LET'S GO FOR A SPIN

AAW EDUCATION

DEVELOPED BY ALAN N. LELAND OF LELAND STUDIOS

An exploration of woodturning, taught through a series of skill and technique exercises, followed by a variety of fun and challenging projects

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SAFETY GUIDELINES AND PROCEDURES

It doesn't matter how experienced you are or how safety conscious you think you are, all woodturners should carefully study and observe the safety guidelines provided by the American Association of Woodturners. The AAW Safety Guidelines can be found in their annual resource guide provided to members or on their website at woodturner.org. Below I have listed some other safety tips in addition to the AAW guidelines. Please read and obey all safety instructions that come with your equipment and that are presented by your instructor. Feel free to share your own safety tips with the class, as safety is of the utmost importance to our health and future enjoyment of woodturning. I highly recommend reading the AAW "Safety for Woodturners" and the Craft Supplies USA (The Woodturners Catalog) Safety Data sheets, especially the one on Gouge safety.

Above all, please wear a faceshield at all times while turning!

Pay close attention to your surroundings and environment.

- If something sounds or feels wrong or your inner voice is giving you warning signals, stop what you are doing immediately and check your equipment and/or procedures, as something may be amiss or unsafe.
- Pay close attention to your inner voice and above all stay alert.
- Do not under any circumstances operate a lathe or any other powered equipment when under the influence of alcohol, drugs, or any medications that may impair your abilities

Stick with projects within your skill level.

- Obtain instruction by taking a class or seeking out good advice before tackling a technique or skill that is beyond your current skill level.
- Work on projects that are at your skill level, using equipment that you are familiar with and are comfortable using.
- Actions and techniques that are safe for an experienced woodworker/woodturner may not be safe for the novice or intermediate turner/woodworker. There is a built-up background of skill and knowledge of the tools and techniques that helps make certain techniques less dangerous for experienced artisans.
- By no means is this suggestion of staying within your skill level meant to keep you from growing and challenging yourself. It is merely a suggestion that you seek out knowledgeable instruction to help aid you in your growth in a safe manner. Power tools are inherently dangerous and it is advisable to learn the tools and how to use them from someone that is familiar with them.

Pay attention to and use the proper lathe speed.

- Before turning on the lathe, always double check the speed setting. Also be sure to check that the drive belt is on the proper pulley for what you are turning.
- Turn at a speed that is comfortable for you and is appropriate for the work that you are turning. A good rule of thumb for proper lathe speed, taken from the Craft Supplies Woodturning catalog, is that the result of the multiplication of the diameter of the piece times the lathe speed in rpm's should fall somewhere between 6,000 and 9,000. For example, a 10"-diameter turning times a lathe speed of 800 rpm's equals 8,000, which would be a safe speed as 8,000 falls between 6,000 and 9,000 and therefore that would be a safe speed.
- Larger, more off-balanced items should be turned at slower speeds.

Keep your fingers and body parts out of harm's way.

- When using a bandsaw to prepare pieces, keep your fingers out of reach of the blade and ensure that they do not follow the wood into the blade.
- The toolrest on the lathe should be as close to the work as possible so that your fingers will not get caught between the toolrest and your work (⅛" to ¼" would be safe).
- Get in the habit of blowing the dust and shavings off the toolrest instead of wiping it off with your fingers. Using your fingers to clean off the toolrest might cause your fingers to get caught between the work and the toolrest.
- Always turn the lathe off before moving the toolrest. This prevents harm not only to your work but also to your body parts.
- Do not wrap sandpaper or buffing/polishing rags around your fingers or hand. If the cloth gets caught ▸

in the spinning parts of the lathe, your fingers will be pulled into the lathe.

Wear proper attire and keep the work area clean.

- Most importantly always, and I can't emphasize this enough, wear eye protection. A FACESHIELD is the best protection and a requirement in class.
- Be aware of the dangers of breathing wood dust.
- Most finishes are not safe to breathe and precautions should be taken to avoid inhaling their fumes. A good respirator rated for finish-type chemicals would be a good investment in your health and future mental capacity. Be aware that chemical respirators have a limited functional shelf life so the filters should be changed when necessary.
- Loose clothing and/or hair is dangerous because it can get caught in the spinning lathe.
- Remove jewelry and watches as they can get caught up in moving parts. Rings can be especially dangerous in woodworking/woodturning. Rings can get caught on equipment or various other things in the shop or can be crushed on your finger if a heavy object lands or wedges your hand.
- The floor can be slippery or dangerous when shavings build up, so clean up often!
- A clean shop is a safer shop!

Be safe, have fun, and create beautiful objects!

ACKNOWLEDGEMENTS

I would like to acknowledge and thank the following folks for their part in my advancement as a woodturner/woodworker/teacher. They have shared their knowledge and skills with me, encouraged me, and well, just plain inspired me to share my newfound skills with others, as well as sharing their teaching methods.

Two of the woodturners who have been most influential in my career and from whom I have learned the most and who have given me some of my best teaching ideas are Allan Batty and Stuart Batty. Their teaching techniques have been very influential in the methods that I use in my own classes and written material.

I would especially like to thank Bob and Melissa Gunther for their part in encouraging me and aiding me in my development as an instructor and their support when things seemed to be stuck in idle.

I must not forget to thank Roger Austin for his help and encouragement when I was just starting out and his aid in my pursuit of a woodturning career. I will never forget his sage advice to me when he advised me that the more that I write and speak in public, the easier it will become. Not his exact words but I have found them to be quite true. I now find it to be much less stressful than earlier preparing for a class or demonstration or even when asked to write an article for our chapter newsletter or a major publication. Writing handouts seems to be less and less of a chore.

Then there is my friend and teaching partner Frank Penta, who has provided his constant critique of my teaching style and pointed out my many faux pas in the early days of my teaching career. (Yes, even now I have a tendency to put my foot in my mouth when I am speaking. I do not always say what I mean to say, as my words are sometimes a bit off the mark). Frank encouraged me in the development of my class curriculum and helped set the format for my many handouts. He also is one of my best supporters and promoters, as he is always praising my expertise and teaching skills to anyone who is interested in learning to turn.

My many thanks go out to Bill Johnston and Phil Pratt, whom I met through the Triangle Woodturners of North Carolina (now known as the Woodturners Guild of North Carolina). Phil and Bill were very encouraging and taught me a great deal about woodturning, but most of all they encouraged me to take an active role in the club, which opened up a world of creativity and opportunities for good friendships.

I would also like to thank all those demonstrators and professional turners whom I have come in contact with through my association with the American Association of Woodturners and the Triangle Woodturners Association. The list is large and I know that I will leave out some of my favorite demonstrators as my memory may be a bit off at times, but here goes; I would like to thank Keith Tompkins and Jacques Vesery for their willingness to share their handouts on shape and form with my students and their sage advice on teaching shape and form; Soren Berger for his excellent workshops held in my studio; Trent Bosch for his patience and his fun and inspirational workshops; Myron Curtis for his many critiques of my demonstrations and teaching methods and his encouragement that I write more articles on basic woodturning; my friend and personal go-to guy Terry Brown for all his help and advice over the years; George Hatfield for his charm and sharing of his knowledge of architectual woodturning (one of my specialties), and, of course the aforementioned Allan Batty and Stuart Batty. I mustn't forget Mike Mahoney, who was and still is very encouraging and helpful by providing many opportunities to share my skills and knowledge; and Nick Cook for his aid in getting my name out to craft schools and other venues and for his good humor and, lest I forget, his wonderful Southern hospitality. I owe a tremendous debt of gratitude to Dale Nish for all he did to promote woodturning and his kind words of encouragement. Dale also accepted my stool and table into the Gregg Museum of Art and Design's exhibit entitled "With Lathe and Chisel." Dale was very helpful and encouraging by introducing me to influential people in the woodturning world, for which I am very grateful.

I mustn't forget to acknowledge Doug Barnes, former resident turner at the John C. Campbell Folk School for his help in providing me the opportunity to teach at the Folk School and consequently aiding me in finding my way as an instructor. Teaching at the Folk School and my subsequent contact with Doug with his easy-going personality and encouragement helped to set me on a more focused career ▸

path, which in turn led to my making teaching, demonstrating, and writing instructional materials a larger part of my life. I just can't thank Doug enough for all he did to change my life. I would also like to thank Marsha Barnes for all the work she does to keep the Folk School woodturning program running smoothly, also for all the work she has done for the Brasstown Woodturners and the Southern States Woodturning Symposium. Then there is the magic of the John C. Campbell Folk School that not only provided me with a place to develop my teaching skills but also had a very positive effect on my life overall. The Folk School is a very special place and I am glad that I discovered the magic that is the John C. Campbell Folk School.

I would also like to thank Kip Christensen for his kind words during my time on the American Association of Woodturners Educational Committee and his efforts to promote woodturning education; Michael Mocho for his help in providing me with some much-needed and appreciated feedback on my woodturning curriculum.

I know that there are many more folks whom I would like to acknowledge but the list could go on forever as so many people from all walks of life have had a positive effect on my life and career. Golly gee, I almost forgot to thank all my past, present, and future students for their support, constructive feedback, and all that they have taught and will teach me. I must not forget to thank all those woodturners and their families who have hosted me when I was teaching or demonstrating for their local woodturning group. A special thanks goes out to Paul Coppinger and Mike DeLong for setting up and hosting a series of classes for the East Texas Woodturners Association that were held in Paul's shop in Mineola. Lastly I would like to thank all those who have shown their appreciation for my work by complimenting it, but most importantly, by purchasing it, and thereby encouraging and enabling me to hang in and grow as a teacher and craftsman/artist. ■

INTRODUCTION

This manual was created to provide Alan's students with written material to go along with the many classes that he teaches in his studio and at schools such as The John C. Campbell Folk School, the North Carolina State University Craft Center, Arrowmont School of Arts and Crafts, Klingspor's Woodworking Shop, and at Woodcraft stores and many woodturning associations across the country. The following manual contains his curriculum for teaching a series of classes that are designed to provide beginning and intermediate students with a good solid foundation in the skills and techniques that will help them enjoy and become successful in the field of woodturning. Alan's approach to teaching woodturning uses project-based skills and hands-on learning experience. The classes are designed to be highly informative and fun. Included in the manual are a variety of project handouts that will aid and build upon the skills and techniques being taught.

This six-session series of preferably day-long or possibly 3-hour-per-evening workshops is designed to provide beginning and intermediate students with a well- rounded set of turning skills. The intent is to provide a turning experience that will start students on their long and enjoyable journey into woodturning. The workshops start with the bead and cove stick, followed by one of several possible simple projects designed to provide students with a sense of accomplishment. The workshop will then move on through a variety of skill-building exercises, each followed by a project that builds on these new-found skills. The skills and techniques that Alan Leland is teaching are those that he has found to make his turning easier and more pleasurable. The techniques that Alan has adopted require less work and effort on his part and have the added benefit of less sanding. As the students progress through the course, they will be exposed to a wide range of turning styles and techniques, from the more functional and ornamental spindle work to bowls and platters. They will also be exposed to end-grain hollowing and try their hands at using simple hollowing tools to hollow a birdhouse or the slightly more complicated hollow-globe-with-icicle ornament. The series has been adapted from a five-day workshop that Alan Leland developed for his techniques classes at the John C. Campbell Folk School and for classes in his own studio. The one-week technique workshops that Alan teaches at the Folk School have produced rave reviews from his many students, from beginning students to his more advanced students. To ensure that these workshops provide something of interest to students at all levels, after completing the skill building exercises, students can choose from a variety of projects of varying difficulty. This series can be taught on the small midi lathes that many woodturning chapters are now purchasing. The goal here is not to produce professional turners but rather enhance the enjoyment of woodturning by providing lessons in the many skills used in woodturning. Have fun and be sure that you and your students are experiencing an enjoyable and fun time at the lathe.

Alan's goal is not to train professional woodturners but to provide students with a good basic set of turning skills that will help to make their time at the lathe more enjoyable. This curriculum is designed for beginner to intermediate woodturners and even more experienced turners who would like to hone their skills and possibly pick up a few helpful techniques in the process. Some of the skills and teaching techniques that Alan has incorporated into his curriculum have been adapted from the many workshops and demonstrations that he has attended over the years. Alan has borrowed some of the best ideas and exercises to aid in teaching his classes.

The class schedule and class descriptions that follow are meant as a guideline. Please feel free to add to or adjust the classes to meet your or your students' goals and objectives. If you are a student in this class, be sure to communicate to the instructor any goals or objectives you may have and state where your interests lie. Be sure to make use of the many resources and references available, such as Keith Rowley's book titled "Woodturning, A Foundation Course" and Allan Batty's "Woodturning Notes," available at Craft Supplies in Provo, Utah. There are many articles, videos, and books available on the subject that may be of help. Be sure to check out the many project- oriented handouts found in the manual and add your own where appropriate. At some point during the course it would be a good idea to discuss some sharpening techniques. I have found that it is a good idea to go over sharpening during Sunday evening's introductory session. As folks have spent the day traveling and the session is only two hours long, it seems like a good time to deal with sharpening. Throughout the course of the week, I show how each tool is sharpened as I use them and then do a bit of one-on- one, as each individual's tool requires sharpening. There is a lot of information to cover in a short period of time, and some students ▸

may be overwhelmed with the amount of material covered, so try to be sensitive to their needs.

The curriculum has been broken down into the following six sessions. The first session is the longest and most tiring as there is a lot of information being given to the students in a short amount of time. Therefore, I recommend that the first session be scheduled to last at least 4 hours, preferably taught as an all-day class. There needs to be ample time to do a simple project, so that the students leave with a completed project. The next five sessions can be taught in 3- to 4-hour sessions or as all day classes (preferred). This course was designed with the intent that each session builds upon the skills taught in the previous sessions. It is highly recommended that the sessions be taught in succession to reinforce the skills and techniques being presented. Not only does each session deal with teaching tool skills, but each session adds other techniques to the student's knowledge base in a carefully planned succession of projects. For instance, in Session 2 external chucking methods (the chuck's jaws used to grip a tenon) are introduced, then in Session 4 internal or expansion chucking techniques are used (the chuck's jaws expand into a recess to hold the work on the lathe). The sessions can be broken out and taught as separate classes, but I feel that the student's learning curve is better if the classes are taught in the order presented in this manual. ■

SUGGESTED TURNING TOOLS AND RESOURCES

Tools:

- Faceshield – required at all times while things are spinning on the lathe!
- Spindle roughing gouge 1¼" or 1"
- ⅜" spindle gouge
- ¾" skew
- ¼" × ½" beading and parting tool or regular parting tool
- 1/16" × 2" thin parting tool*
- ⅜" side-ground bowl gouge (with U-shaped flute) Robert Sorby or Packard
- ⅜" traditional-ground bowl gouge (with U-shaped flute not V-shape)*
- ¾" round-nose scraper
- Hollowing tools for small projects such as 8" hollow forms or 2" globes: Dale Nish Formed Scrapers Style C part # 247-0098 or D part # 247-0099 available from the Woodturners Catalog, Crafts Supplies USA, highly recommended for small hollowing
- If you purchase the set of three Packard small hollowing tools cat. #103389 from Packard Woodworks, you will need to grind close to ⅜" or more off of the two bent tools before using, as they will grab and cause a horrific catch, as the cutting edge is too far out from the support and the amount of torque created is just too much for most of us to handle.*

This list was compiled for my beginning students who ask me what tools they should buy to get started turning. It is also a good list for the tools that would be used in my week-long fundamentals and techniques classes. Craft Supplies in Provo, Utah, is another good supplier and of course your local Woodcraft or Klingspor's Woodworking Shops.

Books:

- Keith Rowley's *Woodturning, a Foundation Course*
- Michael O'Donnell's *Turning Green Wood*
- Richard Raffan *The Art of Turned Bowls* and any of Richard Raffan's books
- Ray Key's books are excellent
- Allan Batty's *Woodturning Notes* available through Crafts Supplies USA
- Alan Leland's *Let's Go For A Spin* a woodturning lab manual and curriculum

Videos:

- Jimmy Clewes
- Allan Batty
- Mike Mahoney
- Del Stubbs
- Trent Bosch
- Alan Lacer

Suppliers:

- Packard Woodworks Inc.
  800-683-8876
  packardwoodworks.com
- Craft Supplies USA, the Woodturners Catalog
  800-551-8876
  woodturnerscatalog.com
- Choice Woods
  888-895-7779
  choicewoods.com

*Optional tools

SIX-SESSION WOODTURNING WORKSHOP

Introduction:

This six-session series of preferably daylong or possibly 3-hour-per-evening workshops is designed to provide beginning and intermediate students with a well- rounded set of turning skills. The intent is to provide a turning experience that will start students on their long and enjoyable journey into woodturning. The workshops start with the bead and cove stick, followed by one of several possible simple projects designed to provide students with a sense of accomplishment. This first session is the longest and most important session and is filled with perhaps too much information to be absorbed in one lesson. The workshop will then move on through a variety of skill-building exercises, each followed by a project that builds on these new-found skills. The skills and techniques that Alan Leland is teaching are those that he has found to make his turning easier and more pleasurable. The techniques that Alan has adopted require less work and effort on his part and with the added benefit of less sanding. As the students progress through the sessions, they will be exposed to a wide range of turning styles and techniques, from the more functional and ornamental spindle work to bowls and platters. They will also be exposed to end-grain hollowing and try their hands at using simple hollowing tools to hollow a birdhouse or the slightly more complicated hollow-globe-with- icicle ornament. Please note that each session not only introduces new turning skills but is carefully planned to add new techniques, such as how to mount objects to the lathe. For instance, in session 2 chucks are introduced and used to grab the work with a compression foot and in session 4 students are introduced to using the chuck with a compression foot. These sessions and the concepts that are being taught are laid out in a well-designed series of lessons and projects that provide the student with a very broad base of knowledge from which to start their turning hobby or career.

The series has been adapted from a five-day workshop that Alan Leland developed for his techniques classes at The John C. Campbell Folk School and for classes in his own studio. The one-week technique workshops that Alan teaches at the Folk School have produced rave reviews from his many students, from beginning students to his more advanced students. To ensure that these workshops provide something of interest to students at all levels, after completing the skill-building exercises, students can choose from a variety of projects of varying difficulty. This series can be taught on the small midi lathes that many chapters are now purchasing. The goal here is not to produce professional turners but rather enhance the enjoyment of woodturning by providing lessons in the many skills used in woodturning. Have fun and be sure that you and your students are experiencing an enjoyable and fun time at the lathe.

The following class schedule and class descriptions are meant as a guideline. Please feel free to add to or adjust the classes to meet your or your students' goals and objectives. Be sure to make use of the many resources and references available, such as Keith Rowley's book titled *Woodturning: A Foundation Course* and Allan Batty's *Woodturning Notes* available at Craft Supplies in Provo, Utah. There are many articles, videos, and books available on the subject that may be of help. Be sure to check out the many project-oriented handouts found in the manual and add your own where appropriate. At some point during the course it would be a good idea to discuss some sharpening techniques. I have found that it is sometimes a good idea to go over sharpening during Sunday evening's introductory session. As folks have spent the day traveling and the session is only two hours long, it seemed like a good time to deal with sharpening. Throughout the course of the week, we show how each tool is sharpened as we use it and then do a bit of one-on-one, as each individual's tool requires sharpening. There is a lot of information to cover in a short period of time. Some students may be overwhelmed with the amount of material covered, so try to be sensitive to their needs.

Sunday Evening Orientation:

1. Introduce yourself and provide a brief outline of the course. If possible, provide a handout that describes the class and what is being taught. This handout should include a picture of a lathe with its various parts named.
2. Have each student introduce themselves and state their interest and experience in woodturning and anything else that they wish to share. If they have brought samples of their turning, take a quick look at them. Any critique at this point should be gentle and encouraging.
3. This is a good time to do a brief sharpening demonstration that goes over how to sharpen the tools that we will be using in the class. See handouts titled "Thoughts on Sharpening," "Sharpening Demo," and "Sharpening For Woodturners." Sometimes, once class gets rolling, it is hard to stop class to demonstrate sharpening. My thought is that by doing the sharpening demonstration during the orientation session, sharpening does not get overlooked. Then during class if a student's tool needs sharpening, the instructor can show the student how to sharpen the tool and later in the week the instructor can let the student do the sharpening with guidance from the instructor. ■

SESSIONS

Session 1:

Part 1: Bead and Cove Stick

The purpose of this session is to practice tool techniques and to develop turning skills without the worry of damaging a project. Body positioning and movement through the various cuts can be developed. The three basic cuts in woodturning, bead (convex cut), cove (concave cut) and the flat or filet (straight cut) will be taught and practiced while turning a bead and cove stick.

Part 2: Projects Using Beads and Coves

This session begins with a simple project, such as a weed pot, mallet, candlestick, honey dipper, toy soldier/snowman/angel ornament, etc. For a 6-session series of classes, I like to have the students turn a tool handle and then, using a ¼" piece of round HSS bar stock, grind a pyramid (point tool) on one end and a skew on the other end. I teach how this tool is used in sessions 4 and 5. This would also be a good time to briefly touch on sharpening techniques.

Session 2: Facing Cut, Convex Cut and Concave Curves Exercise

In this session we delve further into the use of the spindle gouge, as we explore its use in end-grain hollowing and the very useful facing cut across end grain. This exercise makes use of the ⅜" spindle gouge and is followed by a project such as a goblet, a box, or a birdhouse ornament. In this session chucks are introduced by using a compression foot to hold the work in the lathe.

Session 3: Hollowing Project

This session gives students some experience with the skills and techniques for turning and hollowing vessels. Possible projects are a hollow globe with an icicle ornament or a small hollow form. This session introduces a variety of hollowing tools and methods.

Session 4: Faceplate or Side Grain Turning Using Dry Wood

Repeat facing cut, convex cut, and concave cut exercise, using a ⅜" bowl gouge. To practice the concave and convex cuts and to practice shaping the ogee cuts, sometimes used in faceplate work. This exercise also provides a good review of some of the basic gouge techniques. This short exercise is followed by a project such as a platter or shallow bowl using dry wood. This might be a good time to discuss bandsaw safety if you use a bandsaw to cut the platter/shallow blank into a circle. This session also introduces using a chuck to hold the work in an expansion foot. Bandsaw safety and use is explained while preparing a blank for turning.

Session 5: Turning Green Wood

It is now time for the students to experience the fun and pleasure found when turning green wood. Projects include turning a bowl or natural edge bowl from green wood. Before beginning this project, try doing a couple of tool technique practice exercises. One of the best exercises for improving bowl gouge skills is to mount a blank of wood on a screw chuck and just waste it away, practicing shaping the outside of a bowl using both the push cut and the pull cut. Another good exercise is to mount a waste blank on the lathe and practice hollowing it with a bowl gouge with a side grind (David Ellsworth grind, Celtic grind, Irish grind, etc.) and one with the traditional grind that has a small micro bevel to enable it to undercut the rim or to make tight curves on the inside of bowls. A discussion on finding and preparing green wood for turning should involve proper chainsaw safety and how to prepare and preserve the green wood for turning.

Session 6: Discovering and Exploring Shape and Form

This session is intended for intermediate to advanced students. Short exercises will help the student to develop a sense of what makes a good shape and form. Basic principles of design will be discussed, with student participation and feed-back through class critiques of their work. If time allows, surface ornamentation such as coloring and texturing may be added to the skills being taught. Student participation is a critical element of this session. ■

LET'S GO FOR A SPIN
SESSION 1

AAW EDUCATION

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THE BEAD AND COVE STICK

Tools and Materials:

Faceshield
3" × 3" × 9" blank, wet or dry, in good condition with no checks or large knots. (I recommend maple or poplar)
1¼" spindle roughing gouge recommended (although any spindle roughing gouge will suffice)
⅜" beading and parting tool (optional)
¼" parting tool
¾" skew
⅜" spindle gouge
Bearing (live) center
Drive center (I prefer to use a ⅞" steb center for safety) or a safety center

Course Introduction:

If this is the first time that you have met with the class, introduce yourself and provide a brief outline of the six-session course. Provide a handout at the beginning of each session which describes what is to be taught. Have each student introduce himself and share with the group his experience in woodturning, what type of turning interests him, and anything else that he wishes to share. If students brought samples of their turning with them, take a quick look at them. Any critique at this point should be encouraging. Session 1 should be a day-long class possibly titled " Introduction to Woodturning" or "Woodturning 101." I also have found that just wasting away wood, practicing beads and coves, leaves students at the end of the session wondering if they learned anything at all. By adding a simple project, they all go home with a sense of accomplishment and something that they can show off.

Session Introduction:

I feel that if one wants to learn how to turn, then the bead and cove stick is the place to start. Personally I prefer not to let first-time students begin their turning experience by turning bowls. I think that it is a bit dangerous for a first-time student to try to turn an often unbalanced bowl blank with a tool that they have no experience in using. The result can be pretty scary. I am reminded of the experience my friend had the first time he took a turning class. He had mounted a half log on the lathe as instructed. Not only did he have the lathe speed too high, but he also just stuck the bowl gouge straight into the bowl blank. The end result was that the half log became airborne and flew across the shop, not only scaring him all of the other students in the class as well. Not what I would consider a good introduction to woodturning. Be sure to emphasize safety by requiring all students to wear a FACESHIELD, by repeating the A, B, C rule (Anchor, Bevel, Cut), and proper lathe speed. Try to keep the class moving at good pace and above all make sure that they are having fun.

Note: Recently I have decided to skip the beading and parting tool segment, as too many of my beginning students were getting frustrated and learning seemed to stop. This is most especially true with those students who have a perfectionist nature as they feel that they must master the beading and parting tool even though it was only meant to be used as a teaching aid and mastery of its use was and is not necessary to be able to learn to turn. I used the beading and parting tool mainly as a means to help students learn to move their wrists and body when turning, as they receive instant feedback in terms of a nasty catch when they do not rotate their wrist and the tool through the cut. It is a very effective teaching method, but there is the risk that students will get too frustrated or take it too seriously and may never recover from the lesson. It is worth reading through the lesson though, as there may be some useful tips in the lesson that will help later in the class session.

The use of the ⅜" beading and parting tool to turn beads is a very effective way to build the mental and muscle memory of turning your wrist and rotating the tool through the cut. Not only are you forced to preload your wrist, twist your hips, or move your body while rotating the cutting edge through the cut, but you also get instant feedback when you are not using the tool properly. Stuart Batty has used this method to develop the mental and muscle memory required to turn round beads. I have seen how rapidly students learn to use the movement of their wrists and body to turn proper beads using Stuart's method of starting out with the beading and parting tool. I suspect that this method works better for more experienced turners than for raw beginners. Another benefit is that it reduces the learning curve substantially. It may be necessary to limit the amount of time students spend using the ⅜" beading and parting tool to practice turning beads in order to minimize their frustration. ▸

Note: If students seem to be getting frustrated, by all means move on to the ⅜" spindle gouge to finish turning beads or just skip the beading and parting tool altogether.

Demonstration:

1. As you are preparing to mount your blank in the lathe, briefly touch on safety procedures and the parts of the lathe. From here on out, every time you pick up a new tool or touch another lathe part or accessory, give its name and a brief description of its use. Remember to emphasize the importance of proper lathe speed at this time and to show the students how to change the lathe's speed.

   The object here is to get the students turning as soon as possible and to minimize the time spent lecturing and demonstrating.

   At this point you may want to refer to the handout on turning a bead and cove stick.

2. With the blank now mounted, pick up the spindle roughing gouge and give a quick and informative description of the tool and how it is used and sharpened. Be sure to emphasize that the spindle roughing gouge is only used for spindle turning (between centers work when the grain of the blank is parallel to the bed of the lathe), as the tang can snap if used for side grain/faceplate/bowl turning, or the tool itself may be thrown from the lathe and hit the turner in the face.

3. Rough turn the blank to a cylinder, stopping occasionally to check for any questions the students might have. It often helps to tell the students that there are no dumb questions except the one they needed to ask and did not ask.

4. As you are roughing out the blank, describe how the tool is presented to the wood and how it is held and used. For instance:

   The tool is at your side with your arms tight to your body and the tool is centered on the workpiece, not your body. The left hand is touching the toolrest (also referred to as the hand rest) and the thumb is putting downward pressure onto the toolrest. The right hand is holding the bottom of the handle with the right thumb on top of the handle in order to put downward pressure onto the toolrest. The handle is dropped down farther than you think it needs to be, so that the heel of the bevel gently touches the wood first. (This would be a good time to discuss the bevel and describe the heel and toe and to point out the flute.) Once the heel of the bevel makes contact with the wood in a non-cutting position, the handle is slowly raised and the handle is drawn back slightly so as to minimize the pressure of the tool onto the wood. Once the toe of the roughing gouge begins to cut, roll the flute in the direction of the cut and slide the tool across the toolrest in the direction of the cut. Be sure to emphasize that the tool must make metal-to-metal contact with the toolrest at all times before the tool touches the wood. The tool is then moved along the toolrest by shifting your weight from side to side while keeping your arms close to your body. For speedy roughing, the flute is in the 12 o'clock position and the tool itself is 90 degrees to the blank. As the blank is rounded down, the tool and

Note: I prefer to use a 1¼" spindle roughing gouge, but a ¾" spindle roughing gouge will do just fine. Emphasize that the tool must always make contact with the toolrest before it contacts the wood. Remember the ABC rule of woodturning: Anchor, Bevel and Cut. Also mention that the tool handle rests on the hip or there-about and that your arms are tucked near your body so that it is your body movement that moves the tool through the cut. The most effective and controlled roughing out method is done using the underhanded grip on the gouge.

Now is the time to mention the 5 moves required to turn a round bead.

1. **The tool handle can move up and down to control the amount of cut.**
2. **The tool handle can move right to left to allow for the bevel to guide the cutting edge of the tool through the cut, just barely grazing the surface of the blank mounted in the lathe, to help improve the quality of the cut.**
3. **The movement of the tool sliding across the toolrest in the direction of the cut.**
4. **The rotating of the flute in the direction of the cut from the 1 o'clock or 11 o'clock position to the 3 o'clock or 9 o'clock position as the cutting edge rounds over the bead, so as to prevent a catch on the unsupported edge.**
5. **The last movement that I have been able to define is the subtle feeding of the tool into the cut as it nears the bottom of the bead or cove on the final passes.**

The above movements are best done with your arms close to your body and by shifting your weight from your left foot to your right foot or vice versa, or by twisting your hips. Del Stubbs refers to this body movement, as the woodturner's dance in his video on bowl turning.

the flute are rotated in the direction of the cut for a smoother finish. The bevel is gently touching the surface of the work and is used as a guide for the cutting edge. The tool does not need to be pushed into the wood but rather, using the bevel as a guide and pointing the bevel in the direction of the cut, it gently slides across the surface of the blank in the direction of the cut.

Project:

1. Once the blank has been turned to a cylinder, have the students go to their lathes and turn their blanks to a cylinder. If you are working with beginners, be sure to check the lathes for proper speed and that the blank is mounted properly, before each student turns on the lathe.

Note: Make sure that all students are wearing eye protection, preferably a faceshield, as it affords the best protection. In a classroom situation a faceshield should be required at all times when turning on the lathe. The instructor should wear theirs to set a good example for the students!

2. Keep a keen eye on the students and remind them to drop the handle of the roughing gouge so that the heel of the bevel gently touches the surface of the blank and that as the tool handle is raised to find the cut, the tool is slightly drawn back to minimize the pressure of the bevel onto the work piece. We want to gently glide the bevel across the surface of the blank and we do not want to put pressure onto the blank, as this will increase vibration. Also, the tool does not need to be held in a death grip, as the tighter you hold the tool, the less control you have and the more pressure is put onto the work piece. Try to emphasize the open flute grip as opposed to the overhand grip.
3. As we want to maximize the amount of wood left for practicing beads and coves, be sure the students stop rounding the blank when the flats are removed and the blank has been turned to a cylinder.
4. Once the majority of the students have reached the cylinder stage, stop them all and go on to the next step.
5. Repeat the proper use of the roughing gouge and once again go over the 5 moves. Now is the time to show how one can use the flat side of the 1¼" roughing gouge to make a planing cut that is similar in quality to the planing cut done with a skew. By setting the roughing gouge on the flat side (right side of flute) with the tool handle pointing in the direction of the cut (in this case pointing toward the headstock), with the cutting edge resting on the bevel and the flat at roughly a 45-degree angle to the axis of the lathe similar to the position that a skew would be in if doing a planing cut. Move the handle up and down slightly and in toward the tailstock or away from the tailstock until a nice smooth cut is achieved on the flat edge of the gouge. Now slide the tool across the surface of the blank toward the headstock taking a nice slicing cut. If the cut gets choppy, gently get back onto using the bevel as a guide by shifting the handle toward the tailstock thereby getting the bevel back in contact with the surface of the blank.
6. Now introduce the skew. Once again describe how it is sharpened, the suggested angle of the skew, and suggested bevel angles.
7. Use the skew to make the same slicing cut that you just did with the roughing gouge, in order to compare the difference in the quality of the cuts between the two tools. I usually use the skew on one half of the blank so that the two cuts can be compared. Be sure to describe how the skew is used and positioned to make this slicing cut and remind the students that as long as the cut remains on the bottom half of the cutting edge and that the heel is not cutting into the wood, that a very nice smooth cut will be the result. Once again the tool will make bevel contact and then be lifted into the cut. To do this, the bottom of the leading side of the tool is in contact with the toolrest and the trailing side is raised off the toolrest approximately ¼" to ⅜" and the bevel slides across the surface of the work, taking a nice slicing cut. The cutting edge of the blade is presented at a 45-degree angle to the axis of the lathe. The wood is being cut below the center of the cutting edge, but above the heel (sometimes referred to as the short point) and the tool just slides across the work nice and gently. I sometimes raise the toolrest a tad so that the skew is cutting higher on the tangent of the cylinder or above the most protruding part of the cylinder.
8. Now that the skew has been introduced, use it to make the V cuts for the beads. Next use a story stick to mark the lines for the outside edges of the beads. I generally have the students turn just two beads at a time, as we are not doing production work and I want everyone to get a chance to turn at least two ▸

beads before we move on to the next step. This is very important as time is limited and some students will spend too much time making the V cuts and not get started on turning the beads. Once the students have turned two beads, have them continue practicing turning beads and V cuts until the majority of students are ready for the next step.

This might be a good time to explain that a bead is one-half of a circle and that the depth of the V cut should be just shy of the radius of the bead and that the tool should move across the toolrest this same distance, in order not to shrink the width of the bead. Do not forget to mention that beads are turned from the outside back to the centerline.

Note: You may want to skip this next step, that of using the beading and parting tool, and move on to the ⅜" spindle gouge, as the beading and parting tool can be a bit frustrating for some students.

9. Next I go on to show the class how to use the ⅜" beading and parting tool to turn beads. I generally do not like to show more than three steps at a time so as to avoid confusion, but in this case I do not want to interrupt their turning too often. I tend to repeat the proper use of the beading and parting tool quite often, as the finer points of its use are not really apparent until one has tried to use it. Repeating its use often helps to reinforce the steps involved, as they are the same steps used when turning beads with a spindle gouge or a skew for that matter.

   You may be wondering why to use the beading and parting tool to teach the turning of beads. The answer is a simple one. When I assisted Stuart Batty's workshop for our chapter in my studio, I noticed that he had the students practice turning beads with the beading and parting tool and by the end of the session, almost all of the students were able to turn round beads with a gouge. By using the beading and parting tool to turn beads, the students get instant feedback when they are not rotating their wrists or lifting up the handle properly and sliding the tool along the toolrest while turning a bead. If not used properly, the tool responds with an instant dig in or catch that usually results in the destruction of the potential bead and the student must move on to the next bead. When using this tool to teach the wrist and body movement necessary when turning beads, keep a close eye on the students' frustration level. The object here is not to frustrate the students but to speed up the learning process. When I first used this approach, I let the students practice using the tool for over 1 ½ hours. The frustration level was high and some students have still not recovered from the experience. I now keep a careful eye on their wrist movement and body movement and as soon as I see them rotating their wrists and understanding most of the movements involved, I stop them and we move on to the ⅜" spindle gouge. This usually takes about 30 minutes. The students are much happier and the beads of sweat that used to appear on their foreheads due to frustration are no longer there. Therefore you may want to skip the beading and parting tool lesson.

10. Once the majority of students have shown some understanding of the movements involved when using the beading and parting tool to turn beads, it is time to teach them how to use the ⅜" spindle gouge to turn beads.

Start of ⅜" Spindle Gouge Lesson:

11. Before demonstrating the use of the ⅜" spindle gouge, I demonstrate several ways to turn down the practice beads to start over again. I use the flat edge of the roughing gouge to do a peeling cut, I then demonstrate the use of the skew when doing a peeling cut, and finally, if they are frustrated with the beading and parting tool, I show them how it is used to do a peeling cut or parting cut. At this time I reemphasize that the use of the beading and parting tool to turn beads was for training purposes and that in the future, unless desiring to show off to fellow turners, it would best be used as a parting tool.

12. While demonstrating how to use the ⅜" spindle gouge to turn beads, go over the five moves involved in turning a bead. When turning the side of the bead on the tailstock side, start with the flute at the 2 o'clock position and the tool handle pointing in the direction of the cut, thus pointing the bevel in the direction of the cut. The handle is down and pointing up in the direction of the cut. As the bead is rolled, the handle is raised and the wrist is rotated, thereby turning the flute toward the three o'clock or closed position as the bead is formed. The first couple of cuts do not involve much movement, but it is essential that the last cut finishes with the flute in the closed position (3 o'clock) and the bevel pointed at almost 90 degrees to the axis of the lathe.

This is most easily done by starting with your body perpendicular to the lathe and rotating your body toward the tailstock as the tool is rotated through the cut. For the headstock side of the bead, start with the body parallel to the lathe and rotate or twist the hips away from the lathe toward the headstock, thus getting your body out of the way of the tool handle so that on the final pass the bevel, once it reaches the bottom of the bead, will be close to 90 degrees to the axis of the lathe.

13. Once again have the students turn only two beads at a time and then continue turning beads once they have turned the first two beads. The idea is for everyone, including the slower students, to have the opportunity to turn a couple of beads before the class must move on. Remember this is not production work, so it is best to do one or two beads at a time and then continue on turning beads until the class is ready for the next step.

Note: Be sure the students understand how to turn two beads and then continue on turning beads until it is time for the next step. Also emphasize that it is practice, practice, and more practice, which will make turning easier and more productive.

14. The next step is to teach the class how to turn coves and flats or fillets. For the most part, students find coves easier to turn, as there is less body movement involved when turning coves. A cove is essentially the opposite of a bead or it can be seen as the other half of the circle. To turn a cove, one method is to work from the centerline out, just as in making the V cuts. As a cove is the opposite of a bead, the bevel is pointed 90 degrees to the axis of the lathe and the handle is in the horizontal position with the flute in the closed or slightly open position around 3 or 9 on the clock. To start, drop the handle and with the flute in the closed (3 o'clock or 9 o'clock) position, lift the handle, feeding the cutting edge into the cut in an arching motion to slice into the wood, as when using the skew for making V cuts. Then immediately upon breaking the surface enough for the wood to support the bevel, begin to roll the flute open slightly while sliding the cutting edge through the cut and down the slope to the bottom center of the cove. Stop at the bottom center of the cove. Do not slide the cutting edge across the bottom and risk hitting the end grain on the other side of the cove. Once the cut is started and there is a place to guide the bevel, the handle is either pushed down and away from you or pulled down and toward you, depending upon which side of the cove you are turning. At the same time the flute is rotated to the open position. The idea is to drop the handle as you are going through the cut so that the cutting edge is no longer in contact with the wood at the bottom of the cove. Try not to run across the bottom so that you will not risk the side of the gouge making contact with the other side of the cove, as it will cause a catch due to the unsupported edge making contact and pulling the tool up the other side, with a nasty dig-in being the result. Just as in the V cut, you work your way first down one side and then down the other, trying to keep the cove symmetrical. The motion is much the same as when scooping out ice cream.

Note: the first few cuts are shallow so the flute cannot be opened very much. Just as with the V cut, the cove is opened up from the center of the cove out toward the edge of the cove and down toward the bottom of the cove, all the while maintaining bevel contact and cutting with the very center tip of the gouge, keeping the wings from contacting the wood. As in all woodturning, one must cut from the high point to the low point.

15. After repeating the process for turning coves several times, it is time to demonstrate the cutting of the fillet or flat. This is done by pointing the bevel once again in the direction of the cut with the flute in the 9 o'clock or 3 o'clock position (closed position) and pointing in the direction of the cut, which in this case is parallel to the axis of the lathe or the blank.

    Keep an eye on the diameter of everyone's workpiece, because if it gets too thin, it is easy for a student to drop his or her tool below center, causing the workpiece to pop off the lathe.

16. Let them practice these cuts, stopping from time to time to repeat the cove demonstration if an individual is having trouble or showing signs of confusion. Invite the others to watch the demonstration. We have now finished the practice exercise and are ready to move on to Part 2, which entails the making of a simple project. Pick a project that combines the use of beads, coves, and flats to make an object that will give the students a sense of accomplishment. ■

BEAD AND COVE STICK: WHERE IT ALL BEGINS

Tools and Materials:

Faceshield
⅜" beading and parting tool (optional)
¼" parting tool
⅜" spindle gouge
1¼" spindle roughing gouge
¾" spindle roughing gouge optional
¾" skew
¾" steb center or safety center
Bearing center with cone
3" × 3" × 9" wood blank

Introduction:

The purpose of turning a bead and cove stick is to practice tool techniques and to develop your turning skills without the worry of damaging your project. Body position and movement through the various cuts can be developed. Concentration should be focused on the proper placement of the tool, how the tool is held in your hands, and the proper position of your hands and arms. There are only three cuts that you can make in woodturning, which are the bead or convex curve, the cove or concave curve, and the flat/fillet or straight cut. Most everything that is turned on a lathe is made up from these three cuts or shapes.

The beginning and experienced turner should both start out by turning a bead and cove stick with a ⅜" beading and parting tool followed by a ⅜" spindle gouge and then finally with the skew. The theory behind learning to turn beads with a ⅜" beading and parting tool is that it provides you with the muscle and mental memory that will aid you in other types of turning. The use of the beading and parting tool requires precise wrist and body movement in order to prevent a catch. This is a fun project that may take many attempts to achieve perfection. It is also a good exercise even after one has become an accomplished turner. It is similar to going to the driving range before beginning a round of golf. It is a simple exercise that helps to improve your skills and tool control.

For a more detailed description of proper tool techniques, refer to the handout titled "Tips and Techniques for Using a Spindle Gouge" or the handout titled "Tool Techniques for Bowl Turning."

Roughing Out the Cylinder:

1. Select a piece of wood approximately 3" × 3" × 9". Green wood is fine for this project.
2. Mark the centers on both ends of the blank. Use a scratch awl or other pointed object to make a locating hole in the center of both ends.
3. Place ⅞" steb center, 4-prong drive center, or safety center and a revolving (live) center into the tailstock. Insert the blank and bring up the tailstock. Tighten the work between the headstock and tailstock until it is tight, then back off ¼ turn on the tailstock and tighten to firm again. This method helps to avoid putting excessive pressure on the bearings in the head stock, which would shorten the life of the lathe's bearings.
4. Position the toolrest so that the tool will be cutting at the center of the work or slightly above center, in other words, at or above the most protruding part of the blank (the radial mean in math terms). The end of the rest should extend beyond the end of the blank by approximately ¾" or the width of your finger and the rest should be approximately ¼" to ⅛" from the blank. Using the hand wheel turn the blank by hand to be sure that it does not hit the toolrest.
5. Using a spindle roughing gouge, turn the blank to a cylinder. Remember the A, B, C rule of woodturning. (A) Anchor; tool must make metal-to-metal contact with the toolrest, (B) Bevel; touch the heel of the bevel to the work and raise the handle up until the tool starts to (C) cut. The back of the flute can be rested on the top of the spinning work to check to see if the blank is round. If it bounces, the blank is not smooth. If it runs smoothly, the blank has been turned to a cylinder. ▸

Note: Be sure to emphasize that a spindle roughing gouge is only to be used when the direction of the grain of the material being turned is running parallel to the bed of the lathe.

Note: This would be a good time to mention the 5 movements that a turning tool goes through when turning.

1. The tool handle can move up and down to control the amount of cut.
2. The tool handle pointing in the direction of the cut to allow for the bevel to glide along the surface of the wood with the bevel in contact with the surface but without pressure on the bevel and with the bevel supporting the cutting edge, just barely grazing the surface of the blank mounted in the lathe, to help improve the quality of the cut.
3. The movement of the tool sliding across the toolrest in the direction of the cut.
4. The rotating of the flute in the direction of the cut from the 1 o'clock or 11 o'clock position to the 3 o'clock or 9 o'clock position as the cutting edge rounds over the bead so as to prevent a catch on the unsupported edge.
5. The last movement that I have been able to define is the subtle feeding of the tool into the cut or off the toolrest as it nears the bottom of the bead or cove on the final passes.

The above movements are best done with your arms close to your body and by shifting your weight from your left foot to your right foot or vice versa, or by twisting your hips away from or toward the lathe. Del Stubbs refers to this body movement as the woodturner's dance in his video on bowl turning.

6. Use a tape measure or a story stick to mark out ¾" spaces for the beads. I like to start out by turning a full stick of beads. It may be a good idea not to mark the whole blank at this point as all those lines can be very confusing. For the beginner, I would suggest turning one or two beads at a time and then turning two more.

7. Once the outer edges of the beads are marked, I make a thick line to represent the center of the bead. Generally I make the V-cuts first, then mark for the center of the bead, as sometimes I take a bit too much off one side of the lines. I use a thicker line for two reasons: the first is that it points out where the beads will be turned and the other is that if I am careless when making the final cut on one side of the bead, hopefully I will still have some of my reference line left to give me the symmetry I need to turn the beads symmetrically.

