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Giuseppe Cazzaniga, Liutaio

Bernareggio, July 2009 - June 2012

Restoration of a Brescian style double bass

The instrument is property of Maestro Ezio Pederzani

Front

The design of the front is very pleasant, archaic, typical of the Brescian school.

The upper bouts are relatively wide, the C bouts small and round, the f holes very far apart and slanted, with the upper and lower eyes of similar size, the corners long, there is a double purfling, the bridge line is close to the middle point of the top's length. The arching of the upper part of the top is finished with a central crest.



The whole surface on the front is heavily cracked,

It is also very deformed, presenting an extensive weakening of the bass side, a swelling of the lower treble side, cuppings under the bridge's feet, in particular under the G foot





Edge works and and purfling replacements are evident both on the lower and upper block's sides.







I have doubts on the lower part of the C bouts as well. I will have a clearer view after I clean the varnish and remove the edge doubling from the inside.





The varnish is dirty, with red brown retouchings and fillings, specially near the bass bar, where there are evident woodworm damages.

There are no open worm holes though.



From an inside view, there are repairs by at least three different hands



The entire edge has a spruce doubling, which has been glued with the fiber running perpendicularly to it.

At the lower edge, this doubling is glued over another (previous?) one.



In some areas, upper and lower bouts on the treble side, lower bout on the bass side, at the lower block, the doubling extends inside the top.



The bass bar, which is very long, conical, well shaped, is glued to a large doubling in the middle part of the top, and to reinforcements with perpendicular fiber at the edges. (the grain of the central doubling which is made of multiple pieces, goes in various directions).





The thickness of the non doubled parts, without considering irregularities, shows a thick area near the edge, ranging from 4,5 to 6 millimetres, up to 7,5 in the C bouts area, and a relatively thick area at the edges of the bass bar, between 6 and 7 millimetres, while thin areas can be found between the bass bar and the edges, till a minimum of 2,8 millimetres.

The edge of the f holes has been bevelled from the inside, so that from the outside it shows a thickness more or less regular and of an average of about 4 millimetres.

In order to have proper sustaining during the removal of the doublings, and to correct the deformations, I need to make a mould of the front.

To do so, I plane down the bass bar, which I will replace, to lay the top on a flat surface.



I notice, with no surprise considering the ribs, that the edge of the top is not flat but curves lengthwise, with the C bouts being the highest point.

Doublings, replacements and deformations might have been a cause for it, but is more likely that the curve was given to the ribs by planing them to follow an original curve of the top's carving.

In fact, the asymmetrical deformations of the top, even if pronounced, are quite common.

If the top had been made flat, and then bent on the ribs lengthwise, now we would notice a lowering of the whole area between the f holes, not only of the bass side.

I make the mould









The sides of the mould are in plywood and polyester to give it strength, while the inside is in plaster for the ease to work it

I place the front on the mould, with a cotton cloth to protect the varnish, and remove the bass bar. Then I plane the doublings and cleats down till I can see the glueing surfaces.





While doing this, I notice that the edge doublings and their extensions toward the inside are older than the ones in the middle of the front, where the wood used seems less oxidized.

There is a second doubling in the lower center of the top, older than the one covering it.



I put new small temporary cleats on the cracks that have been repaired from the outside, and on the ones that could open when the top is pressed against the modified mould to correct the deformations.





I modify the mould.





I apply a good amount of shellac to the mould and sand it



Then I press the top against the modified mould, moisturizing it and using sand bags as weights, while clamping the edges down when they rise up.

