



# TURN A HEART

## ON TWO AXES

Michael Anderson

**T**here are many ways to create a wooden heart. Some methods avoid the lathe entirely (hand- or power-carving, band- or scroll-sawing), and others utilize the lathe but rely on split-turning or deconstruction-reconstruction techniques. Here I present a method to create a heart on the lathe via multi-axis turning. This is a fun intermediate-level process that involves spindle turning, facegrain turning, drilling on the lathe, and a bit of endgrain hollowing at the top of the form.

### Blank prep

This process applies to both green-, or wet-, wood turning and dry-wood turning. I find that starting with a square blank works best, especially one whose thickness is roughly half that of the side dimension (or long edge if using a rectangular blank). The dimensions

are flexible, as hearts take many forms, but in my experience (read, experimentation) a square blank will produce a heart that has nice even curves and proportions. The blank can be of any size, though the size should be appropriate for the chuck jaws you will use later. I typically use 50mm, or 2", jaws and have found that a 5" (13cm) square blank is about the smallest that will work well with this jaw size.

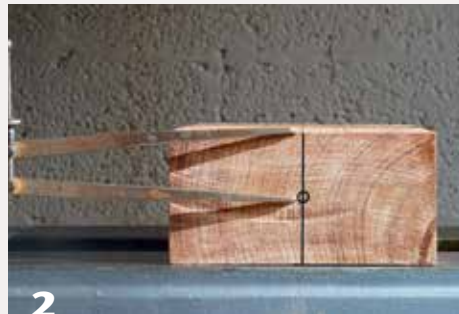
Regardless of the blank, it is important that the front and back faces are parallel to one another. If you are using a chainsawn blank, take the time to square each face on the bandsaw or at the lathe. If using wood that is very green, consider boiling the blank prior to turning to mitigate cracks during the drying process—once the heart is turned, you cannot easily put it back on the lathe.

For the piece shown in this article, I purchased a waxed macauba (also called hormigo) blank from a local retailer. This wood is fairly dense with sections of interlocking grain and large diffuse pores. I had never turned it before, but the color was appealing for a heart form, as was the fact that it was new to me. The blank was 3" (8cm) thick and 6" (15cm) square. Prior to commencing work on the blank, I scraped away most of the wax and cleaned the surface with VM&P (Varnish Makers and Painter) naphtha.

### Lay out the design

One of the faces of the blank will serve as a reference for the other surfaces. This will become the front or the back of the heart. Choose the truest/flattest face, and with your favorite marking device, measure and draw lines that separate the

## Draw layout lines



1 Accurate layout lines aid in drawing the intended heart shape as well as locating the mounting points for both axes.

blank into thirds in both dimensions. These markings will later dictate the width of the heart, as well as where the top lobes begin to descend into the “bowl,” or hollowed-out area, at the top.

Once you have drawn your thirds, draw an additional line down the midline of the heart. This reference midline will separate the heart into left and right halves and should run parallel to the grain. Make a mark at the halfway point of this line. Make one more mark that is halfway between this center point and where the top third line intersects the reference midline. Circle this mark, as it will indicate the center of a future tenon (*Photo 1*).

Using a T-square (or similar), draw a line from your reference midline across the top and bottom endgrain faces. Mark the center point of the line on each face. I find this task easiest and most precise with a pair of dividers (*Photo 2*). These points will be where your drive and live centers connect.

Following the line layout, I find that it is beneficial to draw a heart on your reference face (*Photo 3*). This gives you something to aim for when you are turning. The widest part of the heart will be at the top third, and the top of each

lobe of the heart will be tangent to the side-third lines you drew that are to the right and the left of the midline. Connect this tangent to the midline with a slight drop, but still near the top. The bottom point of the heart will be at the bottom of the midline. You should aim to have a continuous curve that connects the bottom of the heart to near the top of the midline. Although it is not necessary, it can be helpful to draw both the left and right sides of the heart.

### Turn the top of the heart

Mount the blank between centers in spindle orientation, meaning the wood grain should run parallel to the lathe’s bed ways (*Photo 4*). Your drive and live center points should aim for the marks

you previously made on your top and bottom endgrain faces. I used a four-prong drive center in the headstock and a cupped live center in the tailstock. It is helpful to use a live center system with threads, as future steps will require a cone center. Using a spindle roughing gouge (SRG), true the blank so that the left and right sides are rounded over. Turn only as far as is needed to remove flat spots. You will notice that you have turned away the sides of your heart drawing; however, you should see that the apex of the turned curve is still at the now-imaginary junction of your drawn lines (*Photo 5*). In other words, the apex of the curve represents the widest point of the heart.