The skew and V-cuts:

8. The skew is the best tool for making V-cuts to open up a space for the spindle gouge or the beading and parting tool to cut into when turning a bead, as these tools need an open space to work into. With the long point (toe) of the skew make the first cut to one side of the line with the handle lowered and lifted into the cut in a slicing motion. The blade is perpendicular to the toolrest in the 12 o'clock position and is lifted straight up until the handle is in the horizontal position. This first cut will just barely break the surface and will only cut about a 1/16" deep as the shape of the bevels act like a wedge and will not allow the cutting edge to penetrate any deeper. The second cut is to the other side of the line and should only take a sliver (1/32") of a cut as the heavier the cut, the more force is necessary to move the cutting edge through the cut. The tool handle is angled into the cut so that the bevel points in the direction of the cut and the blade is in the 12 o'clock position and the handle is raised from below horizontal to the horizontal position, moving the toe in a slicing motion through the cut. Once the handle is in the horizontal position, the cut is finished and the edge is drawn straight back and out of the cut. Now work one side, then the other as you open up the space between the beads. The object is to open up the V notch wider and deeper with each cut until there is enough room for the gouge to turn a bead. For a ¾" wide bead the depth of the V cut should be about a ¼" deep.

Beading and Parting Tool:

Note: I have recently decided to skip this section on turning beads with a beading and parting tool as too many of my beginning students were getting far too frustrated and the learning process seemed to come to a halt. I think that it would be an effective teaching approach for slightly more experienced students.

1. Start by using a skew to make V cuts at the outer edges of the beads. Starting on the outer edge of

the right side (tailstock side) of the bead, cut off the outer corner of the bead with the ⅜" beading and parting tool. Work your way back to the thick center line taking light cuts while rotating the point of the beading tool and rolling, lifting, and swinging the handle to the right, ensuring the cutting action is taking place at the tip of the tool. This is achieved by pre-loading your wrist before turning the bead. When turning the side of the bead toward the tailstock, the index finger is placed on top of the shaft and then rotated 90 degrees toward the tailstock while you move the parting tool sideways along the tool rest as you are rotating the tip of the parting tool through the cut. The parting tool will slide across the toolrest at about the same distance as half the width of the bead. As the bevel always points in the direction of the cut, the tool handle has to follow the cutting edge around the cut in order to achieve a rounded bead. If the handle is not rotated through the cut, the bead will remain flat and angled from the top to the center, creating a diamond-shaped bead, or worse, you may have a nasty catch. If you see any shavings or powder building up behind the cutting edge, you'd best turn your wrist to rotate the blade away from the bead in order to keep the cut at the very tip of the tool.

Note: Hold the tools with a light touch, as the harder you grip the tools, the harder they are to control. I know this seems counter-intuitive but a light touch on the tools is far more effective and the tools are actually easier to control and move more easily through the various cuts than if held in a white-knuckle death grip.

2. To cut the side of the bead toward the headstock, place your index finger on the side of the shaft so that the wrist will rotate the hand from an open position to a closed position. To turn the left side of the bead (headstock side), start with the point of the beading tool at the outer edge of the bead and take short, light cuts getting progressively longer as you work your way down and back toward the centerline at the top of the bead and down to the bottom of the bead. I find it best to preload my wrist for turning beads by gripping the tool handle on the side with my wrist twisted, so that as I turn the bead, my wrist automatically rotates with the cut to help rotate the cutting edge and the flute in the proper direction. Once again the tool handle will rotate from being down around your hip to roughly a horizontal position at the end of the cut.

Note: There is an easier method for turning beads with the beading and parting tool that starts with the beading and parting tool's handle in the horizontal position and the wrist and tool are twisted through the cut, with the front edge of the parting tool finishing the cut in the vertical position. I prefer to use the technique that requires more movement of the handle and the body through the cut, as this method helps students to develop the muscle and mental memory of how the tool moves through the cut, which will help them better understand the movement of the bevel through the cut and gain a better understanding of the dynamics of tool, bevel, and body movement in the turning process.

⅜" Spindle Gouge:

1. Using a story stick, mark the lines for the beads. Start by using the skew to make V cuts on the lines you just marked. Mark and turn only two beads at one time and then continue turning beads. Next be sure to mark the center lines of the beads to help maintain the symmetry of the beads. To turn beads on the tailstock side of the center line, hold the tool with your right index finger pointing down the flute in order to pre-load your wrist, touch the heel of the bevel to the blank with the flute slightly open in the 1 o'clock position and gently lift the handle as you draw it back very slightly so as not to put pressure on the bevel until the tool begins to cut. Starting on the outer edge of the right side (tailstock side) of the bead, make a small cut with the ⅜" detail gouge to trim off the outer corner of the bead. Work your way back to the thick center line and down to the bottom of the bead, taking light cuts while rotating the flute and rolling, lifting, and swinging the handle to the right, ensuring the cutting action is taking place below the tip of the tool. As the bevel always points in the direction of the cut, the tool handle has to follow the cutting edge of the gouge around the cut in order to achieve a rounded bead. If the handle is not rotated through the cut, the bead will remain flat and angled from the top to the center, creating a diamond-shaped bead. The actual cut is at the center of the cutting edge or on the downhill side of center at the tip of the flute. If the flute is not moved from the open position to ▸

the closed position with the cut on the downhill side of center, the cut will move up the edge to an unsupported position, causing a nasty catch. To cut the left side of the bead, start with the index finger of the right hand on the side of the flute to pre-load your wrist. Once again present the tool to the wood by touching the heel of the bevel to the wood and then raising the handle slightly until the edge begins to cut with the tool on its back with the flute in the slightly open position (11 o'clock position). Then starting at the outer edge of the cut, take small, light cuts working your way back to the top center of the bead and down to the bottom of the bead. Each cut should get longer and require more rotation of the flute and the handle to the left as the bead gets closer to its final shape and size. Remember to pre-load your wrist for these cuts. The position of the gouge at the finish of the cut should be with the flute closed (9 o'clock position) and the handle in the horizontal or slightly above horizontal position. Continue practicing cutting beads across the length of the stick.

Note: There is an easier way to turn beads with a spindle gouge by keeping the tool handle in the horizontal position and by rolling the flute from the 1 o'clock or slightly open position to the closed or 2 o'clock position and twisting your wrist as you traverse the toolrest in the direction of the cut. As most of my students are more interested in turning bowls than anything else, I want the students to get a feel for the movement of the tool handle through the cut as it guides the bevel in the direction of the cut. I think that it is beneficial for students to understand this connection between the movement of the handle and the direction of the bevel as the bevel always points in the direction of the cut. I also would like students to get used to moving their bodies in tandem with the movement of the tool and the cutting edge and how they should all flow together for a very smooth and pleasing motion and cut.

Turning the Coves:

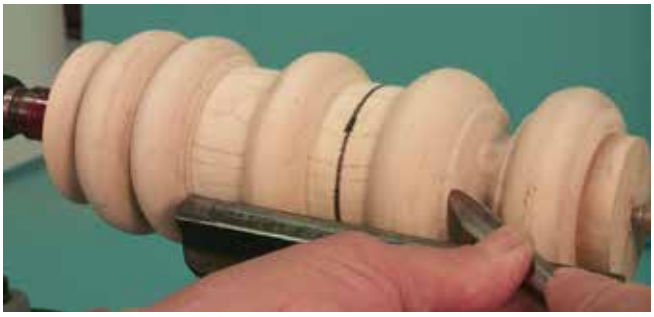
1. Use a parting tool, the side of the spindle roughing gouge or a skew to do a peeling cut to level or flatten every other bead. This will be where the coves will be turned.
2. Coves are turned with the opposite motion from the beads. To turn a cove, start with the flute closed and facing in the direction of the center of the intended cut. Lower the handle and raise it up into the cut in a slicing motion with the flute in the closed position (three o'clock position) This is similar to making a V cut with the skew. The starting cove cuts should be done with the bevel at right angles to the work and the flute in the closed position. The tendency for the tool to skate sideways across the work when first starting the cut must be considered. This can be overcome by first establishing a small cut to provide a place for the bevel to make contact with the surface and provide support for the cutting edge. This is achieved by placing your thumb firmly on the toolrest, where it acts as a stop preventing the gouge from skating sideways. With the thumb firmly positioned, the flute fully closed, and the handle below horizontal, raise the handle as the cutting edge begins to slice through the surface, then drop the handle and rotate the flute down and through the cut just as you would if you were scooping ice cream. Just as when you are turning a bead, the first cuts are short and move progressively out from the center and deeper into the cove (just the opposite of turning a bead). Cuts are started near the center of the intended cove and progress to the outer edges of the final cove. Be careful not to cut past the center of the bottom of the cove or a catch may occur. As you get

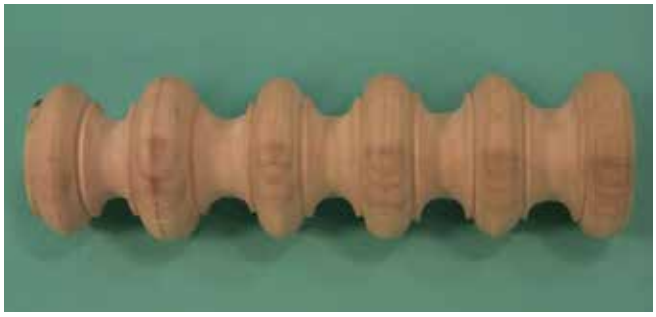




proficient at this cut, you may notice that it is just a drop and roll cut that slides up and over the middle of the cove.

3. Once the beads and coves have been cut, it is time to turn the fillets or flats that make them stand out and separate them from each other visually. The fillets are turned by using a spindle gouge or a skew and pointing the bevel parallel to the work. To use a gouge, the flute is in the closed position and the bevel is as close to parallel as possible without bumping your hand on the spinning work. The cut is at the center of the flute or on the downhill side of the center of the cutting edge of the gouge. The cut is started by gliding along the bevel as the flute is rotated slightly to start the cut and then pushed toward the bottom of the bead. The cut is then cleaned up by cutting the bottom of the bead and then the top of the flat until all signs of tear-out or ridges are removed.
4. Repeat cutting coves and fillets until the stick is a series of beads and coves. If you used a 3" diameter piece of wood, you may have enough material left to turn it to a cylinder again or just knock down the tops of the beads and then start all over. Once you have practiced making beads and coves with the spindle gouge, try making some beads with the skew and practice turning more coves with the spindle gouge.
5. Set aside the first completed bead and cove stick as a reference point for checking your future progress. ■





PROJECTS USING BEADS AND COVES

Tools and Materials:

Faceshield
1¼" roughing gouge
⅜" spindle gouge
¾" skew
Parting tool
For turning a tool handle:
1½" × 1½" × 9"-plus wood for a tool handle
¼" HSS bar stock
¼" drill bit
¼" collet (optional) with ferrule (optional depending upon design of collet)
½" drill bit or drill bit sized for collet mortise
For turning a weed pot or mallet: 3" × 3" × 8" +/- For weed pot, green with bark, or for a mallet, dry wood
For other simple projects: See handout materials list for honey dipper, Harry Potter wand, pen stick, candlestick, simple ornament, etc.

Introduction:

It is always a good idea to review some of the skills and techniques that have already been taught. Sometimes the light bulbs will begin to pop in students' minds as they get more familiar with the tools and machinery. After a brief period away from the lathe their minds sometimes free up and things become much clearer. I would begin this session with a quick overview of how to turn beads and coves.

When teaching a series of sessions or when teaching a week-long course at the John C. Campbell Folk School, I find that turning a tool handle and learning how to grind a point tool and a skew on a ¼" piece of round HSS bar stock is an excellent project. There is nothing like the satisfaction of making your own tool. Also it ensures that all students have used the grinder at least once. It provides them with some understanding of the how and why of sharpening. It also satisfies the project needs of turning a simple project that combines beads and coves to make a satisfying and useful project. I do not teach them how to use the point tool at this time, but rather I wait until Sessions 5 or 6 when we are doing faceplate work and the students have had some experience and understanding of how the more traditional turning tools are used. Any of the other simple projects can be turned in this session, such as a weed pot, honey dipper, candle stick, magic wand, simple spindle ornament (toy soldier ornament or snowman), etc. For more detailed instructions and materials list please refer to the appropriate handout in the project section of the manual.

The purpose of the tool project is to introduce the students to the grinder and how simple it is to create their own tools. It tends to de-mystify the sharpening process. One of the other results is boosting their confidence by allowing them to tell folks that they have made their own tools. In my first class at the John C. Campbell Folk School there were several women in the class, a few of whom had husbands in the advanced turning class next door. You should have seen the reaction of their husbands when the women showed up at dinner with turning tools that they had made themselves. It was all that my assistant and I could do to keep their husbands and the other students in the advanced class from invading our class. I am sure that the wives and other students had a wonderful and strong feeling of accomplishment.

Demonstration:

Note: Before starting the project it is a good idea to put a blank on the lathe and do a quick review of the skills and techniques that have been taught so far. Depending on the project chosen, this can be done as you demonstrate the turning of the project. It sometimes helps to use different words and methods of describing these techniques, as we all learn differently. Some of us learn through reading, some listening, some through observation, and most of us through actually doing the work.

I have chosen to describe the making of the point tool and the skew as the project for this session, but you can easily insert a different one from the project section of the manual.

If you are working with youth, pick a project that is of interest to them, such as a simple top or stick pen. Bonnie Klein has some excellent projects for kids. She suggested in one of her demos that just giving young children a roughing gouge and some colored pens was all they needed to have a wonderful time on the lathe. Check out Bonnie Klein's article in one of the *AW* Journals or her project book.

1. For tool handles not using a collet, drill a ¼" hole in the end of the tool handle blank as deep as possible so that the ¼" HSS bar stock will fit half the length of the bar into the handle and not stick out too far when the tool is used. I like to do this on the drill press. It can be done on the lathe, although most of my classes are taught using the small midi lathes and there is not enough room between centers to fit the drill chuck and bit to drill the hole in the handle. ▸

Note: If you are going to be using a collet, drill the appropriate size hole for the collet you are going to use before drilling the smaller hole for the bar stock. Then drill the ¼" hole for the bar stock centered in the mortise. If using a collet, I sometimes drill the hole for the bar stock slightly larger than the diameter of the bar stock (5/16" for ¼" bar stock) just in case my hole is off center a tad.

2. Now mount the handle blank between centers on the lathe using a cone center in the end where the hole was drilled or into the hole of the collet and a steb center or some other type of drive center in the end of the handle.

Note: If you are going to use a ferrule, you need to go ahead and turn the tenon for the ferrule and attach the ferrule and then insert the collet into the handle. I like to use the drill press as a press for this step. Be sure to use the outside edge of the drill press chuck or be sure that the jaws of the chuck are fully recessed so that they will not be harmed when pressing in the collet.

3. Rough turn the blank to a cylinder using the spindle roughing gouge.
4. If turning a handle that is going to receive a collet with a ferrule, using the ferrule, mark the width for the tenon that the ferrule is going to fit onto.

Note: Not all collets come with ferrules.

5. Turn the tenon for the ferrule and fit the ferrule to it and press the collet into the tool handle. Be sure that the ferrule is attached to the end of the handle and then push the collet into place. If the collet slips easily into the mortise, use some thick CA glue to help hold it in place. I have found that using the drill press as a press makes this procedure easier. You can also use your workbench vise.
6. Remount the blank and decide upon and mark the length of the handle.
7. Using a parting tool, turn down the waste side of the back end of the handle, leaving about ½" diameter or more of wood for support.
8. Now shape the handle to fit your hand and add a few details such as V cuts or beads, maybe burn in some lines with a burn-in wire. I sometimes briefly introduce the students to the use of the point tool. The point tool will be covered in more detail in the last two sessions.
9. Once you're satisfied with the shape and fit of the handle, sand it and then part it off the lathe. Apply your favorite finish, keeping in mind that the tool handle should not be too smooth or slick, as you want to be able to hold it steady.
10. Now insert the ¼" HSS bar into the ¼" hole in the end of the tool handle. Or if using a collet, insert the ¼" HSS bar stock into the collet and lock it in with the set screw.
11. It is now time to go to the grinder and make the point tool. Please refer to the handout in the projects section for one of the many methods for making a point tool. The method that I use is very simple and requires no measurement but instead relies on the best guess approach.
12. Once the students have ground their point tool, you can show them how to make a skew on the other end of the bar. Once again I have a simple approach that involves very little measurement. I sometimes wait until later sessions to teach students how to grind the skew. I generally teach the faster students and then let them help the other students. This method not only frees up my time but slows down the faster students, while at the same time helping to build up their confidence.
13. To make a skew, I start by using a protractor if available or by using a skew that has the suggested 70-degree angle across its face as a template. I then draw guide lines on the flat plate or toolrest on the grinder at 70 degrees on each side, one mark for each face of the skew. I then set the plate in the horizontal position and grind a 70-degree angle across the end of the ¼" bar. Once that has been done, the plate is readjusted to an angle so that the sides of the bar can be ground with approximately a 25-degree angle. This bevel angle can be achieved by grinding the bevel so that the length of the bevel is 1¾ to 2 times the thickness of the tool's steel. For instance a piece of ¼" bar stock would have a bevel length of approximately ½" to ⅝" when properly ground. It sometimes helps to use a properly ground skew to set this angle. Once the table is set, I proceed to grind one face of the tool. I use the side of my finger as a depth stop to run along the bottom of the table to keep the tool at the same distance from the wheel as I grind it down. I occasionally check my progress and cool the tool in water. Using the angle that was ground on the end of the tool, keep it perpendicular to the wheel and parallel to the 70-degree lines that were drawn on the table. I grind it almost halfway and then grind the other face. Try to keep the faces parallel. One of my students pointed out that as you grind the second face, you can see the flat beginning to form on the opposite edge and all you have to do is to keep this flat parallel to the front flat. Now check to see if the bevels are long enough to provide a sharp cutting edge. Readjust the table if necessary. It sometimes takes two or more tries to get the bevel angle the way you want it to be. All that is left is to hone the edges of the skew and try it out.
14. You now have two new hand-made tools that can be used in the next sessions and beyond. ■

TIPS AND TECHNIQUES FOR USING A SPINDLE GOUGE

Introduction:

On occasion I have taught this session as a full-day class to more experienced turners who want to improve their turning skills but feel too advanced to go back to the bead and cove stick.

The purpose of the following discussion is to describe in more detail some of the ways a spindle gouge is used to make a variety of cuts. In this handout I have tried to describe in words how the spindle gouge is moved through various cuts and how the turner's body is positioned and moves with the tool to facilitate the different cuts such as the convex curve (bead), the concave curve (cove), and the flat/fillet (straight) cuts. I have also added a section describing the use of the spindle gouge for hollowing end grain. This handout is designed to be a more thorough study of tool techniques and can presented after the bead-and-cove-stick exercise and project and used in conjunction with the goblet or box project exercise or it can be used as a stand-alone exercise and waste blocks can be wasted away while practicing the various cuts described below. As always, happy turning and I hope the information is helpful and more importantly helps to make your turning experience more enjoyable and less like work.

Spindle Roughing Gouge:

I prefer to rough out my spindles with a 1¼" spindle roughing gouge or a ¾" spindle roughing gouge. Roughing out can be accomplished with a spindle gouge but it takes a bit longer and the finished cuts are not as smooth. Used properly, a 1¼" roughing gouge can leave nearly the same finish as a skew.

Roughing Cuts: The cut is started approximately 2" in from the tailstock end and proceeds in multiple 2" increments, cutting toward the tailstock until approximately 3" from the headstock end of the blank, at which point the direction of cut is reversed toward the headstock. Remember your ABC's of woodturning—Anchor (tool is in contact with the tool rest), Bevel (bevel is in contact with the spinning wood without pressure on the blank) and finally C (cut, when the bevel is gently gliding across the blank and supporting the cut). These cuts are accomplished with the tool handle perpendicular to the blank and the end of the handle pointing up into the blank at approximately a 45 degree angle to ensure that when the cutting edge makes contact with the wood that the heel of the bevel makes contact with the wood first and the tool is not cutting. As the handle is raised up to start the cut, it is drawn back ever so slightly in order to minimize any pressure on the bevel. What we are after is bevel contact with the material but with very little pressure on the bevel. Hold the tool firmly but not tight, as in all turning the tool needs to be easily manipulated and this cannot be done with a tight, white-knuckle death grip on the tool. The feet should be spread apart and the body should be free to move with the cut. To achieve the most control, the flute of the tool is sandwiched between the thumb and fingers of the left hand using an open style grip. The thumb is exerting pressure down toward the tool rest and is gripping the flute against the fingers. With this grip it is very easy to rotate the flute a small amount to improve the angle of the flute in the cut, by moving it between the fingers. The right hand is holding the end of the handle with the right thumb on top, adding a bit of pressure down onto the toolrest and raises and lowers the handle to control the depth of the cut and the amount of pressure exerted on the bevel. The arms are resting against the body so that any movement of the body is reflected in the movement of the handle through the cut.

Various spindle gouges

Position of roughing gouge cut

Thus the woodturner's dance begins. The flute is in the fully opened position with the back of the tool making solid contact with the toolrest. The tool should always maintain contact with the toolrest. The heel of the bevel should make contact with the wood first, then slowly lift the handle up as you draw the tool back slightly to begin the cut. As the cut proceeds, point the tool in the direction of the cut and roll the flute slightly in the direction of the cut. The reason the blank is roughed out in this manner is to minimize the length of any long splinters that ▸

may be chipped out as a result of checking or other defects in the wood. This is known as the underhand method and is my preferred method, as the overhand method is more aggressive and does not allow for the free flow of chips.

Planing cut: Once the initial roughing out is completed, raise the handle to a more horizontal position, at approximately 45 degrees to the work piece so that the bevel is in contact with the cylinder with the flute open and the cutting edge at approximately 45 degrees to the cut. The cutting edge is in the same 45-degree position that a skew's cutting edge would be in to make this same planing cut. Slowly shift your weight back and forth so that the tool's handle moves in and out from the work while tweaking the angle of the flute and the bevel until it begins a nice slicing cut. Once a fine cut is established, move the tool across the work, gliding along the bevel and pointing the tool in the direction of the cut. This cut produces a finish cut that is similar to that achieved when doing a planing cut with a skew. This cut works well in both directions but you will find that for a right-handed person it is easier to slide the tool from the headstock end toward the tailstock end of the lathe, as it is easier to get your body out of the way of the tool handle going in this direction. For a left-handed person it is easier to go from the tailstock end toward the head stock end of the lathe. Shift your weight from your right foot to your left foot as you move the tool across the work toward the headstock.

Turning Beads:

For me the best gouge for turning beads is a ⅜" spindle gouge. To begin turning a bead, mark the outer edges of the bead using a story stick and a pencil or a tape measure. The next step is to make V-cuts on the pencil lines and then mark the center line of the top of the bead. With the back of the flute resting on the toolrest and open at approximately a 45-degree angle (1 o'clock position) pointing in the direction of the cut and the handle pointing up in the direction of the cut at a roughly a 45-degree angle. Begin the cut by first making contact with the heel of the bevel and then raising the handle until it starts to cut. The flute is held between the thumb and forefinger with the thumb exerting force down onto the toolrest and against the fingers.

This is a gentle relaxed grip similar to using a bridge when playing pool, which enables the rotating of the angle of the flute through the cut with ease and with very little resistance. Do not over-grip the tool, as too tight a grip limits the freedom of tool movement and produces a rougher cut. The tool handle is raised and the angle of the flute is adjusted so that the cut is occurring on the lower side of the flute just off center. The cut is started at the outer edge of the bead and is a small cut at first. Just easing the edge and beginning to round it over. Each successive cut is longer and requires more rotation of the flute, the handle, and the body in order to create a round bead as opposed to an angular bead. With the last cut, the flute will start in the open position and then proceed through an arc to the closed position with the handle ending up in the horizontal position and the bevel perpendicular to the blank. All of these movements can be visualized as parts of an arc or curve. The flute is rolling in an arc from 45 degrees to 90 degrees. The handle is rotating in an arc from 45 degrees to 90 degrees, which in turn causes the bevel to point in the direction of the cut. The bevel always points in the direction of the cut. Your body is also rotating in a parallel arc in order to roll the tool handle through its own arc.

Turning Coves:

The turning of coves is pretty much the exact opposite of turning beads. For most coves the cuts are started at the center of the cove and move out toward the outside and down toward the bottom of the cove. Cut one side of the cove then the other side, while avoiding crossing the center at the bottom of the cove. It is a good idea to work one side then the other to help maintain the symmetry of the cove. Repeat this process until the cove is complete. To turn a cove, start with a ⅜" detail gouge with the flute in the closed position (3 o'clock or 9 o'clock) facing the direction of the cut, the handle pointing up into the cut and the bevel at 90 degrees to the work. Your


Position of spindle roughing gouge for the planing cut


Start of bead cut


Halfway through bead cut


End of bead cut or bottom of bead


Starting a cove just off center


Top of cove cut


Bottom of cove cut or finished position


Turning a fillet with flute closed and only the tip cutting

thumb is stationary and applying force down onto the toolrest to prevent the tool from skidding across the work before it has a chance to cut a place for the bevel to rub.

Using a slicing motion similar to that of starting a V cut with a skew, begin the cut by raising the handle in a slicing motion as you arc the cutting edge into and through the cut in a slicing motion. Once you have entered the work deep enough to provide a place for the bevel to rest, begin to rotate the flute slightly at first to the open position as it rides down the cove. The movement of the handle through this cut will be to pull down and toward you or to be pushed down and away from you. This movement is similar to the movement used when scooping ice cream. Repeat this procedure on both sides of the cove. The final cut should be made with the bevel just off 90 degrees toward the inside of the cove and rolled through the cove, as was done with all the other cuts.

Turning Flats or Fillets:

Fillets help define the transition point between coves and beads. To cut a fillet with a ⅜" detail gouge, start with the bevel parallel with the ways of the lathe. With the flute closed and the tip of the cutting edge pointing in the direction of the cut, touch the heel of the bevel on the edge of the top of the cove and slowly bring the handle toward you until it begins to cut. Once it has cut in the side of the cove enough to provide a place on which to ride the bevel, move the tool parallel to the work and cut to the bottom end of the bead. Clean up the cut by touching up the bottom of the bead and then touching up the inner edge of the fillet.

End-Grain Turning:

The use of a spindle gouge for end-grain turning is a technique that has many benefits and uses. Lidded boxes and goblets are among two of the things can be hollowed with a detail gouge very quickly and efficiently. One need only attend the egg cup races at the Utah Woodturning Symposium to see how quickly a detail gouge can turn out an egg cup.

The blank is mounted to a faceplate or in a chuck with the grain running parallel to the bed of the lathe, as in between-centers turning. It is then rough-turned to a cylinder and the tail- stock is removed. Rough shape the outside of the cup section of the goblet, flower, or egg cup close to its final shape, leaving enough material behind the cup to support the work when end-grain hollowing. Then face off the top of the cup before hollowing. To face off the top, the toolrest is parallel to the lathe bed and the height is adjusted so that the tip of the spindle gouge with the tool handle in the horizontal position will be even with the center of the cup. With the flute in the closed position (3 o'clock position) touch the heel of the bevel to the surface, then shift your weight so that the bevel begins to make contact and the tool starts to cut at the very tip or just below the center of the tip. Adjust the flute to find the sweet part of the cut, then ease off the cut by resting gently on the heel of the bevel and slide or pull the cutting edge back beyond the shadow line. Now shift your body and the tool back into the cutting position that you just found, then assume the cutting position. Next gradually feed the tool while it is in the cutting position to begin the cut. Once you have cut in enough so that there is a place to ride the bevel, lean forward while aiming the tip of the gouge to the center of the cup and proceed to glide along the bevel using your thumb to push the bevel away from the surface to offset the fact that your right hand is putting ▸ excessive pressure on the bevel so as to have neutral pressure on the bevel as the cutting edge glides along the surface of the wood. When using a freshly sharpened tool and with very little pressure on the bevel, this cut will produce a very nice finished surface in end grain that will be a mirror smooth finish cut. The key here is to gently slide across the surface with bevel contact without pressure on the bevel. If you are getting chatter or the cut is very

noisy, that is a sign that there is too much force on the bevel onto the surface.

The next step is to set up the toolrest so that it is perpendicular to the ways of the lathe and adjusted so that when the spindle gouge is in contact with the rest and the handle is in a horizontal position parallel to the bed of the lathe, the center of the gouge lines up with the center of the blank. With the tool in the horizontal position and the flute in the fully open position, place your index finger along the top of the flute with the handle of the tool covered by your forearm. Having your forearm on top of the tool handle when hollowing with a gouge or a scraper helps to protect your face in the event of a catch, as your arm will prevent the tool handle from making contact with your face. Slowly push the tool straight into the work approximately ¼", keeping the handle level and horizontal. When doing this initial cut, hold the tool gently so that it will be able to automatically self-center. It you are getting a nubbin, it is a sign that the toolrest is too high or too low and the center of the tip is cutting below or above center. It could also be a sign that you are holding the tool way too tight and forcing it off center.

Method 1: Next rotate the flute to about 45 degrees, drop the handle a little bit, and push it a slight bit down and away from you and pull the tool out. The motion is push it straight in with the flute open, drop the handle and rotate the handle away from you, and roll the tool out of the cut. Repeat this cut until you have reached the finished depth of the goblet, box, or long stemmed flower. Once again this is a rotating motion, moving the tip upward through an arc on the inside of the piece.

Method 2: This method is similar to the one described above but rather than dropping the handle and cutting in the upper quadrant, the cutting edge is pulled straight across the surface and is pulled out of the cut as it approaches the outer edge of the hollowed out section of the cup. Once again the tool is in the horizontal position with the flute fully open (12 o'clock position) and is pushed into the work until it cuts in about ¼", and then the flute is rolled towards you until it is open at about a 45-degree angle (11 o'clock position) and then the cutting edge is dragged across the surface. As the cup is hollowed out deeper and deeper, the cutting edge will have to be pulled out slightly as it nears the outer edge so as not to engage the whole side of the spindle gouge, causing a nasty catch.

Note: I sometimes grind my spindle gouge with a shallower bevel angle such as 50 or 60 degrees and grind the shape of the tip a bit differently to make it more compatible with this end-grain hollowing cut. Ray Key has a signature gouge that he designed and that Craft Supplies Woodturners catalog sells for just this purpose.

A round-nose scraper is used for the final shaping and finish cuts inside the cup of the goblet or the inside of the box. My round-nose scraper has been ground partway along the left side to aid in cutting the inside of end-grain boxes or goblets (it is ground in a similar fashion to Bonnie Klein's Signature Box Scraper). The front bevel of the majority of my scrapers is ground at roughly 70 to 80 degrees. I have modified most of my scrapers by adding a slight 5- to 10- degree bevel on the top side of the scraper to create a negative rake.

To use a scraper properly, hold the handle in the horizontal position and tilt the cutting edge down into the material or tilt the scraping edge down and into the cut in a shear scrape position. You should never let the bevel contact the wood when using a scraper. Scrapers can be ground in any shape you desire. They come in a wide variety of shapes and sizes designed to do a particular cut or shape. Scrapers are a bit easier to use than gouges and other cutting tools, as body position is not as critical and you just remove the wood that needs to be removed to create your desired shape or form. In general, work that has been scraped requires a bit more sanding than work that has been cut with cutting tools such as gouges and skews. Scrapers are used most often for hollowing vessels. ■


Facing cut


Begin hollowing with flute at 12 o'clock


Round-nose scraper (top tool), middle and bottom ⅜" spindle gouge top view and side view

MAKE A POINT TOOL, SKEW CHISEL, SKEWGIE WITH HANDLE

Introduction & Thoughts on Design:

Learn how to turn a 6" to 8" tool handle suitable for a collet and ferrule. Then using a ¼" × 8" piece of HSS steel rod, make your own point tool on one end and a ¼" skew or skewgie on the other end. Proper use of the grinder and techniques for centering holes in the turned handles will be covered in this session. The use of a collet in the handle to hold your tool makes it very easy to switch the ¼" HSS bar end-for-end so that you can have a point tool on one end and a skew or skewgie on the other end. I now skip the ferrule when using a collet and leave a bit more wood around the collet.

Point tool and skewgie

Parts and parts in process

Materials:

Faceshield
1½" × 1½" × 7" or 9" long hardwood blank for handle
¼" HSS round bar
¼" collet optional
¼" drill bit if not using a collet
½" drill bit or bit sized to drill mortise for collet
5/16" drill bit for hole in handle to receive ¼" HSS bar if using a collet
CA glue
Slow-speed grinder
Protractor to measure 70-degree skew angle

Procedures:

Turning the Handle:

1. Choose a blank for the handle that is at least 1½" × 1½" × 7" or longer.
2. Use a center-finding jig or other method to mark the centers on both ends.
3. Take a scratch awl or other sharp object to make a locating hole in the center of both ends.
4. Use a drill press to drill the hole for the collet and the tool bit. Or turn a foot on the blank then mount it in a four-jaw chuck and use a Jacobs chuck equipped with the drill bit sized to match the outside diameter of the tenon of the collet. Drill the hole a little deeper than the length of the shaft on the collet. Always drill the largest size hole first with the larger diameter drill bit.
5. Next use a 5/16" drill bit and drill a hole as deep as the bit will allow so that the ¼" HSS rod can be inserted as deep as possible into the handle. This enables the tool's working length to be adjusted to better match the work being turned.
6. Mount the blank between centers using a cone-type bearing center in the tailstock. Then turn the blank into a cylinder using a spindle roughing gouge.
7. If using a ferrule, use a parting tool to cut the tenon for the ferrule that will surround the collet. Back off the tailstock frequently to test fit the ferrule. Once the proper fit is achieved, insert the ferrule. If the ferrule is a little loose, apply a dash of CA glue.
8. Now shape the handle so that it fits your hand comfortably.
9. Sand and apply finish to the handle.
10. The last step in turning the handle is to test fit the collet before gluing it into the handle. I sometimes use the drill press as a press to press the collet into the handle. ▸

Handle with tenon for ferrule

Note: If using the drill press to press fit the collet, be sure to back off, or completely open the Jacobs chuck so as not to harm the wings that hold the drill bits in place, and use the outside edge of the Jacobs chuck to press in the collet.

Grinding the Point Tool & Skew:

Making the Point Tool:

1. Take the ¼" HSS rod over to the 49- or 80-grit grinding wheel. Insert the sliding bucket of the Wolverine system so that you have a place to rest the tool handle with the ¼" HSS bar in the handle.
2. Grind down one side of the bar to remove to the center of the end, creating a tear- drop slightly less than ⅜" long.
3. Now rotate the rod so that the flat on top of the edge you just ground is perpendicular to the grinding wheel. Now grind a second teardrop the same length as the first teardrop.
4. Now turn the bar so that the edge between the two facets that you just ground is dead center above the grinding wheel. Turn the third facet so that the resulting teardrop is the same length as the two just ground.
5. The last step is to go around and regrind each facet if necessary to get all sides as close to equal as possible.

Making the Skew:

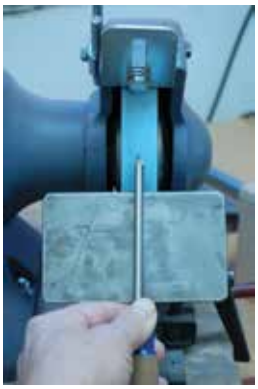
1. Turn the rod over and decide whether you want to grind a skew or a skewgie on it.
2. To turn a skew, place the rod on the grinder's table parallel to the floor and at a 70-degree angle to the grinding wheel. Grind a 70-degree angle across the top end of the rod.
3. Adjust the angle of the table and grind the front and back sides of the rod, at a 20- to 25-degree angle or with the length of the bevel about twice the diameter of the bar or slightly less. So for a ¼" round bar the bevel length should be slightly less than ½".
4. After grinding one side, flip the tool over 180 degrees and grind the other side the same way.
5. Be certain to keep both bevels/facets parallel to each other.

Note: One of my past students pointed out an easy way to see if the facets/bevels are parallel when grinding the sides of the skew. Watch the top edge and as the tip is being ground, you can see a parallelogram forming on the flat top edge. By keeping the sides parallel, the facets/bevels should be parallel. It is hard to understand what I have written, so put the tool to the grinder and keep an eye out for what I have just described.

6. Check the grind and regrind the bevels on both sides equal to each other, if necessary. Now all that is left is to hone the edge of the skew to make it nice and sharp.

Skewgie:

1. To make a skewgie, lay one side of the rod on the grinding wheel and grind a hollow to the center of the HSS bar.
2. The last step is to grind the end of the rod the same way you would a spindle gouge. The Wolverine Varigrind jig makes this process very easy.
3. Insert the newly-made tool into the collet, lock the set screw, and test out your new tool. ■





TURNING A WEED POT

Introduction and Thoughts on Design:

The weed pot is an excellent project for a beginning turner or a turner who is looking for a simple gift. One of the goals of the various projects in this series is to keep adding techniques and new procedures to the student's skill base, therefore I highly recommend, if at all possible, drilling the hole for the weed pot on the lathe or at the very least demonstrating how this is done. This is a good project for adding another tool and technique to the student's basket of tricks. Have the students try drilling the hole for the weed on the lathe using a Jacobs chuck in the tailstock with an appropriately sized drill bit. This added exercise also teaches students how to turn a foot on the wood blank so that it can be mounted in a four-jaw chuck.

The design of a weed pot and the wood it is turned from are meant to be rustic, as its purpose is to hold a dry flower or weed. The original weed pots were turned from old fence posts and sometimes only the top portion was turned and the bottom was left in the shape that it was found, usually split, cracked and well weathered. The more cracked and split the timber, the more attractive the weed pot. However, be careful not to use wood that is excessively checked or cracked, as it may disintegrate when turned at spindle-turning speeds. A simple vase shape or wine bottle shape looks best. Little sanding is necessary as the more unfinished the piece, the more appropriate it is for its end use.

Materials:

Faceshield
4" × 4" × 8" +/- green (still wet) wood blank with the bark still on it
⅝" drill bit +/- for drilling hole for weed
Drill chuck for lathe or drill press to drill hole for weed
1¼" spindle roughing gouge
¼" parting tool
1/16" Chris-Stott-style parting tool (optional)
⅜" spindle gouge

Procedure:

1. Locate a blank roughly 4" to 6" in diameter and about 6" to 10" long. Try a tree branch with its bark left on, an old fence post, or a dead cedar tree.

Weed pot blank held in chuck for drilling

The weed pot mounted between centers after ⅝" hole has been drilled.

2. Mark the centers on both ends and make a dimple with a nail or scratch awl.
3. Drill a ⅝" to ¾" hole approximately 2" to 4" deep in the center of the end that is to be the top. It just needs to be deep enough to hold a dried flower or weed. You can use a drill press or a hand drill for this procedure. You can also drill the hole on the lathe by mounting the blank in a chuck or on a faceplate. Then with a drill chuck in the tailstock with a ⅝" or ¾" drill bit, proceed to drill into the blank with the lathe set to a slow speed, 300 rpm +/-.
4. Mount the blank on the lathe using a ¾" steb center, 4 prong drive center, or a dead center in the headstock and a cone center in the tailstock.
5. Turn the top of the pot to a cylinder and shape the base of the vase, remembering to leave an unturned portion in the middle so that a band of bark will remain on the finished vase. Turning a bead at the top of the vase adds a bit of refinement and definition to the top. The very bottom should be undercut toward the center of the bottom, so that the weed pot will sit flat on the outside of the bottom. The bottom curve should appear to end at the center of the base or foot of the pot. The underside of the finished piece should be slightly concave in order for the pot to sit flat.
6. Sand the finished piece or not, remembering that it is a rustic piece and may not look good if sanded to a high polish.
7. Part the pot off and apply your favorite finish. An oil finish such as Watco Danish oil looks good.
8. Harvest a weed, stick it in the top, and now admire your work. ■

RING HOLDER WITH FINIAL

Introduction and Thoughts on Design:

The ring holder discussed in this handout is based on the ring holder described in Bob Rosand's article in *American Woodturner*, Fall of 2000, vol. 15, pages 22 and 23. I have found that the ring holder makes an excellent project to go along with learning the basic skills taught in session 1, titled The Bead and Cove Stick. The beauty of the ring holder and its practicality make it a great gift item. It has the added benefit of introducing the beginning turner to drilling on the lathe. Another skill the student will learn is the making of a tenon to fit in a four-jaw chuck and a tenon on the finial to fit into the drilled hole in the ring holder. This helps to take some of the mystery out of turning a tenon to fit and instills a new confidence in the beginning turner. I have discovered, much to my dismay, that many beginners need to make an exact copy of a sample ring holder and are not comfortable with making up their own design. My suggestion is that you provide samples of completed ring holders with dimensions for them to copy. I recommend that students be encouraged to come up with their own designs and begin to become aware of their own sense of creativity and design.

Tools and Materials:

Faceshield
1¼"spindle roughing gouge
⅜" spindle gouge
¼" drill bit
¼" parting tool
4-jaw chuck
1/16"-wide-blade parting tool
Glue (carpenters glue or CA glue)
Sandpaper and finish
Jacobs drill chuck
2½" × 2½" × 4" blank for ring holder
1" × 1" × 3" blank of contrasting wood for finial

Procedures:

1. Mount blank for the ring holder between centers and turn it into a cylinder with a foot to fit into a 4-jaw chuck, using a spindle roughing gouge and a ¼" parting tool.
2. Mount the blank into chuck and bring up tailstock for extra security, to aid in making more aggressive cuts and for added safety.
3. Start by using the spindle roughing gouge to true up the blank and to begin shaping the thin neck of the ring holder. The diameter of the neck should be ½" to allow for rings to fit.

4. Once the neck begins to take shape, I then begin to rough-shape the body of the holder and define or locate the bottom of the ring holder so that I can better visualize my final shape and ensure that the proportions are pleasing to the eye.

Note: When defining the bottom, leave enough of a tenon (roughly 1"-plus) to support the piece when drilling the hole into the top.

5. Finish shaping the body of the ring holder and then remove the tailstock in preparation for drilling the ¼" hole in the top.
6. Mount the Jacobs chuck with a ¼" drill bit installed into the tailstock. Set the lathe to a speed of 500 rpms plus or minus and then drill a hole approximately ½" deep. When drilling on the lathe, be sure to hold onto the chuck with one hand as you drill the hole to ensure that the chuck does not vibrate out of the tailstock. This hole is to receive the tenon on the finial to hold the finial in place.
7. Finish turning the ring holder.
8. Reduce the tenon holding the ring holder on the lathe and slightly undercut the bottom. I like to use a ⅜" detail spindle gouge to do a facing cut on the bottom. A 1/16"-wide-blade Chris-Stott-style parting tool can also be used to undercut the bottom.
9. Now sand the ring holder and part off using the parting tool.
10. Next mount a 1" square by 3" blank of contrasting wood between centers.
11. Turn it to a cylinder and cut a tenon on the tailstock end with a parting tool to fit the hole drilled in the top of the ring holder. ▸

12. Now turn an interesting finial to fit on top of the ring holder. In Bob Rosand's article he turned a flame-shaped finial, but any of a number of shapes would be acceptable. Have fun with the finial and experiment. There is extra wood in the blank, so that several finials could be made and the best one chosen.
13. Now is the time to mate the finial with the body of the ring holder and glue it in.
14. The last step is to apply your favorite finish and step back and admire your work. I like to use a spray-on lacquer or shellac, although I tend to favor Watco Danish oil for darker woods to help bring out the color and for items that do not require a gloss finish. ■

SEAM RIPPER HANDLES

Introduction and Thoughts on Design:

Turning a seam ripper handle is an excellent project where beginning turners may practice their spindle turning skills. It makes a useful gift for an avid sewer. This is another choice in a series of projects that are appropriate for Session 1 Part 2 projects. I like to turn a 1"+ thick handle as it seems to be more ergonomic. Beads, coves and various turned decorative elements can be added to the basic design to individualize each seam ripper handle. The handles can be made from salvaged timber or manufactured wood products such as Dymondwood, Colorply, Colorwood, Spectraply, exotic woods, or left-over scraps of wood from your last project. The seam ripper used for this project is a blue seam ripper with clear plastic top, available at most sewing centers for about $1.50, sometimes called a buttonhole ripper.

Note: Handle thickness can be varied to fit end user's hand.

Materials:

Faceshield
1" × 1" × 5" wood blank
9/32" drill bit
Bearing cone center
¼" drill bit
⅝" steb center or other drive center
1¼" spindle roughing gouge
Seam ripper
⅜" spindle gouge

Note: I use a 5/16" spade bit that I have reground to match the taper of the seam ripper.

Procedure:

1. Start with a blank approximately 1" × 1" × 5" and mark the centers on both ends. Use a scratch awl or nail to make a dimple at the center points at each end.

2. Using a drill press, drill a tapered hole in the end that will hold the seam ripper. Start by using a 9/32" drill bit, to drill a hole ½" deep. Next install a ¼" drill bit in the drill press and drill a ¼" diameter hole in the center of the 9/32" hole to a depth of ⅞". The final depth of the two holes combined will be ⅞". I now use a spade bit that has been ground down evenly on the sides to match the taper of the seam ripper inserts.
3. Mount the blank in the lathe using a ½" steb center, 4 prong center, or dead center in the headstock and a bearing cone center in the tailstock, inserted into the tapered hole.
4. Turn the blank to a cylinder and then shape it into a comfortable handle, using a skew or ⅜" spindle gouge. Turn some beads or coves for decoration or just turn a plain, yet functional handle.
5. Sand the turned handle, beginning with 100 grit sandpaper and ending with 1500 grit.
6. If you choose to use a friction polish on the handle, apply it now and then part off the handle.
7. Hand sand the parted off end and apply finish to it.

Note: I like to finish my seam ripper handles off the lathe. I spray several coats of Mohawk's Tone Finish clear gloss M102-0420.

8. Take off the cap of the seam ripper and carefully jam the blue seam ripper base into the tapered hole. Replace the cap and you have finished. Do not glue the plastic insert into the handle for it may need to be replaced when it gets dull. ■

Unassembled parts for seam rippers

TOY SOLDIER AND OTHER SIMPLE ORNAMENTS

Introduction and Thoughts on Design

Nick Cook introduced me to this simple ornament during one of his many demonstrations. This ornament can be varied in many ways. The overall shape and combinations of beads and coves can be changed, the thickness and length can be altered, and a variety of woods can be used. The finished turning can be colored on or off the lathe with acrylics, dyes, or permanent markers. I like to let my daughters paint their own designs on the some of the ones that I turn, thus making it a family project.

