

Project 8: Turn an Inside Out Vase



Taken from [Wood Turning Projects to Set Your Mind Spinning](#).

**To learn about the rest of these projects, go to
<http://www.woodturnedart.vcn.com/projects.html>.**

Skill Level: Advanced

Tools and Supplies

- Four billets of hardwood. See instructions below to determine dimensions.
- Fiberglass reinforced package sealing tape.
- 3/4 in. roughing gouge.
- 1/2 in. gouge.
- 1/2 in. flat scraper.
- Steady rest.
- Cone center.
- Finish: beeswax or your choice.

The Golden Section

For centuries, artists in all media have known about the Golden Section. It is a mathematical relationship that yields the ideal proportions. In visual art, the Golden Section is a subtle element that pleases the eye.

An object conforming to the Golden Section will have a width to length ratio of approximately 0.6. These proportions work well on a piece like the Ash Vase above, because the greatest diameter is near the bottom. If you wish to have the greatest diameter near the top, a more pleasing ratio is width/length=0.3. An example of how the Golden Section would work for a 10 inch vase is that its diameter would have to be about 6 inches.

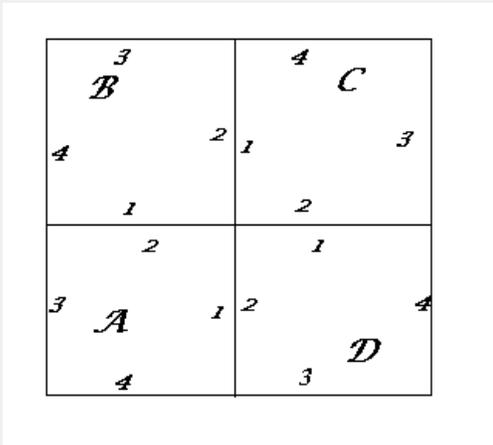
Inside Out Turnings

As in Project 6, Inside Out Butterflies, this vase uses the Inside Out technique. I build a blank from four billets, stick them together with double sided tape and cut a depression that will form the hollow interior. I then pull the blank apart, turn the pieces 180° and glue them together. I mount this block on the lathe and cut the

exterior. As I cut the external shape, I create four openings or windows to the interior where the interior curves intersect with the outer surface.

Prepare the Stock and Assemble the Turning Blank

Start with four ash billets of square cross section. For a 10 inch vase, use billets of approximately 3 1/4 in. x 3 1/4 in. x 12 in. Lay up the four billets so the portion of each that will form the interior of the vase is now on the outside corners of the composite block. You may wish to put letters in the outside corner and number the edges of each billet as pictured below (top view). Stick these billets together with double sided tape so that A1 sticks to D2, and C1 sticks to B2. (Be sure that the resulting surfaces, A2–D1 and B1–C2, remain flat.) Next, stick A2–D1 to B1–C2 and wrap at least three turns of fiberglass reinforced packing tape around the ends of the composite block. If you need to cut in an area where you have taped, put more tape in an area where you have already turned.

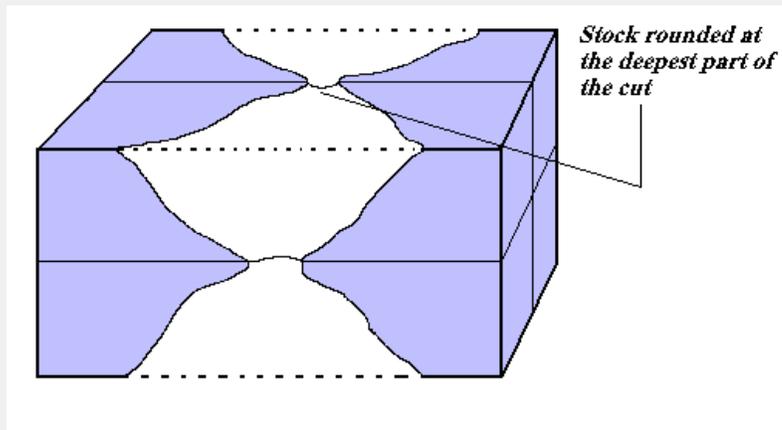


Cut the Interior Contour

Put this taped-up block between the centers and check for clearance before turning on your lathe. I have turned vases of this sort where I needed to use a hand saw to cut a V-shaped notch in the corners of the block so that they will clear the

banjo of the tool rest.

Set your lathe to turn at a relatively slow speed. Cut the contour of the inside curve of your vase. (Stay clear of those rotating corners. They can hurt!) Make the deepest part of your cut deeper than just rounding the block (see the diagram below). This should occur at the point of greatest diameter in your vase. When you gain experience with this style, you can manipulate this cut to change the look of your finished product. The deeper you make this cut, the fatter your vase will be. I cut the Ash Vase pictured above with the interior curve going deeper into the block than the Peregrine Falcon Vase pictured on the Vases page of my [wood turning website](#).



You can turn the interior to leave a smooth surface, or you can leave it rough. I have turned vases where I cut the interior so that it appeared to be hand carved. This puzzles the viewer when he or she notices that the vase has no opening large enough to admit a carving chisel or gouge!

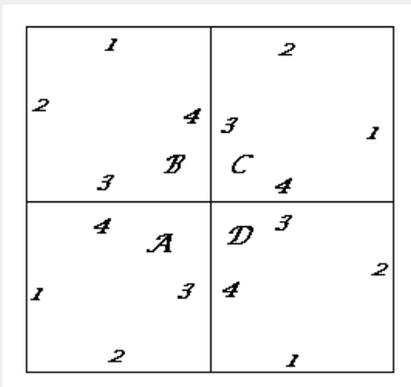
Once you have cut the inside contour, do any sanding or finishing you want on the cut portion of the block. If you apply finish, avoid putting it on the flat portions of your billets. These surfaces form the glue joints when you glue up your vase.

