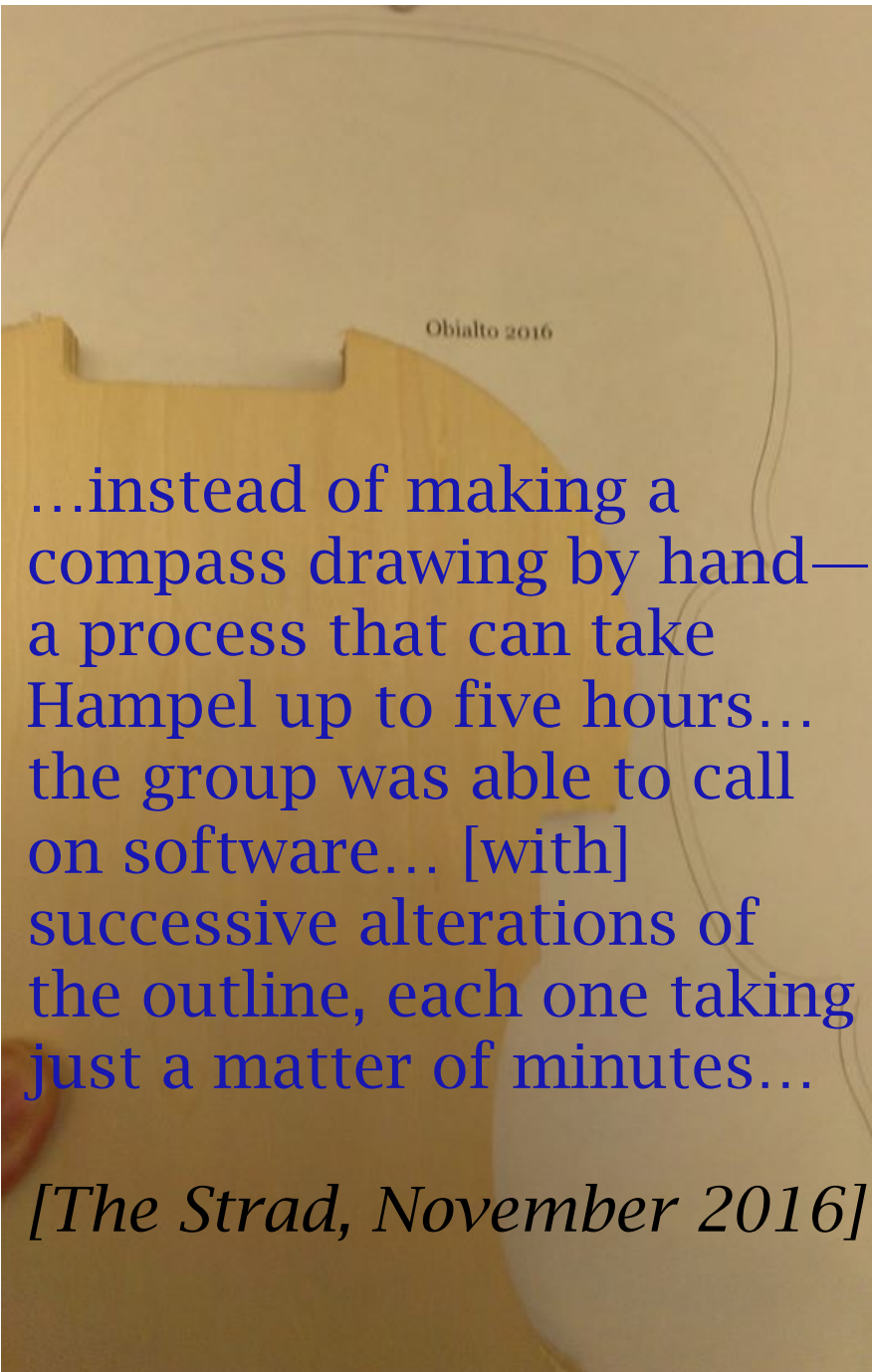


What has Digital Amati been used for?

Obiealto: Oberlin viola (summer 2016)



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DESIGNING A VIOLA

Andreas Hampel and Harry Mairson discuss how the Obiealto model was created

'Leading a viola group must be like herding cats,' joked a friend of Obiealto project leader Andreas Hampel ahead of this year's VSA/Oberlin workshop. Only too aware that Oberlin participants would have very different ideas of what constitutes the ultimate viola, Hampel began the Obiealto sessions by asking makers to talk about their least successful viola. 'That turned out to be an excellent starting point,' said Hampel. 'It set up a good mood in the group, and it's easier to discuss what isn't ideal in an instrument than what is.' Hampel next presented the group with two dozen full-size print-outs of classical violas, which were deliberately left unidentified. 'We compared the different models and talked about what kind of sound we would associate with each one,' he said. On day three the group decided on a length for the new model - a standard 16 inches (406mm). 'Then we discussed the width,' said Hampel, 'and we decided on a very broad middle bout and on a classical 4:5 ratio of upper bouts to lower bouts.'

The drawing of the form could now begin, but instead of making a compass drawing by hand - a process that can take Hampel up to five hours - the group was able to call on software developed by computer scientist and amateur cello maker Harry Mairson to do the drawing. Beginning with an outline of a classical viola that he had encoded, Mairson printed out a new drawing after coding in the group's initial decisions and ideas. After further discussion and deliberation among

the makers, Mairson produced successive alterations of the outline, each one taking just a matter of minutes. Mairson had been inspired to create this neat solution to designing instruments after reading Francois Denis's study *Traite de Lutherie*. 'For me, the way that the straightedge and compass directions are written in that book is like a big computer program,' he said. 'If you code those instructions, then when you make a mistake, instead of swearing at a piece of paper and having to begin a hand drawing all over again, you just look at the code, see where you went wrong and change it. That means that the debugging and alteration process is a lot more dynamic.'

By the end of the first week, the group had considered 25 variations of the drawing and collectively decided on a favourite. This outline was transferred into the computer design program Rhino and then 60 identical inner forms were produced using a CNC router. Each Oberlin participant was given a form from which to create their own unique viola, and asked to report on their processes along the way. 'It's essential,' he said, 'that they also document what they do - their goals for the sound, their making decisions, their measurements.' To that end, the participants were later emailed a detailed spreadsheet to fill in during the making process. 'The goal is to have 30 or more different violas - all made on the same form - in Oberlin next year,' said Hampel, 'with a spreadsheet lying next to each one, so that we can explore the sound and connect it with the making decisions and features.'

Image at right: Geometric constructions created by the Digital Amati computer program.