Why stop at toy soldiers? Come up with some simple designs of your own. The basic concept behind this project is to practice your turning skills by combining beads and coves to make simple decorative projects. Try making a snowman ornament, which is made up of three beads of progressively smaller diameters, topped off by a cove that forms the top hat. Then there is the angel ornament that has a dress/skirt that is created by turning a stretched-out cove that runs into a half bead that represents the chest, that rolls into the neck, that meets the bead that represents the head, topped off by a thin bead that signifies the halo. Try turning a bell shape. Practice undercutting the bottom of the bell leaving a small ball to represent the clanger. Another project would be to turn a solid globe with a delicate finial. One of my past students turned a series of shapes using beads and coves with a flat plate in between to make a stick or icicle ornament. Take a look at some heirloom glass ornaments for some more interesting ideas. Let's put a piece of wood between centers and turn some ornaments.

Toy soldier ornament mounted between centers

Tools and Materials:

Faceshield
⅜" detail spindle gouge
¾" or 1¼" roughing gouge
¾" skew optional
1" × 1" × 3¼" maple blank plus or minus
Optional 2" × 2" × 6" or longer maple blank
Paints or markers
Fabric paints—black, dark blue, red

Procedure:

1. Mark the centers on both ends of the blank and using a scratch awl or nail put a dimple in the center of both ends.
2. Mount the blank between centers. I prefer to use a ½" steb center in the headstock and a Oneway live cone center in the tailstock.
3. Using a spindle roughing gouge, turn the blank to a cylinder and begin turning the bottom ⅔'s of the blank into a cone shape.
4. Use a ⅜" beading and parting tool to part down at the tailstock end of the blank to ⅝" or ½" diameter by ⅜" wide. This part will ensure that the hole left by the cone center will not be in the bottom of your finished soldier.
5. Then using a skew or a detail spindle gouge, make a V-cut approximately ⅜" in from the tailstock end of the cone shape.
6. Turn a bead or ball shape between the V-groove and the tailstock, leaving enough wood on the end of the ornament to allow for the hole caused by the cone center, which can be removed with a sharp knife after the ornament is removed from the lathe.
7. Approximately 2" up from the V-cut, turn another V-cut that represents the division between the head and the shoulders.
8. Approximately ½" above this V-cut do another V-cut that will represent the top of the head. ▸

9. The next step is to turn a bead between the two V-cuts for the head.
10. On top of the head turn a thin bead for the brim of the hat.
11. The hat is then shaped by turning a tapered cove and rounding over the top. Once again leave enough wood to allow parting off without running the parting tool into the drive center.

Toy soldier taking shape

12. Now you can remove wood from the beads and coves to balance out your figure and then sand it to 180 or 220 grit if you are going to paint it.
13. You may now add color to it while it is still on the lathe or part it off and color it later.
14. The last step is to drill a hole in the top for the screw eye hook to screw into. I use the drill bit sold by Craft Supplies to go along with the screw eye hooks that they sell.
15. Have fun with this project and experiment with shapes and colors. You can try turning a snowman by turning three beads of decreasing sizes with a top hat. Another simple ornament to turn would be an angel with a small bead for a halo on top of the bead that represents her head which rests upon a nice, long, tapered curve that represents the robe. There is always the classic bell shape. Just play around and see what you can dream up that is developed from simple beads and coves of varying diameters and widths. A simple finial made up of various shapes makes for a nice icicle-style ornament. Add a sphere to the top of the icicle and you have a globe-and-icicle ornament. Keep these ornaments fairly small so that they are light enough to hang on a tree branch. You could design the snowman and angel ornaments to stand up on their own. There are lots of ideas, so have fun and experiment. Then try adding texture, color, and decoration to your finished ornaments! ■

Variety of simple ornaments

CUTLERY HANDLES

Introduction and Thoughts on Design:

This project covers a wide variety of kitchen utensils, including pizza cutters, carving sets, cheese knives, etc. The cutlery used with these handles is available through Craft Supplies Woodturners Catalog in Provo, UT. The handle dimensions may vary and the size of the hole for the tangs varies, but the steps for making the handles are the same. Feel free to change the size of the blanks for the handles. They can be larger or smaller; it is just a matter of taste and the size of the handle that appeals to you. As these items are going to be washed, they will be subject to water damage. Choosing a naturally oily wood will help to preserve the beauty of the finished piece and choosing a water-resistant or easily renewable finish would also help. Before drilling the holes for the tangs of the cutlery, carefully measure all the tangs and use a drill bit large enough to accept all the tangs. The tangs will be held in place using epoxy and therefore a tight fit is not necessary, as the epoxy needs room to expand.

I have found that the tang sizes on cutlery vary, so always double check them with a pair of calipers and drill a hole slightly larger than necessary. Be sure to leave room for the 5- minute epoxy that will hold the tang in place. The drill bit sizes listed below worked for the last batch of cutlery that I turned. Drill a test hole in some scrap to ensure a proper fit. The handles are turned in the same manner as the seam rippers, although I do vary the shape of the handle according to the task it is to perform.

The diameter of the end of the handle that holds the tang guard should be slightly larger than the tang guard. For the cheese slicers I found this to be ⅝" or a tad less. Once again, match your dimensions to your cutlery. I recommend that you purchase the top grade of cutlery, as your time is worth more than the cost of the parts. I have found that it pays to order the parts well in advance as they are sometimes back-ordered, especially around the holidays.

Materials and Suggested Sizes:

Faceshield

The drill bit sizes listed in the table fit the cutlery that I used. Please check the tangs on your cutlery and use the size drill bit that fits them.

Carving set

Parts

Item	Drill bit	Depth	Guard diameter	Blank size
Cheese slicer	11/64" bit	1⅝"	approx. ⅝"	blank 1¼" × 1¼" × 4½"
Cheese knife	13/64" bit	1⅞"	approx. ¾"	blank 1¼" × 1¼" × 4½"
Pie cutter	13/64" bit	2"	approx. ¾"	blank 1¼" × ¼" × 5"
Carving fork	¼" bit	2¼"	approx. ⅞"	blank 1¼" × 1¼" × 5"
Carving knife	15/64" bit	2¼"	approx. ⅞"	blank 1¼" × 1¼" × 5"
Bread knife	15/64" bit	2⅜"	approx. ¾"	blank 1¼" × 1¼" × 5"
Pizza cutter	½" bit	1½"	approx. ⅞" tenon	blank 1¼" × 1¼" × 5"

Procedure:

1. To turn a cheese knife, start with a blank approximately 1¼" × 1¼" × 4½" and mark the centers on both ends. Use a scratch awl or nail to make a dimple at the center points.
2. Using a drill press or Jacobs drill chuck in the tailstock, drill a hole in the end that will hold the tang, using a 13/64" drill bit to drill a hole 1⅞" deep. ▸

3. Mount the blank in the lathe using a ½" steb center or your favorite drive center in the head- stock and a bearing cone center in the tailstock inserted into the drilled hole.
4. Turn the blank to a cylinder, remembering to leave approximately ¾" diameter where the guard on the slicer meets the wood handle and use a parting tool to make the tenon for the guard. Shape it into a comfortable handle, using a skew or ⅜" detail gouge. Turn some beads or coves for decoration.
5. Sand the turned handle, beginning with 100 grit and ending with 1500 grit sandpaper.

6. If you choose to use a friction polish on the handle, apply it now and then part off the handle. I prefer to finish my handles off the lathe using gloss lacquer or gloss polyurethane.
7. Hand sand the end that was parted off and apply a bit of finish to it.
8. Test fit the cheese knife into the newly turned handle. If it fits smoothly, prepare the 5- or 10-minute epoxy and have a toothpick or similar item handy to aid in getting the epoxy into the hole and on the tang. As the epoxy will spill out of the handle when the tang is inserted, have a paper towel or rag handy to carefully wipe off the excess. This procedure can be messy, so try not to get the epoxy all over the handle. If some of the epoxy gets on the blade, it can be cleaned with acetone or lacquer thinner after it dries. Prepare a place to put the just-glued-up knife so that it can remain vertical. This will prevent it from sticking to the tabletop. Check on it shortly to be sure that the tang has not eased out of the hole due to forces of hydrolysis. ■

LAMINATED CANDLESTICK

Introduction:

This handout is adapted from my article in the AAW Journal *American Woodturner*, Fall 2000, Vol. 15, No. 3, titled "Turned Candlesticks." This is a fun project that introduces some of the principles involved in laminating and gluing up wood blanks for turning. As in most woodturning, the design is not completely my own. I discovered this when perusing an old book on antiques. There I came across a set of candlesticks that had a shape similar to mine--so much for originality. The candlesticks in the book were turned from a solid wood blank and were not laminated like mine. I must admit that I developed this design quite by accident and the look was spectacular, especially after I modified my first design a tad, by using ⅛" purpleheart veneer instead of the ¼" veneer that I used in my first set of candlesticks. Feel free to use woods other than the ones I have chosen. The procedures in the following handout hold true for both laminated candlesticks and solid wood ones. Just leave out the section on how to glue up the blanks, if you wish to turn a candlestick from a solid wood blank. Instead of a rounded bead in the mid section of the candlesticks, I used a V-style bead. My thought was that a V-type bead would better reflect the V shape of the long tapers of the candlestick. Truth be known, the real reason for the V-type beads in the mid section has to do with my lack of skill turning proper beads when I was first starting out as a wood turner. I also was attempting to do a variation of Rude Osolnik's design. Make sure that you use a candle cup in the top of the candlesticks to minimize any fire hazard. Candlestick cups can be purchased through many of the woodturning catalogs or at hobby shops such as Michael's. Purchase the inserts first—that way you can modify the size of the hole in the top to fit your inserts. I took this design concept a few steps further by creating a table lamp with a base turned on a faceplate. Not being satisfied, I continued exploring the possibilities and began turning floor lamps with a slightly modified design, as the taller spindle required some changes in the diameters and of the spacing of the V bead. This may be my first artistic series of work. This is a fun project and full of opportunities to put your own spin on the design.

Materials:

Faceshield
2 pieces of purpleheart, walnut or cherry veneer ⅛" × 2½" × 24" will make 2 12' candlesticks
3 pieces highly figured maple ¾" × 2¼" × 24" will make 2 12" candlesticks
1¼" × ⅞" plug for candlestick bottom (purpleheart or walnut)
Titebond Original Carpenter's Glue
Lead shot or some other material to add weight to the candlesticks
1 brass candle insert
Thick CA glue/super glue
Zinnsers sanding sealer finish
Mohawk Aerosol gloss lacquer or equivalent
Optional laminate or other thin material for making gauges
1¼" spindle roughing gouge
⅜" spindle gouge
¼" parting tool
¾" skew
1/16" parting tool optional
Candlestick Style Lamp glue-up
Middle section for candlestick would be a solid piece of wood

Note: If turning a set of three candlesticks you will need to glue up 2 blanks.

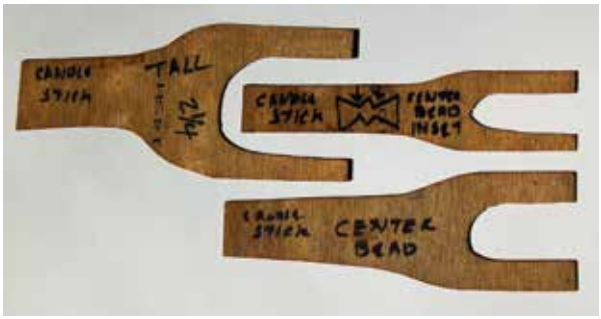
Procedure:

1. I start by selecting an interesting maple board which I plane to a ¾" thickness and rip to 2½" in width. I then rip the purpleheart (which I purchase in ⅛" by 3" by 24" blanks) to the same width. I dry-fit the pieces, alternating maple and purpleheart, to ensure that the most interesting maple figure is facing the outside of the candlestick. When using quilted or tiger maple, I try to line up the quilts in all three pieces of maple. When I glue up the blanks I make sure that the two outside pieces are glued with the cup facing in. The cup is in the opposite direction of the growth rings. ▸

Growth ring orientation

Note: This blank is enough to make 2 candlesticks. If your are planning on turning a set of 3 candlesticks you will need to glue up 2 blanks.

2. The next step is to glue up the blank. I have found that Titebond Original Carpenter's Glue tends not to leave a ridge at the glue joint (sometimes referred to as glue creep) as the wood expands and contracts, making for a smoother finished product. I spread the glue on the boards with one of those fake credit cards that arrive in my junk mail. They tend to make excellent glue spreaders, especially the plastic ones. I then clamp the parts and set them aside for 1 to 2 hours. After the glue has had time to harden a bit, I scrape it off before it dries completely, when it's difficult to scrape off. While the glue is setting I make my gauges. Using plastic laminate scrap or other thin material, I make the following gauges, where height is not an issue—top 1½", bottom 2¼", center bead 1¼", and center bead inset 15/16". The gauges are used as a rough guide, so the final dimensions are not critical.
3. Once the glue has had time to set, the next step is to square the ends and cut the blanks to size. You may want to cut the blanks a little longer than the finished height to compensate for the final trim cut on the lathe. I have found the following heights to be aesthetically pleasing: 7½" – 8", 10" – 10½" and 12". When I make a set of three candlesticks, I set the height as I turn them so that the tops of the two smaller candlesticks stop at the center bead of the next tallest candlestick.
4. I use a center-finding jig to mark the centers of both the top and bottom of the blanks. I mount a ⅞" Forstner bit in the drill press and drill a ¾" to 1" deep hole in the top, being careful to center the hole between the layers of purpleheart. I then drill the hole in the bottom for the lead shot. In the past I have done this after I finished the candlestick. But it now makes more sense to me to drill the hole for the lead shot now and plug it, thereby leaving me a solid surface to mount the blank on the lathe using my ⅞" steb center or whatever center you choose to use. See step 10 for helpful hints on adding the lead shot. The lead shot hole is drilled to the full depth allowed by the Forstner bit or the drill press.
5. I mount the blank on the lathe using a steb center in the headstock and a revolving cone center in the tailstock. If you have not yet plugged the bottom hole, you can mount the bottom end in the cone center and the top end on the ⅞" steb center. The gauges are laid out nearby in top to bottom order. I turn the blank to a cone shape, keeping the diameter of the blank greater than 2¼" at the bottom and greater than 1½" at the top. I use a 1¼" spindle roughing gouge for this step. This gouge was the first turning tool that I purchased and I use it for everything from pens to chair legs. Use your gauges often for quick sizing checks. Once the rough cone shape is achieved, stop the lathe and measure down from the top 2" – 2¼" to mark the area for the center bead. I use a ¼" parting tool to cut the rough depth for the bead. I part down the center twice the width of my ¼" parting tool on both sides of the center mark to leave an area for the top of the V bead roughly ½" wide. Next using the center bead inset gauge, I part down on either side of the center cut to just shy of the gauge depth. You can vary the final pattern of the candlestick by changing the depth of these cuts. Do not cut too wide apart, as the candlestick tapers to this inset.
6. Using a spindle roughing gouge or skew, I taper the top and bottom to the inset. As these are roughing cuts, I leave a little extra thickness at the top and bottom for the final finishing cuts. It is important to leave ample wood at the top to minimize the risk of splitting when the brass candle insert is inserted. I stop the lathe and view



Sample gauges made from Formica

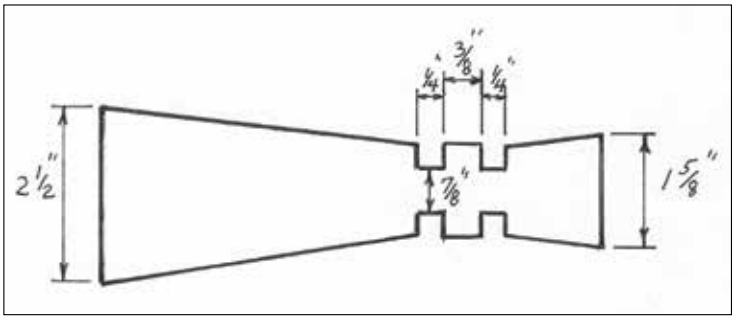


Diagram of candlestick roughed out with approximate dimension

the pattern as it emerges. It may spark some ideas for adjusting the sizes and angles to change the pattern for future candlesticks. Once the candlestick is roughed out, it is time to cut the V bead. I start by drawing a line through the center of the part left for the bead. I use a ⅜" spindle gouge to cut the bead. The goal is to have the angle of the bead the same on both sides. The lines of the top and bottom taper should appear to converge directly under the apex of the bead.

Helpful Hint: When cutting a taper, set your tool rest at the desired slope of the taper. This way you can use it as a guide. To check the taper for variations, stop the lathe, place a straight edge on the candlestick, and look for bumps or voids.

7. The next step is to make the final cut. I like to use the my spindle roughing gouge for this cut by using the flat side edge of the gouge in a planing cut similar to the planing cut that is done with the skew's cutting edge at 45 degrees to the surface. The two types of cut are very similar but I find the spindle roughing gouge is easier to use and that there is very little difference in the quality of the cut, especially if you are going to sand your work to a gallery- quality finish.
8. After I complete the finish cuts, I cut a slight chamfered edge on the top and bottom edges with a gouge, which gives the appearance that the candlestick is floating on the table. I leave enough flat area on the top for the brass insert. (Measure the outside diameter of the insert and mark the top edge of the candlestick just shy of this measurement.) The candlestick is now ready for sanding.
9. I start with 100 grit and go on up to 1500 grit. I try not to sand the bead until I get up to 180 grit so as not to round it over. After sanding with the first couple of grits, I stop the lathe occasionally and sand with the grain. There is nothing worse than looking at a nicely turned piece and spotting a sanding scratch. With the last couple of grits I sand the outside edge of the bead so that it is not razor sharp.

Note: If you have already inserted the lead shot, skip step 10. I have found that if I turn the candlestick with the lead shot already installed and the hole plugged, I do not need to spend as much time sanding the bottom.

10. If you have not already done so, now is the time to fill the bottom hole with lead shot. Using a small paper cup or yogurt container, I pour some shot into the hole. I then pour in some thick CA glue, add a little more shot and then more glue, leaving enough room for the plug. I cut the plug from purpleheart that was turned to the diameter of the hole, and then glue the plug in place. Once it dries, I sand it with a 2" pad sander attached to a Sioux right angle drill, being careful not to sand the edge of the base. I am careful to wash my hands after handling the lead shot, as it contains cyanide.
11. For a finish I like to spray on one coat of Zinnsers sanding sealer finish and then I spray on several coats of Mohawk Gloss Lacquer. I may need to sand the finish before the last coat if the finish is not smooth or has collected some dust.
12. The final touch is to add the brass candle insert. Be careful at this stage because the insert may split the candle top. I sometimes file off the knobs on the insert to ensure that the fit is not too tight. Enjoy yourself while making these candlesticks and be sure to experiment with the design. It is those subtle changes that make all the difference. ■

Laminated candlestick style lamp

TURNING MUSHROOMS

Introduction and Thoughts on Design:

The mushroom is an excellent project in which to practice turning ogee curves and to develop your skills in undercutting tops and bottoms. It is a small object that can be made from fallen branches, small ornamental trees, or shrubs that need pruning. Play with the design of your mushrooms as they grow in many sizes and shapes. You may want to consider turning multi-axis or off-center mushrooms to make them look more natural. They also make great gifts for people who like to collect knick-knacks. The mushroom can be sanded and finished to a high gloss or the original tool marks can be left on for a more natural look. Have fun with this project, remembering to focus on tool technique as well as the finished mushroom.

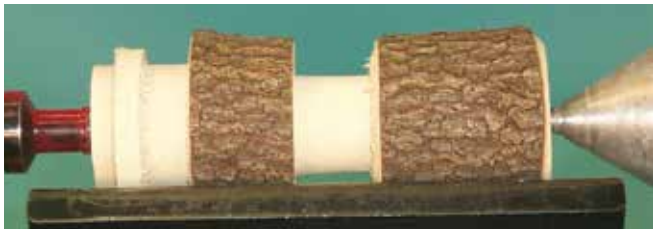
Materials:

Faceshield
2" to 3" dia. × 4" long branch or other wood
Drive center
Bearing center
1¼" spindle roughing gouge
⅜" spindle gouge
¼" parting tool
1/16" Chris-Stott-style parting tool

Procedures:

1. Select a branch or small trunk approximately 2" to 3" in diameter and roughly 4" long. Actually the diameter can vary a great deal and the length can vary, as the actual size is not that important. I have made them as large as twenty inches tall and twelve-plus inches in diameter.
2. Mark the centers on the ends and put a dimple in the center of each end as an aid to mounting on the lathe.
3. Mount on the lathe between centers. I prefer to use a steb center in the headstock and a bearing cone center in the tailstock. Occasionally I turn a tenon on the piece for mounting in a chuck, as this method allows full access to the top for finishing and eliminates the final step of hand sanding or carving the nub left behind when turning between centers.
4. Decide approximately where the bottom lip of the top and the bottom are going to be located, and be sure not to turn the bark off these areas when the piece is turned round.

5. Begin by rough shaping the top and the area for the stem. Practice turning the ogee for the top with the ⅜" detail gouge.
6. As the top begins to take shape, switch to a parting tool and roughly define the area for the stem and base. Remember to leave room for the ogee at the base that the stem grows out of, and the bark edge at the bottom of the base. Room must also be left in the base to undercut the base and part it off. Also, there needs to be room between the dead center or chuck and the bottom of the base for the tools to access this area when parting off.
7. When doing the final cuts on the top near the bark edge, start the cut the same way that you would start a cove cut. The flute is in the closed position, the handle is lowered slightly, and the thumb is acting as a stop to prevent the tool from skidding across the bark edge. Slowly raise the handle as you drop the cutting edge into the cut, while feeding the cutting edge straight in until a space has been cut in which to ride the bevel. Then roll the flute gradually into the open position as your body and the tool handle roll through the cut and do their weaving motion to create a flowing ogee curve. This is a wonderful, flowing motion with the body, tool, and flute all rolling together in a nice, even movement or dance. This move is one of the reasons I like to have some nice music playing in the background. ▸

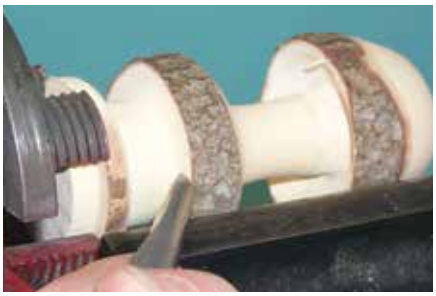


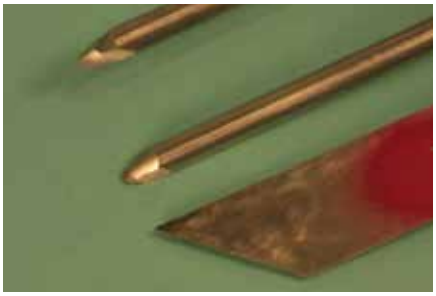
Note: I refer to this motion as the hip-shake-wiggle as my hips start out parallel to the bed of the lathe and then rotate away from the lathe as I turn the cove and then as I start the bead section of the ogee, my hips roll back in toward the bed of the lathe and end up back in the starting position as I flow smoothly through the ogee cut.

8. With the top finished, it is now time to work on the stem and base. As the stem has already been roughly defined, I begin with the ogee at the base and blend it into the stem. This cut in the base is similar to the final cut on the top.
9. Work can now begin on trimming the stem and undercutting the top. To undercut the top, I use a thin parting tool. My favorite tool for this job is the Chris Stott parting tool (1/16" thick and approximately 2" wide). Start where the stem meets the top and take small cuts, working your way to the outer edge of the top. Each cut should progress deeper under the top.

Note: I like to grind the tip of my 1/16" Chris Stott parting tool at a skewed angle to make it easier to match the stem to the undercut performed on the back side of the top.

10. Now it is time to finish shaping the stem. This is done using the 3/8" detail gouge. Be sure to ride the bevel in order to control the cut.
11. Where the stem meets the top, the thin parting tool can be used in a scraping cut to blend these two parts together. The parting tool presents fewer opportunities for getting a catch than if a spindle gouge were used to perform this cut.
12. The mushroom can now be sanded and if you're using a friction polish, it should be applied now. I generally finish my mushrooms off the lathe and spray them with several coats of lacquer or shellac.
13. Using the parting tool, part off the finished mushroom. Make a wide part to provide room for undercutting the bottom of the base. To undercut the base, start at the center and work your way out with light cuts. The final cut should progress from the outer rim to the center. Remember to be ready to catch the mushroom as it is parted off. To be safe, you can leave a 1/8" stub, stop the lathe, and cut the mushroom off with a carving tool or knife by hand.
14. Admire your finished piece or spray it with lacquer and set it aside, to be admired again later.
15. That was easy, so why not do another one? Better yet, read the following handout and make a mushroom box with hand-chased threads. Even better, buy Allan Batty's DVD titled "*Hand Thread Chasing*." ■



LET'S GO FOR A SPIN
SESSION 2

AAW EDUCATION

AAW | AMERICAN ASSOCIATION OF WOODTURNERS

FACING CUT, CONVEX CURVES AND CONCAVE CURVES EXERCISE

Materials:

Faceshield
3" × 3" × 4½" block of wood, green or dry (I like to use poplar)
1¼" spindle roughing gouge
⅜" spindle gouge
¾" or ½" round-nose scraper
¾" skew
¼" parting tool
1/16" Chris-Stott-style parting tool if turning a box
Project Wood

Note: refer to appropriate handout materials list for a list of materials for the project you choose to turn.

Introduction:

This exercise helps to introduce the importance of body position and body movement in refining a pleasing shape with quality cuts. One other objective of this session is to introduce the use of the spindle gouge for end-grain hollowing. The main emphasis of this exercise is to show how important body movement is in refining a shape or a pleasing curve. It also gives the students the opportunity to play with full convex or concave cuts and to combine them into ogees to form a pleasing shape or curve without the worry of destroying a project. This exercise is followed by one of several projects that will help to build on the skills already learned and add a new skill, that of hollowing end grain using a ⅜" spindle gouge. Good choices for projects include the birdhouse ornament, the acorn birdhouse, small lidded box, or goblet, as all of these projects involve using a ⅜" spindle gouge to quickly hollow an end-grain object. The round-nose scraper and scraping techniques will also be introduced in this session, as the insides of the projects are refined by using the round-nose scraper to make the final cuts. The use of a chuck and the making of a proper foot to hold the workpiece in the chuck are also covered in this session. Many turners use the spindle gouge to hollow out the recess for making jam chucks to hold spheres and other turned objects that benefit from being held in a jam chuck. When demonstrating the facing cut, one could mention its usefulness for making glue-blocks that can be used to glue valuable or rare woods to a scrap block of wood, thus enabling one to maximize the usable portion of the rare wood for the project.

Demonstration:

Exercise Block:

1. Mount a 3" × 3" × 4½" block between centers and turn it to a cylinder,
2. Discuss the use of a chuck to hold the work and how it works. Turn a foot to mount the blank into the chuck. Be sure to discuss the importance of turning a proper foot and the importance of having the shoulder of the foot resting flat on the top of the jaws of the chuck so as to resist the lateral force that turning puts on the blank.
3. Now mount the blank in the chuck and remove the tailstock.
4. True up the blank with the roughing gouge.
5. Using a ⅜" spindle gouge, demonstrate the facing cut by using the gouge to face off the end of the blank. ▸

Note: To use the ⅜" spindle gouge to do a facing cut, the flute is facing away from the blank in the 3 o'clock position (closed) and the tool handle is in the horizontal position with the bevel 90 degrees to the axis of the lathe. This cut is started by first resting the heel of the bevel on the surface of the end of the blank and then moving the handle by twisting your hips in toward the tailstock so that the bevel makes contact with the work, as the flute is just slightly adjusted to find the cut. Once the cut is established, twist your hips slightly away from the tailstock and gently, ever so gently, drag the heel of the bevel across the work until it slides free of the work. Now move the tool's cutting edge over toward the headstock ever so slightly and try to take a small cut, approximately 1/32" of an inch. Now lock your thumb on the toolrest to prevent the cutting edge from trying to skate toward the headstock and twist your hips back into the cutting position. Slowly feed the cutting edge into the work about 1/8th of an inch, until enough wood has been cut to allow the bevel to guide the cut. (I sometimes drop the handle slightly to start the cut by slicing into the blank). Lean forward as you feed the tool through the cut, aiming the tip of the tool towards the center of the work. Be sure not to push on the bevel nor push the tool into the work. Make sure that the force is directed down and across the end of the blank. If the cut action is very noisy then it is a sign that you are putting too much pressure into the workpiece instead of across the face of the blank. The sound made by this cut, when properly executed, is similar to that of a finely-tuned hand plane swishing across a board as it finely planes the board.

6. The next cut is to turn a half bead or make a convex cut that goes from the outside of the blank all the way around and down to the center of the face of the blank.
7. Now let's do a cove cut or make a concave cut which starts at the outside and works its way down to the end of the blank.
8. The next step is to take the concave cut and blend it in with the previous convex cut to form an ogee.
9. Now try doing a convex cut that flows into a concave cut to form an ogee.

Note: Pay attention to how the body moves through these cuts. When turning the facing cut, the body tends to just fall straight forward. When doing the convex cut, the body and hips tend to roll toward the tailstock or the bed of the lathe as your weight shifts from your left foot to your right foot. When performing the concave cuts, the body and hips dip and roll away from the lathe. My favorite cut is when, combining the convex and concave cuts to form ogees, the body and hips do what I like to call the hip-shake-wiggle, as the hips roll into the lathe to form the convex cut and then halfway through the cut they twist and roll away to form the concave cut or the other half of the ogee and vice versa for the other ogee.

10. Continue practicing these cuts and movements until the wood is all used up.

Project:

Note: For the related project choose one that requires end-grain hollowing and that appeals to your students, listed in the contents section of the manual. Then just follow the instructions found in the handout. You may do one of your own projects or any number of projects that reflect the skills that are being taught in this session. One of the skills taught in this section is the use of the ⅜" spindle gouge for hollowing end grain, so be sure to pick a project that requires end-grain hollowing. Check in with the students from time to time to be sure that everyone is having a good time. Goblets or boxes are perhaps the easiest to hollow and require the least amount of time to demonstrate. The birdhouse and acorn birdhouse require a bit more explanation but are definitely a good choice, especially near Christmas time.

Look through the handouts for Session 2 and choose one that will be of interest to the class or develop your own project for this session that emphasizes end-grain hollowing. ■

NOTES ON LIDDED BOXES

Introduction and Thoughts on Design:

Before beginning your box, decide whether you are going to turn a basic cylinder box with a flat top and bottom or a variation of this simple design. Egg-shaped boxes are popular but are somewhat difficult to turn, as the egg shape is tricky. You may want to experiment with using a detail tool or a chatter tool to decorate the top of the box. The inside of the box does not have to follow the shape of the outside of the box. For instance, if you turn a flat top cylinder box, the inside of the top could be domed. The ratio of the bottom to the top should be one of the following ratios, as they are the most pleasing to the human eye: ⅖ to ⅗, ⅓ to ⅔, or ¼ to ¾. The Golden Section ratio is ⅜ to ⅝ or ⅖ to ⅗. They are so close that it just depends on how easily the math works out for me as to which ratio I choose. Actually, I rarely make any measurements. I just make the division by eye and have found that most of the time my division is right on the Golden Ratio.

Materials:

Dry hardwood 2" to 3½" inches in diameter and 5" to 6" inches long
1¼" roughing gouge
⅜" spindle gouge
¾" round-nose scraper Bonnie-Klein-Style Box Scraper
½" square nose scraper Bonnie-Klein-Style Box Scraper
¼" parting tool
1/16" thin parting tool
⅜" box/skew tool (optional). This is a homemade tool.
Four-jaw chuck
Spur drive or steb center
Faceshield

Procedure:

1. Mount a blank between centers.
2. Turn the blank to a cylinder.
3. Use a parting tool to put a ¼" tenon on both ends with a proper shoulder for chucking the top and the bottom. The top of the chuck's jaws should rest squarely against the shoulder.
4. Measure the length of the box, making sure to leave room at the ends for the ¼" tenon and allowing clearance for the parting tool when shaping the top and bottom in the chuck. Be sure to leave about a thumb's width of space between the bottom of the box and the jaws of the chuck to provide access for parting the bottom of the box off the lathe when you have finished turning and sanding the bottom of the box.
5. Mount the blank with the two tenons in the chuck with the end that is going to be the lid of the box mounted in the chuck. Next rough shape the box, then mark the lid separation point and part off with a thin parting tool, leaving the end that is to be the lid still mounted in the chuck.
6. With the lid mounted in the chuck, face off the lid with a ⅜" spindle gouge or skew chisel.
7. Once the lid has been faced off, use the ⅜" spindle gouge to begin hollowing out the lid. For a more accurate and stable fit, it is best to relieve some of the tension in the lid by removing some of the material inside the lid before parting in the mortise. ▸

Box blank between centers with tenons on both ends

Facing off cut

Note: I use the following technique to hollow with a spindle gouge: Set the toolrest height so that when the gouge handle is horizontal, the center of the cutting tip is at the center of the piece to be hollowed. Push the gouge straight in to make the initial hole with the flute fully open. Push it in approximately ¼" and rotate the flute toward you at about 45 degrees (11 o'clock). Then drag the cutting edge across the middle toward the outside of the box and begin hollowing. As the tool gets in deeper, it will need to be drawn out of the box as it nears the outside edge of the box. Repeat this step until you have reached a depth beyond the usefulness of the spindle gouge (1¾" plus or minus), then switch to a round-nose scraper.

See handout titled "Tips and Techniques for Using a Spindle Gouge" for further instruction on the technique of hollowing with a spindle gouge.

Remember to check your depth often so that you do not risk going through the bottom when you later reverse turn the bottom. You also need to check the wall thickness to insure that it is even.

Finish hollowing the top. If the lid is to be round on the inside, use a round-nose scraper or if the inside of the lid is to be flat, then use a square-end scraper or box scraper. Please note that it is best to modify the round-nose scraper by grinding the side of the scraper so that it can scrape the side of the box with the tool almost parallel to the side of the box. Once again the toolrest is set so that when the handle is level and parallel to the lathe bed, the cutting edge is at the center of the piece to be hollowed. I hold the scraper with my forearm over the handle and my index finger pointing down the top of the scraper. With this method two things happen—when I move my finger, the tool edge automatically goes in the direction that I point and if I get a nasty catch, my forearm prevents the tool from hitting my face.

Be careful as the scraper may grab when cutting the end grain at the bottom of the box. To minimize the tendency of the scraper to get pulled in by contact with the end grain, I grind a 5- to 10-degree bevel on the top of my scraper to give it a negative rake, which makes the scraper a lot less aggressive.

Hollowing cut with spindle gouge

*Remember to leave enough space on the edge of the lid for the mortise and some extra wood for the final shaping of the box after fitting the lid to the bottom of the box.

8. Once some of the material has been removed from the inside of the lid, use a parting tool to cut a recess (mortise) in the lid for the bottom tenon to fit into. The recess should be ⅛" wide and ¼" deep. Be sure to keep the side of the mortise straight and parallel to the bed of the lathe.
9. Finish hollowing the lid with a round-nose scraper and then sand the inside of the lid, avoiding sanding the mortise, as this must remain straight and parallel to the bed of the lathe
10. Sand the inside of the lid and apply finish, being careful not to sand the recess or round it over.
11. Remove the lid from the chuck.

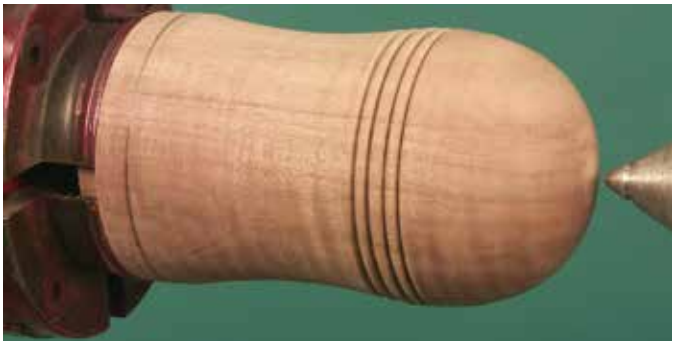
Turning the bottom of the box:

Hollowing cut with ⅜" spindle gouge

Some of the material removed from inside of the box bottom before fitting mortise and tenon

12. Place the bottom in the chuck.
13. Face off the top of the bottom. Remove as little wood as possible so as to minimize the grain mismatch when top and bottom are connected.
14. Before using a parting tool to cut a tenon for the lid to fit onto the bottom, be sure to hollow out a portion of the bottom of the box to a depth of approximately 1" to 1½" to relieve a bit of the tension in the wood to help ensure a good fit when matching the mortise in the lid to the tenon in the bottom. Cut a slight taper on the tenon so as to gradually sneak up on a tight fit. Test for fit frequently and try to avoid the urge to make one more cut as it usually causes a loose fit. I make the tenon just long enough to test for the fit so that I can start over again if the fit is too loose, without creating more of a grain mismatch than necessary.

Note: The lid must fit tightly because it will be jam-fitted to the bottom of the box so that the top of the lid can be turned to its final shape and sanded to completion.



Lid attached to bottom to finish turning lid

Lid finished and ready for sanding

⅜" box scraper

Hollowing inside of box with round-nose scraper

Jam chuck mounted in lathe

Bottom of box mounted in jam chuck

15. Attach the lid and finish shaping the outside of the lid and the bottom of the box. Turn a decorative groove or feature to disguise or highlight the separation point of the lid and the bottom. Use gentle cuts when cutting the lid as it will pop off if you get too aggressive. After all, it is only held on by friction.

Note: Be sure to align the grain of the lid with the grain of the bottom of the box to help ensure a nice fit.

16. Finish sanding and then remove the lid.
17. Next it is time to finish hollowing the bottom of the box. Hollow the bottom using the same method that was used for hollowing the lid. Starting with the ⅜" spindle gouge and then finishing with either a round-nose scraper or a ⅜" box scraper or other flat-tipped scraper if you desire a flat bottom. Remember to check depth and thickness frequently. Leave enough wood on the bottom to reverse turn the box and to ensure that you do not turn through the bottom when finishing it in the jam chuck. Most importantly, do not forget to make the tenon at least 3⁄16" or slightly longer so that the lid seats properly.
18. Sand and finish the inside.
19. Remove the bottom from the chuck.
20. Make a jam chuck to reverse turn the bottom of the box. It is best to use a compression fit in the jam chuck. The box is placed inside a recess cut into the jam chuck. Once again, this needs to be a tight fit. Start out with a shallow groove and sneak up on the fit, testing often. Note that if you get a tight fit but the box slips a bit, you can take the box out and apply moisture to the jam chuck, causing the wood to swell and thereby making for a tighter fit. Sometimes you can use a bit of toilet paper or paper towel to improve the holding power of the jam chuck.

Finished Box

21. Finish off the bottom, making it slightly concave so that it will sit flat. Sand and finish the bottom.
22. Attach the lid of the box to the bottom of the box and admire your newly finished box. ■

MUSHROOM BOX WITH HAND-CHASED THREADED LID WITH NOTES ON HAND CHASING THREADS

Introduction and Thoughts on Design:

Before attempting to use this handout to turn a mushroom box with a hand-chased threaded lid, I would suggest that you read over the handouts on "Turning Mushrooms" and the handout on making boxes titled "Notes on Lidded Boxes." The focus of this handout will be on hand thread chasing and will not cover in detail the making of the box. If you have not made a box, or a mushroom for that matter, before, go ahead and use the handouts listed above to turn a practice mushroom box. Once you feel confident enough to turn a mushroom box, then you will be ready to turn one with a threaded lid. To properly chase threads, a very dense hardwood is needed. The best wood for chasing threads is English boxwood. As this wood is very expensive, one can fairly easily chase threads in dogwood or some of the other exotic woods such as cocobolo and ebony, although they, too, are a bit pricy. I have had great success with using dogwood for my threaded boxes. I highly recommend reading Allan Batty's handbook on woodturning titled "Woodturning Notes" available through Craft Supplies Woodturners Catalog, especially the chapter on chasing threads. I would also recommend watching Allan's DVD titled "Hand Thread Chasing." In this handout I will describe the tools used and some tips on how to choose the right set of thread chasers. I will also cover various techniques to improve your thread chasers and tips to help make turning a box with a screw-on lid much easier. Most of the tips that I am sharing I learned from Allan Batty and can be found in his DVD on hand-chased threads.

I will do my best to explain how I chase threads and maybe provide you with a few helpful tips. Threaded lids can be used in a wide variety of projects. Many turners use threaded inserts to create threaded lids for projects that are made out of woods or materials that are not suitable for hand chasing threads. Thread chasing can be fun but requires a bit of rhythm and timing, as the cutting tool moves in sync with the speed of the lathe and the turning and travel of the thread. The lathe used for thread chasing must be able to rotate at somewhere between 300 and 500rpm maximum. Most of us can chase threads at around 300rpm. It is a bit more difficult to keep up with the lathe speed when it is set to 500rpm. Stay relaxed and amaze your friends.

Materials:

Thread chasing tools

Relief cutting tool

Set of thread chasers (Allan Batty's signature chasers size 16, 18, or 20 recommended, you only need one set so pick the size that appeals to you) available from Craft Supplies Woodturners Catalog. These chasers will need to be ground down a bit and modified to work at peak efficiency.
Arm rest (optional)
Relief cutting tool (this tool may need to be modified or reshaped)
1¼" spindle roughing gouge
Thin parting tool ▸

¼" parting tool
⅜" spindle gouge
½" round-nose scraper
⅜" box scraper (optional), Allan Batty design
Suitable wood (English boxwood preferred but dry dogwood will work)
Four-jaw chuck
Lathe that will turn at slow speeds of 300 to 500rpm
Faceshield

Procedure:

1. Mount the blank between centers and rough turn your box with a tenon on both ends so that the lid and bottom can be mounted in the chuck to hollow the box bottom and lid.


Roughed-turned mushroom mounted in chuck with tenons on both ends

Note: A trick Allan Batty uses to line up the grain of his box after chasing his threads is to draw a line on the outside of the box across where the joint for the top and bottom of the lid is. That way he can later just line up the grain by removing a bit of the female threads.

2. Decide which end is going to be the lid and which end will be the bottom and begin shaping the mushroom box. Remember to leave the bark edge on the lid or top section's rim. Do not fully shape the outside of the mushroom box, as there needs to be enough wood left between the box and the chuck's tenon to support the parts, so that they can be hollowed and the threads chased with very little or no vibration. Also remember to leave enough room for the tenon and the mortise and the waste area where the lid will be separated from the bottom.

Note: Generally the female threads are in the lid, which means that the lid would be left in the chuck and the bottom of the box would be parted off after a line has been drawn to help register the grain pattern when the lid and the bottom are put together.

3. Once the box is rough shaped, separate the lid and the bottom with the thin parting tool.
4. First hollow out your box lid. Be sure that the top part where the threads are going to be is perfectly parallel to the side of the box which would be parallel to the ways (bed) of the lathe. An easy way to check to see if the side of the box is parallel is to rest the side of a pencil inside the box and look to see if it the pencil is parallel to the bed of the lathe. Leave the sides thick enough to compensate for the threads and be sure that it is small enough for the bottom to fit in. Using a parting tool or the box scraping tool, make the inside of the sides for the female threads perfectly parallel about ¼" to ⅜" into the inside of the lid.
5. Once the area for the female threads is trued up parallel and straight, cut a groove or recess approximately ⅛" deep behind where the threads are to stop, as a relief for enabling the chaser to stop before bottoming out and thus eliminating or wiping out your threads. The front edge of the area for the threads should be rounded over a bit to make it easier to start your threads. Set the toolrest at an angle away from the box lid to provide room so that you can use the thread-chasing arm rest as an aid in chasing threads.
6. I use a relief cutting tool that has been slightly modified to cut a small relief at the end of the threaded section. The tool has been modified by grinding the tip's cutting edge to make about a ⅛"-wide groove and to ensure that the cutting edge is in line with where it is supported on the toolrest. This is done by grinding the area behind the cutter at an angle to relieve the steel directly behind the cutting edge. See photo.

Note: The easiest and most common thread size to use is 20 threads per inch. You will need to get a matching set of thread chasers. They may have to be adjusted to work properly. The first thing to do is to check to see that the chasers start with a full tooth. If not, grind away the half tooth, so that the chaser starts with a full tooth. Another trick or adjustment which makes the tool much easier to use and allows it to get into small boxes is to grind down the top to about half its original thickness. When sharpening, only grind the top surface—never ever touch the teeth. Once your tools have been modified, you are ready to chase threads.

7. The front edge of the area for the threads should be rounded over a bit to make it easier to start your threads. Set the toolrest at an angle away from the box lid to provide room so that you can use the thread-chasing arm rest as an aid in chasing threads.
8. To start your threads, begin with the tool at an angle and slowly, matching the speed of the lathe, bring the tool around, in sync with the motion of the lathe, rocking up and down in and out, making sure not to cut with the lead tooth until the threads are established, giving it a place to ride. Once the threads are established, you can let the lead tooth

follow the threads until they are cut to final depth. Be sure to pull the chaser out when it reaches the recess or groove so that it does not stop and wipe out your newly chased threads!

9. We are now ready to mount the bottom of the box in the chuck and turn the male threads to fit the female threads. It is a good idea to start to hollow some of the interior of the box before chasing the threads in order to relieve a bit of the tension in the wood. Be sure not to hollow the box too much, as you will need to leave plenty of wood to support the threads.
10. Next turn a ⅛" or longer tenon to just fit inside the female thread. This establishes the bottom of the male threads. Now part down where the threads are going to be, leaving enough wood for the depth of the threads. Leave the leading tenon in front of the area to be threaded to assist in sizing the threads.
11. Once again round over the leading edge of the soon-to-be threads to make it easier to start the threads, just as was done for the female threads.

