

A tale of two dots

(Stradivari's now-lost P.G. violin mould)

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The Museo del Violino in Cremona maintains a large collection of Antonio Stradivari artefacts, many of which, originating from Stradivari's workshop, were saved for posterity when they were bought by Il Conte Ignazio Alessandro Cozio di Salabue (1755-1840). Cozio's purchase of moulds, tools, templates, and paper patterns followed on from his acquisition during 1774 and 1775 of twelve 'leftover' Stradivari violins, ten of these having been made by Antonio and two by his son, Francesco. The Museo's collection of artefacts includes twelve moulds for full-size violins, one for a *violino un quarto*, another for a *piccolo violino*, and three for violas of various sizes. A detailed examination of Cozio's manuscripts* reveals the evidence that one further violin mould had been included in Cozio's purchase, a mould that Stradivari used to create at least three large violins. One of these violins, dated 1724, was sold by Count Cozio to Niccolò Paganini in July 1817. The present-day whereabouts of the large mould are unknown.

* Archived at the Biblioteca Statale di Cremona, Libreria Civica [BSCr, LC].

On 27 February 1823, Count Cozio wrote an inventory – *La Collezione, Primo Inventaro*** – of his 34 best instruments (28 violins, 3 violas, and 3 cellos) which were to be sent to his Milanese banker, Carlo Carli, to be sold as a single group (*a vendersi tutti unitamente*).

** BSCr, LC, ms. Cozio 73.

The moulds, tools, and workshop artefacts were also to be sent to Carli, and therefore, on the same day, the Count wrote a second inventory (*ibid.*, ms. Cozio 72):

Nota ossia inventaro delli modelli, forme di legno, e ferri particolari dell' Ant^o Stradivari e dell' Amati che si aggiungerebbero alla Collezione delle instrumenti di Antonio Stradivari.

Note, or inventory, of the models, moulds of wood, and individual metal tools of Antonio Stradivari and of Amati which are to be added to the Collection of the instruments of Antonio Stradivari.

The first page of this second inventory contains descriptions of cello and viola moulds. The descriptions of the violin moulds then follow (see illustration overleaf):

Forme da violini di d[ett]^o Ant^o Stradivari, tutte di legno di noce ripiene e con dieci buchi per l'uso di cui si espresse per quelle da viole.

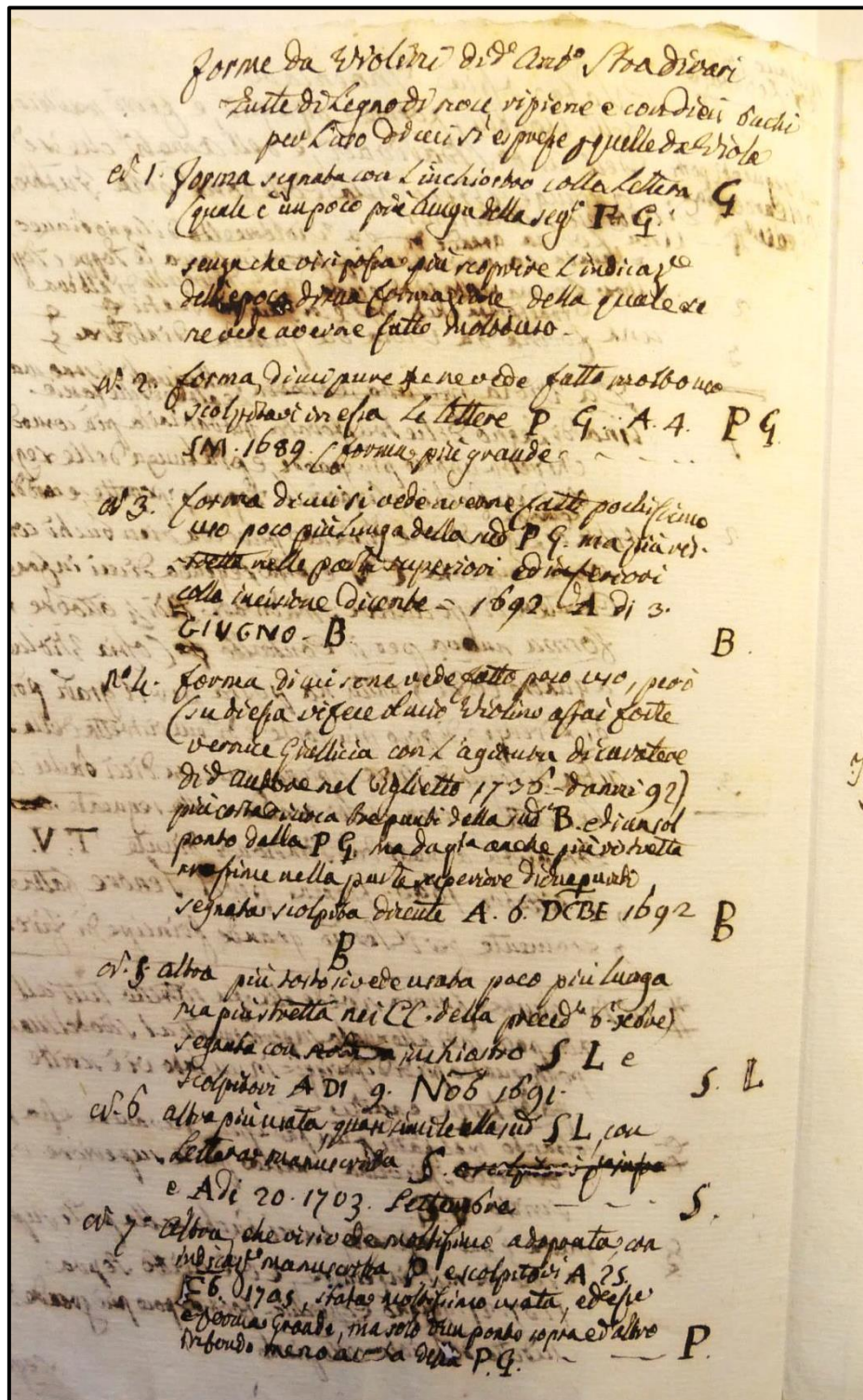
Moulds of violins of the aforementioned Antonio Stradivari, all of solid walnut wood and with ten holes, the use of which is explained [in the notes] for the violas.

