

SHINING STAR

The 1735 'Plowden' violin by Guarneri 'del Gesù' has been talked about, pored over, and photographed time and time again, but there is still plenty more to discover about this celebrity of the violin world, as SAM ZYGMUNTOWICZ reveals

THE 'PLOWDEN' GUARNERI 'del Gesù' of 1735 is one of the most recognisable and acclaimed violins in existence. It is very much a player's instrument: its sound is remarkably warm and seductive, and it is smoothly accepting of the bow. The Hills listed it among their top nine Guarneri instruments, and it was one of twelve selected for the 'Violin Masterpieces of Guarneri del Gesù' exhibition at New York's Metropolitan Museum of Art in 1994. When examining a violin as

thoroughly documented as the 'Plowden', it's hard not to be just another paparazzo angling for a revealing shot. However, I feel a very personal connection with it, and I will try to discuss aspects of the instrument that are not so easily seen, using some new resources and my own experiences.

I first encountered the 'Plowden' in 1980 when I was an assistant in the shop of René Morel in New York. Many of the shop's rare violins appeared faded, and frankly rather worn out, but the 'Plowden' was overwhelming in its vivid freshness, with intense orange-red varnish on its stunning one-piece back. As well as being a player's instrument, it is also very much a maker's instrument, and the tool work itself is part of the appeal – it is not over-smoothed or hidden. In stolen moments, I would try to record and absorb the details of this remarkable violin, >

ALL INSTRUMENT PORTRAITS: JAN RÖHRMANN



The vivid orange-red varnish of the 'Plowden' gives it a strikingly fresh-looking appearance

◀ The instrument's curves are similar to those of the grand-pattern Nicolò Amati model



and those first hasty tracings and measurements became the basis for much of my own making. Thirty years later, I am possibly wiser and certainly visibly older, but the 'Plowden' remains the same.

Over the years I have had the opportunity to make exact copies and reinterpretations of the 'Plowden', and I have also been able to adjust its sound and even disassemble it for maintenance. Playing and repairing this violin has provided a yardstick against which to measure the sound of my own instruments, and it has fuelled my curiosity about how such structures create sound. My studies have gradually started to include scientific analysis and modern technology, in ways that have mirrored broader changes in violin research.

THE 'PLOWDEN' was featured in the classic 1931 book *The Violin-Makers of the Guarneri Family (1626–1762)* by William and Arthur Hill, in which it was listed as the 'Ex-Arbós'. While well-researched and still informative, the photogravure plates and elevated prose of that survey now seem quaint to us. In contrast, the 'Plowden' was again featured in the large-format book *Giuseppe Guarneri del Gesù*, published by Peter Biddulph in 1998, which included excellent full-size photographs, detailed technical measurements and thoughtful analyses from a violin maker's point of view by John Dilworth and Roger Hargrave. Also released in 1998, the *Miracle Makers* CDs featured recordings of 30 Stradivari and Guarneri violins, including the 'Plowden', played by Elmar Oliveira, which provided comparisons between the different instruments' sounds. Ruggiero Ricci had made a similar recording in 1969, *The Glory of Cremona*. He told me that the 'Plowden' had been his favourite violin on that recording, and he later commissioned a copy of it. These sound comparisons, combined with developing structural expertise, have helped us to understand how the design we see affects the sound we hear.

To further this quest, the 'Plowden' was included in the Strad3D project, led by myself and physicist George Bissinger (see 'A Scanner in the Works', *The Strad*, January 2009 for more details). This project grew to include the first 3D modal analyses of Cremonese violins, acoustic sound tests, comparative musical excerpts and CT scans, along with dendrochronology, proportional drawings and the usual photographs and measurements. Except as noted, the references used in this article are drawn from the 2008 *Strad3D* DVD. Two other famed violins were included in this study, and will be mentioned here: the 1715 'Titian' Stradivari, a prime golden-period specimen, and the 1734 'Willemotte' Stradivari, made one year earlier a short walk from Guarneri's shop.

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The 1735 'd'Egville' Guarneri, invariably associated with the 'Plowden' and often owned by the same collector, is also useful for context and comparison. It was made the same year from the same spruce and probably the same maple as the 'Plowden', but the overall impression and the sound character are nevertheless quite different.

