



Making Cremonese corner templates

A guide to creating a geometrically precise template according to Stradivari's own model

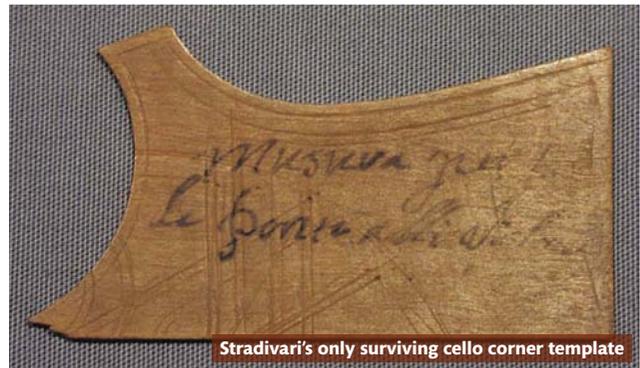
BY TORBJÖRN ZETHELIUS

VIOLIN MAKER BASED IN STOCKHOLM, SWEDEN

THE COLLECTION OF STRADIVARI TOOLS AND

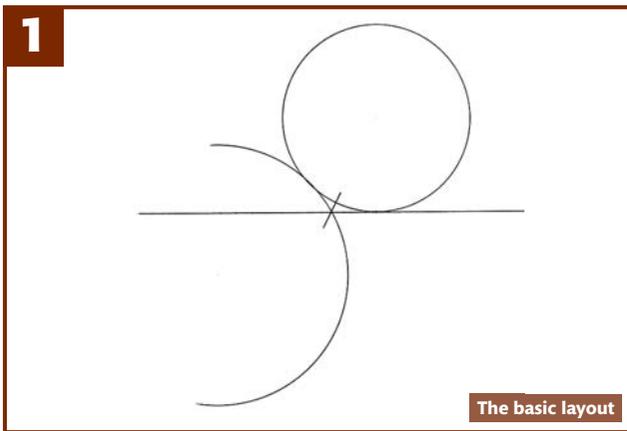
implements housed at Cremona's Museo del Violino contains the master's only surviving template for a cello corner. It gives some fascinating clues to the Cremonese construction method at that time: having special templates allows for some flexibility in the ribs while preserving the geometry of the corners. In this article I demonstrate how to create corner templates for a viola of my own design, as well as sharing some extra methods that I consider useful.

The geometry that underlies a Cremonese corner is the same for all instruments of the violin family. In its simplest form, it consists of two arcs and a line. One arc connects with the upper (or lower) bout, and one connects with the C-bout. These two arcs are connected by another, slightly larger, circle to facilitate the integration with the instrument's outline. For practical reasons and to avoid



Stradivari's only surviving cello corner template

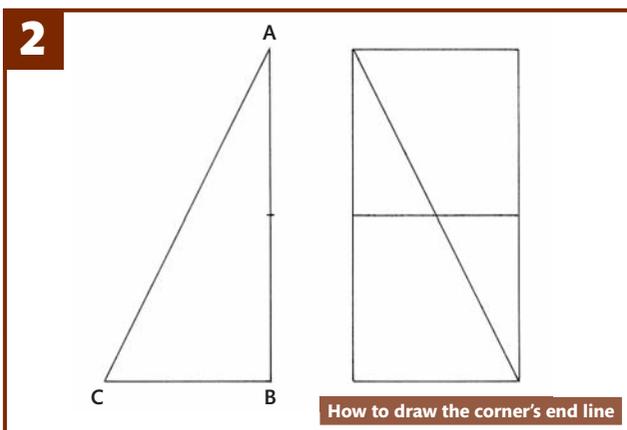
confusion, in this article all the illustrations show a lower left corner. The upper corner is made with the same technique as the lower one, so the same principles apply.



