

# Count Cozio's measurements of his 1716 Stradivari violin

## transcription, translation, commentary

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Within the archive of the documents left behind by Il Conte Ignazio Alessandro Cozio di Salabue is a thick booklet, approximately A5 in size, containing 150 folios; the booklet is identified at the Biblioteca Statale di Cremona, Libreria Civica, as 'BSCr, LC, ms. Cozio 47'. The booklet contains dozens of sets of detailed measurements which Count Cozio took from the string instruments which he owned; the first set of measurements is dated 1 April 1816 and the last 27 February 1823. Folios 13v, 14r, and 14v, dated 29 May 1816, contain the measurements which the Count took from a 1716 violin made by Antonio Stradivari. No other 1716 Stradivari violin appears within the booklet.

Throughout ms. Cozio 47 Count Cozio repeatedly identifies his use of the French *Pied du Roi* (Foot of the King) measuring system, authorised by Napoleon I in 1812 as a *mesure usuelle*, in which one *Pied* was defined as measuring 324.84mm. One *Pied* was divided into 12 *pouces* (of 27.07mm) and one *pouce* was divided into 12 *lignes* (of 2.26mm). The Count's equivalent Italian terms were *pollici* (almost always spelled *policì*) and *ponti*.

Count Cozio also repeatedly states that his front-plate measurements are 'taken with dividers' (*col compasso*) and that his width and length measurements 'include the purflings' (*compresi li profili*). Thus, in measuring the width of a bout, the legs of the dividers had their needle-tips positioned on the outer line of the purfling (bass and treble side of the front plate) and the resultant spacing of the tips was measured against a *Pied du Roi* rule. The rule was then used to measure the width of the border, i.e. the wood lying to the outside of the purfling; this width, on the 1716 violin, is defined by Count Cozio as ' $1\frac{2}{3}$  *ponti*' (3.76mm); see p. 4 of this account. This dimension has to be added, twice, – 'and thus  $3\frac{1}{3}$  *ponti*' (7.52mm) – to a purfling-to-purfling bout measurement in order to establish the distance across the full width of the front plate – i.e. edge-to-edge. The width of the border also has to be added, twice, to the cumulative purfling-to-purfling measurement of an instrument's front-plate length.

Count Cozio's ms. 47 text demonstrates that he had doubts as to whether his initial measurements of his 1716 Stradivari violin were as accurate as they could be. Perhaps the dividers which he initially used were of the curved 'outside' type – a type which could not be precisely anchored on the outer line of the purflings; alternatively, perhaps they had straight, one-piece, legs – a type which would have had the tips 'reaching', diagonally, for the measuring points. It is probable that the Count's 'more accurate dividers' (*compasso più esatto*; see p. 3 of this account) had legs which could be precisely adjusted by a threaded rod, the legs being hinged in the middle so that the lower halves could be positioned vertically and the two needle-tips placed exactly at the measuring points on the outer line of the purflings. This improved method of taking the measurements resulted in new dimensional results which, although only very slightly different from those that he had initially defined, prompted Count Cozio to amend his document both numerically and textually. These amendments demonstrate the Count's painstaking determination to produce the most accurate definition of the physical reality of his 1716 Stradivari violin (the violin which he admired above all others in his extensive collection).

It is this 1716 violin which many believe to be the instrument known today as the 'Messiah' violin, but Count Cozio's measurements clearly deny any connection between his violin and that which is displayed at the Ashmolean Museum in Oxford.



**1816, 29 mag[gi]°, Mil[an]° forma (P.G.)**

**Misure del mio piu bello e grande V[iolin]° di Ant[oni]° Stradivari del 1716.**

**Ver[ni]°e rossa prese col Compasso compresi li profili del Coperchio**

1816, 29 May, Milan, mould (P.G.)

Measurements of my most beautiful and large violin of Antonio Stradivari of 1716.

Red varnish, taken with dividers including the purflings of the front plate.

