

A BARK-EDGED FLYING-WING VASE



Kevin Felderhoff

I enjoy turning endgrain pieces and have found that the most dramatic wood grain comes from logs or branches with irregular shapes—far from round. The flying-wing vase shown in this article is an example of endgrain hollowing, but with the added feature of a crotch where two branches sweep outward with enough curve that after turning the piece, the vase appears to have wings.

Wood selection

Start by selecting a freshly cut branch with a crotch. Ensure the wood is not cracked. Examine the outside curve of the diverging arms to see that you'll get the wing effect you want when the piece is turned.

Turning green, or unseasoned, wood is easier than turning dried wood since the moisture provides some lubrication and the bark is still intact. Although the turned vase will warp during drying, this effect is not very noticeable and, if anything, adds more character since a bark-edged vase may already appear asymmetrical. Sometimes when turning a natural-edge piece in wet wood, the bark will become partially unattached or even pop off during drying; I'll offer a

solution to this problem later in this article.

I have found that mesquite is a good choice for this type of project. In my experience with this species, if the bark is still on the piece after turning, then it is likely it will remain when it is fully dried. Also, with mesquite there is always a crack in the pith, but I have found the crack does not grow much while drying.

Position the workpiece for optimal effect

After you have cut your crotch branch to size, attach a wing-support piece made from plywood or hardwood and screws (*Photo 1*). This extra support allows you to position the workpiece on the lathe for the best alignment of the vase and not have to run the tailstock into the center of the crotch. Instead, the tailstock will come into contact with the support piece. This also provides support for the wings and eliminates a lot of chatter during turning. Pay close attention to the location of the screws; make sure they are not too close to the outside edge of the wings (branches). I like to leave the support piece in place as long as possible when cutting the outside profile of the upper wings. Placing the screws toward the inner part of the branches keeps them clear of your cutting path.

Positioning the crotch on the lathe is one of the most important tasks, and you should take your time in getting it just right. To prepare the branch for mounting on a faceplate, I first mount the piece using a drive spur and live center. This allows me to position the vase for optimal results, whereas mounting it on a faceplate initially would dictate the turning axis of the piece. I start at the top part of the wings and work my way down to the base, making adjustments at the head and tailstock centers. ▶

Safety Note

This project should only be attempted by experienced turners. When turning a crotch piece with extended, separated wings, there is a greater possibility of injury. Also, advanced hollowing skills are needed. Following are a few safety notes to keep in mind when attempting this type of project:

- Irregular pieces are more dangerous and generally deserve respect and your constant attention.
- Protruding branches, or “wings,” have a separate path of rotation than other parts of the workpiece. Keep your fingers, hands, and arms behind the toolrest when cutting near the wings.
- When hollowing a large log or branch, use a faceplate and screws to mount the blank, rather than holding it in a chuck. Crotch pieces are likely to be out of balance (even after the main body of the vase is trued), and the greater holding strength of screws and a faceplate is needed.
- Inspect your wood mounting carefully, and manually spin the workpiece before turning on the lathe.
- Always know how you will finish a cut, so you don't get your body out of position, which could cause you to come into contact with the spinning wings.
- Be extra careful and diligent when trying new techniques at the lathe.
- Wear an impact faceshield and safety glasses.
- See that your turning tools stay sharp.
- Sanding an irregular piece with the lathe on is dangerous due to intermittent contact. In this project, the wings are sanded with the lathe off and the spindle locked.

Prepare and mount workpiece



A wooden wing-support piece screwed to the top end of the branches receives the tailstock live center and allows for intentional positioning of the turning axis.

Rough-turn base and mount faceplate



The piece is initially driven by a spur drive, allowing for adjustable positioning. Turn a flat base to accept a faceplate, the preferred and safer holding method for hollowing.

