

Tuning trends in large string bass instruments,
a talk by Peter McCarthy for the ISB Conference, 2009

Examining historical instruments is informative and interesting, but it's no certain guide to knowledge of their original tuning, function or pitch. Even the place and time of original construction may be difficult to assess. Disagreement exists about one famous and often-copied instrument: the Ventura Linarol (1585, Padua) in the Vienna Kuntshistorische Museum. Alfred Planyavsky tells us [Baroque Double Bass Violone 1998 p.156] that while Gerhard Stradner views it as a rare example of a double bass in original condition, Karel Moens sees it as a double bass "put together with various parts" from the 17th and 18th centuries.

The London luthier, Roger Dawson, is very illuminating on the proportions of the neck to the body: the ratio on a 19th century "London" bass is 3:4 (18 inches on the neck, 24 inches over the body). A modern D stop on a double bass of that period produces a much more abstruse ratio - 43:60. In other words, the neck and therefore the string length have been reduced, by approximately 2 inches, from about 44 inches to the "standard" 42 inches of today.

In the extra supplement to no. 256 of the Strad magazine (August 1911, page 132), Towry Piper wrote an article about the "Bottesini" Testore with measurements and pictures. He had examined and measured the instrument during Bottesini's lifetime ("some time in the early eighties"). Bottesini died in 1889 and Claude Hobday acquired it in 1894, after which it was converted to 4 strings. Piper observes that it lost "about an inch" in the string length during the conversion. Prior to Bottesini's ownership, Thomas Martin declares it to have been a 4 string instrument! [Martin "In search of Bottesini" ISB 10, I 983]

This instrument has a label which gives a date of 1716. At that time it is likely to have been fretted. Typically there are 7 frets, encompassing the range of a fifth from the open string. The 7th fret comes at the root of the neck on a D necked bass, a position in which it will not stay: the steep flare at the base of the neck will simply force it out of place unless it is secured by an extra tie between the fingerboard and belly. A longer neck is required for 7 frets. Why assume that basses were fretted? Viennese basses were fretted (as late as 1828 to judge from the Harmonicom report of Hindle's performance in Prague); Michel Corrette (*Méthode*.....1781) describes and depicts them; Praetorius depicts frets; and a wealth of iconographical evidence supports their use.

Additionally, the age of the double bass specialist had not yet arrived. Johann Sebastian Bach's testimonials for students at the Thomas Schule in Leipzig make it clear that students were expected to play several instruments proficiently. [For example *The New Bach Reader*, numbers 112, 148, 153 154, 234 etc.] That was also the case with the training of Stadtpfeifer musicians, expected to master a range of both wind and string instruments: Johann Joachim Quantz is famous as a flute player but at the age of 21 he was appointed first oboe in the ensemble of Augustus II's chapel in Dresden.

It's interesting to note what the *New Grove dictionary* (1980. volume 18 p.51) has to say about the demise of the Stadtpfeifer: as their ancient rights were swept away by free exercise of trade following the French Revolution [1789], the increasing technical demands "in music after 1790" also led to the "replacement of...the all round musician.... by a new type, the specialist". Before that time, the large bass instrument standing in the corner would often be played by a non-specialist for whom frets would be essential.

Duane Rosengard's preface to his work on Cremonese double basses [Duane Rosengard "Contrabassi Cremonesi". Cremona, Turris 2000] sheds a great deal of light on alterations in very early basses. He draws a very clear distinction between the earliest Brescian basses and those instruments developed late in the 17th century, apparently specifically as doubling instruments and very much the precursor of our modern "double" bass. He observes that "most if not all large basses made before 1650 have lost their necks and heads". He finds this particularly surprising in relation to those instruments attributed to Gasparo da Salo, in view of the generally excellent state of preservation of the bodies of these highly prized instruments. Highlighting 3 particular facets of these early instruments - greater width between the f holes to accommodate a wide bridge, greater width at the root of the neck for a neck and fingerboard that will take more than 4 strings and thirdly the possibility that they were originally fitted with shorter necks - he goes on to observe that since "these heads and necks were deemed useless, and consequently discarded, suggest that at some point they were rendered obsolete". To adapt these acoustically satisfactory bodies to later requirements, ie. as a "contrabasso" for 18th century ensembles, it was easier to fit them with a complete new neck and head.

Though few instruments survive unscathed, there are many contemporary literary sources. Each writer is only telling us of what he has actually seen, or heard of from others, or read about, and that information must have been acquired in advance of the publication date (not after!). An original source is information unaltered by time, though our understanding of it may be imperfect.

I have made a list of contemporary sources. It is not absolutely comprehensive; it's still work in progress. It's drawn from primary sources, well researched secondary sources and also private contributions from friends and colleagues (and critics). All of the most commonly quoted primary sources are included. Gathering this information together in the following lists will, I hope, prove to be a helpful resource.

List 1.