**Maggior larg[hezz]°a superiore polici sei ~~cinque ponti undeci, e due terzi~~ pol 5. ~~11.~~ <sup>2</sup>/<sub>3</sub>**

Maximum width in the upper part [upper bout]: 6 pollici

Count Cozio initially wrote *polici cinque ponti undeci, e due terzi* (5 pollici and 11<sup>2</sup>/<sub>3</sub> ponti) but this text was then crossed out and replaced with *sei* (6 pollici); the numeral 5 was modified to show as 6 and the 11. <sup>2</sup>/<sub>3</sub> crossed out. The initial measurement equates to 161.71mm; the subsequent *ratificate con compasso più esatto* measurement of 162.42mm is just 0.7mm wider.

6 pollici = 162.42mm.

Add 7.52mm (3<sup>1</sup>/<sub>3</sub> ponti) for the combined width of two borders: **total UB width = 169.94mm.**

**Minor larghezza nel petto fra li CC polici tre, ponti nove e mezzo pol. 3. 9. 6**

Minimum width in the chest between the CC: 3 pollici and 9½ ponti

Count Cozio variously represents *mezzo* (half) with ½, or with <sup>3</sup>/<sub>6</sub>, or with 6 (i.e. <sup>6</sup>/<sub>12</sub>). In this case he initially wrote a zero, 0 (with his usual bisecting horizontal line), to indicate that there was no subdivision of one *ponto*, but then, with his *compasso più esatto*, re-measured the centre bout and added an upper tail to the 0 to show as a 6. The words *e mezzo*, with their 'squeezed in' placement on the page, give every appearance of being a subsequent addition/correction. The initial measurement of 3 pollici, 9 ponti equates to 101.55mm; the *compasso più esatto* measurement of 3 pollici, 9½ ponti equates to 102.68mm.

3 pollici and 9½ ponti = 102.68mm

Add 7.52mm (3<sup>1</sup>/<sub>3</sub> ponti) for the combined width of two borders: **total CB width = 110.2mm.**

**Maggior larghezza inferiore polici sette, ponti sei ~~cinque, e tre q[uart]~~<sup>i</sup> pol. 7. 5. <sup>3</sup>/<sub>4</sub>**

Maximum width in the lower part: 7 pollici and 6 ponti

Count Cozio initially wrote *ponti cinque e tre q<sup>i</sup>* (5<sup>3</sup>/<sub>4</sub> ponti), but then crossed out *cinque e tre q<sup>i</sup>*, replacing it with *sei* (6 ponti); the numeral 5 was modified to show as 6 and the <sup>3</sup>/<sub>4</sub> crossed out. The difference between the two measurements is just 0.56mm.

7 pollici and 6 ponti = 203.05mm.

Add 7.52mm (3<sup>1</sup>/<sub>3</sub> ponti) for the combined width of two borders: **total LB width = 210.57mm.**

Side margin; rotated text

***Ratificate con compasso più esatto***

Checked with more accurate dividers

This annotation applies to *all* the measurements which appear on folio 13v.

The curly brace to the right of this annotation groups together the three measurements of width, just as the lower brace groups together the measurements of length.

***Longhezza dal ponticello (al taglio delle FF) al bordo superiore polici sette, e ponti uno, e mezzo pol. 7. 1. ½***

Length from the bridge (at the [inside] 'notch' of the *f*-holes) to upper border [i.e. to the outer line of the purfling at the neck]: 7 *pollici* and 1½ *ponti*

7 *pollici* and 1½ *ponti* = 192.88mm

***Longhezza dal ponticello al bordo inferiore polici cinque ponti nove 5. 9. ⅓***

Length from the bridge to lower border: 5 *pollici* and 9½ *ponti*

Count Cozio's numerical indication – ⅓ – is not mentioned in his written text; nonetheless, it is not an error since its half-*ponto* value is included in the Count's corrected calculation for the total length of the violin's soundbox (see below).

