

Turning for Furniture The Cabriole Leg

Introduction & Thoughts on Design:

This session or workshop was developed to make it possible to teach furniture makers who may not have much experience on the lathe, the techniques involved in laying out, designing and turning legs for a variety of furniture needs. The legs have been scaled down to make it possible to teach these techniques on the small mini

lathes that many clubs have acquired for use in club sponsored workshops. The techniques are the same and the legs turned can be used to make a stool or small table perhaps for a child's tea table or playhouse. The idea for this class came about through my association with the Triangle Woodworkers Association and their request that I do a demonstration followed by a workshop on turning furniture parts specifically table or stool legs.

There are many styles of legs used in the design of furniture that can be turned on a lathe from the simple cabriole leg to the more ornate ball and claw legs and even the more elaborate legs with spirals, twists, flutes, etc. They all start with a bit of measuring and some layout lines and then where appropriate material is turned off on the lathe and then later shaped or refined as is necessary for the particular design or style of the leg desired. Most legs for tables or stools will have a square section above the turned part of the leg referred to as the pommel which is used to attach the apron to the leg both for looks and support; therefore one must consider this in the overall design of the leg. This workshop is intended as an introduction to turning furniture parts therefore we will be turning a simple cabriole leg and discussing other styles and types as time and student interest allows. One of the interesting aspects in the turning process for the cabriole leg is that it is a multi axis turning which will add an extra element to the skills being taught. Multi axis turning can be quite interesting and in some respects a bit intimidating but with the right attitude and a bit of knowledge they can be very interesting and exciting to make and the results are inspiring. The process is quite simple as long as the proper sequence of steps is followed. The method that I will be using was taught to me by Allan Batty, who is a second generation production woodturner from England and whose methods are very efficient. One major difference between his method and the one described below is that his legs have not had the mortises cut into them before he turns them, as that is the job of the furniture builder who ordered the legs and is done after the legs are turned, thus making the layout of the legs much easier and less confusing. This is due to the fact that you do not have to worry about the relationship of the out turned foot to the mortises as that is in the furniture makers hands.

This workshop is meant to be fun and inspiring. My hope is that many of you will be inspired to add turned parts to your future furniture projects. Enough talk let's get on with the project.



Tools & Materials:

Face Shield (highly recommended)
1 1/4" Spindle Roughing Gouge or similar roughing Gouge
3/4" Skew
3/8" Spindle Gouge
Parting Tool
Drive Center (Safety Center or Stub Center Preferred)
Bearing Center
Square and Straight edge
Tape Measure or Ruler
Maple 2" x 2" x 6" for practice cuts and exercises
Maple 2" x 2" x 12" for leg joined & planed square
Sand Paper

Procedures:

Practice Exercise

1. It is advisable to start the day by performing a quick practice exercise in the form of turning a small bead and cove stick. This exercise is designed to help the instructor get a feel for the skill set of the students and as a good warm up exercise for those that are accomplished turners. To begin this exercise mount the 2"x2"x6" maple blank in the lathe and practice using the Spindle Roughing Gouge to turn the blank to a cylinder.
2. Then layout marks for a couple of beads and using the skew make V-cuts to define the outside of the beads.
3. Then using the 3/8" Spindle Gouge practice turning beads. If you are an accomplished turner or would like to stretch your skills try turning a bead or two with the Skew.
4. Enough with the bead practice now let's get some practice turning coves. Flatten every other bead and then using the 3/8" Spindle Gouge practice turning coves.
5. Finally mark the transition point between the bead and the cove by turning a fillet by either using the 3/8" Spindle Gouge preferred or by using a Parting tool.

Turning a Cabriole Leg

Note: The layout described below is for Cabriole legs whose feet face out perpendicular to the table or buffet which is usually the case when they are turned for tables. If you desire the feet to face out on the bias or 45 degrees or as they would be when turned for footstools the layout is slightly different and perhaps a bit easier to describe. For this workshop we will be turning a small prototype leg for the typical table.

1. Begin by marking the layout for the cabriole leg, using the 2"x 2"x 12" Maple leg blank
2. Make sure that the leg blank is joined & planed square.
3. I prefer to mark and cut the mortises before I turn the leg, because it is easier to use my mortising machine if the leg sits flat. For this class I have marked where the mortises would be if

we were to be using this leg in a piece of furniture rather than take the time to cut them before hand. You must be sure that when you lay out the for the multi axis turning that you note where the mortises are so that the leg will face out properly and in line with all the other legs. **This is a very important step and time should be taken to double check your layout.**

4. To layout the leg for marking the various axes we must first determine and mark the area at the top of the leg for the square section of the leg that attaches to the apron of the table with a mortise and tenon joint. In this case the square pommel will be 2 ¾" long. Measure down from the top of the leg 2 ¾" and using a square draw a line perpendicular to the length of the leg to mark the bottom of the square section or pommel.

