



A historically informed system of plate shaping

Applying a structured method to the shaping and planing of violin plates, inspired by close observation of the old Italian school

BY JÉRÉMIE LEGRAND

VIOLIN MAKER BASED IN CORK, IRELAND

ONE OF THE MOST INTERESTING PARTS of violin making is the process of carving the arched top and back from a solid piece of wood. The arch's shape is one of the determining factors for the quality of the sound. I've been able to study many old Italian violins, and always paid particular attention to their arching, as well as the tool marks left by the makers' planes and scrapers. Based on my studies, I have developed a method of shaping the plates with a series of differently sized planes.

This technique allows me to take a creative approach, instead of blindly following cross-arched templates. The resulting arch is more structured and helps me to comprehend the vast complexity of the arch in three dimensions.

My system is one attempt at a methodical way of planing, and obviously there are many possible approaches to the process. The steps I follow are a way of making guidelines for myself, and I always compare the results with plaster casts of the original instruments.



The set of planes

1 My first step was to visit the Ala Ponzone museum in Cremona to examine the original planes. This research helped me to redesign the shape of my thumb planes – using my method, the shape of the sole is crucial for designing the arch. I use a series of eight planes, each of them razor-sharp. All the flat planes are set with slightly curved blades. At the final stage, the planes are set with as little of the blade out as possible, so that the shape of the sole guides the resulting shape of the arch.



The directions of planing strokes on the crosses

2 The design of the arch can be compared to the work of an architect on the structure of a dome. While the arch has to provide resistance to all the tensions created by the strings, it also has to be as flexible as possible. Works by several Renaissance architects recommend starting a project with a cross. I applied this to the shape of the violin and it resulted in a system based on the crosses shown in the picture. These crosses represent the foundation of the arching, the plane being circulated around them. The image shows the general movement of the planes in relation to the crosses and the outline.

The planes do not move in a straight line. Instead, a more circular and tilting motion allows the tightening of the curves towards the crosses (imagine a car turning at speed and the tilting outward created by the suspension). This enables the structure to rest on the crosses and gain strength without being too stiff. >



The long arch is established

3 There is a strict order to the use of the planes. I use each one only within a defined perimeter, and as I get closer to the outline I need to use smaller and smaller planes with more curved soles. I start by shaping the top of the arch with a large, flat plane. The very top requires long, overlapping strokes. The shape of the long arch is dictated by the movement and shape of the plane.



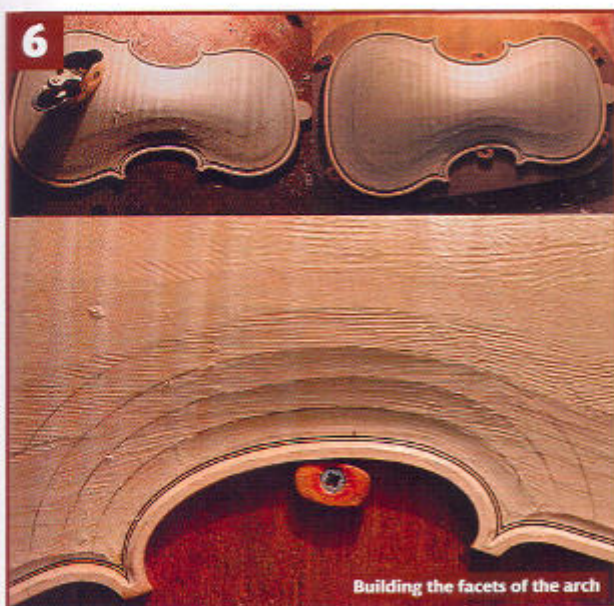
Starting to make facets

4 To monitor the shape of the arch closely as I work, I leave regular facets between different plane perimeters – just as it is sometimes easier to make an octagonal bow before shaping it round. At this stage, I work away from the central arch. To define the perimeter of the smaller flat plane, I draw a line with a regular compass parallel to the outline. Because I move the plane in relation to the outline, to a certain extent the outline of an instrument generates its own arching.



A profile gauge is used to check the result

5 I use a plastic profile gauge to check the symmetry of the arch and refer to cross-arching templates that I have taken from original instruments. In this way, I make sure I am not copying any particular instrument. I can then work on the symmetry of each side.



Building the facets of the arch



The finished arch



The motion of the scrapers

6 I gradually work towards the edge of the instrument, drawing different radiuses parallel to the outline. Each level is defined by a particular plane.

7 Finally I bring the arching together by blending the facets. It's surprising how much fuller it looks once the blending is done. The scraping is only necessary to remove tool marks, as the arching is now very much complete.

8 To finish, I use three differently shaped scrapers made of thick, rigid metal (like the sword steel used by the old Italians). By moving them in the directions shown by the arrows, I complete the shape, pivoting the scrapers again according to the scheme of the cross, resulting in a perfectly controlled arch. ■