5 *pollici* and 9½ *ponti* = 156.82mm

***Spessore del ponticello, ponti uno e ⅔ – 1. ⅔***

Thickness of the bridge [measured at the foot]: 1⅔ *ponti*

1⅔ *ponti* = 3.77mm

***Larghezza dei due bordi, ossia loro spessore superiore ponti uno e ⅔ caduno e così ponti tre ed un terzo – 3. ⅓***

Width of the two borders, or their thickness, in the upper [part]: 1⅔ *ponti* each and thus 3⅓ *ponti*

3⅓ *ponti* = 7.52mm

***polici 13. 4. – \*      Totale longhezza del detto violino polici tredici ponti tre e mezzo ponto***  
***polici 13. 3. ⅓*** [the 3. ⅓ overwritten to show as 4. 0]  
 Total [body-] length of this violin: 13 *pollici* and 4 *ponti*

\* This written confirmation of the corrected total length of the soundbox has been written in an unused space on the left of the sheet of paper.

Count Cozio's *compasso più esatto* total body-length of 13 *pollici* and 4 *ponti* = 360.95mm.

The individual measurements of length, i.e. 192.88 + 156.82 + 3.77 + 7.52mm = 360.99mm.

The total length of the 'Messiah' violin's front-plate has been defined, using callipers, as 356mm (*The Strad*, March 2011).

***Il fondo in due pezzi vena bellissima larga da alta in basso***

The back in two pieces, the most beautiful flame[s], wide from the top to the bottom.

For an examination of the evidence relating to the directional angle of the back-plate flames on this 1716 violin see the present author's research article *The flames are rising* (free-to-read at [www.themessiahviolin.uk](http://www.themessiahviolin.uk)).