The full-size violin moulds that Count Cozio then describes are identified by him as *G*, *PG* (4 June 1689), *B* (3 June 1692), *B* (6 December 1692), *SL* (9 November 1691), *S* (20 September 1703), and *P* (25 February 1705) – seven in total. All of these moulds are today exhibited at the Museo del Violino. The Museo also exhibits moulds that are identified by the letters *MB*, *S*, *P/B*, *T*, and *Q*, but none of these is mentioned by the Count. His inventory is written on a single piece of paper, approximately A3 size, folded booklet-style; there is no pagination, the seven violin-mould descriptions being set out on 'page 2'. It is possible that Count Cozio wrote descriptions of further moulds on a single loose sheet of paper which was placed within the fold; perhaps this individual sheet was subsequently lost.

The first entry in the Count's inventory of his Stradivari violin moulds describes the mould marked with the letter G:

N° 1 Forma segnata con l'inchiostro colla lettera G (quale è un poco più lunga della seg[na]^{ta} PG senza che vi si possa più scoprire l'indica[zi]on^e dell'epoca di sua formazione della quale se ne vede averne fatto molto uso.

No. 1: Mould marked with ink with the letter G (this [mould] is a little longer than [the one] marked PG, without anything further that would indicate the date of its making, and which has clearly been used many times.



The Count's final description is for the mould marked with the letter *P* and the date 25 February 1705:

N° 7 altra, che vi si vede moltissimo adoprata, con indicaz[ion]e manoscritta P, e scolpitovi A 25. Fb. 1705, stata moltissimo usata, ed esse e forma grande, ma solo d'un ponto sopra ed altro in fondo meno accosta[?] della P.G.

No. 7: another, which can be seen to have had heavy use, with handwritten indication *P*, and carved 'On the day of 25 February 1705', very heavily used, and this is a large mould, but only one *ponto** in the upper [bout width] and another [*ponto*] in the lower [bout width] less [i.e. narrower] when placed against the *P.G.*

* See boxed text below.

The Count's description is confirmed by the text which he inked on the *P* mould:

Questa è un poco più corta ed in qualche parte più stretta della forma P.G.

This [mould] is a little shorter and in some parts narrower than the mould *P.G.*

Note Count Cozio's careful differentiation between the moulds' inked markings: *PG* (smaller than the *G* mould; see *N° 1* on previous page) and *P.G.* (longer and wider than the *P* mould; see *N° 7* above).

The measuring system used by Count Cozio was that known as the 'Foot of the King' (of Paris) which was defined by the French government on 10th December 1799 as the result of 9,000mm divided by 27.706 = 324.839mm. One *Pied du Roi* was divided into twelve *pouces* (of 27.07mm) and one *pouce* was divided into twelve *lignes* (of 2.26mm). Count Cozio's equivalent Italian terms were *polici* and *ponti*.

