he would have to have bypass surgery. Bert was 78 years old, and no doctor would agree to surgery when Bert could simply take it easy and enjoy life. The problem was, Bert couldn't enjoy life without turning wood.

Bert and I spoke and exchanged many emails. He told me that he wanted to take a chance—he really missed turning wood. Woodturning was his life and passion and without it, life seemed meaningless. I absolutely knew how he felt: When we love something, how can we measure that love? Would you risk your life for it? I had been faced with a similar decision in my journey to find freedom from oppression in Vietnam; I understood Bert's decision.

When you are willing to risk life for what you love, that is true passion. In Ancient Greece when someone died, instead of an obituary, the question would be asked, "Did he have passion?" In the case of Bert Marsh, the answer is a resounding, *Yes!* Bert risked his life for a chance to turn again. His will to live the life of a woodturner, however, came up against destiny. Goodbye my friend, you will be missed. We will meet again. ■

—Binh Pho

Photos courtesy del Mano Gallery (delmano.com)

Untitled, 2010, Burr elm, 3⅝" × 5"
(92 mm × 127 mm)

Untitled, 2010, Cherry, 4⅝" × 6⅛" × 4⅛"
(117 mm × 155 mm × 105 mm)

Untitled, 2010, Mulberry, 3½" × 6½" × 5¾"
(90 mm × 165 mm × 145 mm)

Spray Booth

Affordable and Compact

Gregory S. Whitaker

During the cold winter months I have had to limit my application of spray lacquer and varnish because of the unwanted overspray. I had explored the possibility of purchasing a small commercial spray enclosure, but even the smallest units were too large and well beyond my budget.

Then on a trip to a local sporting goods store, I found exactly what I was looking for: a compact, collapsible, inexpensive cubicle that could be modified to become a portable spray booth. A one-person ice-fishing shanty, with a few simple modifications, became an effective spray booth.

Required materials

- A single-person portable ice shanty. (There are many manufacturers of ice shanties. I bought a Quik Shak by HT Enterprises, which is available on the Internet for about $130. When assembled, this shanty measures 51" long × 32" wide × 65" high [130 cm × 80 cm × 165 cm]).
- A tube of silicone RTV adhesive
- Hot-melt glue and glue gun
- A 4" (10 cm) universal dust port
- A 9" (23 cm) square piece of ¼" (6 mm) plywood
- Two shop clamp lamps
- Two folding sawhorses
- A 2' × 2' (60 cm × 60 cm) plywood board
- A shop vacuum with a 4" (10 cm) collection hose. (A smaller-size collection hose will not develop adequate airflow.)
- A furnace air filter
- One Lazy Susan (rotating tray)

Tools

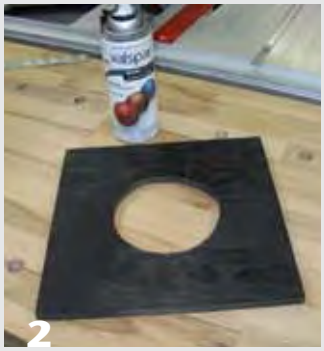
- Solder gun with a cutting tip
- Drill and drill bits
- Screwdriver

Assembly steps

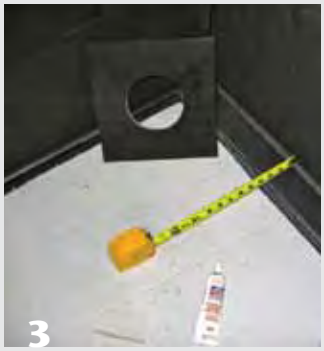
1. Construct a hose connection faceplate out of the ¼" plywood by cutting a 4¼" (11 cm) hole in the center *(Photo 1)*. Paint it to match the interior of the paint booth *(Photo 2)*.
2. Measure the width of the floor brace to ensure that the mounted faceplate and dust port will be installed high enough on the vertical wall so it will clear the frame when the booth is collapsed for storage *(Photo 3)*.
3. On the backside of the faceplate, put the silicone RTV adhesive in a couple of concentric circles. Then apply hot-melt glue *(Photo 4)* to each of the four corners of the faceplate before mounting the board on the inside of the hut, at the height determined in step 2. The hot-melt glue provides quick adhesion so you can move to the exterior and mount the dust port to the faceplate before the silicone adhesive has time to cure.
4. Within a few minutes of applying the silicone adhesive, mount


1

Hose connection and plywood faceplate.


2

Paint the faceplate to match the interior of the booth.


3

Measure the width of the floor to install the faceplate and dust port high enough to clear the frame when the booth is collapsed.


4

Apply RTV adhesive, then apply hot-melt glue to the corners.

the dust port onto the outside using four 3⁄16" (5 mm) wood screws, which pass through the canvas and into the mounted faceplate *(Photo 5)*. The pressure applied by the screws will force the silicone adhesive to establish solid contact between the canvas and the faceplate before the RTV has a chance to skin over.

5. Use a solder gun fitted with a cutting tip to open a 4¼" hole that aligns with the dust port and faceplate *(Photo 6)*.
6. On the interior, place a furnace air filter in front of the dust port opening, which will trap much of the overspray before it enters the collection hose and vacuum.
7. To increase the airflow into the enclosure, use the solder gun's cutting tip to make a Dutch door by slitting the access door and the plastic zipper in half.
8. Mount the clamp lamps on each side of the interior supports.
9. Place two folding sawhorses inside, topped with the 2' square piece of plywood, along with a Lazy Susan to facilitate turning your project while applying the spray finish.
10. Attach a 4" (10 cm) vacuum hose to the exterior dust port and your spray booth is operational. *(Photo 7)*

When collapsed, the spray booth measures 51" long × 32" wide × 5" high (130 cm × 80 cm × 13 cm) and weighs about 30 lb (14 kg). In a matter of seconds it can be collapsed and stored on a shelf *(Photos 8, 9)*.

Safety and use

Any time you apply a finish, it must be done in a well-ventilated area and although this spray booth does a great job controlling overspray, you will still have to ensure that you have adequate ventilation. Wear an appropriate respirator. In my case I have a ceiling exhaust fan in the shop, which is running whenever I am applying finish. Make sure that your exhaust fan and vacuum are approved for use with fumes from spray finishes. (A fan or vacuum that has an explosion-proof motor will keep sparks from the motor brushes from igniting solvent vapors.)

Although this booth configuration would work well for sanding, once sawdust is inside the enclosure it becomes difficult to establish a dust-free environment for the finishing process. ■

Greg Whitaker's grandfather, a patternmaker, introduced him to woodworking at a young age. Greg is retired and currently combines his love of boating with his interest in woodworking. When refurbishing a boat in 2006, he acquired his first lathe. Greg's work can be viewed at gallery.me.com/gswhitaker/100709.

Apple-wood rice bowl with teak chopsticks, 2010, 4¼" × 4" (11 cm × 10 cm)

Use wood screws, passed through the canvas and into the mounted faceplate, to mount the dust port.

Use a solder gun fitted with a cutting tip to open a hole that aligns with the dust port and faceplate.

With the clamp lamps mounted onto the interior supports and the vacuum hose hooked up to the exterior dust port, the spray booth is ready to use.

Boxed elements and folded shanty are ready for storage.

The spray booth is stored on a shelf when not in use.

Tips

Preserving unused finish

One of the biggest problems with finishing is having expensive finishing product go bad sitting in the can. There is a product to remove the air, but it is costly.

I purchased a Vacu Vin wine saver pump and stopper (on the Internet for $11). I drilled a hole into the top of a metal lid (one that fits onto a jar) and put a stopper into the hole. I use the pump to remove most of the air left in the container.

Additional stoppers are four for $6. Of course they are also available in most liquor stores.

— Robert Jay, New Jersey

Got a Great Idea?

Share your turning ideas! If we publish your tip, we'll pay you $35. Send your tips along with relevant photos or illustrations and your name and mailing address to:

Betty Scarpino
American Woodturner
5246 Evanston Ave.
Indianapolis, IN 46220
editorscarpino@gmail.com

Moveable lamp for Powermatic

I finally figured out how to attach my lamp to the headstock so it would move with the work. I drilled out the lower hole on the wall bracket that came with the light and attached it to the comparator arm of my Powermatic by drilling a ⅜" (10 mm) hole for the comparator cap screw to fit through. Now when I slide the headstock along the bed of the lathe, the lamp follows the work. Simple solution, and it works!

—Dave Martin, Georgia

Gantry crane

I needed to lift log sections that weighed over 200 lb (91 kg) onto a sawbuck so that I was not bent over while ripping them in half. My solution was to build a gantry crane. I scavenged the lumber from dumpsters at construction sites (with permission, of course). The wheels were $14 each and the one-ton chain hoist was $50, both from Harbor Freight. The back two wheels swivel, the front two are fixed, allowing easy maneuverability. I got the sawbuck plans from the Internet; John Lannon, from Ohio, designed them.

—Paul M. Kaplowitz, South Carolina

Lightening and finishing silver maple

The silver maple I scavenged had gorgeous flame and quilted figure, some artistic ambrosia highlights, but also some gray stain that detracted from the beauty of the wood. I did not want to alter the natural character and hue of the wood (particularly the ambrosia flares) by using aggressive peroxide and chlorine bleaches. Oxalic acid was ineffective.

I found a natural alternative, an oxygenating brightener, OxiWood granules that dissolve in water and can be applied to the wetted wood surface as heavily or as often as is needed. Follow the instructions for use as a brightener and then wash thoroughly with a hard spray of water from a hose and dry in the open air. Finish by fine sanding.

For a finish, I experimented with oil formulation that I often use and found that it highlighted not just the handsome figure in the wood, but also the residue of gray stain. I sanded to remove the oil finish and reapplied the OxiWood.

I next tried a finish consisting of beeswax, some carnauba wax, and mineral oil. I melted and mixed the three ingredients in a pot on the stove (take care, wax will ignite!) and allowed it to harden to a consistency softer than the beeswax. I applied this wax finish heavily, and then buffed with a linen ball polisher powered by a drill.

The flame and quilt figure didn't quite "pop" the way I wanted it to, so I applied two coats of General Finishes' light FDA-approved Salad Bowl Finish with a cloth and rubbed it into the piece. This finish blended well with the wax and produced a rich finish with a natural feel and appearance—far better than either the wax or the liquid finish alone. The hint of stain was no longer noticeable and I ended up with a food-safe finish.

This finish does not dry quickly indoors, but it does dry in a warm breeze. I repeated the process on three more pieces from the same tree with the same success. ■

— Bradford Whitman, Pennsylvania

Burn lines

In the April issue (vol 26, no 2), there was an article about adding burn lines to a turned object. The article contained an appropriate warning about using a wire around a fast moving object and the proper handles for that wire. I eliminate the safety hazard associated with the wire by using a countertop laminate sample card (such as Formica or Wilsonart) that you can get free at most large hardware stores.

Simply cut a shallow groove in your turned object with a skew chisel, and hold the card against the spinning surface. The friction will soon burn the line you want. You can adjust the width of the burn line by thinning the edge of the sample card on a grinder.

— Steve Mellott, Georgia

Tool rack

I needed a compact way to hold my tools, chucks, faceplates, and all the miscellaneous stuff we turners need to create our works of art. I waited until Sears had a sale on rolling mechanic's tool chests, built an A-frame tool holder for the top, and applied pegboard ends. Now everything is in one place and I can roll it around.

—Paul M. Kaplowitz, South Carolina

Calendar of Events

October issue deadline: August 15

Send information to editorscarpino@gmail.com

Australia
March, 2012 Turnfest! For information, visit turnfest.com.au.

Ireland
October 14–16, Irish Woodturners' Guild National Seminar, County Kerry, southwest Ireland, Malton Hotel. Demonstrators include Dick Sing (USA), Bill Robinson and Gary Rance (UK), and Christien Van Bussel, Glenn Lucas, and Tom McCosh (IRE). Easy access to the symposium location from Dublin. Local attractions include Killarney's 25,000 acre National Park, Ireland's highest mountain (Carrauntoohil), and Lakes of Killarney. For more details and updates, visit irishwoodturnersguild.com.

United Kingdom
August 12–14, AWGB Biennial International Seminar at Loughborough University. Featured demonstrators include Marilyn Campbell, Michael Mocho, Hans Weissflog, John Wessels, Yann Marot, Les Thorne, Paul Coker, Nick Arnull, Tobias Kaye, and Tracy Owen. Honored guest is Richard Raffan. Trade stands and gallery, all accommodations, restaurants, and bars are on the university campus. For information, contact Reg Hawthorne at reg.hawthorne@btinternet.com or visit woodturners.co.uk.

Colorado
September 10, 11, Rocky Mountain Woodturning Symposium, Loveland. Demonstrators include David Ellsworth, Dixie Biggs, and Al Hockenbery. For more information, visit rmwoodturningsymposium.com or contact Allen Jensen at rajconst@aol.com or 970-663-1868. Following the symposium, Dixie Biggs will offer a five-day workshop, September 12–16. For more information, contact Frank or Elizabeth Amigo at 970-568-3899 or efamigo@gmx.com.

Florida
February 3–5, 2012, Florida Woodturning Symposium, Lake Yale Convention Center. Featured demonstrators include Tim Yoder, Dick Sing, Mark St. Leger, and Don Derry. Local demonstrators are Lee Sky, Nick Di Mona, Norm Rose, and Tim Rowe. Workshop leaders are Don Geiger, Ted Smith, Charlie Schrum, Kurt Hertzog, and Rudy Lopez. Mark your calendars now and check out our website for online registration after May 15 at floridawoodturningsymposium.com.

Georgia
September 16–18, Turning Southern Style XVII, Unicoi State Park Lodge in the mountains of north Georgia near Helen. Featured demonstrators include Ernie Newman, Andi Wolfe, and Cliff Lounsbury and several local turners. For information visit gawoodturner.org, call Harvey Meyer at 678-261-7722, or email symposium@gawoodturner.org.

Hawaii
October 22, 23, 3rd Annual Honolulu Symposium, sponsored by the Honolulu Woodturners. Demonstrators include Kelly Dunn, Sharon Doughtie, and many of Hawaii's top woodturners. For information, visit honoluluwoodturners.org or call Andy Cole at 808-778-7036.

Massachusetts
February 5–September 11, "Loom and Lathe: The Art of Kay Sekimachi and Bob Stocksdale," Fuller Craft Museum, Brockton. For more information, visit fullercraft.org.

Michigan
August 26–27, "Turn for the Troops" event, held at the Woodcraft Store, 4265 28th St., Grand Rapids. Members of the Grand River Woodturners will demonstrate turning and hollowing. Finished items will be for sale. Additional information is available at grandriverwoodturners.org.

Minnesota
June 17–September 4, "Conversations with Wood: Selections from the Waterbury Collection," Minneapolis Institute of Arts, Minneapolis. This exhibit features more than 80 spectacular pieces of wood art collected by David and Ruth Waterbury, residents of Minneapolis. For more information, visit artsmia.org.

Montana
September 24–25, Great Falls Turners Symposium, Hilton Garden Inn, Great Falls. Jimmy Clewes will demonstrate basic bowl turning, offer a session on design, shape, form, and aesthetics of turned forms, and much more. For information about the event, visit GFTurners.org or call Sam Sampedro at 406-799-8984.

October 1–2, Yellowstone Woodturners Symposium, Career Center, Billings. Stuart Batty is the guest presenter and will demonstrate bowl-turning basics. For more information, visit yellowstoneturners.org or call Stan Lambert at 406-348-3499.

New York
March 31–April 1, 2012, Totally Turning symposium, held in conjunction with the 21st Annual Woodworkers' Showcase. Featured presenters are Trent Bosch, Giles Gilson, Kurt Hertzog, Joe Herrmann, Peter Lovalo, Glenn Lucas, David Nittmann, Chris Pytlik, and others. More details available at totallyturning.com.

North Carolina
November 4–6, North Carolina Woodturning Symposium, Greensboro Coliseum Special Events Center. Featured demonstrators include Marilyn Campbell, Emmet Kane, Mike Mahoney, Pascal Oudet, Richard Raffan, and Les Thorne. They, along with regional demonstrators, will present 63 sessions (7 periods of 9 rotations). Visit northcarolinawoodturning.com for developing information.

Ohio
July 10–August 21, "National Treasures," exhibit at the Ohio Craft Museum, Columbus. For more information, visit ohiocraft.org or contact William Jewell at Jewell@historicalwoods.com.

September 30–October 2, "Turning 2011," 7th biennial symposium, sponsored by Ohio Valley Woodturners Guild. The event takes place in suburban Cincinnati and features Benoît Averly, Jimmy Clewes, Keith Holt, Richard Raffan, Avelino Samuel, Betty Scarpino, Al Stirt, and Kimberly Winkle, plus local guest demonstrators. There will be a trade show, auction, and lots of good food. Additional details can be found at ovwg.org or by contacting Bob Cochoy at 937-427-2555 or cochoys@sbcglobal.net.

Tennessee
January 27–28, 2012, Tennessee Association of Woodturners 24th Annual Woodturning Symposium at the Radisson Hotel at Opryland in Nashville. Featured demonstrators include Al Stirt, Dale Larson, Mark Gardner, and Jennifer Shirley. View upcoming details on tnwoodturners.org or send an email to symposium@tnwoodturners.org or call 615-973-3336.

Texas
August 26–28, Southwest Association of Turners 20th Annual Symposium, Waco Convention Center. Featured demonstrators include Nick Arnull, Kip Christensen, Nick Cook, Douglas Fisher, Dave Hout, Alan Lacer, Robert Rosand, and Curt Theobald. For more information, visit swaturners.org.

Washington
October 22, A Day with Douglas Fisher at the Anacortes First Baptist Church, Anacortes. Doug will discuss and demonstrate how he plans and creates his unique double-sided off-axis pieces. Included will be details of turning, carving, pyrography, and coloring. An all-day hands-on workshop is available October 23. Sponsored by the Northwest Washington Woodturners. For more information, visit nwwwt.org/DouglasFisherDemoPoster-1.pdf or email rick Anderson at vicepresident@nwwwt.org.

Wisconsin
November 19–January 22, 2012, "Think Inside the Box," Leigh Yawkey Woodson Art Museum, Wausau. Central Wisconsin woodturners, woodworkers, and craft artists combine skill and imagination to create containers that hold items of interest or surprise. This exhibit is organized with the assistance of Wisconsin Valley Woodturners, a chapter of the AAW, and it complements "Boxes and Their Makers," a concurrent exhibition featuring the work of thirty-two contemporary woodworkers from around the world. For more information, visit lywam.org.

Call for Entries
August 14 deadline, "Arbor Aid: Vessel," 4th annual juried art exhibition featuring artwork created from reclaimed and urban wood, sponsored by Tree Pittsburgh. Exhibit date is October 29, 2011. For more information, visit treepittsburgh.org/arboraid.org. ■

Demonstration Day Veggies

Each year Boone Elementary School in Allen, TX, holds Gold Day, which is a career day for the students. They offer forty to forty-five presentations and demonstrations from which the boys and girls choose. Dallas Area Woodturners has supported this event since 2004.

In 2009, Murray Stein suggested that we incorporate vegetable turning into our show. Doing so enabled us to demonstrate more items (turning veggies is quicker and safer than turning wood) in the limited amount of time we had with each group. Previously, we had only turned tops but we were able to add bowls and boxes, and the kids loved it! Not all of them appreciated the vegetable smell, though.