Side margin; rotated text

***La tratta dal ponticello, al capotasto, polici dodici p[on]<sup>ti</sup> due, e mezzo P. 12. 2. 6***

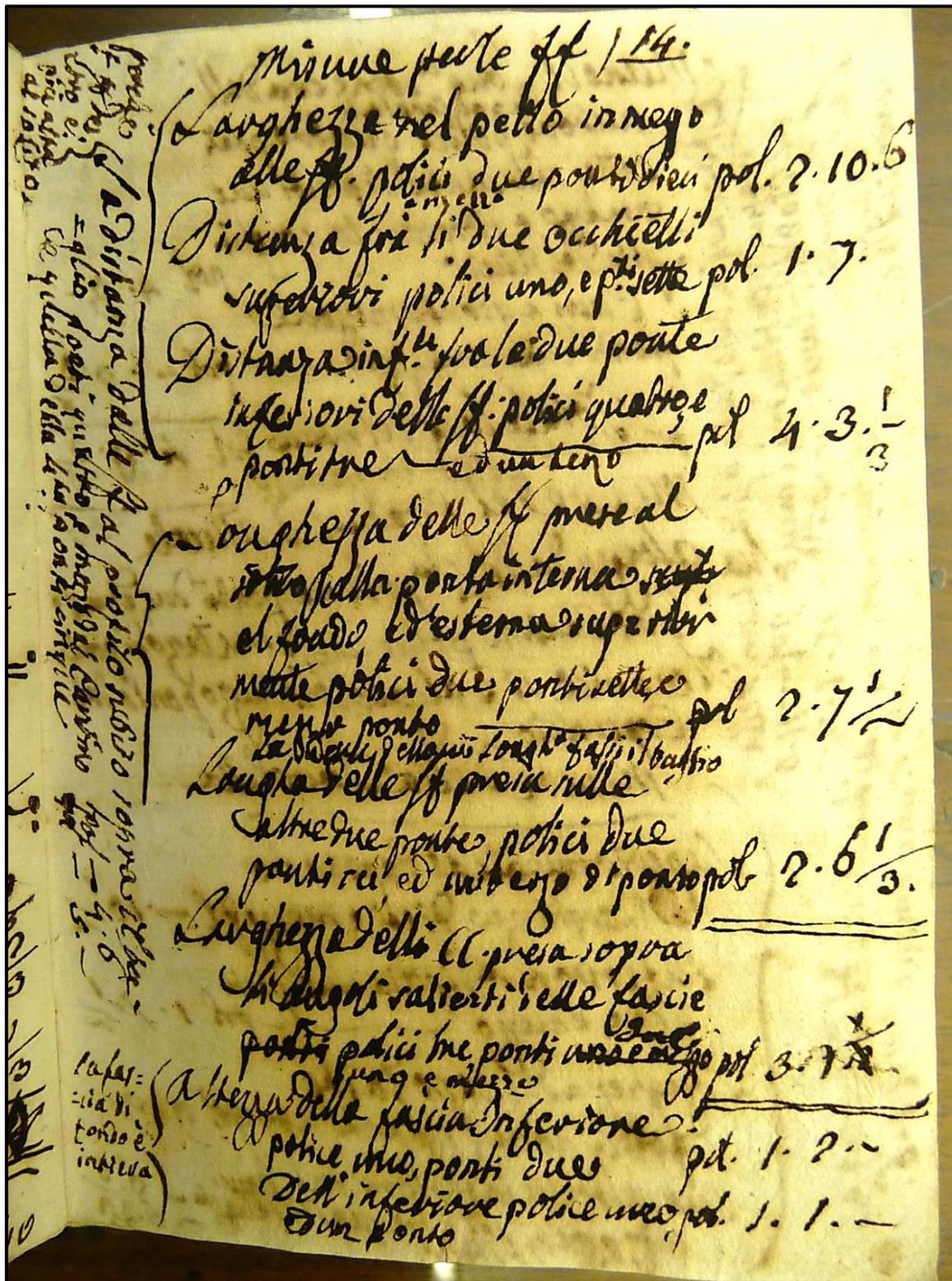
The length from the bridge to the nut: 12 *pollici*, 2½ *ponti*

This measurement defines the freely-vibrating string length from the top of the bridge, down the diagonal line of the strings, to the front face of the fingerboard nut.

12 *pollici*, 2½ *ponti* = 330.49mm.

**End of folio 13v**

contd. overleaf



ms. Cozio 47, folio 14r

**Misure per le ff**

Measurements for the f-holes

**Larghezza nel petto in mezzo alle ff. polici due ponti dieci pol. 2. 10. 6**

[‘squeezed in’ compasso più esatto correction] e mezzo

Width in the chest at the mid-point of the f-holes: 2 pollici and 10½ ponti = 77.87mm

***Distanza fra li due occhietti superiori polici uno, e p<sup>ti</sup> sette pol. 1. 7.***

Distance between the two upper eyes [of the *f*-holes]: 1 *pollice* and 7 *ponti* = 42.89mm

***Distanza inf.<sup>ri</sup> fra le due ponte inferiori delle ff: polici quattro, e ponti tre pol. 4. 3. 1/3***

[*compasso più esatto* correction] ***ed un terzo***

Distance between the two [equivalent] lower points of the *f*-holes [i.e. between the two lower eyes]: 4 *pollici* and 3<sup>1/3</sup> *ponti* = 115.8mm

Side margin; rotated text

[...?] ***f destro e più alta al solito***

[?the position of the] *f*-hole on the right [i.e. the treble *f*-hole] is higher, as usual

Side margin; rotated text

***La distanza dalle ff al profilo subito sopra il taglio ponti quattro e mezzo dal cantino pol. – 4. 6 e quella della 4<sup>ro</sup> ponti cinque pol. – 5. –***