The 'Plowden' has been cherished by a succession of prominent collectors. It was named after the amateur London violinist C.H. Chichele Plowden, the instrument's first recorded owner, whose collection also included the 'd'Egville', 'King Joseph', 'Dushkin' and 'Ole Bull' Guarneri violins. In 1867 Louis d'Egville Sr bought it from the London dealer George Hart, and, in 1900, the d'Egville family sold it to the greatest of collectors, Baron Johann Knoop, through W.E. Hill & Sons. The Hills sold it a further three times: a decade later, to Enrique Fernández Arbós, a noted Madrid violinist, conductor and composer, and perhaps the only prominent violin soloist known to have owned the 'Plowden'; in 1924, to Richard Bennett, the collector who owned 15 of the finest 'del Gesù' instruments throughout his lifetime; and in 1929, to the Connecticut collector John T. Roberts. In 1944, the US businessman William Rosenwald acquired it from the Rembert Wurlitzer firm, and finally, in 1987, it was bought by its current owner, Mark Ptashne, through J.&A. Beare. Ptashne is a leading molecular biologist, and an accomplished violinist, who has assembled an impressive collection of violins and bows, including the 'Willemotte' Stradivari. For a time he also owned the 'd'Egville' Guarneri.

THE 'PLOWDEN' gives an outsize impression that defies its rather petite dimensions. Several factors combine to create this effect: the very broad-flamed maple back, the substantial thickness of the purfling, the wide-grained top, back arching that quickly rises from the relatively shallow channel, the open f-holes, and, above all, the plentiful red varnish that lies with an ▶

▶ The broad-flamed maple back makes the violin appear larger than it actually is



The 'Plowden' is overwhelming in its vivid freshness, with intense orange-red varnish on its stunning one-piece back

almost sculptural effect over the undulating flames of the back, which rake at a dramatic angle. The colour is intense but is applied over a colourless first coat, unlike the 'Titian' Stradivari, whose thin, coloured varnish seems to lie very close to the wood.

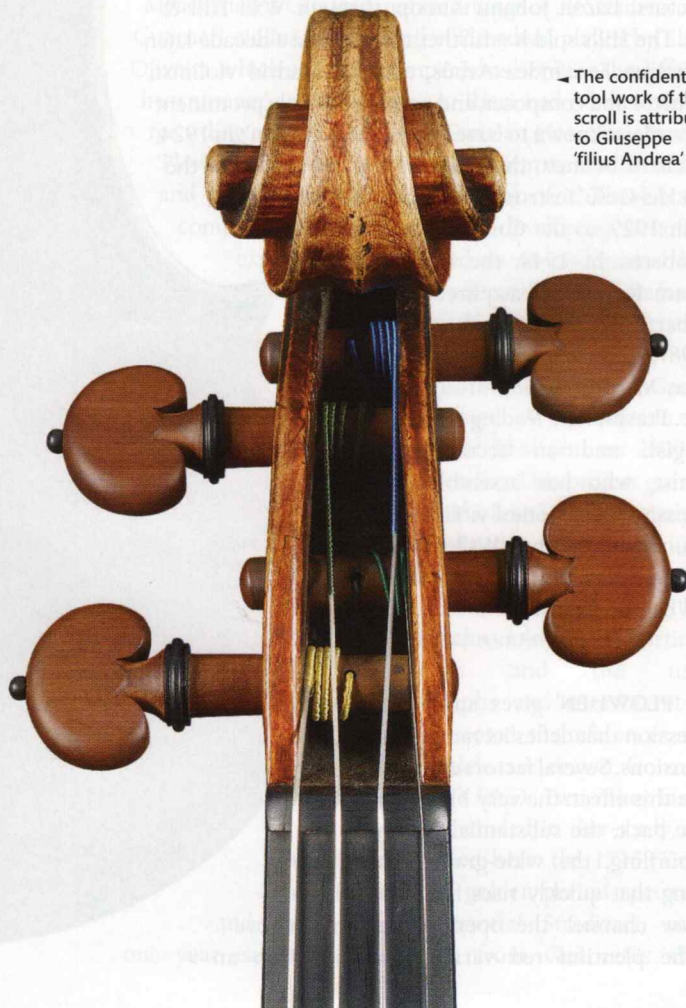
The body of the 'Plowden' measures only 351mm, and the mensur is short at 191mm, which makes the violin very comfortable to play. The thickness of the back edge is generous, but the edge overhang is very narrow and the corners are relatively short. The 'd'Egville' has similarly dramatic back wood and varnish, but gives a different impression, due to the thinner edges and more scooped-out back arching. The resulting sound is different as well – the 'd'Egville' has quite a bright and ringing sound compared with the honeyed darkness and more robust feel of the 'Plowden'. Both top arches are very low and flat, the 'Plowden' around 14mm and the 'd'Egville' a scant 12mm.