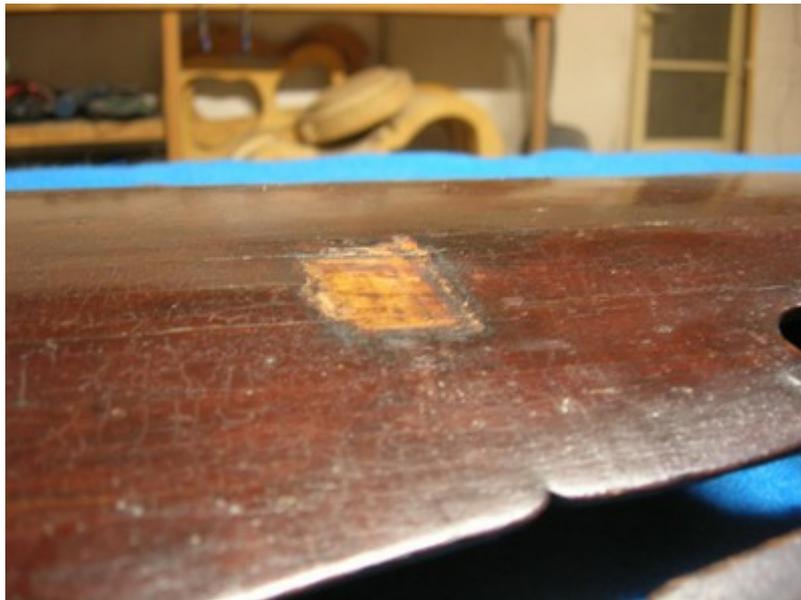




The top takes an acceptable shape in about two months. The area under the bridge's treble foot remains slightly cupped, and it will need more time to get in shape before the making of the central doubling.







I start the repair work in the lower part on the treble side, by removing the edge doubling up to the first crack.



By doing so, I can see that the edge had been replaced in the lower part, at the widest part of the bout and at the corner, where I see a wooden pin.





The outer purfling has been partially replaced or reglued with white glue.



The doubling's extension towards the inside, in the lower part, has been inserted in the plate with a straight joint.



I replace a first part of the doubling in spruce with fiber running slightly sloped.



I remove the cleats, clean and repair the first two cracks, and put new cleats.



Then I replace the extension of the edge doubling, smoothing the edges thus obtaining a curve glueing surface.



I make and insert a shim from the outside to close the first crack, which was damaged and filled.



The following crack was glued with non aligned sides.



I open it, clean, glue, and reinforce with new cleats.



I proceed in the same manner with the following two cracks
The inner one has been repaired with stiches, of which holes still remain.
The outer one has two well made shims.

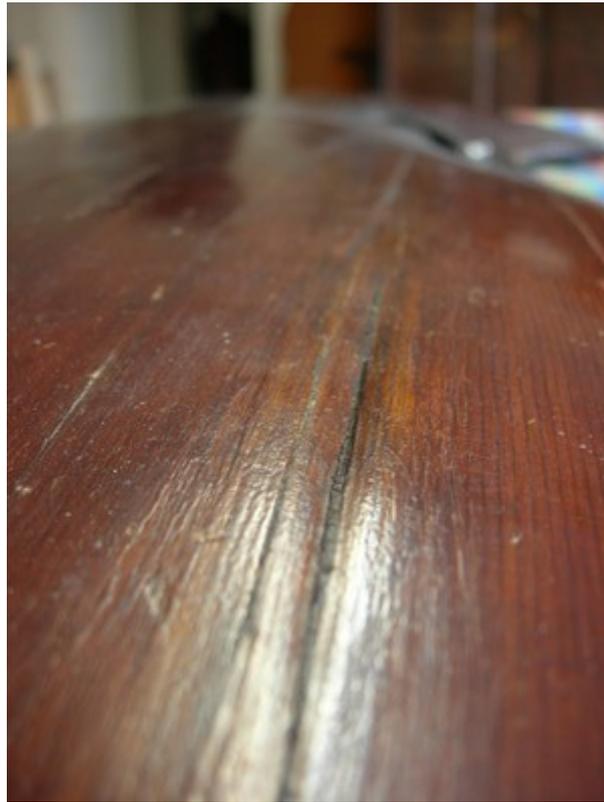




I remove a temporary cleat from the third crack and put a reinforcement under the f hole.