A simple chronological list of tunings

1528	G' C F A d g	Agricola	WITTENBURG
1546	G' C F A d g	Gerle	NURNBERG
	A' D G B e a'		
1592	range G' to d'	Zacconi	VENICE
	<i>implies G' C' F a d g + range to 7th fret on top string d'</i>		
1609	D' G' C E A d	Banchieri	BOLOGNA
	G' C F A d g		
1611	G' C F A d g	Banchieri	BOLOGNA
1613	G' C F A d g	Cerone	NAPLES
	A' D G B e a		
1619	G' C F/E A d g	Praetorius	WOLFENBUTTEL
	F# B' E A d g		
	A' D G B e a		
	D' G' C E A d		
	D' E' A D G		
	E' A' D G c		
	F' C G d a		
1635 + 40	G' C F A d g	Doni	ROME <i>violone da gamba</i>
1636	5th below the Basse de violon (Bb' F c g)	Mersenne	PARIS
			<i>"a sixth part in the manner of Lorraine"</i>

1677	G' C F A d g F' A D F# B	Prinner	VIENNA
1677	E'/G' A D G	Bismantova	FERRARA
1687	G' C F A d g E' A' D G	Speer	ULM
1688	G' C F/E A d g	Falck	NURNBERG
1694	F'/G' A D F# A G' C F A d g	Talbot	OXFORD
1695	A' D G B e a G' C F A d g A' D G A d g	Merck	AUGSBURG
	<i>also gives "French" bass tuning Bb F c g</i>		
1701	G 'A' D G	Janowka	PRAGUE
1701	no tuning or number of strings	Brossard	PARIS <i>violone, c'est un double basse</i>
	<i>"je suis fort surpris que l'usage n'en soit plus frequent en France"</i>		
c.1715	no tuning, 5 pegs	Weigel	NUREMBERG <i>violone</i>
1722	depicts 6 pegs but 4 strings	Bonnani	ROME
	<i>violone, e armato di sei corde</i>		
before 1723	G' C E	Cousser (Kusser)	commonplace book
1724	range F' to g'	Rabassa	SPAIN
	<i>Xosé Crisanto Gádara suggests this implies either F' A' D G or F' A' D G c</i>		
1732	G' C F A d g	Majer	NUREMBERG
	<i>a plagiarist of Matheson and Walther</i>		
1732	D' G' C E A d G' C F/E A d g	Walther	LEIPZIG
1737	E' A' D G C' G' D A	Stossel	CHEMNITZ
1738	D' G' C E A d E' A' D G C' G' D A G' C F A d g	Eisel	ERFURT
	<i>"but the majority tune it in 4ths"</i>		
1740	4 strings	Grassineau	LONDON
	<i>violono "it has a noble effect in great concerts"</i>		
1750	E' A' D G	Paneraï	FIRENZE
1752	E' A' D G or 5 strings	Quantz	BERLIN <i>"the so called</i>
	<i>German violone [Deutsche violon] with 5 or 6 strings has been justly abandoned"</i>		
1756	use of 3 strings mentioned	L. Mozart	SALZBURG
1767	(C') G' D A F' A' D F# A	Sauveur (Diderot's "Encyclopedie")	PARIS
1769	4 or 5 strings with frets	L. Mozart	SALZBURG <i>grosse Bass oder violon</i>
1776	4 strings in 4ths	Castillon (supplement to Diderot)	PARIS
	<i>basse-double ou double basse</i>		
1776	3 or 4 strings	Hawkins	
	<i>"it seems that this appellation [violone] was formerly given to that instrument which we now call the violoncello"</i>		
1779	no tuning or number of strings	Hoyle	LONDON
	<i>violone "it is used only for great Consorts, Operas, and other publick Musick"</i>		
1780	F' G' D A 3 string tuning, presumably G' D a	Laborde	PARIS

1781	F' A' D F# A E' A' D G G' D A F# B' E A d	Corrette	PARIS
1787	F' A' D G c G' C F A F' A' D G F' A' D G c	Kobrich	BONN
1782	F' A' D G G' A' D G	Petri	LEIPZIG
1790	F' A' D F# A F' A' D G G' A' D G	Albrechtsberger	LEIPZIG
1790	C' G' D A	Gehot	LONDON
1791	E' A' D G G' D A C' G' D A	Galeazzi	ROME
1791	C' G' D A	Busby	LONDON
1802	E' A' D G D' A' D G	Koch	FRANKFURT
1807		Koch also published in	LEIPZIG
1809	E' A' D G (C') G' D A B' E' A D A' D G c	Hause	DRESDEN
1810 (+29)	G' C F A F' A' D F# A	Fröhlich	BONN
1813	C' G' D A	Franconeur (written 1777, Fetis)	PARIS
1816	G' C F A E' A' D G F' A' D G G' A' D G C' G' D A F' A' D F# A F' C G	Nicolai	LEIPZIG
1818	C' G' D A Italian A' D G English	Jones	LONDON
1818	4 strings 3 strings <i>most common</i>	Palatin	SEVILLE
1820	A' D G	Granelli	VENICE
1823	A' D G <i>Italian</i> G' D A <i>French</i> E' A' D G <i>German</i>	Asioli	MILAN
1826	F'/G' C F	<i>Cäcilia</i> periodical	MAINZ
1828	E' A' D G G' C F A F' A' D F# A	Wettengel	ILMENAU
1828	E' A' D G G' D' A	Hause	PARIS