If, following Count Cozio's comparative dimensional information in *N° 7* (above), one *ponto* (2.26mm) is added to the upper-bout and lower-bout maximum widths of the 1705 *P* mould (161mm and 200mm respectively**) the equivalent bouts of Count Cozio's *P.G.* mould would measure 163.26mm and 202.26mm. These *P.G.* bouts are thus much wider than the bouts of the *PG* mould which is dated 4 June 1689, and are also wider than the bouts of the *G* mould (see below). This dimensional evidence points to the existence of a larger-than-*G* mould which was lettered *P.G.* but with the letters perhaps representing *Più Grande* rather than *Poco Grande* (a term which might usefully be applied to the *PG* mould of 1689). A dimensional hierarchy of moulds can be constructed thus:

<u>Mould</u>		<u>UB width</u>	<u>CB width</u>	<u>LB width</u>	<u>Length</u>
<i>Più Grande</i> (1705 <i>P</i> + 2.26mm) <i>P.G.</i>		163.26mm		202.26	
<i>Grande</i>	<i>G</i>	161	103	201	350.4
<i>Poco Grande</i> (4 June 1689)	<i>PG</i>	161	103	200	348
<i>P</i> (25 February 1705)	<i>P</i>	161	102	200	348

** Measurements of the *P*, *PG*, and *G* moulds are sourced from *Antonio Stradivari: disegni, modelli, forme*.

The ribs on a violin are usually between 1.1mm and 1.2mm in thickness. The 'overhang' of the front and back plates (the distance by which they project beyond the vertical outer face of the rib) is variable, but, based on examples of Stradivari violins, a reasonable norm of 2.5mm can be proposed. Therefore, adding 1.15+1.15+2.5+2.5mm (i.e. 7.3mm) to a mould's 'raw' width-measurement should reveal a resultant instrument's extremity-to-extremity width. From the *Più Grande* (*P.G.*) mould a resultant violin's upper-bout and lower-bout widths would be:

UB 170.56mm (163.26 + 7.3) LB 209.56mm (202.26 + 7.3).

In his *Memorie per la costruzione ed addattamento delli stromenti da corda* ('Notes relating to the construction and arrangement of string instruments') Count Cozio makes some relevant comments about sizes and proportions of violins. Specifically, in the section *Corpo delli instrumeti* ('Body of the instrument'), he writes:

Must be fairly large but not enormous, of Stradivari the mould *G* is believed to be the best; however some [violins derived from the] mould *P.G.* are strong and good of voice but [the tone] approaches that of a contralto [viola] [*ma si approssima a quella del Contralto*].

This text (present author's translation) demonstrates the existence of a *P.G.* mould that was larger than the *G* mould, the increased internal volume of the resultant soundbox tilting the tone of the instrument towards that of a viola.

In the entry *Curve de' violini* Count Cozio writes:

The small [violin] moulds, and even the medium, need no longer be used nowadays, since people want great power combined with quality of sonority; but even less is it necessary to think (as has happened with the Parisians of the school of ... [blank space]) of making violins of still larger size than the Stradivari *P.G.* since if made with due proportions, the sonority would be too fat [*troppo grossa*]. On the contrary, it is observed that generally the best instruments come only from Stradivari's *G* mould, as I am in the process of demonstrating.

The Count's text clearly indicates that there were violins which were larger than those derived from the *G* mould (and, apparently, some violin makers in Paris were using moulds which were even larger than the Count's *P.G.* mould).

Count Cozio's 1808 description of the 1724 Stradivari violin which he would sell in July 1817 to Niccolò Paganini – *forma più grande P.G. [...] fortissimo di voce e quasi tenore* ('Mould larger *P.G.* [...] very powerful sonority, and viola-like' [in tone]) – is consistent with the two statements quoted above, and with the comment made by the Count on 29 May 1816 when he measured the 1724 violin: *Questo ha la voce più forte, e da tenore* ('This [violin] has the more powerful voice, and of viola [tonal character]'). In the same document* the Count reiterates his identification of the violin's source mould: *nella cassa marcato: forma P.G.* ('in the pegbox marked [lettered?]: mould *P.G.*').

* BScR, LC, ms. Cozio 47, folio 15r.