The next two cracks, close to each other, were repaired offset, with shims and filler. The front has been leveled from the outside, removing the varnish, which has been later retouched.



I unglue, remove shims and filler, repair the upper part, were there are no missing parts.



I reinforce the joint with new cleats.



The lower part presents a thickness decreasing, where the cracks have been poorly closed and the top leveled from the outside.



I make a doubling that will fill the unlevelled inside surface, and glue it by pressing down on the mould; I reinforce with cleats and make the filling shims.



I remove the doubling from the lower block's glueing surface, and part of the surrounding reinforcements placed on a large reconstruction of the lower center part of the top, which is also cracked.





I notice that an old doubling covers the large reconstruction, made before the edge doubling and the lateral reinforcements.

Both doubling and reconstruction show a crack repaired with a walnut shim.







The thickness of the external reconstruction is of about 2 millimetres. The old doubling covering it brings this area to 4,2 millimetres.

The glueing area under the bass bar has been lowered to 4,5 millimetres, and then reinforced with doublings with perpendicular fiber.

The extension of the edge doubling between the bass bar and the lower bout was partially inserted in the top, where it drops to 3,2 millimetres.

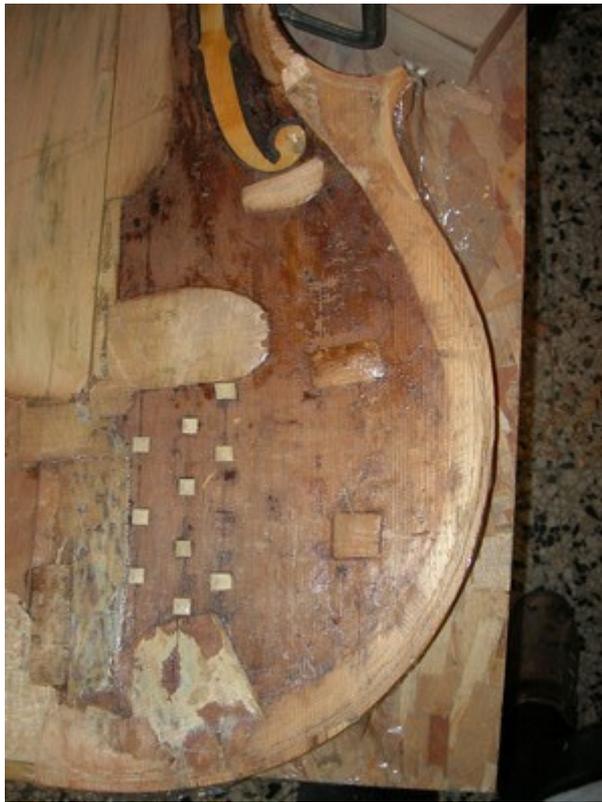


This requires a large doubling at the lower part of the top.

Since this doubling will cover cracks on the bass side as well, I decide to repair this side of the top too, before I start the doubling.

I remove the edge doubling on the bass side.





By doing so, edge reconstructions come to light along the whole bout, together with a corner reconstruction.

I make the edge doubling with the fiber running slightly tilted, for the part with no cracks.



I remove the cleats, open, clean and reglue the first crack, then reinforce with new cleats.



I clean and repair the other cracks, always reinforcing with new cleats.



I clean the area under the edge's doubling extension towards the bass bar, to repair the inner cracks.



I clean the lower center part of the front.



So I can see that the top is in three pieces.

the central reconstruction is connected to the central piece with a slanted joint, while on the sides there is a walnut shim and a larger spruce reconstruction.