Shape the outside profile



5 With the piece mounted on a faceplate, begin shaping the lower section of the vase.



6 Form the neck area and outer surfaces of the wings.



Start by choosing a location for the tailstock live center at the wing end of the workpiece. The wings catch your eyes first in the finished vase, so align your tailstock position in relation to the crotch. Here you are deciding if you want your wings level (tailstock centered on the crotch) or at differing elevations (tailstock offset). I use the toolrest as a reference point to line up the piece, as it is a fixed point from which I can take measurements on both sides; move the workpiece accordingly on the tailstock or headstock end (*Photo 2*). I often mount the body of the vase just off center, so the bark will be exposed

on one side when the piece is trued up. Keep the wings in mind when positioning the base end on the spur drive because any adjustment will affect your wing location. Once you are happy with the alignment of the piece, rough-turn the base and create a flat end on which to mount a faceplate (*Photo 3*). Remove the piece from the lathe and mount a faceplate on the base end (*Photo 4*).

Turn the outside profile

With the piece mounted on the faceplate and the tailstock in place for support, turn the lower half of the vase (*Photo 5*). Start at a low rpm and increase the lathe speed as more of

the piece comes into round. *Never turn this kind of project at high speeds because the entire piece may remain out of balance due to the wings.* I will turn the lower half to the point where I have just a section of bark showing on at least one side, as I like some bark to remain as a feature.

If you divide the vase roughly into thirds, you can then locate the neck area. The center of the neck would be about one-third of the way down from the tip of the wings, or just below the crotch area. The widest part of the vase would be about two-thirds down, with another one-third to the base. These are rough estimates, and adjustments may

Position steady rest on the neck



8 The neck area is a good location for a steady rest.

Turn the wings



9 View from the tailstock end shows the intermittent cutting action—air and wood.



10 Form the wings' wall thickness in stages.

need to be made based on the piece you have chosen.

When planning your design, keep in mind that curves are more pleasing to the eye than straight lines. If you are not sure about the shape you are creating, lay a 6" (15cm) straightedge on the piece to gauge the arc. Also, with the lathe off, close your eyes and feel the piece with your hands, which can sometimes detect flat spots your eyes may have missed.

After you have shaped the neck, blend the underside of the wings into the neck using a sharp gouge (*Photos 6, 7*). I use a push cut with the gouge's flute almost fully open, making cuts in the direction of the base, working incrementally from the neck toward tip of the wings. While shaping the outside profile of the wings, it is best to follow the natural direction of the branches. If the branches are not symmetrical, then you will have to find a compromise; not following the natural direction can result in a weak wing, especially at its base.

Turn inside the wings

Before turning the inside surface of the wings and hollowing the vase, you need to determine if you can shape the lower part of the vase now or after hollowing. This will depend on the size of the vase, your steady rest, and how far the setup extends from the faceplate. It may be necessary to keep the mass of the lower section in order to reduce vibration during hollowing. If you feel you need the mass when turning the upper half, then do not shape the lower half of the vase yet. For this illustration, I have left the shaping of the lower half until after the upper half of the piece is turned and hollowed.

To give the bark the best chance of staying intact while turning the wingtips and during drying, I like to reinforce it with glue. I do this with

the piece removed from the lathe (though leave the faceplate mounted on the workpiece for accurate remounting). The best glue for this is cyanoacrylate, or CA, glue, which quickly sets up in wet wood and readily soaks into soft, wet areas. It also sands well without gumming up abrasives. Use very thin (low viscosity) CA for reinforcing the bark.

Apply the thin CA to the soft, wet area (cambium layer) just under the bark. I apply glue to this area after turning the outside surface of the wings but before turning the inner surface. Use good ventilation while applying CA, as the fumes are irritating and toxic. Be careful not to drip excess glue on areas of the vase you have finished turning. This can cause a stain that may be difficult to sand away later. However, another reason I like working with mesquite is that on sound areas of wood, the glue does not soak in as deeply and can be sanded out more easily than with other species.