1834	F' A' D F# A	Hartman	PARIS
1835	G' C F A	Schilling	STUTTGART
	F' A' D F# A		
	F' A' D G		
1837	E' A' D G	Seyfried	VIENNA
	F' A' D G	<i>this is a re-edition of Albrechtsberger 1790</i>	
	also recognises 3 string tunings		
1837	F' A' D G	Kastner	PARIS
	E' A' D		
	F' A' D F# A		
1839	E'/F' A' D F# A	Jeitteles	VIENNA
1840	G' D A	Dalmaine & Co	LONDON
1844	G' D A	Berlioz	PARIS
	E' A' D G		
1846	A' D G	Rossi & Anglois	MILAN
	G' D G		
1849	F' A' D F# A	Gassner	STUTTGART
	E' A' D		
1854	F' A' D G	Hindle	VIENNA
1860	E' A' D G	Labro	PARIS
	F' A' D F# A		
1865	E' A' D G	Verrimst	PARIS

This is a simple chronological sequence of tunings for large string bass instruments up to 1865. I believe it includes the majority of the sources up to 1750. I'm still collecting. It's a confusing welter of information (28 different ways of tuning a large string bass instrument) that can bewilder the reader. Especially if they are spread across many pages of a book, or books. Here follow a number of other lists, subdividing the information in different ways.

There is an essential difference between contrabasso tunings whose top string is at the bottom of the bass stave and tunings that reach into the tenor register (where the highest string sounds at the top of the bass clef). Such instruments play at sounding pitch; the lowest string may be in the contrabass register but it is also the least accessible mainly suitable for occasional cadence notes. Admittedly, Agazzari (Siena 1607) advises the violone player to stick to the thick strings - "tratenendosi piu che si puo, nelle corde grosse, toccando spessio i contrabassi". This is not "contrabasso" in the modern sense: he also says of the trombone that it can be a double bass for the small 4 foot organ (one octave higher than sounding pitch) in small ensembles - "il trombone in picciol concerto s'adopera per contrabasso, quando sono organetti all'ottava alti". It is inconceivable that he expected that trombone part to grovel beneath the bass stave while accompanying an organ transposing up an octave. Wide separation of parts was not a feature of writing at this time, still considered undesirable by Johann Joachim Quantz 150 years later [Versuch 1752].

Here are those tuning that reach into the tenor register, extracted from the first list.

List 2.

The 6 string "G violone"

1528	G' C F A d g	Agricola	WITTENBURG
1546	G' C F A d g	Gerle	NURNBERG

1592	A' D G B e a range G' to d'	Zacconi	VENICE
	<i>implies G' C F a d g + range to 7th fret on top string d'</i>		
1609 +1611	G' C F A d g	Banchieri	BOLOGNA
1613	G' C F A d g	Cerone	NAPLES
1619	A' D G B e a G' C F/E A d g F# B' E A d g A' D G B e a	Praetorius	WOLFENBUTTEL
1628	C E A d g	Hizler	TUBINGEN
1635 + 40	G' C F A d g	Doni	ROME
1677	G' C F A d g	Prinner	VIENNA
1687	G' C F A d g	Speer	ULM
1688	G' C F/E A d g	Falck	NURNBERG
1694	G' C F A d g	Talbot	OXFORD
1695	A' D G B e a G' C' F A d g A' D G A d g	Merck	AUGSBURG
1700	Kaiser recommended to use the violoncello VIENNA <i>"das Violoncello bey dero music zu introduciren"</i> Viennese court records (Die Musiker in Archivbestand des kaiserlichen Obershofmeisteramtes Herwig Knaus Vienna 1967-9)		
1722	depicts 6 pegs but 4 strings	Bonnani	ROME
		<i>violone, e armato di sei corde</i>	
1732	G' C F A d g	Majer	NUREMBERG
		<i>a plagiarist of Matheson and Walther</i>	
1732	G' C F/E A d g	Walther	LEIPZIG
1738	G' C F A d g	Eisel	ERFURT
1752		Quantz	
	"the so called German violone with 5 or 6 strings has been justly abandoned"		

the "G violone" in retirement?

<i>before</i> 1723	G' C E	Cousser (Kusser)	commonplace book
1787	G' C F A	Kobrich	BONN
1810 (+29)	G' C F A	Fröhlich	BONN
1816	G' C F A	Nicolai	LEIPZIG
1828	G' C F A	Wettengel	ILMENAU
1835	G' C F A	Schilling	STUTTGART

Another tuning that can play into the 8ft register (without going above the frets)

1620	F' C G d a	Praetorius	WOLFENBUTTEL
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c.1715	no tuning, 5 pegs	Weigel	NUREMBERG <i>violone</i>
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Fifteen writers refer to it, dating from 1528 to 1738 and showing 5 variations. Majer 1732 was most likely plagiarising Walther and Mattheson. Both Banchieri and Doni's repeat it in 2nd publications. Bonnani illustrates a 6 six string instrument but is not specific about its tuning. In fact his picture has only 4 strings but there are 6 pegs and the short text is specific that it has 6 strings.

14 references to the tuning in G, three also mention a variant of the 4th string down: E rather than F (not later than 1695). Four scholars offer a tuning a tone higher, in A and one (Merck 1695), a mix of the G and A tunings. Praetorius gives this higher tuning for *viola bastarda* as well as *klein bass-viol da gamba*. Jason Paras [The Music for the Viola Bastarda. Indiana University Press 1986] shows this virtuosic style requires a range of three octaves, generally from D, until the end of the 16th and beginning of the 17th century when an alternate range a 4th lower began to be used.