The basic layout

1 I begin by drawing the basic layout of the corner template. The horizontal line marks the deepest part of the C-bout, with the slanted line marking the corner's end point (see the next stage). Two circles whose edges coincide with the outline of the instrument lead into the corner. The centre points for the arcs' radii are set by the original viola outline. (In this illustration the two circles appear to be linked together above the end point, but that is a coincidence. It all depends on the original design of the instrument in question.) In classic designs I have often found that the lower circle arc leads to the crossing point between the horizontal line and the diagonal.

The corner's width is ultimately the result of the edge overhang combined with the maker's aesthetic taste.

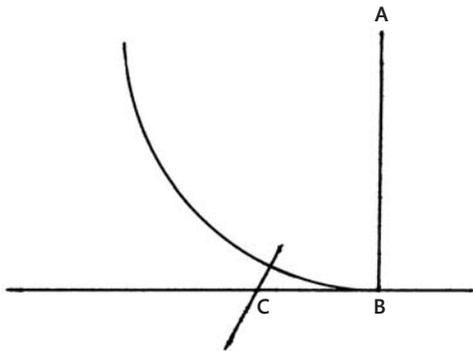


How to draw the corner's end line

2 The corner ends in a slanted line. It might not seem like much, but it can make or break the instrument's outline. To draw it, I begin by drawing a perpendicular line (AB) from the centre of the top circle to the deepest point of the C-bout. Then I find the point C on the horizontal line, so that BC is half the length of AB.

From my studies I have concluded that the slanted line is usually a 'root-five diagonal' of a double square: in other words, the hypotenuse of a right-angled triangle with sides in the ratio 1:2 (AC). Sometimes the corner diagonal is centred on the horizontal line, sometimes tending upwards (as in figure 6).

3



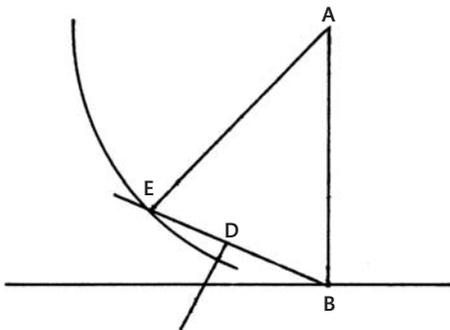
Finding the corner's top edge

3

The following steps show how to find the radius of the circle that forms the corner's top edge. Note that this is a general method that works for drawing many other curves as well.

First, I draw an arc from a point chosen at random along AB, making sure that it passes through the slanted line AC, to the outside of the corner. (The C-bout side is to the right of the vertical line.)

4

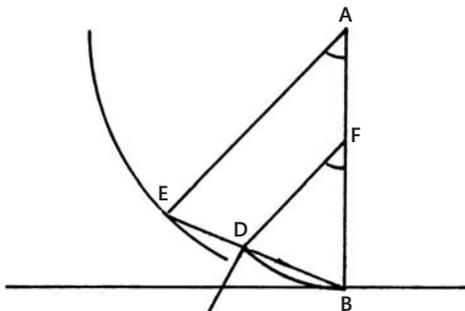


Point D is the end point of the top edge's arc

4

Then I draw a straight line, which also passes through the diagonal AC, to make the top part of the corner (D). Next, I draw a second radius to the point where the line and arc cross (E), so that a triangle is formed.

5

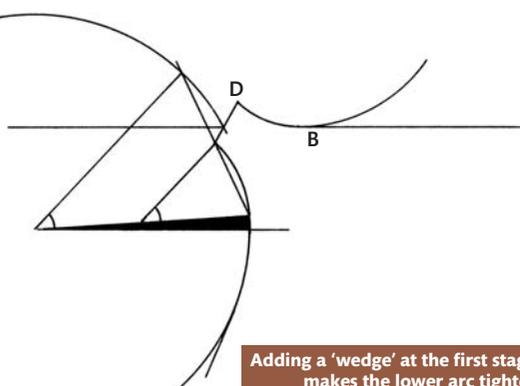


The line DF gives the radius for the top edge's curve

5

I draw a line from D to a point on AB so that the line is parallel with AE. This forms a triangle that is similar to the first. Because the two triangles have the same angles, they are said to be similar, and so have equal properties. This smaller triangle gives the radius for the arc that completes the top part of the corner.

