

BOWL WITHIN A BOWL

with Theo Haralampou – February, 2021

The principle behind this project is to form a perfect hemisphere on the outside of the bowl so that the blank can be rotated and remain on center so both bowl internal and external bowl shapes can be turned with even wall thickness.

Tuning the blank into a hemisphere

1. Start with a blank which is $9/16$ " wider than half the diameter.
2. Mount between centers with intended bottom of the bowls towards the tailstock and true up to round and square the bottom face.
3. On the bottom face mark a spigot diameter to match your chuck when the jaws are $1/8$ " apart and turn a $3/8$ " deep spigot and leave a $3/16$ " flat and square shoulder that is wider than your jaws.
4. Reverse the blank and mount on your chuck.
5. Mount a thin $1/8$ " printer paper sized board at around 45° to your bed projecting away from you on the other side of the blank and cut away part so it does not impede the banjo. *(Note: the reason for the 45° is so that shavings don't accumulate on it when you are turning).*
6. Place a light mounted about 6 ft from the floor at 90° to the board on your side of the lathe pointing away from you and downwards towards the blank so that it casts a shadow on the board. The light is lined up to the center of the bottom face of the blank. You can use a ruler, or a rod placed against the blank and pointing towards the light to assist with alignment.
7. Clip a piece of $8\frac{1}{2} \times 11$ paper to the board and mark the top and bottom of the shadow cast by the blank. Also mark the center using the shadow cast by the live center on the paper. Mark where the paper is on the board and remove it.
8. With a compass and a ruler draw a semicircle on the paper to match the marks. This will replicate the outer shape of the intended bowl and will be larger in dimension. *(Note: the further away the light from your blank the smaller the shadow, but not so far as to have blurry edges. The board supporting the paper must be within $3/8$ " of the blank, otherwise the edges of the shadow may be fuzzy).*
9. Return the paper to the original position on the board.
10. Now while keeping one eye on the shadow cast by the light and the other eye on your bowl gouge, turn away the wood that casts a shadow until you get to your marked semicircle as far as you can without hitting the chuck with your gouge or scraper. Sand and finish using an egg or curtain ring over the sandpaper. *(Note: one of the reasons for adding the finish at this stage is to stop any loss of moisture from the timber which could cause movement. If you are going to take a break at any stage of the process it is important to place a plastic bag over the blank and tie it closed to stop the loss of moisture).*

11. Now true up the front of the bowls and mark the two circles delineating the rim of each bowl.
12. Using a drill bit, either with a handle or in a Jacobs chuck mounted in your tailstock, drill down to $3/8$ " less than the inner radius of the smaller bowl. *(Note: This will make it easier to turn down the inside of the bowl and also act as an indicator when the drill hole disappears that you only have a few more cuts to go to the bottom of the bowl).*
13. Turn away the inside of the bowl keeping a consistent wall thickness of $3/4$ ".
14. Now turn down the rim of the inner bowl $3/4$ " lower than the outer bowl.
15. Sand the inside of the bowl and remove from the chuck.
16. Prepare a large cylindrical piece on the lathe so the bowl can be reversed over it.
17. Mount the inside of the bowl over the cylinder with some protective material in between and bring up the tail stock live center to hold in place.
18. Turn away most of spigot on the bottom of the bowl by following the curve leaving $3/8$ " then sand and seal.
19. Saw off the remainder of the spigot and sand and seal by hand.
20. Create a recess in the cylinder deeper than the bowl and mount the bottom of the bowl and bring up the tail stock using a ball and protective material to hold the bowl in place.
21. Study the grain and determine which is going to be the high side and which is to be the low side of the outside bowl.
22. Tilt the bowl accordingly by $3/8$ ".
23. Using a pencil, mark a line as you rotate the work which will represent the outer rim.
24. The work can also be taped to the cylinder or hot melt glue can be used to hold it fast for turning.
25. Turn away the outside of the bowl being careful to stop at the meeting point with the inner bowl.
26. Sand by hand and apply the finish.
27. The bottom can be left rounded or, if you prefer, a flat can be turned or sanded to match the rim of the larger bowl.