Using dividers (*prese col compasso*) and the *Pied du Roi* measuring system Count Cozio specifies (in May 1816) only two bout-width measurements for his 1724 Stradivari-Paganini violin:

1. Upper Bout; measured between the outer line of the purflings: *6 pollici* and $\frac{1}{3}$ *ponto* = 163.17mm
2. Lower Bout; measured between the outer line of the purflings: *7 pollici* and *6 ponti* = 203.05mm.

Count Cozio does not provide a measurement for this violin's border, i.e. the narrow width of plate-wood on the outside of the purfling** but a norm of 3.75mm can be proposed (i.e. 7.5mm for the combined border-width on the bass and treble sides of the plate). Therefore the upper- and lower-bout widths – extremity to extremity – on the 1724 Stradivari-Cozio-Paganini violin were:

UB 170.67mm (163.17 + 7.5) LB 210.55mm (203.05 + 7.5).

These results can be compared with the extremity-to-extremity results extrapolated from the raw *Più Grande (P.G.)* mould (see p.3, bottom):

UB 170.56mm LB 209.56mm.

** **NB:** not the plate overhang beyond the outside vertical face of the rib.

Count Cozio also states that the body length (extremity-to-extremity) of his 1724 Stradivari-Paganini violin is the same as on the 1716 Stradivari violin which he also owned, the length of the latter being defined by the Count as 13 *polic*i and 4 *ponti* (360.95mm).^{*} Subtracting 7.3mm for the plate overhangs and the rib thicknesses, i.e. 2.5+2.5+1.15+1.15mm, from this dimension reveals the length of the *Più Grande* mould: 353.65mm.

<u>Mould</u>		<u>UB width</u>	<u>CB width</u>	<u>LB width</u>	<u>Length</u>
<i>Più Grande</i>	<i>P.G.</i>	163.26mm		202.26	353.65
<i>Grande</i>	<i>G</i>	161	103	201	350.4
<i>Poco Grande</i> (4 June 1689)	<i>PG</i>	161	103	200	348
<i>P</i> (25 February 1705)	<i>P</i>	161	102	200	348

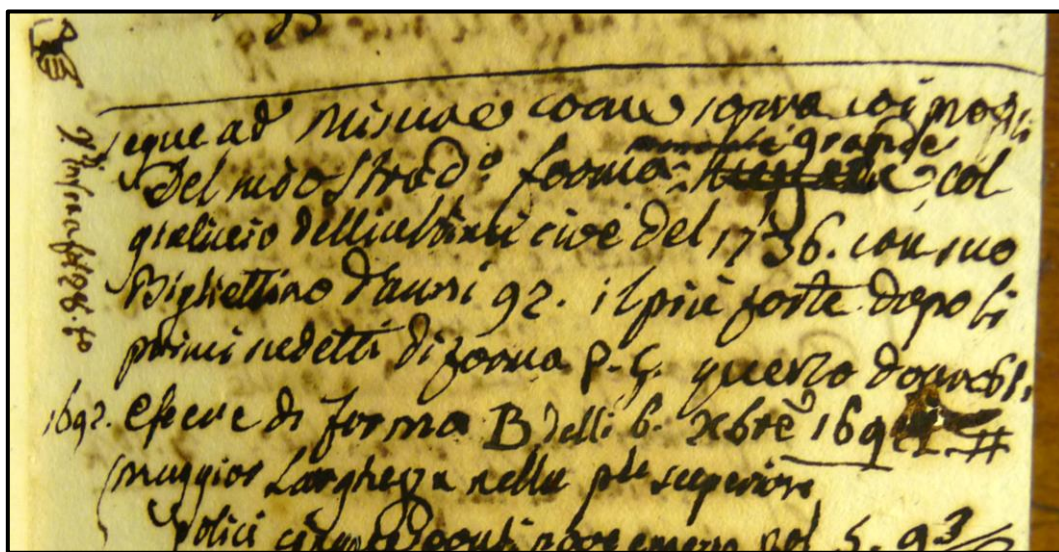
^{*} See www.themessiahviolin.uk for the present writer's article: *Count Cozio's measurements of his 1716 Stradivari violin*.

Count Cozio states that the C-bout minimum width on the 1724 violin's front plate, measured between the outer line of the bass-side purfling and its treble-side equivalent, is one *ponto* wider than the same width on his aforementioned 1716 violin – defined as *forma (P.G.)* – a width which is specified by the Count as *polic*i *tre*, *ponti nove e mezzo* = 102.68mm; therefore the 1724 violin's front-plate C-bout measurement (between the outer line of the two purflings) is 104.94mm (102.68+2.26). Adding 7.5mm for the combined width of two 3.75mm plate borders reveals the extremity-to-extremity C-bout width on the 1724 violin to be 112.44mm.