I am grateful to Mr. Loe van den Bosch of the Netherlands for information about Hizler (1628). It is obviously related to the 6 string violone though I omitted it from list 1 as it does not have a low string in the contrabass range. Around 1715, Weigel (in Nuremberg) depicts an instrument he calls violone, with pegs. Sadly he does not note a tuning for it. The non-transposing nature of these instruments is further supported by the recommendation in 1700 to the Kaiser to accept the use of the violoncello. [Viennese court records]. Planyavsky dates 'cellos in the personnel roster from 1709, though he is frank that these records are incomplete. There is one other tuning that spans the bass clef from an octave below to the top line: Praetorius' *Gross quint bass* F' C G d a (range in the frets F' to e'). It is a solitary example.

In 1752 Quantz, obviously no fan of the Deutsche violon, declared it justly abandoned. It had disappeared from Italian tracts after the middle of the 17th century and from the last decade of the century it was gradually ousted by the violoncello in the German speaking countries. .

A curious contrabasso tuning appears 1752: G' C F A. Five authors, exclusively in the German speaking countries mention it from 1787 to 1835. Is this the last sight of the Deutsche violon? For 210 years writers had acknowledged the 6 string tuning from G. Did it take a further 100 years for the memory of it to vanish completely?

In the years before 1723 Cousser made a note, sandwiched in his commonplace book between orchestra lists, payment records, letters, cures and recipes [Yale University library], of a tuning G' C E.

Removing the five 8 foot pitch tunings from list 1 cuts the options down to 21. Splitting the list at 1752, when Quantz pronounced the Deutsche violon dead, there are eleven contrabasso options before and fifteen after.

List 3.

The 6 string violone in contrabasso.

1609	D' G' C' E A d	Banchieri	BOLOGNA
1619	D' G' C E A d	Praetorius	WOLFENBUTTEL
1732	D' G' C' E A d	Walther	LEIPZIG
1737	D' G' C E A d	Stossel	CHEMNITZ
1738	D' G' C' E A d	Eisel	ERFURT

1722 depicts 6 pegs but 4 strings Bonnani ROME *violone*

It is not known which 6 string tuning Bonnani refers to: the text is specific - "e armato di sei corde" - and though supported by the pegs in the illustration, is contradicted by the 4 strings depicted.

There are only 5 references in this list, and the mysterious Bonnani picture. If Bonnani's instrument is the higher of the 6 string instruments, then there is only one Italian example: Banchieri 1609, significantly not repeated in his 1611 publication. If Bonnani's instrument was meant to portray a contrabass instrument, then the *violone in contrabasso* popped up after a century of being ignored by other writers.

Praetorius's comprehensive list includes it but then again a century passes before three writers show it again in the 1730s. These are all from the same small geographical area. Chemnitz is about 40 miles south east of Leipzig and 85 miles east of Erfurt. Erfurt is roughly 85 miles south west of Leipzig.

In fact, Leipzig itself is only about 95 miles south east of Wolfenbuttel where Praetorius work was published. Was this instrument in general use only in this locality? Were these scholars anxious to be inclusive and partly reporting what they had discovered from secondary sources (as I am today)? Or were there instruments in this area, surviving from c. 1620, maybe in a church, that by chance Eisel, Walther and Stossel had all encountered? Groundless speculations without additional evidence.

Statistically this tuning is an unlikely candidate for general use in the baroque period given the great preponderance of evidence for the "G violone" and, as we shall see, the 4 string contrabasso tuned in fourths (plus it's close variants).

List 4.

The "Viennese" tuning

1694	G'/F' A' D F# A	Talbot	OXFORD	<i>double bass viol</i>
1767	F' A' D F# A	Sauveur (Diderot's "Encyclopedie")	PARIS	
1780	F' A' D F# A	Laborde	PARIS	
1790	F' A' D F# A	Albrechtsberger	LEIPZIG	
1810	F' A' D F# A	Fröhlich	BONN	
1816	F' A' D F# A	Nicolai	LEIPZIG	
1828	F' A' D F# A	Wettengel	ILMENAU	
1834	F' A' D F# A	Hartman	PARIS	
1835	F' A' D F# A	Schilling	STUTTGART	
1837	F' A' D F# A	Kastner	PARIS	
1839	E'/F' A' D F# A	Jeitteles	VIENNA	
1849	F' A' D F# A	Gassner	STUTTGART	

Other 5 string tunings

1619	D' E' A D G E' A' D G c F' C G d a	Praetorius	WOLFENBUTTEL	
1677	F' A' D F# B	Prinner	VIENNA	
1724	range F' to g'	Rabassa	SPAIN	?
	<i>Xosé Crisanto Gádara suggests this implies either F' A' D G or F' A' D G c</i>			
1752	E' A' D G or 5 strings	Quantz	BERLIN	?
1769	4 or 5 strings with frets	L. Mozart	SALZBURG	<i>grosse Bass oder violon</i> ?
1779	no tuning or number of strings	Hoyle	LONDON	?
1781	F# B' E A d F' A' D G c	Corrette	PARIS	
1787	F' A' D' G c	Kobrich	BONN	

Viennese tuning is noted in 4 countries and appears in list 1 twelve times - rather more than the *violone in contrabasso*. One solitary reference to a “*Germ. gross contra bass gieg*” by Talbot in 1694 (that he translates as *double bass viol*); the remaining eleven grouped 1767 to 1849.