The [transverse] distance on the ‘singing string’ side [i.e. the treble side of the front plate], measured from directly above the outer notch of the *f*-hole to the inner line of the [adjacent] purfling: 4<sup>1/2</sup> *ponti* = 10.17mm

and the [equivalent distance on the side] of the 4<sup>th</sup> string [the G string]: 5 *ponti* = 11.3mm

***Longhezza delle ff prese al solito alla punta interna al fondo, ed esterna superiormente polici due ponti sette e mezzo ponto pol. 2. 7 1/2***

Length of the *f*-holes, taken, as usual, from the inside point [of the wing] at the bottom and the outside [point of the wing] at the top: 2 *pollici* and 7<sup>1/2</sup> *ponti* = 71.09mm

***La [?] della più longh<sup>a</sup> fa[?] il taglio***

This ‘squeezed-in’ text resists explanation. Renzo Bacchetta omits it from his *Carteggio* transcription (Antonio Cordani, Milano, 1950).

***Longha delle ff presa sulle altre due ponte, polici due ponti sei, ed un terzo di ponto pol. 2. 6 1/3***

Length of the *f*-holes, taken between the other two points [of the wings]: 2 *pollici* and 6<sup>1/3</sup> *ponti* = 68.44mm

***Larghezza delli CC presa sopra li angoli salienti delle fascie polici tre ponti ~~uno e mezzo~~ due uno e mezzo pol. 3. 1 1/2*** [The 1 and the 1/2 are crossed out.]

Width of the Cs, taken above the projecting corners of the ribs: 3 *pollici* and 1<sup>1/2</sup> *ponti* = 84.60mm

Count Cozio appears to have decided that, after all, *ponti due* was not correct and the measurement really was *uno e mezzo* (as he had initially determined) but he couldn't erase his earlier cancellations. It is unclear whether Count Cozio was measuring between the inner projecting corners or the outer.

***Altezza della fascia inferiore police uno, ponti due pol. 1. 2. –***

Height of the rib in the lower part: 1 *pollice* and 2 *ponti* = 31.59mm

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***Dell'inferiore*** [superiore] ***police uno ed un ponto pol. 1. 1.*** –  
[Height of the rib] in the [upper] part]: 1 *pollice* and 1 *ponto* = 29.33mm

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Side margin, bottom-left corner