Mark Duval turned a potato, Murray Stein shaped a sweet potato, and I transformed a turnip into a lidded bowl. We also demonstrated turning wooden tops. Not only did we make objects, we promoted healthy eating. ■

Jon Lindgren, Past President, Dallas Area Woodturners

The tops are made from wood; the bowls, boxes, and vases are made from various vegetables.

Wood Turning Center New Name, New Location

After eleven years at their former location, the Wood Turning Center has moved to 141 N. 3rd Street, an area of Philadelphia that receives considerable foot traffic and is near three major galleries: Snyderman/Works Gallery, the Wexler Gallery, and the Clay Studio. The Center's larger facility will house its museum collection, library, and archives, and will include an expansive exhibition space, museum store, community room, conference room, and staff and executive offices.

The name change is the result of a three-year strategic business plan to rebrand the organization. After an examination of its mission and vision statements and with input from the business and cultural communities of Philadelphia and the organization's constituents, the new name ***The Center for Art in Wood***, was selected as most representative of the Center's mission and vision. ■

Albert LeCoff, Co-Founder and Executive Director

Empty Bowls Project Club Collaboration

In 2010, the Northwestern Michigan Woodturners collaborated with local potters on a project to raise money for a charity. Each year, the Fresh Food Partnership, a local nonprofit group, holds a fundraiser, the Empty Bowls Project, to raise money for purchase of fresh, locally grown produce from the region's farmers. They distribute the produce via a group of volunteers to the region's food emergency system including food pantries, community meal programs, and shelters. On the day of the fundraising event, people purchase a bowl and then enjoy a soup and bread meal prepared by local restaurants.

The turners contributed over 60 bowls, which were well received. The club was especially pleased to include bowls made by the Elk Rapids High School woodworking class.

This collaborative effort is based on the international grassroots movement to fight hunger, created by The Image Render Group years ago. For more information about the empty bowls concept, visit emptybowls.net. ■

Madeleine Sabo
Overcoming Challenges

Dennis DeVendra

We all face obstacles in life. By critically analyzing the various methods for overcoming those obstacles, we can learn new approaches and solutions, as well as learn about ourselves and, in Madeleine Sabo's case, understand a little more about woodturning. Madeleine became blind later in her life. Until 2002, she lived in Ohio, where she owned her own permanent cosmetics and camouflage tattooing business. In this business Madeleine used her artistic talents to help hide scars and other blemishes on a person's body. She also has been an artist for thirty years, painting portraits of animals and exploring wood burning and glass engraving.

After retiring from her business in 2002, Madeleine and her husband Steve moved to New Mexico where they both took up woodturning. Madeleine was the president of her local woodturning chapter, the Mountaintop Turners, from 2005 to 2009.

Madeleine Sabo in her shop.

Getting started with turning

Before Madeleine and Steve moved to New Mexico, they purchased a small lathe and a set of spindle-turning tools. They did not do much turning until Madeleine saw an ad for woodturning lessons, four months after their move. They both took the lessons and less than a year later, they started selling their work.

For Madeleine, woodturning was an extension of her artistic talents. She says, "I can take a hunk of wood and end up with something beautiful." Her desire to continue turning resulted from the many compliments she was receiving. "Doing these art shows, people admire my work and it is such a rush to have someone say, 'that is a beautiful piece of artwork.'" She has been featured in *Country* and *New Mexico* magazines for her turning skills.

Madeleine attributes most of her early woodturning skills to a lot of practice and attending woodturning symposiums like the Utah Symposium, the Desert Roundup in Mesa, and S.W.A.T. in Texas.

Obstacles to overcome

In 2008, Madeleine experienced a dramatic change in her life. She contracted MRSA, a type of bacterium that is resistant to antibiotics. The result was a blood staph infection that left her with detached retinas and the loss of hearing in her right ear. After many surgeries and drug therapy, Madeleine's eyesight is limited to only slight black and white vision with some color perception in the periphery of her left eye. Fortunately, hearing in her left ear is intact.

For many, this kind of setback would mean a life of sitting back and doing little. For Madeleine, "There isn't a word in my vocabulary that says I can't do something. I can do anything I want. Maybe it will take me twice as long, but at least I can do it." She admits, though, that for woodturning it was like starting over again at the lathe.

New tools and techniques

After about eight months of recovery, Madeleine decided it was time to start turning again. She had Steve mount a piece of wood and she turned a 6" tall vase. This first turning went reasonably well. The startup process had some frustrations, but Madeleine's determination kept her coming back, not giving up.

Madeleine uses only three tools for all of her work: a bowl gouge, a skew chisel, and a parting tool. She uses the bowl gouge for spindle and faceplate work. When a scraper is needed, she


1
Madeleine's modified skew chisel has a mark on its handle to allow her to line up the tool in its proper position.


2
The modified toolrest has stops on each end.


3
The stand Madeleine uses has a black border to help her see the edges.


4
The tool caddy has receptacles for various tools and supplies. The holes for the tools have a black border, making it easier for Madeleine to see where to place the tool.


One of Madeleine's turned vases

turns the bowl gouge on its side.

Madeleine's vision in one eye causes everything to look like it is tilting. To compensate for this phenomenon when turning a tenon for a bowl, Steve made a mark on the skew chisel's handle so Madeleine can line up the tool in its proper position *(Photo 1)*.

Sharpening was a challenge. To overcome the difficulties with using a high-speed conventional grinder (a 1"-wide wheel and high speed), Madeleine purchased a Tormek sharpening system. The Tormek, with its slow speed and wide wheel, allows her to more easily sharpen tools.

For centering the wood on the lathe, Madeleine uses the trial-and-error method. Most of the wood she uses is rough pieces, so she will continue to adjust the wood between centers, rotating it by hand until she gets the correct balance.

Introducing the tool to the turning wood can be challenging, but Madeleine has learned through experimentation she can accomplish this safely and effectively. The key is to carefully position the toolrest as close as possible to the wood, then with her left hand resting against the toolrest, she slowly touches the wood with the tool, finding the best position to ride the bevel. Everything must be done in slower motion, so it takes several times longer for Madeleine to finish projects than it did prior to her loss of sight. It may take longer, but for Madeleine it is worth the effort!

New practices

To compensate for her loss of vision, Madeleine and Steve sweep the shop and put away all the tools after each turning session. (This sounds like a good practice for all turners.) They had a friend machine a screw hole in each end of their toolrest and install metal stops, which prevents turning tools from inadvertently slipping off the ends *(Photo 2)*. They purchased a set of plastic drawers to organize the various grits of sandpaper to make them easier to find. Through use, Madeleine can now distinguish the different grits of abrasive paper by feel.

Madeleine uses her limited vision to help her in the shop. She stands on a platform to bring her up to the correct height for their lathe, and the platform is bordered with black paint, to help her avoid falling off the edge *(Photo 3)*. They installed additional lights in their shop to provide as much light as possible. Steve drilled holes in the tool caddy and outlined them with black paint *(Photo 4)*, allowing Madeleine to easily pick tools out of the caddy and replace them into their respective holes. To see the wood while turning, a contrasting-colored board is mounted on the back side of the lathe.

Today

Madeleine currently promotes and sells her woodturnings at local shows and art tours. In 2010 she won first place at the New Mexico District GFWC (General Federation of Women's Clubs) Convention. Madeleine enjoys speaking to other AAW clubs about overcoming obstacles. In addition, she created a local limited-sight support group. Her primary message is one of encouragement and perseverance.

Madeleine's new motto for life is:

A *Accepting* the loss of my eyesight and continuing to enjoy life!

P Learning to be *patient* because things now take twice as long to complete.

S Is for *stubborn*, "I will do everything again if need be!" ■

Dennis DeVendra is blind and does woodturning. After his first article appeared in AW *(vol 24, no 1), he has heard from many AAW members who have shared their own inspiring stories of overcoming challenges. He invites others to send him their stories. Please contact Dennis through his website, blindwoodturner.com.*

Cyanoacrylate Glue

Bill Blasic

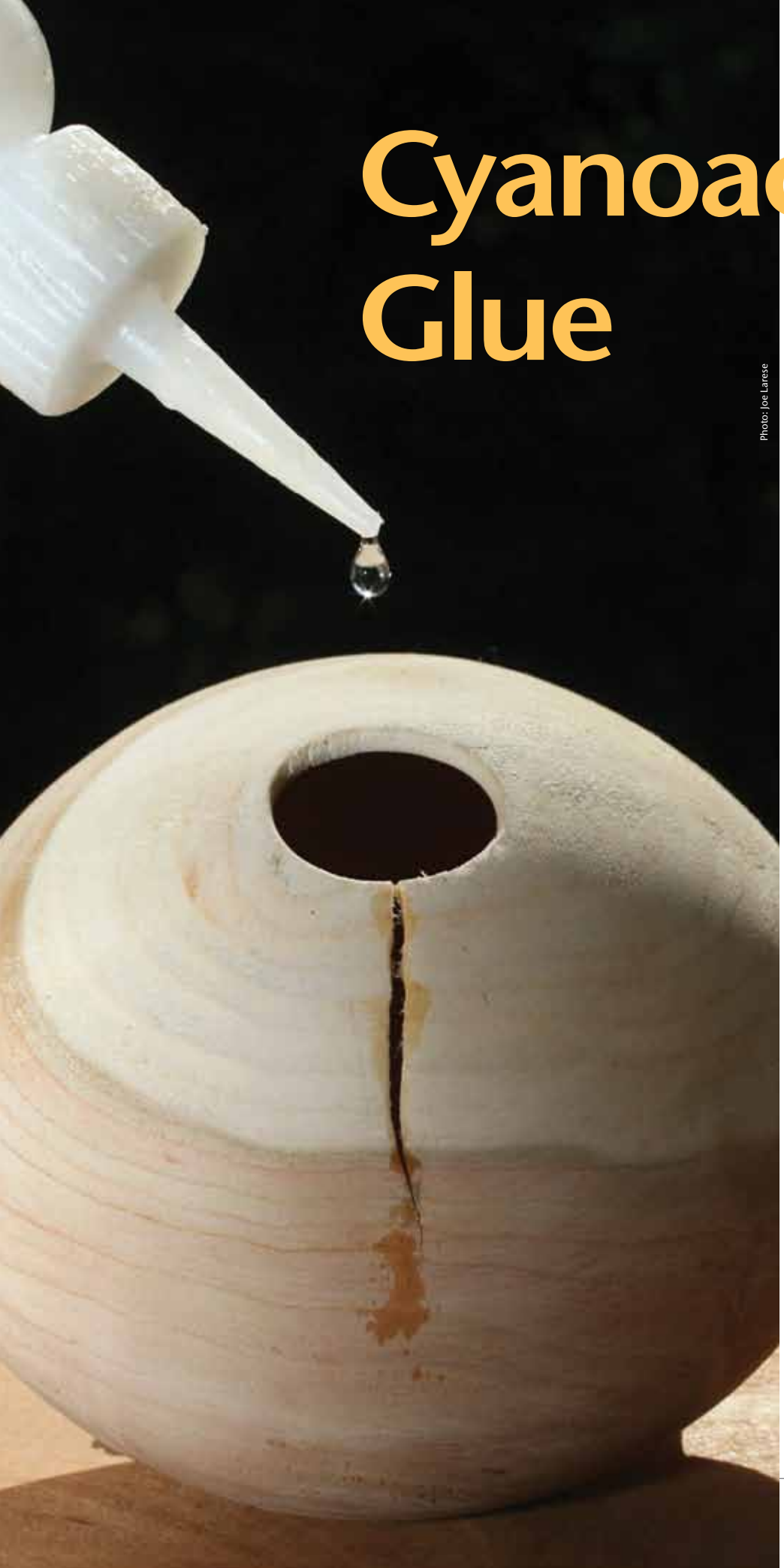


Photo: Joe Larese

We woodturners have enthusiastically embraced the use of CA glue for a variety of purposes: to instantly attach bowl blanks to waste blocks, to fill and repair cracks, and as a finish for items such as pens and bottle stoppers. Unlike yellow or white wood glue, CA glue works well to affix green (wet) wood to glue blocks (medium viscosity) and medium or thick CA will hold an end-grain cylinder to a glue block. CA glue is instant; no clamping is necessary. Where did this seemingly magic adhesive come from and is it all that it's purported to be?

Cyanoacrylate glue (commonly called CA glue, superglue, instant glue) was first formulated in 1942 by Dr. Harry Coover while working to fabricate optically clear gun sights at Kodak Laboratories. The substance, however, was determined to be too sticky. Years later, while working at a Kodak chemical plant, Dr. Coover again looked at this cyanoacrylate and discovered its possibilities as an adhesive. The initial formulation became "Eastman 910" adhesive and was marketed by the Eastman Kodak Company.

In 1958 Dr. Coover appeared on the TV show "I've Got a Secret" and demonstrated the instant bonding capability of the glue by using it to pick up the host Gary Moore using only a single drop of the glue between two steel cylinders. Many of us may also remember the television commercials featuring a worker wearing a hardhat that was glued to a beam where he was suspended, flailing and kicking.

Material Safety Data Sheets (MSDS)

For the safety of everyone, as well as for legal reasons, manufacturers are required to have an MSDS for each of their products. MSDS list major chemical components for flammability and health hazards and sometimes list the entire chemical makeup of a product. MSDS should also contain instruction for the safe use and potential hazards of a product.

One of the early uses of CA glue was during the Vietnam War, where it was used to bond skin tissue together to close up wounds, keeping soldiers from bleeding to death on the battlefield. Although not FDA approved, medics used it anyway. Original CA glue caused skin irritations; current medical-grade CA does not. It is not a good idea for anyone to use shop-grade CA glue to close wounds.

Varieties and properties of CA glue

Not all CA glues are created equal: the purer the formulation, the better the quality. Some manufacturers advertise high-quality CA glue, which is filtered and pure. Check various manufacturers' websites for their material safety data sheets (MSDS) to learn more about the purity of their product. (You can also check manufacturers' MSDS for information on the chemical makeup of accelerators and debonders.) For some companies, the entire manufacturing process is located in the United States; others formulate the monomer from overseas suppliers. The monomer is the thin CA, which is the basic substance used for creating a variety of glue types that provide qualities such as thickness and flexibility.

CA glue comes in thin, medium, thick, and gap filling, as well as regular, semi-flexible, and flexible. Companies have recently expanded their offerings of viscosities to make in-between types, including versions of gel, giving us woodturners more options. CPS (centipoise millipascal seconds) is a universal measurement of a product's thickness versus water, which has a CPS of 1. By checking each manufacturer's CPS rating for their CA, you can compare one brand's thick or thin to another brand's, which will help you determine gap-filling ability.

Some manufacturers offer low-blooming (foaming) and low-odor (or odorless) versions of CA. Low blooming would help avoid the foaming that occurs when the glue sets up too quickly. None of the companies I contacted would say that low-odor varieties of CA were safer, but I have found that the low-odor version does not bring tears to my eyes like regular CA does.

Most of the suppliers I contacted also have a flexible black CA, which is a rubber-toughened variety that offers shock resistance and better holding ability than regular CA for use on nonporous material. This CA is also available in clear formulations, but not by all companies.

Strength

CA glue does hold well. I found literature saying that the shear strength of some of these glues is 4000 psi. The strength of CA glue's holding ability is greater in opposition, such as pulling it apart, than its shear strength. A sharp rap 90° to the joint can cause joint failure. However, in the nonscientific test I performed, I could not break the bond on the wood I glued together no matter how hard or how many times I tried, short of using a sledgehammer. For the experiment, I used the purest- and freshest-quality glue, which no doubt added to the strength of the glue joint.

It is clear that woodturners can reliably use CA for holding wood onto the lathe for turning. Medium viscosity works best for this application. Thin CA sinks into the wood pores, not leaving enough glue to form a bond. Thick CA works okay, but is unnecessarily thick.

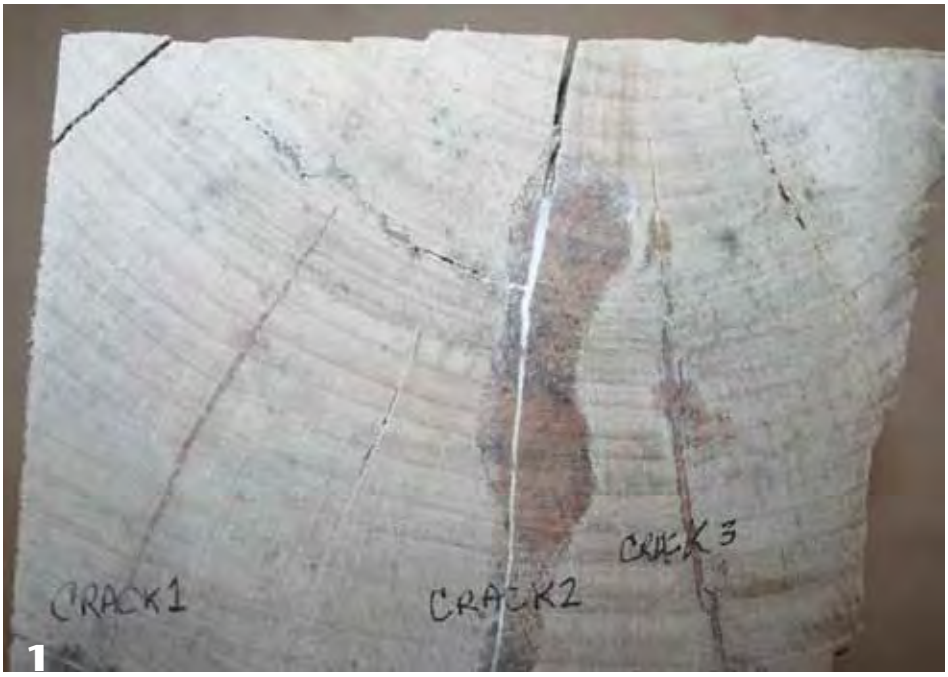
Working properties

CA is kept in liquid form by the use of stabilizers. In use, water vapor in the air and on the piece to be glued actually negates the stabilizers, which starts the curing process. This ability to bond when moisture is present is why CA glue is ideal for gluing green (wet) turning blanks to auxiliary blocks. In high humidity situations, foaming from the CA can happen because of too much dampness in the air or in the wood.

The glue's bond cures at different rates depending on the formulation: generally occurring in about 3 to 5 seconds for thin, 10 to 14 seconds for medium, and 15 to 30 seconds for thick. Full curing may take anywhere from a few hours to 24 hours. These are estimates; curing times will vary with different brands, with moisture present, and with temperature fluctuations. Most manufacturers have charts that show viscosity and cure times.

To help ensure that the glue you are using is as fresh as possible, buy CA from a source where the turnover of stock is regular. Keep opened bottles capped after use, and if not used regularly, place the bottle in a cool, dry atmosphere. Store unopened bottles in the refrigerator.

The curing process can be sped up with the use of accelerators that come in either aerosol cans or spray bottles. As with CA glue, accelerators are not all the same. For instance, a spray bottle originally containing one ▸



Crack 1 was sprayed with lacquer before filling the crack with sawdust and CA glue. Doing so helped avoid staining the wood next to the crack.

brand, refilled with accelerator from a different manufacturer, shriveled up the plastic bottle, dissolving it. All the accelerators worked well, though, to speed up the curing of CA glue.