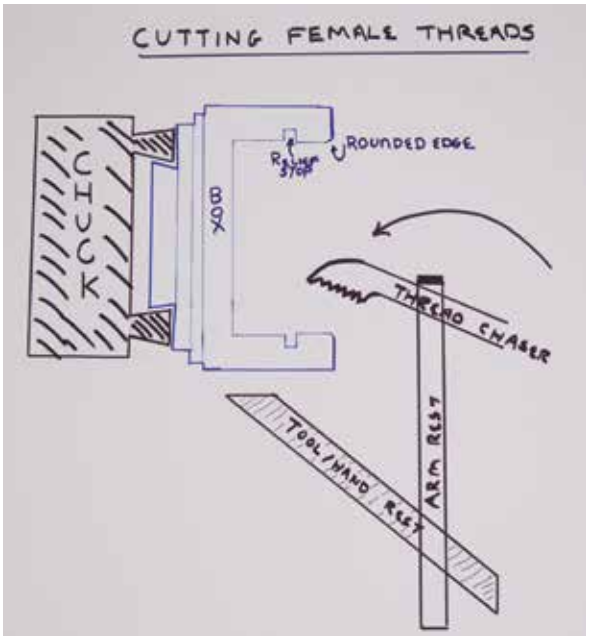
Note: Applying a touch of paste wax to the threads will help make them easier to turn. Allan Batty suggested mixing up hand dishwashing liquid and rubbing alcohol and applying the mixture to the area to aid in chasing the threads.

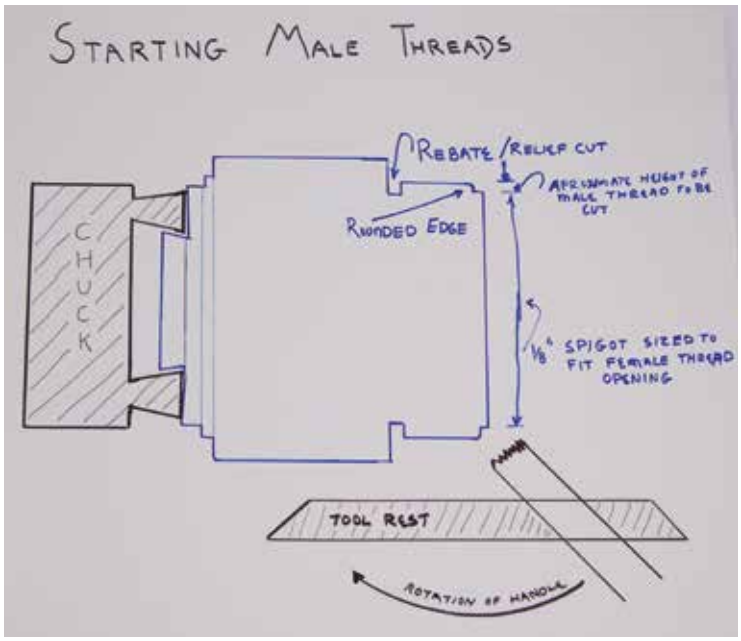
12. Again start the threads at an angle to the tenon and bring the tool around in rhythm, rocking it up and down while you begin to chase the threads. Once again do not cut with the lead tooth until all the threads are cut. Then let the lead tooth follow the threads until the threads begin to mark the leading tenon that you originally established to set the depth of the threads.
13. Next ease or round the first thread so that it will not get torn during use.
14. Now it is time to line up the pencil line and adjust the threads until the grain lines up.
15. To adjust the fit, it is best to remove threads from the female face to get the grain to line up. Once finished, screw the parts together and enjoy your new mushroom box. ■

Using thread-chasing arm rest to turn female threads

Hand-chasing male thread

Finished Box





Diagrams taken from Allan Batty's "Woodturning Notes"

THE GOBLET AND ITS RELATIVES

Introduction and Thoughts on Design:

Goblets can be made from most woods, depending upon whether they are to be used for drinking or ornamentation. If the intended use is drinking, I would use cherry or maple, as both these woods are readily available in large thicknesses and are fairly food safe. The goblet form can be adjusted to look like a long-stemmed flower with a few minor design changes as the techniques involved in turning goblets are essentially the same as those used to turn the more challenging long, thin-stemmed flowers or goblets. The more artistic long, thin-stemmed goblets or flowers can be made from dry or wet wood. If turning a long, thin-stemmed goblet, straight-grained wood is best for these show pieces, as wild, crazy grain may tend to fail more easily. When considering the type of finish to put on the goblet, once again, if it is to be used for drinking, a food-safe, durable finish should be used. If the goblet or flower is of the artistic variety, then the finish should match the artistic statement being made. Sometimes if green wood is used, the stem can bend or be bent to give a more natural look to the piece.

Materials:

3" × 3" × 6" plus or minus for a drinking goblet, dry wood
2" × 2" × 6" plus or minus for a decorative goblet or flower, wet or dry wood
Paper towel or tissue for stabilizing the goblet while turning the stem
Mike Mahoney's Walnut Oil Finish, lacquer, shellac, or your favorite finish
1¼" spindle roughing gouge
⅜" spindle gouge
Skew
Round-nose scraper
Parting tool
Narrow parting tool, Chris-Scott-style 1/16" by 2"
Chuck
Bearing center
Faceshield

Procedure:

1. Mount blank between centers.
2. Turn blank to a cylinder and turn a foot on the bottom for mounting in the chuck.

Tip: If turning a flower, remember to leave the bark on both the top and the bottom of the potential flower.

3. Mount the blank into the chuck and bring up the tailstock as always for safety.
4. True up the blank and mark the blank for the top cup or flower section and for the base.
5. Rough shape the upper section of the bowl part of the goblet just enough to see where the shape of the bowl is eventually going to meet the stem.

Tip: Do not turn the bottom of the bowl all the way down to the stem. Leave extra wood at the base of the bowl to help provide stability when hollowing the end grain, as end grain hollowing is very aggressive and the bowl of the goblet will need the extra support.

6. Remove the tailstock and set it aside.
7. With the toolrest parallel to the bed of the lathe set the height of the rest at a height so that the tip of the ⅜" spindle gouge, when the tool is horizontal on the rest, touches the center of the blank.
8. Now face off the top of the blank with the flute of the spindle gouge in the 3 o'clock position. Try not to put any pressure on the bevel when facing off the top of the goblet.
9. Next move the toolrest to a position where it is perpendicular to the bed of the lathe and approximately ¼" away from the top face of the bowl of the goblet. Once again the height of the rest with the ⅜" spindle gouge held horizontally should be set so that the tip of the gouge is dead center in the bowl of goblet. ▸

Goblet mounted in chuck with cup partially shaped, ready for hollowing

10. With the flute of the gouge in the fully open position, push the tip into the blank approximately ¼". Now rotate the flute toward you, to the 11 o'clock position, pushing the cutting tip toward the outside while pushing the handle down and dragging the cutting edge out. The idea is to remove as much wood as quickly as possible. With each cut, the hole being created is getting wider as well as deeper.


Hollowing inside of goblet


Turning stem with tailstock support

Note: Remember, the goal here is to open up the bowl area so that a round-nose scraper can be used to finish hollowing the inside of the bowl.

11. Once the bowl has been opened up, a round-nose scraper can be used to finish shaping the inside of the goblet. Try to keep an even wall thickness on the sides of the bowl and check the thickness often. It is very easy to go through the side of the bowl or to get it too thin to be useful.
12. Once the cup or bowl section is hollowed, go ahead and finish shaping the outside of the bowl down to the intersection of the stem.
13. Finish sand the inside and outside of the bowl.

Note: Once work has begun on the stem, the piece will be too weak to work the top section without risking breaking it off.

14. Mount the tailstock with a bearing center in it onto the lathe. Now carefully pack tissue or a piece of paper towel into the bowl of the goblet and advance the bearing center until it supports the goblet. The purpose of the tissue is to help prevent the bearing center from marring the inside of the goblet. Apply only enough pressure to hold the goblet steady for the shaping of the stem. Too much pressure and the stem will flex as it is thinned, not enough pressure and the goblet will wobble and vibrate.
15. Now begin shaping the stem, working down the stem in 1" to 2" sections. Remember to sand each section as you go, if this is to be a long, thin-stemmed goblet or flower. If it is a functional goblet, the sanding of the stem can be done after the base has been shaped.
16. Shape the base, keeping it in proportion to the top of the goblet. The base should be slightly larger than the diameter of the top to ensure that the finished goblet does not look like it will fall over and that the goblet looks well proportioned.

Note: If turning a long-stemmed flower with the bark left on the top, remember to leave the bark on the bottom.

17. Use a parting tool to begin to part off the base, leaving enough wood to hold the goblet in place for finish sanding.
18. Now using the thin parting tool or tool of your choice, slightly undercut the bottom and part off the finished goblet or flower.
19. Now apply your chosen finish and admire your work. If a functional goblet, fill with appropriate liquid and enjoy. ■

Tips:

If turning decorative pieces from green wood with the intent of keeping the bark on, it is best to use wood that was cut in late summer to early winter.

Sometimes it helps to use a little CA glue on the bark after the finish has been applied, so as to not discolor the wood.

An excellent source of wood for the decorative goblets is tree trimmings and storm-damaged shrubs and trees.

Craft Supplies in Provo, Utah, sells hand-blown glass wine goblet inserts to be attached to a turned base.

Refer to Alan's handout entitled "Tips and Techniques for Using a Detail Spindle Gouge."

Richard Raffan and Ray Key both have excellent books out that have chapters on turning goblets, as well as Keith Rowley's book titled *Woodturning Fundamentals*.

LET'S GO FOR A SPIN
SESSION 3

AAW EDUCATION

3.1 Hollowing Project

3.2 Hollow Globe Ornament

3.3 Tips and Techniques for Turning Hollow Forms:
An Introduction to Shape and Form

AAW | AMERICAN ASSOCIATION OF WOODTURNERS

HOLLOWING PROJECT

Materials:

Faceshield
Hollowing tool options:
Dale Nish Formed Scrapers Style C part # 247-0098 or D part # 247-0099, available from Craft Supplies Woodturners catalog
Set of 3, ¼" square hollowing tools
Swan-neck hollowing tool
Your preferred small project hollowing tool
Hollowing tool scraper with outrigger
Parting tool
1¼" spindle roughing gouge
⅜" spindle gouge
¾" skew (optional)
Project wood: See individual project handout for specific materials

Introduction:

This session is designed to provide the students with the opportunity to do some hollowing and to learn more about scrapers. The best projects for this session are the hollow globe ornament with cap and icicle, small hollow form (3" × 3" × 7" plus or minus), or a lidded box (although the lidded box does not provide the opportunity for blind hollowing). I prefer to have the students turn a hollow globe ornament, as it gives them another opportunity to practice spindle work and to fit a tenon into a mortise. It also introduces students to the use of a Jacobs chuck for drilling a piece on the lathe. One of the more important lessons is the experience of hollowing an object without being able to view the cutting edge. This is small scale turning, so the risk of injury is reduced. There are a number of tools designed specifically for hollowing, some of which work well for small scale hollowing. Most hollowing is accomplished with some type of scraper held in a variety of bars or scraping tools. The best ones minimize the tendency of the tool to roll due to excessive torque. Swan-neck style tools work well, as the cutter's edge lines up with the tool supported on the toolrest.

This might also be a good time to have the students practice their facing cuts to make a glueblock for the hollow globe ornament. One of the objectives of these sessions is to expose the students to a wide variety of skills and techniques in a limited amount of time. If all goes well, some students may provide the class with some examples of creative opportunities and pop their globes off the lathe, in which case the making and use of a jam chuck can be demonstrated. If short on time or if teaching these sessions in the evenings, it may be better to turn a small hollow form. The main emphasis of this session is to experience using scrapers for hollowing through a small access hole.

Demonstration:

Use the project handout titled "Hollow Globe Ornament with Icicle" or the one titled "Tips and Techniques for Turning Hollow Forms: an Introduction to Shape and Form" from the manual or your own project handout. Give a short demonstration of the first few steps for the project. Be sure to have finished examples of the project available for the students to view and to copy. It is always best to demonstrate a few steps at a time. If you give the students too much information all at once, they tend to get lost and confused. A good deal of time can be wasted one-on-one explaining the steps all over again. Also the idea is to maximize the students' hands-on time. If turning a hollow globe ornament, have one that is not yet glued up to show how the parts relate to each other.

Project:

Each student should have a handout or a project outline to aid him or her in the steps involved in the making of the project. Once again, when the majority of the students are ready to move on to the next step, stop the class and demonstrate the next series of steps. Try to avoid turning the slower students' work, in order to get them caught up. The work must be the student's work, so that he or she will feel ownership of the finished piece. If it is necessary to show a particular cut or technique, it is a good idea to have a scrap block on a lathe and show the technique and then have the student practice the cut on the scrap block. Now might be a good time to start focusing more on design and shapes as the students are getting more comfortable with the tools and they are more open to discussing various shapes and design concepts. As always, have fun and remember to keep the mood light and cheerful. ■

HOLLOW GLOBE ORNAMENT

Introduction and Thoughts on Design:

The globe should be turned from an interesting wood such as maple burl, dogwood, or some other figured wood or burl. The icicle should be turned from a good dense wood that is of a contrasting color from the globe. The globe can be dyed or colored in some way to make it more interesting if a figured wood is unavailable or if you would like to experiment with color. The parts can be friction polished while on the lathe or sprayed off the lathe, after they have been glued together, with lacquer or some other finish. Try not to turn the globe into the shape of a perfect sphere, for when the cap and the icicle are glued on, the balance is disturbed and the ornament looks odd. I think that the best shape for the globe is that of a squashed sphere. The curves of the globe should flow nicely together, avoiding any sharp transitions in the flow of the curve. I have seen some pear-shaped hollow globe ornaments that turned out pretty nice. What makes my ornaments stand out is the exquisitely turned delicate finals. A word of warning--once you have started making ornaments with delicate finials, you may discover that you are unhappy with those finials that are not so delicate. I have also noticed that while customers and fellow turners are very complimentary concerning the delicateness of my finials, they are hesitant to purchase them for fear that they may break.

Set of three ¼" Square Packard hollowing tools that have been ground down a bit to minimize torque

Dale Nish birdhouse hollowing tools

Hollow globe ornament parts: cap, globe and icicle

Materials:

2½" × 2½" × 3" +/- maple, dogwood, or some type of burl wood for the globe
1½" × 1½" × 5½" contrasting wood for the cap and icicle
3" × 3" × 3" optional blank for a glueblock
Screw eye from Packard Woodworks catalog or other suppliers
Faceshield

Tools:

⅜" spindle gouge
1¼" spindle roughing gouge
¼" parting tool
½" or ¾" skew
Hollowing tools for a ¾" or ⅝" access hole
I use the set of three ¼" square hollowing tools available from Packard Woodworks catalog, but they must be modified by grinding off approximately ⅜" of the bent tools to minimize torque when hollowing. If used as they are, they may cause a nasty catch.
Dale Nish Formed Scrapers Shape C or D are excellent hollowing tools for small globes and birdhouses.
Hunter carbide-tipped small swan-neck hollowing tool
⅝" or ¾" drill bit (I use a Fisch spurbit)
Vernier calipers
Jacobs chuck for holding drill bit in tail stock
Four-jaw chuck (such as a Talon or Stronghold Chuck)

Procedures:

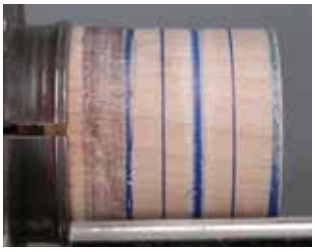
1. Turn the globe for the ornament first. The reason that I do the globe first is so that I can fit the cap and the icicle to the globe. Sometimes the shape of the globe is a bit off and the shape of the icicle ▸

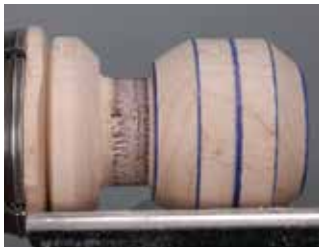
and cap can be adjusted to visually change the appearance of the globe and of the completed ornament. There is also the occasional catch or other unforeseen occurrence that changes the diameter of the holes in the globe that accept the tenons on the cap and icicle. The tenons can be turned to fit each globe, ensuring a good tight fit, which in turn helps to align the icicle so that it hangs straight down as opposed to at an angle.

2. The diameter of the globes that I turn varies from 1¾" to 2". For a beginner I would suggest turning a globe approximately 2 to 2½". The larger the diameter of the globe, the larger the access hole can be. With the 1¾" globes, I drill a ⅝" access hole; with the larger globes, I drill a ¾" hole. The woods that I like to use are dogwood, maple, maple burl, and any other light colored wood or burl that has an interesting grain pattern. Red cedar also makes an interesting globe. For the icicles I use a contrasting wood with dense grain.

Turning the Globe:

1. If you are going to use a chuck, choose a blank that is approximately 1½" longer than the intended finished diameter of the globe. Turn the blank to a cylinder between centers and turn the appropriate size tenon with a proper shoulder for mounting in the chuck.
2. For hollow turning, I like the tenon to be about ⅜" long. It is important that the bottom of the tenon does not rest on the bottom of the chuck but rather sits flat on top of the jaws. In other words, the shoulder of the blank should rest on top of the chuck jaws, not on the inside bottom of the chuck.
3. Mount the blank in the chuck and true it up with the spindle roughing gouge.
4. Measure the diameter of the cylinder and mark the diameter on the blank parallel with the axis of the lathe. I feel that a perfect sphere is not as attractive as a squashed sphere, so I reduce the mark by approximately 25% to 30%. (If the cylinder is 2" in diameter, I would then mark the blank at 1½".) This is a judgment call as there is not an exact measurement or ratio involved.
5. Use a parting tool to remove some of the material between the chuck and the globe. I leave a tenon about 1" to 1¼" in diameter to support the globe when hollowing.
6. Mark the center of the proposed globe and divide each half in half, thus dividing it into four equal parts. I mark the centerline a bit darker and thicker than the other lines, to provide room for adjustment, in case of a catch or other mishap.
7. Using a ⅜" spindle gouge, I proceed to turn both corners off the blank to the line marked. I start on the outside and work my way to the middle, following the bevel.
8. Now start rounding the blank, taking material away from both sides in an attempt to maintain a symmetrical globe. Finish shaping the globe.
9. Once the globe is shaped, I then sand it to 120 grit to ensure that I am satisfied with the shape and that it looks good. To better view the profile, place a contrasting background like black poster board behind the globe to help increase the contrast and highlight the shape of the globe.
10. The next step is to use the skew to make a dimple or indentation for the drill bit to start in.
11. Next use a pair of vernier calipers to find and mark the depth of the hole to be drilled. Remember when setting the depth to reduce the calipers to leave room for the final wall thickness. I use a piece of masking tape to transfer this measurement to the drill bit for a depth stop. Using a Jacobs chuck mounted in the tailstock and fitted with a ⅝" or ¾" drill bit, set the lathe speed to between 300 and 500 rpm, then drill a hole to the depth marked by the tape on the drill bit.
12. Once this is done, I remove the Jacobs chuck so that I will not put another hole in my elbow when hollowing the globe. You may also want to remove the tailstock at this time to give yourself more elbow room.


Globe marked and quartered


Globe with corners turned away forming an octagon

Note: The procedure for using a glueblock is similar to the procedure above, with the exception that the blank is either glued to a glueblock attached to a faceplate or to a block mounted in a chuck. When I am using expensive wood or small scraps, I sometimes use a glue- block in my chuck.

The procedure for using a glueblock is as follows:

1. **Mount a block of wood either to a faceplate or in a chuck.**
2. **The next step is to turn it round and flatten the face for receiving the blank. The face of the glueblock needs to be perfectly flat in order to ensure a solid glue-up. The bottom of the blank also needs to be flat. I generally flatten my blanks on a sanding station or a belt sander.**
3. **Once the parts are flattened, I apply thick CA glue (Cyanoacrylate glue) to the blank and then center it on the glueblock, moving it around to help spread the glue and ensure the glue is evenly spread. I then bring up the tailstock to clamp it in place for a minute or two. I sometimes add a line of glue to the outside of the joint and then spray it with the accelerator. When turning on a glueblock, I try to avoid turning where the glue has seeped from the joint as this sometimes crystallizes on my faceshield or safety glasses.**

13. The next step is to begin hollowing. Using the straight scraper hollowing tool, I open up the inside of the hole as much as I can, starting at the upper inside and working my way down. I take a light cut going in and a heavier cut on the way back out. As we are hollowing end grain, the best cut is from the inside out.
14. I then proceed to use the 45-degree bent angle scraper to hollow those parts that can- not be reached with the straight scraper and then use the 80-degree bent angle scraper to get the inside of the top. If I were doing a larger hollow form, I would get the top third of the hollow form down to final thickness and then proceed to hollow the bottom area. The finished thickness should be somewhere between 1⁄16" to 1⁄8" or whatever thickness you feel comfortable with.

Note: Check the wall thickness frequently. I use homemade gauges made from coat hangers that have been bent in a variety of shapes to enable them to gauge the wall thickness at various points of the globe. The homemade gauges are bent into shapes that will allow them to enter the small hole and accurately gauge the wall thickness. Two gauges are needed, one for the top area of the globe and one longer for the bottom half of the globe. I also listen to the sound produced when I am hollowing. As the pitch gets higher, the wall is getting thinner.

Roughed-out icicle in chuck, turned to a cone shape

15. Once the inside is turned to an even thickness, the tenon is reduced slightly to less than the diameter of the drill bit used to open up the ornament. As I reduce the tenon, I am also shaping the bottom of the globe, while trying not to be too aggressive and keeping in mind how thin the bottom of the globe is. Be sure to leave enough of the tenon to support the globe while sanding.
16. The next step is to finish sand the globe. I sand from 120 grit all the way up to 1500 grit and sometimes I burnish the globe with 3M scotchbrite pads, the grey and the gold.
18. If you are going to use a friction polish, now is the time to apply it.
19. To complete the globe, turn down the tenon to a diameter smaller than the drill bit that you will be using and remount the Jacobs chuck with the drill bit. Remember to remove the tape from the drill bit. Carefully with the lathe off, feed the bit into the globe just shy of the bottom of the globe. I then turn the lathe on at a slow speed, 300 to 500 rpm, and drill the globe out completely.
20. The finished globe will rest safely on the drill bit. I then remove it and set it aside or if using lacquer, spray it off the lathe as soon as possible.

Turning the Icicle and Cap:

1. To turn the icicle and the cap, I start with a contrasting wood that is 1½" × 1½" × 5½" long. I like to turn the blank to a cylinder between centers and turn a tenon to fit in the number one jaws of my Talon chuck. You can also turn the icicle between centers without putting it into a chuck but it is more difficult to turn a delicate icicle between centers.
2. Once the blank is mounted in the chuck, I mark the rough length of the icicle and proceed to ▸

turn a cone shape similar to sharpening a pencil. Remember to leave enough room for the cap. When turning a delicate icicle, I turn the blank thinner than I think it should be turned.

3. The next step is to mark your pattern.
4. Use a gouge or skew to turn the pattern. Be aware that you may have to adjust the pattern if the tool slips or some other creative opportunity arises.

Note: I do not measure my patterns. I tend to space them out in a visually pleasing ratio that rises upward toward the globe in increasing diameters, sort of like an upsidedown pyramid. I also tend to try to come up with a variety of new designs where the icicle meets the globe. I do not want all my icicles to be the same pattern.

5. Each section of the icicle has to be sanded as you complete it. Sections of approximately 1" to 1½" should be okay, depending on the amount of vibration in your lathe or the wood itself. I spray my icicles with lacquer off the lathe. It is very risky to go back over a thinned section without risking snapping it off.
6. As the bottom of the icicle needs to conform to the shape of the globe, I use the globe as a guide in turning the base of the icicle. I hold the globe in front of the icicle to get a visual idea of the shape to turn the cap for the bottom.
7. Once the base of the icicle is turned, I turn a tenon to fit the hole in the globe. At this time I also remove some of the material behind the base to match the curve in the bottom of the globe, for a better fit. In other words I relieve the back (undercut the back) of the bottom cap to make for a better fit.
8. Before parting off the icicle, I turn a shape parallel to the base of the icicle. This saves me some time when turning the cap, as I will already have a rough shape for the top cap. It also relieves the sharp edge that may cut my hand when sanding the icicle. As the globe is somewhat symmetrical, this helps to get the cap started. The icicle is now finished and parted off carefully.
9. The top cap is next. I check the curve to the globe then adjust it as necessary, leaving a bit of wood on top for some sort of bead or ball or some other decoration.
10. Once the pattern for the cap is turned, I use a skew to create a starting hole for the drill bit. The drill bit is sized to fit the screw eyes that I am going to use for the top of the ornament.
11. Using a pair of vise grips to hold the drill bit, after turning the lathe speed down, I then bore the small hole for the screw eye.
12. Next I turn the tenon to fit the hole in the top of the globe. Once again I relieve the back of the cap to help the cap conform to the curve of the globe, ensuring a tight fit.
13. I then sand the cap and part it off. I sometimes screw in the eye hook before parting the cap off.
14. To complete the ornament, I dry fit the cap and icicle to check the fit. If they are not tight, I use carving tools or sandpaper to improve the fit.
15. Occasionally I need to increase the size of the hole in the globe to fit an oversized tenon.
16. Sometimes material needs to be removed from behind the base or the cap with a carving tool or knife to improve the fit. I have to be careful not to apply too much pressure or I might break the icicle or the cap, as they are sometimes fragile.
17. Use thick CA glue to glue the parts together, being careful not to use too much glue as the excess glue squeeze-out looks terrible. I do not like to use the accelerator as this turns the excess glue white and there is usually some glue on the outside of the ornament. The ornament is now finished and ready for spraying with lacquer. The last step is to hang it up for display. ■

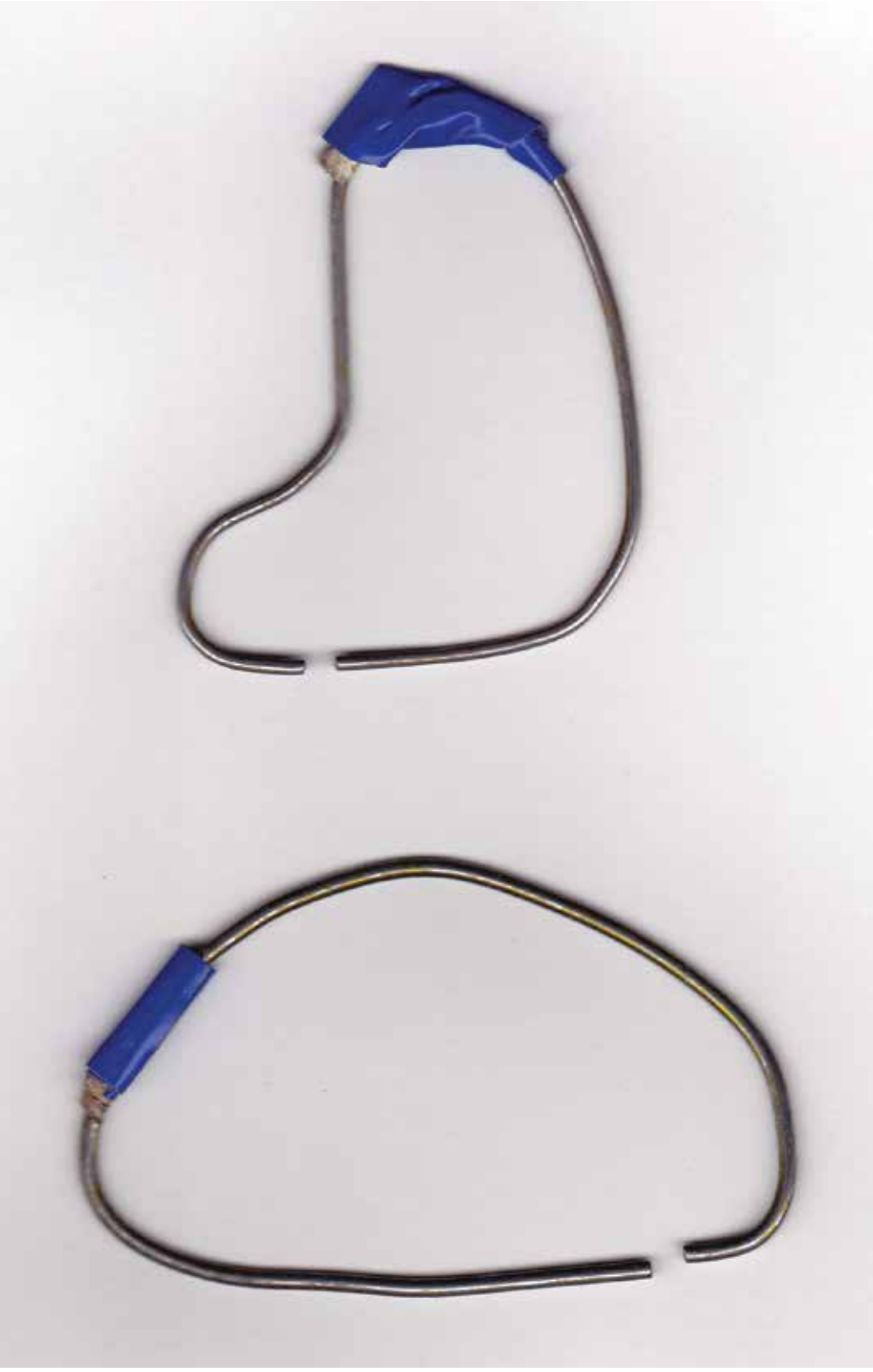
Note: Consider turning a base from a figured piece of scrap wood with a bent piece of brass or copper wire inserted in the middle to hang the ornament.


Undercutting icicle


Turning cap from left-over icicle stump

Thickness Gauges for Small Hollow Forms & Hollow Globe Ornaments

Made from coat hangers and bent to shape with needle nose pliers



TIPS AND TECHNIQUES FOR TURNING HOLLOW FORMS: AN INTRODUCTION TO SHAPE AND FORM

Introduction and Thoughts on Design:

The hollow form is an excellent place to start the study of shape and form. A good hollow form, just like a good bowl form, stands out due to its purity of form and shape. The overall shape in good proportions is essential when creating a gallery-quality form. The shape is the most important factor even if one is going to carve, texture, or in any way add embellishment to the piece. Good shape and form are the essential elements that will help the work to stand out. A good form will look good whether it is viewed right side up or upside down. Size is very important to setting up the best form for the material being used. By that I mean that just because the wood you have mounted in the lathe is 5" in diameter and say 14" long, that does not mean you have to use all the wood in the blank. Take away any material that needs to be removed to provide for a well-balanced form. In some cases excess material can be used in other projects; sometimes it just has to be removed. Size is also important. I have seen some very large pieces that were less than ideal, as more time and energy were spent on turning a large piece rather than paying attention to important details such as the flow of the lines and nice sweeping curves that take one's eye on a pleasing trip around the form. A good, flowing, fair curve is far superior to abrupt curves or curves that lead the eye astray. Transitions from the shoulder to the neck are best if they are smooth flowing and just melt into each other. Another thing to consider is how the bottom of the form relates to the surface that it is resting on. If the line flows down the side of the piece and gently curves around through the bottom of the form, the piece appears to float off the surface. Not only does this effect improve the overall appearance of the hollow form by making it appear to be floating, but it also adds a feeling of lightness. This technique also helps to create a continuous flowing line, leading your eye down and around the work.

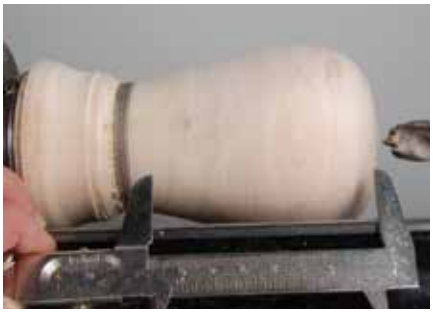
For your first hollow form I would suggest turning it from green or freshly-cut wood, as it is far easier to turn and hollow than dry wood. One of the problems encountered when using green or wet wood is that you need to go from start to finished piece as soon as possible, for as the wood dries, it will begin to change shape. The other thing to watch out for when turning green wood is that it is critical to have a fairly even wall thickness to minimize distortion as the form dries. Time to have at it and make some shavings fly!

Materials:

3" to 4" diameter by 7" or 8" long, green wood
3" × 3" × 6" maple, poplar, or cherry, preferably dry
3" × 3" × 3" scrap maple or poplar for reverse turning finished form
Faceshield

Tools:

1¼" spindle roughing gouge
⅜" spindle gouge
¼" parting tool
¼" point tool
¼" skew
½" round-nose scraper
Small hollowing tools, swan-neck style. Easy Rougher small swan-neck hollowing tool. Hunter Tools also offers a small swan-neck style hollowing tool.
Hollowing tools equipped with an outrigger arm
Any one of a number of hollowing tools will work. Just remember we will be hollowing a small vessel.
¾" drill bit, Forstner or spur drive ▸


Roughed-out hollow form in chuck


Hollowing tool with outrigger arm


Reverse turning bottom of hollow form

Procedure:

1. Mount the 3" × 3" × 6" blank between centers and turn it to a cylinder with a foot with a proper shoulder on what will be the bottom, for mounting in your chuck.
2. Mount the blank in the chuck and bring up the tailstock for extra support. With the tailstock adding support, the shaping can be done a bit more aggressively.
3. Establish the top and bottom of the hollow form before beginning to start shaping the form. Remember to leave a bit of extra wood at the base for easy access when it is time to rough in the bottom and to part the hollow form off the lathe.
4. Now begin to shape the hollow form. Keep in mind the guidelines for creating a pleasing shape. The best proportions are the ratios ⅝ to ⅜ or ⅖ to ⅗. I usually pick the one that makes the math easier as one is slightly smaller than the Golden Ratio and one is slightly larger than the Golden Proportion. These suggested ratios not only relate to the placement of the largest diameter, top to bottom of the form, but also to how the height relates to the overall diameter of the form. In reality, I tend to shape my pieces by eye rather than actually measuring them as I have a good sense of pleasing proportions.

Note: If you are going to be measuring the Golden Ratio, be aware that strict adherence to these proportions can make for a very static piece. The work may look too mechanical and the lines too stiff. It is far better to stray from the guidelines a bit and just let the form take shape. Besides good proportions, the most critical item affecting the overall look of the form is the ability to have a flowing, fair curve leading your eye around the form, thus creating a more kinetic feel. The work will feel lively and just pop out as a striking form.

5. In a classroom situation especially if teaching design, it might be a good idea to have the students shape their forms, then remove them, still in the chuck, from the lathe for a brief constructive critique of their work. It also helps to look at the piece in the vertical position, the way the form will actually be viewed, to get a better feel for how the form is taking shape. This should be done before beginning to hollow it, when it is too late to modify the overall shape and proportions.
6. Once the outside shape has been established and refined, it is time to sand the outside, as once the hollowing begins, the blank may begin to go slightly out of round as material is removed from the inside.
7. Before starting to hollow the form it is advisable to drill a hole in the top of the blank all the way down to the approximate finished depth of the hollow form. This hole provides not only access for the hollowing tools but it also sets the depth for the bottom of the vessel.

Note: There are a variety of tools on the market designed to make the hollowing process easier and more accurate. Some tools come equipped with laser attachments to help set the wall thickness and minimize the potential of breaking through the wall and ruining the piece. The best hollowing tools have some sort of stabilizing system to offset the forces trying to twist the cutting edge over, causing a catch due to the torque of the machine and the fact that the cutter's edge is not in line with its support on the toolrest. I have found that the easiest ones to use for large hollow forms have an extra toolrest that acts as a stabilizer by trapping the bar and minimizing the potential for the tool to fall below center or to torque over during the hollowing process. I tend to use a hollowing tool that has an outrigger arm as it is far easier to set up, although when turning large forms I set up my Oneway hollowing system that has a separate toolrest that traps the bar and makes it far easier to control the tool. I suggest that you arrange with some turners who do hollow forms and try out the different systems until you find one that you feel comfortable using.

8. Begin hollowing by opening up the hole that was drilled to make it easier to get the tool in and out. On larger hollow forms it is best to hollow the top third to finished wall thickness and then the middle section and finally the bottom third. The amount of sanding that needs to be done on the inside of the vessel will depend upon the size of the entry hole. Only the part that can be seen or touched needs to be sanded.

Note: Sometimes I will part the vessel in two. That way I can use a large hole to hollow through and then glue the top piece back on and drill a tiny hole through it, making it look as though I did the impossible by hollowing the form through the tiny hole.

9. Once you have finished hollowing and sanding the vessel, it is time to part it off and reverse turn it to finish the bottom. They are many ways to mount the hollow form for turning the bottom. One method is to turn a nub to fit into the mouth of the vessel and gently trap the form between centers, using a cone in the bearing center. By taking very light cuts, clean up the bottom, leaving only a small nub at the cone center that can be carved off once the form is removed from the lathe. Another method, used mainly for larger vessels, is to mount a long stick or rod in the headstock that makes contact with the inside bottom of the vessel and puts pressure against the bearing center's cone or cup center, which helps to keep the vessel running true. Once again one must take light cuts to avoid ruining the hollow form.
10. Once the bottom has been completed, it is now time to apply your favorite finish. You can add color to your piece or, if you left extra material for carving, you can now carve it or you can add gilding (see David Marks' DVD titled "Gilding and Chemical Patinations").
11. Admire your work and start planning your next piece. ■

LET'S GO FOR A SPIN
SESSION 4

AAW EDUCATION

AAW | AMERICAN ASSOCIATION OF WOODTURNERS

FACEPLATE OR SIDE GRAIN TURNING



Introduction:

This session moves into faceplate work or side grain turning. I like to start the session by repeating the practice session on the facing cut, convex cut, concave cut exercise, but this time we will be using a bowl gouge. Part of the reasoning behind repeating this exercise is to give the students the opportunity to do some practice cuts on scrap wood before working on their projects. It is also a way to subtly show them that spindle work and faceplate work are based on some of the same principles and that a bowl gouge is used in much the same way as a spindle gouge. We still roll the flute through the cut to maintain a supported cutting edge. We still rotate the handle through the cut. Body position and body movement are still important. It also doesn't hurt to practice doing the ogee cuts that are so much a part of good faceplate work and can make the difference between a well-turned platter or bowl and an ordinary one. This is the session that most would-be turners have been waiting for, as most folks are attracted to the bowl side of turning. After the short 15 minute to 30 minute practice exercise, the class will move on to turning a platter or shallow bowl from dry wood. Students will get the feel for shaping and dishing out a platter. I prefer to use a screw mounted in the chuck to hold the platter on the lathe while I turn a recess for mounting on the jaws of the chuck. It is easy to size the recess to the jaws as they are in easy view. I have found that using the chuck to expand into the recess is a very efficient way to mount my platters as I can completely finish the bottom before mounting it on the chuck. One other benefit of using an expansion grip is that I can almost always remount the piece if I need to touch it up a bit. Using the chuck to expand into the recess teaches yet one more technique. This would be a good time to show the many benefits of the point tool for doing detail work and various other decorative techniques in faceplate turning.

Tools & Materials:

Faceshield
3" × 3" × 4½" block of poplar, green or dry (for waste block exercise)
2" × 9" × 9"-plus or minus (depending on size of lathes), preferably dry
⅜" bowl gouge with side grind
⅜" bowl gouge with traditional grind (optional)
¾" round-nose scraper
Parting tool
Point tool

Demonstration:

1. Quickly repeat the face cut, convex cut, concave cut exercise with a bowl gouge.
2. Once the students have had time to do the practice exercise, it is time to demonstrate the turning of a platter or shallow bowl.

Project:

Turning and Detailing a Platter: please refer to the handout. ▸

Note: In this exercise the open stance or holding of the tool away from the body is introduced. The following two methods for hollowing the inside of the platter should be presented.

A. The power method for fast removal of wood—keeping the tool handle in the horizontal position and hogging out wood using a rowing action while moving the tool handle towards you and feeding the tool from the outside down to the inside of the platter (the Mike Mahoney method)

B. The more subtle, controlled removal of wood starting by riding or gliding along the bevel in the horizontal position and rolling through the cut by dropping the handle and rotating the flute (the Batty method). This method enables you to practice the final cut throughout the hollowing process. As you cut from the outside (top) of the bowl or platter to the bottom of the platter, the cut will proceed in an arc across the inside of the platter as the flute rotates to keep a clean cut and to prevent catching on an unsupported edge. This cut is similar to cutting a cove in spindle work. One of the benefits of using this method is that you get to practice your final cut over and over again until you have hollowed the platter to its final thickness. The bevel angle on your gouge can be changed to enable it to match the angle needed to turn the bottom of the platter or bowl. Bowl gouge bevels vary from 40 degrees to approximately 65 degrees according to the depth and style of the platter or bowl that you are turning.

1. Demonstrate how to take a square blank and find its center and use a compass to draw a circle for cutting out on a band saw. Then drill a hole for mounting on a screw chuck. For shallow bowls or platters I sometimes use a spacer in the chuck to minimize the depth of the hole. Once the blank has been cut into a circle on the band saw, go ahead and mount it on the lathe.

   This would be a good time to discuss band saw safety procedures.

   Rough shape the piece and establish the recess for holding the piece on the lathe. I prefer an expansion type hold. Finish turning the backside. Stop at this point and let the students mount their blanks and turn a recess. It is a good idea to point out to the students that the bevel is pointed in the direction of the cut and is used as a guide and that it is gently sliding across the surface of the work in the direction of the cut.

2. When the majority of the students are ready, discuss sanding techniques then remove the blank from the screw chuck and remount in the chuck jaws by expanding into the recess.

3. Face off the blank and demonstrate how to hollow out the inner bowl or platter shape. Once again the bevel points in the direction of the cut and the gouge slides along the surface using the bevel as a guide. Remember, there is bevel contact but there is no pressure on the bevel as it glides along the surface of the wood. If the students are getting a lot of vibration, then they may be putting too much pressure onto the bevel or they may be getting off the bevel and may need to bring the handle back towards them, in order to use the bevel as a guide to support the cutting edge. Remind the students to establish the outer rim and completely finish turning it before they remove too much wood from the inside, as the platter will tend to go out of round as it is hollowed. I sometimes use a scraper to round over the outside rim to avoid the nasty catch that is possible if the flute of the gouge is not in just the right position. Also remind them to check on the thickness so as not to go through the bottom of the piece.

4. Finish turning the inside. Once again, discuss sanding and finishing techniques. Check with the students to see if they have any questions or ideas that they would like to share with the class.

Project:

Turning a Platter or Shallow Bowl Using Dry Wood

Refer to the following project handouts in project section of lab manual: “Tool Techniques for Bowl Turning or Bowl Turning Fundamentals,” or provide your own handout.

“Turning Platters & Shallow Bowls” ■

NOTES ON TURNING PLATTERS




Introduction and Thoughts on Design:

Platters can be very satisfying whether they are functional or strictly artistic and meant for display. Some turners use platters as a medium to express their artistic visions by a variety of surface treatments, be it through color, texturing, carving, filling voids or carved areas with inlace or epoxy fillers. Some of the most striking platters are turned from large burls with the natural voids left in as an added feature.

The most stable or wobble-free platters are turned form quarter-sawn boards which may be hard to find kiln-dried in widths wide enough for large platters. It may be a good idea to glue up several boards, being careful to have a good eye for matching the grain and using quarter-sawn boards. Although perhaps the best method would be to cut them straight from the log when you are cutting your bowl blanks, though this method would require rather large logs and years of drying time.

Tools and Materials:

Faceshields are mandatory for this project
⅜" side-ground bowl gouge
⅜" traditional-ground bowl gouge
¼" parting tool
¼" point tool/skew
¾" round-nose scraper

Optional Tools
Sorby detail tool
Sorby mini detail tool
Sorby decorating Elf
Wagner detail tool
Traditional carving tools (veiner, straight & bent gouges,V-tools, etc.)
Power carvers
Various sanders & sanding drums
Rasps of different sizes and curves
Files & riflers

Procedure:

Note: It is best to use kiln-dried wood or air-dried wood that has a maximum moisture content of 8% to 10%. It would be best to cut your own platter blanks straight from the log so that you can ensure that the blanks are quarter sawn to minimize potential warping, as most wide kiln-dried blanks are flat sawn, making them more prone to warping after having been turned.


Quarter sawn board


Flat sawn board

1. Begin by flattening an area on the face side with a planer, belt sander, or a hand plane so that it can be mounted in a screw chuck. If I'm using a planer, I plane the whole board just enough to have a flat area for mounting on the screw chuck. I then cut it into as many square blanks as I think that I will be turning in the next few days in order to minimize any loss of blanks due to end checking as the boards acclimate to the change in humidity and any relieved stress.
2. The next step is to choose the best side for the top and then mark the center. (Remember that you will be removing wood from the top so the best figure should be on the bottom or back side of the platter blank.) Once the top center has been marked, I use either a bar compass or a large compass to draw the circumference of the platter.
3. Before cutting the blank into a circle, I go ahead and drill the pilot hole for the screw chuck, as the corners give me something to hold with if the drill bit bogs ▸

down. I like to add a ¼" Masonite spacer on top of the chuck's jaws to help minimize the depth of the pilot hole for the screw and to act as a stabilizer to help minimize the movement of the outer rim of the platter. I also use the largest set of jaws that I own for my chuck to minimize the vibration caused by the blank flexing on the rim. Drill the appropriate-sized hole for the screw that you will be using. I use the 1½"-long screw made by Oneway that comes with my Stronghold chuck. (The Oneway screw is my favorite as it seems to hold the best). I recommend using a 13/32" bit to drill the pilot hole in kiln-dried wood and then put a dab of paste wax on the screw to make it easier to screw on the platter blank. (For green wood I use a ⅜" drill bit for the pilot hole). The pilot hole needs to be deep enough for at least four threads on the screw to bite into the blank to hold it safely in place. After drilling the hole, I like to use a chamfering drill bit to slightly chamfer the top of the hole to minimize the possibility of some of the wood fibers pushing the blank away from the spacer block as the blank is screwed onto the chuck. I also chamfer the hole in the spacer block on the side that meets the platter blank.