Subtracting 7.3mm from 112.44mm – i.e. 2×2.5mm for the plate overhangs and 2×1.15mm for the rib thicknesses – reveals the centre-bout width of the *Più Grande* mould: 105.14mm.

<u>Mould</u>		<u>UB width</u>	<u>CB width</u>	<u>LB width</u>	<u>Length</u>
<i>Più Grande</i>	<i>P.G.</i>	163.26mm	105.14	202.26	353.65
<i>Grande</i>	<i>G</i>	161	103	201	350.4
<i>Poco Grande</i> (4 June 1689)	<i>PG</i>	161	103	200	348
<i>P</i> (25 February 1705)	<i>P</i>	161	102	200	348

In his 300-page catalogue of measurements the Count makes yet another reference to the *P.G.* mould when he writes, with respect to a 1736 Stradivari violin: *il più forte dopo li primi sudetti di forma P.G.* ('The most sonorous after the aforementioned [violins] of the *P.G.* mould' [dated 1716 and 1724]):



BSCr, LC, ms. Cozio 47, folio 19r.

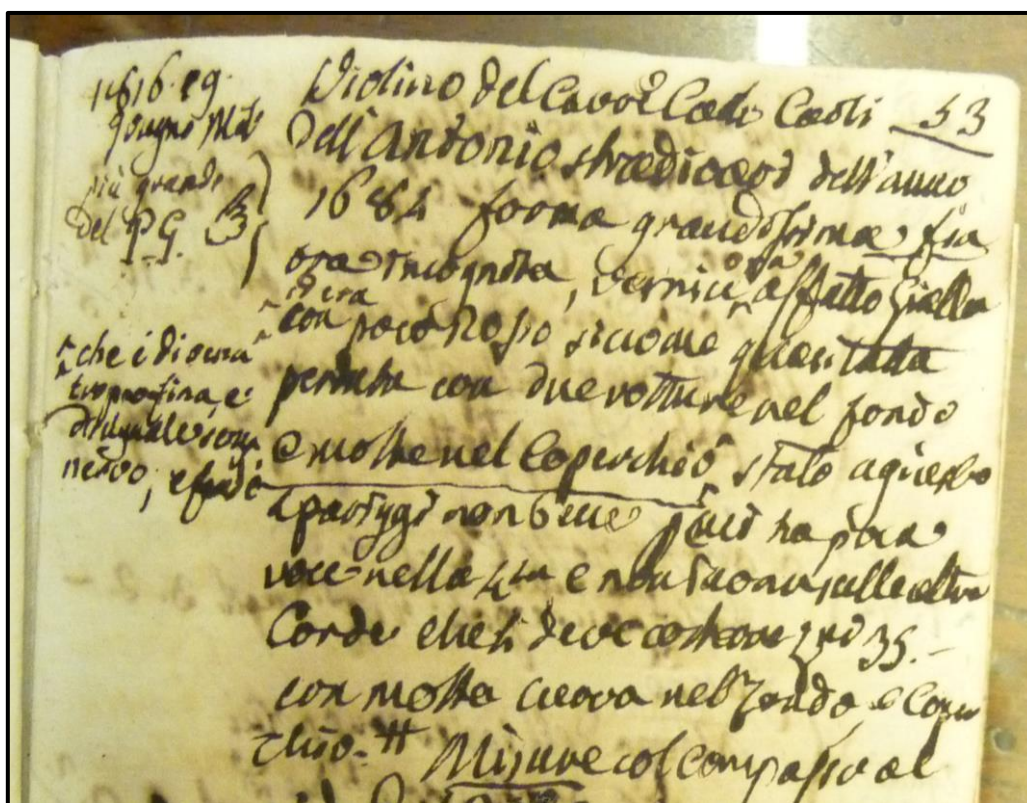
The *Più Grande* mould was also used by Stradivari in 1719 to make a violin which, in 1820, belonged to a Professor Giuseppe Moler. In a description of this violin Count Cozio writes:

Measurements of the most beautiful violin of Antonio Stradivari of Prof. Moler, of the year 1719. Red varnish; particularly fine workmanship, like mine [like my violin] of 1716 [...] Equal in all the measurements [to my 1716] [...] and consequently of mould *P.G.* of 1687.*

* ms. Cozio 47, folio 111v; the fourth numeral may be a '1' rather than a '7'.