As demonstrated by François Denis in his article 'Two Forms', written for the Strad3D project, the basic proportions and curves of the 'Plowden' are very similar to the grand-pattern Nicolò Amati model, but are slightly broader. In fact, the 'Plowden', with its sleek outline, narrow edge overhang and petite corners, can be considered more conservative than Stradivari's work. The 'Willemotte' Stradivari is

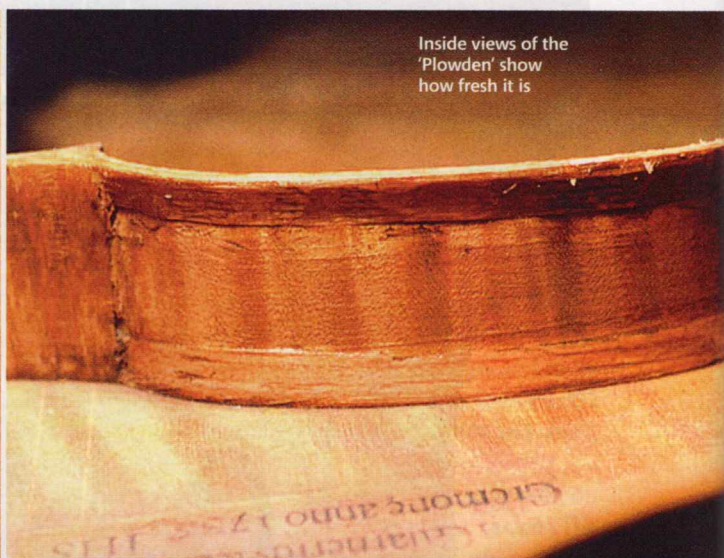
heavier in style, with a wide purfling margin, high and quite full arching, and heavy-set f-holes. Even the golden-period 'Titian' is more innovative, with its squared C-bouts and short, wide corners.

The purfling is slightly wider than what is usually seen on Guarneri violins, especially the irregular white centre. The thinner areas of the black strips are seen more often on the concave curves of the purfling, where it would have been easier to scrape a pre-bent purfling strip to fit into an over-tight channel. This same variation is found on the 'Titian', indicating quite a useful shared technique.

The scroll carving is my favourite aspect of the 'Plowden'. As with the other Guarneris from the period 1730–40, the scroll is attributed to his father, Giuseppe 'filius Andrea', who had retired from independent violin making but apparently carved scrolls for his son. The cutting on this scroll shows very well-ordered and definite tool work, with prominent parallel >



← The confident tool work of the scroll is attributed to Giuseppe 'filius Andrea'



Inside views of the 'Plowden' show how fresh it is



facets coming in from both faces, now accentuated by the coloured varnish worn off the high ridges. The back view of the pegbox also demonstrates crisp shaping with a plane or chisel. A ruler laid along the outer wall of the pegbox does not roll in a smooth curve, but rather clicks over from one broad cut to the next. These facets are not only straight but even a bit hollow, indicating that the cutting was possibly done across the grain or with a very slightly domed tool. The shallow channel of the back demonstrates similar well-controlled tool work, with gouge traces clearly visible.