Note: To set the proper depth to drill the pilot hole, the easiest way is to insert the screw in the chuck, then use vernier calipers to measure how far the screw sticks out from the chuck's jaws. Then transfer this measurement to the drill bit by using masking tape to mark this depth on the bit, by wrapping the tape around the bit. If using a spacer block, be sure to put it on the chuck before making your measurements.

4. Once the blank has been drilled, it is time to go to the bandsaw and cut the platter blank into a circle. I try to stay slightly outside the line drawn by the compass in order to maximize the diameter of my platter.
5. With the chuck on the lathe and the screw properly mounted in the chuck with the ¼" spacer attached, screw the blank onto the chuck as evenly as possible. Lock the lathe spindle and tighten the blank fairly tight but not too tight as you might strip the threads and the blank will be loose.

Note: Be sure to check that the belt is on the slow pulley and that the lathe speed is turned way down before turning on the lathe.

6. I like to position the toolrest at roughly a 45-degree angle to the edge of the platter blank. That way I can start off shaping the platter by cutting across the grain and not directly into it. I use my ⅜" side-ground bowl gouge to rough turn the platter. As the platter takes shape, I work my way up to the rim and down to the bottom. I like to establish the foot as soon as I can so that I know my starting and ending points. That way I can make a nice, flowing curve or ogee between the two points. Once the platter is close to its rough shape, I move the toolrest between the headstock and the top of the platter in order to smooth the top outer rim of the platter. Next I begin to refine the rim by working both the top and bottom of the rim. Once I am happy with the shape of the back side of the platter, I use my ⅜" traditionally-ground bowl gouge to make the finish cuts on the outside of the platter and then sand it before removing it to begin work on the top side.
7. Once the bottom has been completed, I remove it from the screw chuck and mount it in the chuck, using either an expansion foot or compression foot, depending upon my design. Normally I use an expansion foot as that way I can completely finish the back of the platter and not have to reverse turn it in order to finish it.
8. To begin work on the top, I first face it off using a ⅜" side-ground bowl gouge to flatten the surface to make it easier for my entry cuts.
9. I only do a little bit of hollowing in the center of the platter, as it is best to establish and finish turning the rim before removing too much wood from the middle, because the rim will begin to flex as material is removed, making it difficult to turn an even rim.

Note: Now is the time to do any texturing or detailing work on the rim, as once you begin removing wood from the inside, the rim will begin to go out of round and get a bit of a wobble.

10. Once the rim is complete, begin shaping the inside of the platter. Take care to measure the wall thickness regularly as it is very easy to get carried away and go through the bottom of the platter. I like to use a pair of Veritas deep calipers to check my progress, as they can sometimes squeeze in between the chuck jaws for a very accurate measurement of the wall thickness in the bottom of the platter where the foot is the thinnest. They are also spring loaded so that it is simple to get a good reading as long as the tips are perpendicular to each other.
11. Once again I like to use my traditionally ground ⅜" bowl gouge for all final cuts. I try to take a very light cut for my final pass, sometimes with very little bevel contact getting a shaving the thickness of a human hair. If done right, this final cut will need very little sanding.

12. Time to sand. I start out with whatever grit I need to use to remove any tool marks. I sand up to 1500 grit with wet/dry sandpaper and then use a gray Scotchbrite pad followed by the gold and white Scotchbrite pads, leaving a very smooth finish. If you plan on dyeing your platter, you may want to skip the Scotchbrite pad step, as the platter will be too burnished to accept the dye.
13. The finish to use depends on what the platter will be used for. If the platter will be a gallery piece, I would spray it with lacquer. If it is going to be used for food, then I would use Mike Mahoney's walnut oil finish, walnut oil, or mineral oil.
14. Enjoy your platter. Fill it with something good to eat or put up for display! ■

A variety of methods for mounting platters and bowls:

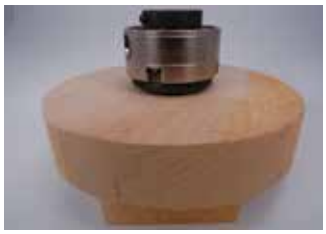
Talon chuck on left, with a variety of jaws. Stronghold chuck on right with #4 jaws.

Oneway Talon chuck on left with screw. Screw chuck style faceplate on right.

Oneway Talon chuck with screw. Dry blank with 13/32" hole drilled in it for Oneway screw and chamfering bit.

Left front blank with hole drilled for screw chucking. Top has a tenon for compression chucking. Bottom right has a mortise drilled in it for expansion chucking.

Hole drilled in bottom for expansion chucking



Blank held in expansion mode

Blank with tenon and square shoulder for mounting in chuck in compression mode

Inserting the Oneway Screw into a Chuck:

Dimples in side of screw must line up with the tips of the jaws as screw is inserted into the opening between the jaws

The screw properly inserted into the chuck

View of screw properly inserted in chuck from the back side of the chuck showing how the tips of the jaws draw in to lock in on the dimples in the screw

IKEBANA FLOWER VASES

Introduction:

The word ikebana is from the Japanese (The literal translation taken from japan-zone.com/culture/ikebana.shtml is flowers kept alive). There is a lot more to ikebana than just the arrangement of flowers, as a quick Googling of the word provides upwards of 1500 references to ikebana. Go to any large bookstore or library and you will discover many tomes providing information on the topic. In Japan and elsewhere around the world there are many schools and organizations teaching ikebana, as it is a very complex way of arranging flowers by creating a harmony of linear construction, rhythm, and color. In Japan three of the most popular schools are Ikenobo, Sogestsu, and Ohara. There are different styles of arranging the flowers depending on the school, the vase, and the plants used. In the west flower arranging is mostly done for decoration while in the east it is steeped in history. Ikenobo goes back to the school founded by the Buddhist priest Ikenobo Senkei in the 15th century. The following is taken from the history of ikebana found on the website en.wikipedia.org/wiki/Ikebana: "Ikebana began as a kind of ritual flower offering made in Buddhist temples in Japan during the sixth century. In these arrangements, both the flowers and the branches were made to point toward heaven as an indication of faith. A more sophisticated style of flower arrangement, called rikka (standing flowers), appeared in the fifteenth century. The rikka style reflects the magnificence of nature and its display."

Bear with me a bit longer, as I feel a little more of the history and background may be of interest to some folks, especially those who will be making this project for a gift or adding it to their craft lines. Once again pulling information from the Japan-zone web site, it is stated that modern ikebana can be divided into two styles referring to the size of the vase, (moribana) shallow or (nageire) tall vase styles. There are a series of patterns to help beginners create their own arrangements that involve the use of three different levels or branches—the shin (truth) branch, the soe (supporting) branch and the hikae (moderating) branch. Diagrams are available on the website or in one of the many books written on the subject to help explain and to show the arrangement of the three branches. My favorite description, that I use to simplify what could be a long dissertation on the subject, is the following, "that one needs only three flowers of varying heights to produce a very elegant flower arrangement that is based on a more spiritual vision of the arrangement."

Thoughts on Design:

Wood choice is very important to the overall look and beauty of the vase. As most vases will not contain flowers all the time, it is important the vase looks and feels good when it stands alone. The use of figured and unusual woods aids in the overall appeal of the finished piece. The observer's eye is drawn to the beauty of the wood and the subtle curving lines of the turned vase. There are a variety of shapes to choose from, such as the donut or bagel shape, what I call my flying saucer shape, a slightly curved and tapered top. You can even try your hand at a square or rectangular shape. For true Ikebana a simple form or shape with clean lines is best, as it is the flowers representing the three levels or branches that should dominate. If turning a square or rectangular shape, the sides should be square and perhaps the edges sanded prior to turning. It is extremely difficult to sand the edges once they have been turned and are a bit thin. One tip for turning square or rectangular pieces is to turn the speed up higher than you would normally turn. The wood spinning makes an awful sound almost like a plane propeller. Do not let this scare you into turning down the speed, as you will obtain much smoother and cleaner cuts at this high speed. First time out turning a square or rectangular piece, I would advise getting some instruction from an experienced turner.

Three live flowers set at different levels makes a striking flower arrangement. A major consideration is the type of finish to be used. Keep in mind that water droplets may affect the finish if not wiped off immediately, so be sure to use a water-resistant finish. Some thought ▸

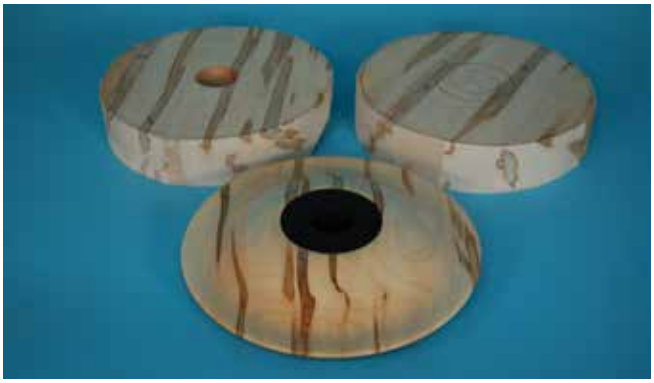
should be given to holding the ikebana frog or insert in place, especially if you are selling the vases. The customer may pick up the piece to look at the bottom and the insert will fall out and damage your other work or the table top. Be aware, one must also consider that the inserts may need occasional cleaning. I have used double-stick tape and soft candle wax inserts designed to hold candles in their holders. I have found that a drop of silicone caulk works best but unfortunately makes it more difficult to remove the insert for cleaning. Something new that I found is that scrapbook tack dots work very well and it is easy to remove the inserts. The only drawback to these is that in cold weather they harden and the insert may fall out.

Materials:

Faceshield
Interesting block of wood: 2" × 6" × 6" minimum, 2" × 7" × 7" or larger preferred. 2" × 8" × 8" is my preferred size but larger sizes such as 2" × 10" × 10" work well.
Ikebana insert, with or without a flange
Zots™ clear adhesive dots
Optional silicone or something to hold insert in place so that when vase is inevitably turned upside down the insert will not fall out and dent your table. Good quality double-stick tape is a very effective method for temporarily holding the inserts. Zots brand adhesive dots for scrapbooks are very effective. They are available at a Michaels Store or any scrapbook supply store. To release the Zots holding power, just stick the ikebana in the freezer for a short time.

Procedure:

1. Locate top. In most cases the best figure will result if the bark side is on top.
2. Mark the center points on both sides by drawing an X with a straightedge.
3. Draw circles with a compass.
4. Mark the overall outside diameter.



Marking out the blank

5. Draw two circles for the flanged insert.
   A. 1¾" circle represents the 1¾" hole for the cup.
   B. 2" circle represents the inset for the flange.
   C. If you are not using a flanged insert, skip this step. Just marking the center is sufficient or perhaps you feel confident that you will remember which side is intended to be the top.
6. Use a band saw to rough cut the blank to a circle.
7. If using a screw chuck, drill a ⅜" hole (if using a Oneway chuck, or the size that fits your screw chuck) in the center of the top where the frog (flower arranger insert) will be inserted later. If turning between centers, use a mallet to insert the two-prong spur drive in the top. The bark side should face the headstock, as that is usually the preferred top side.

Tip: I have started pre-drilling the hole for the insert on my drill press for two reasons- one to save time when doing a production run and the other to make it possible to mount directly on the chuck. If using this method, mount the blank onto the chuck using the chuck's #1 jaws. If pre-drilling the hole, remember to drill it a tad deeper, as the top has not been faced off. When using a screw chuck, the top must be fairly flat for the piece to seat properly on the chuck jaws' shoulder to minimize vibration.

8. Rough out the bottom shape. Leave a large foot for mounting in a chuck. Your foot can be designed to be gripped either externally or internally. I now prefer to grip my foot internally (I expand the jaws into the foot) so that I can always remount the vase if I need to work on it at a later date. Occasionally it may get damaged at some point and need some touch up work. The foot needs to fit the jaws of your chuck but should be approximately ⅓ of the diameter of the vase plus or minus, as your design permits, as this is a functional piece.
9. If using an internal (expansion) grip foot you can go ahead and sand the bottom. This is another reason why I now prefer to use an internal (or expansion) grip design on my feet, as it saves having to reverse turn the vase.

Tip: If you have pre-drilled the hole for the insert, skip this step.

10. Mount the blank in the chuck. Next, using a Jacobs chuck with a 1¾" Forstner bit, drill the hole for the frog to the depth of the frog (flower arranger insert) plus the flange, adding a bit of depth to compensate for shaping and sanding.
11. I use a ⅜" beading and parting tool or a flat-nosed scraper to make the recess to accept the flange on

the frog. I sneak up on the final size of the recess, stopping the lathe often and testing the fit with the flanged vase insert reversed. Leave a little space between the edge of the flange and the edge of the wood on the top to accommodate any wood movement due to changes in humidity. With some frogs you may need to round over the edge where the hole meets the flange recess to accommodate the welded joint where the flange attaches to the cup.

12. Shape the top and final sand it.
13. If you need to reverse turn the vase, you can expand a set of #1 jaws into the hole that was drilled for the insert.
14. Finish with your preferred finish. On dark woods I use Watco Danish oil, let it sit for a week or more, and then apply Watco gloss wipe-on poly or spray it with lacquer.
15. I use a dab of clear silicone caulk or Zots adhesive dots on the bottom of the frog.
16. Find three exotic flowers, cut them to different lengths, add water and step back to admire your beautiful work.■

Tips:

When doing a production run of vases, I may pre-drill the hole for the insert in the top of the vase. When doing this, I drill the hole a tad deeper than required as I have not yet faced off the top of the vase and the finished top will be slightly lower than the rough blank's top. Before taking the finished vase off the lathe, check to ensure that the hole is deep enough. Be careful not to drill through the bottom of the vase. This method works best if the blanks used are fairly consistent in thickness or have been previously surfaced.

The reason I apply Watco Danish oil to the darker woods is to help bring out the rich color of the wood. It is best to wait thirty days for the solvents in the oil to completely cure but the label on the can says 76 hours is sufficient, depending upon humidity. On the lighter woods I apply only the wipe-on poly or sometimes I use Super Blond Shellac that I mix myself from flakes or when in a hurry I just spray them with lacquer. Generally I try not to darken the color of the lighter woods at all. In the near future I may try some water-based polyurethane, as I have had some bad luck with wipe-on polyurethane lately.

When turning a square-shaped Ikebana:

1. **Cut blank perfectly square and then sand all the outside edges, as they are easier to sand before they are turned down to a thin edge.**
2. **Make sure that all hand and body parts remain safely behind the tool rest and that your hands remain clear of the spinning corners at all times, as making contact with the spinning edges could prove to be quite painful and bloody.**
3. **When starting to shape the wings, the bevel of the bowl gouge points in the direction of the cut and gently glides across the surface with very little or no pressure on the bevel. Any pressure on the bevel when performing this cut will result in vibration and a very poor cut and as the wings get thinner, this vibration could start to resonate and cause the wings to explode.**
4. **For best results run the lathe at a very high speed. Be sure to stay alert and pay careful attention to your turning. Check the thickness of the wings often, so that they do not get too thin and fragile.**

Convex square Ikebana

Concave square Ikebana

THE ARTISTIC LAZY SUSAN

Sample layout for glue-up

Introduction & Thoughts on Design:

I take great care in choosing figured woods or woods with an interesting grain pattern for my lazy susans. I spend a great deal of time lining up the grain patterns for the glued tops so that it is difficult to see the individual boards that make up the top. This is accomplished by choosing a board that has a grain pattern that can be easily matched. Be aware of grain direction and the way light is reflected off the surface of the boards. If the grain of two boards is going in opposite directions, the boards will stand out as separate boards, thus negating all the time and effort that was spent matching the grain pattern. I tend to slowly nip away at the edges of the boards to better blend the grain. I also watch for patterns in the wood that can either fool the eye or that may make a pleasing picture of balance and color. I add a groove under the edge of the top for your fingers. I sometimes turn a groove or a bead in the tops to show that it was turned on a lathe and not just cut out on a band saw. Experiment and have fun.

Tools and Materials:

Faceshield
⅜" bowl gouge, traditional grind
⅜" bowl gouge, fingernail grind
Round-nose scraper
3-point tool, ¼"
⅜" detail spindle gouge
1/16" or smaller pilot hole drill bit (self-centering drill recommended)
⅝" drill bit, Fisch brad point bit or Forstner bit
5-plus board feet of interesting wood, ¾" to 1⅜" thick
6" lazy susan bracket (I now prefer to use a 9" circular lazy susan bracket)
Screws for bracket
#10 or #20 biscuits (optional)

Procedure:

1. The most important step is the selection of the wood to turn the lazy susan. Try to select a wood that has figure that can be matched or blended on the edges. I strive to make the joints invisible as though the top is made from one board and not glued up from several boards.
2. As I look at the board, I make the initial decision as to where to cut the board for ease of handling and machining. I then cut it into more manageable lengths, guessing at where the best grain match will be. At first this may seem difficult, but with practice your eye will begin to see patterns and it will become easier every time you do it.
3. If you have a jointer available, run the boards through on one face side to flatten them out. At this time I also joint at least one edge of the boards.
   a. If you are working with wide boards, they may have to be ripped on the table saw to fit the jointer. Take care to rip them at a point where it will be easy to match the grain when they are glued back together.
   b. If a jointer is not available, you can skip this step and go straight to the planer.
   c. If you do not have access to a planer or jointer, be sure to buy your boards already planed and jointed.
4. Now run the boards through the planer with the jointed side down.
5. On a clean, flat table begin laying out the boards for final matching. As I match the boards, I cut them to length plus approximately ½" plus or minus. ▸

d. I arrange the boards with the cupped side down. I do not alter the cup side as is recommended for some table top glue-ups, as the grain from one side of the board reflects light differently than the other side. The altering of the cup also produces a wave pattern in the top, as one board cups up and then the next board cups down.
e. I sometimes break this rule, as my ultimate goal is a nice looking top. Therefore, I sometimes just place the best side up.
f. To better match the cut lines and blend those in, I sometimes overlap the boards, to help visualize where to rip them, for the best grain match.

6. To ensure a nice, even joint when using the table saw, the following suggestions will help:
   g. Use a good quality saw blade (Forester II, Freud's new Ultimate rip saw blade etc.).
   h. Tune and square up your saw, blade and rip fence.
   i. Rip the board on the right side of the joint face up and the board on the left side of the joint face down. This ensures that any inaccuracies in the angle of the cut are offset by altering the cut.
7. It is best to use a jointer for joining the boards. But I have found that when using highly figured woods, that the irregular grain sometimes causes chip-out and therefore a lousy joint. So with highly figured woods, I opt for the table saw method.
8. Once I have matched the boards, I draw the top of a triangle across the boards to aid in remembering their proper placement.

Note: biscuits are not necessary for a good glue-up. If the joint is well made, the glue itself will be more than strong enough to hold the boards together. I find that the biscuits help to keep the boards lined up during the clamping process.

9. We are now ready to mark for the biscuits that will help to line up the joint and reinforce it during glue-up.
   a. First it is best to draw the final diameter of the lazy susan with a compass or a cardboard pattern. It is very important to know where the outside edges of the lazy susan are so that the biscuits are not placed where they will become exposed when the piece is turned.
   b. We also have to take into consideration any detail work or grooves that we might turn on the piece.
   c. Remember to leave extra room around the biscuits as their placement is not critical to the strength of the lazy susan. They are mainly used as an aid during glue-up to help keep the top surfaces aligned properly.
10. Using a biscuit jointer, cut the slots for the biscuits. (I use #10 or #20 biscuits)

Note: I have read in some woodworking magazines that biscuits have a tendency to telescope through to the surface due to the swelling of the biscuit and the added moisture. I have not had a problem with this, perhaps due to the fact that I glue my blanks up a week or two before I turn and sand my lazy susans.

11. Now it is time to glue up the lazy susan.
    d. I like to use the original Titebond Carpenters Glue. I have found that Gorilla glue (polyurethane) is too time consuming and messy.
    e. I let the glue set for 1 to 2 hours before peeling off the excess glue. Using a paint scraper or a cabinet chisel, I carefully remove the semi-hardened glue.
    f. I have found that if I wipe the excess glue off when it is wet, it tends to get pushed into the grain of the wood, which shows up later in the finishing process as a discoloration in the finish.
12. Unclamp the piece.
13. I generally belt sand the top and bottom now to level them out and clean up the glue joints. I like to do it now, while they are still square, as it is much easier now than when they are round.
14. The next step is to draw a circle on the backside for the faceplate and drill the pilot holes for the screws. I like to use the largest faceplate that will fit so as to minimize any wobble when turning.
15. Now is a good time to mark and drill the pilot holes for the lazy susan hardware screws. Take note that

Marking and placement of lazy susan bracket

there is a top and bottom to the hardware, as the holes in the bracket are placed differently.

16. Next I take the blank to the band saw and cut it into a circle.
17. Mount it on the lathe and true it up or turn it to finished diameter. I generally do not face off the front, as I have found that this creates extra sanding and work. I have found that it is quicker and easier to machine sand the top & back off the lathe.
18. Now is the time to do any detail work on the surface and the edges.
19. Remove top from lathe and set aside until bottom has been turned.
20. The bottom needs to be at least 10½" to 11" in diameter to accommodate the 6" lazy susan bracket. The diameter increases as the size of the top increases in diameter. For instance, the diameter of the base is approximately 14" for a 17" to 18" lazy susan. Mark the holes for the faceplate and the lazy susan bracket, remembering that there is a top and bottom to the bracket and drill the pilot holes for both if you have not already done so in step 15.
21. Mount the bottom on the lathe and turn it to finished diameter and add any detailing. I generally sand the bottom while it is still on the lathe as I have usually turned some detail that needs sanding on the lathe.
22. Remove the bottom from the lathe.
23. It is now time to mark the access hole in the bottom for final mounting of the hardware. To do this, I use a small 1/16"-diameter drill bit to drill a pilot hole through the bottom to locate the proper placement for the ⅝" access hole. I temporarily place the bracket on the bottom and rotate the part of the bracket that mounts to the top 45 degrees to the bottom mounting plate. I then mark the screw hole and drill the pilot hole so that I will be able to access the screw when it is time to mount the bracket.
24. Now I turn the base over and using a ⅝" brad point bit or Forstner bit, I drill through the bottom. I have a scrap board underneath the base to minimize tear-out as the drill bit breaks through the work.
25. I now finish sand everything, sign my work, and put the first coat of Watco Danish oil on all the parts, both top and bottom. That is, if the wood is a dark wood the Danish oil brings out the color. If it is a lighter wood I skip the oil and apply the final finish.
26. Once the finish has had time to dry, I mount the hardware to the bottom first and then to the top through the access hole. Remember there is a top and bottom to the hardware.
27. I then turn a dowel from contrasting wood to fill the access hole and glue it in place.
28. I finish the lazy susan by sanding the dowel smooth and adding a final coat of finish. I sometimes use wipe-on polyurethane or lacquer for a final finish.
29. The last step is to admire your work for its beauty and functionality. ■

Finished lazy susan

TURNING A CONTEMPORARY ELEGANT LAMINATED LAMP

Introduction and Thoughts on Design:

The making of a lamp is an excellent project for beginning to intermediate turners as it involves both spindle turning and faceplate turning. Before mounting any wood on the lathe, it is best to spend some time sketching out a design. If this is your first attempt at turning a lamp or spindle work, try to keep the design fairly simple. Generally the base and the upright spindle parts of the lamp are turned from two separate pieces of wood. Some thought should also be spent on deciding what wood or woods to use for the lamp. Are you going to use solid wood or are you going to glue up several pieces of wood to create a laminated design? Another consideration is whether or not you are going to paint or color the lamp. Painting the lamp accentuates the lines of the turning, as the grain of the wood does not interfere or distract the eye from the lamp's curves and clean lines. If you are making the lamp for yourself, the overall size of the lamp and lamp base should be taken into consideration. I find that the hardest part of turning a lamp is finding a suitable lamp shade. I am fortunate in that there is a local lamp shop that is willing to take the time to help me choose an appropriate shade at a reasonable price. Sometimes it can be very difficult to find a lamp shade that complements your work and does not distract from it.

Tools and Materials:

Faceshield
1¼" spindle roughing gouge
¾" skew
⅜" spindle gouge
⅝" bowl gouge (with side grind)
⅝" bowl gouge optional (with traditional grind)
¼" point tool or pyramid tool
¾" round-nose scraper optional
⅜" or 5/16" lamp auger or electrician's drill bit
1¼" Forstner bit
¼" dovetail router bit and router table optional
2½" × 2 ½" × 12" plus or minus blank for lamp
8" × 8" × 1½" blank or larger plus or minus for the base
Lamp kit or parts to wire lamp
8' #16 or #14 lamp wire
13" plus threaded lamp rod
2 nuts for lamp rod
2 washers for threaded pipe and nuts
1 1½" brass washer for top of turned lamp
Decorative filler parts to go between top of lamp and the light socket
Light socket with a one-way or three-way switch
Lamp shade holder (harp) 8", 10", or 12"
Lamp shade
Felt for bottom of lamp base

Sources:

Lamp Parts:
W. N. deSherbinin Products Inc.
2 Augusta Dr
Danbury, CT 06810

203-791-0494 or 800-458-0010
wndesherbinin.com
lampparts@wndesherbinin.com ▸

Mail Correspondence:
PO Box 63
Hawleyville, CT 06440

Procedure:

Note: If you are going to glue up wood for a laminated spindle lamp, go ahead and do your glue up before preparing and turning the base.

Turning the Base:

1. True up the wood for the base by running it through a planer, hand planing it, or using a belt sander. The bottom of the lamp base should be flat and ready for finish sanding as the blank will be mounted on a screw chuck from the bottom side. Generally I do not turn or reverse turn the bottom on the lathe.
2. Cut the blank to size, roughly 2" × 8" × 8" plus. I prefer to use a blank 8" to 12" square by 1½" to 2" thick, depending upon the wood available.
3. Using a straightedge find the centers both front and back.
4. Use a compass or bar compass to draw the outside diameter of the blank.
5. While the blank is still square, using my router table and a ¼" dovetail bit, I route a recess in the bottom for the electric cord. To do this, I mount the bit in the router, and bring up my fence so that the bit will cut a hole in the center of the blank. I then adjust the height of the bit so that the electric cord will fit in the slot cut by the bit and when twisted sideways will lock in place. I mark the fence where the center of the bit is and then draw a line on my blank perpendicular to the direction of the wood grain from the center of the piece to the outside. I then rout the slot, stopping before the line on the fence and the line on the side of the piece meet.

Note: I do not want to rout the slot all the way to the center as I still have to drill a hole in the center for the nut and washer and will need some wood left to center the drill bit. Remember, we are going to be drilling a 1⅛" hole plus in the bottom, so the slot can stop a half inch from the center and still connect with the future hole.

6. I prefer to drill the hole for the lamp spindle tenon on the top of the blank and the hole for the electric cord nut and washer that hold the lamp to the base in the bottom, on the drill press before I turn the base. The hole in the top for the tenon is approximately 1¾" in diameter and ⅜" deep. The hole in the bottom needs to be wide enough to fit the washer that helps connect the base to the threaded rod that goes up through the base and the lamp spindle.

Note: When drilling holes on the drill press, especially when using Forstner drill bits, it is always a good idea to clamp the work down on the table. It can be quite painful if and when the piece spins out of control, when the bit inevitably jams in the hole.

7. Now it is time to drill the hole through the center for the screw chuck and eventually the lamp rod. As I use a Oneway chuck and screw, I drill a ⅜" diameter hole for the screw. Unfortunately, some threaded rods need a slightly larger diameter hole and I will later, after the base is turned, ream out the hole to fit the threaded rod.
8. The blank is now ready for mounting on the lathe. I like to turn the base first so that I can easily match the tenon on the spindle to the mortise or drilled hole in the base. If you do not have a drill press, you can turn out the mortise in the top of the base. The recess in the bottom can also be done without a drill press by plugging the ⅜" hole with a dowel plug and drilling it out with a hand drill after the lamp base is turned.
9. Turn and finish sand the base according to your design by using a story stick or by referring to your drawing. I prefer to use a story stick or at times when I feel like taking a risk, I create my design directly on the lathe, which is most of the time.

Turning the Lamp Spindle:

1. If you are going to use solid wood, it is best to pre-drill the ⅜" plus hole in the lamp spindle first. I recommend the use of a threaded lamp rod to go all the way through the lamp, connecting the base to the lamp spindle. Unfortunately, some lamp rods require a hole slightly larger than the ⅜" lamp augers provide. One solution is to use an electrician's drill bit and have the hole slightly larger than the rod or to cheat and enlarge the hole at both ends and glue in sections of the lamp rod in the bottom and the top. I do not recommend this method, as it is not as secure or safe as a solid rod. When gluing up the parts


Lamp base with dovetail groove routed in bottom


Lamp base ready for mounting on the lathe

for a laminated lamp, the section for the hole can easily be sized to fit the lamp rod, by using two pieces for the center glue-up and leaving a space in between them for the lamp rod (see photo).

2. Mount the spindle blank in the lathe by centering it on the pre-drilled holes. I use a cone bearing center in the tailstock and a drive center or a steb center in the headstock. For mounting in the headstock end, you can insert a temporary plug in that end for the drive center to bite into.

Note: Before mounting a laminated blank, I glue a plug in both the top and bottom that is approximately ½" long into the end which will be drilled later to fit the threaded rod. I do this because the hole left in the blank from the glue-up is a rectangular hole and is generally a bit larger than the threaded rod and it would be difficult to center the blank on the hole.

3. Using a story stick or your drawing, turn the blank and finish sand it. For my lamp spindle I like to lay out a story stick, especially if I am going to do a production run or if I may desire to turn another lamp sometime in the future.

Assembling the Lamp:

4. Now that both the base and the lamp spindle have been turned, test fit them together and try connecting them by running the lamp rod through both parts. You may have to use a round file or a larger drill bit to open up the hole in the base to fit the rod.
5. Attach the washer and nut to the base, and screw on the brass decorative washer to the top of the lamp spindle with the filler piece if desired, the harp connector, then the light socket and switch. Before you can connect the socket, you will need to cut the threaded rod to length. This can be done with a good hacksaw.
6. Once all the parts are dry fitted, you can now connect them and wire the lamp according to electric code or the directions on the lamp package kit. Remember to tie a knot in the cord inside the socket so that it cannot be easily pulled out.
7. Apply a felt or cork bottom to the lamp base to help hold the cord in place and to protect your tabletop. Plug her in and light up your life.


Spindle mounted in lathe


Parts ready for glue-up

Laminated Lamp Spindle:

1. Prepare stock by jointing and planing it flat and to a consistent thickness. I like to use 3 pieces of curly or tiger maple ¾" thick by 2½" to 3" wide, sandwiched around two pieces of purpleheart ⅛" thick by 2½" or 3" veneer. The inner layer of maple (middle layer) is made from two pieces ¾" × 1" to 1¼" set apart, so that a 7/16"-plus hole will be left for the lamp rod.
2. I then put glue on all the faces of the pieces and glue them up. I use a sacrificial piece of lamp rod in between the two middle pieces to ensure that the wood does not slip during glue-up and that the hole will be large enough for the lamp rod. I generally have the cup side of the outside pieces of wood facing into the glue-up. This helps to ensure that when the wood moves with the changes in humidity, that it will tend to curl into the joint and not peel apart. I like to use Titebond yellow carpenters glue for this glue-up. I do not bother wiping off the excess glue at this point but choose to scrape it off when I remove the blanks from the clamps after a minimum of an hour and a maximum of two hours, as the glue gets too hard to scrape after two hours.
3. If you haven't done it already, cut little rectangular filler pieces ½" long to glue into the ends of the blanks to fill the holes so that the blank can be drilled to fit the lamp rod at the top and bottom and to more easily mount accurately on the lathe.

Note: it just dawned on me that you could save a step and glue the two rectangular blocks in the ends at this time and not only use them to help space out the center pieces but also for centering the blank on the lathe when turning it to shape.

4. The blank is now ready for turning.
5. Once it is turned, I drill out the center of the spindle where the temporary pieces were glued in to make it easier to mount the blank on the lathe, with the proper size drill bit to match the diameter of the lamp rod.
6. Proceed to step 4 above and assemble your lamp. ■

MINIATURE STOOL OR 17" HIGH STOOL

Introduction:

The seat of the stool is the most visible part of the stool, therefore using a figured wood will enhance the overall appeal of the finished stool. The legs look best if turned from a wood that contrasts with the seat. A maple seat looks good with padauk, walnut, wenge, or other dark wood for the legs. When working on the design for the legs, keep in mind that simple flowing lines are easier to turn and are visually less distracting from the overall look of the piece than a design loaded with beads and coves. The size of the seat and the length of the legs can be changed to fit a particular doll or teddy bear. Once you have sketched a design for the legs, it is a good idea to turn a sample leg out of scrap wood. Sometimes seeing a design in 3-D will inspire changes that will enhance the overall design of the finished piece. Have fun with the miniature stool and when you have settled upon an outstanding mini-stool, consider turning a full-size stool.

Materials:

Faceshield

Mini stool

Maple seat planed or sanded flat on the bottom side 1⅜" × 7" × 7" plus
Walnut or padauk legs 1⅜" × 1⅜" × 7" to 8" long
Walnut or padauk button 2" × 1¼" × 1¼"
¼" × 4½" spacer disk (for use on screw chuck for a shallower hole)

17" High Stool

Maple seat planed or sanded flat on bottom side 2" × 11" × 11" plus or minus
Walnut or padauk legs 2" × 2" × 17"
Walnut or padauk button 2" × 1¼" × 1¼"
¼" thick by 6" plus or minus Masonite spacer disk for stability

Tools:

⅜" side ground/fingernail bowl gouge
⅜" traditional ground bowl gouge
⅜" spindle gouge
1" spur style drill bit (for 17" stool)
⅜" beading & parting tool
1/16" × 2" Chris Stott parting tool
⅝" spur drill bit
⅜" spur drill bit
⅜" screw center (Oneway)
Oneway Talon chuck
½" steb center or safety drive center
Bearing center with cone

Turning the Stool:

1. I always turn the stool seat first. That way I can drill the holes for the legs and turn the tenons on the legs to match the drilled holes in the seat. Some drill presses and some drill bits tend to wander and the hole for the legs is sometimes a bit larger than the diameter of the drill bit.
2. Before mounting the square seat blank, mark the center of the bottom and using a compass or template ▸

Parts for miniature stool

Sample tools used for project

Chucks and drill bits

draw out a circle. I then take it to the band saw and cut it round.

3. The next step in preparing the blank is to drill a ⅜" hole in the center of the bottom, approximately ½" deep for mounting the blank in a screw chuck that has a spacer mounted on it to reduce the required depth of the mounting hole.
4. For the spacer I use scrap ¼" Masonite or ¼" plywood. Mount the blank onto the screw chuck and turn it true.
5. Begin to shape the top of the seat by turning the face of the blank with a slight indentation. The seat will resemble a red blood cell or life saver shape when finished.
6. Round over the outside edges to an appealing curve and finish sanding the sides and seat.
7. I do not turn or sand the back at this time, as I will need to draw out and divide a circle for locating the holes for the legs. I have found it easier to use orbital sanders on the bottom after the leg holes have been drilled.
8. To mark the seat bottom for the leg holes, I first determine how far from the edge of the seat that I want the legs to be. On the miniature stools the center of the ⅝" hole for the legs is approximately 1" in from the outside edge of the seat. For a 17" tall stool, the center of the mortise for the legs is 1½" in from the outside edge of the stool seat.
9. I then draw a circle with the center point of the compass in the ⅜" hole that was used to mount the blank to the center point of the leg holes. I insert a turned button with a ⅜" diameter tenon into the center hole to make it easier to set the compass point. This button is similar to the buttons that I glue into the hole to cover it thus adding a bit of extra detail, but instead of having a raised knob, it is concave with a dimple in the center to aid in setting the compass point for marking the circle for the positioning of the leg holes.
10. The next step is to decide where you want to locate the first leg. I usually locate the first leg in the middle of the flat grain pattern of the seat. I mark this spot and then using the compass with the same radius as the circle, I make an arc from the spot and mark where the compass touches the circle. Once I have gone all the way around marking arcs, I then reverse direction and go back around the circle, marking the arc where it meets the other arc. Do not worry if the two arcs do not line up exactly, for you can approximate the center of the two arcs.
11. Use a scratch awl to put a dimple for the drill bit to center on, at every other convergence of the two arcs. This produces three equally-spaced marks for the legs.
12. Use a straightedge to draw sight lines on the seat bottom connecting the center point of the leg hole to the center of the two arcs directly opposite the leg hole. (These lines are used as sight lines to help line up the drilling of the holes and to keep the same splay angle on the legs).
13. Next I set up my drill press to drill the holes at approximately 15 degrees. I use a portable angled tabletop jig that I clamp to the drill press that has the proper angle already set. For larger stools I sometimes adjust the angle to 10 degrees to keep the legs from splaying out too far from the seat, possibly creating a tripping hazard. If you intend to drill a number of items at various angles, it might be worthwhile to buy or build a hinged tabletop for your drill press. To avoid drilling through the top, I use a scrap piece of ¼" material to set the drill press to stop automatically before drilling through the top.


Drilling hole in seat for mounting in screw chuck


Using compass to draw circle

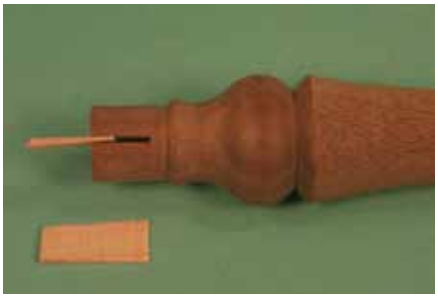

Dividing circle into six parts


Drawing sight lines for drilling holes. These lines aid in keeping the splay of the legs correct.


Portable adjustable angle jig for drilling leg holes

Jig mounted on drill press, drilling first leg hole

Using a story stick to mark the leg



Loose tenon with wedge for a better fit

14. Now that the holes are drilled in the seat, the fun begins as I turn the legs. Three-legged stools will level themselves while in a four-legged stool all legs must be exactly the same length or they will rock. I work and design better in 3D, so I begin by turning a prototype for my legs. Most people will spend time drawing out and planning the design of their legs and then make a story stick. I prefer to make a story stick from an already turned leg. If I am in a real hurry, I just skip the story stick and use the prototype to mark my other legs.
15. Rough turn the blank to a cylinder and then mark the high and low points. Wherever I have a bead, I make the center mark a tad thicker just in case I take too large a final cut. This helps ensure that my center mark is still visible, in order to maintain my symmetry.
16. Then starting at the tail stock end, which is the bottom of the leg, I shape the leg.
17. As I near the top of the leg, I stop and turn the tenon to a bit larger than its final size. Once the spindle is turned, I then dry fit the tenon in the leg hole and gradually turn it to fit snugly. I am after a firm fit. Too tight and it may not go in all the way when the glue begins to swell the wood. Too loose and the leg will fall out or require tedious wedging, or worse have to be cast aside as a reject. Once I am satisfied with the fit, I finish sand the leg. If I am doing a production run of stools, I rough turn all of the legs and then fit the tenons and sand them all at the same time. The length of the tenon should be equal to or less than the depth of the hole in the seat.
18. Before applying finish to the seat, I plug the holes with wads of paper towels to prevent the finish from interfering with the glue joint.
19. I place masking tape around the tenons to prevent the finish from interfering with the glue joint.
20. The last step is to glue the parts together and clean up any excess glue. It is best to let the glue dry and then peel it off. This method works best if finish has already been applied to all the stool parts.
21. Occasionally I need to wedge a loose tenon. To do this, I use a V block to hold the leg while I use the band saw to cut a groove perpendicular to the growth rings (center of the face grain) of the leg, ¾ of the way down the unexposed part of the tenon. I then cut a wedge shorter than this groove to ensure that it will not interfere with the seating of the leg in the mortise. This wedge is similar to the wedges used to hold axes to their handles.
22. If for some reason there are gaps between the hole and the leg, I sometimes glue slivers of the same wood as the top in between the leg and the wall of the mortise. I later cut them flush with the seat bottom and very few people notice the gap.
23. With a little buffing or elbow grease, you have a stool fit for a favorite doll or plant. The same procedures are used for turning a full-scale stool. Stools over 17" high need to have cross bracing to minimize the tendency for the legs to splay apart. When using cross bracing, the idea is to put the parts in tension and compression, thereby locking the stool together. The same principles used in the making of Windsor chairs apply to the making of three-legged stools.
24. The last step is to turn a small 1" to 2" plus or minus diameter button to stick into the hole left by the screw chuck. The button should be turned from the same wood as the legs. ■

Stool with one leg installed

24" HIGH THREE-LEGGED STOOL

Introduction:

My large stools have a design similar to my mini stools or 17" high stools. If you have time, do a quick read-through of the mini-stool handout as there may be some tips or tricks that I have not covered in this handout. The seat of the stool is the most visible part of the stool. Therefore, using a figured wood will enhance the overall appeal of the finished stool. I prefer to make the seats from figured maple and the legs from a contrasting wood. The seat is indented in the top, similar to the shape of a healthy red blood cell; this makes a more comfortable seat. The 24" stools and taller require cross bracing to prevent the legs from spreading out and breaking. I like to angle the back cross brace down to the foot brace. This is a design technique which I first saw on David Scott's stools and have since adapted to my own stools. In general I turn my seats approximately 12" to 14.5" in diameter for 24" and higher stools and 10.75" to 12" diameter for 17" high stools. It all depends upon the availability of wood for the seats and the customer's preference. I also adjust the splay of the legs on the 27" stools to ensure that they do not extend too far beyond the seat footprint, as this could create a tripping hazard. The straighter the grain in the legs, the easier they are to turn and the stronger they will be. When working on the design for the legs, keep in mind that simple, flowing lines are easier to turn and are visually less distracting from the overall look of the stool than a design loaded with beads and coves. Once you have sketched a design for the legs, it is a good idea to turn a sample leg out of scrap wood. Sometimes seeing a design in 3-D will inspire changes that will enhance the overall design of the finished piece. Now let's select the wood and turn a beautiful and comfortable heirloom stool.

Finished stool seat

Stool seat with legs and leg braces

The chuck, drill bits, steb center, screw, and bearing center

Materials:

Faceshield
Figured wood seat (I prefer figured maple) 12" to 15"
Wood for legs & braces (contrasting color wood such as walnut or padauk) 2" × 2" × 25"
Wood for braces 2" × 2" × cut to fit (Legs must be in tension and compression, therefore the size of the braces is dictated by the height of the stool and the final splay of the legs. They are cut to fit each individual stool.) Back brace wood is approximately 13" long and foot brace is 17" long.
Spacer disk for screw chuck (made from ¼" thick Masonite approximately 4" to 6" in diameter)

Tools:

1¼" spindle roughing gouge
⅜" bowl gouge with a side grind
⅜" bowl gouge with traditional grind
⅜" spindle gouge
¼" parting tool
⅝" spur drill bit
1" spur drive drill bit
⅜" screw center
Stronghold chuck
⅞" steb center
½" steb center
Bearing center with cone center ▸

Turning the Stool:

Note: The steps for turning full-size stools are the same as in turning the miniature stool with the exception of the added cross braces. The 17" and smaller stools do not need cross bracing. The 24" high and taller stools require cross bracing to prevent the legs from splaying out and breaking.

1. I always turn my seat first and drill the holes in it for the legs. I can then turn the tenons for each leg to fit in its matching hole to ensure a good fit. Some drill presses and drill bits tend to wander and enlarge the hole and thus require a slightly larger tenon.
2. Before I cut my seat blank from my chosen board, I like to run what will be the back side or bottom of the seat through my planer to flatten the bottom and give it a nice finished surface. If it is too large for the planer, I use a belt sander or a hand plane to flatten the surface. When turning the seat, I try not to turn more than necessary on the back side. I turn just enough of the back side so that the curve on the outer edge of the seat blends in smoothly to the bottom of the seat.
3. Once the bottom is flattened, I then cut the blank to size (for example a 12" × 12" square) and mark the center on the bottom or back side with a straightedge going from corner to corner.
4. Next I use a large compass or a bar compass to draw a circle.
5. With the aid of my drill press, I drill a hole for the screw chuck about ½" deep. (Use the proper size drill bit to fit your chuck's screw.) I like to use the screw made by Oneway, so I use a 13/32 drill bit to drill a pilot hole for it. I like to use a spacer (stabilizer) between the chuck and my blank so that I do not have to drill a deep hole and to provide more support for the blank to help minimize vibration.

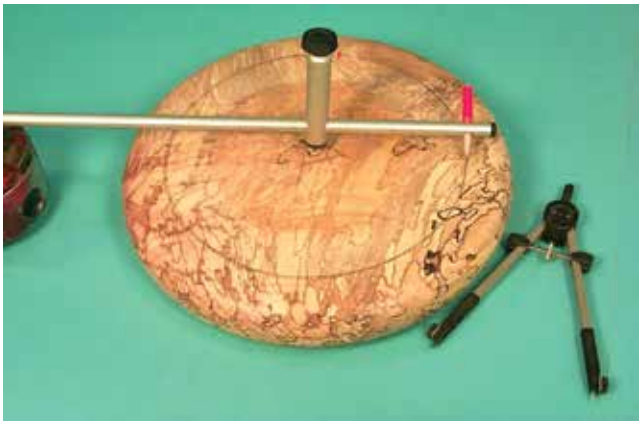
Adjustable drill press table for drilling holes in the seat

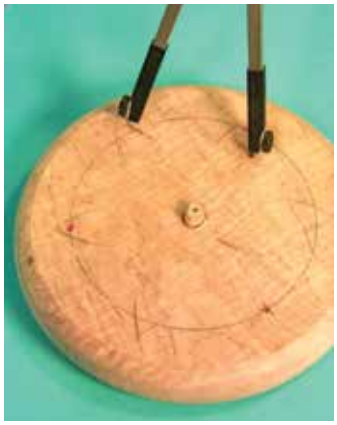
Note: For the spacer I use a piece of scrap ¼" Masonite or ¼" plywood disc with a ½" hole drilled in the middle on which I sometimes put a slight chamfer with a chamfer drill bit. The slight chamfer helps to prevent the bits of wood that sometimes twist out of the screw hole from pushing the blank off the disk and causing it to wobble.