Methods for using accelerator with CA glue vary. Some woodturners spray one side of the piece to be glued with accelerator and put CA on the other side. Some apply the CA glue, close the joint together, then spray the edges. I have observed that waiting 20 to 30 seconds before spraying the glue joint with accelerator gives a better bond. Using too much glue and accelerator will cause foaming, which can make the glue joint brittle.

If humidity is low and temperature cold, the time it takes CA glue to bond is longer than in warm humid conditions. To help speed up curing, without the use of accelerator, some turners *lightly* moisten one side of the glue joint and rub the other side to create friction/warmth. The added heat and moisture helps the glue cure, almost instantly.

Filling cracks and gaps

In addition to joining pieces together, a widespread use of CA is to fill cracks and voids in wood. Simply rub fine sawdust into the crack and pour some thin CA on it, letting the glue seep into the sawdust; the crack will be filled and bonded. If desired, spray with accelerator to speed up the curing. Alternatively, fill the crack with gap-filling CA.

One downside of filling cracks with CA glue is the possibility of staining around the filled crack, caused by the CA adhering to the wood and filling the pores. This staining is hard to get rid of. To avoid this occurrence, use a light coat of lacquer (shellac also works well, see *AW* vol 26 no 2, Tips) on the area around the crack before applying the glue. This lets the CA flow into the crack but not adhere to the wood. *Photo 1* shows three cracks filled with sawdust and CA glue. Crack 1 was sprayed with lacquer before filling and cracks 2 and 3 were not. There is staining on the edges of cracks 2 and 3, but none on crack 1.

Filling a gap with baking soda (sodium bicarbonate) and then applying thin CA makes a hard, lightweight gap filler. Decoy carvers use this gap filler often—they can because they paint the surface afterward. Be careful using CA and baking soda together, however, as it will produce an exothermic reaction (very hot)! Also, avoid using cotton with CA; this also produces an exothermic reaction, which can cause a burn (I learned that one the hard way).

Attach endgrain cylinder

Mounting a cylinder onto the lathe for turning tops or knobs is best accomplished using a chuck. But what if the cylinder is short and you want to use its entire length? Regular woodworking glue (yellow or white) will not hold endgrain to a glue block. The wood pores have a capillary action that renders the glue-filled joint ineffective. Medium or thick CA glue, however, will create a strong enough bond to hold a short cylinder onto a glue block for turning small items. Make sure the face of the cylinder and glue block are flat and meet at 90°. Apply medium or thick CA glue and hold the two together. Spray with accelerator or hold with pressure until the glue cures.

Glue-B-Gone and Super Solvent

Use as a finish

CA is gaining popularity as a finish. Many pen makers have discovered that a CA glue finish holds up well to the rigors of daily use. Sand the piece to 1200 grit. With the lathe running, apply a liberal even coat of thick- or slow-curing CA and then apply a liberal coat of boiled linseed oil while the CA glue is not yet cured. (Wear a faceshield!) As the lathe rotates the wood, continue buffing with the rag you used to apply the linseed oil. Finish buff at higher speed using a clean towel. The heat speeds up the curing process and the buffing results in a high-gloss finish that looks like a plastic coating. If glossy is your preference, this finish is for you. Stick Fast brand is now producing a CA strictly for finishing. I suspect other manufacturers will follow. (When using rags for applying finish and buffing, use small pieces of rag, the size of which will not get caught on the spinning wood.)

Debonder

The CA industry recognizes that even experts make mistakes and will sometimes get CA glue where it should not be, resulting in fingers glued to each other or to projects. To help recover from these mistakes, various debonders (solvents) have been developed. Always have a good debonder nearby and test it to verify that it works with the brand of CA glue you are using. Fingers can also be unglued by soaking them in very warm water, rubbing them gently until the glue debonds.

Along with CA samples, Satellite City sent a Glue-B-Gone gizmo to remove CA from fingers *(Photo 2)*. Lightly sanding a spot of CA on your fingers with 120-grit abrasive will also remove the glue. They also included a CA Super Solvent (debonder), a different brand from the solvent I currently had in my supply cabinet. The Glue-B-Gone worked as advertised and completely cleaned up the residue.

Variety of opinions

I have been using CA for about ten years, but there are many turners who have been using it for much longer. This prompted me to ask five well-known turners whose opinions I respect about their use of CA.

David Ellsworth

I caution people about ventilation when using superglue because of the risk of increased heart rate and accumulated sensitivity over prolonged exposure. I spoke with a manufacturer's rep years ago at a conference. He was willing to admit that "some people" had had "some difficulty" with CA glue.

There's no scientific data to support claims that the fumes cause health issues, at least not that I'm aware of. So to publish testimonials would simply be a matter of hearsay or personal experiences rather than substantiated facts. That said, here's what I do/don't use CA glue for:

I only use superglue (a) when I'm mounting small pieces of green or dry wood onto glue blocks to make my small Spirit forms, and (b) when I'm gluing the tips into my hollowing tools. It is excellent for both situations. I never use it for filling voids or checks, mixing with dust, or doing inlay. I don't trust its holding power over time. In these circumstances, I only use standard furniture glue, yellow or white.

Richard Raffan

I gave up using CA a few years ago when I realized the holding power does not last. I purchased a kaleidoscope that was held together with superglue and it literally fell apart after ten years. Terry Martin (a professional woodturner, writer, and curator from Australia) told me that several American museum curators mentioned similar problems with segmented bowls and other constructed turnings in their collections.

Originally, I used CA glue mixed with sawdust to fill splits, and I've had no problems with those repairs. Bowls that were used daily that I repaired with CA lasted a few years then needed to be glued again. Now I use it only for temporary gluing or for firming up ▸

Resources

CPH International, Starbond, 1-year shelf life, starbond.com

E-Z Bond, 1-year shelf life, e-zbond.com

Franklin International, Inc., CA Titebond, 2-year shelf life, titebond.com

Great Planes Pro CA, sold at hobby stores and has a "Use By Date"

Insta-Bond, 1-year guarantee, woodturnerscatalog.com

Palm Labs Adhesive, Inc., Turbo Fuse, 1-year shelf life, palmlabsadhesives.com

Parson Adhesive Parfix, 1-year shelf life, parsonadhesives.com

Pacer Technology Zap-A-Gap, 1-year shelf life, supergluecorp.com

Satellite City Hot Stuff & Super T, 1 year shelf life, caglue.com

TMI Products, Stick Fast CA, 1-year shelf life, stickfast.net, packardwoodworks.com, woodcraft.com (A special thank you to Joe and John Matwick at TMI.)

Keeping CA glue refrigerated before opening will lengthen its shelf life.

Safety and use

- Do not breathe fumes from CA glue or accelerator. Either wear a respirator with a chemical cartridge appropriate for CA or use plenty of ventilation.
- Be careful when using accelerator and do not breathe the spray or get it into your eyes. Also, overspray of accelerator hitting an open container of CA can ruin it.
- Wear a full faceshield when turning bowl blanks (or any glued-up wood) where CA glue has been used and when using CA as a finish. A pocket of uncured glue may be exposed, which would result in CA glue flying into your eyes. Pockets of uncured glue can happen, even when accelerator has been applied.
- Keep a spray bottle of water handy. If CA gets on your hand (or anywhere else), a short spray of water sets up the CA before it can cause problems. Better yet, consider wearing disposable gloves.
- CA dissolves in acetone, which can be useful for removing CA from skin or for soaking a clogged nozzle.
- Heat breaks down CA, which is useful to know if you need to remove a cutting tip that has been set into hollowing tools (one that has been glued in place with CA).
- Excessive heat build-up will delaminate Velcro that has been glued on with CA.
- To help keep a bottle of CA from being inadvertently knocked over, drill a hole in a piece of wood and place the bottle into the hole.
- Store unopened bottles of CA in the refrigerator to extend their shelf life.
- In my personal experience, having the cap on or off the container of CA has had no effect on the life of the product. The amount of humidity where you live, however, might require that your CA glue be capped at all times.
- To help keep tips unclogged, I hold the container upright and squeeze the bottle to clear the tip after use (or you could gently tap the uncapped bottle to settle the glue), but even so, the tip can become clogged. I use a small drill to open the tip. Or, you can try a KC Cherry Picker inserted into the nozzle to keep it clear; a small nail or hatpin would do the same job. Replacement and capillary nozzles are available.

punky areas that are impossible to cut cleanly or sand otherwise.

The inexpensive CA purchased in craft stores is not much good — that's the stuff in tiny tubes.

The fumes from CA glue are basically dangerous and not good to breathe. That's another reason I don't use it. I'm told the accelerator is even more of a health hazard. I always keep some solvent handy when I'm using CA, and I generally avoid the use of accelerator. These days I primarily use ten-minute two-part epoxy. It seems to provide a permanent fixing and is successful for repair work.

I never used CA to hold wood onto the lathe: that's what chucks are for. I always thought attaching blanks to waste blocks to be ridiculously expensive when for the price of a few bottles of CA you could purchase a chuck and make life a lot easier.

John Jordan

Although I use CA glue regularly, I use very little quantity-wise. As a result, my glue often went bad, got thick, and the tips clogged no matter what. That changed when I was given sample tubes from Starbond some years ago. Along with the sample tubes, I acquired some of the small capillary applicators. These applicator tubes don't require a cap; the opening is so small that air getting into the bottle is not a problem. The tube is always clear, and the tiny sample bottle doesn't allow gravity to flow more glue than I want. It requires a squeeze to get a drop at a time, which is about all I ever use, and I never have a mess of glue gushing out where I don't want it. After I used up the few samples, I ordered a large box of sample tubes, likely a lifetime supply, and a large quantity of capillary tubes. I keep the glue in the freezer and only keep out the one small tube, with the capillary applicator, and I keep that standing upright in a hole drilled into a small wood block.

Terry Scott

I started turning fourteen years ago, and from day one found the need to use CA glue. This came about with suggestions from mentors that cracks could be fixed and holes filled with sawdust and CA glue. As far as CA failing, I haven't had any work returned in fourteen years.

About five years ago I was using large quantities of CA in a well-vented room with a fan and with a Racal helmet on. The fumes got into the helmet; I ended up on a ventilator in the hospital. Since then I have developed a severe allergy to CA glue. Only a couple of minutes after coming in contact with the stuff I start sneezing and have restrictive breathing similar to an asthma attack. CA is activated by warmth and moisture; when I breathed it in, it reacted with my lungs. I have tried all sorts of alternatives, but nothing compares to CA. I would appreciate a recommendation for an alternative, as this stuff has become to me, like many, an essential part of working with wood.

Bill Neddow

I started using CA glue about ten years ago on the recommendation

of other woodturners. Luckily, I was warned early on that there might be a problem with the CA glue losing its bond if used to adhere two pieces of wood together, so I never used it for that purpose. I use it extensively to stabilize bark and to fill cracks and voids (after they are packed with sanding dust or coffee grounds).

The largest void I filled was 2" (5 cm) in diameter on the inside and 3" (8 cm) on the outside of a 35" (89 cm) burl bowl. That was three years ago and the void is still in perfect condition. On large voids, I will put in a layer of coffee grounds (very fine) and apply CA. Then I will add a thin layer of sanding dust and apply more CA. The result, after a number of layers, is a realistic-looking bark effect. I have had no failures and I go through a 16-ounce bottle of regular CA glue every three months.

I think the new flexible CA glues are a lot more forgiving than the original formula, so I have used them to glue up pieces of wood. I have made several sculptures with turned components and joined the pieces using a threaded metal rod and black CA glue (flexible). It has worked perfectly, in spite of the fact that I introduced the metal, which has a different rate of expansion and contraction to the wood.

The newer clear CA glues are more versatile than their older counterparts, as they do not create black lines. These glues are flexible, yet hold tight. I use them to put new Velcro on sanding pads. They are the best glues I have found for this application. They stand up to years of daily sanding, a real torture test for durability and flexibility. The only problem comes when you accidentally wreck the Velcro again. The old Velcro is stuck on so efficiently that I have to sand it off on a belt sander.

Be careful breathing this stuff! Wearing a chemical-rated mask is a good idea when working with this product. CA is like anything else we use: know and understand how to use it and familiarize yourself on its safe use. Every manufacturer has material safety data sheets available for your understanding.

Conclusion

For temporarily holding wood (wet or dry) onto the lathe or for filling cracks and voids, CA glue is a wonder product for many woodturners. It is important to understand, however, that CA glue is potentially harmful to health; use the glue (and accelerator) with care. Do not breathe the fumes or get the CA into your eyes. CA bonds instantly with moisture and heat.

It is clear that the purest and freshest CA will enhance the chances that a joint, or crack filled with CA and sawdust, will hold together longer than inexpensive superglue or CA glue that has passed its shelf life. Take heed of the experiences of those who have had CA glue fail over time. If what you are making needs to stand the test of time, be aware that CA glue has not been in use by woodturners for long enough to say with authority that glue joints will last.

As I was finishing this article I heard that Dr. Harry Coover passed away in March, 2011. His accomplishments live on! ■

Bill Blasic retired in 2003 from General Electric, where he was a machinist for 33 years. He is currently in his sixth year as president of the Presque Isle Woodturners. He is a member of the AAW, the North Coast Woodturners, the Buckeye Woodworkers and Woodturners, and the Genesee Valley Woodturning Guild. He can be contacted at piwturner@verizon.net.

bandsaw SAFETY

Keith Tompkins

There is potential danger lurking in the corner of woodturning shops, waiting for the most inopportune time to injure or maim. For some, the thought of operating a bandsaw strikes fear; we have all heard horror stories of bandsaw accidents. The bandsaw's negative reputation, however, is largely undeserved. If we follow a few guidelines, the bandsaw can be one of the safest, and most versatile, of all stationary woodworking equipment. Let's see if we can demystify this machine and acquire a comprehensive understanding of how to operate it safely.

Know your machine

Before operating any power equipment, it is imperative to have a basic understanding of its functions, adjustments, and maintenance and safety procedures. Read and periodically review the owner's manual; it contains necessary information required to properly set up and maintain your bandsaw. If you have misplaced your owner's manual, many manufacturers make copies available online. Excellent books and articles on setting up and operating bandsaws are also available (two books are listed at the end of this article). If you are unsure of any bandsaw function, most turning clubs have experienced operators who will be willing to give proper instructions. Under no circumstance should you operate a piece of power equipment without proper training, when tired or under the influence of alcohol or medications, or when the equipment is not in good working condition.

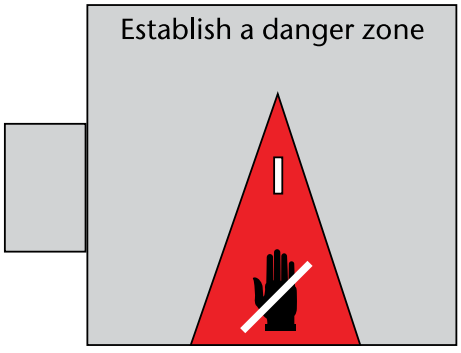


Figure 1. The red triangle illustrates the danger zone area: the area where it is not safe to place hands and fingers when making cuts on the bandsaw.

Safety

While there have been many publications written about the bandsaw, very little information on bandsaw safety, as it applies to woodturners, is available. This article will focus on safe bandsaw operation and will cover the basic cuts employed by woodturners.

Before using any power woodworking equipment, ensure a clean work area free of obstructions. Remove rings, watches, and other jewelry. Avoid wearing loose-fitting clothing or shirts with long baggy sleeves, and if you have long hair, securely tie it back. Always wear eye protection (a faceshield is best). Even when every precaution is taken, you may find yourself in a dangerous situation. Be sure the on/off switch is located in a convenient, easy-to-reach location.

Establish and adhere to the concept of a danger zone *(Figure 1)*. This zone is an area where an operator's hands are not safely placed when cutting wood. The red area indicates the danger zone, as seen from above the saw's table. Keeping your hands out of the danger zone will significantly reduce chances of injury while operating the bandsaw. As obvious as this may seem, nearly all bandsaw accidents occurred because the operator placed his hand directly in the path of the blade (in direct line of the cut).

Good posture and body position are important; you may inadvertently place your hands in danger if you lose your balance. Stand with a relaxed posture, feet balancing your body so that you are squared up in front of the table. Avoid reaching too far forward or to the sides. I recommend an open stance while cutting large pieces. This gives you the ability to react in any direction. Avoid standing flat-footed. Imagine you are resisting someone pushing: feet together, no resistance and easy to push over. Open stance, good resistance and balance.

Condition of the bandsaw

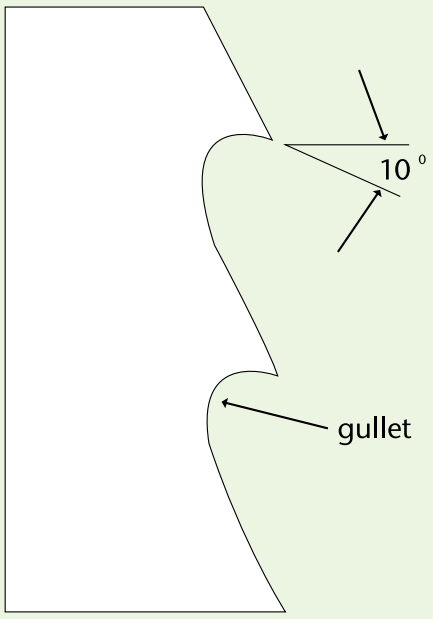
Cutting bowl blanks safely begins *before* the bandsaw is turned on. The condition of the saw blade is

of utmost importance; many accidents are the result of the operator attempting to cut with a dull blade. Never operate a bandsaw with a dull blade. Resist the temptation to take just one more cut when you *know* the blade needs replacing. For every action, there is an equal and opposite reaction: If you are pushing hard, trying to make a cut with a dull blade, as the blade exits the wood, the bowl blank will jump forward, possibly pulling your hand directly into the path of the blade. The blade may be dull, but it will still cut off a finger.

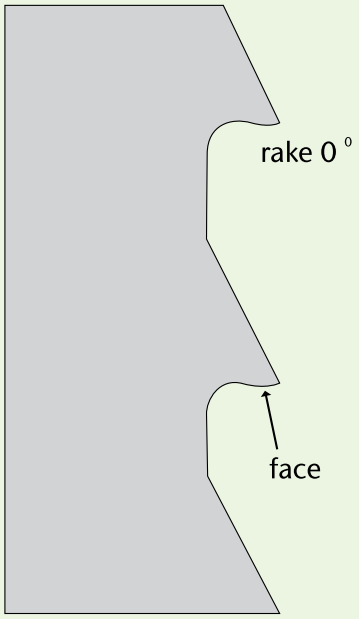
When installing a new blade, disconnect the saw from the power source, then adjust the tension, blade guides, and rollers to the bandsaw's and blade's specifications. At the same time, inspect your saw and make necessary adjustments or replace worn parts. The following are things to check before and during installation:

- Check the condition of the rubber tires on each wheel. Obvious cracks, chunks of missing material, or a loose rubber tire indicate replacement is required. If the tires are in good condition, clean each tire using a thin piece of scrap wood or stiff nylon brush.
- Thrust bearings play a role in proper bandsaw setup and use. The thrust bearings are located behind the blade (one above and one below the table), and they should move freely so that a slight pressure from the back of the blade against it during use will keep the blade from moving too far back. The bearings should not rotate while the saw runs idle, but should begin to rotate the instant the cut begins.
- Most bandsaws are equipped with upper (above the table) and lower guide blocks (below the throatplate) ▶

Bandsaw blade terminology



Hook-tooth blade
A hook-tooth blade has a deep gullet and widely spaced teeth that have a 10° undercut face, which helps the blade cut well. The gullets tend to curl the chips. Hook-tooth blades, alternate set, are good for harder woods.