Prinner’s tuning (1677), varying only with a top b string rather than a, is an early precursor. Including Prinner, 6 authors give specific references to 5 string tunings other than “Vienna” tuning (3 different options offered by Praetorius). Other than Praetorius, Prinner and Talbot, all 5 string tunings date from 1752 onwards.

Talbot notes an alternative tuning of the bottom string to G’ (with the name Mr. Finger next to it); 145 years later Jeitteles offers a lower alternative, E’.

List 5.

Three string tunings

before 1723	G’ C E	Cousser (Kusser)	commonplace book
1756	use of 3 strings now mentioned	L. Mozart	SALZBURG
1776	3 or 4 strings	Hawkins	LONDON
1780	3 strings presumably G’ D A	Laborde	PARIS
1781	G’ D A	Corrette	PARIS
1787	A’ D G	Kobrich	BONN
	G’ D A		
1791	G’ D A	Galeazzi	ROME
1809	(C’) G’ D A	Hause	DRESDEN
1816	F’ C G	Nicolai	LEIPZIG
1818	A’ D G English	Jones	LONDON
1818	3 strings <i>most common</i>	Palatin	SEVILLE
1820	A D G	Granelli	VENICE
1823	A’ D G <i>Italian</i>	Asioli	MILAN
	G’ D A <i>French</i>		
1826	F’/G’ C F	<i>Cäcilia</i> periodical	MAINZ
1828	G’ D A	Hause	PARIS
1837	refers to 3 string tunings	Seyfried	VIENNA
1837	E’ A’ D	Kastner	PARIS
1840	G’ D A	Dalmaine & Co	LONDON
1844	G’ D A	Berlioz	PARIS
1846	A’ D G	Rossi & Anglois	MILAN
	G’ D G		
1849	E’ A’ D	Gassner	STUTTGART
1914	revised 1935 A’ D G+G’ D A	Forsyth	LONDON

“*Richard Strauss....recommends the inclusion of the 3-string Italian Double Bass for the sake of its great cantabile powers. This is practically a return to the method universal in English orchestras twenty-five or thirty years ago*”. Richard Strauss was 50 in 1914 but it is still possible that this quote from Forsyth’s text dates from the 1935 revision: Strauss did not die until 1949 and a pre-1914-18 war photograph of the Queens Hall bass section, formerly on display at the Fairfield Halls in Croydon (just south of London), showed nine players, all of them armed with three string bass. Forsyth’s revision makes it plain the 3 string bass had been superseded by 1935 though they are still regularly found in the UK.

3 strings in fifths

1780	3 strings presumably G’ D A	Laborde	PARIS
1781	G’ D A	Corrette	PARIS
1787	G’ D’ A	Kobrich	BONN

1791	G' D A	Galeazzi	ROME
1809	(C') G' D A	Hause	DRESDEN
1816	F' C G	Nicolai	LEIPZIG
1828	G' D' A	Hause	PARIS
1840	G' D A	Dalmaine & Co	LONDON
1844	G' D A	Berlioz	PARIS
1914	revised 1935 G' D A <i>less common</i>	Forsyth	LONDON

3 strings in 4ths

1787	A' D' G	Kobrich	BONN
1818	A' D G English	Jones	LONDON
1820	A D G	Granelli	VENICE
1826	F'/G' C F	<i>Cäcilia</i> periodical	MAINZ
1846	A' D G	Rossi & Anglois	MILAN
1914	revised 1935 A' D G	Forsyth	LONDON

Not specific

1756	Use of 3 strings now mentioned	L. Mozart	SALZBURG
1818	3 strings <i>most common</i>	Palatin	SEVILLE
1837	refers to 3 string tunings	Seyfried	VIENNA

Other 3 string tunings

<i>before</i> 1723	G' C E	Cousser (Kusser)	commonplace book
1826	F'/G' C F	<i>Cäcilia</i> periodical	MAINZ
1837	E' A' D	Kastner	PARIS
1846	G' D G	Rossi & Anglois	MILAN
1849	E' A' D	Gassner	STUTTGART

Excluding Forsyth, added for interests sake but well after my list peters out, seven different tunings are given and 20 people talk of 3 strings (not including Forsyth). Nine are specific about tuning in 5ths, eight about tuning in 4ths and five are non specific. Kastner and Gassner knew of a very low tuning - E' A D - for achieving low notes in orchestral bass sections, by inference otherwise composed of higher 3 string instruments.

Both 4th and 5th style appear a tone lower, F' C G and G' C F, each in a solitary example. Only Rossi and Anglois give a mixed tuning (G' D G) and Cousser is alone for two reasons: firstly his tuning is very curious (G' C E) and secondly, it is alone in predating 1750. All the others appear after 1769. If this were the only evidence, the 3 string tuning developed only in the classical period.

List 6.