THE 'PLOWDEN' has been analysed by John Waddle with Steven Sirr, and separately by Terry Bormann with Berend Stoel, using different CT data sets. They independently estimated the back maple density to be in the range of 0.53 to 0.54 specific gravity (SG), the spruce top to be approximately 0.35 SG, and the scroll a slightly denser 0.58 SG. Even with a margin of error, this is a considerably lower density than that of most spruce and maple currently available, and makes the rather thick graduations of many Guarneri backs more understandable. The ribs are less deeply flamed than the

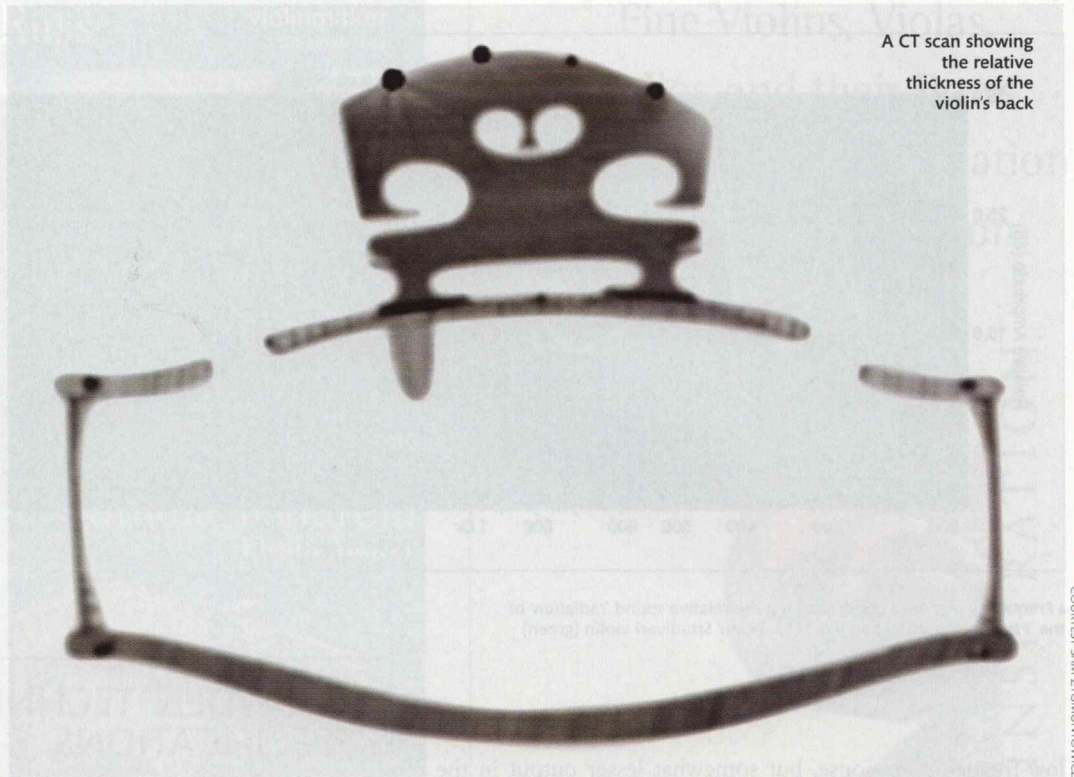
back wood, which would be easier to bend. The rib thicknesses are around a generous 1.2mm. The CT cross-sections show the outward bulge of the ribs, especially in the C-bouts.

The spruce top has a variable grain width, with a band of wider grain just past the bridge area, and again in the outer flanks. Matching spruce was clearly used for the 'd'Egville'. Dendrochronology studies by John Topham have identified other Guarneri violins made from this same tree. He has calculated that the youngest tree-ring on the spruce top of the 'Plowden' dates from 1729, and that at least two outer annual rings would have been removed in joining, so that the wood could not have been cut more than five years before being used, and was possibly younger. This finding is consistent with other Guarneri violins Topham has studied, which often used spruce that was even more freshly cut.

The interior contours of the back show no scooping at the edge, but instead there is a reverse curve that mostly follows the outer channel. The thinnest areas are generally well in from the edge. The graduations are on the whole quite carefully worked, with some thinner areas on the bass side of the back in the upper bouts. The characteristic central pin is located 160mm from the upper edge. The thickest point of the back is near the central pin, but the thicknesses fall away more rapidly towards the upper bouts >



← The ribs are around a generous 1.2mm thick



A CT scan showing the relative thickness of the violin's back

COURTESY SAM ZYGUNTOWICZ

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than towards the lower bouts, a feature I have seen on other 'del Gesù' violins.

