Guadagnini Cello Ribs

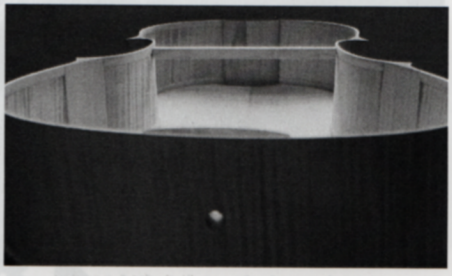
Helen Michetschläger considers the rib assembly of the cello

I've recently made a cello based on G. B. Guadagnini. A characteristic of this maker's cellos is that frequently the rib assembly flares outwards, the front broader than the back. This seemed an interesting idea – it helps a relatively small model of cello to have C bouts of 247mm on the front and widely spaced f holes, which surely in no small measure contribute to the reputation that these cellos have for sound, and their popularity with soloists.

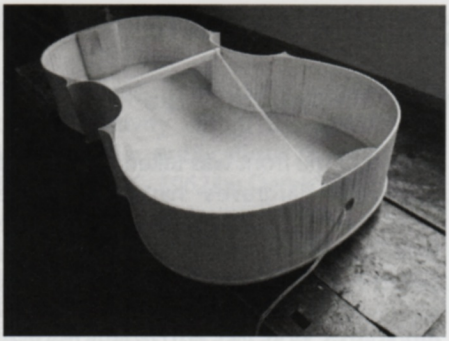
Work on this cello was interrupted by one of my regular collaborative making projects with William Castle, Kai-Thomas Roth and Marc Soubeyran. We made a cello, by chance another small one, based on an Andrea Guarneri of 1691. This shows the same feature of wider C bouts on the front than the back. For this cello, Kai made a three-part mould, which accurately followed the outline of both back and front of the original cello. I was really impressed with the sound quality of our finished instrument, which set me thinking more deeply when I returned to my own cello.

Checking through the cello measurements I could find, principally from *Strad* posters, my impression is that most cellos, however, have ribs, which are roughly parallel, allowing for discrepancies in bending and some distortion over time. Comments from those with more experience of studying classical instruments would be welcome.

Reading about Guadagnini suggested that perhaps he made the ribs on a mould, then glued them to the back before the outline of the front was taken. This would fit Roger Hargrave's hypothesis (The Strad, June, July and August 1986) for the baroque system of construction, though would not explain why Guadagnini's ribs are flared but so few other cellos share this feature. In the book '*Joannes Baptista Guadagnini celestitudinis suae realis*' edited by Andrea Zanrè, the suggestion is made that for some of the cellos, the backs with ribs glued on were left for some time before the outlines of the front were taken, and had moved in that time. However, the busy, hand-to-mouth existence that Guadagnini seems to have led would have left him little leisure for the luxury of delaying completion of his instruments. John Dilworth (http://tarisio.com/cozio-archive-cozio-cargeggio/guadagninis-cellos/) suggests that the maker used minimally seasoned wood and that he fitted the upper linings after the back was glued to the ribs, the linings pushing the ribs outwards. I'm not sure about the green wood theory either; if you have more than minimal shrinkage on the lower bouts of a cello, you lose your overhang.



Wedge in place.



String tied in place and threaded

Having the experience of working at the same time on two different small cello models, both with flaring ribs, and being unconvinced by the hypotheses for how this happened made me wonder if this phenomenon is more than accidental. We underestimate the intelligence of our predecessors at our peril, and it's important, when looking at classical instruments, not to be distracted from the concepts underlying the work by occasional less than perfect execution. If the back of the instrument helps to generate the sound, might ribs that taper outwards help the sound to radiate more effectively than parallel ribs?

For my own cello I was keen to see how this process might work. I made the ribs on a mould and glued them to the back. I then set the ribs plus back aside for about three weeks. To my disappointment there was no significant movement in the rib assembly and the measurement across the C bouts remained the same as it had been on the mould. So I decided to wedge a piece of wood between the C bouts of the ribs to open them up to the desired measurement, in this case about 5mm wider. As you would expect, the width of the upper and lower bouts also increased and the body length decreased.

This had a considerable effect on the flatness of the ribs – they only touched my jointed and planed front at the top and bottom blocks and the middle of the C bouts. In order to generate an outline, which followed my splayed ribs, I had to cut out the front oversize and rough out the arching and thicknessing so that it was flexible enough to cramp to the ribs.

When the time came to glue the finished front to the ribs, I tied a piece of string round one end of the stick, so that once glued, I could pull it out through the endpin hole. This worked a treat.

Removing through the endpin hole

Whether this makes a better sounding cello than had I left the ribs from the mould, I have no idea, but I'd be happy if there is further discussion on this topic, in these pages and elsewhere.

By Helen Michetschläger