Peter Ratcliff restores and investigates violins from his workshop in Hove, UK.

Q&A Peter Ratcliff

Violin detective

Peter Ratcliff uses dendrochronology — tree-ring dating — to pin down the age and suggest the provenance of stringed instruments. As he prepares to speak at the Woodmusic instrument-identification conference in Cremona, Italy, on 30 September, he talks about the science of spotting fakes, and the 14 Stradivarius instruments made from the same spruce tree.

How do you use dendrochronology for dating?

The bellies of most Western stringed instruments are made from spruce, whose tight, even growth is easy to analyse. When I am sent an instrument, I measure the width of each ring in the varnished wood. The unique pattern formed by the rings can be matched with those on thousands of instruments in databases, as well as cores extracted from the oldest living trees and ancient timber. The year of the most recent ring on an instrument is the earliest it could have been built.

How do you pin down the school of making?

Ring patterns depend on weather, climate, soil composition and other local factors, so the pattern in any tree resembles those of its neighbours. I list other instruments whose wood grain is the closest match. Occasionally, I will find some by the same maker or, more rarely, by different makers who used the same tree — such as a 1744 violin made by Giuseppe Guarneri Del Gesù from Cremona, for instance, matched to a 1746 Sanctus Seraphin from Venice, and surprisingly, a 1767 José Contreras from Madrid. I am cautious not to make hard claims about authenticity, but if I examine a violin and 90% of instruments that match dendrochronologically are from, say, seventeenth-century

England, I will suggest that the owner show it to an expert who can assess whether style, varnish and construction conform to that school.

What have you learned about the habits of old violin makers?

To make a violin today, you buy a wedge of spruce, split it down the middle and align the halves so you have a symmetrical pattern — a 'book match'. It is clear that many early makers did not work in this way. In a study of 13 violins and violas made by Andrea Amati, the sixteenth-century grandfather of modern violin-making, investigator John Topham and I found that 5 came from the same tree and only one was a true book match. I have also found that at least 14 violins and violas built by Antonio Stradivari between 1695 and 1705 are made from a single tree. My guess is that these old masters would buy a log, split it into wedges thick enough for half the soundboard, and hang them on a rack, sometimes for years, without worrying about book matches. Many soundboards are mismatched or come from different trees.

Have you spotted fakes?

Several — including two violins falsely attributed to Stradivari, and some that could not have been made before 1920. But two

instruments have gone up in value after I found that their soundboards matched trees known to have been used by Stradivari; one subsequently sold at auction for more than four times its estimate. Many convincing forgeries were made in the nineteenth and early twentieth centuries, but the science did not exist then. Forgers now are aware of dendrochronology, and it could be a problem if they use wood from old chalets to build sophisticated copies of historical instruments.

KAMILA RATCLIFF

How about unintentional deceit?

I never like to 'kill' a violin — reveal it as not what it seems. But if the wood does not match the claims, I investigate. I was recently sent photos of a violin supposedly made by an Italian craftsman who died in 1735. The wood dated to the 1760s, so I knew he could not have made it. But I did see strong correlations to instruments made by his sons and nephews who worked in the 1770s. So I deduced that the violin might have been damaged and an entirely new soundboard made after the craftsman's death. The violin was pulled from auction, but not before it had received bids of more than US\$100,000.

Will dendrochronology change the market?

I think it already has, and has called into question some incorrect historical assumptions. Large violins of the Brescian school, which have a double line of inlaid decoration, were thought to have faded out with the death of maker Giovanni Paolo Maggini in about 1630. But I have tested 4 of these instruments and found that they were made at least 50 years after his death. Several important UK and US dealers and auction houses have found the information useful, especially when it confirms what they already believe. Others have knowingly sold instruments that were not quite what was claimed, and many of these are nervous about dendrochronology. Eventually, I'm hoping, this analysis will become routine. If you are spending £400,000 on a violin, what's another £500 for a scientific report?

Can you identify violins made from the same tree by their sound?

I don't believe this has been tested, but I would wager that a musician would not be able to select a pair of same-tree violins from a crowd. Incidentally, there does not seem to be any scientific or acoustic evidence that older instruments sound better. In an experiment reported this year by researcher Claudia Fritz, six old violins, including five Strads, were compared with six new ones in a double-blind test. Experienced players could not tell old from new. The new instruments seemed to be the favourites. I suspect that these results are not going to revolutionize the violin world. ■

INTERVIEW BY JASCHA HOFFMAN