Skip-tooth blade
A skip-tooth blade has a zero degree rake (a straight 90° tooth) and a sharp angle at the junction of the tooth and gullet. The large distance between the teeth aids in breaking up and clearing chips. Skip-tooth blades, raker set, are good for general-purpose woodcutting.

Terminology

Alternate set: How the teeth are set—in an alternating right, left pattern.

Gauge: The thickness of the material used to fabricate the bandsaw blade.

Gullet: The space within the curved area between two saw blade teeth. This space serves to remove chips.

Kerf: The slot created when a cutting tool parts through material.

Rake angle: The angle that the tooth face makes with respect to a perpendicular line from the back edge of the blade. The angle is positive when the tooth angles forward in the direction of the cutting action and negative when it angles backward from the direction of the cutting angle. A hook-tooth blade has a positive rake of 10 degrees.

Raker: A pattern of offsetting the teeth, one tooth right, one tooth left, one tooth unset. (Also referred to as *raker set* or *raker tooth*.)

Set: The bending of bandsaw teeth to right and left of center. The set allows for clearance of the back of the blade as it cuts, which enables the blade to cut straighter and to clear chips from the kerf.

Tension: The direct pull in pounds on the bandsaw blade.

TPI: Teeth per inch, also referred to as *pitch*.

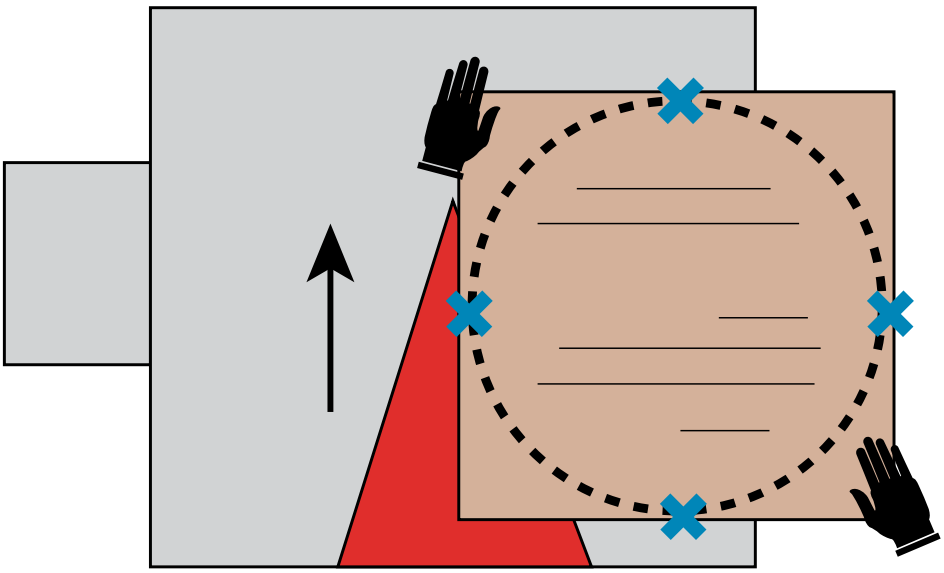


Figure 2. Position your left hand behind the sawblade and your right hand outside the danger zone as you cut a bowl blank. The Xs represent the four places where the blade will exit the wood, potentially making the bowl blank jump forward.

or with ball bearing rollers. Guide blocks/ball bearing rollers play a critical role in the performance of your bandsaw and must be in top condition. Inspect them for wear or deep grooves and replace if necessary. Keep them adjusted so that the sides of the blade are supported but not pinched.

- Bandsaw blades, by their nature, are flexible, so the greater the distance between the upper and lower blade guides, the greater the chance the blade has to flex or develop a bow while cutting. Any maladjustment of the blade guides will only exacerbate the problem. If the guides are adjusted too far forward, the set of the teeth will be removed. If they are adjusted too far to the rear, or set too loosely, the blade won't steer properly.
- Make sure the throatplate does not have an overly large opening. An opening that has become too wide can cause a small piece of wood to fall into the opening, get caught, and possibly break a blade.
- An additional safety consideration is the distance between the top of the wood and the blade guard. When cutting bowl blanks of uneven thickness, that gap might be significant for part of the cut. Adjust the guard to be as close as possible to the top of the wood.

Bandsaw blades

Blade type and width are important. Make sure the blade you use is capable of cutting the radius required for each size bowl blank. It is good practice to install a bandsaw blade that will allow at least three teeth to be in contact at all times with the material being cut.

The teeth on bandsaw blades are manufactured with a *set*, each tooth offset alternately right-left-right-left. This set is important because it produces a kerf that is wider than the thickness of the saw blade, which allows for clearance between the wood and the blade so that the blade does not bind. This clearance also gives the blade the ability to cut along curved or circular lines. A blade that has lost its set (a dull blade) will not cut properly and will overheat, weakening the blade and burning the wood.

For cutting large chunks of green wood, a 3 tpi, ½"- (13 mm-) wide blade is a good size that will hold up well to heavy use. For cutting smaller stock, a ⅜"- (10 mm-) wide, 4 or 6 tpi works well. Bandsaw blades for cutting wood are available in hook-tooth or skip-tooth configurations. (A standard-tooth blade is a good choice for cutting thin stock or non-ferrous metals.)

Hook-tooth blades, available in alternate or raker set, have a deeper gullet than skip-tooth blades. Their positive-tooth rake cuts more aggressively than a comparable skip-tooth blade. The deep gullet works well for eliminating shavings when cutting thick, green wood. A ⅜"- or ½"-wide skip-tooth blade, alternate set, is a good selection for general resawing, cutting round sections to length, or cutting bowl blanks.

For inexperienced bandsaw users and for cutting soft wood, I suggest using a blade with a skip-tooth design, raker set.

Deconstructing an accident

Woodturners primarily use the bandsaw to cut bowl blanks, so it's not surprising that many bandsaw accidents occur while performing this operation. Cutting bowl blanks involves both ripping cuts along the grain, as well as cutting across the grain; it is important to understand the effect this change in grain direction has when cutting round bowl blanks. Ripping cuts require more force than crosscuts because the blade is pushing into endgrain fibers. In crosscut operations, the

blade feeds freely with little operator effort (assuming the blade is sharp and the bandsaw is set up properly). The change of grain direction is a leading contributor to bandsaw injuries while cutting bowl blanks—the operator does not take into consideration the difference in the amount of push required. If a dull blade is added to the equation, injury is even more likely.

Let's examine a common bandsaw accident in order to understand what went wrong. In almost every accident, the saw blade exited the wood at one of the points near the edge *(Figure 2, blue Xs)* while the operator's hand was positioned in the danger zone. Just slightly before the blade exits a piece of wood, resistance abruptly ends, the wood jumps forward (still pushed by the operator), and the operator is unable to react quickly enough to stop his or her hand from being cut, if it is in the danger zone. Keep your hands away from the danger zone and be aware at all times when the blade is about to exit the wood so that you can ease up on the pushing pressure and cut the last bit of wood with a slow, controlled push.

Forcing a bandsaw blade through the cut with a dull blade stretches the back of the blade and compresses the front edge, allowing a bow to develop in the blade while attempting curved cuts. Once the blade begins to develop a bow, it becomes even harder to follow a curved line; there is so much pressure on the inside of the cut that the blade will have a tendency to cut in a straight line instead of following the curve of the bowl blank. The more force the operator applies to turn and cut the blank, the more the blade begins to bow and an accident is in the making.

Most turning blanks made from log sections are rectangular or square in shape, so when cutting a circular shape from the half-log, there are two or four points during the cut where the blade is close to the edge of the wood. Not coincidentally, these points are where the grain direction change occurs and where nearly all accidents happen. Be aware at all times when the blade is about to exit the wood and ease up on the pushing pressure.

Safe cutting method

Figure 2 illustrates the method I advocate for cutting bowl blanks. Notice that the operator's left hand is behind the saw blade as the blank is rotated toward the danger zone, where the blade is most likely to exit the blank. In the event that the blade exits the cut at that point, the operator's left hand has already been placed beyond the cutting edge of the saw blade, completely out of harm's way. Having a slight bend at the left elbow keeps the operator's arm well away from the blade. By following this method of cutting blanks and planning your hand position in advance, chances of being injured while cutting bowl blanks will be significantly reduced.

Other considerations

Always ensure that bowl blanks (or any wood being cut) sit flat on the table of the bandsaw. Any gap between the blank and the table where the blade enters the wood will cause the wood to be pulled toward the table with enough force to damage or break the blade.

It is common practice to mount a fixture to the bandsaw table that utilizes a stationary pin to cut circles. A divot is created in the center of the ▸

Cutting large-diameter logs

When cutting round stock on a bandsaw, unsupported material can be caught and rotated, pulling it into the blade with a good deal of force. This can result in serious injury and/or jamming the blade, stalling the bandsaw motor, or kinking the blade, rendering the blade useless.

For small-diameter round stock, a simple V block works well. For larger stock, V blocks do not sufficiently support and stabilize the log, so for safety, I use a modified sled.

For the bottom two boards, use 2" × 4" lumber, screwed to the miter gauge at 90°. To that, attach with screws 2" × 2" cross pieces, spaced as wide apart as possible, yet still making contact on both sides of the log. This spacing may need to be adjusted for larger or smaller diameter wood.

Some logs are crooked or have knots and do not rest in the carrier as safely as I would like. For those, I use a bar clamp to hold the log securely to the fixture. Placing screws into the log and the carrier is another option, as are wedges hot-melt glued onto the log and carrier.

A refinement to the fixture would be to use ½" plywood for the bottom instead of the 2" lumber, which would allow cutting of even larger-diameter pieces.

John I. Giem

Ripping wide stock

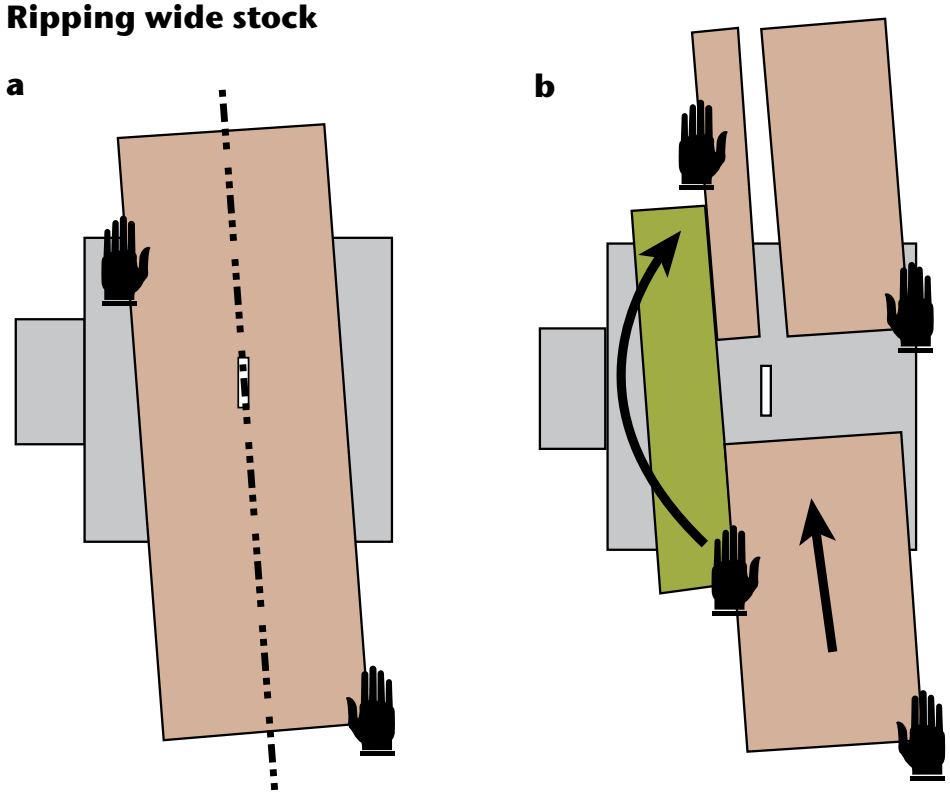


Figure 3. (a) The operator's hands are placed correctly to avoid the danger zone. (b) If cutting a long board, the cut can begin with hands placed as shown in the lower portion of this illustration. As the cut proceeds, move your left hand to the back side of the blade, as shown on the top of this illustration.

Ripping narrow stock

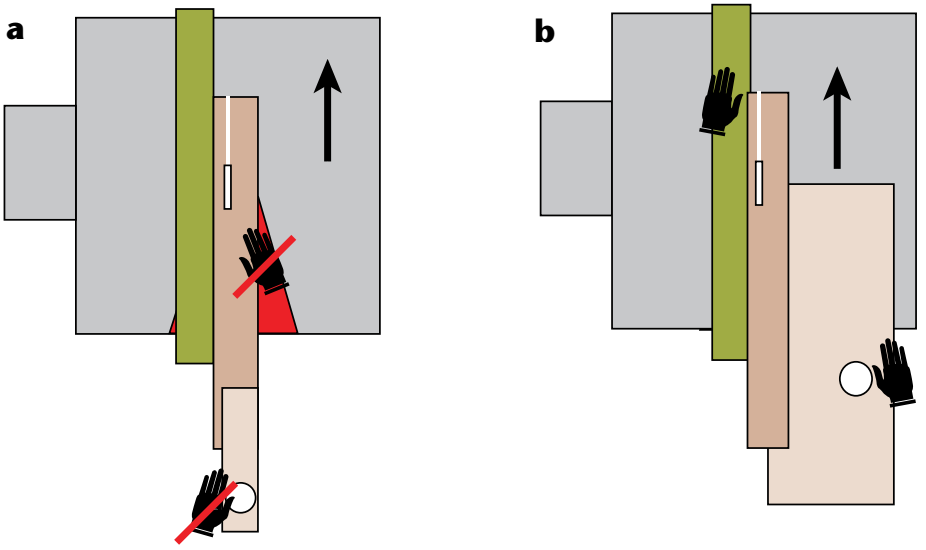


Figure 4. (a) The operator's hands are not positioned correctly even though a push stick is employed. (b) The operator is using a push stick (depicted in light brown) and has placed both hands correctly to avoid an accident.

blank, which is then placed over the pin. The stock is pushed through the blade while rotating on the pin, and the result is a near-perfect circular shape. This setup works fine for thin stock, but never, under any circumstance, should you attempt to cut bowl blanks while using a pin guide such as the one described. The bowl blank must be allowed to "float" on the table, which helps compensate for blade drift and flex. Turning blanks do not have to be perfectly round—that's the lathe's job.

If you find yourself in a situation where the blade is having trouble following the desired line and the blade is in danger of exiting the blank, don't continue to force the cut. Ease up pressure on the cut, be sure your hands are out of the danger zone, and carefully steer the blade out of the side of the blank.

Ripping wide stock

Woodturners often find it necessary to cut large blocks of wood into smaller pieces for pen blanks, furniture legs, or bottle stoppers. Properly tuned, the bandsaw is ideal for this. It provides a better yield and is safer than using a table saw.

Very few bandsaw blades cut in a perfectly straight line, though, even when new. That tendency to cut on either side of a straight line is known as *drift*. To compensate for drift, a bandsaw should be equipped with a fence that is capable of being adjusted to compensate. An easy way to determine the amount and direction of drift in a bandsaw blade is to draw a straight line, parallel to one edge, on a piece of flat scrap wood *(Figure 3, a)*. As you guide the blade through the cut, notice the angle of the stock in relation to the square table. Set your fence to that approximate angle and make another test cut, keeping the stock against the fence and the guides close to the

wood. With minor adjustments of the fence, the blade will cut cleanly through a long piece without binding or drawing the stock away from the fence. You are now ready to rip your stock to width *(Figure 3, b)*.

Pay attention to the hand positions in the diagrams. Similarly to cutting bowl blanks, the left hand is moved to a position behind the blade, while the right hand is never in the path of the blade. In the event of a slip, there is little danger of operator injury.

Ripping narrow stock

When cutting a board into narrow stock, your hands can come dangerously close to the bandsaw blade. It is good practice to use a push stick to guide your work through the blade. Even then, it is important to position your hands away from the danger zone. *Figure 4 (a)* shows the operator using a push stick; however, both hands are potentially in the blade's path.

A safer method is placing your left hand behind the blade to secure the stock, while your right hand is safely off to the side of the blade holding the push stick *(Figure 4, b)*. By the time the cut is completed, your right hand will be beyond the cutting edge of the bandsaw blade as well, out of harm's way.

There are many circumstances where a small piece of wood requires cutting on the bandsaw, and there are many ways to safely cut each piece. For example, a wooden clamp is useful for holding small objects safely while they are being trimmed to length. You could use a piece of scrap wood and use hot-melt glue to temporarily affix the small item to the larger piece of wood, sacrificing the scrap wood instead of your fingers.

Cutting round stock (cylinders)

Another cut frequently employed by woodturners is cutting cylinders, such as tree limbs, into manageable lengths. Cutting cylinders on the bandsaw, however, is a potentially dangerous operation. Aggressive saw blades may work just fine for cutting bowl blanks, but that same blade will cause an unsecured round piece to roll rapidly into the blade, possibly carrying the operator's hands with it. There is also the possibility that the workpiece will roll with enough force to break the saw blade. Even something as small as a ½" (13 mm) dowel rod can break a bandsaw blade.

There are several ways to prevent injuries when cutting cylinders. (A chainsaw may be a safer alternative when cutting large-diameter logs.) A shopmade V block will help stabilize smaller pieces and allow them to be cut safely *(Figure 5)*. A miter gauge, in combination with the V block, is a good choice as well. Never attempt an unsupported cut on round stock. The material to be cut must be sitting flat on the bandsaw table.

A common, and incredibly unsafe, mistake made by some woodturners is attempting to shorten a too-long tenon on the bottom of a bowl blank using the bandsaw. The saw *will* pull the stock down to the table, rolling the round bowl at the same time. Even the most experienced bandsaw operator should never attempt this cut.

Do not attempt to cut a sphere using the bandsaw unless you know how to correctly and securely attach it to a jig.

A last word of caution

There are two categories of woodworkers who receive the most injuries, beginners and, oddly enough, the most experienced operators. It's possible that experienced operators begin to take the bandsaw for granted since they've made thousands of cuts without incident. It is easy to become complacent and gradually let your guard down. Always use common sense and think safety first. If it is used properly, you will discover the bandsaw is a versatile, safe machine.

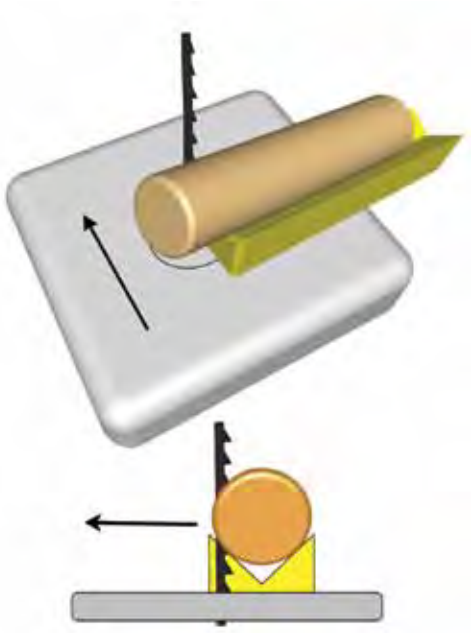


Figure 5. Never cut a cylinder without supporting it in a jig of some sort. This cylinder is correctly supported in a V-block jig. (Do not attempt to cut spheres using a bandsaw without the use of a proper jig—a V block is not sufficient support for cutting spheres.)