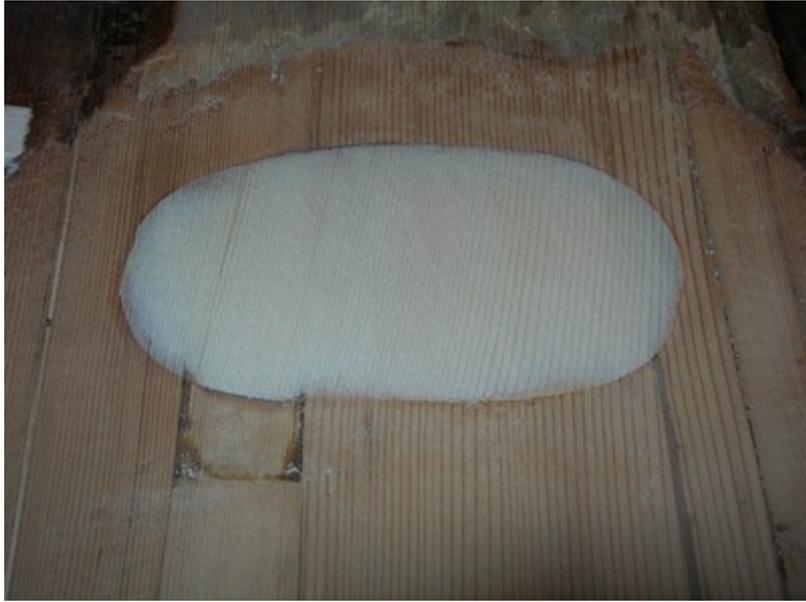
I make the lower central doubling, with slightly sloped fiber.





I make a partial doubling at the joint of the external reconstruction, to avoid excessive thinning.







I finish by thinning and remaking the missing edge doubling, and insert a patch to get rid of a small knot.



I apply a reinforcement to the lower eye of the f hole.



I remove the old edge doubling from the C bouts and upper corners.



It is possible to see an edge replacement of the treble C bout, maybe made because of the bowing action. The corners have centering pins.



The bass C bout has both corners reconstructed.
Here as well are centering pins.

I remake part of the edge doubling, with slightly sloped fiber.



I remove the remaining central doubling.

This clearly shows the top in three pieces. The joint on the treble side is parallel to the center line, and internal to where the sound post might be.

On the bass side, next to the joint, there are worm holes.

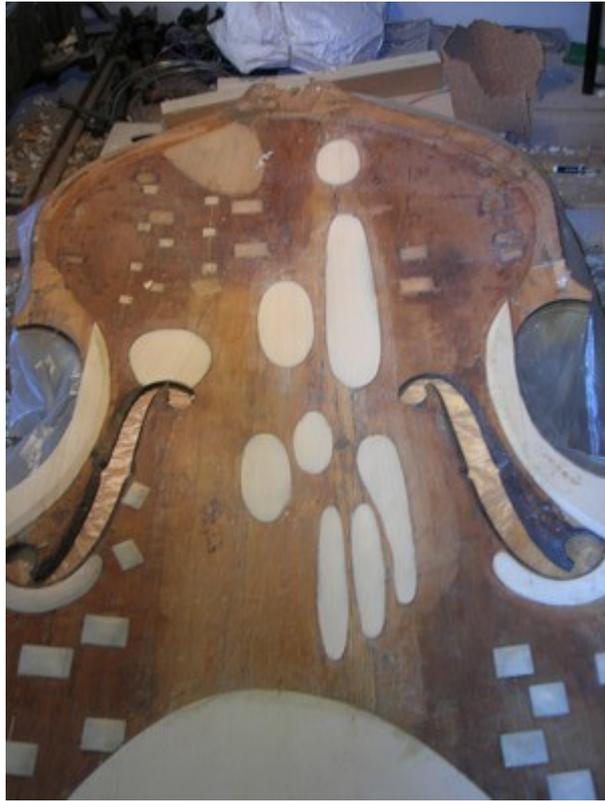
Under the old doubling, the front was roughly made thin, and worm holes and tool marks were filled with white chalk.