Round over the top third of your heart with your tool of choice, ▶



### Axis 1: mount between centers

Mount the blank in spindle orientation first, between centers.

aiming to connect the widest point (indicated by your top-third line) to the top of each lobe (indicated by your side-third lines) with a smooth curve (*Photo 6*). The surface/curve does not have to be perfect yet, as we will come back and refine that in a future step. At this point, you do not need to remove much material from the bottom third of the heart. Instead, the added mass will help stabilize the blank when you hollow out the “end-grain bowl” soon.

Turn a tenon on the bottom of your blank. I turned away some material first, but only enough so that I’m not making interrupted cuts when forming my tenon. I first scribed a 55mm- (2"-) diameter circle with a Vernier caliper, being sure to let only one leg of the caliper touch the spinning blank. I then used a skew to peel away most of the excess material and a detail gouge to refine the tenon and clean up the surface. I also added a small shoulder above the tenon (*Photo 7*).

### Turn an endgrain “bowl”

Mount the newly turned tenon in your chuck, taking care to ensure that your blank is positioned as it was between centers. I use my live center and slight tailstock pressure

## Turn edges and top



**5** Since the blank is mounted in spindle orientation, with the grain running parallel to the lathe’s bed ways, it is acceptable to use a spindle roughing gouge to round the two sides.



**6** Continue shaping the top shoulders of the heart.

prior to tightening the chuck jaws to ensure proper alignment. For this project, I planned to use the heart as a bud vase, so I needed to drill a hole before turning the “bowl” at the top. Remove your live center and insert either a drill chuck and drill bit or a taper shank bit into the tailstock. I used a ½" (13mm) bradpoint bit (*Photo 8*). Switch on the lathe at a slow speed and advance the bit as far into the heart as desired. For this demonstration, I drilled about two-thirds the length of the heart.

Move the tailstock out of the way, and with your tool of choice, begin

hollowing into the endgrain at the top of the heart. I used a bowl gouge for the initial cuts and a cupped carbide cutter to refine the surface. The inner profile should have a steep ogee profile, and you should aim so that the rim of the “bowl” is positioned about ¼" (6mm) in from the front and back faces of the blank. It can be helpful to create a stepped interior prior to your finishing cuts. After hollowing the top area, blend the rim with the top curve you previously turned on the exterior of the blank (*Photo 9*). If you are using dry wood, take the time to sand the

## Form tenon at bottom



**7** Form a chucking tenon at the bottom of the heart.

## Drill and turn top



**8** With the work now mounted in a chuck, the author drills into the workpiece since he wants it to serve as a dry bud vase.



**9** Carefully turn a “bowl,” or hollowed out area, at the top of the heart.

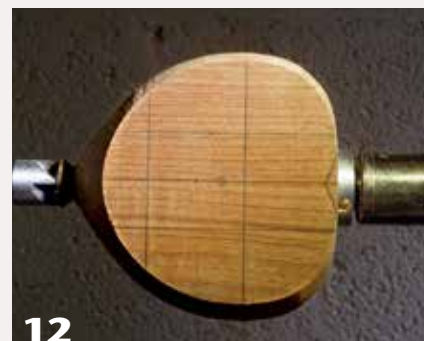
## Continue shaping



10



11



12

With the work once again mounted between centers, using a cone on the tailstock quill for support, continue shaping the outer profile, using the heart-shaped lines as a guide.

hollowed “bowl” while your blank is still mounted in the chuck.

### Form the bottom of the heart

Remount your blank between centers, being careful to line up the drive center spurs with the indentations made when you first mounted the blank. Use something to stabilize and protect the top of the heart on the tailstock side. I screwed a cone onto my live center threads and used a folded shop towel as a cushion to protect the surface of the bowl (*Photo 10*). Apply a reasonable amount of tailstock pressure and lock the tailstock quill.

Using the tool(s) of your choice, begin turning away the material on the bottom two-thirds of the heart. Your initial drawing should still be visible and can serve as a guide while turning (*Photo 11*). You want to aim so that the bottom point of your finished heart will be at the tip of your drive center pin, or even slightly in front of it. This will ensure you can create a nice point at the bottom of the heart, free of any holes or mounting marks. I used a spindle roughing gouge for the bulk of the material removal and then switched to a bowl gouge when I got close to the drive center (*Photo 12*).

