

Scientists dispel the mystery surrounding Stradivarius violins

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Antonius Stradivarius violins are shrouded in more myths than any other instruments in world history. At Mid Sweden University, researchers are using modern technology to uncover his secrets. At the international acoustics conference ICSV12, taking place in Lisbon on July 11-14, 2005, Associate Professor Mats Tinnsten will be presenting the latest research findings in the field.

"It's not possible to copy Stradivarius violins exactly, since wood is a living material with great natural variations. The results of new research indicate, however, that we will be able to overcome such difficulties with the aid of advanced computer support," says Mats Tinnsten.

The Italian Antonius Stradivarius, 1644-1737, introduced a geometry and design that became the exemplar for all violin-makers. Of the 1,100 instruments he built, some 650 still survive. The extremely high value of these instruments was demonstrated at an auction at Christie's in London in April. The 'Lady Tennant' Stradivarius violin sold for more than SEK 14 million, the auction record for a musical instrument.

"His craftsmanship is still unexcelled. Few after the death of Stradivarius have managed to produce anything that even approaches his best work," says Mats Tinnsten, who, together with Associate Professor Peter Carlsson, is researching whether it is possible to copy Stradivarius violins with the aid of modern technology and powerful computers.

What the Mid Sweden University scientists are trying to create is a violin



with the same acoustic properties as a Stradivarius instrument. This work is progressing in stages, and it was decided that the first stage would involve calculations based on the top of the violin.

"With the help of advanced mathematical optimization method, we can determine how a top should be shaped to achieve the same properties as a top from a genuine Stradivarius," says Peter Carlsson.

The reason it is not possible to simply copy a top or an entire violin exactly is that it can never be assumed that the new top will have the same material properties as the old one.

During the 12th International Congress on Sound and Vibration, ICSV12 at the Lisbon University of Technology, Mats Tinnsten will show how far along he and Peter Carlsson have progressed in their pursuit of the perfect violin.

"Stradivarius violins were made of slow-growth spruce. Perhaps our research will help create a new instrument-making industry in northern Sweden," concludes Peter Carlsson.

Source: Swedish Research Council

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