

Multi-Axis Star (Based on design by Theo Haralampou)



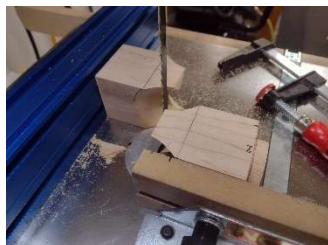
This project is based on the work of Australian woodturner Theo Haralampou. Theo's star is turned completely on the lathe from a cube of wood, using a jig that allows the star to be turned on 3 axis.

Blanks: 2" x 2" x 6-1/2" (jig)
 2" x 2" x 2" (star)

Blanks must be square and true. Turning can be accomplished with a spindle gouge (or a bowl gouge if preferred). A saddle square and center-finding ruler will come in handy!

Making the jig

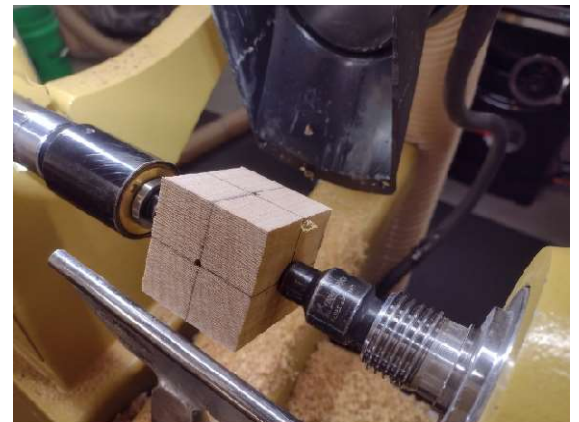
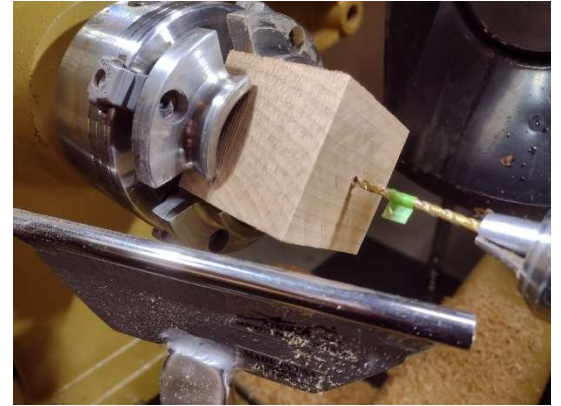
- 1) Mount the jig blank between centers and turn a tenon on one end. Mark jaw positions on blank and draw a "witness" mark across the length of the blank.
- 2) Mount the blank in your chuck and true up the end.
- 3) Drill a 3/4" hole 1" deep in the tailstock end.
- 4) Use a center-finding ruler to locate and mark the center of the blank, measuring from the shoulder of the tenon to the tailstock end.
- 5) From the center, mark 1" on either side.
- 6) Use a saddle square to draw a line through each of the 3 marks, and extend these lines around all four sides of the blank.
- 7) Remove jaws #1 and #3 from your chuck.
- 8) Use your lathe's live center point to locate the jig blank between the two remaining jaws (you will be drilling into the side grain of the blank).
- 9) Use a compass to draw arcs from the center of the middle line to the edges of the outside lines. Do this on both sides.
- 10) Chuck a 1" Forstner bit in the Jacobs chuck, and drill a hole 1" deep (halfway into jig blank).
- 11) Use a spindle gouge (or bowl gouge) to make a straight diagonal cut from the compass line to the bottom of the 1" hole.
- 12) Repeat steps 11, 12, and 13 on the opposite face.
- 13) Take the blank to the bandsaw and make two cuts across the grain, one of each side of the centerline, effectively 'parting' the blank and taking out about 1/8" of material.
- 14) Clean up any tear-out with sandpaper ... the jig is ready to use!



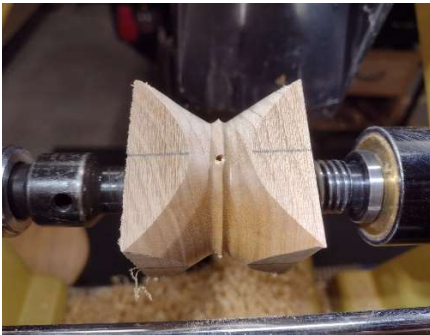
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Making the star

- 1) Chuck the cube (star blank), and drill a 1/8" hole 7/16" deep at the center of each side of the cube. These holes serve as depth markers when you cut each of the three axis.
- 2) Remove the chuck from the lathe and mount the cube between centers ... recommend cutting into end-grain first.
- 3) Draw a vertical line through the center.
- 4) Use a bowl or spindle gouge to make V-cuts, from the corners of the cube to the bottom of the depth hole.
- 5) Continue to the center, approximately 1/16", eliminating the bottom of the depth hole. V-cuts must be straight (no bumps or depressions).
- 6) When you are satisfied with the V-cuts, sand in preparation for finishing.
- 7) Mount the chuck, and mount the jig's tenon in the chuck.
- 8) Mount the star blank in the jig as shown below, and draw a vertical line through the center (step 1)
- 9) Rinse and repeat steps 4, 5, and 6 for the second and third axis.



First Axis



Second Axis



Third Axis

