Tame Curved

Parts with Patterns

Make multiples more easily using simple templates

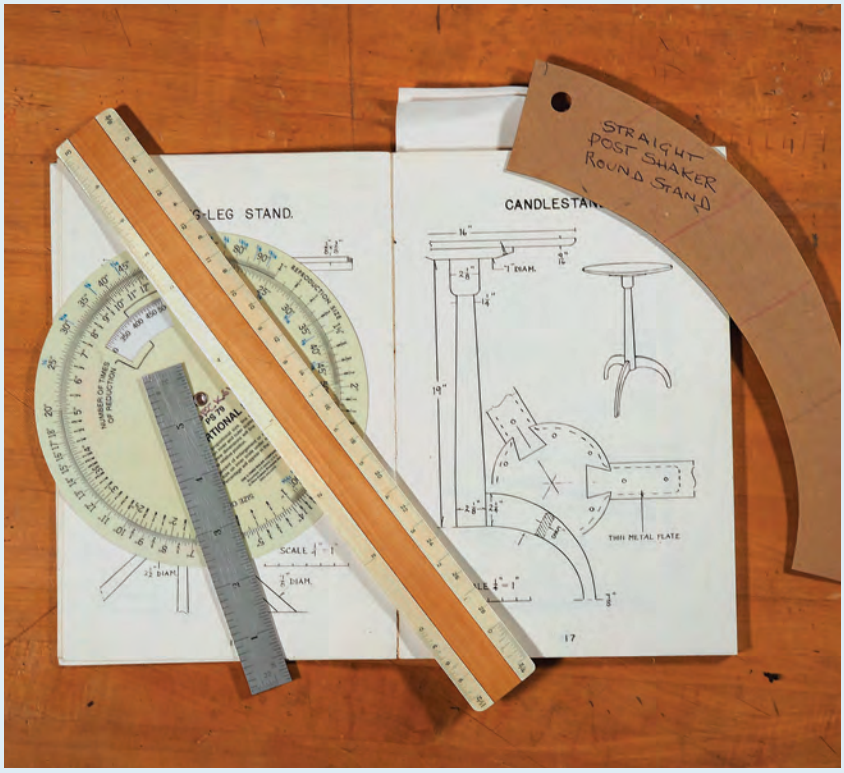
BY CHRISTIAN BECKSVOORT

If you make furniture that you plan to re-create in the future, a good set of patterns will make your life a lot easier. Boatbuilders have known this for years, taking their layout lines from half hulls. Back in the day, shipwrights would build half hull models to scale. They only needed to build one side since the other side is a mirror image, then they'd take all the measurements from that for both sides. I do the same thing with my symmetrical patterns. After all, if someone commissions a set of four chairs, then a few years down the road wants two more, they expect them to be identical. The same with historical reproductions or limited edition gallery works.

Most of my patterns are made of stiff paper: poster, manila, tag, or 110–180 lb. card stock. It needs to be stiff enough for a pencil to follow its outline, yet thin enough to cut with scissors. In a few cases I have made thin patterns of solid wood or plywood, but these aren't as light or as easy to store as the paper templates.

Here I'll discuss four pieces of furniture where I use patterns to make multiple parts: a lamp, a Shaker trestle table, a stool, and a Shaker round stand.

Longtime contributing editor Christian Becksvoort makes furniture in New Gloucester, Maine.



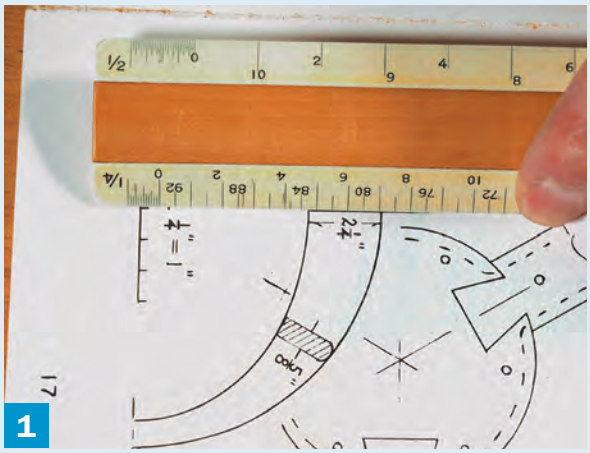
Making the pattern

Patterns can be made directly from an existing object, drawn freehand, or scaled from a drawing or photo. When working from a photo or drawing, it's handy to have a proportion scale (available from drafting- or art-supply stores). If a drawing is your source, you'll also want an architect's scale. By comparing the dimension of a part on paper with the part's intended full size, you can find the necessary percentage of enlargement. Go to a copy shop and have the photo or drawing enlarged to give you a full-scale image.