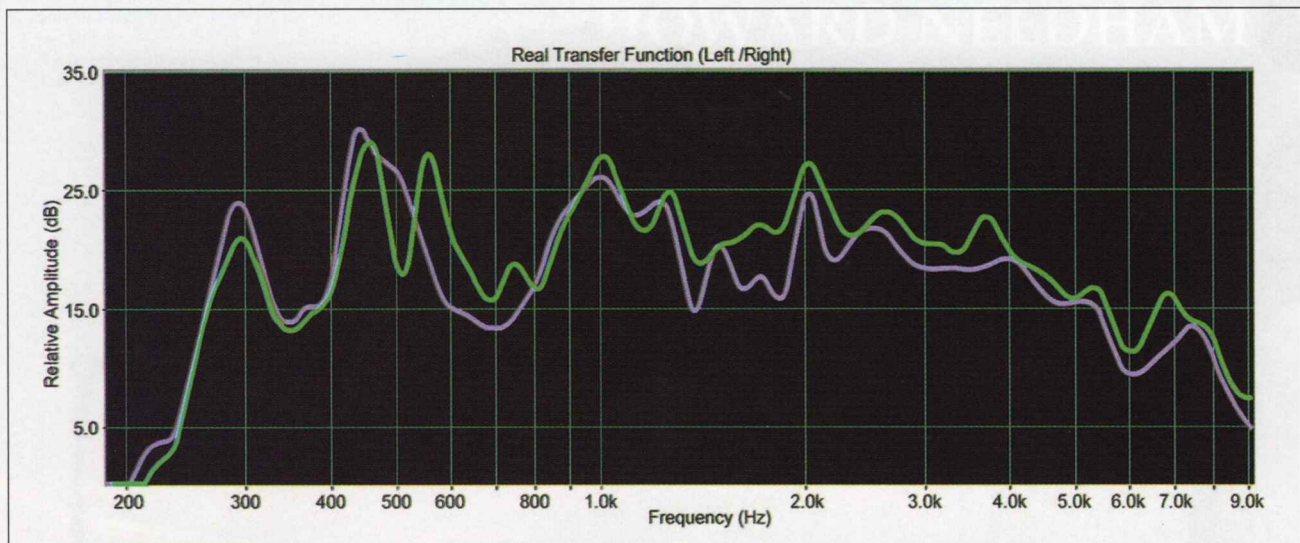
Top removal has left the top under-edge thinner, but still fresh and without doubling. The top thicknesses are healthy and relatively even, the thinnest areas being in the centre and under the bass-bar area. The scans also show the slightly denser breast patch in the top, as well as the expected soundpost patch. The interior is otherwise very fresh. The ribs show traces of the irregular tooth-blade plane. The spruce linings are mortised deeply into the corner blocks, and have been quickly shaped with a knife.

The f-holes are the most original design element of this violin, and are stylish and beautifully cut. The open main body of the holes, sweeping into the pointed wings, give this violin a distinct and individual impact. The f-hole wings are smoothly fluted, with some visible gouge marks, and this sculpting gives some additional structure to the low arching. The cross-section at the bridge shows the convex centre section and the concave outer wings, with matching interior and exterior curves.

WRITING ABOUT THE 'PLOWDEN' in these pages years ago, I speculated: 'Structurally, these sleek bodies tend to be flexible (more so than the Stradivari or Amati models, for instance). This allows the top and back to be slightly thicker, yet still vibrate freely. With the flatter arches and small lightweight corners, this helps to create the dark, resilient tone' (see 'A Tale of Two Guarneris', November 1993). With modal analysis and sound testing, it has become possible to test old theories, and to discover how much more complexity there actually is. I had never imagined that the f-hole wings would vibrate so actively, as we now know they do. For example, the 'Plowden' sound profile showed a strong peak at about 1,600Hz, while the modal animations revealed that the only strong vibrations were on the outer treble-side f-hole wing.

Using the Strad3D modal files and the Polytec Scan Viewer, I recently compared the 'Plowden' and the 'Titian', and found that the former did in fact have greater motion at comparable points, especially near the f-holes. This is the most satisfying sort of science – when what you already believe turns out to be more or less true!