Suggested References

The Band Saw Handbook by Mark Duginske, Sterling Press, 1989.

The Bandsaw Book by Lonnie Bird, Taunton Press, 1999. ■

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Bandsaw Tension

Mark Duginske

Woodworking machines can be classified according to how much skill it takes to get good results. A thickness planer requires pushing the board into the machine and taking it out the opposite side. Not much skill is required; the machine does all the work. At the other end of the spectrum are the two most skill-intensive power tools: the lathe and the bandsaw. The lathe rotates the wood and the bandsaw rotates the blade; the skilled operator does the rest.

The bandsaw and lathe are similar to musical instruments: the amount of skill the performer has makes all the difference. The ability to tune the device or machine for optimal performance is an essential skill. This article deals with blade tension.

The bandsaw and the lathe complement each other. The art of woodturning is evolving, which is leading to more use of the bandsaw. Turners have the ability, with the right tools, to use local trees without the need for a long, tedious, and expensive drying process. Owning a chainsaw and a bandsaw allows for harvesting free local wood *(Photo 1)*. The bandsaw is a mainstay in most woodturners' shops for cutting circular shapes before mounting the wood onto the lathe *(Photo 2)*.

The bandsaw is named for its blade, a thin and narrow band of steel with teeth on one edge that is welded together to form a loop. Bandsaws are versatile. Straight cuts can be made in almost any thickness of wood, and because a bandsaw blade is narrow, that allows woodworkers to saw curves better than with any other machine.

The bandsaw's thin blade cuts the wood with a minimum of effort and waste. This is particularly important when cutting or resawing an expensive exotic wood or a highly figured domestic wood.

Safety is another reason why many woodworkers prefer the bandsaw for general cutting, and especially for cutting small pieces of wood. Since the blade moves smoothly and continuously, it applies downward pressure on the work piece. This makes the bandsaw safer than a circular saw, which applies a backward force that may kick the work piece back toward at the operator. Conversely, the direction of the bandsaw blade is always downward, so there is no danger of kickback. Clearly, it is useful for a woodturner to also have a bandsaw and to develop the skill to use it well.

Bandsaws are ideal for processing green logs.

A bandsaw easily cuts bowl blanks round.

Types of bandsaws

Bandsaws for woodworking are manufactured in a variety of vertical and horizontal configurations that range from small portable units to large industrial heavyweights. The most common design is exemplified by the stand-mounted two-wheel Delta 14" (35 cm) bandsaw *(Photo 3)*. First made in Milwaukee, WI, in the early 1930s, this saw has been the standard of the industry for 75 years. Today there are many Asian-made imported saws that all mimic this basic design, which even use the same standard 93.5" (240 cm) blade. With the optional riser block, the depth of cut can be expanded from 6" to 12" (15 cm to 30 cm), which is ideal for woodturners.

Bandsaws are generally classified according to either the wheel diameter or the throat width, which describes the distance between the column and the blade. Because the moving blade must be guarded at the column, a two-wheel bandsaw with 14" (35 cm) wheels has a throat width of slightly less than 14". Bandsaws are also classified by depth of cut, that is, the thickest material that can fit between the saw table and the upper blade guide. A typical 14" bandsaw can saw a 6"- (15 cm-) thick piece of wood. An optional 6" riser block can be bolted between the top and bottom castings of some 14" bandsaws, allowing for material up to 12" (30 cm) thick. Cutting thick material requires more power so it is important to the get the optional larger motor, if available.

Overtensioning

A couple of years ago, I was asked by a woodturning club to do a day-long seminar based on my latest bandsaw book. I arrived the evening before and went to see the saw and tune it up. I was told that the used 14" Delta saw was recently purchased at a "very good" price. I opened the top door and a rough irregular surface caught my eye. Someone had overtensioned the saw and bent the top wheel hinge mechanism enough so that it was rubbing against the sheet metal wheel cover. Then, they had cut out the wheel cover *(Photo 4)*. The saw had been overtensioned enough to bend the top wheel hinge! I have seen other instances where the top wheel hinge casting breaks in two. It is interesting that the Delta hinge bends and that Asian clones actually break *(Photo 5)*.

Clearly the abused bandsaw had been overtensioned. If one part was damaged, there is a question of whether other mechanisms on the saw may have also been damaged.

The weakest link in a bandsaw is the top wheel hinge casting that supports the top wheel shaft. When too much tension is applied to the blade, the casting will either break or bend.

The top wheel axle is held into the top wheel hinge by a pin that also holds the hinge casting in place inside the hinge-housing box *(Photos 6a, 6b)*. The advantage of this design is that if the saw is overtensioned, usually only one part is damaged and needs to be replaced. On the opposite side of the hinge-housing box is another square box in the casting with two holes for the tension knob and the tilt knob *(Figure 1)*. There is also a long slot so that you can see the tension spring and the red washer located on the bottom of the spring.

Tensioning principles

One of the most important factors affecting bandsaw performance—and the easiest one to change—is the tension of the blade. Blade tension keeps the blade straight between the wheels and it keeps the blade stiff so that it does not flex or deflect during the cut. Tension is applied when the adjustable top wheel is moved away from the other wheel stretching the blade. A poor-quality saw that is well tensioned will perform better than a quality bandsaw that is poorly tensioned.

When the blade is not correctly tensioned, noticeable problems will occur when cutting wood. First, there is a condition generally known as a wandering cut. If a blade is not sufficiently tensioned, it will flex as it cuts. The cut on thin wood (less than 1") will not stay straight and will be hard to control. This is more of a problem when the intention is to cut straight. When cutting thick material, the blade will wander or even create a curved cut from top to bottom. When cutting thick material, use the maximum tension and a sharp blade—more on that later.

A 14" Delta bandsaw

Bandsaw anatomy

Tension screw

The blade tensioning mechanism is located on the back of the top wheel on the 14" saws *(Figure 1)*. The tension on the blade is adjusted with a threaded screw, which moves the top wheel up and down. When you rotate the knob on top of the tension screw to increase the tension, it compresses the tension spring inside the spring housing.

Tensioning mechanism

The blade-tensioning mechanism is located on the back of the top wheel on the 14" saws. A hinge-housing block contains the tension spring and the tension rod, which can be seen from the back of the saw (*Figure 1* and *Photos 6a, 6b*). A thin tongue on each side of the hinge block fits into a mating groove in the top frame casting and slides up or down to tighten or loosen the tension on the blade.

The tension spring adjusts the amount of tension applied to the blade. It also acts as a shock-absorbing or buffer system, to mitigate any eccentricity of the wheels.

A note of caution: The spring should never be completely compressed because it would lose the shock-absorber function.

Tension gauge

The tension spring regulates the amount of tension applied to the blade and a gauge registers the amount of tension in a readable form. The gauge on the 14" saws is on the back of the saw near the tension spring. For many years, bandsaws have been built with a spring to apply tension to the blade by applying opposing forces between the top and bottom wheel. In essence, these systems all work in the same manner: a threaded shaft attached to the upper wheel pushes against and compresses a fixed spring. As the spring compresses, opposing forces are exerted on the saw frame and the upper wheel. The wheel ▸

4

The wheel cover on this Delta bandsaw has been cut open after someone overtensioned the saw and bent the top wheel hinge mechanism.

5

The weakest link in the bandsaw is the top wheel hinge casting that supports the top wheel shaft. When too much tension is applied to the blade the casting will either break as illustrated in the Taiwanese casting on the left or bend, as shown in the Delta casting on the right. A new Delta casting is shown in the middle.

6a

6b

Hinge-housing box, front and back.

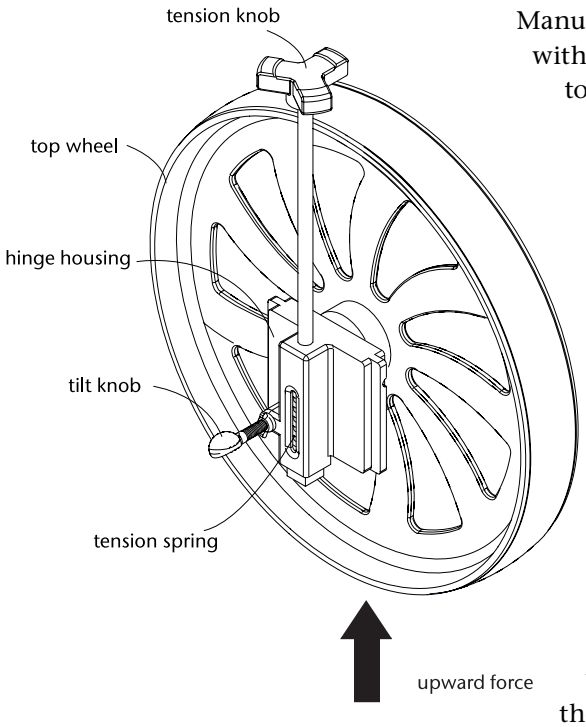

Figure 1. Anatomy of a bandsaw.

transfers this force and consequent stress into the blade.

Manufacturers have located lines with numbers for the blade width to indicate the amount of spring compression required for each size. Wide blades require more tension, so those numbers are located toward the top of the gauge where the spring is more compressed. There is also a long slot so that you can see the tension spring and the red washer located on the bottom of the spring. The tension screw is turned until the red washer corresponds to the number of the blade width. The wider the blade, the more the spring is compressed to increase tension.

Quick-release tension lever

A recent innovation is the quick-release tension lever, which allows the tension on the saw to be released by moving a lever. The quick-release tension lever eliminates the tedious task of cranking the tensioning knob. Although this mechanism is handy, it is by no means essential. This mechanism is more often found on 14" saws than on smaller bench-top units or larger floor models.

Releasing the tension is good for extending blade and tire life. To reestablish tension, the wheels should be rotated as the tension is gradually increased. This allows the blade to be tensioned and tracked correctly.

Tension options

I grew up using multiple bandsaws in my father's patternmaking shop and we always set the blade tension with the gauge. From my experience of using more than one hundred different bandsaws of various types while doing seminars around the country, I always use the standard gauge and get good results when adjusting it for the appropriate blade and task. My observation from years of woodworking is that the manufacturer's gauge and the spring are adequate, and are the easiest way to achieve good results.

I use the tension gauge on the saw and set the blade at the recommended setting. Occasionally if I'm cutting thick material or if the blade is not super sharp, I'll increase the setting to the next blade width setting, which means increasing the tension from the ½" (13 mm) mark to the ¾" (19 mm) mark.

For cutting thick green wood, use a coarse blade such as a three-teeth per inch, 1½" wide. Don't be afraid to experiment and increase tension if you get a curve in the cut. You could even go a little over the ¾" setting if need be. Do not compress the spring all the way, however, or you will lose the

shock-absorber effect that the spring provides and you may damage some parts. If you crank up the tension, release it at the end of the day so that the blade and saw parts are not under constant stress.

I now use the bimetal Olson All-Pro ½" 3 tpi and blades stay sharp for a long time. The tooth is made from a strip of laminated high-speed steel, which will outlast a carbon steel blade by ten to twenty times.

Controversy about blade tensions gauges

Until about twenty years ago, bandsaw blade tension was not a big issue and there was no disagreement about how to tension a blade. Then, an article written about the popular 14" Delta bandsaw in an influential magazine asserted:

1. The tension gauge was inaccurate and an expensive aftermarket strain gauge was more accurate.
2. The tension gauge on most saws was inadequate and the blades needed to run with higher tension than the reading on the gauge.
3. The article recommended replacing the saw's tension spring with something stiffer to provide higher tension.

No testing or scientific data was used to support the supposition that the standard tension gauge is inadequate.

Tension gauge test

For my latest book on bandsaws, I wanted to provide solid information on tension gauges. To help sort out confusion about aftermarket gauges (some of which are priced at more than $300), I acquired all of the aftermarket tension gauges available *(Photo 7)* and had Aaron Gesicki, a metallurgical engineer, test the gauges and write a report. I also worked with Roger Zimmerman, an electrical engineer, to help with the test. Both are woodturners.

The test confirmed my experience, which is that the tension gauge on bandsaws is quite adequate. Would you spend several hundred dollars to upgrade the gas gauge in your car? Probably not, because you have learned that, although it is a rough indicator, it is adequate.

One problem with replacing the original spring with a stiffer spring, as the questionable article recommended, is that the tension gauge is no longer functional so the operator is on his or her own.

The mechanical tension gauges were designed for industrial use and are overkill for the average woodworker. Of the mechanical gauges, the Starrett *(Photo 7)* is the most accurate. The Ittura was the least accurate and gave inconsistent readings that were low, which would result in an overtensioned blade. The first Iturra gauge I tested gave inconsistent and unrepeatable results, so I obtained another one. Three Ittura gauges tested on the same blade provide amazingly different results.

If you are the "techie type" and want a gauge, Aaron Gesicki recommends the Carter *(Photo 7)*. The number 292 is the wheel load in pounds of the ½" blade tensioned to 15,000 psi. The huge advantage of the Carter is that it is on during the cut and requires no clamping and unclamping, unlike the other gauges. The Carter electronic tension gauge may be good in a school or a shop with multiple users because the blade-tension setting is easy to reproduce. It may be a way to record the performance of a blade.

The February 2007 issue of *Woodworker's Journal* article contains an article I wrote about the blade-tension gauge test. If you are interested in the more detailed information, contact me at markduginske@gmail.com. ■

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These aftermarket mechanical tension gauges each show a different reading. The electronic Carter gauge (yellow gauge) is the most accurate and is in agreement with the built-in saw gauge. The readout shown on the column shows the wheel load in pounds. Of the mechanical gauges, the Starrett (black gauge) is the most accurate and the Ittura gauge (silver) is less accurate and the least consistent. A Lenox gauge is the blue gauge, also not in agreement with the built-in saw gauge.

Kendama

A Toy

Arnold Ward

Earlier in my life, I was a juggling fanatic. I traveled to different cities that hosted juggling festivals where people shared tricks, bought props, took classes, and participated in competitions and shows. Strangely, the juggling community is a lot like our woodturning community, except for the hobby itself. In the early 1990s, the kendama showed up at the International Jugglers' Association's annual festival (juggle.org) and has since become popular in the juggling community. I bought a kendama and enjoyed it for years.

When I bought my first lathe, I thought a kendama would be easy to make; however, learning to turn well enough to create one took a few years of practice and learning. My woodturning addiction quickly overtook my juggling addiction. I now have a method of making the kendama correctly, but before you decide to make one of these for your child or grandchildren, be aware that they can be very dangerous. A kendama is not a suitable toy for young children. The solid ball swinging on a string can break a window or knock out a tooth. They are great for middle-age youth and adults who have a little common sense.

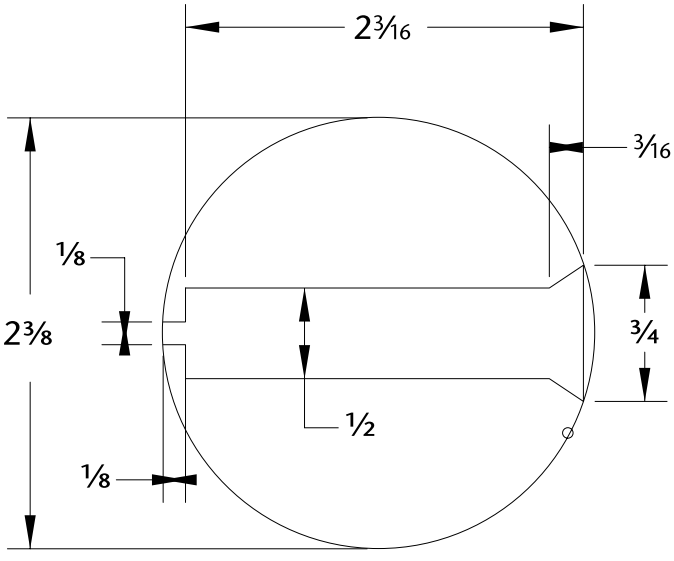


Figure 1. The ball

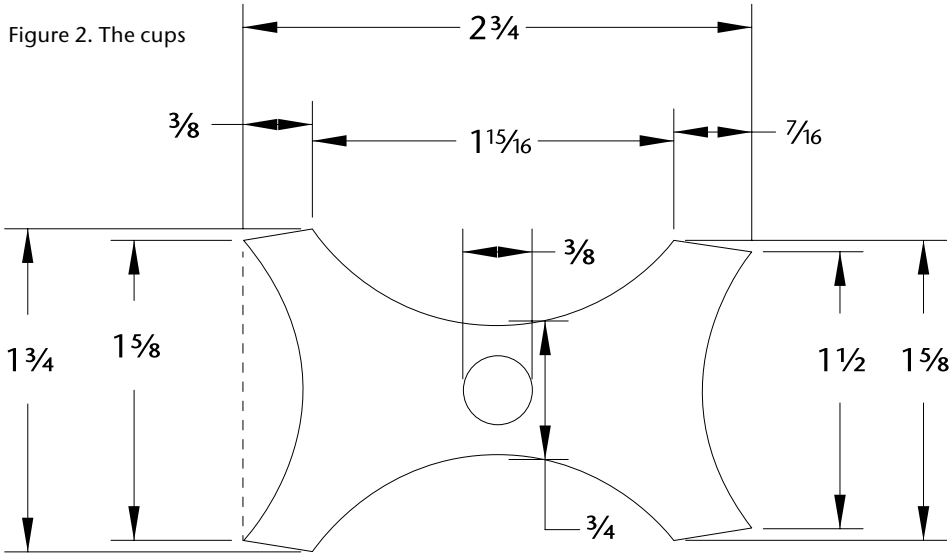
The kendama is like the traditional cup and ball game, except this version is much more complex. The kendama is best known in Japan the way the yo-yo is known in the Western world. It consists of a ball attached to a string, with three separate cups in which the ball can be caught. The three cups are known as the large cup, the small cup, and the center cup. The center cup is the smallest and is located on the bottom of the stick. The ball has a hole in it that can be caught on the pointed tip of the stick. There are other places the ball can be caught as well, as the player advances in his or her skill of the game. Like the yo-yo, the kendama has many tricks with specific names and skill levels. From what I have read, the kendama has been in Japan for more than two hundred years. Its origin is unclear, but it has roots in several different cultures. Its name translates roughly to *stick ball* where *ken* is the main body and *tama* is the ball.

The official kendama I have is not very heavy, but is made from a fairly hard wood. There is no telling what type of wood it is since it was made in Japan, but the wood is plain, with no features. Domestic close-grained woods such as maple, walnut, or cherry should work fine. The toy will take some abuse and the ball will get nicked, so a soft wood is not suitable. Also, avoid heavy woods or you will create a weapon instead of a toy.

Dimensions

The dimensions I used were taken with a digital caliper and do not correspond with imperial or metric units, so I

Figure 2. The cups



made my own rough approximations *(Figures 1, 2, 3)*. It is not important to achieve these exact dimensions, but it is important to have the wood square and to drill the holes correctly. From what I see on the Internet, kendama can come in all shapes and sizes, but the Japanese Kendama Association considers only certain ones official. I could not find any official dimensions (at least not published in English).