Carlo Carli (see p.1 of this account) was not only Count Cozio's banker but also a violinist who was sufficiently talented to play alongside Niccolò Paganini in quartets. Carli owned a 1684 Stradivari violin which the Count described and measured on 9 June 1816:

Larger than the *P.G.* (*più grande del P.G.*) [i.e. larger than the violins derived from the *P.G.* mould]. Violin belonging to the nobleman Carlo Carli, of Antonio Stradivari, of the year 1684, [built around an] enormous mould, hitherto unknown (*forma grandissima, finora incognita*).



BScR, LC, ms. Cozio 47, folio 53r

The three bout widths of Carli's 1684 violin are measured by Count Cozio: *Misure col compasso al piede del Re detto Parigino e compresi li profili* ('... including the profiles' [i.e. measuring to the outer line of the purflings]). **NB:** two plate-border widths are specified as *ponti tre e mezzo* = 7.91mm:

UB *polici sei, ponti uno e due terzi* = 162.42+3.76+7.91 = 174.09mm (extremity-to-extremity)

CB *polici tre, ponti dieci e due terzi* = 81.21+24.10+7.91 = 113.22mm

LB *polici sette, ponti sette mezzo* = 189.49+16.95+7.91 = 214.35mm

– *più larghezza della forma P.G.* ('wider than [the violins derived from] the mould *P.G.*'). The equivalent widths of the Count's 1716 and 1724 *P.G.* violins are 169.94/170.67, 110.2/112.44 and 210.57/209.56mm.

Within the Count's five pages of measurements of Carli's violin there are eleven citations of the *P.G.* violins as being the reference against which all the measurements of Carli's violin are being compared, and, on all eleven occasions, Count Cozio writes '*P.G.*' – with two dots.

Within Count Cozio's index to his book of measurements (ms. Cozio 47) are the following sequential entries which once again identify the *P.G. (Più Grande)* mould:

Violino Ant^o Strad^o mio piu bello P.G. 1716 fol. 14

V^o d'Strad^o f^a [forma] P.G. mio come s^a [sopra] 1724 fol. 15

Following the deaths of both Carlo Carli and Count Cozio, the former's son, Giuseppe, drew up an inventory (May 1841) of the Count's unsold instruments and workshop artefacts which were still being held at the Carli offices in Milan. The inventory states that 'three wooden violin moulds of various dimensions' were still in their possession. If the *Più Grande (P.G.)* mould was sent to Milan but was not sold (and therefore was one of the three violin moulds identified by Giuseppe Carli in 1841) it should have been passed to Count Cozio's daughter, Matilde. After Matilde's death in 1853 her remaining instruments and artefacts were inherited by her cousin Rolando Giuseppe Dalla Valle. Following his death in 1891 some of the items – including the extant moulds – passed to his youngest son, Rolando Alessandro Dalla Valle (d. 1905), and then to Alessandro's wife, Paola; from her they were acquired by Giuseppe Fiorini and finally, in 1930, presented to the town of Cremona. However, the *Più Grande (P.G.)* mould is not exhibited at the Museo del Violino.

If the *Più Grande* mould was sold by Carlo Carli – to a Parisian violin-maker? – then there is no known record of the sale or the identity of the purchaser.

Nicholas Sackman: Associate Professor, Department of Music, University of Nottingham (retired). Author of *The Messiah violin: a reliable history?* (2015); see www.themessiahviolin.uk for details. Author of an historical study of the Stradivari *Habeneck* violin, published in the *Journal of the American Musical Instrument Society*, 2016, and re-published on the aforementioned website. Author of an historical study of the 'original' neck of the Stradivari *Soil* violin (website). Author of a detailed historical study of the two Guarneri *del Gesù* violins which belonged to John Tiplady Carrodus (website). Author of an extensive and detailed investigation into the reality of the 1724 Stradivari violin which Count Cozio di Salabue sold in 1817 to Niccolò Paganini (website). Author of an historical study of the Stradivari *Chant du Cygne* violin (*Journal of the Galpin Society*, March 2017). Author of a transcription and translation of the complete sales-ledger archive of Jacques Francais (Smithsonian Institution, Washington DC); see website. Author of a detailed historical examination of the Stradivari quartet of decorated instruments exhibited at the Palacio Real in Madrid, Spain; see website. Author of *The case of the missing mould* ('The Strad', June 2018). Author of a detailed examination of issues which surround both the *Cannone* violin in Genoa and the *Canon* violin sold by David Laurie (website). Further free-to-read research articles are available at the website.