When you are satisfied with the interior contour, remove the block from the lathe. Pull off the fiberglass tape and make pencil marks across the uncut portion of each face. Then run each face of the composite over the jointer. Take as many

light cuts as necessary to just remove the pencil marks. (Make the same number of passes on each face.) This will leave each face flat and square with the adjoining faces.

Pull the Block Apart and Reassemble to Cut the Exterior Curve

Now, using a wood chisel or other tool, pry your composite block apart, turn each block 180° on its axis so that sides # 3 and 4 of each block are inside the composite (see below).



Reassemble your turning block as follows:

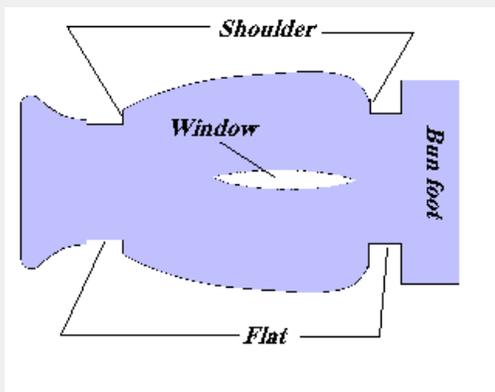
1. Glue side B3 to side A4. As represented by the vertical line through the middle of the picture above, be sure that you glue these blocks so that the surface formed by B4 and A3 is flat.
2. Glue C4 to D3. Also be careful to keep flat the surface formed by C3 and D4.
3. Glue the two halves together so that B4 mates with C3 and A3 mates with D4.
4. Set your project aside until your glue has cured.

Place your block between centers, top against the drive center, and begin turning the middle section that will have the windows. You will do the neck, lips and bun foot a little later.

When you start turning the outside, you will soon open or widen the "windows" to the inside of your vase as your cuts now intersect with the previously turned interior contours. These windows can be dangerous, so keep your fingers well away during all operations. As the windows widen, you get a view of the interior shape that can provide you with a guide for cutting the outside contour. Leave the vase oversized at this point so that later you can make the various curves flow together. You can reduce the amount of chipping at the intersection of the exterior and interior curves by taking light cuts with a sharp gouge.

Shape the Bun Foot, Neck and Lips

In the place where the cove above your bun foot will be, cut a flat with your 1/2 in. scraper. This flat needs to be wide enough for a steady rest. Leave a shoulder on the top side of the flat for the side of the rub bar in the steady rest to ride against. Attach your steady rest so that it is supporting the bottom and pushing the vase snugly against the drive center. Pull the tailstock away, turn the lathe on (slow speed) and shape the bun foot. Skip this step if you are turning a vase similar to the Peregrine Falcon.



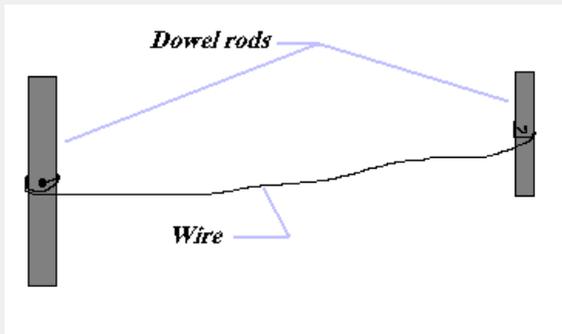
Use a similar technique to shape the neck and lips. Orient the vase with the bun

foot against the drive center. Cut a flat in the area that will form the neck of the vase and leave a shoulder that will allow the steady rest to hold the foot firmly against the drive center. With the top held in place by the live center in the tailstock, position the steady rest in this flat with the side of the rub bar also riding against the shoulder.

Using a drill chuck in your tailstock, drill an appropriate sized hole through the neck to the interior of the vase. Then shape the lips, curving their interior so that it flows into the hole you drilled. I sanded and applied a wax finish to this portion before I proceeded to the next step.

Put a cone center into the tailstock and push it up to the top of the vase. To avoid a black mark on my vase caused by the aluminum cone center in my tailstock, I placed a small disc of paper between the cone and the vase. Remove the steady rest, and make your final cuts so that all the curves flow together. Then cut the cove above the foot. I elected to score and burn a couple of lines on either side of the cove. People have commented that they really liked my "walnut inlays" above and below the cove!

To burn these lines, take two pieces of dowel rod, drill a hole in each that will accommodate the diameter of wire you wish to use, push the end of the wire into the hole and wrap the wire around the dowel a few times (see below). Then select the place where you want your burn mark, and score a shallow groove with a V shaped tool or the corner of your flat scraper. Then with the lathe set to turn at a fairly fast speed (approximately 1200 rpm or more depending on the diameter of the turning), stretch your wire taut and hold in the scored groove until it begins to smoke. The wire will want to grab a little when it gets hot and begins to burn the wood, but if you are prepared, that will not cause any problems. The longer you hold the wire against the turning, the deeper and blacker will be your burn mark.



If, while you were turning the exterior, you chipped the edges formed by the junction of the interior and exterior contours, you will need to dress them with sandpaper or a small file. I applied a buffed wax finish that gave my vase a soft luster.

You can read about a similar project in the April 2002 issue of *Woodworker's Journal*.

If you have any questions about this project, please send me an email at woodturnedart@vcn.com

If you enjoy this project, consider purchasing my e-book of turning projects. You will find many other things you can do on your lathe. This e-book is available for purchase on my website at <http://www.woodturnedart.vcn.com/projects.html>

Thanks, Ellis Hein