Prepare the wood

Start by squaring your stock. There are three pieces required: the ball, the stick, and the cups *(Photo 1)*. The blocks for the stick and cups must be square and the ends must also be square. If not, you will likely have problems keeping the pieces on center when they are rechucked for the various holds. For the ball, start with a block slightly larger in diameter than needed to ensure you can work your way down to the size required.

The ball

I suggest cutting semicircles from card stock to match up with your pieces. You will need the template of the outside of the circle to compare to the ball and the circle template to compare with the cups later *(Figure 4)*.

Turn the ball first *(Photo 2)*. By doing so, you can match the ball with the cups as they are being made to verify that the cups are deep enough to fully accept the ball. There are many instructions available for making spheres (*AW* vol 25 no 4). I like to make my kendama ball just slightly larger than the final dimensions and then achieve the final size by rotating it frequently and shear scraping small amounts away each time it is rotated. When the ball is nearly at its final dimension, as checked with the template, do the final sanding and finish with 220-grit abrasive. The ball can be painted later if you desire, but either way it will be beaten up after use, so there is no need for a polished finish.

Drill a hole in the ball. (This hole will be used for catching the ball on the stick.) To accomplish this, I used a doughnut jig to hold the ball *(Photo 3)*. This step can be done on the drill press as well, but the hole requires a countersink around it that is difficult to make with the drill press, unless you have a large countersink bit. My doughnut jig has a recessed hole in the bottom board that centers and accepts the ball. The top layer gets screwed over the ▸

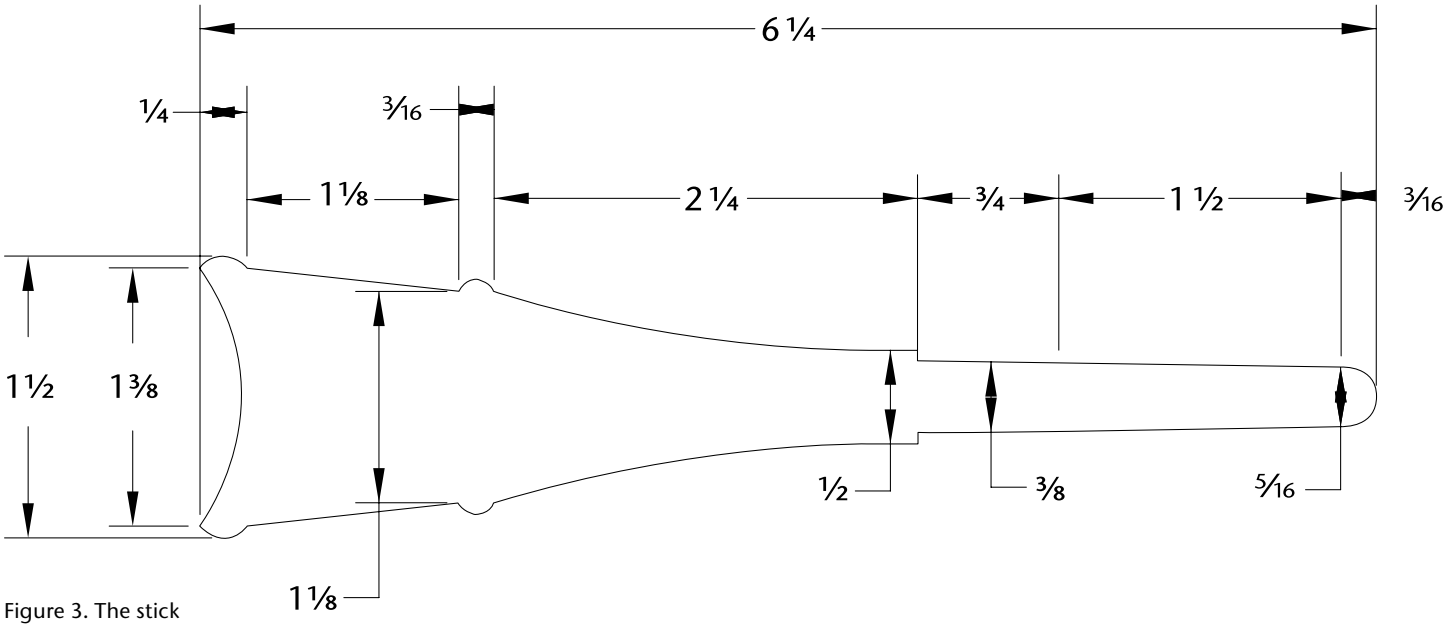


Figure 3. The stick

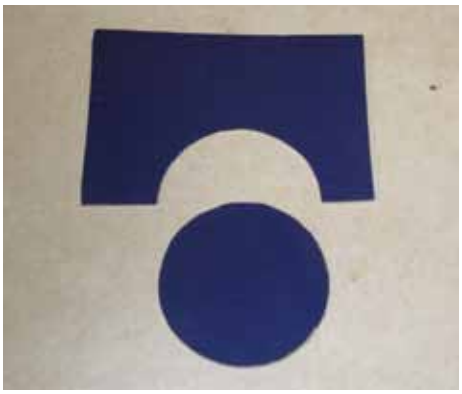


Figure 4. Template for matching the cup to the ball.

1 Three blocks of wood are needed to make a kendama.

2 Turn the ball.

ball and holds the ball firmly. I suggest using ½" (13 mm) plywood for the top part of the doughnut. Otherwise the board may crack. Place the ball in the jig such that the grain of the wood is parallel to the lathe bed. (You will be drilling into endgrain.)

Mark the drill bit to just less than ⅛" (3 mm) of the diameter (depth) of the sphere. Before drilling, start by turning a small starting dimple in the sphere. Leaving the tailstock loose, push the tip of the drill bit into the hole *(Photo 4)*. Let the tailstock align with the hole, and then lock down the tailstock. If you get any wobble in the drill bit when you first start drilling, loosen the tailstock, clean up the out-of-round hole with a gouge, and try again. Try to make the drill bit run as true as possible *(Photo 5)*. Finish by turning a countersink around the hole *(Photo 6)*.

The hole for the string is best made using the drill press. To drill this hole in the correct position (directly across from and centered with the first hole), clamp a scrap board to the table of the drill press. Drill a ½" (13 mm) hole in the wood. Insert a short ½" dowel rod into the hole so that it sticks out a couple of inches *(Photo 7)*. Place the ball onto the dowel rod (the dowel rod will be inserted into the previously drilled

3 Place the ball in a doughnut jig.

4 With the tailstock loose, push the tip of the drill bit into a small hole that you turned in the ball. Let the tailstock align with the hole, and lock down the tailstock.

5 Drill a hole to a depth of just less than ⅛" (3 mm) of the bottom of the ball.

6 Turn a countersink around the hole.

7 Clamp a scrap board to the table of your drill press and drill a ½" (13 mm) hole. Insert a short length of ½" dowel rod into the hole. The center of the dowel rod should line up with the next drill bit you will use.

8 Drill a hole for the string through to the first hole. The two holes should end up centered.

hole). Drill a ⅛" (3 mm) hole through the top, all the way through the wood into the other hole. This alignment makes it possible to thread the string and tie a knot that will hold the string in place *(Photo 8)*. It is important that the hole for the string is exactly opposite the stick hole otherwise some tricks will be very difficult to accomplish.

The cups

Make the cups next. There is one cup on each end, one slightly smaller than the other. The center forms what I call twin cups, separated by the stick. Start with a block of wood no smaller than 1⅞" (48 mm) square and make sure the block is square. The exact length should be 2¾" (70 mm). Mark the profile of the cup form on the outside of the block of wood *(Figure 2)*.

Drill a ⅜" (10 mm) hole all the way through the center of one side of the block to the other side. Make sure the hole is dead center and square to the surface. You can find the center by drawing diagonal lines from corner to corner and center punch the cross point. Do this on both sides. If the drill exits the other side the slightest bit off center, then get another block and try again. Make sure your drill press is squared up, your block is square, and your diagonal lines are accurately drawn.

Mount the block into a 4-jaw chuck. While the lathe is turning, scribe the diameter of the small cup on the end of the block *(Photo 9)*. Then hollow out the cup, leaving the outside of the block square. Use the circle template that matches your ball diameter to ensure you end up with a cup that fits the ball *(Photo 10)*. Also, take the ball itself and test it with the cup to make sure it does not bottom out in the cup *(Photo 11)*. The ball should contact the outer edge.

Flip the block over in the chuck jaws and repeat this process on the other end using the larger cup size.

The next step is to turn the profile of the cups piece. Mount the block between the headstock and tailstock using two bungs, each in the shape of a hemisphere, which are cut to match the curves of the cups.

Turn bungs

To make the bung for the tailstock, a block of wood needs to be mounted onto the rotating part of the live center. How you accomplish this depends on the type of live center being used. I prefer a live center with a threaded tip that I can use to screw onto a soft block of wood. If you have a live center that has the whole head rotating, you must make the block of wood slide over the entire rotating part. Some live centers cannot be used because there is no way to attach an auxiliary block.

After you have attached the wood to the live center, mount the live center into the headstock and tape the wood to the center so it does not rotate. Turn a hemispherical shape on the end of the wood to create a bung, using the template semicircle and the actual cup from the block of wood to test the fit *(Photos 12, 13)*.

Insert another block of wood into a 4-jaw chuck and turn a hemisphere on it that matches the other end of the block.

Mount the cups block between the bungs and turn the rest of the piece *(Photo 14)*. The ⅜" (10 mm) hole should ▸

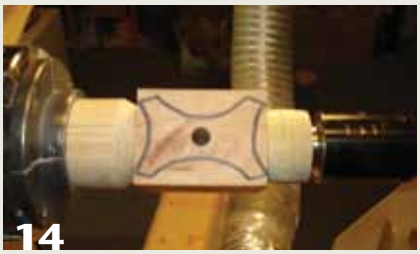
Mount the block into a 4-jaw chuck. On the end, scribe a circle the same diameter as the small cup.

Use the template to test the diameter and depth of the concave area. The bottom of the ball (circle) should not touch the bottom of the concave area.

Use the ball to test that it does not bottom out in the hole. Flip the block over in the chuck and hollow out the other end to create the large cup.

Turn a bung for use with the live center of your tailstock. Use the template to make sure the cup will fit onto the bung.

Test the fit with the cup itself.



Make a second bung for the drive center. Mount the cup block between the two bungs.

Use the template to check the diameter of the curve. Note that the hole should be dead center.

Use the ball itself to check for a good fit.

be dead center. The concave curve between the cups should match the diameter of the ball. You can use the circle template to check for the curve as you turn *(Photo 15)*, but always check the final curve with the ball you turned to make sure it matches *(Photo 16)*.

The stick

For the stick, the block of wood will be ⅜" (10 mm) longer than the finished stick *(Figure 3)*. (The extra ⅜" length will eventually be removed from the tip to eliminate the dimple left from the live center.) The block should be perfectly square. Mount the wood into a 4-jaw chuck *(Photo 17)*. Scribe the cup size onto the bottom. You can use dividers set to 1⅜" (35 mm), which is the diameter of the cup. Hollow out the cup. Test-fit the cup with the ball to ensure that the ball contacts cleanly on the outside edge of the cup *(Photo 18)*.

When the cup is complete, reverse the block of wood in the chuck and use the tailstock with a live center *(Photo 19)*.

Start turning the point of the stick. As you approach the nontapered part that holds the cups, advance slowly. Remove the tailstock and check the fit frequently by inserting the stick into the hole between the cups *(Photo 20)*. The fit should be snug enough to hold the two pieces together, but not so tight that the pressure of the stick in the hole will split the wood of the cups. The two sections can be glued together later, so if the fit is just a tad too loose, the glue should take care of minor slippage. If you turn the diameter of the stick too small, I suggest starting over—the cups should not wiggle on the stick.

Turn the rest of the stick, getting as close to the chuck as possible, while being safe (avoid the chuck jaws!). Carefully cut off the extra ⅜" (10 mm) from the tip, round the end off and sand it smooth *(Photo 21)*. Then remove the stick from the chuck.

Put a scrap block into the 4-jaw chuck. Cut a flat on the face of the block. Use a Jacobs chuck mounted into the tailstock to hold a ⅜" (10 mm) drill bit. Drill a hole into the scrap block to receive the tip of the stick *(Photo 22)*.

Insert the stick into the hole. It should fit snugly. If it is not snug, use a piece of tissue paper to tighten the fit. Just make sure the stick stays centered. Use the same bung on your live center that you used to turn the cups to provide support *(Photo 23)*. Finish turning the base of the stick *(Photo 24)*.

Mount the stick blank into the chuck and mark the size of the bottom cup.

Hollow out the bottom cup and test-fit the ball.

The wood is remounted and ready to turn to the profile of the stick.

The profile of the stick should be such that the fit is snug.

Attach the cups to the stick and ball

Smashing the string between the stick and the cup hole, using just a friction fit, connects some kendamas, but I find that the cups frequently work loose that way. I prefer drilling a hole for the string. Drill a 1/16" (1.6 mm) string hole

through the stick at the point where the stick exits the hole in the cups *(Photo 25)*. The string hole should be perpendicular to the two cups. (If you hold the kendama in front of you and form a cross, you should be able to see through the string hole.)

You can leave the cups-and-stick joint a friction fit if you want, but if the connection is the least bit loose, glue may be required. If you glue the cups to the stick, make sure the string hole is aligned perpendicular to the cups.

Use a braided string that does not wind up on itself. I found that masonry string works well. The string should be about 18" (46 cm) long. Use a toothpick to help thread the string into the holes in the ball and the stick. Tie a large knot in the string on the opposite side of the stick *(Photo 26)*. After threading the string through the small hole in the ball into the larger hole, pull the string out and then tie a large knot in the end of the string. Pull tight and you are ready to play.

Play the game!

There are different skill levels for kendama play, so you might want to find the various skill charts on the Internet and include them if you are using the kendama for a gift. Doing so will make the game more challenging and give the recipient some ideas of what tricks to try.

Additionally, check out kendama-makyokai.com/index_english.html and kendama-world.com/acatalog/TK16-Kendama.html. Also, search for *kendama* on the Internet and on Youtube.com to see all the tricks firsthand, most of which are nearly impossible to do! ■

Arnold Ward is a woodturner and juggler living just outside Cincinnati, OH. He is an active member, newsletter editor, and officer of the Ohio Valley Woodturners Guild. Arnold has been hooked on woodturning since high school, but fell in love with it after buying a house and finally a lathe. He enjoys making technical pieces, especially ones with movement or novelty, much like the juggling he spent his earlier years practicing.

Finish-turn the stick, removing the extra length at the tip, then sand.

Use a scrap piece of wood, held in the 4-jaw chuck. Cut a flat on the face of the wood, then drill a ⅜" (10 mm) hole into the wood.

Mount the stick back onto the lathe. Use the bung for support.

Finish-turn the base of the stick.

To attach the string, drill a hole in the stick perpendicular to the axis of the cup.

Thread the string through the stick hole and tie a large knot. Thread the other end of the string into the string hole in the top of the ball, pull it through the larger hole, and tie a large knot.

Spalted Wood

Health and Safety

Sara Robinson

Of all the life that can be seen without a microscope, fungi may be the most misunderstood. Perhaps it is the strange dual world they inhabit—macroscopic bodies that form from microscopic parts, or perhaps it is their perceived similarity to other microorganisms like bacteria and archaea. Regardless, the fact is that fungi are an integral part of our existence. Some are helpful, some are harmful, and most don't affect us one way or the other. I'd like to invite you to take a short journey with me through Kingdom Fungi. We will take a peek at life cycles, wander through paranoia, delve into some science, and emerge with an understanding of fungus toxicity, and (I hope) a renewed interest in utilizing spalted wood.

Spalting

Spalted wood is wood colonized by very specific types of fungi. These fungi make black lines, beautiful colors, and lightened bleached areas on deciduous wood. Calling wood spalted instead of rotten or punky indicates that the decay has been halted before significant mass loss has occurred. Spalting implies that a certain usefulness remains in the wood.

The three types of spalting are created by two distinct groups of fungi. Bleaching *(white rot)* and black lines *(zone lines)* are formed by basidiomycete fungi—specifically, white rot fungi. Basidiomycete fungi are wood-decay fungi whose role in the ecosystem is to break down dead trees so the nutrients can return to the soil to nurture future generations. Such fungi are helpful and necessary for forest growth. Basidiomycetes are not going to sneak into your house at night, invade your cupboards, or grow miniature mushrooms in your lungs. That's just not how things work, but more on that later.

Pigments, the third type of spalting, are formed on wood primarily by ascomycetes, some of which are often unaffectionately referred to as molds. To be fair, not all ascomycetes are molds. Some are pseudo white rots (*Xylaria polymorpha* or dead man's finger) and some are soft rots and stains (*Scytalidium cuboideum* or pink stain). Fungi are not as clear-cut as one might suspect. Ascomycetes serve a variety of roles in decomposition, and unlike the basidiomycete white rots, very few are suitable for use in spalting. In fact, outside of the *Ophiostoma* and *Ceratocystis* genera, only three species of ascomycetes are actively utilized for spalting: *Xylaria polymorpha*, *Scytalidium cuboideum*, and *Chlorociboria aeruginascens* (elf cup).

What is a fungus?

A fungus is a filamentous organism with a chitinous cell wall, which I realize means very little to most people. Basically, fungi sprout from spores and grow in strands *(hyphae)* and those strands are thinner than a human hair. When enough of the strands are in the same place, the fungus becomes visible to the naked eye. Fungi can grow indefinitely from these strands; however, as with many organisms, a second mode of growth and dispersal is handy. When it is time to reproduce, the fungus creates and sends out spores, which will be carried by the air to some new location and, if conditions are right, will sprout and form new strands. Generally, fungi need moisture,

warmth, dark, and a sugar source to grow.

Some fungi have special mechanisms for dispersing spores, called *mushrooms*. Not all fungi make mushrooms, but many basidiomycetes do, which is handy for do-it-yourself spalting. Some mushrooms are edible, some are poisonous; most are tough and not very palatable. Some spores are tasty (contained in a delicious morel, for instance), some are toxic, but most simply exist.

Molds: Terror from the air?

Many of the molds that people (often incorrectly) associate with lung problems are airborne household molds that have absolutely nothing to do with spalting. Spalting fungi primarily grow *in* wood. Mold fungi grow *on* wood and *on* other things, like your walls. You are probably not going to find *Trametes versicolor* (turkey tail) growing on the bread in your cupboard, just as you are not likely to find *Penicillium spp.* (common air mold) on the inside of a log. Fungi have niches, just like plants and animals. Molds are in your home because they like high humidity and can grow on nutrient-poor surfaces, like bathroom tile. Molds grow on the top of wet wood to eat the available sugars, then are pretty much done. Decay fungi (and some soft rot and stain fungi), capable of penetrating into cell walls, are the fungi that really get into the wood and cause internal spalting. The erroneous assumption that all fungi behave the same is like saying that a dandelion and a cedar tree are the same because they are both plants.

Air movement of their spores transmits many fungi. The spores are so small that you need a microscope to see them, and are so light the faintest air movement sends them across a room. With humidity situations often beyond our control (bathroom humidity, flooded basement) certain mold fungi are concentrated in domestic enclosures (your house). A sample of air from inside an apartment building would yield very different results than one from the forest, although both would contain ample amounts of fungal spores. Fungus spores are in the air no matter where you go, although the types vary by location. Even the best air filter available for home use is not capable of removing all of the spores from the air.