The remaining thickness of original wood varies between 3,4 and 1,7 millimetres, and is particularly thin on the bass side in proximity to the upper part of the bass bar and on the treble side on the upper part of the f hole.

In order to avoid thinning the plate too much, I make partial doublings to level irregularities.





The joint on the bass side has been partially filled with a shim and filler.
I clean, and remake the shim.



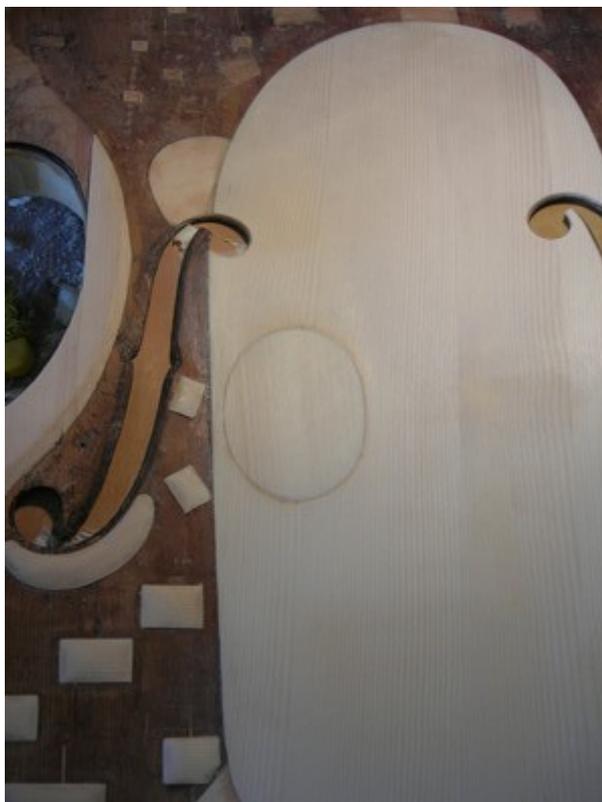
I make the central doubling, with the grain leaning the opposit way of the lower one.





In order to avoid stiffening this part too much, considering the inclined fiber and the large glueing surface, I use softer spruce than the one used in the lower part.

So I make a soundpost patch with harder spruce.



I continue by removing the section of the edge doubling covering the first crack on the top's shoulders, on the bass side.

By doing so the edge reconstruction ment to widen the top is clearer. I clean and repair the crack. I apply three new cleats.

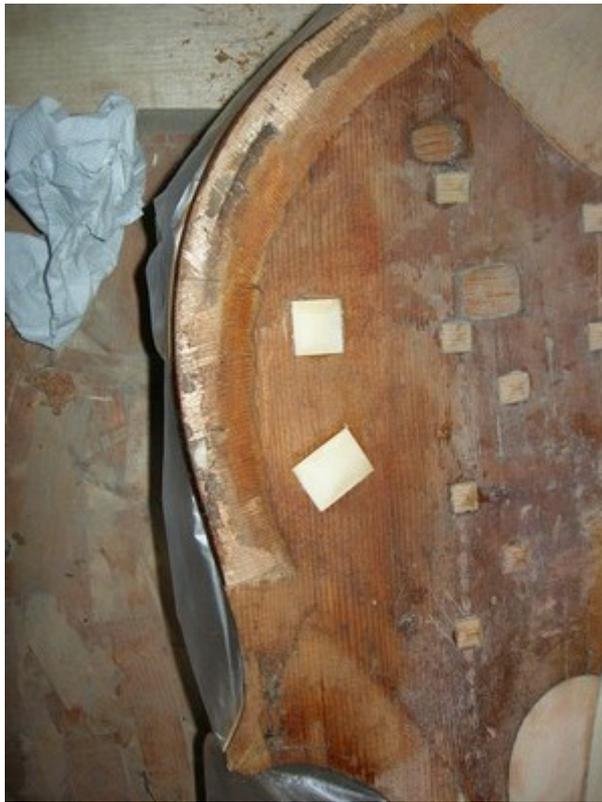


I place a temporary cleat to block the two cracks, properly closed, next to the center doubling, in an area that has been thinned to 2,5 millimetres, that will need a doubling.