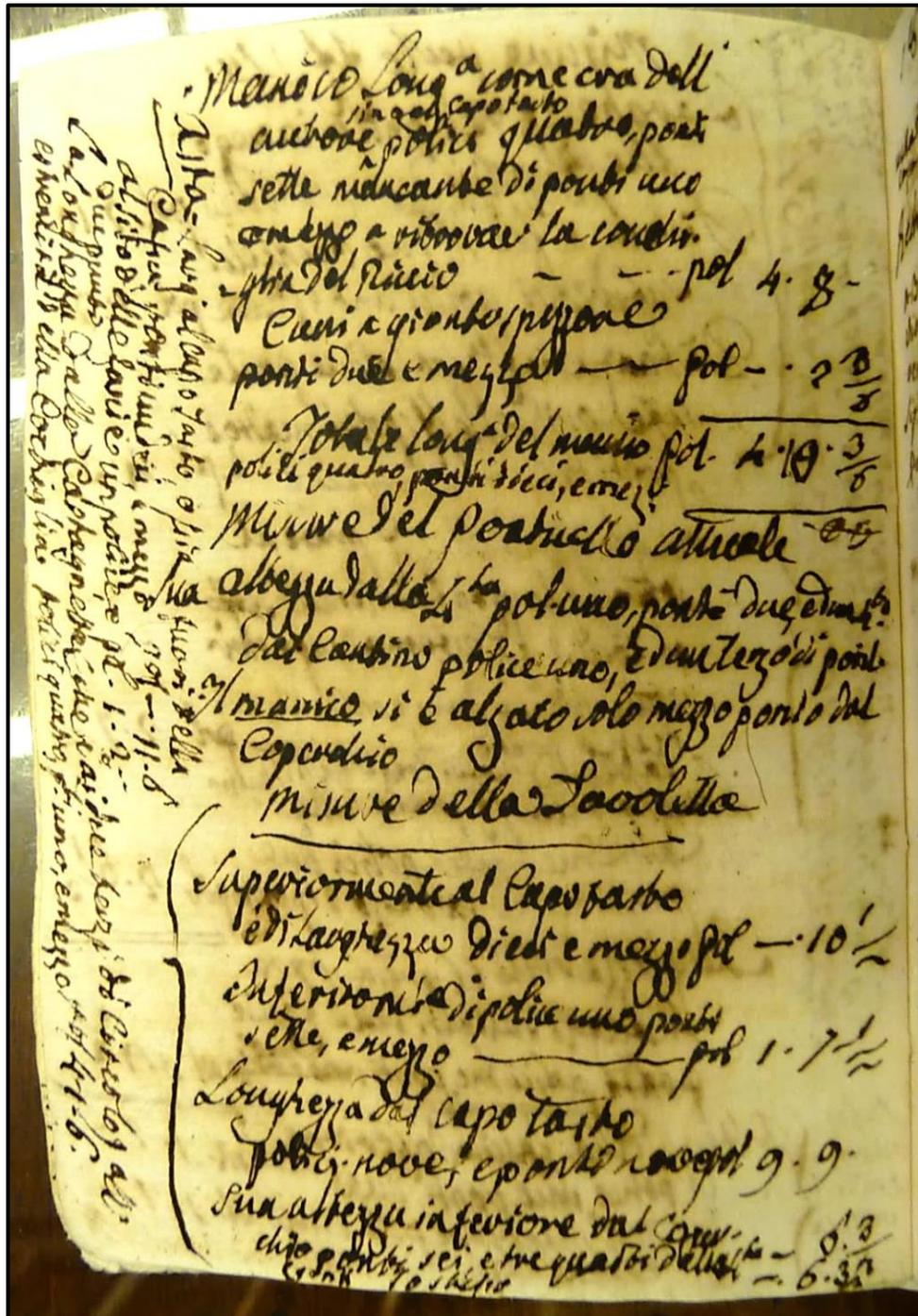
***la fascia di fondo è intiera***

The rib at the bottom [around the end-pin] is in one piece

The bottom rib on the 'Messiah' violin is in two pieces and the vertical joint is off-set to the left of the instrument's centre-line. See John Pringle's technical drawing of the 'Messiah' violin (1980). See also *Musical Instruments in the Ashmolean Museum: The Complete Collection* (Oxford, 2011, p.162) where John Dilworth writes: 'Unusually, there is a joint in the lower ribs [of the 'Messiah' violin]. Stradivari generally used a single length of maple to form the entire lower bout from corner to corner. This does not seem to be the case here, as the grain is not contiguous across the joint. The joint is not exactly aligned with the centre joint of the back, but is set slightly to the bass side. A small knifemark close beside the joint near to the back edge indicates the true centre.'

A photograph of the 'Messiah' violin's lower rib can be found on p. 163 of *Musical Instruments in the Ashmolean Museum*.

**End of folio 14r** \_\_\_\_\_ contd. overleaf



ms. Cozio 47, folio 14v

*Manico long[hezz]<sup>a</sup> come era dell'autore sino al capotasto polici quatro, ponti sette mancante di ponti uno e mezzo a ritrovar la conchiglia del riccio pol 4. 7 - [the 7 modified to show as 8 even though the word sette is not changed to otto]*

Length of the neck, as at the time of the maker [i.e. as Stradivari made it], as far as the [fingerboard] nut, 4 pollici 8 ponti = 126.36mm, [the neck] drooping by 1½ ponti [3.39mm] in reaching the shell of the curl [i.e. drooping from an imaginary horizontal line extended from the body of the violin to the scroll].

The length of the original neck of the 'Messiah' violin has been defined as 120.5mm (*The Strad*, March 2011).