Remount the piece on the lathe and position the steady rest over the neck area (*Photo 8*). Remove the wing support piece at this time to allow access for shaping the inside of the wings. With a sharp gouge in an almost fully open presentation,

Commence hollowing



The author's captive boring bar setup. Hollowing only proceeds midway into the body at this stage. The vase's wings do not affect the actual hollowing process, other than adding the obvious danger of striking your hands or arms. Be ever mindful of the rotating wings.

cut the top part of the wingtips. Start from the outside the wings, making light push cuts from the top toward the crotch. Due to the nature of the crotch branches, you'll be making intermittent cuts; that is, the gouge will not be in continuous contact with wood, but will also pass through air. The use of pressure on the toolrest is important when making these cuts. There are two types of pressure to consider: use downward pressure on the toolrest to maintain stability, and maintain consistent forward pressure so the ►

Final-shape the vase body



With a custom-turned, cone-shaped plug fit into the vase's opening and tailstock support in place, finish shaping the lower section of the vase's body.

gouge is not plunged into the void between wood contacts. The gouge should be freshly sharpened for the primary cuts but especially for the final cuts.

Initially, cut only about a third of the way down inside the wings to achieve the desired wall thickness. Then move to the next portion and do not go back to the top because it will have gone out of round (*Photos 9, 10*). As the cuts go deeper into the vase, the toolrest should be angled into the vase to provide support for the gouge and to reduce vibration. The lathe should always be turned off before the toolrest is repositioned, and always spin the piece manually after the toolrest is repositioned to ensure the workpiece will clear it. Plan and know your anticipated body movement throughout these cuts, so you do not get out of position and into the path of the wings.

Hollow the vase

After you have reached the bottom of the wings, it is time to begin hollowing. The first step is to drill a hole to a depth just above your planned internal depth of the vase. Then you can hollow the vase to your desired wall thickness.

Since I left the lower portion of the vase unshaped to take advantage of its

mass, initial hollowing should only proceed to the midpoint of the vase body. I hollow vases using a captured boring bar with a laser or by hand, depending on the size (*Photo 11*).

For my final pass of hollowing, I use a scraper, holding it at a downward angle and scraping the inner walls to smooth out the lines left behind from the cutting tip.

Move the toolrest back to the lower portion of the vase and bring up the tailstock, using a custom-turned, cone-shaped jam chuck fit into the upper part of the hollowed vase to receive the live center. Finish shaping the lower part of the vase (*Photos 12, 13*).

Next, move the toolrest back to the top of the piece and hollow the remaining mass at the base, checking wall thickness as you go (*Photo 14*). Since you are turning endgrain, pay close attention to the thickness of your base. I like the base to be as thin as my walls—about $\frac{3}{8}$ " (10mm).

After the piece is hollowed, I move back to the vase body and turn a tenon at the bottom so I can hold the piece in a chuck for sanding after it has dried (*Photo 15*). I typically make a small tenon since it will only be used to hold the piece for sanding—not hollowing. Set the piece aside to allow the wood to dry.

Sanding and finishing

After the wood has dried, I like to glue in some turquoise inlay using CA glue or epoxy, depending on the location and size of the turquoise needed. I will also fill voids or cracks with a mixture of sawdust and glue.

Remount the piece on the lathe, using a chuck to grab the base tenon, and begin sanding the outside. For larger vases, I may use a jam chuck in the vase opening to allow for tailstock support during sanding. I first power-sand the turquoise flush with the wood with the lathe spindle locked, being careful to follow the curve of the vase and not to end up with a flat spot. Then I sand the vase body—not the wings—with the lathe on at a slow speed, sanding through the grits.

Sanding winged pieces with the lathe on is dangerous due to the intermittent contact; the lathe must be off and the spindle locked when sanding above the neck. The lathe will act as your third arm, holding the piece while you power-sand the wings.

My typical finish is a coat of Danish oil applied on the lathe after the piece has been sanded. I let the oil dry for at least four days and then apply five to six coats of lacquer. After the lacquer has dried for another four days, I put the piece back on the lathe with the wings facing the headstock using a cone-shaped jam chuck with some padding to drive the piece. With the piece mounted in this orientation, I can turn, sand, and finish the bottom of the vase. A final buffing completes the vase. ■

Finish hollowing



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With the vase body fully shaped, return to the hollowing, checking wall thickness as you go.

Form a tenon



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The author forms a tenon at the base so he can hold the vase in a chuck for sanding after the wood has dried.

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