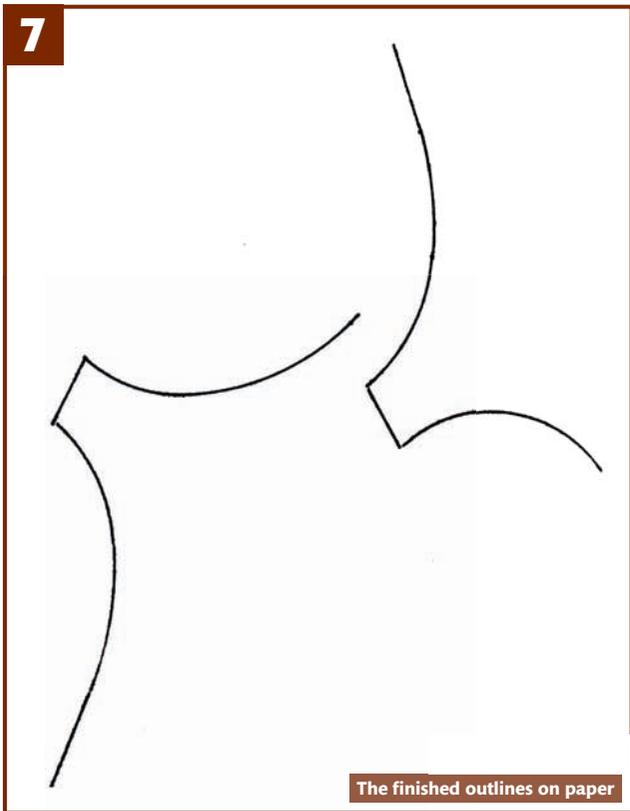
6



Adding a 'wedge' at the first stage makes the lower arc tighter

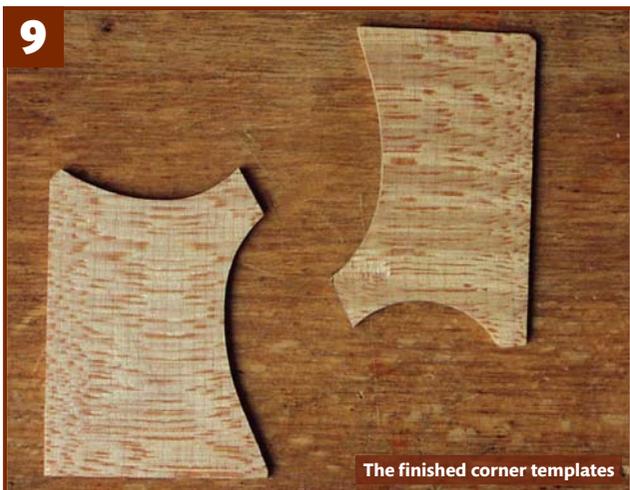
6

For the lower side of the corner, I could simply go through the same process as in steps 2–5. This would be the 'natural' choice but it can give the curve a somewhat dull and unattractive appearance. So I choose to spice it up by inserting a wedge in the plane (shaded in the diagram), to raise the radius by just a few degrees. This lifts the smaller circle, making the arc 'tighter', and the curve towards the corner becomes more dynamic. By experimenting I find the right width of the wedge. Then I finish the corner in the same way I did the C-bout side. ▶



7 Once all the extraneous lines are rubbed out, I am left with the finished outlines for the upper and lower corners. I am now ready to make the wooden templates.

8 I make the templates from a thin piece of wood, such as a piece of rib stock. I trace the lines from the paper drawing on to the wood with metal compasses. Then I saw it out and cut to the line using a sharp knife. ■



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