***Cuni agionto spessore ponti due e mezzo pol – . 2<sup>3</sup>/<sub>6</sub>***

The thickness [i.e. maximum front/rear dimension] of the wedge inserted [at the foot of the neck]:  
2½ ponti = 5.65mm

The wedge – triangular in cross-section – was fitted by G B Guadagnini. Its thickness increased the length of neck as fitted by Stradivari (126.36mm) to 132.01mm – see also next entry.

... *con manico dato indietro dal Guadagnini come tutti li altri del Stradivari*

... 'with a tilted neck by Guadagnini as with all the others of Stradivari' [which I own]

Biblioteca Statale di Cremona, Libreria Civica, ms. Cozio 42, page 7; April 1801; Stradivari violin label-dated 1730.

***Totale long[hezz]<sup>a</sup> del manico polici quatro, ponti dieci e mezzo pol. 4 . 9. <sup>3</sup>/<sub>6</sub>***

[the 9 altered to 10 because of the modification of 7 to show as 8; see previous page – *Manico long[hezz]<sup>a</sup>*]

Total length of the neck: 4 pollici and 10½ ponti = 132.01mm

Combining the longitudinal distance from the foot of the bridge to the outer line of the purfling at the neck (192.88mm) with the width of the border-wood (3.75mm) and the length of the neck up to the front face/edge of the fingerboard nut (132.01mm) produces a total of 328.64mm. Raising one end of this imaginary line from the foot of the bridge to the top of the bridge would increase the overall length by approximately 2.5mm; i.e. to 331.1mm. This dimension can be reassuringly compared with the freely-vibrating string length specified in the side-margin rotated text on folio 13v (see p. 4 of this account): 330.49mm.

***Misure del ponticello attuale***

***Sua altezza dalla 4<sup>a</sup> pol. uno, ponte due ed un q[uar]<sup>io</sup>***

***dal cantino police uno, ed un terzo di ponto***

***Il manico si è alzato solo mezzo ponto dal coperchio.***

Measurements of the current bridge ['current' as in 1816; the bridge probably made by Guadagnini]

The height at the fourth [G] string: 1 pollice and 2¼ ponti = 32.15mm

[The height] at the 'singing string' [E string]: 1 pollice and one-third of 1 ponto = 27.82mm

The [underside of the] fingerboard is only half of 1 ponto (1.13mm) above the front plate [where the fingerboard starts to project forwards over the front plate].

Side margin; rotated text

***Asta: Larg<sup>a</sup> al capotasto, ossia fuori della cassa ponti undeci e mezzo pol – 11. 6***

***al sito delle fascie un police e due ponti pol – 1. 2.***

***La lunghezza dalle castagnetta (che ai due terzi di circolo) alla estremità della cochiglia polici quatro, p[on]<sup>ti</sup> uno, e mezzo pol 4. 1. 6***

Shaft: the width at the nut, that is, outside the box [of pegs]: 11½ ponti = 25.99mm

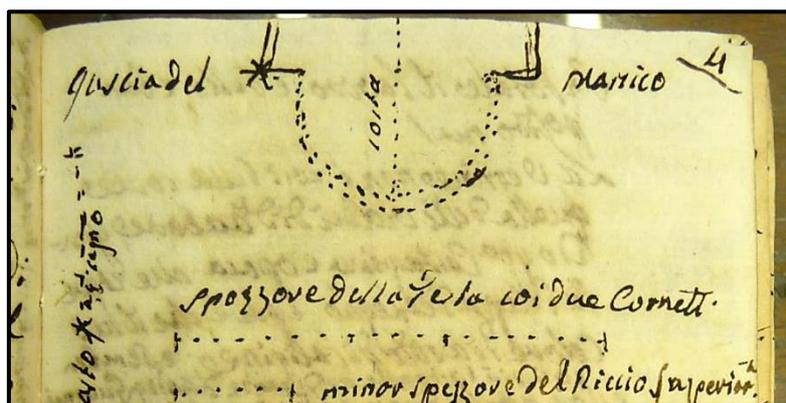
[The width of the shaft] at the point where it meets the rib: 1 pollice and 2 ponti = 31.59mm

The length from the 'castanet' (its shape being two-thirds of a circle) to the edge of the 'shell': 4 pollici and 1½ ponti = 111.67mm.