I repair the first partial crack on the treble side.





I remove the sections of the edge doubling interfering with the other cracks that need to be repaired





This way the replacement of the top edge made to widen it can be clearly seen.

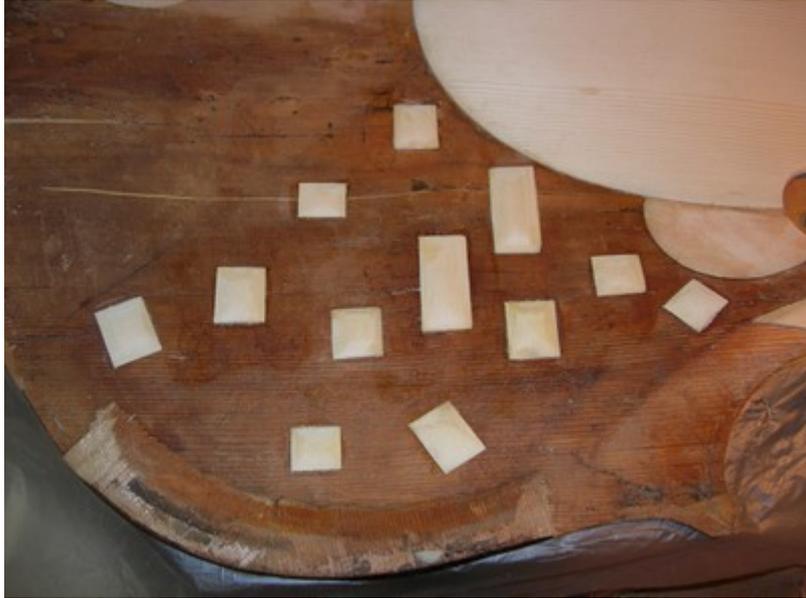
The extension of the edge doubling towards the inner part of the top was inserted in the wood, and the top is here thinned to 2,7 millimetres.

There are two well done shims as well.

I remove the cleats, open, clean and repair the next crack, reinforcing it with new cleats.



I repair the other cracks in the area that will not be covered by the upper doubling.



I remove the edge doubling in the upper block area.



Now it is possible to see the edge reconstruction and four centering pins in the upper part of the top.

I make the upper doubling, that will repair:

the thinned area on the treble side, where the edge doubling would extend towards the inside;

the thinned area on the bass side, flanking the bass bar, where two cracks are temporarily hold together with a cleat;

the thinned area on which the tip of the bass bar was glued, reinforced with a transverse fiber doubling.

The glueing surface of the upper block, which had a doubling, reconstructions and worm holes.

Between the tip of the bass bar and the edge doubling there is an area, 7 millimetres thick, that is maybe original. Unfortunately I will have to thin it to glue the upper new doubling. This area is cracked anyway.



The thickening of this area is interesting, maybe revealing the maker's intention to reinforce a part of the top subject to sollicitation.

Another thickening of the upper part of the top, up to 11,5 millimetres, can be found in proximity to the central "crest" carved on the outside.

I prepare the surface for the upper doubling.



I model, glue and thin the doubling.



As said before, the areas next to the edge with no doubling are relatively thick, of about 5 millimetres at the upper and lower bouts, and between 7 and 8 millimetres at the C bouts.

The more central areas drop down to 3 millimetres.

I have no reference on the doubled areas, since they were all thinned.

However, there was a thickening, to 7 millimetres, in the area under the upper block, on the bass side.

For the graduation, I left a thickness of 7 millimetres on the areas of the tips of the bass bar, and between the f holes, rising up to 7,6 at the soundpost.

The areas under the bass bar, between the tips and the central area, go down to 5,8 - 6 millimetres.