The 4 string tuning E' A' D G with F' A' D G / G' A' D G / D' A' D G variants.

E' A' D G

1677	E'/G A D G	Bismantova	FERRARA
1687	E' A' D G	Speer	ULM
1737	E' A' D G	Stossel	CHEMNITZ
1738	E' A' D G	Eisel	ERFURT
		<i>"but the majority tune it in 4ths"</i>	
1750	E' A' D G	Panerai	FIRENZE
1752	E' A' D G or 5 strings	Quantz	BERLIN
1776	4 strings in 4ths	Castillon (supplement to Diderot)	PARIS

1781	E' A' D G	Corrette	PARIS
1791	E' A D G	Galeazzi	ROME
1802	E' A' D G	Koch	FRANKFURT
1807		Koch also published in	LEIPZIG
1809	E' A' D G	Hause	DRESDEN
1816	E' A' D G	Nicolai	LEIPZIG
1828	E' A' D G	Wettengel	ILMENAU
1823	E' A' D G <i>German</i>	Asioli	MILAN
1828	E' A' D G	Hause	PARIS
1837	E' A' D G	Seyfried	VIENNA
1844	E' A' D G	Berlioz	PARIS
1860	E' A' D G	Labro	PARIS
1865	E' A' D G	Verrimst	PARIS

F' A' D G

1724	range F' to g'	Rabassa	SPAIN
		<i>Xosé Crisanto Gádara suggests this implies either F' A' D G or F' A' D G c</i>	
1787	F' A' D G	Kobrich	BONN
1782	F' A' D G	Petri	LEIPZIG
1790	F' A' D G	Albrechtsberger	LEIPZIG
1816	F' A' D G	Nicolai	LEIPZIG
1823	E' A' D G <i>German</i>	Asioli	MILAN
1835	F' A' D G	Schilling	STUTTGART
1837	E' A' D G	Seyfried	VIENNA
	F' A' D G	<i>this is a re-edition of Albrechtsberger 1790</i>	
1837	F' A' D G	Kastner	PARIS
1854	F' A' D G	Hindle	VIENNA

G' A' D G

1677	E'/G A D G	Bismantova	FERRARA
1701	G' A D G	Janowka	PRAGUE
1782	G' A' D G	Petri	LEIPZIG
1790	G' A' D G	Albrechtsberger	LEIPZIG

Not specific

1636	5th below the Basse de violon (Bb' F c g)	Mersenne	PARIS
1701	no tuning or number of strings	Brossard	PARIS <i>violone, c'est un double basse</i>
		<i>"je suis fort surpris que l'usage n'en soit plus frequent en</i>	
		<i>France"</i>	
		<i>"a sixth part in the manner of Lorraine"</i>	
1740	4 strings	Grassineau	LONDON
		<i>violono "it has a noble effect in great concerts"</i>	
1767	4 or 5 strings with frets	L. Mozart	SALZBURG
		<i>grosse Bass oder violon</i>	
1776	3 or 4 strings	Hawkins	LONDON
		<i>"it seems that this appellation [violone] was formerly given to that instrument which we now call the violoncello"</i>	
1779	no tuning or number of strings	Hoyle	LONDON
		<i>violone "it is used only for great Consorts, Operas, and other publick Musick"</i>	

1818	4 strings	Palatin	SEVILLE
		<i>3 strings most common</i>	

Two closely related tunings given by Praetorius

1619	D' E' A D G E' A' D G c	Praetorius	WOLFENBUTTEL
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The one example in this list of E' A' D G with a lowered 4th string

1802	D' A' D G	Koch	FRANKFURT
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Forsyth (1914 and 1935) mentions having encountered the tuning D' A' D A

Two interesting 4th tunings at a time of experimentation

1787	A' D G c	Kobrich	BONN
1809	B' E' A D A' D G c	Hause	DRESDEN

17 texts give the 4 string tuning E' A' D G, 7 the tuning F' A' D G and 4 the tuning G' A' D G. Of these, 4 give more than one of these alternatives.

Bismantova's text is the first reference for the 4 string tuning E' A' D G. To achieve low E', he is clear that one must have a thick enough string available (as he also says for the low C of the violoncello). In the stave that follows the text, the low E' is raised to G' (just as stave for the cello shows D and not C).

Bismantova's text suggests that these 3 tunings are all variants of the 4 string tuning that has survived to the present day, each taking into account how low the fourth string could be tuned and still be serviceable. The low G' is mentioned from 1677 to 1790, the low F' from 1724 to 1854 - if indeed Rabassa's tuning was for the 4 string bass.

Accepting them as a single group, the 4 string bass tuned in fourths is represented 29 times in my list, 8 times up to 1752 and 21 afterwards. Four other texts are specific about 4 strings but not about tuning.

Mersenne (1636) does not mention the number of strings of the basse de violon tuned "in the manner of Lorraine", neither does he suggest that it is different from the basse de violon in this respect. Nor does Sebastian de Brossard in 1701 - "c'est notre *Basse de violon*, ou pout mieux dire, c'est une *Double Basse*".

Praetorius has two very closely related tunings, both 5 strings including E' A' D G but with an additional string: in one case, low D' adjacent to E'; in the other, a top c string.

Koch (1802) is alone in offering D' A' D G.

