

The Bead and Cove Stick

Materials:

Face Shield

3" x 3" x 9" blank wet or dry, in good condition with no checks or large knots.

(I recommend maple or poplar)

1 1/4" Spindle Roughing Gouge recommended (although any Spindle Roughing Gouge will suffice)

3/8" Beading & Parting tool

3/4" Skew

3/8" Spindle Gouge

Bearing (live) Center

Drive Center (I prefer to use a 7/8" 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 themselves and share with the group their experience in woodturning, what type of turning interests them and anything else that they wish to share. If they 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. If you are teaching College age folks and younger it may be a good idea to skip the Bead & Cove Stick exercise and go right to some simple, interesting and most importantly fun projects.(see section on teaching youth at the end of this manual)

Session Introduction:

I feel that if one wants to learn how to turn that the bead & 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 a 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 left became airborne and flew across the shop, not only scary him but all the other students in the class. 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 that have a perfectionist nature as they feel that they must master the Beading & 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 & Parting tool mainly as a means to help students learn to move their wrists and body when turning, as they received 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 3/8" beading & 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 & 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 3/8" Beading & 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 3/8" 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 lathes 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.

Note: I prefer to use a 1 ¼" spindle roughing out gouge, but a ¾" spindle roughing out gouge will do just fine. Emphasize that the tool must always make contact with the Hand Rest (Tool Rest) 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 into 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 tool rest 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 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 Stubs refers to this body movement, as the woodturners' dance in his video on bowl turning.

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 work piece not your body. The left hand is touching the tool rest (also referred to as the hand rest) and the thumb is putting downward pressure onto the tool rest. 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 tool rest. The handle is dropped down further 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 as 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 tool rest in the direction of the cut. Be sure to emphasize that the tool must make metal to metal contact with the tool rest at all times before the tool touches the wood. The tool is then moved along the tool rest 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 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 their lathe.

Note: Make sure that all students are wearing eye protection preferably a face shield as it affords the best protection. In a classroom situation a face shield 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 1 ¼" 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 tool rest and the trailing side is raised off the tool rest approximately $\frac{1}{4}$ " to $\frac{3}{8}$ " 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 heal(sometimes referred to as the short point) and the tool just slides across the work nice and gently. I sometimes raise the tool rest a tad so that the skew is cutting higher on the tangent of the cylinder or above the most sticky out 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 tool rest 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 & parting tool and move on to the 3/8" Spindle Gouge as the Beading & Parting Tool can be a bit frustrating for some students.

9. Next I go on to show the class how to use the 3/8" beading & 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 & 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 use the beading & 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 & 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 & 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 tool rest 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 student's 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 3/8" spindle gouge. This usually takes about 30 minutes. The students are much happier and the beads of sweat that used to appear on the student's foreheads, due to frustration are no longer there. There for you may want to skip the Beading & Parting Tool lesson.

10. Once the majority of students have shown some understanding of the movements involved when using the beading & parting tool to turn beads, it is time to teach them how to use the 3/8" spindle gouge to turn beads.

Start of 3/8" Spindle Gouge Lesson

11. Before demonstrating the use of the 3/8" 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 & 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 & 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 3/8" 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 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 bead 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 contacting the side of the gouge 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 can not 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 work piece because if it gets too thin it is easy for a student to drop his or her tool below center causing the work piece 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 are now done with the practice exercise and are ready to move on to Session 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.

***Please note that I have added a handout titled “*Tips and Techniques for Using a Spindle Gouge*”. I use this handout when working with experienced students who may feel that their skills are beyond the basic Bead and Cove Stick skill building exercise. This handout covers essentially the same skills as the the Bead & Cove Stick handout but in a different format therefor some of the skills being taught are repeated but just in a different format.**

Books And DVDS

Books:

Woodturning A Foundation Course by Keith Rowley

O'Donnell's Woodturning Techniques by Michael O'Donnell Fox Chapel Publishing
ISBN 978-1-56523-405-5

Woodturning Notes by Allan Batty (available from Craft Supplies Woodturners catalog)

DVDS:

Back To Basics with Jimmy Clews

The Skew Chisel with Alan lacer

The Son of Skew with Alan Lacer

The Skew Chisel with Allan Batty

Mastering Woodturning Tools And techniques with Glenn Lucas

Session 1 Part 2

Projects Using Beads & Coves

Materials:

1 ¼" Roughing Gouge

3/8" Spindle Gouge

¾" Skew

Parting Tool

For Turning a Tool Handle

1 ½" x 1 ½" x 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" x 3" x 8" + or - 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, Candle stick, Simple Ornament etc.

Introduction:

It is always a good idea to review and go over 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 insures that all students have at least used the grinder 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, nosstepenny, simple spindle ornament (toy soldier ornament or snowman), etc. For more detailed instructions and materials list please refer to the appropriate hand-out 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 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 AAW Journals or her project Book.