The remaining surfaces gradually drop from the thick areas next to the edges to the 3 millimetres of the not doubled parts.

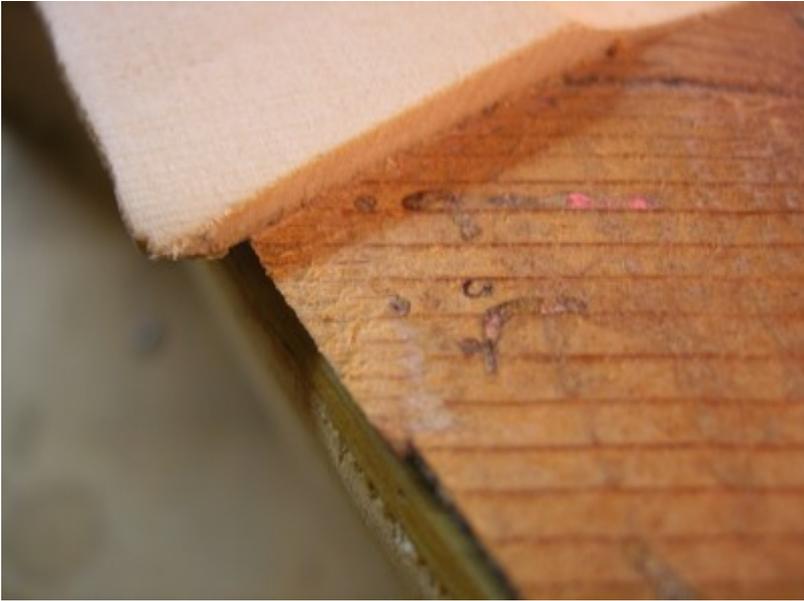
The "crest" carved on the outside, about 19 centimetres long, thickens the top up to 11,5 millimetres.

I remove the remaining edge doublings.

This way, the edge and upper corner reconstruction on the bass side come to light, together with a superficial addition.



On the treble side, the shorter upper edge reconstruction is almost entirely covered by the doubling.



Then there is an edge reconstruction in the widest part of the bout, and the corner rebuilt in multiple pieces.

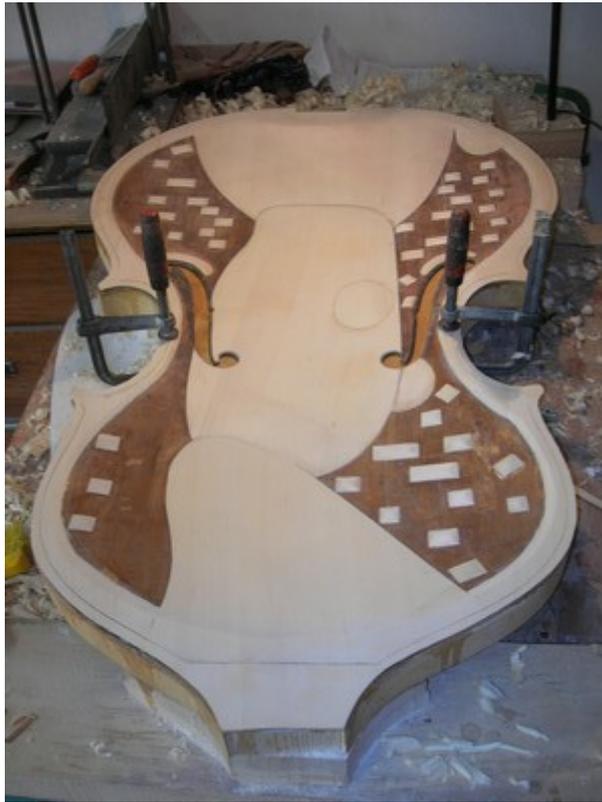


I prepare the new edge doubling, with slightly tilted grain, and glue it.