Kobrich (1787) and Hause (1809) both knew of a baritone double bass A' D G c; Hause also a very low instrument, B' E' A' D. This last, most likely, to be incorporated into a large bass section: not ideal for solo playing.

List 7.

The 4 string tuning C' G' D A

1738	C' G' D A	Eisel	ERFURT
1767	(C') G' D A	Sauveur (Diderot's "Encyclopedie")	PARIS
1790	C' G' D A	Gehot	LONDON
1791	C' G' D A	Galeazzi	ROME
1791	C' G' D A	Busby	LONDON
1809	(C') G' D A	Hause	DRESDEN

1813	C' G' D A	Franconeur	PARIS
		<i>(written 1777, Fetis)</i>	
1816	C' G' D A	Nicolai	LEIPZIG
1818	C' G' D A Italian	Jones	LONDON
Not specific			
1740	4 strings	Grassineau	LONDON
		<i>violono "it has a noble effect in great concerts"</i>	
1767	4 or 5 strings with frets	L. Mozart	SALZBURG
1776	3 or 4 strings	Hawkins	LONDON
		<i>"it seems that this appellation [violone] was formerly given to that instrument which we now call the violoncello"</i>	
1779	no tuning or number of strings	Hoyle	LONDON
	<i>violone "it is used only for great</i>	<i>Consorts, Operas, and other publick Musick"</i>	
1818	4 strings	Palatin	SEVILLE
	3 strings <i>most common</i>		

The 4 string double bass tuned in fifths first appears in Eisel (1738), though he also says that the vast majority tune it in fourths. In England, Jones notes it but says it is an Italian tuning. It crops up 9 times before 1818 and unlike some other tunings in my list, still has its proponents today.

List 8.

Tunings by country

Italy including Venice

1592	range G' to d'	Zacconi	VENICE
	<i>implies G' C' F a d g + range to 7th fret on top string d'</i>		
1609	D' G' C E A d G' C F A d g	Banchieri	BOLOGNA
1611	G' C F A d g	Banchieri	BOLOGNA
1635 + 40	G' C F A d g	Doni	ROME
1677	E'/G' A D G	Bismantova	FERRARA
1722	depicts 6 pegs but 4 strings	Bonnani	ROME
		<i>violone, e armato di sei corde</i>	
1750	E' A' D G	Panerai	FIRENZE
1791	E' A D G G' D A C' G' D A	Galeazzi	ROME
1820	A D G	Granelli	VENICE
1823	G' D A <i>French</i> A' D G <i>Italian</i> E' A' D G <i>German</i>	Asioli	MILAN
1846	A' D G G' D G	Rossi & Anglois	MILAN

Spain - my apologies for having so little information on this important country

1613	G' C F A d g A' D G B e a	Cerone	NAPLES
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1701	roster of Chapel Royal in Madrid: <i>Don Brancati, violone contrabajo</i>		
1724	range F' to g'	Rabassa	SPAIN
	<i>Xosé Crisanto Gádara suggests this implies either F' A' D G or F' A' D G c</i>		
1818	4 strings 3 strings <i>most common</i>	Palatin	SEVILLE

Hapsburg Empire

1677	G' C F A d g F' A' D F# B	Prinner	VIENNA
1700	Kaiser recommended to use the violoncello <i>"das Violoncello bey dero music zu introduciren"</i> Viennese court records (Die Musiker in Archivbestand des kaiserlichen Obershofmeisteramtes Herwig Knaus Vienna 1967-9)		VIENNA
1701	G' A D G	Janowka	PRAGUE
1756	use of 3 strings mentioned	L. Mozart	SALZBURG
1769	4 or 5 strings with frets	L. Mozart <i>grosse Bass oder violon</i>	SALZBURG
1837	E' A' D G F' A' D G also recognises 3 string tunings	Seyfried	VIENNA
		<i>this is a re-edition of Albrechtsberger 1790</i>	
1839	E'/F' A' D F# A	Jeitteles	VIENNA
1854	F' A' D G	Hindle	VIENNA

Prussia, Poland and the other German states

1528	G' C F A d g	Agricola	WITTENBURG
1546	G' C F A d g A' D G B e a	Gerle	NURNBERG
1619	G' C F/E A d g F# B' E A d g A' D G B e a D' G' C E A d D' E' A D G E' A' D G c F' C G d a	Praetorius	WOLFENBUTTEL
1628	C E A d g	Hizler	TUBINGEN
1687	G' C F A d g E' A' D G	Speer	ULM
1688	G' C F/E A d g	Falck	NURNBERG
1695	A' D G B e a G' C F A d g A' D G A d g	Merck	AUGSBURG
	<i>also gives "French" bass tuning Bb F c g</i>		
c.1715	no tuning, 5 pegs	Weigel	NUREMBURG
before 1723	G' C E	Cousser (Kusser)	commonplace book
1732	G' C F A d g	Majer	NUREMBURG
	<i>a plagiarist of Matheson and Walther</i>		
1732	D' G' C E A d G' C F/E A d g	Walther	LEIPZIG
1737	E' A' D G	Stossel	CHEMNITZ