1. For tool handles not using a collet, drill a 1/4" hole in the end of the tool handle blank as deep as possible so that the 1/4" HSS bar stock will fit half the length of the bar into the handle so that it will 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 1/4" hole for the bar stock centered in the mortise. If using a collet, I sometimes drill the hole for the bar stock slightly larger (5/16" for 1/4" bar stock) than the diameter of the 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 that the hole was drilled or into the hole of the collet and a Steb Center or some other type of drive center in the center of 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 collet slips easily into the mortice 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. One can also use your workbench vice.

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.

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 a $\frac{1}{2}$ " or more diameter 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 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 $\frac{1}{4}$ "HSS bar into the $\frac{1}{4}$ " hole in the end of the tool handle. Or if using a collet, insert the $\frac{1}{4}$ " 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 of the manual 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 and slows down the faster students while at the same time helps to build up their confidence.*
13. To make a skew, I start by using a protractor if one is 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 tool rest 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 $\frac{1}{4}$ " 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 1 $\frac{3}{4}$ to 2 times the thickness of the tools steel. For instance a piece of $\frac{1}{4}$ " bar stock would have a bevel length of approximately $\frac{1}{2}$ " to $\frac{5}{8}$ " 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 and 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.

**Note: Please note that a handout describing how Alan recommends how to sharpen turning tools is available in Section 8 of the manual*

Bead & Cove Stick

Where It All Begins

Tools & Materials:

Face Shield

3/8" Beading & Parting Tool
3/8" Spindle Gouge
1 1/4" Spindle Roughing Gouge
3/4" Spindle Roughing Gouge Optional
3/4" Skew
3/4" Steb Center or Safety Center
Bearing Center with Cone
3" x 3" x 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 3/8" beading and parting tool followed by a 3/8" spindle gouge and then finally with the skew. The theory behind learning to turn beads with a 3/8" 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:

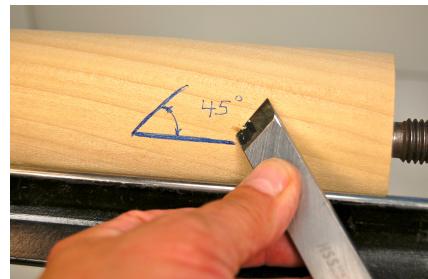
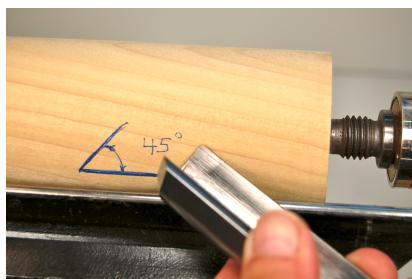
1. Select a piece of wood approximately 3" x 3" x 9". Greenwood is fine for this project.
2. Mark the centers on both ends of the blank. Use a scratch awl or other pointed object to make a locating hole in the center of both ends.

3. Place 3/4" Stub center, 4 prong drive center or live center into the headstock and a bearing center in 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 $\frac{1}{4}$ 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 tool rest 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 sticky out 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 $\frac{3}{4}$ " or the width of your finger and that the rest should be approximately $\frac{1}{4}$ " to $\frac{1}{8}$ " from the blank. Using the hand wheel turn the blank by hand to be sure that it does not hit the tool rest.



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 tool rest, (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.

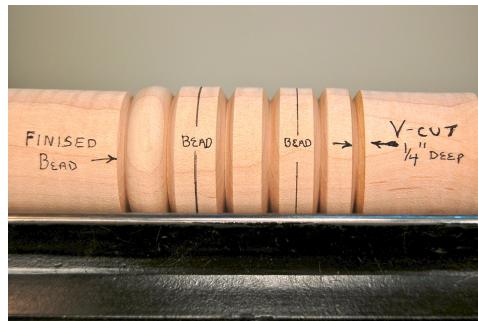
1. The tool handle can move up and down to control the amount of cut.

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 tool rest 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 tool rest 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 Stubs refers to this body movement as the woodturners' dance in his video on bowl turning.

6. Use a tape measure or a story stick to mark out 3/4" 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.

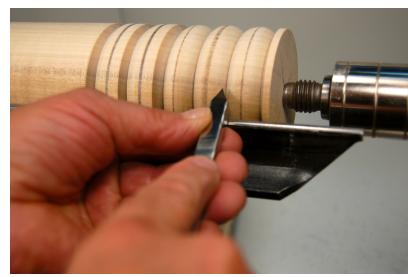


The Skew & V-cuts:

8. The Skew is the best tool for making V-cuts to open up a space for the Spindle Gouge or the Beading & Parting Tool to cut into when turning a bead, as they 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 tool rest 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 3/4" wide bead the depth of the V-cut should be about a 1/4" deep.

Beading and Parting Tool:



Note: I have recently decided to skip this section on turning beads with a Beading & 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 3/8" 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 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 tool rest 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 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 as I turn the bead. 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 & 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.

3/8" 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.

2. 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 preload your wrist, touch the heel of the bevel to the blank with the flute slightly open in the 2 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 3/8" spindle 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 preload 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 3 o'clock position and twisting your wrist as you traverse the tool rest 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 tool rest 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.