Tonally, the 'Plowden' is one of the most appealing violins I have played. Its tone is smooth and velvety, with a touch of reediness that gives clarity to the sound. When violinist Aaron Boyd recorded the Strad3D test sessions, sound engineer Da-Hong Seetoo commented that while the 'Plowden' was not the loudest violin, if the sound levels were equalised it would be the best-sounding. Comparing the sound spectra of the 'Plowden' with the 'Titian' and 'Willemotte' Stradivaris did show that the 'Plowden' had very full >



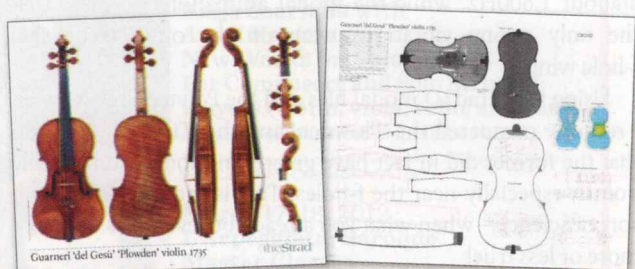
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A Frequency response graph showing the relative sound 'radiation' of the 'Plowden' (purple) and the 1715 'Titian' Stradivari violin (green)

low-frequency response, but somewhat lesser output in the 2–4kHz high-frequency ranges associated with projection.

Interestingly, comparing the CT scans showed that the 'Titian' had an especially strong bass-bar, while the bass-bar of the 'Plowden' was much lower in profile. Would a higher bass-bar increase the sound projection, without lessening the sensual appeal of this violin? After long consideration, Stefan Valcuha recently fitted a new, somewhat higher bass-bar. The results were gratifying, as the violin retained its warmth but gained a more muscular response, with increased core and dynamic range, making it even more suitable for large-scale performance.

An antique masterpiece such as the 'Plowden' may seem timeless and sacrosanct, but all violins are dynamic objects, and they continue to change and develop. If even the 1735 'Plowden' Guarneri can be improved with a mild intervention, imagine what we could do to our own new violins, given the knowledge and the time. ■



To order a rolled copy of this month's poster and to buy the Strad3D DVD, visit The Strad Library at www.thestrad.com/library or call +44 (0)1371 851800

For more information on the Strad3D project, visit www.strad3d.org

'PLOWDEN' TECHNICAL SPECIFICATIONS

The techniques of acoustic analysis and modern imaging are still developing, as is our ability to interpret the resultant findings. The data on the 'Plowden' that is presented here has been gathered at different times by different individuals, and the accuracy may vary.

When the 'Plowden' was recently opened up, tap tones of the top plate with the old bass-bar were: 325Hz (mode 5), 164Hz (mode 2) and 85Hz (mode 1). The top plate weight without the bass-bar was 59.6g, and it was 64.6g with the new bar. The signature modes of the reassembled violin were: AO 286Hz; CBR 380Hz; B1- 465Hz; and B1+ 515Hz.

AO is the violin's lowest resonance, largely determined by the internal air volume of the body and the flexibility of the plates. Using computerised tomography (CT), the internal air volume of the 'Plowden' is estimated at 1.83 litres, in contrast to the 2.04 litres of the high-arched 'Willemotte' Stradivari. The strong AO of the 'Plowden', which is (relatively speaking) closer to the low-lying B1 resonances, helps to give especially full support to the instrument's low notes.

In his Strad3D analysis, George Bissinger stated: 'The "Plowden" possessed the strongest low end, the lowest "critical frequency" of any violin tested and a somewhat more extended high end. It has somewhat contradictory properties.' By contradictory properties, he meant that it had both full bass and extended high frequencies.

CT scan analysis is an art, and having two separate CT teams provides an interesting test of the accuracy of these techniques. Estimates of the top plate weight by John Waddle and Steven Sirr, and by Terry Bormann and Berend Stoel, were to within a few grams of the real weight. Their back-weight estimates diverged, but their density estimates roughly corresponded at around 0.54 specific gravity. Sirr also calculated that the centre of mass of the top and back plates would be in line with the soundpost position. This transcends mere data, moving on to illuminate some underlying design concepts.