5. With one of the mortises to the left of the face to be marked and the other mortise opposite the face you are marking (the other mortise is facing the workbench top or in contact with the workbench top), measure and mark the center of the line drawn for the bottom of the square or pommel. Now measure down from this center point toward the foot about an 1/8" and make a mark.

6. It is now time to mark the layout lines for the offset center points on the top and bottom of the leg. For the offset point on the top of the leg, draw a line on the top of the leg on the end grain perpendicular to the face opposite the mortise that was on the left as the layout process began, from the outside face to the center point. Refer to the drawing, as this sounds more complicated than it really is. Once you have marked and turned a leg it all makes sense.

7. Now on the bottom draw a perpendicular line on the end grain from the face on the mortise side to the center point.

Note: To have the foot face out on the bias or at 45 degrees instead of facing forward, as in the Cabriole legs for a footstool, the offset centers will be on the diagonal line that was drawn from corner to corner to find the original center. To mark the layout for this style leg one mortise is on the left side facing you and the other mortise is facing you. With one mortise facing you and the other on the left side find the center of the bottom of the pommel and mark a center point 1/8" down from the center point of the pommel. The measurement for the offset center points is the same as the straight forward leg except that the measurement in from the mortise side face on the bottom is transferred from the perpendicular line to the diagonal line By measuring the distance to that point from the center out to that point just marked on the perpendicular line and then transferring that distance out from the center point along the diagonal line and marking it with a scratch all or a center point punch. Make sure that both the top offset point and the bottom offset point are on the same diagonal line both top and bottom. Once again refer to the photo or drawing as this is hard to describe in words and seeing the layout makes it much easier to understand.

8. To mark the center for the off center turning on the bottom of the leg; measure in ½ the diameter of the finished turned ankle plus a hair or say 1/16". This would be the radius of the ankle, which for this example would be ½" as the finished turned ankle should be 1" in diameter. In order to have the back of the leg fully turned and to avoid a flat spot we need to add about 1/16" to the measurement for the bottom off set center. To put it simply we will measure in on the perpendicular line that we marked earlier 9/16" and mark the bottom offset center and make a dimple for the drive center. This extra 1/16" will insure that that the turned portion of the leg will be cylindrical from the top of the foot to the bottom of the square pommel.

9. Now transfer this point to the face by drawing a perpendicular line from this offset point to the face. Mark where it intersects the face on the face side where we previously marked the layout point for the center of the pummel.

Note: This is where a picture is worth a thousand words as this all sounds difficult and the words may seem confusing but if you look at the drawing it may shed some light on the layout procedure. It is really fairly simple, the words well, my choice of words seems to make it all very complicated when it really isn't.

10. From this mark on the face we will draw a line through the center point just below the center of the bottom of the pummel (this point was marked in step 5) to the top edge of the leg.

11. Now transfer the mark just made at the top edge on the face of the leg by drawing a line perpendicular to the face until it meets the line that was drawn on the top end grain of the leg in step 6. Now mark the point where they intersect. This is now the off set center for the top of the leg. Make a small dimple for the drive center to slip into.

12. Now mount the leg on the lathe between centers using the true center points.

13. Before turning the bottom part of the leg to a cylinder use a skew to cut in for the pummel. There are a variety of ways to turn the pummel where it transitions from the square to cylinder. There are a variety of shapes from the square straight in cut or maybe a slightly rounded curve most common to the more intricate lambs tongue or ogee. Choose one and rough it in now as the pummel is being cut in. When cutting in the pummel be sure to just barely break the surface of the cylinder and then stop cutting as the cut should not go too deep beyond the rounded cylinder. This area will be finished later as the area is blended into the offset turning. Turn the section below the pummel to a just barely a cylinder being careful not to bump into the square section as you turn.

14. Now turn the foot on the bottom and the full bead. When turning the very bottom foot make sure that there is enough wood left on the foot to mount the leg off center. I sometimes leave the bottom of the foot a bit larger and then turn it down to the finished diameter after I have turned the leg on the off center axis and have remounted the leg for final sanding. Turn a half bead to meet the full bead. **Do not turn the top of the half bead as that is done after we change centers to the off set centers.**

15. Now reset the leg between the off set center points and return the leg to a cylinder and blend the foot to the leg by turning a cove on the top of the half bead at the foot to blend in with the leg.

16. The next step is to remount the leg between the original true centers and finish turning the pummel and if necessary turn the bottom foot to its finished diameter.

17. Sand the leg so that the off center turning blends in with the between centers turning. It may be necessary to remount the leg on the offset centers to help with blending the turned sections together by sanding them.

18. The leg is finished and ready to find its new home supporting a finely crafted piece of furniture.

Note: Be sure to check out my website for upcoming classes or better yet give me a call if you are interested in learning to turn and we can set up a class or squeeze you into an existing class.

**Cabriole Leg
For Table/Buffer**

**Cabriole Leg For Footstool
Leg canted at 45 Degrees**