6. Once the blank is mounted on the lathe, begin turning the top of the seat. Start by truing up the outside of the seat and roughing in the outside curve on the edge of the seat. Once that is roughed in, I begin to dish out the seat in the shape of a red blood cell or life saver.
7. Next blend the outside edge curve to the seat curve, creating an appealing shape.
8. Once I am happy with the feel and look of the seat, I sand it. I start with 100 grit sandpaper and sand all the way to 1500 grit, wet-dry paper, and then buff it with a grey Scotchbrite pad, followed by the gold Scotchbrite pad.

Note: I do not sand the back of the seat at this time because I still need to lay out and mark the leg holes. I have also discovered that it is easier to use a belt sander and/or hand held orbital sanders to sand the back after the leg holes have been drilled.

9. To mark the seat bottom for the leg holes, I first determine how far from the edge of the seat I want the legs to be placed. On my 24" and taller stools I like the legs set in about 1¾" from the outside edge of the seat. I have made a gauge that has notches cut in it for the various setbacks that I like to use on my stools.
10. Using my setback gauge, I mark the spot for the first leg hole, which is 1¾" in from the outer edge of the stool seat. I usually place this first hole in the center of the face grain (end-grain area of seat if viewed from the edge) of the seat on what I consider to be the back face of the seat.
11. Next set the compass to draw a circle from the center of the seat to this mark and around the seat. Using the radius of the circle just drawn, set the point of the compass in the mark for the first hole and draw an arc which will cross the circle and then continue drawing arcs around the circumference of the circle (the result should be six arcs on the circle). Starting back at the first mark, repeat, marking arcs going in the opposite direction from the first set of marks. The arcs should cross at exactly the same point but if they don't, not to worry, just split the difference between the marks. Next, skipping every other cross mark from the first leg hole, mark the spot for the other two legs. Use a scratch awl or some other





How I lay out and space the holes for the legs, using the radius of the circle to divide the circle with six arcs and then skipping every other arc, mark them for drilling the leg holes

pointed marking device to make a dimple for the tip of the drill bit to bite into at each leg hole. There should be three evenly spaced marks for the leg holes.

Note: I use a button to glue into the central hole to cover it, but instead of having a raised knob, it is concave with a dimple in the center to aid in setting the compass point for marking the circle for the positioning of the leg holes.

12. Next use a straightedge to draw sight lines on the seat bottom connecting the center point of the leg hole to the center of the two arcs directly opposite the leg hole. (These lines are used as sight lines to help line up the drilling of the holes and to keep the same splay angle on the legs.)
13. Next it is off to the drill press to drill the holes for the legs. The holes in the seat are 1" in diameter and 1" plus deep to accept the 1" tenon on the legs. The angle of the leg hole varies between 10 degrees and a hair shy of 15 degrees, depending upon the height of the stool. For stools 24" and above I drill the mortise at 10 to 12 degrees, for stools 17" and smaller I drill the mortise at 15 degrees.
14. I set my homemade, adjustable tabletop on the drill press so that I can drill the proper hole angle; in this case it is 11 or 12 degrees. At this time I also use a scrap piece of ¼" Masonite as a spacer to set the drill press stop so that I cannot drill through the top of my seat.
15. Once everything is set, I drill the holes for the legs.

Note: I prefer not to have the tenons on my legs go through the seat as I think that they would visually break up the figure and detract from the clean look of the seat top. The strongest way to attach the legs to the seat is to use a tapered mortise and tenon through-joint and have the legs wedged into the seat similar to the way wedges are used in axe handles. The mortise and tenon would have a 6- degree taper for the best results. For more on this method of tapered leg joints, see Peter Galbert's article in *American Woodturner*, Spring 2009 Vol. 24, No. 1, titled "Tapered Mortise and Tenon."

16. I then finish sanding the seat and finish the seat with one coat of Zinssers Bulls Eye Shellac sanding sealer finish, followed by several coats of lacquer, shellac or polyurethane.
17. Now it is time to turn the legs. I like to use a contrasting wood for the legs, 2" × 2" × 25" for a 24" high stool.
18. Find the center of the leg blanks and mount them on the lathe between centers. Next use a story stick to mark the legs and then turn them. I generally turn all my legs and then sand them all as I fit the tenons to each individual leg hole and mark the legs to the corresponding mortise. I like to use a numbering system if turning multiple stools. For instance, leg A1 goes in hole A1, etc.
19. Before drilling the holes in the legs, I dry fit the legs into the seat.
20. With the legs in the seat, mark the angles for drilling the mortises in the legs and measure for the size of the cross braces. ▸



How I mark the angles for the cross braces

21. The size of the seat, the splay of the legs, and the finished thickness of the legs will determine the length of the cross braces. The length of the braces will vary a bit from stool to stool, so I do not cut them to length until after I dry fit the legs. Dry fit the legs in the seat and then push them apart firmly to put them in tension and compression. Then measure the length of the stretchers, remembering to add in the depth of the mortises which in this case is ⅝" plus ⅝" or 1¼". Now it is time to cut the stretchers to length.
22. I use a straightedge and some clamps to line up the holes and measure for the braces. At this time, I also mark the angle on the leg with a watercolor pencil for drilling the mortise. (I find that a white watercolor pencil shows up better on dark woods and is easily removed with a bit of moisture.)
23. The holes on the two front legs as measured down from the top of the tenon are roughly 16" to 17" down from the top of the tenon.
24. The location for the mortise in the back leg is approximately 12" to 12½" down from the top of the tenon, depending on the design of the legs.
25. After marking the legs, I drill a ⅝"-diameter hole ⅝"-plus deep in them to accept the ⅝" tenon on the braces. I like to use Oneway's "Drillwizard" that mounts in the banjo on the lathe and holds a hand drill for boring holes in objects mounted on the lathe. It is best when designing your legs to take the positioning of the leg braces into consideration and ensure that the area for the mortise is thick enough, thus avoiding any problems with drilling the holes for the tenons.

Note: I now use the Oneway "Drillwizard" assembly to mount a hand drill on my lathe to drill the angled holes in the legs, as it is much easier to hold the legs in place when drilling the holes.

26. After cutting the braces to length, I turn them and test fit the tenons into the appropriate leg mortise.

Note: When fitting the tenons, they should not be too tight or too loose; when the tenon slides into the mortise with just a little bit of force, the fit is good; if you have to work to get the tenons to go into the mortise, they are too tight. If they slide in very easily and wobble around, they are too loose and will need a wedge in the end of the tenon to spread it apart inside the mortise.



(Left to right)
The Oneway "Drillwizard" in action with leg hole angle jig for easy set-up

V-block jig for cutting cylinders on the band saw and for cutting the slot in the leg tenon for a wedge

Loose-fitting leg with wedge for a tighter-fitting joint

27. I am now ready to sand and apply finish to the legs and braces.
28. I use masking tape to cover up the tenons to prevent the finish from interfering with the glue bond.
29. If all the tenons fit snugly into the mortises, I then proceed to glue up the stool.
30. If some are loose, I take the offending tenon to the band saw and cut a groove to accept a wedge on the face grain side of the tenon to just shy of where the tenon meets the turning. When it is glued up, the wedge and groove will not be seen. The wedge should be trimmed to be smaller than the width of the endgrain portion of the tenon, shorter than the length of the tenon, and thick enough to spread the tenon out in the hole to lock the leg in place.
31. I use either a rubber mallet or a wooden maul to drive the legs into the mortises. The legs must be driven in evenly, a little bit at a time so as not to wedge them in and not be able to get all legs to bottom out in the mortises.
32. Now turn a button with a ⅜" tenon to stick into the hole in the bottom of the seat to cover up the screw chuck hole.
33. Stand back and admire your finished stool. Give it a test run, well okay, a test rest as you deserve to get off your feet for a break. ■

(Left) Stool leg parts oiled and placed in drying racks

(Right) Using a hand drill with a spade bit with extension rod to drill mortises in legs

(Left) Fitting the cross braces to lock stool legs in tension and compression

(Right) Finished stools awaiting delivery

AAW
EDUCATION

LET'S GO FOR A SPIN
SESSION 5

5.1 Tool Techniques for Turning Platters and Bowls

5.2 Turning Green Wood

5.3 Bowl Turning Fundamentals

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TOOL TECHNIQUES FOR TURNING PLATTERS AND BOWLS

Introduction:

The following discussion is a review of some of the tool skills and techniques that were covered in sessions 4 and 5 of the curriculum that Alan Leland developed to give students a good solid foundation in Woodturning Fundamentals. The different tool techniques that were discussed in Sessions 5 and 6 are reviewed here, partly to make it easy to refresh students' skills and partly to be certain that they were adequately covered in the class. The following review is intended to highlight some of the finer points of tool technique when turning side grain (faceplate turning). Alan suggests practicing these tool techniques by chucking up some waste blanks (approximately 3" × 5" × 5") and then turning them away as you practice the outside and inside cutting techniques. Maybe try practicing using a bowl gouge to turn ogees for bowl and platter rims.

The Side-Ground Gouge and the Traditional-Ground Bowl Gouge:

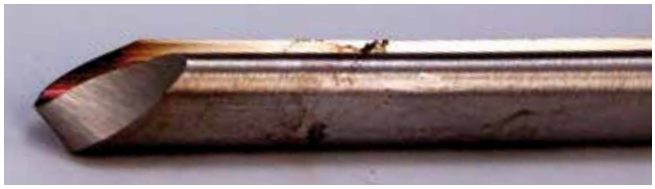
I recommend the use of two bowl gouges for bowl turning. I do most of my roughing cuts with a gouge with the side grind (David Ellsworth grind, celtic grind, Irish grind, etc. These are just different names for essentially the same type of side grind on a bowl gouge). The traditional-ground gouge has a 40-degree bevel and is used for my finish cuts and for minor shaping and tweaking. It also does a wonderful job of cutting the tight curve at the bottom of many bowl designs. For tight curves I grind a secondary micro-bevel of 65 degrees, plus or minus, to match the curve that I am trying to cut. I have also ground the back of the bevel slightly convex to make it easier to get around a tight curve.

The tool techniques discussed below do not require force. The sharp edge of the tool should easily slide its way through the cut. Do not push the tool into the work. Rather, glide it across the surface of the wood, with the bevel pointing in the direction of the cut and with the bevel supporting the cut but without pressure onto the surface of the material being cut. This will produce a much smoother, cleaner cut. When done right, making this cut is so much fun that many turners forget to check the thickness of their bowl and go right through the bottom. If you hear a knocking sound, it sometimes signifies that you are putting too much pressure into the wood. As you are gliding along on the bevel through the cut, if you start to see lines forming behind the cut, they could be caused by one of two things:

1. The first one would be that you are getting off the bevel and the cutting edge is self-feeding into and out of the work. If this happens, all you need to do is push the handle back toward the lathe (if you are working on the outside of the bowl) in order to get back on the bevel.
2. The other problem that causes the series of lines is that the bevel may be too long for the curve that it is cutting and the heel is digging in behind the cut. Sometimes it digs in because the heel, not the toe or cutting edge, is in contact with the surface. The solution is to pull the handle toward you (if you are working on the outside of the bowl) to get back on the bevel properly so that the bevel is supporting the cut.

Horizontal Power Cut Technique:

Use a bowl gouge with a side grind. The tool handle is held in the horizontal position parallel with the ways of the ▸



Side-ground ⅜" bowl gouge

Traditional-ground ⅜" bowl gouge

lathe with the center of the cutting edge at the center of the work to be turned. Throughout the following cutting action the handle remains fairly close to horizontal. With the flute in the closed position (3 o'clock position), using the bevel as a guide, slowly bring the handle around until it starts to cut. Adjust the angle of the flute slightly if necessary, slowly cut into the bowl until you have created a place for the bevel to register. Now sliding along using the bevel as a guide, open the flute to approximately 45 degrees (1 o'clock). Continue the cut on into the center of the bowl. As I near the bottom inside of the bowl, I begin to rotate the flute back to the closed position. Remember to slow down the cut as you near the center so as not to cross the center and risk a possible catch. If you experience vibration, it is a sign that you are not gliding along the bevel, that you may be off the bevel, or that the tool is dull. Putting too much force into the wood by pushing the tool into the work is another cause of excess vibration. As you go down through the cut, gradually rotate the flute as it goes around the curve of the bowl and bring it to a closed position as it nears the bottom center of the bowl. Sometimes the sharp curve at the transition point between the side of the bowl and the bottom portion is too sharp to ride the long bevel on the side-ground gouge. Sometimes changing the bevel angle on the gouge by taking to the grinder will help. At this point I sometimes switch over to using the traditional ground gouge. It has a smaller bevel that can glide through the sharp curve. Many turners resort to using a large scraper to shape the bottom curve of the bowl. I have found that by switching to the shorter bevel of the traditional gouge and possibly grinding a micro bevel on it, I can cut this area rather than scrape it. Cut fibers are easier to sand than scraped fibers.

Traditional Technique for Turning the Outside of a Bowl:

The tool handle is resting against your hip and in the horizontal position, the flute is sandwiched between your thumb and fingers of your left hand (do not cover the flute with your fingers so that the shavings have a clear passage) and is open at roughly a 45-degree angle (11 o'clock). Once again this is a gentle cut, with the only force used going down to the tool rest and from the thumb to the fingers to slightly adjust the flute angle as necessary for optimum control of the cut. As with most woodturning it is the movement of your body through the cut that enables you to have the flowing curves of a well-turned bowl. The cut is started with the body in an uncomfortable position and ending in a comfortable position. The knees are flexed and your body movement aids in controlling the quality of the cut. The bevel of the gouge always points in the direction of the cut and very little pressure is used to push the tool through the cut. Most of your force should be directed onto the tool rest and in the direction of the cut, not into the work itself. Once again, the bevel is gliding along the surface with very little pressure onto the surface. Both the side-ground gouge and the traditional-ground gouge are used. The side-ground gouge is for the roughing cuts and removal of large quantities of material. The traditional-ground gouge is used for the tight curves and for the finishing cuts.

Shear Scraping Using the Side-Ground Gouge:

The side-ground gouge is used by many bowl turners to scrape and shear scrape using a pulling cut. This method works best when pulling the tool across the work, as it tends to be harder to control and has a tendency to catch when pushed into the piece.

Scraping Cut: This cut is very useful in the rough shaping of a bowl or platter. The cut can be controlled to easily to remove high spots or to modify the curve of the work. Use a bowl gouge with the side grind. Hold the tool handle horizontal (parallel to the ways of the lathe). The flute is in the closed position with the bottom edge of the flute touching the work and the top edge of the flute **NO MORE THAN ⅛" FROM THE SURFACE OF THE WOOD**. This is strictly a pulling cut. Start at or near the center and pull the cut to the outside of the blank. You do not need to apply a lot of force. All these cuts require minimal pressure into the wood. This cut does not produce shavings; rather, it will produce fine particles.

Shear Scraping: (I prefer to refer to it as a slicing cut): The shear scraping is achieved by simply dropping the tool handle to approximately a 45-degree angle and pulling the tool across the work as in the scraping method described above. This cut should produce fine shavings and is an excellent finish cut. ■

Note: Opening the flute beyond ⅛" increases the risk of getting a nasty catch, as the tool is no longer cutting on a supported edge and will therefore roll to the fully open position, engaging the whole length of the side of the tool, causing a nasty nerve-splitting catch. This causes you to lift up on the tool handle, thereby increasing the depth of cut and making the catch even worse. The other effect is a tendency to grip the tool tighter on the next cut, once again setting you up for a catch.

TURNING GREEN WOOD

Introduction:

This session is perhaps the most enjoyable and most fun, as we are now turning green wood and the students have by now developed some basic skills and need only a bit of encouragement or a reminder here and there concerning their turning techniques. Some of my students in the past have asked why we do the easiest turning in the last session. My response is that it only seems easier because you now have a good, solid foundation of skills to rely on. It is best to turn a simple bowl first and then, if there is time, show the students the techniques involved in turning a natural edge bowl. If time allows, it would be a good idea to go over the collection, processing, and preparation (chainsaw safety and skills) as well as cutting logs to size, techniques for cutting logs in half, the coating of the end grain, etc. If time allows, bandsaw safety and use should be covered. This can be done by actually showing them the process or by describing it and referring them to books such as *Turning Green Wood* by Michael O'Donnell or to videos such as Mike Mahoney's *From Tree to Table* and *Two Ways to Make a Bowl*. Be sure to discuss the rough turning and setting aside of bowl blanks along with some tips on drying, etc. It would be a good idea to discuss design and the variety of shapes for bowls. The size of the foot is determined by whether it is an art piece, where foot size is not critical, or a functional bowl that would require a larger foot, approximately ⅓ to ½ of the finished diameter. Do not forget to point out that the outer rim must be established early on and not worked on again once the bowl has been hollowed, because it will be out of round and the likelihood of a bowl-destroying catch increases as the bowl is hollowed out and the rim begins to go oval.

Materials:

FACESHIELD MANDATORY
Green bowl blank (as freshly cut as possible)
⅜" side-ground bowl gouge
⅜" traditional-ground bowl gouge optional
Parting tool
¾" round-nose scraper
Point tool (pyramid tool)
Optional ⅜" square skew/box tool

Practice Exercise:

A good practice exercise that I learned from Allan and Stuart Batty is to mount a 3" × 5" × 5" blank of wood in a chuck and have the students waste away the blank, practicing using the ⅜" side-ground bowl gouge to turn the outside shape of a bowl.

Then chuck up another blank the same size as before and have the students waste away the blank using the fingernail-ground gouge and possibly the traditionally ground gouge to practice turning the inside of bowl.

Demonstration:

1. Either demonstrate or discuss how the bowl blank was taken from the log to the point where it can be mounted on the lathe.

Note: If turning a natural edge bowl, it is sometimes easier and more effective to use a 1" or larger Forstner bit to drill through the bark down to stable wood in order to mount the two-prong drive center for between-centers turning.

2. Find the center and rough cut the blank to a circle on the bandsaw. Be sure to discuss bandsaw safety procedures while rounding the blank.
3. Mount the bowl blank on a screw chuck or between centers using a two-prong drive center that is in ▸

direct contact with the wood after the bark has been removed from the area where the center will be pounded into the blank.

4. Rough turn the blank and prepare a foot for mounting in the chuck.
5. Go over turning techniques, pointing the bevel in the direction of the cut and using the bevel as a guide to support the cutting edge as it glides along the surface of the wood in the direction of the cut so as to minimize the vibration caused by pushing too hard into the work piece.

   Now let the students go to work rough-turning their bowl blanks.
6. Remove roughed-out blank and mount in chuck for turning out the inside of the bowl.
7. Once again go over the proper turning techniques.
8. Hollow enough of bowl for the students to get the idea of how it is done and let them get back to work on their bowls.
9. Finish inside of bowl.
10. Discuss or demonstrate a variety of ways to reverse turn the bowl in order to finish the back side and finish turning the foot.
11. Reverse turn the bowl and, if possible, show how the three-point tool can be used to add a bit of detail or to highlight some feature on the foot.
12. Remove the finished bowl from the lathe and discuss some of the various finishes that can be used to make the bowl food safe or that would provide a gallery quality finish.

Project:

Turning a Green Bowl

1. Refer to handout in project section of manual titled "Bowl Turning Fundamentals."
2. Also refer to handout on "Tool Techniques for Turning Platters and Bowls." ■

BOWL TURNING FUNDAMENTALS

Introduction and Thoughts on Design:

Bowls can be turned using either green (freshly harvested wood) or kiln-dried wood. A beginning turner should consider starting out with green wood. I would recommend that a new turner attend a spindle turning class before attempting to turn bowls. All the skills learned in spindle work will make the turning of bowls so much easier to accomplish. Start out with a bowl blank about 8" to 10" in diameter. If roughing out a green bowl that will be set aside to dry before finishing, remember to leave it thick enough to compensate for wood movement. The general rule is 2.5 to 3 times the desired finished thickness, or more. This rule is fine for average woods. Remember that some woods move more than others and should be left thicker so that when they dry oval in shape, that there is still enough material left to turn a round bowl.

Before mounting a blank on the lathe give some thought as to the design of your bowl. Do you want to turn a deep or shallow bowl? Will the top of the bowl curve into the bowl opening, appear to go straight up or open out? Will it be a Calabash-style bowl or one with a well defined foot? Do you want a functional bowl or a more artistic bowl?

Tools and Materials:

⅜" bowl gouge with traditional grind
⅜" bowl gouge with side ground
⅜" beading and parting tool
⅜" spindle gouge for detail work
Point tool optional for detail work
¾" round-nose scraper
3" × 9" × 9" or larger green or dry wood
Four-jaw chuck
2-prong drive center
Bearing center
Faceshield

Note: I have found that it helps to do a practice exercise before starting to turn a bowl or platter in order to practice using a bowl gouge to do concave and convex cuts. Chuck up a piece of wood such as poplar approximately 3" thick by 5" by 5" and practice outside bowl cutting and shaping techniques. Follow by chucking up another piece to practice doing the inside cuts (concave cuts.) This exercise is good for both inexperienced and experienced turners to help hone their skills without worrying about destroying their finished bowl.

Procedures:

1. Select a piece of wood for your bowl blank. If using kiln-dried wood, select a piece of wood at least 2.5" thick and 6" to 10" in diameter. If using a green log that has been sliced in half, select one that has been chain sawed to approximately 4" longer than its diameter. The extra 4" is to allow for checking as the log dries. The log should have been split in half just after it was sawed to length, to aid in equalizing the drying process. The ends should be sealed with end- grain sealer, old paint, or old carpenters glue, anything that will seal the endgrain.
2. Use a compass to make a cardboard template the same diameter of the bowl you want to turn. Mark the center of the template and place a nail in it to attach the template to the bowl blank. Decide which side is going to be hollowed out, keeping in mind that most of the wood will be removed from the top; therefore the most figured side should become the bottom. Place the template on the bark side of the half log or on the side that is to be hollowed if using ▸

a kiln- dried blank and drive the nail in only deep enough to hold the template. Now cut the corners off on the band saw, being careful not to let your fingers slip into the blade. The corners can be left on and turned off on the lathe but this makes the turning process a bit trickier.



Cutting bowl blank to a circle using a bandsaw

3. Insert a two-prong spur drive, or drill a hole to accept a screw chuck into what will be the top of the bowl. (For the Oneway Stronghold and Talon chucks a ⅜" hole is recommended.) The spur drive should be inserted across the grain so as not to split the blank. If using a spur drive, adjust the blank between centers so that it is balanced or if turning a natural edge bowl, adjust so that the high spots are on the same plane with each other and the low spots are on the same plane with each other. Now bring up the tailstock equipped with a bearing center. I prefer to use a Oneway bearing center.

   Whenever possible, bring up the tailstock and hold the blank between centers. This extra precaution helps keep the work on the lathe.

4. Check the speed of the lathe. It should be around 300 to 600 rpm, depending on the size of the blank or how out of balance it is. As you turn the piece, you can turn up the speed as it becomes more balanced. Be sure to wear a faceshield, as bowls sometimes disintegrate and at times bark flies off and can be quite painful.

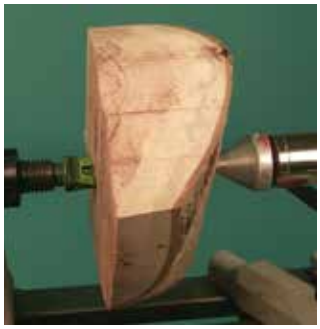
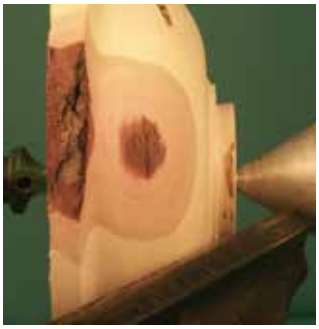
5. Rough out the outer shape of the bowl. Before you finalize the shape, be sure to turn a foot on the bowl to fit your chuck. Some chucks require a dovetail-shaped foot while others, such as the Stronghold and Talon chucks, require a 90-degree foot and shoulder (although Stuart Batty advises, and rightfully, so that the angle where the tenon meets the shoulder should be slightly undercut at approximately 89 degrees). This ensures that the shoulder will sit flat on the top of the jaws. The shoulder should cover the top of the jaws, as that is where the bowl is supported. The size of the foot should also be appropriate to the style of bowl that you are going to turn.

   The foot of a utility bowl should be at least ⅓ of the final diameter of the bowl. For an artistic bowl the foot can be smaller. A Calabash bowl has a slightly rounded bottom without a foot. Mark the center point of the foot or leave a stub where the cone center held the blank in place in order to aid in centering the work when reverse turning.

6. With the foot properly turned and the outside of the bowl shaped, you can now remove it from the lathe and mount it in the chuck. Be sure that the shoulder of the foot rests firmly on the top of the jaws.

7. Face off the top of the bowl. The top of the finished bowl should be below the pith. The pith is the center of the growth rings and if included in the finished bowl, the bowl will check or distort the top edge of the finished bowl.

8. If you're turning a small bowl 12" in diameter or less, you can start hollowing in the middle and work your way from the center out to the outside of the bowl. Each cut should mimic your final cut. This method will allow you to practice your final cut many times before it really matters. Check

Facing off the top of a bowl


Hollowing a large bowl using the stair-stepping method of leaving material in the center of bowl to minimize flexing of the outside of bowl

the depth of your cuts and the wall thickness frequently to ensure that there is enough wood left on the bottom to reverse turn the bowl and clean up the foot. Use a side-ground bowl gouge for the bulk of the hollowing. For the bottom third of the bowl and the final finish cuts I sometimes switch to the bowl gouge with the traditional grind.

Note: Please refer to the supplemental sheet on tool techniques for bowl turning.

9. When turning larger bowls, it helps to leave some material in the middle to help minimize the flexing of the outer edge of the bowl as it turned to its final shape. On large bowls it is best to turn the top third to finished thickness, then the middle third and finally turn the bottom third.
10. Sand the inside of the bowl, beginning with 80 grit and going through the various grits.
11. Remove the blank and set it up to reverse turn the bottom.
12. There are several methods that can be used to reverse turn bowls. Oneway sells jumbo jaws with rubber buttons, which is the easiest method. Another method is to place a pad inside the bowl and rest it against the jaws of the chuck and bring up the tailstock with a bearing cone center in it and center the bowl. Another method is to turn a scrap piece of wood to a cylinder and round off the top to match the inside curve of the bowl. The next step is to place a pad or sandpaper inside the bowl and once again bring up the tailstock with a cone center and center the bowl. Yet another method is to attach a piece of scrap MDF or wood which is larger in diameter than the outside of your bowl and turn a groove in it to jam chuck the outside rim of your bowl. To test to see if the bowl is centered and in which direction it needs to be adjusted, turn the lathe on at slow speed or turn by hand while lightly marking the outside of the bowl by resting a pencil on the toolrest in a stationary position. Now look at the pencil mark and where it is missing, move the blank toward the toolrest and repeat. If you're turning green wood, the wood may have changed shape and it may not be possible to get it perfectly centered.
13. Finish turning the outside of the bowl and the final shape of the foot or bottom of the bowl.
14. Now it is time to finish sand the bowl.
15. Remove the bowl and apply finish. I like to use Mike Mahoney's walnut oil utility bowl finish. Mineral oil and beeswax are also acceptable finishes, although mineral oil tends to remain tacky and beeswax is not very durable.
16. Grab some popcorn or go out to the garden and harvest some salad fixin's and enjoy your finished bowl.

For further information on turning bowls refer to the following sources:

Books:
Turning Bowls by Richard Raffan
The Art Of Turned Bowls by Richard Raffan
Turning Green Wood by Michael O'Donnell

DVDs:
Bowl Basics Workshop with Mike Mahoney
McNaughton Center Saver with Mike Mahoney
Two Ways to Make a Bowl with Stuart Batty and Mike Mahoney
From Tree To Table with Mike Mahoney
Turn It On Video Series with Jimmy Clews
Mastering Woodturning Tools and Techniques, Glen Lucas
Mastering Woodturning Bowl Turning Techniques, Glen Lucas

MDF mounted in a four-jaw chuck or on a faceplate with grooves for jam chucking bowl rims for reverse turning

Oneway Mega Jaws

Top Compression foot with shoulder

Left Drilled hole for screw chuck

Right 2" diameter by ¼" plus-or- minus deep, pre-drilled hole for expansion chucking

LET'S GO FOR A SPIN
SESSION 6

AAW EDUCATION

AAW | AMERICAN ASSOCIATION OF WOODTURNERS

INTRODUCTION TO DISCOVERING AND EXPLORING THE WONDERS OF SHAPE AND FORM

Introduction:

The focus of this session is on developing an eye and a feel for good shape and form. This session probably should be covered over two or more days as there is a ton of material to be covered. I have included in the back of the manual an outline for a week-long class that focuses on shape and form, with a bit of embellishment thrown in to enhance the forms. This session is still a work in progress as I am exploring and developing a series of exercises designed to help students work their way through some of the finer points of shape and form. At one point I used some of my ideas to teach a week-long class on shape and form at the John C. Campbell Folk School with Frank Penta. After getting feedback from the class, I realized that the week-long class needed more development and refinement to make it more interesting and beneficial for the students. There are some guidelines to help one create a pleasing form but developing a feel for these guidelines is a bit more elusive. If one follows the guidelines to the letter, than the object will look and feel static and not be nearly as appealing as a form that is based on the guidelines but tends to flow on its own and that has a more kinetic feel and flow to its lines. The purpose of the exercise is not only to refine tool techniques but to see while turning how the various proportions can change the feel and look of a piece. The plan is to help students discover through hands-on exercises just what constitutes a well-shaped and refined object. Class discussion and participation in the critiques is critical to the success of this session. The first part of the session may seem a bit fundamental, but once some objects have been turned and made available for a class critique, and once the class opens up and begins to openly and freely discuss the shapes turned, then we can begin to share ideas. Students will then provide suggestions as to how the objects may be made more appealing, perhaps by removing a bit of wood here or there, maybe shortening the piece or shrinking the diameter of the turned piece. The best way I have found for studying shape and form is through the turning of spindles. Unfortunately, the majority of my students and many clubs are more interested in turning bowls and hollow forms. For instance, when invited to demonstrate for SWAT (Southwest Association of Turners, one of the largest regional woodturning symposiums in the country), the clubs filming my demo were totally unprepared to do the videography for a demonstration on turning spindles, as they had never had the opportunity to video a spindle-turning demonstration. To make this study of shape and form more attractive to potential students, I feel that this study of form should be done through the turning of hollow forms and bowls.

Tools & Materials:

Tools:

Eye protection, faceshield recommended
1¼" or ¾" spindle roughing gouge
⅜" spindle gouge
⅜" bowl gouge with side grind
⅜" bowl gouge with traditional grind
¾" round-nose scraper
1/16" Chris-Stott-style parting tool
¾" skew
Hollowing tools for small vessels
Sorby texturing tool
¼" point tool
Carving tools/grinders/shaping tools, hand and powered
Dyes/paints/inks
Medallions/buttons/finials/glass beads/precious stones/other decorative objects
Sandpaper
Anything you can think of that can texture, color, or add to or alter a turned piece
Students should be encouraged to bring in examples of their current work.

Wood:

2" × 2" × 14½" or 2" × 2" × 11" (if using mini lathes), 1 or 2 per student for practicing vase shapes
3" × 3" × 12" poplar for practicing bowl shapes
3" × 3" × 4½" poplar or maple
3" × 3" × 6" for boxes
3" × 3" × 7" for shaping hollow forms
2" × 11" × 11" blank for platter shapes
3" plus × 8" × 8" or larger green wood for bowls ▸

Demonstration:

There are many directions that can be taken to begin this session. When the skill level of the students is unknown and if there is time, I like to start off by practicing four of the cuts most often used in shaping a piece of wood. Start by taking a 3" × 3" × 4" block of wood. Turn it to a cylinder and mount it in the chuck. Then using either a spindle or bowl gouge, use a facing cut to face off the end of the blank, followed by turning a full bead, followed by turning a cove, and then by practicing turning ogees by turning in one motion a cove that runs into a bead and vice versa. This exercise is intended to provide a feel for making continuous flowing cuts. The end result should be a nice fair curve that is not interrupted by any flats. The idea is to waste the block away practicing these cuts. This should be a short, quick exercise, twenty minutes tops.

From the practice block we can move on to practice turning shapes. There are many ways to approach this next step. A quick exercise would be to turn egg shapes to work on developing a feel for turning fair curves. An exercise that I have used that helps students understand the different ratios used for laying out forms such as boxes and hollow forms, is to turn a 2"-diameter cylinder that is 14" long and divide it into 3" long by 2"-diameter sections with approximately a ⅜" wide by say 1" diameter part in between the sections to separate them and to use later as a tenon for mounting in a chuck. The next step would be to lay out the different ratios such as ⅓ to ⅔ or ¼ to ¾ or ½ to ½ and most importantly the Golden Section ratio of ⅜ to ⅝. Some folks use the ratio of ⅖ to ⅗ to represent the Golden Ratio; either one works, as one is slightly above the golden ratio (.625) and the other is slightly below the golden ratio (.600). The object is to try to turn a hollow form shape leaving the largest diameter at the intersection of the ratios as they are laid out. It should be obvious that the ½ to ½ ratio is not very appealing. Later the class will look at these shapes and discuss ways to improve them. Sometime during the session these shapes can be used to experiment with color and texturing and can be parted off the original cylinder and each form can then be mounted in a chuck to rework the shapes and make a pleasing hollow form. For some this exercise may seem too basic, but the idea here is to get a variety of forms quickly so that there will be some examples to spark discussion of good shape and form. Provide some of your own forms to add to the discussion and to help get the critiques started and focused in a constructive direction.

A similar exercise can be done for bowl shapes. A cylinder 3" in diameter by approximately 12" long could be used to lay out sections 2" long separated by a ½"-plus wide by 1"-diameter tenon that can be used later to mount the individual bowl blanks in a chuck. Next lay out the different ratios and turn bowl shapes, leaving the line that marks largest diameter for the different ratios. Once again the ½ to ½ ratio just does not seem to make a pleasing form. While still on the stick, get the class together to discuss the shapes and come up with ideas that will make for more appealing shapes. Once again these bowl blanks can be parted off the stick and mounted in a chuck to finish turning. They can then be used to experiment with texture, color, and other embellishments. The whole idea behind turning these small forms is to provide a number of shapes quickly to provide material for discussion and experimentation. This session is not about turning out finished work. It is about exploring, discovering, and developing a feel for what constitutes good design and form. This is a time for play and experimentation. Egos must be left behind for all the work created in this session is up for critique.

After playing with hollow form and bowl shapes, it is time to free students to create objects of their own design and interest. Once again these new creations will be held up for class critique so egos must be left home. All critique should be constructive in nature and should be geared toward improving and growing one's work.

Feel free to develop your own exercises that will help students develop a sense and a feel for good design. Part of the focus of the class should be in helping participants to develop their own voice or style of work. Students should be encouraged to take chances and to refrain from copying the work of others. ■

DISCOVERING AND EXPLORING THE WONDERS OF SHAPE AND FORM

Introduction and Discussion:

This class provides students an opportunity to explore design and form while at the same time honing their skills and possibly learning some turning techniques that will make their time at the lathe much less like work and definitely a more fun and pleasurable experience. We will be turning and studying hollow form and bowl shapes as well as experimenting with texture and color. The last part of the class may be student-driven and the instructors will be receptive to the direction students wish to pursue. Students are encouraged to bring along not only their creative ideas but also any tools they may wish to use to add texture or other embellishments to their work. Some time may be set aside, if students are interested, for exploring the turning of finely detailed finials.

We will go through some practice exercises that are designed to help us see how shape and form are developed and how appealing some basic concepts can be when used to make an object more pleasing to the human eye. Hands-on learning is more interesting and also would be a way for us to share our own sensibilities when it comes to design and form. We all have our own sense of what is beautiful and attractive and, as is the case with most human endeavors, there is not one simple answer or solution as to what constitutes a good art form. There are, however, a few basic rules or concepts that can be used to help us achieve that which we may see as an artful shape or creation. Keith Tompkins has written an excellent handout titled "An Introduction to Form and Design." I found it to be very helpful and think that it adds to the discussion and information that will be presented in this class. Keith's contact information can be found on page 6.2.7 if you are interested in obtaining his handout. I feel that by doing a series of exercises or by making a series of similar objects, we may learn and see how these good design ideas come about and how they influence the way we make things. One of the purposes of this class is to see how seemingly minor changes in shape or form can change the feel of the piece. The concept is to make a simple object that we can manipulate in a short amount of time on or off the lathe. One way to do this would be to use a stick of wood 2" thick and roughly 9" to 12" long as our palette and to turn a variety of shapes. These shapes can then be used as an aid to delving into embellishments such as mixed media, carving, dyeing, painting, and texturing.

Turning experience is a requirement for this class because there will be little time available to teach students how to turn. The object of this class is to go beyond turning simple forms and to explore all sorts of possibilities and to build a good foundation or feel for what constitutes good form and design. It is meant to be a time to play and to search for one's own inner voice. No longer are we going to be satisfied to copy another turner's forms and designs, for we are now ready to be freed to make our own creations.

Our main goal should be to turn and create objects that are pleasing to us and not necessarily to others, be they fellow turners or art critics. First and foremost, we should create those objects that are pleasing to our own vision and that make us happy and not try to please or seek accolades from others. This class will be part lecture and demonstration; the hands-on turning will be focused on turning and playing with shape and form, not on turning out finished pieces. Students participating in this class will be encouraged to offer their views and ideas. Please come prepared to share your ideas and talents.

One of the personal discoveries that I hope to impart to participants in this class is to no longer fear making a mistake or experimenting with a new design or direction. We are our own worst critics and therefore tend to stifle our own creative instincts. We should be making and developing work that appeals to us. As long as good quality of workmanship is present, any direction we choose to go should be acceptable. We must allow ourselves to experiment with shape, form, color, texture, and a variety of other techniques. For without taking a risk and experimenting, there is little chance for a successful breakthrough. The plan is to take ourselves on the creative road to new work and the development of our own style. We must remember that there is nothing wrong with so-called failure in woodturning, as each slip is a just another creative opportunity and a step toward newer, more creative work. It is difficult to reach the next level without experiencing some lack of success or setbacks; they are all learning experiences that, if taken in a positive light, become stepping stones to better and more creative work. The most important thing to remember is that, "True perfection is not always achievable as it is a fleeting Goddess, always flirting but never caught. This is not to be confused with quality of workmanship or craftsmanship as they are a prerequisite for exceptional work." For me, my driving force is the fact that, as I get better technically, ▸

the bar is raised, and I just never seem to produce what I would call a perfect piece. At times I think that I tend to be overly critical of my work. But what I have come to realize is that seeking that perfect piece is what keeps driving me to learn and experiment and to constantly challenge myself. There are no exact answers for what constitutes a perfect shape or form; there are just some good guidelines, as so many factors affect the overall appearance of the work in question. One of the reasons the Greeks developed the entasis of columns was so that they would look right when lined up and seen from our perspective. Most students are seeking an answer or set of rules that will enable them to make beautiful forms, but unfortunately there are only guidelines. A maker has to be careful not to adhere too strictly the Golden Section or the guidelines for the perfect form, as the work in progress may look and feel static, lacking that zest that comes from the flowing lines and the slight wavering from the set rules that will give the piece a bit of kinetic energy that just pulls the viewer in and draws them to the piece. One must experiment and take risks in order to discover, on one's own, what it takes to make a well-proportioned piece that will satisfy our own sense of style and form. Remember, too, that some of the best work is that which was arrived at via a happy accident. One of the objectives of this class is to encourage the students and instructors to step out of their comfort zones and to break new ground experimenting with new ideas while not worrying whether or not the result will be an exceptional piece. So relax, experiment, forgive yourself for the small setbacks and above all open your mind and eyes while looking at the world around you for inspiration and free yourself to create what appeals to you the most, and most importantly, have fun creating!

Tools and Materials:

Faceshield
1¼" spindle roughing gouge or smaller
⅜" spindle gouge
⅜" bowl gouge
¾" round-nose scraper
1/16" Chris-Stott-style parting tool
¾" skew or similar
Hollowing tools for small vessels 7" to 9" tall and maybe 4" to 5" in diameter
Eye protection/ faceshield
Sorby texturing tool
Point tool
Carving tools/grinders/shaping tools, hand and powered
Dyes/paints
Medallions/buttons/finials/glass beads/other decorative objects
Sandpaper
Anything you have or can think of that can texture, color, add to, or alter a turned piece
Students should be encouraged to bring in examples of their current work.

Wood:

The wood selected for boxes should be kiln dried to 8% to 10% depending upon where you live, as the wood will take on or give off moisture to equalize itself to the local humidity. The wood should be relatively plain and inexpensive as we are experimenting with shape and design and are not at all concerned with turning out a gallery piece in this workshop. The sizes will vary, but for starters we would want the following;
2" × 2" × 9" (1) painted a dark color such as black, optional one blank per person
2" × 2" × 11" or 2" × 2" × 14½" (1 or 2) poplar for vase shapes (hollow form shapes)
3" × 3" × 12" (1) poplar for bowl shapes
3" × 3" × 4½" (3) poplar or soft maple or some other common inexpensive wood, at least three blanks per person
3" × 3" × 6" (2) blanks for boxes, maple or cherry
3" × 3" × 7" (2) poplar blanks for shaping hollow forms
3" × 3" × 7" (1) maple blank for shaping hollow forms
2" × 11" × 11" blank for platter green wood for bowl shapes
2" × 2" × 3" plus-or-minus for hollow globe ornaments or birdhouse ornaments
2½" × 2½" × 3" for birdhouse roofs
2" × 2" × 5½" blanks for icicles, hollow globe ornaments

Class description:

Our intent is to have at least one short demonstration or discussion each morning and at least one demonstration or discussion period in the afternoon. The idea is to have as much hands-on time as possible and to leave the maximum amount of time to play with all the new ideas and concepts but still spending just a bit of time tweaking our skills with new and old tools and equipment.

Day One Morning:

Practice tool techniques and skills while turning practice exercises that are designed to enhance tool skills and that begin the exploration of design through shape and form.

As this class is about exploring shape and form and most importantly is designed to be a participatory class, student feedback and participation is essential to the success of the class. Students are encouraged to share their thoughts and feelings on design and should feel free to share their opinions as to what shapes and forms are most pleasing to them and to share their thoughts on how a particular

object could be changed to make it more appealing. My intent here is for students to add to the discussion, not to dominate it. Remember, the goal here is to improve our sense of shape and form, not to hurt feelings or to be overly sensitive if comments are made concerning our work. Any critique of our work should be presented in a positive, supportive manner. Remember also that judging shape and form in many respects is subjective and that there are many opinions as to what is beautiful or elegant.

1. We will start with a quick exercise designed to practice tool technique and control. Use a 3" × 3" × 4" block mounted in a chuck and turned to a cylinder. Then use either a ⅜" bowl gouge or ⅜" spindle gouge to practice making a facing-off cut. In this cut the flute is in the closed or 3 o'clock position, facing away from the blank. The idea here is to turn a perfectly flat surface.

   The next cut to practice is the full bead. This is followed by practicing a full cove. Then we will try an ogee, which is a cove that flows into a bead and finally becomes an ogee where the bead flows into the cove. All these cuts are done with the bevel of the gouge gliding through the cut. The smoothest cuts are achieved when the bevel is pointing in the direction of the cut and just gliding across the surface with very little pressure into the work. I sometimes refer to this cut as the hip-shake-wiggle, as my hips start the cut shifted toward the tailstock for the cove to the bead ogee and then as the tool flows through the cove my hips shift toward the headstock, then as I begin the bead portion of the ogee, my hips shift back toward the tailstock. For the bead-to-the- cove ogee, my movements are the exact opposite. What we are after here is a nice smooth flowing motion of the bevel sliding through the cut with our body shifting and moving through the cut in a nice even flowing motion.
2. Next using a 2" × 2" × 11" if using mini lathes (for full size lathes use a 2" × 2" × 14¼" piece of wood) we will turn a series of vase shapes (hollow form shapes) in line with each other at least three to a stick. All should be of a similar shape to each other but the widest part should be moved up or down on the form to change the ratio between the top, bottom, and midsection. Measure and mark the cylinder every 3" with a ⅝" waste space in between. (It might be a good idea to use this waste space or clearance space to put a foot on the vase shape for later mounting on the lathe to finish the hollow form and prepare it for the embellishment part of the class later in the day). This would be a good time to set the diameter of the tops at say 1⅛". You can use the story sticks provided to mark out the spacing and the diameters for the sample hollow-form stick. The next step is to mark the center lines for the widest part of the sample hollow forms using the traditional ratios of say ⅓ to ⅔ (1" to 2"), ¼ to ¾ (¾" to 2¼"), ⅜ to ⅝ (1⅛" to 1⅞") and, just for effect, try ½ to ½ or any other ratios you might like to try. We may want to turn two sticks practicing these shapes and then pass the least desirable one on to our neighbor, who will then play with the shapes to make something interesting or to improve the overall design. Another exercise would be to take one of the shape sticks and play with the shapes by removing a bit of wood here and there. Then watch how the removal of just a bit of material here or there improves a curve (shape) or try moving the centerline to improve a shoulder. Please observe how these minor adjustments can completely change the feel and look of the object. ▸

Note: Good form is not easily accomplished using set dimensions and ratios, as if from some magical formula. It tends to evolve from the form and is affected by the overall size of the finished form, the grain pattern in the wood, its intended function, and many other factors that might come into play. The height and width of the piece will also have a bearing on the ratio used.

Some of the more common ratios are ⅖ to ⅗, ⅜ to ⅝, ⅓ to ⅔, and ¼ to ¾. Some minor alterations or adjustments may be necessary in order to create a pleasing shape. Many architects and others use the ratio of ⅜ to ⅝ to represent the golden section. I have found that in small-scale work such as boxes that there is very little visual difference between the golden section ratio of ⅜ to ⅝ and the ratio of ⅖ to ⅗. Wood grain or figure will also have an effect on the overall appearance of the piece. The addition of a lid or finial will change the overall appearance and shape of the form. The continuous curve that flows smoothly as it changes shape will be affected by the size of the piece, that is the height and width. Then there is the artist's own sense of design and the feeling they want to pass on through the finished work.