Count Cozio's terms – *castagnetta* and *co[n]chiglia* – are explained in the writings which he grouped within his *Memorie per la costruzione ed addattamento delli stromenti da corda* ('Notes [in alphabetical order] relating to the construction and arrangement of string instruments' (BSCr, LC, ms. Cozio 9) which Renzo Bacchetta presents as the *Liutologia* section of his 1950 *Carteggio* publication. Within the 'C' items Count Cozio identifies the *Covino ossia castagnetta*, which he explains as 'The upper part of the back plate which supports the neck' (present author's translation); i.e. the back-plate button. Elsewhere within the 'C' items the Count identifies the *Conchiglia* ('shell') *per violino e viola* (note that celli are excluded). The Count's *conchiglia* refers not to the scroll but to the semi-circular shaping of the wood at the bottom of the rear of the peg-box

(underneath the G-string peg – the point which today is commonly identified as the ‘chin’). Count Cozio is thus drawing a distinction between the shape of the *conchiglia* on a violin/viola and the shape of the equivalent feature on cellos where the wooden semicircle ‘emerges’ from between the wooden walls of the peg-box like a tongue poking out from a mouth.

The identification of the *conchiglia* as the peg-box chin is confirmed by Count Cozio within his lengthy description (with measurements) of a viola made by Antonio and Gerolamo Amati in 1612 (BSCr, LC, ms. Cozio 47, folio 3r *et seq.*). At the top of folio 4r the Count draws a simple outline sketch of this viola's chin, viewed from behind; the sketch shows the ‘tongue’ projecting from the peg-box walls on either side; i.e. it appears to be a sketch of the chin of a cello, not of a viola. But, as Count Cozio comments: ... *fatto come quello de violoncelli e grossa che indica d'una viola assai grande* ('... made like that of a cello, and thick, which indicates that this was a very large viola'). Adjacent to his sketch Count Cozio has written *guscia del manico*; the word *guscia* translates as ‘shell’.



ms. Cozio 47, folio 4r

The Count's measurement of 111.67mm, therefore, is between the rounded edge of the back-plate button and the rounded edge of the peg-box chin, these two semi-circular features facing each other below the underside of the neck.

It will have been noted that, within the *Manico long*[hezz]<sup>a</sup> *come era dell'autore* item (see earlier), Count Cozio identifies *la conchiglia del riccio*; in this case the additional term *del riccio* makes clear his reference to the violin's scroll.

### *Misure della Tavoletta*

*Superiormente al capotasto è di larghezza diedi e mezzo pol - . 10 ½*

*Inferirom[en]<sup>le</sup> di pollice uno ponti sette, e mezzo pol 1. 7 ½*

*Longhezza dal capotasto polici nove, e ponti nove pol 9. 9.*

*Sua altezza inferiore dal coperchio ponti sei e tre quarti della 4<sup>a</sup> - 6. ¾*

[...?] - 6. 3

Measurements of the fingerboard [?newly made by Guadagnini]

The width at the upper end, at the nut: 10½ *ponti* = 23.73mm

The width at the bottom [wide] end: 1 *pollice* and 7½ *ponti* = 44.02mm

The length of the fingerboard, measured from the nut: 9 *pollici* and 9 *ponti* = 263.97mm.

The height of the fingerboard at the lower [wide] end, above the front plate, by the G-string: 6¾ *ponti* = 15.25mm.

[...?] 6½ *ponti*.

**End of folio 14v**