Spalted wood: Moisture and finishing

Enough biology for a moment, let's talk about spalted wood. All wood has fungus on its surface, because spores are always in the air. Spalted wood has fungi *on* it; it also has fungi *in* it—and most of what is in it is not producing spores. The fungi get into the wood either by digesting wood components for food or by boring little holes (and sometimes both). The fungi grow in the wood happily while moisture remains. Once the wood moisture content drops below about 15 percent (higher or lower depending on different fungi) the fungi stop growing. After a week or two without adequate water, the fungi die. Any spores on the outside or inside now sit in stasis, awaiting the return of water.

Before you reach for your air filter helmet, remember that fungus spores are always on wood, because they are always in the air. If you let your wooden cutting board remain wet for several days in a warm place, it will grow mold, even if it not made from spalted wood. Any wooden bowl put in contact with moisture for extended periods of time will grow fungus, spalted or not. This ▸

(Above) **Dennis Paullus,** *Rope Handles,* 2011, Spalted maple, 14" × 8½" (36 cm × 22 cm)
Photo: Mike Maffitt

(Below) **Mike Mahoney,** untitled canister, 2008, Spalted madrone, African blackwood, 9" × 6" (23 cm × 15 cm)

is one of the reasons we woodturners use protective finishes on our pieces. Although it may seem like the purpose of a finish is to make the wood shiny, finishes serve an important role in minimizing moisture gain and loss in wood during changes in relative humidity (or when you dunk your bowl in water). They don't *prevent* moisture from leaving and entering, but they do slow it down, which helps protect wood from decay caused by fungi.

Busting the myth(s)

Let's proceed to discussing urban legends.

Fred Klap, 2005, Untitled, Spalted maple (white rot, zone lines), African blackwood, abalone, 7" × 3" (18 cm × 8 cm)

Myth: Bringing spalted wood into my shop will introduce fungal spores that were not there before.

Reality: Unless you've lined your entire shop with the very expensive air filters that mycologists use in laminar flow hoods (to create a sterile work environment), there are already spores in your shop. Because it is a wood shop, most of the spores are probably already a good mix of basidiomycete and ascomycete. Remember, if there is air, there are fungal spores. It's really that simple.

It is true that mold can grow on the surface of wood. It is also true that bringing moldy wood into your shop will bring a large batch of spores in with it. What *isn't* true is that these spores are just now being introduced into your shop. The mold got on the wood in the same way it got into your shop: the air. And it's not just wood that brings in spores. Other sources include pets, cheese (*Penicillium roqueforti* makes blue cheese blue), and you, on your clothes, in your hair, pretty much anywhere.

And of course, because spores are everywhere, that means they're also on nonspalted wood. All wood has fungus on it. The main difference is that with spalted wood the fungus has been given ample time and moisture to colonize, whereas clear wood contains only small amounts of fungus. Either way, if you get the wood wet, the fungus will grow.

(Below) **Mike Mahoney,** untitled, 2007, Boxelder, 7" × 10" (18 cm × 25 cm)

The pink stain in boxelder is not spalting; it is produced by the tree and is not color stable.

Myth: Spalted wood in my home, even finished pieces, produces spores.

Reality: Fungi cannot grow and reproduce if the wood is dry. If the wood is dry, the fungus is inactive. If the wood is dry for an extended period of time, the fungus is dead. Spores can lay dormant for millions of years, but they're not going to *do* anything without moisture. So, unless you display your spalted bowls in a shower stall, do not worry about fungi growing.

Applying finish on spalted wood effectively seals the wood pores. Even if the spores were magically activated, they would not be able to go anywhere. Finishing wood has the added benefit of limiting the amount of moisture change from humid summers to dry winters. A finish not only keeps spores in, it keeps out a lot of the moisture that could activate the spores.

Myth: Molds will get into my lungs and grow mushrooms.

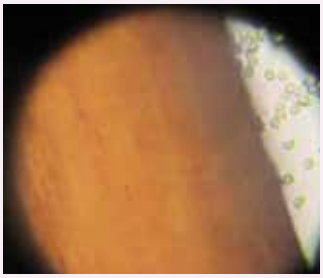
Reality: This is probably my favorite urban legend. Consider the following: If fungus spores are in the air all the time, no matter where you are, how is it that every single human being does not have little mushrooms growing in their lungs? The primary answer is the immune system. This fantastic system keeps us from dying if we scrape our knuckles—it is responsible for destroying foreign material in our bodies. Human immune systems appear to

Mold comparison

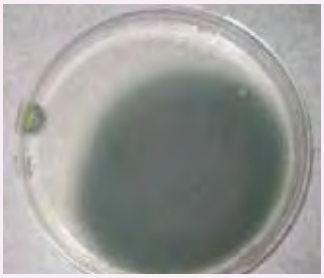
The shots of the molds were done to take a comparative look at ambient mold fungi in a variety of settings. Petri plates contained a 2% malt agar solution (think of it as unflavored jello) and were left uncovered in their location for 30 minutes. Growth was visible after 5 days. Photos are from one week of growth. For the rabbit plate, I briefly rubbed my rabbit's coat, then lightly touched my fingers to the petri plate.

Most university microbiology courses now encorporate this type of experiment on their first lab day – encouraging students to take several plates home, touch things around the house (or even their face!), then let the plates incubate to see what is alive in our supposedly 'clean, civilized environment.' It offers a stunning reminder that we are never free of fungi or bacteria, and in fact live in harmony with many, many species of both groups.

A human hair with several hyphae and millions of fungal spores.



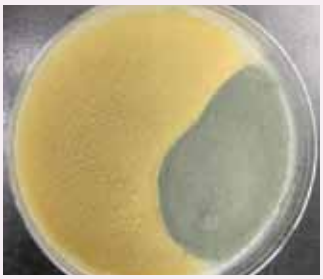
A closer look at the same hair, and the comparative size of the spores.



Petri plate from the ambient air in my kitchen.

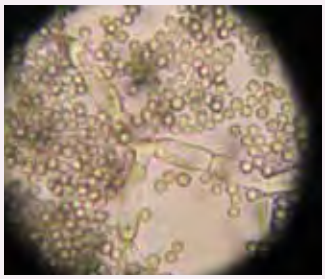
Petri plate from the ambient air in my bathroom.

A close-up (1000x magnification) of a fungus producing spores.

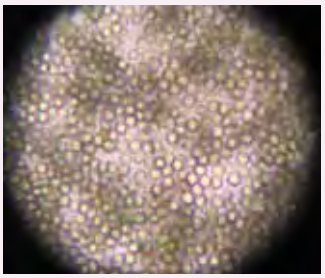


Mold growth on a petri plate after petting my rabbit, then touching the agar.

Petri plate from the ambient air of downtown Toronto. Note that there are many more types of fungi on this plate than any of the others.



A close-up (1000x magnification) of fungal spores and their size relative to fungal hyphae.



Previous shots were taken for clarity. This shot shows the typical spore load from a colonized area of the petri plate.

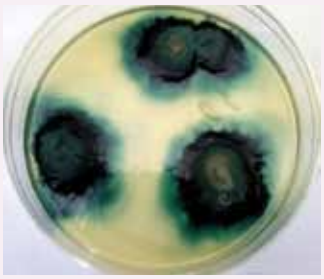
Spalted aspen (Populus spp.) – what it looks like on the inside, free of surface molds.

Mushrooms on the outside often directly correlate to where the spalting is occurring on the inside.

Spalted aspen – what it looks like on the outside, covered in all sorts of fungi and bacteria.

Close-up of the external surface of spalted aspen. Note the heavy concentration of mold.

Fruiting bodies of elf cup *(Chlorociboria aeruginascens)* on a downed conifer.



What elf cup looks like in its growing stage.

"...all it takes is ten minutes on the Internet to develop fungus paranoia. Unfortunately it takes far less time to find fiction, conjecture, and hearsay than to fact check and find, well, the facts."

be working well, considering that we can routinely live into our eighties, even with all the fungus in the air.

This is not to say that our immune system cannot be overwhelmed, especially when it is not functioning properly. The likelihood of a healthy immune system having any problems with airborne molds is low, but if you are concerned, protect yourself by wearing a proper respirator when working with any wood, including spalted wood. I recommend a NIOSH 95 or higher, such as NIOSH 97 or NIOSH 100. I hope that all woodworkers are aware of the dangers of wood dust and take steps to avoid inhaling it.

Can fungi grow in the lungs of humans? Certainly. Are they *likely* to grow in your lungs? No. Fungus growth in lungs occurs primarily when someone possesses compromised lungs or a compromised immune system from conditions such as AIDS or leukemia or while undergoing chemotherapy. Since the body is unable to fight off infection, pretty much anything can grow anywhere. Three examples of fungi that tend to grow in lungs are *Aspergillus, Fusarium,* and *Penicillium spp.* These are common airborne house molds and are completely unrelated to spalted wood, although they can readily grow on the surface of wet wood.

If you are still unsure about molds and your health, check out this circular from the Florida Department of Agriculture and Consumer Services:freshfromflorida.com/pi/enpp/pathology/pathcirc/pp339.pdf.

Myth: Woodworkers die from fungus inhalation.

Reality: Woodworkers who die from occupational lung diseases die from wood dust inhalation, and the involvement of fungi is unlikely. For further explanation, read the Center for Disease Control (CDC) report on wood dust (cdc.gov/niosh/pel88/wooddust.html) and the wood dust carcinogen report (ntp.niehs.nih.gov/ntp/newhomeroc/roc10/WD.pdf) by the U.S. Department of Health and Human Services. Healthy individuals generally do not die from inhaling fungus spores (because we inhale them every day). People *do* get sick and die from wood dust inhalation. Most stories we hear about some guy dying from turning spalted wood have much more to do with the fact that woodworkers have only recently started wearing dust masks and respirators. Breathing spalted wood dust did not cause those deaths; they died from inhaling *wood dust*, plain and simple.

Myth: Burning spalted firewood is not safe.

Reality: Where to begin with this urban myth? Fungus is in the air. Fungus is on all wood, regardless of whether it appears to be spalted. Firewood is routinely left outside, covered, during the year, and thus has plenty of fungus on it already. There is no difference between burning firewood and burning spalted wood.

It is worth mentioning that spalted wood should not be confused with pressure-treated wood, which often has a greenish cast to it. Burning treated wood releases toxic chemicals, which can be harmful. It's not a good idea to burn old decking in a bonfire if you are not positive the lumber is untreated. It is, however, safe to burn that old tree in your backyard, the one with the mushrooms growing on it.

Myth: Using a spalted wood cutting board is not safe.

Reality: It *is* safe, although the differences in density between sound and punky areas might not make for the

Fred Klap, Untitled, 2005, Spalted maple (white rot and zone lines), holly, 7" × 3" (18 cm × 8 cm)

Dennis Paullus, untitled, 2011, Spalted maple, 6½" × 8" (16 cm × 20 cm)

Dick Wilson, *Nazca is Waiting,* 2011, Spalted sycamore, dye, black lacquer, 10" × 7" (25 cm × 18 cm)

best cutting surface. All wood will rot if it gets wet. Cutting boards get wet. Spalted or not, if you keep a cutting board perpetually wet, fungus will grow on it.

Could spalting fungi be reactivated on a spalted-wood cutting board by keeping it wet for several weeks? Sure. But if a cutting board remains wet for long enough for a fungus to develop, I would avoid using wood cutting boards. Plastic would be a better choice.

Despite the tendency for wood to rot when wet, human beings have been using wood for eating and cooking since well before we could even write, and it seems to still be serving us well. So what if you eat a few fungus spores from the vegetables you just chopped on your spalted-wood cutting board? The veggies themselves come complete with fungi of their own.

The Internet says spalted wood is a health hazard!

That information on the Internet is wrong. Before you quote from that Forest Products Laboratory bulletin (fpl.fs.fed.us/documnts/techline/producing-spalted-wood.pdf), let's take a look at what it *actually* says:

Although the white rot fungi responsible for the decorative appearance are not pathogenic (a health problem), there might be some molds associated with the spalting process that could cause allergies in people. It is also possible that some pathogenic molds, such as fumigatus *(responsible for "farmers lung"), might be present, so it is always a good idea to work in well-ventilated areas. (2004, 2)*

So to clarify, the Forest Products Lab (an extension of the U.S. Forest Service) says:

1. White rot fungi are not pathogenic (they're not going to hurt you).
2. There *might* be some molds that cause *allergies* in people.
3. Pathogenic molds may exist *on* spalted wood.
4. Ventilation is necessary (no mention of avoidance).

Some people are allergic to molds, just as some people are allergic to dogs or cats. Some people are also allergic to white rot fungi (just ask some of the students in my lab). Because something is an allergen does not mean it is inherently *dangerous*, but it certainly does make it irritating. Many woodturners have found wood species they are allergic to, often an exotic species or a native species with a high extractive ▸

Safe practices for working with spalted wood

- **YES,** healthy people can get sick from fungi, specifically people with a background of immune system problems or with compromised lungs.
- **NO,** becoming ill from working with spalted wood is not likely to happen.
- **YES,** some of the mold fungi that grow on the surface of wet wood are harmful.
- **NO,** the fungi utilized in controlled spalting, and those that cause white rot and zone lines, are generally not harmful.
- **YES,** spalting your own wood with unknown fungi can be dangerous.
- **NO,** spalting your own wood with known, pure-culture fungi is not a serious health risk. (For information on DYI spalting, read the author's article in ***AW***, vol 25, no 6.)

(Above) **Joe Houpt,** Untitled, 2002, Maple, (white rot, zone lines) 19" × 3" (48 cm × 8 cm)

(Right) **Bill Wiard,** Maple, zone lines and bleaching (dimension and year unavailable)

content (like cedar). If you find a wood species you are allergic to, do you stop turning *all* wood? No, you just stay away from that species or wear a respirator. If spalted wood bothers your allergies, turn a different type of spalted wood or wear a proper respirator.

It's also true that some individuals develop a hypersensitivity to fungi. Again, this is nothing new. Some allergens affect some people more strongly than others. Being around a cat for several hours will leave me wheezing for days, but I don't insist that everyone stay away from cats because of potential allergies. I simply avoid cats. If you're allergic to mold, don't work with spalted wood.

So what about pathogenic molds? They can grow on the surface of wood, just as they can grow on hay, on walls, and in food. Spores are airborne; you're going to inhale them sooner or later, regardless of how careful you are. For those who are seriously concerned: those fungi are on the *surface* of the wood, not inside, which means that you can kill them with a surface application of bleach and isopropyl alcohol. Obtain two spray bottles. In one, pour household bleach to a level of 10%, then fill to 100% capacity with water to achieve a 10% bleach, 90% water solution. In the other bottle, simply pour in 91% (or 99%) isopropyl alcohol (available from a pharmacy). Spray the liquids from the two bottles onto the surface of the wood, either at the same time or one right after the other and have at it with a gouge.

For further filtering in your shop, I recommend a HEPA E12 filter (or higher) if you are concerned about fungal spores, otherwise an E11 is sufficient. (An E10 filter is insufficient for filtering workshops.) Inexpensive, plug-in household filters are often just carbon filters. Higher-priced shop filters can filter to 1 micron (80% removed) and 90% of 5 microns or larger. One micron is excellent for filtering; 80% is sufficient when paired with a NIOSH 95 or higher mask.

A good-quality, effective dust collector and air-filtration system should be part of any shop. Again, this isn't because of the fungus, but because of wood dust. But since you should already have one in place, you can rest a little easier knowing that a good air cleaner will catch those fungus spores too, along with the tiny dust particles.

What does it all mean?

All wood has fungi on it. The air has fungi in it. Everywhere you go you are constantly bombarded with fungi. Turning spalted wood may produce a high spore count in your shop, but at least in the shop you are wearing a respirator that filters out all the nasty particulate matter, of which fungi are a very, very small part. Think about how many fungus spores you pick up when you walk through the woods in autumn, and you're not even wearing a mask.

Sara Robinson, Untitled, 2010, Aspen with pink, blue, yellow stain, yellow zone lines, 4" × 8" (10 cm × 20 cm)

Understanding that fungi have different roles, different requirements, and different behaviors is the first essential step in working with spalted wood. This isn't because a deep understanding of fungi is required to turn a spalted bowl, but because every group has at least one person who has an irrational fear of microbes. When one person starts with, *there was this guy in Texas who had mold on his wall* or *did you hear about the woman who turned spalted wood for 20 years and then died when mushrooms grew in her lung?*, all it takes is ten minutes on the Internet to develop fungus paranoia. Unfortunately it takes far less time to find fiction, conjecture, and hearsay than to fact check and find, well, the facts. These facts are backed up with relevant, peer-reviewed scientific literature, which you can read for yourself in scientific journals.

So, take a deep, fungus-filled breath and enjoy your woodturning experience. Wood dust, wood finishes, and even the very act of machining with power tools is far more dangerous than breathing fungus spores. Don't miss the opportunity to work one of nature's most fabulous artistic achievements: spalted wood. Snap on a respirator, pull down your faceshield, and mount that spalted-wood blank onto your lathe with full confidence that you are protecting yourself from the real dangers of turning wood: wood dust and flying objects. ■

Sara Robinson has a PhD in forestry (within the field of wood science) from Michigan Technological University and currently works as a postdoctoral research fellow at the University of Toronto's Faculty of Forestry. She invites everyone interested in spalting to come visit the Faculty of Forestry's Applied Mycology Lab where the public, graduate students, and undergraduates from all backgrounds and disciplines can explore the interactions of fungus on wood. You can visit her website (northernspalting.com) to learn more abut spalting and stay up-to-date with the latest developments in spalting research.

Spalting in the news

Recently, the Mayo Clinic in Florida presented a poster at a conference which indicated, via the abstract, that spalted wood may be linked to a case of hypersensitivity pneumonitis (HSP) in a 61-year-old former smoker (and current woodworker/home spalter). Based on the information presented in the abstract (there is no paper available; this information came from a poster session), no actual link has been made between a fungus that came specifically from the wood the man was spalting and his lungs. Despite the claims made in the abstract that HSP was associated with spalted wood, no actual evidence of this linkage was presented. Confused? Allow me to elaborate.

Just because two events happen at the same time does not mean they are causal. If I enter a store and it starts to rain, then it stops raining when I leave the store that does not mean my going into the store caused the rain. In that same vein, getting a chest infection and working with spalted wood does not mean that the spalting caused the chest infection. I'm not refusing to admit the possibility, especially as the gentleman had a history of respiratory infections for the past two years (indicating a poor immune system, which makes a person susceptible to all kinds of nasty things). However, it is important to remember two things:

1. Wood dust is harmful to the lungs and can cause serious damage.
2. Wood that is not purposefully spalted (i.e., wood left outside for long periods of time and not intentionally inoculated) can grow all sorts of bacteria and nonspalting fungi on the surface. Many people are sensitive to these surface molds (which are not the kind that cause spalting and can in fact be completely avoided if care is taken when intentionally spalting wood).

When reading articles like this abstract, piece together the facts presented. In this case, an older gentleman with a probable compromised immune system was an avid woodworker, who worked with spalted wood. After not working with spalted wood for thirty days, the man showed remarkable improvement. No information is given about the fungi/bacteria responsible. Was it only bacteria? Was it surface mold? Or was it an actual spalting fungus? We don't know. There was also no control: What if the gentleman was told he could work with normal wood, but not spalted wood? Was it the removal from all wood that cured him, or was it specific to the spalted wood? Did the man wear a respirator when working with his wood?