Also keep in mind that all curves and transitions should flow into and out of each other, much like the curves found in French curves used in architectural drawing (also known as fair curves). A good curve or ogee takes the eye on a journey through the work. Sharp transitions or changes in the direction or tightness of a curve interrupt and disturb the flow of the form.

3. Another exercise we could try would be to use painted practice sticks to delve into shape and form by turning shapes that are enhanced by the two-tone effect of the colored wood. Allan Batty used this method to enhance some of the shapes used in the transition from the pilaster to the turned part of a baluster. This exercise would be an excellent one for those turners that are interested in learning the shapes used in turning balusters and other spindle-style turnings. Stuart Batty turned a sample stick which includes most of the cuts used in baluster turning. I have made a copy of this stick and use it to demonstrate the various cuts and shapes used in architectural turning. Myron Curtis and I did a dueling demonstration on several occasions using this stick to show how we use different techniques to achieve the same result and to help explain some of the differences between architectural turning and artistic turning.
4. Just for fun we could try turning eggs to help us explore fair curves, improve our tool technique, and to see how minor changes in the midpoint or in the curves themselves will completely change the look of the egg. As an added exercise we could make use of jam chucks to turn or reshape the eggs once they have been parted off the lathe. These egg shapes can later be used for texturing and experimenting with dyeing and coloring.

Day One Afternoon:

5. Now that we have some objects to work with, we can begin to explore adding embellishments and color to these forms to enhance their beauty. We can use detailing tools, chatter tools, carving tools, paints, dyes, automotive paints, etc. to enhance our turnings.

Note: We will incorporate the use and discussion of embellishments and added color to our turnings throughout the course.

6. While these shapes are still fresh in our minds, let us try turning a full-size hollow form shape using the ratio that you found most pleasing in the earlier exercise. The intent here is not to spend time hollowing this form, as we are still exploring shapes and want to spend our time playing with shape and form, not making finished objects. We can drill a hole in the end for the insertion of a glass tube so that the form can later be used for flowers. I suggest using a dry poplar blank, 3" × 3" × 7" plus-or-minus. Before sanding and finishing the form, we will bring them up to the front while still in the chuck for feedback on the form. Then we can go back to the lathe to finish turning the form. If there is time or in the evening we can experiment with other shapes. Ultimately we like to do three different shapes if there is time.

   Please seek feedback before finishing or taking the form out of the chuck. To receive feedback please take the chuck off the lathe with the form still attached. That way it can be easily reworked if necessary. The feedback will be given with all the students' work displayed so that it can be used a teaching exercise for all.
7. After the form is turned, it could be sprayed black or some other solid color. This would help us to see the form without being distracted by the colors or grain of the wood. We can also add embellishments to the form by adding texture, color, carving the rim, etc.

It might be a good idea to leave a foot on the base so that later on, if you choose, you could hollow the object and finish the hollow form. Just remember that this class is about playing with and exploring shapes, not so much about making finished pieces. We will do that later on in the class or in the evening on your own. You could use an expansion-style foot—that way it will not interfere with the overall look of the form. (Turn the blank between centers and put a foot on what will be the top end for mounting in a chuck. Mount the blank in the chuck and then turn a small expansion foot on what will be the bottom end. Then remount the blank in the chuck and begin to turn your hollow form shape.)

Day Two Morning:

The objective of day two is to continue to play with shapes and forms and to work with ratios instead of set measurements and to begin to feel and see what constitutes good shape and form. We will explore how changing the curve a bit here or there on a piece will completely change the appearance of that piece. At this point we will still be focused on playing with the wood and shapes and not on turning out finished work. It might be a good idea to show some typical bowl shapes at some point on a white board preferably after the students have had a chance do the bowl exercise.

Exploring bowl shapes:

1. Now that we have played with hollow form shapes, let's try a similar exercise but turn bowl shapes. Using a 3" × 3" × 12" blank, turn it to a cylinder

between centers. Mark off sections (using the story stick provided) for bowl shapes approximately every 2" separated by an approximate ¾" waste space to ease tool access. (Once again it might be a good idea to form a foot for mounting in a chuck in the clearance space so that the bowl shapes could be further turned in preparation for the embellishment part of the class). Cutting the waste space for tool access would be a good time to set the diameter for the top of the bowl shapes at 2⅜". Now let's turn another stick, but do bowl shapes. Once again, move the widest part or midline up and down using the ratios of ¼ to ¾ (½" to 1½"), ⅜ to ⅖ (1 3/16" to 1 3/16"), ⅔ to ⅓ (1⅜" to ⅝"), ½ to ½ (1" to 1") and ⅝ to ⅜ (1 1/4" to 3/4"). The ratios of ⅖ to ⅜ and ⅜ to ⅝ are very close together and in my opinion are almost interchangeable (especially on a scale this small). As a general rule I use the ratio of ⅖ to ⅜ to represent the golden section. Notice how the look of the bowl changes by moving the widest point up and down. Now that you have seen how moving the widest point affects the overall look of the bowl, try removing a little bit of wood here and there to improve or change the curve. Remember that all curves should be fair curves.

2. We can now use these bowls shapes as a palette for adding embellishments such as texture, color, carving, etc.

Day Two Afternoon:

3. We have had the opportunity to play with bowl shapes, so now let's pick the shape you like best and make a full-size version. As it does not take very long to hollow a bowl, you can go ahead and finish the bowl. We can also experiment with a chain and the catenary curve idea described in Keith Tompkins' handout that is described on page 6.2.1. He also describes a variety of ways to use the golden section to help us develop pleasing shapes. Please read his handout carefully as it is an excellent tool to aid us in our search for form.

Note: before turning a finished bowl, try playing with the top of the bowl. Start by forming an outward opening rim, then try pulling it in for a straight rim, then try pulling it a bit more to form a closed rim.

4. Once again now that we have some bowl shapes that we can manipulate, we can add embellishments and coloring techniques to enhance our work. We may even begin to discuss manipulating our turnings by cutting and reforming them into sculptural shapes and forms.
5. If there is time we could play with the platter form and a variety of rim styles on platter forms.

Note: At some point in the class, before we concentrate more on embellishments and other projects, some time should be spent (with ample student participation) discussing shape and form by showing examples of work, both current class projects and those that students have brought from home. The idea here is to focus on the lines of the work and suggest ways that the form may be altered to enhance its overall appearance. Using a shadow light may be of some help here or maybe the use of a blackboard or white board in the background to make it easier to see the lines of the work.

Day Three:

If there is enough interest among class members, we could spend some time today on exploring fine finials and some of the variety of designs and shapes that will be a great addition to other turned forms. We could add an extra element of design to enhance the appearance of the turned object, whether a hollow form with a lid or a box needing a touch of elegant height. We can also explore platter shapes and spend more time discussing and exploring the possibilities of these shapes and forms.

Day Four:

Now the fun begins as we will start adding embellishments such as color and texture at will. We may even begin to use other media to help enhance our designs. The instructors will be available to help students explore their individual interests.

Students can now explore shapes, forms, and projects that are of specific interest to them while we will continue working on embellishments and discussing shape and form. Students can play with a variety of projects such as tool handles, seam rippers, bottle stoppers, etc. Students may also want to make a simple jig for turning bottle stoppers.

At last we will begin to turn objects of individual interest, whether bowls, platters, hollow forms, or boxes. In the afternoon we will do a class critique of what was turned that day. This is not meant to be a competition but rather a learning exercise for both the student who turned the piece and the class. Egos must be left behind for this exercise for it is geared ▸

toward adding to our knowledge base of what it is that constitutes good design and is not intended to hurt feelings or to be competitive but rather to help us to expand our understanding and appreciation for good design and form. This perhaps is the most difficult class session as it is very difficult to critique an object without some hurt feelings. Please try to remember we are trying to improve our sense of shape and form and the most effective way to do this is through the critique. This is intended to be a positive exercise.

Day Five:

Today is free-form once again. The student can explore his or her interest in turning and turn something of their choosing and add to or embellish it at will. Finish up work and gather for a last-chance question-and-answer discussion period to review and add to our knowledge of shape and form.

Supplemental Exercises:

A. Consider painting a 2" × 2" black or some other dark color and turn away parts of the piece as you would if turning a baluster or stool leg.

B. With set parameters, everyone is given a 3" × 3" × 3" block and is challenged to see what they can make from that piece of wood. A time limit may need to be set in order to get the projects done in a reasonable time frame. For chapter meetings this would make an excellent monthly challenge.

C. Turn a box, no need to have a tight lid. Play with the most common ratios that are used most often for the size of the top to the bottom of the box. ⅖ to ⅗, ⅓ to ⅔, ¼ to ¾. Now try turning a box that does not match the previous ratios.

D. Now play with a variety of shapes. Find one you like and then try manipulating the shape by taking a little more wood off here, a tad more off there and see how quickly the overall look and feel of the box changes. Some shapes to consider are, say, a squat box, tall box, a bowl with a lid, a triangular or cone-shaped box, maybe one that has a nice hourglass figure, or a vase shape. The shapes and sizes are endless. One thing to consider is whether it will be strictly an art piece or functional, as that may have an effect on the overall design.

E. Now let's play with color and texture to see how it adds to or detracts from our simple design.

F. We can now start adding features or other media to our boxes. One way is to inset a precious stone or button. Maybe add a finial, either of wood or some other media such as art clay silver.

G. One could try using the candlestick as a design format. If so, one approach would be to tie in a simple laminated design by gluing up 5 layers of wood. Keep it simple at first and then experiment. For instance, try sandwiching two ⅛" thick pieces of cherry or purpleheart veneer between three layers of ¾" maple. All layers should be approximately 2½" wide, plus-or-minus. Other woods would work just fine, but it would be best to have two dark layers sandwiched between three lighter colored woods or vice versa. Dyed veneer would work also.

H. Try giving the students several 2" × 2" × 4" blocks of wood and have them turn a variety of finial shapes that can be used for hollow-form lids or box tops or even for wine stoppers.

I. At some point the students might like to experiment with combining shapes and parts to make a sculpture or artistic piece.

J. A really good exercise for practicing turning flowing or fair curves and ogees is to turn egg shapes. The shape of an egg is a perfect example of a smooth flowing fair curve.

K. A good way to check your form for shape without being distracted by the grain of the wood is to paint it black. This enables you to view the form and makes it much easier to spot flats and slight irregularities in the blended curves. Turning the piece upside down and viewing it this way will let you see if you have turned a nice form, for if it looks just as good upside down as right side up, you know you have achieved a good form.

L. A fun exercise to do would be to turn spheres which could later be used to practice coloring techniques.

M. Consider providing students with templates of different shapes to help them turn the various shapes and forms on the lathe. The image would need to be negative so that they could set it up against their turning to match it. My preference would be to let them turn their own shapes but for those who may have trouble working in a 3-D format, the template idea could be a great help.

Further Study:

Keith P. Tompkins Woodturning Studio
(Demonstrator and Teacher)
"An Introduction to Form and Design," handout by Keith

Keith Tompkins
9 Vineyard Court
Tivoli, NY 12583

keithptompkins.com
keith@keithptompkins.com
845-756-3210 (h)
845-756-3909 (w)

David J. Marks with Grace Baggot, "Gilding & Chemical Patinations"

DVDs

Trent Bosch's series
Frank Sudol, *Starting Your Creative Engine*
Binh Pho, *Surface Design on Thin-Walled Vessels*
John Jordan, *The Aesthetics and Properties of Wood*

Books:

Art & Fear, by David Bayles & Ted Orland
Appearance & Reality, by Stephen Hogbin
Design Language, by Tim McCreight
The Art of Turned Bowls, by Richard Raffan
Turning Boxes, by Richard Raffan
500 Wood Bowls, a Lark book
Turned Boxes, by Chris Stott
Beneath The Bark, chainsaw carvings
New Masters of Woodturning, by Terry Martin and Kevin Wallace
Ellsworth on Woodturning: How a Master Creates Bowls, Pots, and Vessels, by David Ellsworth
Woodturning Full Circle, by David Springett
Woodturning Notes, by Allan Batty

Websites:

http://char.txa.cornell.edu/first.htm ■

THE VOCABULARY OF DESIGN

Balance: Objects are considered to be in balance when they are of equal weight. That can be in terms of size, color, contrast, texture, shape, etc. Balance is the sense of equilibrium displayed by an object.

Color: Color refers to a variety of colors, such as the primary colors of red, blue, yellow, and the colors and shades of colors that can be created by combining these colors. The color wheel is the easiest way to see how most colors are derived from the mixing of these primaries. A color can be described further by its value and hue, as explained below.

Value refers to the strength of the color or its lightness or darkness.

Hue is the dimension or gradation of color and refers to a scale of perceptions of color ranging from red through yellow, green, blue, and back to red as seen in the color wheel used by artists or in the rainbow. A variety of hues can be mixed from the three primary colors, with black resulting from a combination of all colors and white being the absence of color.

Catenary: A catenary is the curve or shape produced when a chain is suspended by two points (each end), where the force of gravity acts upon the entire length of chain to produce a curve or arch that, when placed in a golden rectangle or golden section, it fits perfectly. The catenary effect can be used to produce smooth, flowing forms. Smooth, uninterrupted curves are referred to as organic curves or fair curves.

Composition: The composition of a work is the structure or combination of all the parts or elements that come together to form the work. It includes the layout, symmetry or asymmetry, the color, essentially all the parts that make up the final form.

Contrast: The use of opposing elements, such as shading, coloring, forms, or lines in proximity to produce an intended effect. Contrast can be used to separate objects or parts of a work.

Embellishment: The adding of color or a variety of objects, parts, textures to enhance a work

Emphasis: Making an area or part of a work stand out more than the other parts. Emphasis is the main focal point of an object which helps to create interest.

Fair curve: Describes any arc or curve that flows smoothly without interruption, such as an ogee that flows from either a convex curve into a concave curve in a smooth, flowing manner or vice versa without being interrupted by a flat. A good example of fair curves can be found in the French curves sold in art stores as templates for drawing fair curves.

Golden Section (Golden Mean, Golden Proportion): Is generally referred to as that proportion found in objects or drawings that are most pleasing to the human eye. The golden proportion is 0.618 to 1 or 0.382 to 0.618. Architects and others have adopted the ratio of ⅝ to ⅜ to represent the golden section.

Golden Rectangle: refer to Keith Tompkins Handout entitled “An Introduction to Shape and Form”

Movement: movement brings the element of time into our work. “Real physical motion has direction, speed,and duration. Visual motion is usually implied through shape, value, and lines. In composition these are used to lead a viewer through a piece, or back into the implied depth.” Quoted from *Design Language*, by Tim McCreight

Positive vs. Negative Space: Here I am referring to positive space as that which is solid and negative space as that which is open.

Proportion: The overall dimensions of an object and the relationship of elements within that object.

Repetition: In design, repetition refers to the repeating of a pattern, shape, figure, form, texture, color, etc.

Rhythm: Sometimes patterns can be formed in such a way that, as your eye travels over the object, a visual rhythm results as the eye sees various patterns, textures etc. Repeating patterns or arrangement of elements within an object; rhythm creates a sense of order or movement.

Texture: Is not always three-dimensional but for our purposes texture refers to the smoothness or roughness ▸

of the turned object. There are many ways to create texture in wood turning—a detail tool can be used to rough up the surface, a chatter tool can be used to create patterns and texture, a series of beads grouped together forms a nice texture, sandblasting the surface, carving the work. These are just some of the ways to create texture on a turned object. By adding texture we can add a whole new dimension to our turnings.

Unity: A sense of unity is created when elements of a design work in harmony.

Discussion Topics and Ideas:

Be sure to discuss the flowing curve on the bottoms of vessels and how the curve should gently flow under the vessel and end somewhere in the foot. This helps create the effect of the vessel floating off the tabletop. If the curve dies below the table top, it makes the vessel look firmly mounted to the table and gives it a heavy appearance. The size of the foot may need to be discussed as well. If the object is to be a functional piece, the foot should be ⅓ to ½ the diameter of the object, or if an art piece, the foot can be much smaller.

A consistent wall thickness helps to minimize distortion and changes in the shape of the piece as it takes on and gives off moisture with the changes in humidity and temperature.

Emphasize the idea of a continuous curve without sharp transitions and flats. (fair curve)

One very important idea or concept to discuss is the fact that most of us design our pieces to use the whole block of wood that we have mounted on the lathe instead of removing large amounts of material in order to turn a more balanced form. Sometimes the wood we mount on the lathe is not in the proper proportions to enable us to turn an aesthetically pleasing form or shape.

When considering a design, one of the first things to consider is whether function is more important than form. In other words, is this an art piece or an everyday functional item? The old art-versus-function idea.

Some things to think about when beginning a design are the height versus the width, rim diameter versus the base diameter, thick or thin walls, height of the shoulder, convex shape versus concave shape, squat form (as in, it looks heavy and the bottom looks as though it is attached to the table versus a floating form where the bottom curve ends under the foot). All of these thoughts can be refined by using the golden section as an aid to good proportion.

When creating an object, consider the concept of the pyramids, where the larger, heavier parts are located at the bottom and the shape or form gets smaller as it rises to the top. Or in the case of a hollow globe ornament with an icicle, the parts of the icicle, the elements of design such as the tear drops and beads, start out small and as they near the base of the globe they get larger. This same concept can be applied to color variations as well. Keep in mind that our eyes and brain are constantly looking for patterns, especially familiar patterns. The inverse works just as well where the bottom is small and the elements get larger as they near the top of the object.

Try using plastic tubing to create or demonstrate a fair curve. A rubber hose would work. Michael Fortune has a good article in Fine Woodworking, issue #199, “Precise Tools for Drawing Curves” on ways to draw or mark flowing curves in furniture. The use of a chain to produce a catenary curve is also very effective. ■

MATERIALS AND TOOLS FOR EMBELLISHING WOODTURNINGS

The following list of suggested tools and materials is optional, as these are just some of the tools and materials that we can experiment and play with while exploring the embellishment and coloring of our woodturnings.

Suggested Tools:

Sorby detail tool
Various cutters for the Sorby detail tool
Sorby micro detail tool (be sure to order the texturing wheel for this tool)
Wagner detail tool
Chatter tool
Proxon grinder
Various cutters and attachments for Proxon angle grinder
Proxon carving tool
Rasps
Diamond micro rasp, various sizes and shapes

Suggested Materials:

Inks
Dyes, alcohol and water-based, metallic
Paints:
- Golden fluid acrylics
- Black gesso
- Automotive acrylics
- Black bumper paint

Liming wax
Air-brushing tools, paints etc.
Art Clay silver materials
Stones, gems, for inserts
Gold leaf, copper leaf, and tools and materials ■

LET'S GO FOR A SPIN
THOUGHTS AND TIPS

AAW EDUCATION

AAW | AMERICAN ASSOCIATION OF WOODTURNERS

ALAN LELAND'S TIPS AND THOUGHTS ON TEACHING WOODTURNING

Introduction:

In this handout I will try to share my thoughts and some of the methods and anything else that I can think of that will help someone who is embarking on the rewarding journey of sharing his love of woodturning and his skills with folks eager to learn how to turn. Much of what has aided me in teaching new turners has been accumulated through learning and borrowing techniques, ideas, and different ways to explain the body and tool movements used in turning from many of the workshops and symposiums that I have attended. The knowledge I pick up from watching demonstrations and taking workshops with skilled turners who also happen to be excellent instructors is invaluable. It is through my search for better ways of describing how the tools are used and why they have come to be used in certain ways that helps me to provide the students with a better understanding of the tools, techniques, and skills involved in woodturning. It is this learning a variety of methods to present the information that makes it easier for me to help students better understand the how and the why tools are used the way they are used. It is this sharing of understanding of tool use that makes a big difference in the long run. The trouble is that, at first, the beginning students are too often presented with way more information than most folks can take in and retain. The idea is to present this information in a manner that is not too overwhelming and that will, at some point in the learning process, pop up in their minds as the light bulbs of understanding begin to light up. The biggest complaint I get in some of my evaluations is that there is too much information. I find this a very valid observation, but at first it is hard not to overload students new to turning with too much information.

The number one requirement to be a good instructor is patience. If you do not possess a lot of patience, maybe you should consider helping spread your love of woodturning in other ways. New turners can be very frustrating to work with, as some learn new skills quickly and others, it seems no matter how you describe something or help them work through a technique, they just can't grasp the skill or idea. You need to be willing to repeat yourself and to describe techniques in different ways, hoping that one of the methods will get through to the student. That is why having a written handout can be so helpful. I had a father and son in one of my week-long classes and on the first day they were not having any success and they just could not understand how to use the tools. They were about to quit the class but I convinced them to stay and give me a chance to find a way to explain things so that they might understand how to use the tools. Funny thing, the next day I walked by them while they were turning and noticed that they had somehow figured out how to turn. When I asked them what had made the difference in their understanding of the turning process, their response was that they had read my handouts on how to turn a bead and cove stick and the handout on spindle gouge skills and techniques and it all began to make sense to them. I mention this incident to emphasize that we all learn differently, some by reading, others by watching, and still others by hands-on activities. The more ways you can show or explain a skill or technique, the more likely you will be able to get your ideas across to most everyone. Be careful here, for by providing too much information too quickly or by using too many methods or descriptions to demonstrate or explain a skill or technique, you may run the risk of overloading or confusing the students. This brings up another very important teaching skill, that of being able to read your students. As a teacher, it is very helpful to sense when your students are confused due to misunderstanding the instructions, or from being overly tired, or just plain information-overloaded. There are those occasions, when teaching older students, that health problems may interfere with a student's ability to have success at the lathe. This can be a sticky wicket as you may or may not be aware of his health problem and thus assume that he has not grasped the concept due to a lack of understanding, which can be very frustrating for you and the student. I had a student who, when I looked in his eyes, seemed to understand what I was saying, but his hands and body did not respond as though he understood what I asked him to do. I was tempted to ask about any physical problems but did not want to embarrass the student as he was an older gentleman. Luckily for me, he informed me that after a couple of hours standing, due to injuries from his working life, he lost feeling in his ▸

hands. My suggestion to him was to take breaks when things got too frustrating and to take his time and not push his body too hard. He made it through the week and did manage to turn some nice projects. My point here is that as an instructor, you have to be aware of your student's state of mind and be conscious of his frustration level and his comprehension of what he is learning. Remember, not all students learn at the same rate. I generally move on to the next step when ¾ of the students are ready to move on.

The best instructors are not teaching to feed their egos, they are in it to share their love and joy of turning with others. Students already see you as somewhat of an expert so there is no need to show off or talk down to the students, as such an attitude will only detract from the learning process. It is better to share your skills on an equal level with your students, after all there is no telling what your students have accomplished in life and they are in class to learn, not to be made to feel inadequate or inferior. Also, be open to ideas and feedback from your students and be prepared to adjust the class according to your students' needs, provided that their needs do not interfere with other students' enjoyment of the class.

Procedures:

First things first. The number one thing that should be emphasized in teaching woodturning is safety. Safety should be the number one priority all through the teaching process. The first rule is to wear your faceshield, as it is your best protection from flying objects. So many of us get complacent and do not wear our faceshields as often as we should. Many a bowl has exploded in the final sanding process due to heat stress build up or unseen stresses in the wood.

Note: I like to set up the demonstrator's lathe sideways to the audience so that they can see how I position my body and how I present the tools to the work on the lathe, especially if there is not a camera available to aid in seeing the work in progress. It is also a great safety factor in that anything that may fly off the lathe will not fly out into the audience.

I have attached my set of safety rules along with a handout Craft Supplies has given me permission to use in my handouts. I also recommend reading the safety rules available through the American Association of Woodturners. It is on their website, woodturner.org. It would be nice if there is time to let the students have a chance to read through the safety rules before starting the class. Too often class has to start before the students have a chance to read the handouts. While I am setting up for class, I give the early arrivals the handouts to read while they wait for the other students to arrive and for me to finish setting up. In any case, a brief review of the more important safety issues should be presented at the beginning of class. I also like to point out to my students that if they think or feel that something is unsafe, they should feel free to point it out. That feeling may be their intuition kicking in, warning them that something is not right, or it may be just their fear of trying something new or their lack of understanding of what they are about to do.

I feel that the most beneficial classes are those that are well thought out by the instructor. Writing and providing handouts is an excellent way to provide structure to the class. One of my mentors goes so far as to write on the board the rough timing of each step. Not in actual minutes but say, if doing a class on boxes, that the bottoms should be done before lunch and the tops will be turned after lunch. I try to give the students some idea or a verbal outline of how the day or the class will proceed. For instance, when I teach "Session 1" from my manual *Let's Go for a Spin,* in the morning the class works on turning a cylinder and turning beads, then after lunch they spend 20 to 30 minutes turning beads, then they learn how to turn coves, after which the class moves on to turn a simple project. If teaching young people, this process needs to be sped up a lot. I take a bit longer working on beads than on coves, as beads require more body movement, and then there is the fact that I am a skills and techniques instructor and I try to work on building an understanding of how the tools work. I have to keep telling myself that I am not training folks to be professional turners but am teaching them how to make their turning easier and more enjoyable.

As the class is moving along, stop occasionally and ask the class how things are going and if they are enjoying the class. Feedback is good for the student as well as the instructor. After every class I try to take the time to evaluate the class and look for ways to improve my teaching. It is also a good idea to provide evaluation sheets to give students an opportunity to critique the class. Sometimes these evaluations can be very helpful in providing good feedback that helps the instructor in future classes.

Try to avoid the pitfall of demonstrating a project from start to finish before letting the students get to work. It is best to break a project down into short steps and demonstrate each successive step when the majority of the class is ready to move on. A visiting demonstrator/ instructor teaching a club-sponsored hands-on class in

my studio not only demonstrated nonstop how to turn a regular bowl but then proceeded to demonstrate how to turn a natural-edge bowl before letting the students start to turn the projects. Needless to say, most of the students were confused as to how to start and turn the regular bowl, which was to be the first project. It would have been far more beneficial to have demonstrated how to turn the outside of the regular bowl, complete with a foot for mounting in the chuck.

Below I have listed some of the most important things to consider if you are planning to teach woodturning.

1. A good teacher must have patience.
2. A good teacher is also blessed with the ability to break projects or instructions down into easy-to-follow steps and can explain things using a variety of teaching methods.
3. The best instructors are capable of clearly demonstrating the skills or techniques that are being taught. They also develop good handouts and possess good verbal communication skills.
4. Another good trait is to have the type of personality that can deal with and put up with a variety of student personality types. For instance, there is the over-achiever who is ready to be finished with the project before anyone else even gets started and there are those who do not take the time to listen to the instructor or to learn the skills being taught. Then there is the perfectionist who will not start until he understands every little detail and nuance, and there is the needy student who needs to have the instructor's full attention at all times, even though there is a classroom full of students. Then there is the student who seems to already know it all and tries to take over the class. You get the picture.
5. If teaching multiple students, you must be able to choreograph the process and keep the pace of the instruction moving, so as not to bore anyone and to be able to finish the project in the time allotted for the class. You do not want to leave anyone behind and yet you do not want to hold anyone back. Bear in mind that students learn at different rates yet somehow they all seem to finish the project at close to the same time.
6. Be aware of the fact that for the most part, we are not teaching students to be professional, but are providing them with the skills to enjoy a very rewarding hobby that can pay for itself if one chooses to sell their work.
7. A good instructor has the ability to recognize a student's confusion or lack of understanding and has the ability to remedy the situation without embarrassing the student or making him feel inadequate.
8. A good instructor is able to give positive, constructive feedback and gives constant encouragement to his students.
9. Instructors need to be up-to-date on all the safety rules for the equipment they are using in the classroom and must at all times practice and emphasize safe woodworking techniques in the classroom.
10. Remember to get constant feedback from the students as to whether they are having a good time and enjoying the class.
11. Most importantly, the classes and classroom experience must be a fun and enjoyable experience for all of the students.
12. Make sure that all the equipment that you will need in order to properly teach the class is available and in proper working condition. It helps to make a list of the tools and equipment that you generally use to make the project in your shop.
13. If someone else is preparing the materials for the class, make sure that they have a clear understanding of the sizes, quantities, and the quality of the required materials, so that there will be no surprises once class begins.
14. My preferred class size is three students. I can get around to everyone just enough and still leave them time to process on their own what is being taught. One-on-one is my least favorite, as I am looking over the student's shoulder all the time and most people feel uncomfortable if being watched all the time. Also with three students, they get the benefit of the questions and mistakes that the other students ask and make, thus giving the students a better and more rounded experience.
15. When I teach at the local woodworking stores, I limit the class size to five or six students for economic reasons. More than five or six students requires an assistant.
16. Sometimes adult students will come to class with a specific agenda, but I feel it is better if all my students start off turning between centers, working on a bead and cove stick, followed by a simple project. ▶

17. When teaching anyone for the first time, I like them to turn a practice block. I have them waste away a block of wood by turning it to a cylinder and making a few facing cuts on the end, followed by a few convex cuts (beads), followed by a few concave cuts (coves), and then finally combining the concave and convex cuts to form a nicely following ogee.
18. Class sizes at many craft and woodworking schools are anywhere from 10 to 17 students. Way too many for a hands-on type instructor, but they usually have an assistant for every five students. At the John C. Campbell Folk School an instructor can have an assistant after eight students have signed up for the class. At John C. Campbell the woodturning classes are limited to ten students, so as a hands-on instructor my hope is that only eight students sign for maximum learning, but my ego likes it when there is a waiting list.

Conclusions:

I have tried to provide some of the tips and things to think about before one goes off to teach woodturning for the first time or to help those who have already been teaching, to aid in making the classroom experience more pleasant. I have shared some of the things that I feel make a teacher stand out. This handout was designed to be a starting point for a discussion on good teaching techniques and by no means attempts to cover all aspects of teaching. My intent is to provide some food for thought and to help those who have never taught before to feel a tad more comfortable when going into a classroom. There is nothing more important than prior planning before the class begins. I have found that it takes close to two hours of preparation time or planning time for every hour of classroom time and sometimes more. Once I have taught a class several times, the planning time shrinks, but never as much as I had hoped it would.

A final thought that one of my many mentors passed on to me is that the more you write or teach or speak in public, the easier it gets. I have found this comment by my mentor Roger Austin to be very accurate, and it has helped me push myself further than I ever thought I could go when sharing my skills. Another thought I would like to share is that if you or a student are getting frustrated, it is time to stop and take a break and come back to what you were working on with a refreshed mind, body, and most importantly, a refreshed attitude. Frustration tends to hinder the learning process by feeding upon itself and building its own destructive energy. I have asked many a student to walk away from the lathe and get some fresh air. Good luck and happy turning!

I would like to thank the Wilmington Area Woodturners Association for inviting me to work with a group of club members to aid them in learning how to teach and to become more comfortable setting up classes and teaching the classes with more confidence and with adequate preparation. This handout was created specifically for that workshop in order to share my thoughts on teaching and how I go about preparing for and teaching a class. Some of the tips that I have added to this handout are the result of that meeting and the sharing of thoughts and concerns that were discussed. It was an unusual experience, for I am used to having a lathe and turning tools in front of me when interacting with a group of woodturners. One of the things that made the workshop successful was the willingness of the members to share their thoughts and to actively participate in the discussion. ■

TIPS FOR TEACHING YOUNG TURNERS

The major difference between teaching youth and adults is that young turners have little or no experience with power tools and little knowledge of how dangerous power tools can be. They also have no fear and can be very aggressive and just stick their tools into the work piece, not realizing how dangerous that can be. On the bright side, they present a clean slate and come to the lathe with few prior bad habits. On the plus side, they possess a good deal of passion and enthusiasm, that when properly channeled can lead to a very rewarding experience for the student and the teacher. Minimum time can be spent on teaching skills, as a young student's attention span tends to be short and they enjoy making the chips fly. The instructor needs to take the time to choose and prepare projects that are simple, fun, and of interest to the student. The projects can then progress through more and more difficult projects that build on skills and still keep the students interested. One of the reasons that this manual is such an effective teaching tool is the variety of projects that can be selected and adapted to teach and aid in the learning of the many skills needed to become a good turner. I have found that a few young turners are interested and will spend a short amount of time on skill-building exercises. For the most part, it is the finishing of a project in a short time period that attracts youth to woodturning. The amount of time that a younger student has to spend in the classroom or at the lathe is somewhat restricted, so a great deal of time and effort needs to be spent by the instructor to provide a well-organized and flowing session that enables the student to complete a project that interests them, gives them a feeling of success, and helps to build their self-esteem. Give them a feel for how much fun woodturning can be and that it is a rewarding hobby. When looking for fun projects, be sure to check the resource guide in the appendix or develop some of your own interesting projects. Better yet, encourage the students to develop their own ideas and designs. Encourage them to go off in another direction if they choose to do so; do not force them to create an exact copy of the project selected. After all, most of their time in the classroom is spent regurgitating what they are taught and they are given few opportunities to be creative. The lathe should be an opportunity for them to have fun, be creative, and explore shapes and forms. Most of all, try to keep the session fast-paced, fun, interesting, and productive. The following tips may aid your teaching experience.

- Keep an eye on the students for safety concerns and be alert to any lack of understanding or, just as importantly, signs of boredom or loss of interest.
- Be ready to adjust the pace of the class to better match the needs and desires of the students.
- Remember that not all students learn at the same rate and that some learn by watching, some by reading, and most by hands-on experience, so be prepared to use a variety of media and methods to help your students learn in the manner most comfortable for them.
- If a student does not understand what you are teaching, try another approach to get your point across. Always be alert to signs of incomprehension and provide alternative explanations.
- Height of the lathe: Young turners are generally shorter than adults, therefore the height of the lathe may need to be lowered or a stand or platform can be provided to raise the young turner to the proper height for comfortable turning.
- Use examples: Examples of turnings can enhance a young turner's interest in woodturning and may spark some new ideas.
- Balance helpfulness: Young and older turners appreciate being allowed to do most of the turning themselves, so that they feel ownership of the work.
- Do not be too critical of the students' work. If they are having fun at the lathe, that is what counts, not producing an exact copy of the project.
- Build on experience: Teach in incremental steps that allow the young turner to begin with simple skill-building exercises and projects and to progress to more complicated skills as confidence grows.
- Ensure success: Help students master each step before tackling the more difficult steps.
- Use of mini lathes: Small lathes are less threatening and the height is easier to adjust than full-size lathes.
- By using belt-driven lathes, the instructor can more easily establish the lathe speed and ensure that it remains set. Also the belt can be adjusted such that aggressive tool use will cause the blank to stop, thus minimizing potential injuries.
- Use dead centers (sometimes referred to as cup centers or safety centers): Tighten the centers firmly but not too tight, so that any aggressive tool use or a catch will stop ▸

the blank. It sometimes helps to loosen the drive belt a tad so that it will slip under aggressive or unsafe use.

- Use wood such as maple or poplar which is easy to turn and is in good condition, free of cracks, knots, or other defects.
- Do not allow young turners to use drills, drill presses, band saws, chain saws, etc. unless they have been trained in their proper and safe use or have documented proficiency in their use.
- Try to keep the ratio of adults or spotters as close to one-on-one per student as possible.
- Enjoyment: The emphasis of instruction should be on the enjoyment of turning fun projects and having a good, rewarding time on the lathe spinning wood. Try not to over-emphasize tool technique, as young students will quickly lose interest if too much time is spent on demonstrations or on working to develop good tool control and technique. Try to select projects that will, through the making of the project, help teach or improve tool skills and knowledge. Above all, keep the pace lively and fun. ■

PROJECTS FOR YOUNG TURNERS

- Mallet
- Cup and ball
- Honey dipper
- Coffee scoops
- Spurtle. Muddler, garden dribble
- Magic wand
- Tops
- Spin tops with pre-drilled holes for dowel handle
- Seam rippers
- Simple ornaments: snowman, toy soldier, angel, solid globe with finial
- Birdhouse ornament
- Door stops
- Dusters/basting brushes
- Ikebana flower vases
- Simple salt and pepper shakers, not the fancy grinder kind, just a hole, a plug, and some drilled holes or commercial cap for salt and pepper
- Paper towel holder
- Stick pens
- Tea lights
- Ice cream bowls (small bowls)
- Ring holders
- Weed pot
- Candlestick

Provide markers and paints to add color to the students' turnings and a whole new level of interest and excitement to the session. Be sure to keep pace with your students as they move from project to project at a fast pace. ■

TURNING FOR FURNITURE: THE CABRIOLE LEG

Introduction and Thoughts on Design:

This session or workshop was developed to make it possible to teach furniture makers who may not have much experience on the lathe, the techniques involved in laying out, designing, and turning legs for a variety of furniture needs. The legs have been scaled down to make it possible to teach these techniques on the small mini lathes that many clubs have acquired for use in club-sponsored workshops. The techniques are the same and the legs turned can be used to make a stool or small table, perhaps for a child's tea table or playhouse. The idea for this class came about through my association with the Triangle Woodworkers Association and their request that I do a demonstration followed by a workshop on turning furniture parts, specifically table or stool legs.

There are many styles of legs used in the design of furniture that can be turned on a lathe from the simple cabriole leg to the more ornate ball and claw legs and even the more elaborate legs with spirals, twists, flutes, etc. They all start with a bit of measuring and some layout lines and then where appropriate, material is turned off on the lathe and then later shaped or refined as is necessary for the particular design or style of the leg desired. Most legs for tables or stools will have a square section above the turned part of the leg, referred to as the pummel, which is used to attach the apron to the leg, both for looks and support; therefore one must consider this in the overall design of the leg. This workshop is intended as an introduction to turning furniture parts, so we will be turning a simple cabriole leg and discussing other styles and types as time and student interest allow. One of the interesting aspects in the turning process for the cabriole leg is that it is a multi-axis turning, which will add an extra element to the skills being taught. Multi-axis turning can be quite interesting and in some respects a bit intimidating but with the right attitude and a bit of knowledge, the pieces can be very interesting and exciting to make and the results are inspiring. The process is quite simple as long as the proper sequence of steps is followed. The method that I will be using was taught to me by Allan Batty, who is a second generation production woodturner from England and whose methods are very efficient. One major difference between his method and the one described below is that his legs have not had the mortises cut into them

before he turns them. That is the job of the furniture builder who ordered the legs and it is done after the legs are turned, thus making the layout of the legs much easier and less confusing. This is due to the fact that you do not have to worry about the relationship of the turned foot to the mortises, as that is in the furniture makers hands.

This workshop is meant to be fun and inspiring. My hope is that many of you will be inspired to add turned parts to your future furniture projects. Enough talk—let's get on with the project.

Tools and Materials:

Faceshield (highly recommended)
1¼" spindle roughing gouge or similar roughing gouge
¾" skew
⅜" spindle gouge
Parting tool
Drive center (safety center or steb center preferred)
Bearing center
Square and straightedge
Tape measure or ruler
Maple 2" × 2" × 6" for practice cuts and exercises
Maple 2" × 2" × 12" for leg, joined and planed square
Sandpaper

Procedures:

Practice Exercise

1. It is advisable to start the day by performing a quick practice exercise in the form of turning a small bead and cove stick. This exercise is designed to help the instructor get a feel for the skill set of the students and as a good warm-up exercise for those that are accomplished turners. To begin this exercise, mount the 2" × 2" × 6" maple blank in the lathe and practice using the spindle roughing gouge to turn the blank to a cylinder. ▸

2. Then lay out marks for a couple of beads and using the skew make V cuts to define the outside of the beads.
3. Then using the ⅜" spindle gouge, practice turning beads. If you are an accomplished turner or would like to stretch your skills, try turning a bead or two with the skew.
4. Enough with the bead practice—now let's get some practice turning coves. Flatten every other bead and then using the ⅜" spindle gouge, practice turning coves.
5. Finally, mark the transition point between the bead and the cove by turning a fillet, either using the ⅜" spindle gouge, preferred, or by using a parting tool.

Turning a Cabriole Leg

Note: The layout described below is for cabriole legs whose feet face out perpendicular to the table or buffet, which is usually the case when they are turned for tables. If you desire the feet to face out on the bias or 45 degrees or as they would be when turned for footstools, the layout is slightly different and perhaps a bit easier to describe. For this workshop we will be turning a small prototype leg for the typical table.

1. Begin by marking the layout for the cabriole leg, using the 2" × 2" × 12" maple leg blank.
2. Make sure that the leg blank is joined and planed square.
3. I prefer to mark and cut the mortises before I turn the leg, because it is easier to use my mortising machine if the leg sits flat. For this class I have marked where the mortises would be if we were to be using this leg in a piece of furniture rather than take the time to cut them before-hand. You must be sure, when you lay out the multi axis turning, that you note where the mortises are so that the leg will face out properly and in line with all the other legs. This is a very important step and time should be taken to double check your layout.
4. To layout the leg for marking the various axes, we must first determine and mark the area at the top of the leg for the square section of the leg that attaches to the apron of the table with a mortise and tenon joint. In this case the square pommel will be 2¾" long. Measure down from the top of the leg 2¾" and, using a square, draw a line perpendicular to the length of the leg to mark the bottom of the square section or pommel.
5. With one of the mortises to the left of the face to be marked and the other mortise opposite the face you are marking (the other mortise is facing the workbench top or in contact with the workbench top), measure and mark the center of the line drawn for the bottom of the square or pommel. Now measure down from this center point toward the foot about 1⅛" and make a mark.
6. It is now time to mark the layout lines for the offset center points on the top and bottom of the leg. For the offset point on the top of the leg, draw a line on the top of the leg, on the end grain, perpendicular to the face opposite the mortise that was on the left as the layout process began, from the outside face to the center point. Refer to the drawing, as this sounds more complicated than it really is. Once you have marked and turned a leg it all makes sense.
7. Now on the bottom draw a perpendicular line on the end grain from the face on the mortise side to the center point.

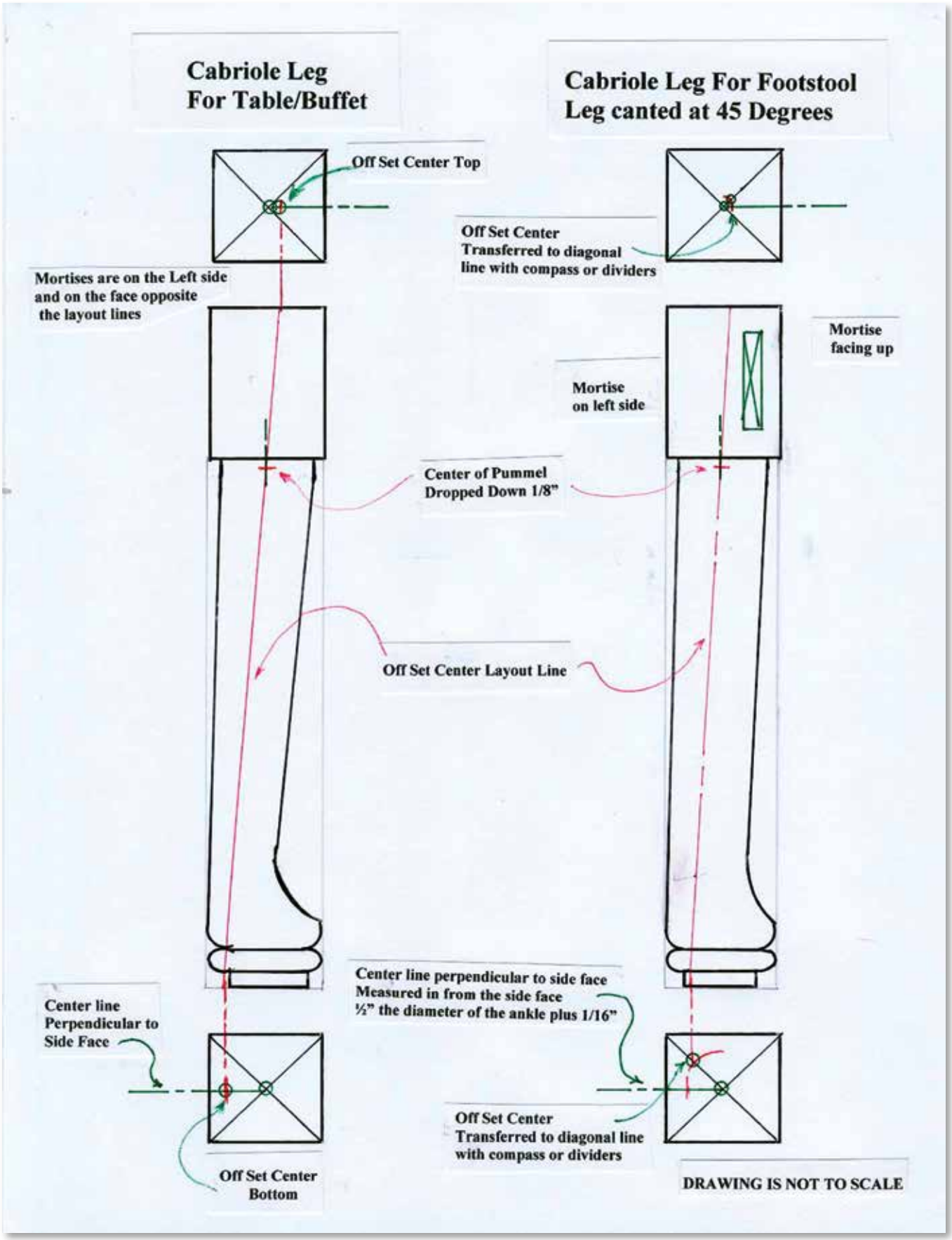
Note: To have the foot face out on the bias or at 45 degrees instead of facing forward, as in the cabriole legs for a footstool, the offset centers will be on the diagonal line that was drawn from corner to corner to find the original center. To mark the layout for this style leg, one mortise is on the left side facing you and the other mortise is facing you. With one mortise facing you and the other on the left side, find the center of the bottom of the pommel and mark a center point ⅛" down from the center point of the pommel. The measurement for the offset center points is the same as the straight forward leg except that the measurement in from the mortise side face on the bottom is transferred from the perpendicular line to the diagonal line. This is done by measuring out from the center to the point just marked on the perpendicular line and then transferring that distance out from the center point along the diagonal line and then marking it with a center punch. Make sure that both the top offset point and the bottom offset point are on the same diagonal line both top and bottom. Once again refer to the photo or drawing, as this is hard to describe in words and seeing the layout makes it much easier to understand.