Patterns for symmetrical components are best created by folding paper in half, drawing half the image, stapling it (to prevent the paper from shifting), cutting the double paper, removing the staples, and unfolding the pattern. Asymmetrical components can be drawn directly on paper. For curved pieces, you can use flex curves, French curves, or drafting weights with battens.

CREATING A FULL-SIZE PATTERN FROM A PLAN

Start by finding the intended full size of the part. On a scale drawing, an architect's scale can determine the size quickly (1). The next step is to measure the size of the part on the page (2). With those two pieces of information, use a proportion scale to determine the amount of enlargement needed to create a full-size copy of the part. Adjust the outer ring so the size on paper and the desired size of the part are aligned (3). The number in the window of the scale tells you by how much you need to enlarge the drawing (4). The enlarged copy can be glued or traced onto heavier stock to create the pattern.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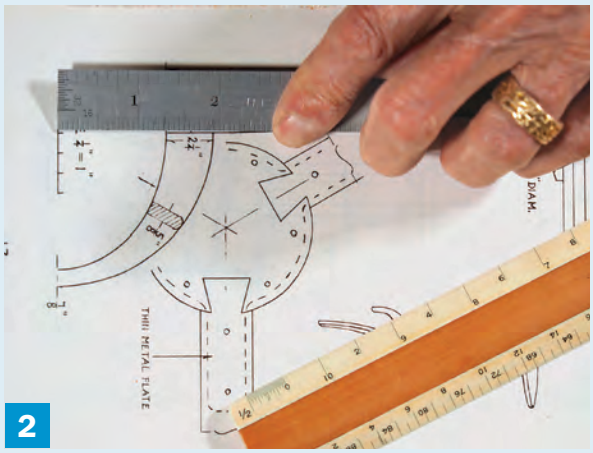
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Photos, except where noted: staff; opening spread: Michael Pekovich

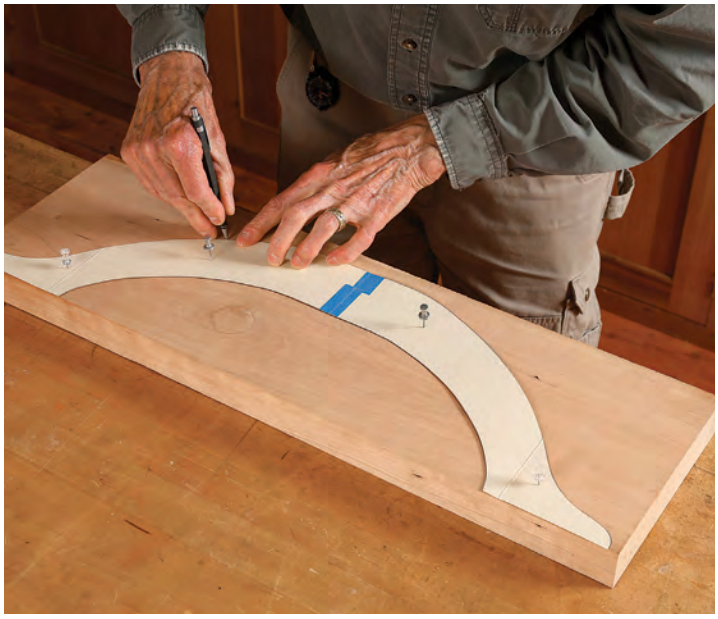
SYMMETRY UNFOLDS

When you're working with a symmetrical pattern, you need only draw and cut half the template on a folded paper. Both sides will be exactly the same when you unfold the paper.

SHAKER TRESTLE TABLE

This is one of the finest examples of Shaker design. It requires three patterns. The first is for the turned post, and I don't cut it from paper. It is one of the few patterns that I have drawn on thin wood. The next two are for the arch foot and the brace. I have built the table a number of times and have a few different patterns, the difference being mostly in length, depending on the width of the table. Both patterns are symmetrical, and are drawn and cut from folded paper.