Take care to blend all of the curves and clean up the turned surfaces; once you have completed this step, you will no longer mount the heart in this orientation. The combination of a parting tool, skew, and/or spindle gouge will help you remove material near the heart’s bottom point.

At this point, your heart will probably not look like much of a heart. I call this the “hot air balloon” stage. Once we start turning the front and back faces of the blank, the heart form will appear like a friend we’ve been anticipating for a while.

### Revealing the heart

Mount your chuck on the lathe spindle and live center in the tailstock. If the cone is still attached to your live center system, remove it so that the cup and point are exposed. The point of your center will line up with the point you marked halfway between the midline center point and the top-third line. This should be circled and will be the center of our first of two facegrain tenons.

To mount the blank, I used my chuck jaws as a jamming surface. Close the chuck jaws and place a piece of rubber or foam drawer liner over the surface of the jaws (*Photo 13*). Alternatively,

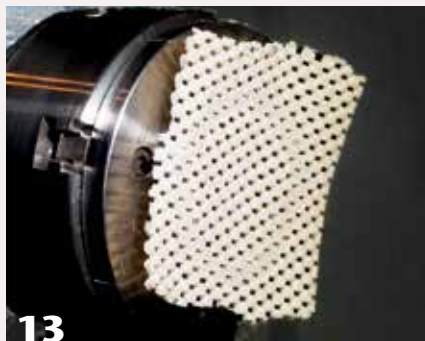
you can turn a flat surface to use as a jam chuck. Position your blank against the chuck and advance your live center so that the center point inserts at the mark you previously circled. Apply pressure and lock the tailstock quill.

Using a flush-cut saw or similar, trim the excess material off the end of the heart’s bottom point (*Photo 14*). This helps prevent splintering when you are turning the front and back faces. You can trim this material off prior to mounting, but it is helpful to take advantage of your spindle lock if possible.

Switch on the lathe and scribe a tenon on the face. Once again, I used a Vernier caliper to mark a 55mm circle. I formed the tenon with a bowl gouge, then cleaned it up with a detail gouge. I also added a small shoulder above the tenon (*Photo 15*). In this case, the shoulder gives the advantage of being able to refine your heart’s front and back curves without interfering with the flush jaw mounting surface. Remove the heart from your jam chuck and mount the newly formed tenon in your chuck jaws. Now turn a tenon and shoulder on the other face.

Turn away some of the material and aim for the tip of your heart. As you do, you’ll notice that the plan is coming to ►

## Axis 2: facegrain orientation



**13** The author jam chucks the work against chuck jaws covered by some soft drawer liner as a cushion. The work is now mounted on its second axis to allow shaping of the front and back faces.



**14**



**15**

After cutting off the excess wood at the bottom tip of the heart, the author forms the first of two chucking tenons, one on each face.

fruition and a heart shape will appear (Photos 16, 17). Your cuts will be quite interrupted, so advance slowly and take great care to ensure you don't overshoot your mark. As usual, a sharp tool edge will help you achieve the best results. Turn a continuous curve from the tenon shoulder to the tip—the shape of your curve will resemble the outside of a wide-open bowl form. You do not need to worry about a clean surface yet, as you can always come back to this side later.

Because you have turned two tenons, you can reverse and remount

your heart as many times as needed to ensure both faces are symmetrical. Once you are satisfied with your heart shape, turn away one of the tenons and sand the face. It may be best to sand the heart off the lathe, as the dramatically interrupted surface will make it difficult to keep your edges crisp.

Remount the completed face in a jam chuck. I used some drawer liner and a small repurposed bowl as a jam chuck, which works for hearts of various sizes and, given its width, does a fine job of stabilizing the boundaries of the heart. Turn away as much of the tenon

and shoulder as possible (Photo 18). A detail gouge is helpful here. Switch off the lathe, remove the heart, and use a flush cut saw or a sharp bench chisel to remove the remaining nub. Sand the surface of the heart, apply a finish, and mount it on a stand as desired. If you began the process with a green blank, allow time for the heart to dry prior to sanding and finishing. ■

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## Shape front and back, remove one tenon



**16**

The first tenon is now held in the chuck to allow for a second tenon to be formed on the other side.



**17**

With a tenon on each side, you can continually flip the work as many times as needed to fine-tune each face, until you are satisfied with the shape of both faces. Remove one tenon.

## Remove 2<sup>nd</sup> face tenon



**18**

With the work jam chucked in a repurposed bowl and some drawer liner as a cushion, the author removes the tenon from the other face.