With so many unanswered questions, it is important not to jump to conclusions. People with poor immune systems probably should not be working with wood, and everyone, regardless of health level, should be wearing a respirator. Wear a respirator of sufficient quality, and there is no need to worry about fungi or bacteria (even the harmful ones), because they cannot pass through the respirator's filtering system.

Fungi cannot be avoided forever, but a smart woodturner will be careful about the ones invited into his or her shop by exercising some control over spalting experiments. Keep the wood contained and out of air circulation. Sterilize the surface before turning with a mixture of bleach and isopropyl alcohol. (It is important to use 91% [or 99%] isopropyl alcohol, not simply inexpensive rubbing alcohol.) Obtain two spray bottles. In one, pour household bleach to a level of 10%, then fill to 100% capacity with water to achieve a 10% bleach, 90% water solution. In the other bottle, simply pour in isopropyl alcohol. Spray the liquids from the two bottles onto the surface of the wood, either at the same time or one right after the other.

Embracing the Flaws

The Work of Will Bellucci and Rachel Scheffel

"The more relaxed you are, the better turner you'll be. Enjoy every aspect of the process."
—Will Bellucci

John English

Will Bellucci has surrounded himself with art. To get to his lathe, one has to wander past plaster angels, skirt around an imposing sculpture of an African matron, and even bypass a carved pew. Gilded oak leaves hang from the studio ceiling and the walls proudly display architectural millwork, watercolors, and framed photography. Rachel Scheffel shares this inviting space.

Will and Rachel first became acquainted in 2004 when Will was running a woodshop in Anchorage, AK. He had advertised woodturning classes for all skill levels. During the long northern winters, a lot of people needed a creative outlet—some months, he had up to forty students. Rachel signed up for one of the beginner classes. She held an art degree from Ohio Northern University, but was still undecided about a medium. Although she had no previous exposure to woodworking, turning, or carving, it didn't take her long to be captivated by the processes and challenges.

Seven years into their working partnership, they share a space, but work separately. Every step from initial shaping to second turning, sanding, carving, and finishing is a solo endeavor. When one of them signs the bottom of a completed piece, it signifies either Will or Rachel as the artist, from start to finish. They do, however, critique each other's work, and this process helps them both grow in their craft.

The day I visited their studio, perhaps the most impressive piece of art was the one on Will's Vega lathe, an immense elm vessel with a 10" crack. The massive form was lovely, and the crack was the kind of defect that would intimidate many turners, but Will and Rachel celebrate such defects. On this day, Rachel was sitting at the carving vise using a Flexcut knife and a Sorby chisel to cut beads into the edge of a large pine bowl.

Will and Rachel's concentration and conversations are intermixed throughout each day. Critiques are spontaneously shared.

Philosophical outlook

Will's life is consumed with the likes of ash, locust, birch, and willow blanks. His intimate relationship with wood has made him philosophical about the nature of the medium. "Wooden vessels have been with us for a long time, and the forms we make are not unique, but the material is: The grain and color change with every piece. Wood is like humanity—each piece has a different aesthetic, varying flaws, a unique personality."

"I've always wanted to create something that would outlive me, and I want it to be something of the highest quality," said Will. "I find comfort in thinking that something made by my hands can survive for generations. When those generations know that it was someone in their family who brought it into being, that's especially gratifying."

The studio

There is nothing haphazard in Will's studio; it is run in a businesslike manner. He keeps meticulous records. Even so, most aspects of the business are infused with an aura of art. These woodworking partners have found a delicate balance between work and wisdom to achieve a productive, creative approach. They take pleasure in elusive tasks. For Rachel and Will, work is a celebration.

The studio, Woods of Wisdom, is only two or three runway-lengths from the regional airport in Rapid City, SD. Looking west from the front stoop, the Black Hills form a backdrop to the city. ▸

Rising from the floor to the bed of Will's lathe, the cottonwood shavings seem endless.

Buried in shavings, focused and loving the process, Rachel creates an exterior shape on a tupelo vessel.

With his hand balanced on the edge of the pecan vessel, Will carves one of 97 beads around the rim.

Will demonstrates the authenticity of his hand-carved vessels during every craft show.

Will's extensive collection of carving tools was acquired during his fifteen years in England.

Meticulous records are kept on each bowl or vessel.

This grassland, interrupted by creeks and gullies, is home to boxelder, scrub oak, Russian olive, and a host of ostracized and undersized species.

In the showroom in the front of their studio, the upper shelves are devoted to completed work that is ready to sell; the lower shelves are full of vessels waiting to be carved.

The wood

One man's firewood is Will and Rachel's treasure trove. They harvest most of the wood they turn, and they prefer standing live timber. They want to see how the wood grew. "When we turn from the trunk," Rachel says, "the wood usually behaves in a predictable way. But when we turn from a limb that has grown horizontally, the stress relieved during turning and drying can reshape a vessel beyond the point of salvation. We do our first turn wet, and then we wax the roughed-out vessel or bowl and store it for a year or so before its second trip to the lathe. During that time, wood from limbs can distort so much that there simply isn't enough material left to salvage a round form from the oval that it has become."

(Above) **Will Bellucci,** *She Loves Me,* Chinese elm, 2011, 11" × 9" (28 cm × 23 cm)
Photo: Rachel Scheffel

(Below) **Rachel Scheffel,** *Waterfall,* 2010, Pecan, 4" × 6" (10 cm × 15 cm)

The initial rough turning allows a basic form to take shape. The creativity comes into play on the second turn and begins with Will's interaction with the piece he selects, "When I reach into the pile, I say to my next little friend, *What do you wish to be?*"

"The wood comes with no instructions, and Rachel and I work with what we are given. The flaws, the grain patterns, the cracks, and core are the elements we seek to balance. We welcome the elements and work with them to create something that leaves the whole just as beautiful as it was in nature."

"The challenge," Rachel adds, "is to highlight the flaws, to decide what to remove and what to leave. The wood that we leave determines what we do next. Sometimes the grain and the spalt pattern are enough, but more often, we prefer to embellish. And for us, that means carving."

The design process

From the beginning, Will and Rachel cut wood with the final outcome in mind. When they harvest, they visualize the piece of art that each block of wood will become. Size and shape play big roles. They cut squares and rectangles with bowls and vessels in mind. The pith comes into play on almost every piece—they want the core of the tree to be the center of their art piece. Squares are versatile. Rectangles compel them to make tall vessels.

Will elaborates, "A turner must be lucky enough to be able to see shapes before they are created. One can teach the technical aspects of turning, but the aesthetics are intuitive, innate. Appreciating and studying the art of others can help a person develop a good eye for form, but that inner

seeing can't be forced. A person must feel it."

After he selects a piece from the pile of year-old rough turnings, Will can usually get it to an acceptable shape in thirty minutes to an hour. The species can affect that, as do the challenges presented by the tree. "Birch is friendlier than walnut or pecan," he says, "and I can cruise right through cottonwood. The size of the core and the defects in the wood have some influence on how fast we turn." The size of the vessel's opening also determines how long it takes to finish a piece. If it's small, they cut for a minute or two and then vacuum. They then repeat that sequence. In addition, a long neck on a vessel can slow down the process.

Sanding, however, is the biggest time investment. Contrary to common practice, they don't sand with the vessel revolving on the lathe. Instead, with the power off, they slowly turn the vessel by hand while they sand with a pad sander under several bright lights. This method eliminates score lines and allows for a detailed inspection of the wood, which results in high quality end products.

Heat from sanding is a concern. They try to make their last cut as smooth as possible to decrease the need to sand. If the wood heats up during sanding, a crack will pop up and instantly run across the piece.

They initially finish-turn only on the outside of the vessel during the second turning, leaving the final cuts on the inside for later. The walls of the vessels are left thick to allow for carving. After they are finished carving embellishments, the vessel is remounted onto the lathe and the final cuts are made on the inside. If they lose a piece at that stage because of too much heat from sanding, they have lost all the time spent harvesting, rough turning, waxing, drying, second turning, and carving. "It can be heartbreaking," says Rachel, "so we're very careful."

Will Bellucci, *Leonardo,* 2011, Boxelder, 7" × 6" (18 cm × 15 cm)
Photo: Rachel Scheffel

Rachel Scheffel, *Hidden Flower* (detail of carving on the underside of a bowl), 2010, Pecan, 3" × 8" (8 cm × 20 cm)

The carving process

After a vessel is turned, it is removed from the lathe and secured in a bench-mounted woodturning vise that has indexing. The indexing enables Will and Rachel to calculate how to incorporate the various elements into the bowl or vase. Primarily, they carve series of beads, leaves, and other natural forms around the waists, necks, and lids of vessels. A dizzying array of carving tools is laid out on a ten-foot-long table between the bench and the lathes.

The last step in the process is a telling one. When the carving and final inside cuts are complete, Will and Rachel ignore the time clock. The vessel is turned upside down, and then, when the time is right, the signature flower is carved and the artist's name is signed on the bottom, a personal gift to the new owner.

As each piece is completed, it is logged in a record book along with photos, dates, species, dimensions, and other relevant information. Each entry is eventually updated with the buyer's name so that Will and Rachel have a complete history of its inspired journey. ■

John English is an author of woodworking books and he teaches furniture building and cabinetmaking at the Black Hills School of Woodworking in South Dakota (bhsw.org). To view Will Bellucci and Rachel Scheffel's website gallery of work and for contact information, visit woodsofwisdom.net.

Rachel Scheffel, *A Friend in the Storm,* 2010, Birch, 6" × 17" (15 cm × 43 cm)

Members' Gallery

Hought Wahl, Georgia

Untitled, 2009, Oak, 8½" × 10½" (22 cm × 27 cm)

Untitled, 2009, Cherry,
9" × 12" (23 cm × 30 cm)

Untitled, 2009, Oak, 5½" × 8 ½"
(14 cm × 22 cm)

Ken Rodgers, Texas
Untitled, African mahogany, copper, gold leaf, 15" dia. (38 cm)

Platter made for the 2010 S.W.A.T. raffle.

Jim Wilkus, Minnesota
Eagle Bowl, 2010, Spalted cherry burl,
9" × 10½" (23 cm × 27 cm)

Rolly Munro, New Zealand

This piece is the fourth in a series loosely based on a fish-head form. I produced the first Hapuku in the mid 1990s, and although it was never my intention to produce a series, I feel the need to periodically revisit the form. As I age, I am more relaxed about exploring different influences and ideas, each piece serving as a muse.

I initially turned the vessel from a piece of wet pohutukawa, which I allowed to dry over a couple of years. I sketched the design onto the surface, then carved it. The pigments were added last.

Hapuku IV, 2008–2011, Pohutukawa, copper, pigments, 7¾" × 6½" (200 mm × 165 mm)

Chuck Fultz, Arizona

The idea for this globe came when I heard the phrase, "Around the World in Eighty Days." I thought if I could turn a globe consisting of eighty segments that would make a catchy title for a piece. Ten rings of eight segments each would do it. The real challenge would be to inlay the seven continents accurately and to scale. Latitude and longitude solved the location, but where the matching points would meet, when turned, involved some guesswork.

My piece took second place at the Arizona Association of Fine Woodworkers' Excellence in Woodworking Show in Mesa. I am pleased and honored with this award. It truly was a fun project.

Around the World in Eighty Days, 2010, Brazilian and American cherry, holly, lacewood, maple, padauk, purpleheart, walnut, yellow heart, zebrawood, 11" × 7½" (28 cm × 19 cm)

Richard Spellenberg, New Mexico

Show-off wine toppers

Wine toppers are quick to make and can be created from cutoffs. They sell well, but what do people do with these toppers when they are not in use? They end up in drawers, get banged around, and generally are not seen. Several years ago my wife, Naida Zucker, suggested that I make individual stands for toppers so they can be attractively displayed.

I make toppers from all kinds of wood and finish them with polyurethane or cyanoacrylate (CA). The ones pictured are stainless-steel droplet stoppers. The wood is Arizona ash, colored with aniline dyes, embellished with liming wax, and finished with CA. Two toppers have stone cabochons in the top, glued in with flexible CA.

Simply turn a base to fit the style of the topper and drill a small hole into the center. Sometimes a two-step hole provides a better fit, the upper part broad to fit the shoulders of the stopper, the bottom narrower to cup the tip and eliminate wobble.

Pierce Randolph, Missouri

When my son, Pierce, was nine years old, his social studies teacher assigned all the students to make something "old" and then write a short story about how the item was used in the time period from which it was in use. Pierce wanted to turn something on the lathe and decided on a mallet.

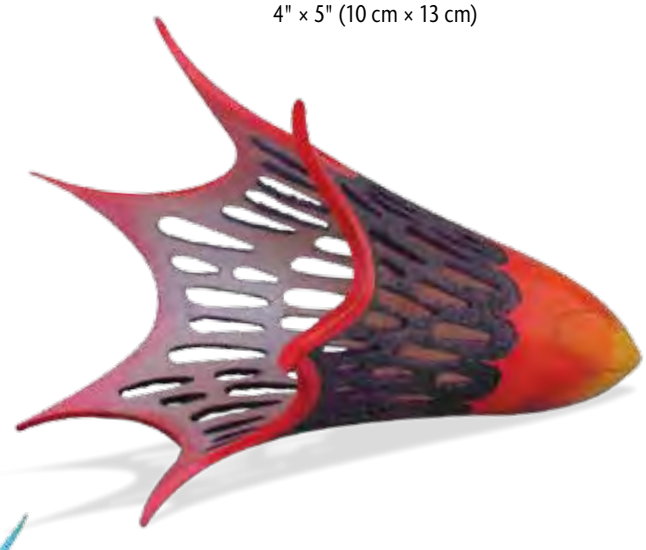
Pierce did most of the work himself, except for the initial roughing, a few minor finishing cuts, and parting the mallet off the lathe. It is made from ash and finished with linseed oil. Covering it in mud, slightly cleaning it, and beating a few nails with it further "aged" it so that it appeared to have been used in an earlier period in the history of Greene County, MO, to build barns.

—Larry Randolph, Missouri

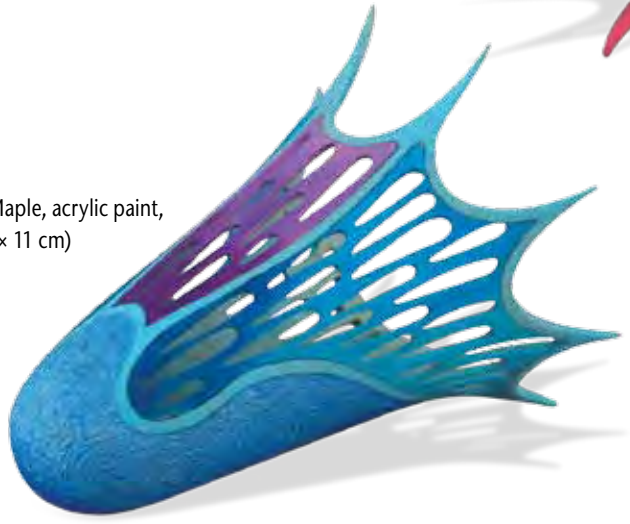
Ken Eberle, Texas

Necktie, 2006, Pecan, maple, fiberglass, padauk, wenge, 20" × 9½" (51 cm × 24 cm), 722 pieces

Nautilus II, 2010, Old growth Australian red gum, 3⅞" × 4½" (10 cm × 11 cm)



Debbie's Nightmare II, 2010, Maple, acrylic, 4" × 5" (10 cm × 13 cm)



Nautilus I, 2010, Maple, acrylic paint, 3½" × 4½" (9 cm × 11 cm)

Paul Petrie Jr., New York
The idea for the form pictured came from a scene in the movie *Twenty Thousand Leagues Under the Sea* where the octopus grabs onto the Nautilus submarine. The colors and piercing add life and a sense of motion.

Glenn McCullough, Michigan
I made this fountain pen from a section of horse chestnut, which had been taken from a tree that was dubbed America's Historic Horse-Chestnut Tree. The section was from one of the last of thirteen horse chestnut trees planted by George Washington on Fauquier Street in downtown Fredericksburg, VA. Washington planted these trees to represent each of the thirteen colonies and to provide shade for his mother and sister as they walked a short distance to and from each other's homes. In 2004, this national treasure succumbed to old age and had to be removed.

I was a bit apprehensive drilling and turning the wood, fearing a blowout in either process, given the significance of the material. I used great caution in securing it in the drill press, drilling slowly, and took light cuts while turning.

Woodturning Today: A Dramatic Evolution

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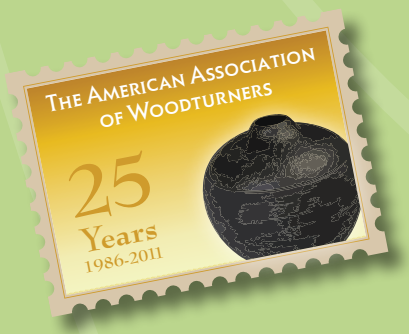

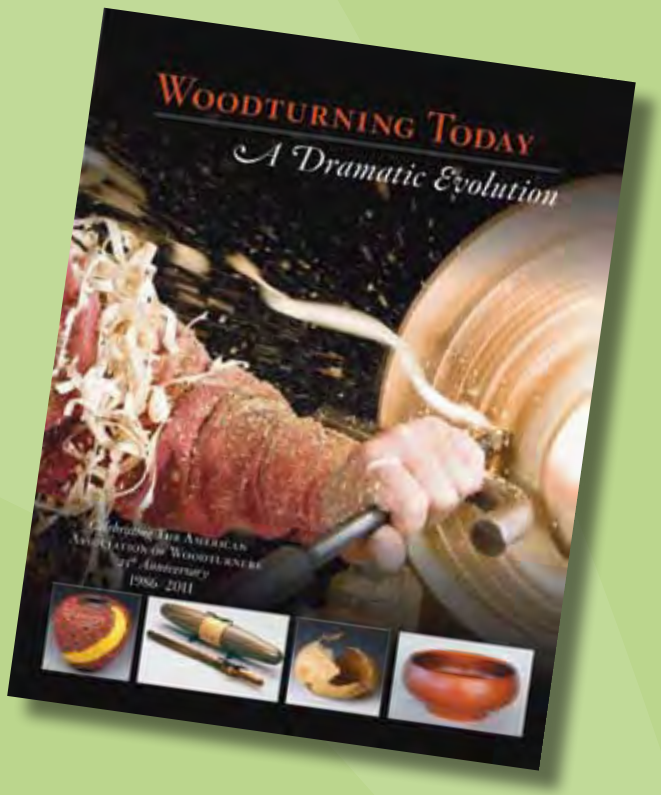

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Douglas *Fisher*

My double-sided sculptures give the viewer two different looks in one piece. Usually one side is symmetrical, the other asymmetrical. With *Expectations*, however, one side is turned off center and off axis, the other side off center only. I harmonize the two sides using a similar theme and related colors, color being most important.

Expectations was turned entirely by using a vacuum-chucking system. I did the carving with various rotary bits and woodburning pens, and then colored the wood with light-fast inks and dyes.

No matter what techniques I use to achieve the look of my sculptures, the form lines of the imagery must be correct. I want the piece to exude an old-world, timeless sensibility and honor the native culture of its origin.

—Douglas J. Fisher

Expectations, 2011, Big leaf maple, steel base, 16" × 1½" (40 cm × 4 cm)

More of Douglas Fisher's work can be viewed at douglasjfisher.com.