Half the work. *With symmetrical patterns, Becksvoort draws and cuts half the pattern on a folded paper. He staples the two halves together to keep the paper from slipping, and then through precise scissor work cuts out half the pattern, pulls the staples, and unfolds the whole pattern.*



Transfer to the workpiece. *With tacks securing the pattern to the workpiece, use a pencil to trace the pattern. Then carefully cut to the line at the bandsaw.*

APPROACH ASYMMETRY A LITTLE DIFFERENTLY

Rather than drawing half a pattern on folded paper, draw the whole pattern.

SHAKER ROUND STAND

The turned posts on round stands, like those on the Shaker trestle table, don't lend themselves to drawn patterns. They are better done with calipers and a ruler.

The stand's feet are a different matter. Some plans will feature the profile drawn on a small grid pattern, which you can enlarge to actual size by drawing on a 1-in. grid. However, most historical pieces don't have plans or patterns. Years ago, I solved the problem by taking a photo (slide), at mid height, and 90° to the leg profile. I then blew the slide up to full size on the wall and traced the leg onto paper pinned to the wall. You can update this method with a digital photo, and a laptop and projector if you have that setup.

Efficient layout of parts. *For an asymmetrical part, draw out the whole pattern and cut it out. Then tack that onto the workpiece, keeping an eye on the grain direction and how it falls in the pattern. Making multiple patterns allows you to arrange parts more easily and make the best use of your stock.*

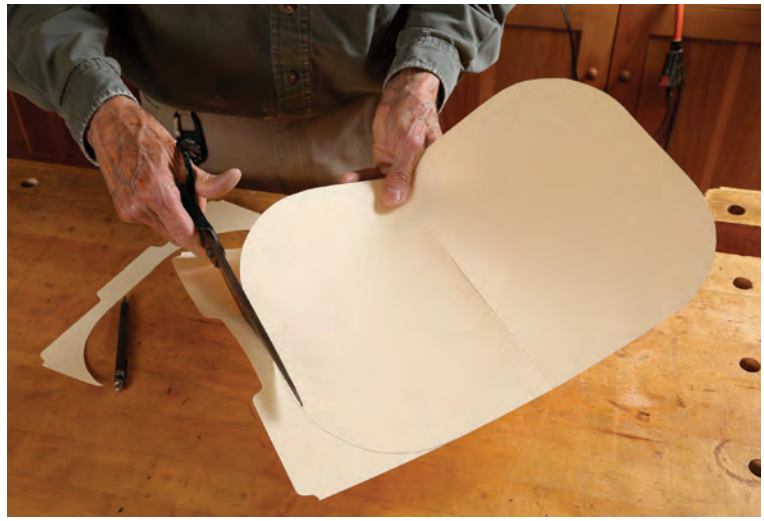
Cut and sand. *Saw close to the line at the bandsaw, and then sand to the line, smoothing out any sawmarks. Becksvoort uses a sanding drum attachment on his lathe to sand curved parts.*

MULTIPLE CURVES AND ORIGINAL DESIGNS

Flexible patterns are key for laying out on curved surfaces, and new designs can evolve from the first pattern.

CURVED STOOL SEAT

The stool looks fairly simple, mostly rectilinear. But I laminate the seat out of bending plywood over a curved form. Consequently, the seat needs a pattern for the correct length, width, and corner radii. Just to be on the safe side, I also have a pattern for the length and width cross-sections. The templates are handy when knocking out six stools at a time.



Conform to a curved surface. *One of the reasons Becksvoort uses thick stock paper for his patterns is it can easily flex into shape on a curved workpiece. For this curved stool seat, he cuts out the pattern, tacks it to the seat, traces it, and saws out the shape before sanding it smooth.*

SWINGING ARM LAMP

I've made about a dozen of these, and I want them all to look the same. Using a pattern keeps me from having to recalculate the angle, length, width, and curve at the bottom. With both a side and a top pattern, I can pin the first pattern to the stock, trace it, bandsaw, and then pin the other pattern to the piece to give me the final shape. This original design started out with this pattern, and I've duplicated it a dozen times. I've also used it as a springboard to evolve the design further, creating new designs and patterns.

Photos, opposite page (top left) and this page (bottom right): Michael Pekovich