8. To mark the center for the off-center turning on the bottom of the leg, measure in one-half of the diameter of the finished turned ankle plus a hair, or say 1/16". This would be the radius of the ankle, which for this example would be ½" as the finished turned ankle should be 1" in diameter. In order to have the back of the leg fully turned and to avoid a flat spot, we need to add about 1/16" to the measurement for the bottom offset center. To put it simply, we will measure in on the perpendicular line that we marked earlier 9/16" and mark the bottom offset center and make a dimple for the drive center. This extra 1/16" will ensure that the turned portion of the leg will be cylindrical from the top of the foot to the bottom of the square pommel.
9. Now transfer this point to the face by drawing a perpendicular line from this offset point to the face. Mark where it intersects the face on the face side where we previously marked the layout point for the center of the pommel.

Note: This is where a picture is worth a thousand words, as this all sounds difficult and the words may seem confusing, but if you look at the drawing, it may shed some light on the layout procedure. It is really fairly simple, the words, well, my choice of words seems to make it all very complicated when it really isn't.

10. From this mark on the face we will draw a line through the center point just below the center of the bottom of the pommel (this point was marked in step 5) to the top edge of the leg.
11. Now transfer the mark just made at the top edge on the face of the leg by drawing a line perpendicular to the face until it meets the line that was drawn on the top end grain of the leg in step 6. Now mark the point where they intersect. This is now the offset center for the top of the leg. Make a small dimple for the drive center to slip into.
12. Now mount the leg on the lathe between centers using the true center points.
13. Before turning the bottom part of the leg to a cylinder, use a skew to cut in for the pommel. There are a variety of ways to turn the pommel where it transitions from the square to cylinder. There are a variety of shapes from the square straight-in cut or maybe a slightly rounded curve most common to the more intricate lamb's tongue or ogee. Choose one and rough it in now as the pommel is being cut in. When cutting in the pommel, be sure to just barely break the surface of the cylinder and then stop cutting, as the cut should not go too deep beyond the rounded cylinder. This area will be finished later as the area is blended into the offset turning. Turn the section below the pommel to just barely a cylinder, being careful not to bump into the square section as you turn.
14. Now turn the foot on the bottom and the full bead. When turning the very bottom foot, make sure that there is enough wood left on the foot to mount the leg off-center. I sometimes leave the bottom of the foot a big larger and then turn it down to the finished diameter after I have turned the leg on the off-center axis and have remounted the leg for final sanding. Turn a half bead to meet the full bead. Do not turn the top of the half bead as that is done after we change centers to the offset centers.
15. Now reset the leg between the offset center points and return the leg to a cylinder and blend the foot to the leg by turning a cove on the top of the half bead at the foot to blend in with the leg.
16. The next step is to remount the leg between the original true centers and finish turning the pommel and if necessary turn the bottom foot to its finished diameter.
17. Sand the leg so that the off-center turning blends in with the between-centers turning. It may be necessary to remount the leg on the offset centers to help with blending the turned sections together by sanding them.
18. The leg is finished and ready to find its new home supporting a finely crafted piece of furniture. ▸

Note: Be sure to check out my website for upcoming classes or better yet give me a call if you are interested in learning to turn and we can set up a class or squeeze you into an existing class.


Cabriole Leg
For Table/Buffet
Cabriole Leg For Footstool
Leg canted at 45 Degrees
Off Set Center Top
Off Set Center
Transferred to diagonal
line with compass or dividers
Mortises are on the Left side
and on the face opposite
the layout lines
Mortise
facing up
Mortise
on left side
Center of Pummel
Dropped Down 1/8"
Off Set Center Layout Line
Center line perpendicular to side face
Measured in from the side face
½" the diameter of the ankle plus 1/16"
Center line
Perpendicular to
Side Face
Off Set Center
Transferred to diagonal line
with compass or dividers
Off Set Center
Bottom
DRAWING IS NOT TO SCALE

TURNING MINIATURES AND SMALL-SCALE TURNING

Introduction and Thoughts on Design:

This handout was developed for a weekend class that I taught at the John C. Campbell Folk School the weekend of Dec 2-4, 2011. The class and my demonstration were designed to introduce intermediate to advanced turners to the wonders and unlimited potential of small-scale turning. Small-scale turning includes, but is not limited to, turning jewelry, ornaments, 1"-scale doll house furniture and accessories. It is also open to turning anything that the turner can create that is small in scale. Heirloom Christmas ornaments fall into this category as well as other ornamental objects, like lamp or fan pulls and beads for jewelry. The object of this workshop was to provide students with some basic understanding of the concepts, techniques and tools that may be used for turning small items. Students were also introduced to a variety of jigs and other aids that may be unique to the art of miniature turning. It may seem counterintuitive but many of the tools that I use to turn small objects are not miniature tools but are full-scale tools that I have reshaped or adapted in some way to perform the necessary cuts to help make turning a particular object easier and more efficient. I have at times ground the right-angled edge of an allen wrench and turned it into a hollowing tool to hollow out a vase or hollow form. On occasion I have seen turners use dental tools or old screwdrivers that have been shaped to do a particular cut when turning small objects. Turning miniature objects sometimes requires a bit of imagination and ingenuity, especially when it comes to holding the work on the lathe and in designing and creating the tools that may aid in the turning. If turning in the micro-miniature scale, one may need to use magnifying safety glasses or some other visual aid to help see what is being turned.

There are so many possibilities of items to turn in small scale that the first step should be to choose the kind of items you would like to turn. The next step should be to decide on the scale whether micro-miniature or slightly larger. If trying to impress your turning buddies, try going to micro-miniature and see just how tiny you can turn a hollow form or goblet. Some turners will gravitate toward turning jewelry, others may prefer to turn 1"-scale doll house furniture or scaled-down furniture prototypes, still others may wish to focus on turning Christmas ornaments. The weekend class focused on turning Christmas ornaments and jewelry while my symposium demonstration covered the turning of 1"-scale furniture and turned objects such as a natural-edged bowl, a typical salad bowl and perhaps a small-scale side table. In the weekend class we went on to explore turning jewelry and small-scale heirloom ornaments.

Tools:

Note: Many of the tools listed below are specialty tools and are homemade. Some of the tools are available for purchase from Alan Leland or can be found in some of the many turning catalogs. Alan on occasion teaches classes on tool-making in his studio or in workshops sponsored by many clubs or woodworking stores.

1¼" spindle roughing gouge
⅜" spindle gouge
¼" parting tool ▸

1/16" parting tool
¾" skew
¼" point (pyramid)/ skew combination tool
¼" square box/skew HSS tool
Allen wrenches of various sizes
Modified scrapers
Four-jaw chuck with #1 jaws
Collet chuck (optional)
Jacobs drill chuck
Bearing center with cone
Double-stick tape designed for holding wood turnings (available in the woodturning catalogs. My favorite is Permabond.)

Materials:

Faceshield
Scrap wood for glue blocks & other holding methods
¾"-plus × 1" × 1"-plus or minus
Wood for projects
Small branch for natural edge bowl
Scrap pieces of Colorwood, Spectraply, Diamondwood
Jewelry findings
Small screw eyes

Procedure:

Miniature Bowl and Miniature Natural-Edge Bowl

1. With the chuck on the lathe mount a scrap of maple 1" × 1" × 2" in the chuck and face the scrap off flat across the face. Double-check the face with a straightedge to ensure the surface is flat and ready for the double-stick tape that will be used to hold the bowl blank.
2. Select a piece of wood for the bowl 1" × 1" × 2" that has been flattened on one end. Use a piece of double-stick tape to attach the blank to the scrap mounted in the chuck. Use the bearing center to put pressure on the blank to help adhere it to the glue block. Wait a minute or so to let the tape set up, then proceed to the next step!
3. Once the blank has had time to set up, begin to turn the inside of the bowl with a ¼" or smaller round-nosed scraper. Sand the inside of the bowl before moving on to shaping the outside of the bowl.
4. Once a nice rounded shape has been turned for the inside of the bowl, begin to turn the outside of the bowl with a ⅜" spindle gouge and part it off.
5. The last step is to reverse turn the bowl by mounting it a jam chuck turned from the scrap piece that is still in the chuck. I prefer to grip the bowl from the inside, as that allows me full access to the outside for sanding. I turn a tenon on the scrap in the chuck so that I can jam the bowl blank onto the tenon and finish turning and sanding the bottom. If your design calls for a foot on the bottom of the bowl, go ahead and turn it.
6. For a slight challenge, let's try turning a natural-edge bowl. The procedure is similar to turning a regular bowl, although a small branch will be used for the bowl blank and reverse turning will be a bit more challenging.
7. Mount a small branch that is about 1" in diameter and say 1½" long between centers and turn a tenon on one end for mounting in a chuck. Once mounted in the chuck, you can begin to rough turn the outside shape of the bowl. If necessary for proper visual balancing of the high and low edges, minor adjustments can be made by shifting the branch slightly toward one side in the chuck and then retightening the chuck.
8. Once you have rough-shaped the outside of the natural-edge bowl and are satisfied with the visual balancing of the high sides with the low sides, use a small round-nose scraper to hollow out the inside of the bowl and then sand it.
9. The next step is to finish shaping the outside of the natural-edge bowl, using a ⅜" spindle gouge. Then sand the outside and part the bowl off the lathe.
10. If there is enough material left, you can try turning another natural-edged bowl from the same stick.
11. Now the tricky part is to reverse turn the natural-edge bowl. One method that I use is to mount a piece of scrap in the chuck and turn a rounded stub that can be placed inside the bowl. Now place the inside of the bowl on the stub and bring up the tailstock with a live bearing


Natural-Edge Bowl ¾" diameter


Salad Bowl 1" diameter

center to hold the bowl in place. Be careful not to overtighten the tailstock, as you might destroy your bowl! Turn the lathe on to see if the blank is properly centered. Stop the lathe and readjust the blank as necessary to get as close to centered on the jam chuck as possible. Once the blank is centered, finish turning the bottom of the bowl and sand it.

12. Remove the natural-edged bowl from the lathe and trim off the stub and hand sand the bottom.
13. The last step is to apply your preferred finish. For bowls I like to use an oil finish but sometimes I will spray them with lacquer.

Goblet

1. Mount a blank (1" × 1" × 2½"-plus or minus) for the goblet between centers and turn a foot on it for mounting in a chuck. If using a collet chuck, this step can be skipped.
2. Now mount the blank in the chunk and true it up.
3. I like to start turning a goblet by shaping the outside of the cup using a ⅜" spindle gouge. Remember not to fully shape the cup as there needs to be enough material in the stem to help support the cup when hollowing it.
4. Next I hollow the inside of the cup with a round-nose scraper and finish sand it.
5. Once the cup has been hollowed, I finish turning the outside of the cup and begin shaping the stem and the base, once again using a ⅜" spindle gouge. Once I am happy with the shape and the look of the goblet and the base, I finish sand it and part it off the lathe using a skew or spindle gouge. I then hand sand the bottom of the goblet and, if necessary, I will reverse turn it by trapping between the chuck and the tailstock.
6. For a finish I would hit with a couple of coats of lacquer.

Candlestick-Style Side Table

1. I prefer to turn the table top first. I start by selecting a piece of wood, usually a scrap piece of maple burl (2" × 2" × ⅜" to ½"-plus) left over from turning my ornaments. Most of the time this piece is already attached to a glue block, so I can skip the first couple of steps.
2. Prepare a glue block in the chuck by facing it off flat. I use a belt sander sanding station to flatten one side of the burl blank to ready it for either gluing or double-stick taping to the glue block.
3. Glue or double-stick tape the blank to the glue block and bring up the bearing center in the tailstock to use as a clamp to help the glue or tape to set up.
4. I turn the top side of the table top first and sand it.
5. Once it's sanded, I then part it off, leaving enough wood on the backside to allow for the turning of a base to attach the leg to, using a mortise and tenon joint, with the mortise being drilled into the top.
6. The top is then reversed and attached to a glue block using double-stick tape.
7. Once the tape has had time to set up, I begin by turning a few beads and coves to make an attractive support for attaching the base.
8. Using a skew, I put a dimple into the center of the base support to help guide the drill bit that will be used for drilling the mortise.
9. I place a 3⁄16" or ¼" drill bit into a Jacobs chuck mounted in the tailstock and then drill a 3⁄16" to ¼" mortise into the back of the top, being careful not to drill through the top.
10. Once the mortise has been drilled, I sand the back side of the top.
11. The last step is to remove the finished top from the lathe and, using mineral spirits, clean off the residual glue from the double-stick tape and set it aside.
12. Now it is time to turn the table base.
13. I select a matching piece of maple burl or some other complementary wood for the base. The base blank ▸

Colorwood goblet 1¼" high by ⅜" diameter

Side table 2" diameter 2" tall

Table top with mortise and table base with tenon

should be 2½" long by about 1¾" diameter. Then mount it between centers and turn a 3/16" long by 3/16"-diameter tenon on the end that will attach to the top with a bead or filet to act as a physical and a visual stop where the base spindle meets the top mortise. Next turn a decorative spindle with a base that is slightly smaller in diameter than the diameter of the top, to keep the proportions visually appealing. My bases are 1½" diameter and are maybe ¼" to ⅜" high depending upon the overall design of the table. The spindle consists of beads and coves and at least one long vase/onion shape detail. See photos for inspiration.

14. Once you're satisfied with the design, sand it and part it off. I like to undercut the bottom of the base slightly so that the base rests on the outside edge in order to minimize potential wobbling. If necessary hand sand the bottom of the base.
15. Lastly glue the pedestal to the table top and apply your favorite finish. I like to spray my tables with Behlens clear lacquer, either the pre-catalized gloss or their Tone Finish Clear Gloss.
16. You now have a beautiful table on which to display your miniature turnings. ■

Miniature bubinga box for inspiration and a future project

ALAN LELAND'S THOUGHTS ON SHARPENING

The following tips and thoughts concerning sharpening are methods that I have learned from a variety of turners and sources, mainly Allan and Stuart Batty as they seem to explain turning techniques and skills in a way that makes sense and is easy to understand. I have also experimented on my own with a variety of the jigs that are on the market today, in order to copy some of the recommended shapes for gouges and other turning tools. I have taken many workshops and sponsor many internationally-known turners for workshops in my studio, and have found that there is not one bevel angle or grind that is universally used. There are a lot of similarities, but many turners modify the basic grinds to the type of wood they are turning or more specifically to the type of turning that they do most. I guess what I am trying to say here is that there is not one method or shape for grinding tools that works or is used universally in woodturning or by woodturners. This is especially true when it comes to sharpening scrapers, as they are sometimes modified for a specific task or cut. The one common thread is that there are some guidelines that can be used to help one to understand why tools may be sharpened the way they are for certain tasks and which ways may be more appropriate for the type of turning you are doing. My goal here is to shed light on why tools may be sharpened differently and how the various grinds function, so that you can choose the methods or the grinds that are most compatible with the type of turning that you do. I hope to pass on an understanding of the tools and how they work so that your sharpening decisions will be made on an informed basis. From my point of view, the best bargain and perhaps one of the best books on woodturning today is the pamphlet by Allan Batty titled "Woodturning Notes." In it Allan explains in very simple terms how and why tools should be sharpened a certain way and methods for using the tools properly. Bear in mind that Allan is a second- generation turner brought up in the English apprenticeship system and that as a production turner, time and speed were of utmost importance. Some of his methods reflect this need for speed and efficiency.

Below is a list, well, more of a discussion of what I feel are some of the more important points to consider when sharpening. Remember to always be aware of safety and to wear eye protection, preferably goggles but at the very least safety glasses with the side shields attached and functioning. No loose clothing, long dangly hair, jewelry, or anything else that could possibly get caught up in the spinning grindstones. Always be alert to the fact that there are usually two spinning grinding wheels and avoid making contact with the one that is not being used.

Frequent sharpening is the key to enjoyable, successful woodturning. Turners need to use the grinder frequently to renew the cutting edge of their tools. The following tips will aid you in this not-so-mysterious process of obtaining a sharp cutting edge. The height of the grinder is very important for achieving good results. As with the lathe, the center of the grinding wheel should be at a height even with the turner's elbow. Having the grinder at elbow height allows for the maximum range of movement for the hands and arms of the turner during the sharpening process. A slow-speed grinder (1720 rpms) with an eight-inch- diameter aluminum oxide wheel is highly recommended. A good combination of grinding wheels would be a 40 or 60 grit wheel on one side and an 80 or 100 grit wheel on the other side. If the more expensive powdered metal 2030 and 2060 or A-11 tools are used, upgrading to an SG aluminum oxide wheel would be a good idea.

Before grinding, check to be sure all the safety features of the grinder are properly installed and functioning. Also be sure that the grinding wheel is still sound (with the wheel off the grinder) by putting a rod through the wheel arbor hole and tapping the side of the wheel. A distinctive clear ring is a sign that the wheel is sound; a dull thud means that the wheel is fractured and should be replaced. It is far better to spend money replacing a wheel than to risk injury if the wheel shatters. Dress the wheel to true it up and to expose a fresh cutting surface before and during each sharpening session. An inexpensive T-shaped diamond dresser is recommended for dressing the wheel.

Always wear eye protection when grinding. When sharpening a tool, apply just enough pressure to keep the tool on the wheel. Excessive force will hasten clogging of the wheel and create friction that can overheat the tool steel. Many professionals feel that excessive honing or using a progression of sharpening stones on turning tools is time wasted. A proper bevel straight off the grinder is usually good enough, since the sharpened edge will dull quickly when turning.

I have discovered that there is no one bevel angle or tool shape. The tool edge that a turner grinds ▸

should relate to the style and type of turning being done and the hardness of the wood being turned. Experiment with the various recommended bevel angles and various grinds (e.g., side grinds, fingernail grinds) to find what works best for your specific project. The key is to achieve a continuous facet. The question of leaving the burr on or honing it off is often raised in any discussion on turning. The best answer I have come across is to hone the burr off when turning very hard and dense exotic woods such as cocobolo or ebony, because the burr tends to grab and tear the grain of exotic woods, and leave the burr on for our domestic hard and soft woods. Alan Lacer recommends honing the grinder burr off and replacing it with a fresh burr after honing the top of the scraper, as the burr straight off the grinder is very rough and similar to a weld, since the burr has been melted in place.

The following grinding angles are the most popular, but you may want to experiment and adjust the angles to find the one that is most appropriate for a particular project. I have listed the bevel angles by tool type and have included the most common range for the bevel angles on the tools listed.

Popular Grinding Bevel Angles:

(Bevel angles are listed in degrees)
My preferred bevel angles are listed in blue
Bowl gouge (55) 40 to 65-plus
Scrapers (75) 70 to 80
Parting tool (25) 25
Skew chisel (30) 25 to 55
Spindle roughing gouge (40) 40 to 45 (Skew bevel length 1½ to 2 × the thickness of the steel)
Spindle gouge (35) 25 to 45

Sharpen your tools frequently. Dull tools are often the cause of many of our turning problems. A variety of sharpening jigs and aids are available through woodturning suppliers and catalogs. One jig that I recommend is the Wolverine system by Oneway Manufacturing. The jigs make it easy to maintain a constant bevel angle with a continuous facet, thus leaving more time for turning now and in the future. ■

SHARPENING FOR WOODTURNERS DEVELOPED BY ALAN LELAND

Introduction:

This workshop was developed to provide background information on why turning tools are ground the way they are and to provide some hands-on sharpening experience. Although I use the Wolverine system in the workshop, I also touch on methods of sharpening without the use of commercial jigs. For beginners and more experienced turners I recommend using one of the many jigs on the market today, as they save time and steel. A good idea for someone who would like to sharpen a side-ground gouge (Irish Grind, David Ellsworth Grind, etc.) free-hand is to practice on a bolt from the hardware store so as not to waste precious tool steel. One of the most important concepts that I emphasize in this class is the fact that there is not one perfect bevel angle or shape and that there are a variety of bevel angles and shapes that are useful for a variety of turning situations.

Tools and Materials:

Grinders: two people per grinder
Wolverine sharpening system or equivalent (recommended)
Sample tools to be sharpened
Students tools to be sharpened
Handouts with relevant information on bevel angles, etc.
Safety equipment (safety glasses, faceshield, safety goggles)

Procedures:

1. Begin the class by introducing yourself and have the students introduce themselves and ask them to share with the class their experience and any specific sharpening problems or areas of interest. Then introduce them to the grinder and go over the various types and speeds of the most common types of grinders. I discuss wheel size, type, and grits. No need to get over-technical here as most turners do not need to know all of the more technical aspects. They, for the most part, need enough information to get them started. The majority of the people that take this class are hobbyists, not professional turners. The idea is not to bog them down with technical details but to give them an understanding of the basics. If they would like more information, refer them to books such as Allan Batty's *Woodturning Notes* (my favorite book on woodturning) available from Craft Supplies Woodturning Catalog or Mike Darlow's book *Fundamentals of Woodturning*, as they go into great detail on the subject.

It is best to have a handout prepared that deals with some of the more technical aspects, such as suggested bevel angles, grinder speeds, basic safety tips, and any other details that you think might be important.

2. Then proceed to discuss the following tips with emphasis on grinder safety:
   a. Optimum height for grinding system is the same as optimum lathe height which is the same height as your elbow.
   b. Grinder safety shields and all other safety equipment supplied with the grinder should be installed and functioning properly.
   c. Emphasize the use of safety goggles or some sort of eye protection.
   d. Test a wheel to hear if it is still sound by taking it off the grinder and tapping it to hear if it rings. If you hear a dull thud, the wheel is defective and should be replaced immediately.
   e. Stand aside when turning grinder on and let it get up to speed before grinding tools. Never restart the grinder if the wheels are still spinning from the last time that it was on, as this may cause the nuts on the wheels to work loose from the torque of start-up combined with the already spinning wheels.
   f. Use a star dresser or preferably diamond-tipped dresser or some other type of wheel dresser to flatten and freshen up the face of the wheel. My favorite diamond dresser is the T-shaped one available from Craft Supplies Woodturners Catalog.
   g. If using a jig, explain how to mount the tool in the jig and how to properly use the jig. Be sure to remind students to check to be sure all jigs are tightened properly and to check once in a while to ensure that they have not loosened up from the vibration of the machine. ▸

Note: If using the Oneway varigrind jig or other similar jig, be sure to mention that one hand holds the jig in the pocket and the other hand is on top of the jig, not on the tool handle. Holding the tool handle provides too much leverage and usually results in the tool and jig hitting the side of the wheel and chipping the wheel, or something worse. Also warn the students to keep their hands in a position which ensures that they will not get caught between the jig/tool and the grinder, should an accident occur.

h. Tool should be ground at or above center of the wheel, on the face only, never on the side.

i. Just enough pressure should be applied to hold the tool on the wheel.

j. Try to make use of the whole face of the wheel to avoid dishing it out. There is no need to whip the tool back and forth across the wheel, just hold it steady in one spot then ease it over to another spot, eventually making use of the whole wheel.

k. Water may be used to keep the tool steel cool while sharpening.

l. Describe and show how to look at the sharpened edge to get a feel for when it is sharpened (with an even bevel all the way around and the lack of reflection at the edge).

It is always a good idea to have a blank of wood mounted in a lathe to test the tools before and after sharpening to give the students a better understanding of how important it is to use a properly sharpened tool. It may also enable you to show how the variety of shapes and bevel angles for the various tools actually work when turning a piece of wood.

3. The next step is to discuss each type of tool (scrapers, spindle roughing gouge, bowl and spindle gouge, skew, and parting tools) and show the various methods that can be used to sharpen them properly. Be sure to discuss the various bevel angles and explain why they vary. Some time can be spent discussing the various shapes for the different tools. (Demonstrate how to sharpen the tools, both freehand, if you can, and with the use of a jig).

4. Below I have listed the bevel angles that I find most useful in the type of turning that I do most often. My preferred and most often used bevel angles are listed in blue.

Popular Grinding Bevel Angles:

(Bevel angles are listed in degrees)
Bowl gouge (55) 40 to 65-plus
Scrapers (75) 70 to 80
Parting tool (25) 25
Skew chisel (30) 25 to 55
Spindle roughing gouge (40) 40 to 45
Spindle gouge (35) 25 to 45

5. Along with the preferred bevel angles it is a good idea to demonstrate how to form the side grind sometimes referred to as the Irish grind, Celtic grind, David Ellsworth grind, etc. and how to form the fingernail shape at the tip of the tool. This would be the time to mention the benefits of the side grind and explain why it is so popular. I consider my side-ground bowl gouge to be my bowl and platter roughing gouge, as I like to use a more traditionally ground gouge for all my finishing and final shaping cuts.

   a. Bowl gouge with side grind with fingernail-shaped tip. I set the Wolverine Varigrind jig at the top notch or the one nearest the tool handle so that the washer on the arm of the jig almost covers the slot. I then move the sliding pocket arm in or out to set the bevel angle (I generally use a 55-degree bevel on my roughing bowl gouge). I then work on shaping one side of the gouge, shaping a slightly convex curve, and then repeat the same procedure on the other side, thus creating the side grind or David Ellsworth grind. When shaping the side grind with the Wolverine jig, the side of the tool must be rocked and rolled as it is ground on the wheel to create the slightly convex curve that is desired on the side of the gouge. If you just lay the side of the gouge flat on the wheel without rolling it back and forth, the side grind will end up being concave. The last step is to blend the two sides to form a nice fingernail shape on the front of the tool. When using the Wolverine Varigrind jig, I have the finger of one hand holding the pivot point in the pocket so that it does not slide forward and the other is on top of the jig, carefully placed so that it will not come in contact with the grinding wheel. Holding on to the tool's handle is not a good idea, as it provides too much leverage and this extra leverage may cause the tool to fall off the face of the grinding wheel and slam into the side of the wheel, thus damaging it, the jig, and the wheel in the process. See diagram 1 for side grind on gouges.

   b. If there is time and interest, I like to demonstrate how to freehand sharpen a bowl gouge with the proper side grind and bevel angle. I would like to share some tips I learned from Allan Batty, Stuart Batty, and Mike Mahoney on

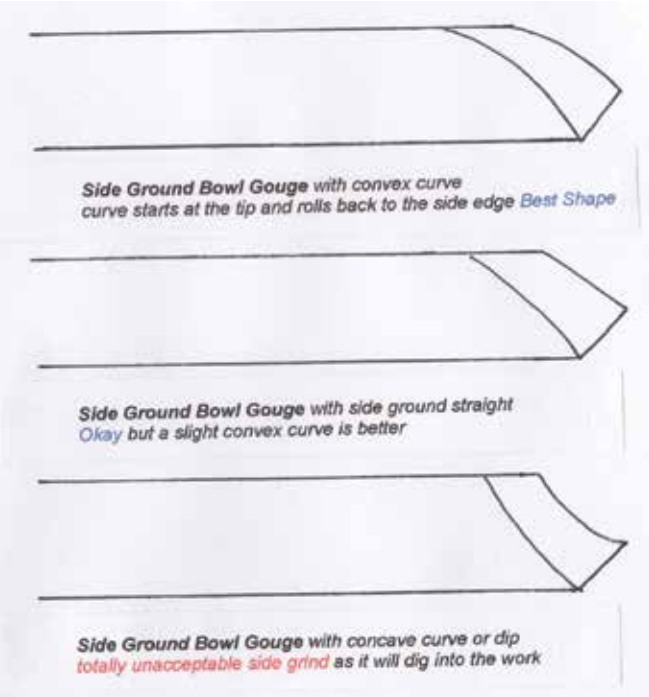


Diagram 1

freehand grinding. If you are using a brand-new gouge or one that is so badly out of shape that it needs to be completely reshaped, a quick way to give yourself a target for the proper finished shape of the side grind is to turn the flute upside down and, using the flat plate that comes with most grinders as a support for your hands while gently keeping both sides of the flute evenly on the wheel, grind the convex shape of the side grind onto the top of the flute. Now that you have the top of the flute shaped to your liking, you only have to grind your preferred bevel angle around the tip and the sides to match the shape of the top of the flute. Stuart and Allan like to grind the top of the flute back at roughly 40 degrees with a slight convex curve shape. They do not like a long side grind on the side of their bowl gouges. For the front bevel of my bowl gouges I tend to go with a 50- or 55-degree bevel, as I find that it fits the majority of the shapes of bowls that I turn. A tip that I learned from Allan Batty is to mark the top corners (a Sharpie marker or even masking tape is good to use to mark this template) of the grinder platform at 40 degrees as a guide for rotating the tool handle around when grinding the side bevel. You then set the platform to your desired bevel angle (Allan prefers 45 degrees and Stuart likes a 40-degree bevel), which will vary according to the type or depth of bowls and platters you intend to turn. As I generally do fairly shallow bowls and platters, I like a 55-degree bevel on my side ground bowl gouge. As I did with the Varigrind jig, I grind one side and then the other side, to reach the shape that I roughed in previously or to match the shape of the existing side grind. Using the 40-degree mark on the platform as a guide, I swing the tool handle around up to this mark while at the same time gently shaping the convex side grind and gently rolling the flute from the open position 12 o'clock to a more slightly closed flute position, thus shaping the side grind and maintaining the same bevel angle on the side bevel as is on the front bevel. Once both sides have been properly ground, I blend the front bevel to the sides, creating a nice fingernail shape. With a bit of practice and some helpful supervision, the student can very easily learn to freehand grind a good edge and shape on their tools. Rather than waste good steel, it is advisable to practice on a ½" bolt purchased from a hardware store. You would be surprised at how easy it is to freehand-grind your tools.

6. The traditionally ground bowl gouge is my finishing tool for most of my faceplate work. There are two ways to sharpen this tool. The one I use most often is to place the end of the tool handle in the pocket of the Wolverine pull-out arm and adjust the arm until I can grind a 40- degree bevel on the end of the gouge, similar to a spindle roughing gouge. I then just roll the tool back and forth, grinding a nice round shape on the front. I occasionally leave the right wing ground straight up like a spindle roughing gouge and the left wing ground back slightly. Another way is to set the platform of the grinder at 40 degrees and lay the tool flat on the platform with the handle perpendicular to the face of the grinding wheel and just roll the tool on its axis to form the nicely rounded shape.
7. Time to cover the spindle gouges. First let's do the spindle roughing gouge. My favorite is the 1¼" spindle roughing gouge. I use the pull-out arm of the Wolverine jig to sharpen this tool. I rest the bottom of the handle in the arm's pocket and pull out the arm to the proper distance so that I can grind my preferred bevel angle of 40 degrees onto ▸

the end of the roughing gouge. This tool is designed to be ground flat across the top and with the side wings straight up and down or perpendicular to the top edge of the flute.

8. My favorite basic spindle gouge, and the most useful for me, is the ⅜" spindle gouge. Depending upon what I am turning, the bevel angle of my spindle gouges is ground anywhere from 25 degrees up to around 40 or 45 degrees, except when I use for end-grain turning, I grind an entirely different shape and go with a more flattened bevel angle of close to 60 degrees. (I will not cover this grind in class as it may confuse some folks.) I use the Wolverine Varigrind jig to sharpen my spindle gouges, set to the bottom of the third notch down from the tool handle end of the jig (the end of the notch closest to the tool handle). I then rest the pivot point in the pocket of the pull-out arm and pull the arm out to set my desired bevel angle, which is generally around 35 degrees for the majority of the work that I do. I use the index finger of my left hand to hold the pivot point in the pocket as it tends to vibrate forward. The fingers of my right hand gently hold the top of the jig where the locking screw handle is located (but not hold the screw handle, as that may be loosened by the movement of my hands when sharpening), making sure that my hand will not make contact with the grinding wheel while sharpening and keeping all fingers, hands, and body parts out from under the jig, where they will not be trapped between the jig and the grinding wheel if something goes wrong.

   I feel that it is dangerous, when using the Varigrind jig, to hold the tool handle while sharpening, as it provides too much leverage and it is easier to roll the tool off the grinding wheel, thus slamming the tool and the jig into the side of the grinding wheel, possibly breaking the wheel but at the very least knocking a big chip out of the wheel, all of which could cause serious injury.

   I like to grind the wings of my spindle gouges back to get them out of the way when I turn beads and for other more delicate shapes. As I do with side-ground bowl gouges, I shape the side of the spindle gouge with a slightly convex side grind. Personally, I rarely, if ever, use the side of my spindle gouge for any turning.

9. Time now for the skew. I have found that the easiest way to sharpen a skew is to use the flat platform that comes with the Wolverine system. Using a protractor and a marker such as a black Sharpie, I draw two lines on each side of the platform at 70 degrees to match the preferred skew angle and then I adjust the angle of the platform to match the proper bevel angle of my skew. For most domestic hardwoods and softwoods the preferred bevel angle is a bevel that is generally 1½" to 2 times the thickness of the steel the skew is made from. I most often grind my skew bevels 1¾ the thickness of the tool. Say for a ¾" wide by ¼" thick skew, the length of my bevel would be somewhere between ⅜" and ½" long, measured perpendicular to the cutting edge. In most cases this will provide a bevel angle of 30 degrees, plus or minus. For very dense or exotic woods a blunter bevel angle of closer to 40 degrees is best, so that the tool will stay sharper longer when cutting such hard and dense woods. I found Allan Batty's explanation of the proper bevel angle for a skew to be the most informative, so check out his "Woodturning Notes" available from Crafts Supplies Woodturning Catalog. Once everything is set, I then lay the skew flat on one side and grind that side until sparks come up over the edge or until I feel I have a nice even bevel, keeping the tool parallel to the line that I drew on the platform. I then proceed to follow the same procedure for the other side of the skew. Once the edges are sharpened, I ease the top or long point corner back edge of the bevel on both sides so that it will not leave a score mark when turning (see drawing). The last step is to hone the edges for a razor-sharp edge. The skew is the only tool that I hone on a regular basis. I only take the skew back to the grinder when I have chipped the edge or honing is no longer effectively giving me a sharp edge.

   I have tried using the grind and shape that Alan Lacer recommends for his style skew and found it to be very effective. To use Alan-Lacer's-style skew grind, he recommends that the bevel length be 1½ times the thickness of the tool and the long point and short point fall within the 70-degree skew angle. He grinds a flat 90 degrees to the edge at the long point about ¼ to ⅓ of the length of the top edge and then he grinds in a slight curve to meet up with the short point. He then hones both the bottom and top edge and then hones the bevel on both sides of the edge by first touching the hone to the back of the bevel and slowly bringing it around

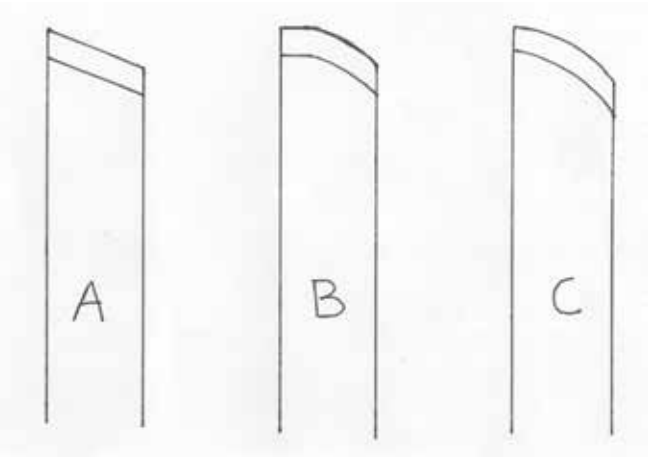


Diagram 2.

A. Normal skew: ground at 70 degrees with the lentgh of the bevel 1¾ to 2 times the thickness of the tool. ¼" thick skew would have a ⅜" to ½" wide bevel.

B. Alan Lacer style: the first ⅓ of the skew is ground at the tip 90 degrees to the side edge and then arcs away down toward the heel. Toe to heel is still at a 70-degree angle.

C. Skew with full arc; not the best way to grind a skew, as it limits what can be done with the skew. For instance, it is dificult to perform a peeling cut with a full arc skew.

so that the hone touches both the back of the bevel and the front cutting edge of the bevel. Unless the edge is damaged, he continues to sharpen his skew by honing. Try not to round over the edge or the skew will be dulled. Refer to skew shapes diagram 2.

10. The Parting Tool: Parting tools are fairly simple to sharpen. Like the skew they are generally sharpened with a 25-degree bevel. I use the pull-out bucket of the Wolverine sharpening system to sharpen my parting tools. I place the tool in the jig and adjust the jig in or out so that I can grind a 25-degree bevel on both sides of my parting tool. Then I grind until I see sparks coming over the top edge of the parting tool. Then sharpen the other side of the cutting edge in the same manner with the jig in the same position as when I sharpened the other side of the cutting edge. If you have a diamond- sided parting tool, make sure that the sharpened edge meets at the widest point of the diamond sides.

11. Scrapers can be ground to any shape that you like and often times are ground to make one particular shape in a turning. Most hollowing is done with scrapers of various shapes, sizes, and configurations. Most scrapers are ground to a bevel angle of around 70 to 80 degrees, but there is some variation in this bevel angle, depending upon how the scraper is going to be used. I tend to grind my round-nose scrapers and my hollowing scrapers at approximately 70 to 80 degrees. Lately I have added a negative rake to most of my scrapers to help prevent them from self-feeding into end grain. They also seem to work more smoothly and are a tad less grabby when scraping end grain and when hollowing. This negative rake can be added to any scraper by simply turning it upside down and grinding a 5- to 10-degree bevel on the top side of the scraper. I find that the negative rake vastly improves my turning experience and the effectiveness of my scrapers.

The burr left on the top edge after grinding should be honed off with a diamond sharpening stone and a new burr put on after honing the top of the scraper, then reestablish a fresh, clean burr using a carbide rod at a 5-degree angle to rub in a fresh burr. The carbide rod is the same type of rod that is used to sharpen cabinet scrapers. The rule of thumb that I use in regards to the burr is that, when turning exotic or extremely dense woods, it is best to hone the burr off, but when turning domestic hardwoods and softwoods, I find scrapers work better if the burr is left on, as the tool works in much the same way as a cabinet scraper and leaves an excellent turned finish.

I use the flat plate that comes with most grinders and the Wolverine system to sharpen my scrapers. I set the flat plate as close to the wheel as I can and set it to grind the angle that I want, generally around 70 to 80 degrees. I sharpen all of my scrapers to this same angle so that I do not have to change the setting from one scraper to the next. I then rest the scraper on the table with my thumb resting on top of the tool, pressing it down on to the table and using it as a pivot point to shape the cutting edge. I grind until I see sparks coming up over the cutting edge. To add the negative rake, I rest my hand on the table and place the top surface of the tool on the wheel at an angle so that it will grind it at about 5 or 10 degrees. Try to make one nice, smooth bevel. I then turn the tool over and regrind the 70- to 80-degree bevel. I only have to grind the negative rake angle once and do not have to redo it until the tool wears out and the negative rake is gone and needs to be replaced.

For the small scraping bits used in hollowing tools, I use a jig to hold the bits so that I can grind and shape the bits on the grinding table without grinding my ▸

fingers. The jig is fairly simple. Sometimes I use a small stick or block of wood with a screw and a washer to hold the machine bit in place. A fellow woodturner made a jig from a piece of steel stock that was tapped and a set screw inserted with a washer to hold the scraper bit in place between the washer and the jig.

12. Once all the tools have been covered, it is time to pair the students up, two to a grinder, maximum, and supervise them as they each sharpen one or two tools and take turns on the grinder. Pay special attention that they properly lock the jigs in place and that they move the tool slowly across the face of the wheel so as not to fall off the wheel. ■

Be alert to the fact that when using a Varigrind jig or other similar jig, the tool is not held by the tool's handle but rather the controlling hand is on top of the jig and the other hand is ensuring that the jig stays in the pocket and does not move forward. Be alert and make sure that neither hand is in a position to make contact with the grinding wheel or be trapped between the tool and the grinding wheel or jig arm.

Be open to any questions that the students may have and try not to let your particular preferences interfere or limit the discussion.

MASTERING SHARPENING AND TOOL TECHNIQUES

Introduction and Overview:

This will be a two-part demonstration. The first half of the demonstration will be devoted to the techniques that I use to sharpen my tools and to explain why I sharpen my tools the way I do. In the second half of the demonstration I will show how I use the tools to perform a variety of cuts, with emphasis on how I use each tool and why certain bevel angles or tool shapes may help to make my turning easier and more efficient. As I am known for my delicate finials, I will attempt to share with the audience those little things that I do to help finesse my turning skills and how I hold and present my tools to the work. This demonstration should be helpful to even the most experienced turners, as they may discover some little technique that I use that may be just that one thing that they needed to push their skills up a notch or two.

The goal of this demonstration is to show how I sharpen my tools using the Oneway Wolverine sharpening system and, if there is time, demonstrate how I would sharpen my tools freehand. The emphasis will be on the shapes and bevel angles that I find work best for me for the type of turning that I do. I will explain why I grind my tools the way I do and how these grinds help make my turning easier.

In the second half of my demonstration I will, time allowing, show how I use each of the tools that were previously sharpened and describe some of the techniques that I use to optimize the use of each tool. When turning, I enjoy each cut and aim for optimum control to achieve the cleanest, crispest cuts with the utmost control so that my sanding will be minimized. Rather than just hog the wood away, I prefer to take controlled cuts and to use finesse to remove the wood. Even though I am at times a production turner, I take great satisfaction in each cut and enjoy the process of turning as much as the finished result of a day at the lathe.

Grinder safety and tips

The following is a list of safety tips taken from my handout titled "Sharpening for Woodturners" that can be found in my woodturning lab manual titled *Let's go for a Spin*.

a. Optimum height for the grinding system is the same as optimum lathe height, which is the same height as your elbow.

b. Grinder safety shields and all other safety equipment supplied with the grinder should be installed and functioning properly.

c. Emphasize the use of safety goggles or some sort of eye protection.

d. Test a wheel to hear if it is still sound by taking it off the grinder and tapping it to hear if it rings. If you hear a dull thud, the wheel is defective and should be replaced immediately.

e. Stand aside when turning the grinder on and let it get up to speed before grinding tools.

Never restart the grinder if the wheels are still spinning from the last time that it was on, as this may cause the nuts on the wheels to work loose from the tork of start up combined with the already spinning wheels.

f. Use a star dresser or preferably diamond-tipped dresser or some other type of wheel dresser to flatten and freshen up the face of the wheel. My favorite diamond dresser is the T-shaped one available from Craft Supplies Woodturners catalog.

g. If using a jig, explain how to mount the tool in the jig and how to properly use the jig. Be sure to remind students to check to be sure all jigs are tightened properly and to check once in a while to ensure that they have not loosened up from the vibration of the machine.

Note: If using the Oneway varigrind jig or other similar jig, be sure to mention that one hand holds the jig in the pocket and the other hand is on top of the jig, not on the tool handle. Holding the tool handle provides too much leverage and usually results in the tool and jig hitting the side of the wheel and chipping the wheel or worse. Also warn the students to keep their hands in a position which ensures that they will not get caught between the jig/tool and the grinder, should an accident occur.

h. Tool should be ground at or above the center of the wheel, on the face only, never on the side.

i. Apply just enough pressure to hold the tool on the wheel.

j. Try to make use of the whole face of the wheel to avoid dishing it out. There is no need to whip the ▸

tool back and forth across the wheel, just hold it steady in one spot then ease it over to another spot, eventually making use of the whole wheel.

k. Water can be used to keep the tool steel cool while sharpening.

l. Check the safety instructions that were provided with your grinder. Also read the safety guidelines prepared by the American Association of Woodturners and those that I have included in the beginning of my lab manual titled *Let's Go For a Spin*.

Sharpening Basics:

Describe and show how to look at the sharpened edge to get a feel for when it is sharpened (with an even bevel all the way around and the lack of reflection at the edge). Never touch the edge of a tool to check on how sharp it is, as this will inevitably result in a nasty cut.

Demonstrate how to use:

- Spindle roughing gouge
- Spindle gouge
- Bowl gouge with traditional grind
- Bowl gouge with side grind
- Spindle and bowl gouges using the three basic cuts: facing cut, convex curve or bead, concave cut or cove
- Skew with straight grind
- Skew Richard Raffan style
- Skew Alan Lacer style
- Demonstrate how to use skew's planing cut, bead, facing, peeling cut, v-cut
- Parting tool rectangular/square
- Diamond parting tool
- Round-nose scrapers
- Square scraper
- Jig for hollowing tool bits

Tool Techniques:

Roughing gouge:

Rough out ½ of a square blank showing how I use the gouge in a roughing cut followed by pointing the tool in the direction of the cut for a smoother cut and concluding by demonstrating how I use the flat side of the gouge to do a cut similar to that of a skew when used to do a planing cut. It might also be a good idea to point out how useful the corners are for cutting a cylinder right up to the side of a bead or a pummel.

Spindle gouge:

Demonstrate the facing cut (show how to cut in a square pummel and a rounded pummel) followed by a convex cut (bead), then the concave cut (or cove).

While working on the spindle cuts, go ahead and demonstrate how useful the traditional-ground bowl gouge is for cutting an ogee in a pummel.

Bowl gouge:

Demonstrate turning the outside of a bowl (convex cuts) while gliding along on the bevel followed by showing how to use the side grind in a scraping manner, then in a shear cutting or slicing scrape. Cautiously consider explaining how to use the side of the side ground gouge by gliding along the side bevel and carefully being sure to stay on the bevel without rolling off the bevel, as it will cause the worst of nasty catches.

Skew:

Show how the various styles for grinding a skew chisel have advantages over the traditional way a skew is ground.

Scrapers:

Demonstrate how they are used and be sure to emphasize the fact that one should avoid making bevel contact with scrapers. Point out that scrapers can be ground to a variety of shapes to achieve the desired cut and that they are very useful when an exact diameter needs to be cut or one is after a very precise shape. Many turners use scrapers to clean up the surface of a bowl or platter prior to sanding, often times using them to shear scrape the outside of a bowl. ■