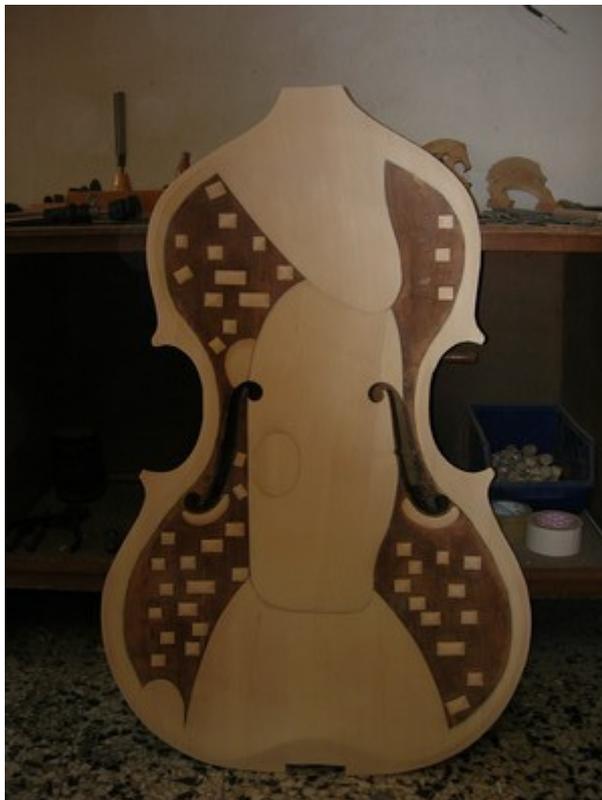


I remove the "crosses" ment to keep the ribs in shape, position the ribs on the top, trace the inside line.





I finish the edge doubling, leaving a small margin between the ribs and the beginning of the scoop.

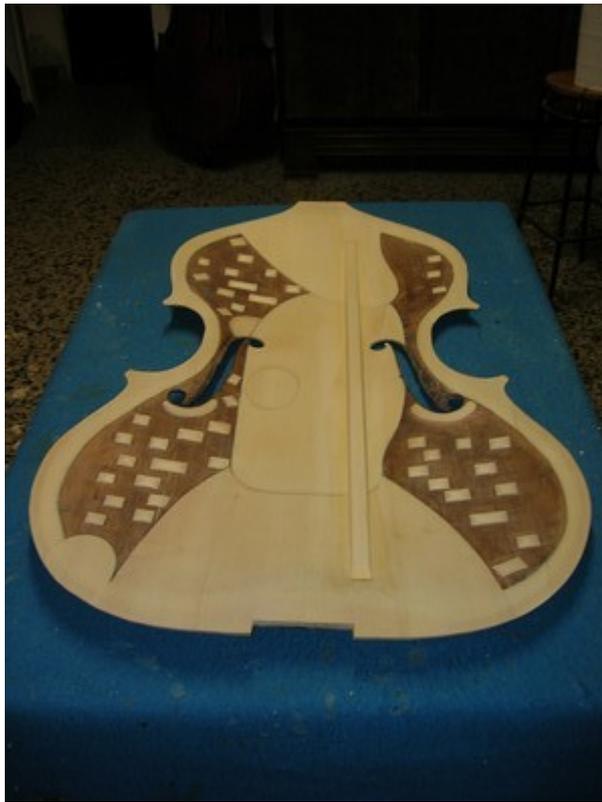


I make and glue the bass bar.



The bass bar is 21 millimetres thick and 840 millimetres long, while the height in the center is 42 millimetres. I consider that the bridge line is not far from the center of the top's length, and position the center of the bass bar on this line. So the upper tip is farther away from the edge than the lower one. However, the shape itself of the top makes it more rigid on the upper part than on the lower one. The inclination is set keeping in mind the different inclinations of the doubling's grain.





I glue the top to the ribs



I set a splint between the C bouts on the back side to hold the correct width.