	C' G' D A		
	D' G' C E A d		
1738	D' G' C E A d	Eisel	ERFURT
	E' A' D G		
	C' G' D A		<i>"but the majority tune it in 4ths"</i>
	G' C F A d g		
1752	E' A' D G or 5 strings	Quantz	BERLIN
	<i>"the so called German violone [Deutsche violon] with 5 or 6 strings has been justly abandoned"</i>		
1787	A' D G	Kobrich	BONN
	G' D A		
	F' A' D G		
	A' D G c		
	F' A' D G c		
	G' C F A		
1790	F' A' D F# A	Albrechtsberger	LEIPZIG
	F' A' D G		
	G' A' D G		
1802	E' A' D G	Koch	FRANKFURT
	D' A' D G		
1807		Koch also published in LEIPZIG	
1809	E' A' D G	Hause	DRESDEN
	(C') G' D A		
	B' E' A D		
	A' D G c		
1810 (+29)	G' C F A	Fröhlich	BONN
	F' A' D F# A		
1816	G' C F A	Nicolai	LEIPZIG
	E' A' D G		
	F' A' D G		
	C' G' D A		
	F' A' D F# A		
1828	E' A' D G	Wettengel	ILMENAU
	G' C F A		
1835	G' C F A	Schilling	STUTTGART
	F' A' D F# A		
	F' A' D G		
1849	F' A' D F# A	Gassner	STUTTGART
	E' A' D		
France			
1636	5th below the Basse de violon (Bb' F c g)	Mersenne	PARIS
			<i>"a sixth part in the manner of Lorraine"</i>
1701	no tuning or number of strings	Brossard	PARIS <i>violone, c'est un double basse</i>
			<i>"je suis fort surpris que l'usage n'en soit plus frequent en France"</i>
before 1723	G' C E	Cousser (Kusser)	commonplace book
	<i>Cousser worked in France and Germany, visiting England in 1705 and in Dublin early 1720s.</i>		
1767	(C') G' D A	Sauveur (Diderot's "Encyclopedie")	PARIS
	F' A' D F# A		
1776	4 strings in 4ths	Castillon (supplement to Diderot)	PARIS

		<i>basse-double ou double basse</i>	
1780	F' G' D A 3 string tuning, presumably G' D a	Laborde	PARIS
1781	F' A' D F# A E' A' D G G' D A	Corrette	PARIS
1813	F# B' E A d C' G' D A	Franconeur <i>(written 1777, Fetis)</i>	PARIS
1828	E' A' D G G' D A	Hause	PARIS
1837	F' A' D G E' A' D	Kastner	PARIS
1844	G' D A E' A' D G	Berlioz	PARIS
1860	E' A' D G	Labro	PARIS
1865	E' A' D G	Verrimst	PARIS
England			
1694	G' C F A d g F'/G' A D F# A	Talbot	OXFORD <i>violone</i> gross contra bass geig
<i>before 1723</i>	G' C E	Cousser (Kusser)	refers to both instruments as German commonplace book
<i>Cousser worked in France and Germany, visiting England in 1705 and working in Dublin early 1720s.</i>			
1740	4 strings	Grassineau	LONDON <i>violono "it has a noble effect in great concerts"</i>
1776	3 or 4 strings	Hawkins	LONDON <i>"it seems that this appellation [violone] was formerly given to that instrument which we now call the violoncello"</i>
1779	no tuning or number of strings	Hoyle	LONDON <i>violone "it is used only for great Consorts, Operas, and other publick Musick"</i>
1790	C' G' D A	Gehot	LONDON
1791	C' G' D A	Busby	LONDON <i>double bass or violono</i>
1818	C' G' D A <i>Italian</i> A' D G <i>English</i>	Jones	LONDON
1840	G' D A	Dalmaine & Co	LONDON

In Italian literary sources, once the 6 string tuning G' C F A d g disappears, apart from the Bonani picture, the only references in my list are to four strings in fourths until 3 string tunings in both 4ths and 5ths appear in in 1791. Galeazzi shows 4 strings in fifths and, in London, Jones refers to this as Italian tuning (1818).

I have insufficient data on Spanish sources for any comment to have meaning, other than that it is clear a contrabass instrument had arrived in Madrid by 1701. The Low Countries are entirely unrepresented in my lists. Bearing in mind the importance of both these areas, I hang my head in shame before you.

In the Hapsburg Empire Prinner knew the 6 string tuning G' C F A d g, but also a contrabass tuning (in the same year that Bismantova mentioned one). Thereafter, in this

list, 4 strings in fourths plus its variants predominate, though Jeitteles shows what we now call “Viennese” tuning in 1839. Leopold Mozart may well mean this tuning when he reports that he had heard concertos, trios and solos performed on 5 string instruments (with frets).

In the German speaking countries outside the Hapsburg Empire, the 6 string “G violone” appears most frequently and for the longest period - 1528 to 1738. After Praetorius, contrabass tunings appear in Ulm with Speer.

Between 1687 and 1752 four writers refer to E’ A’ D G, three to D’ G’ C E A d, and two to C’ G’ D A.

After 1752 in total 10 different tunings appear. The most prolific groups are the four string bass in fourths and its variants (10 examples), “Viennese” tuning and the “G violone in retirement” (each with 5 examples).

The French do not come up with such a variety: 7 tunings in all after 1752. The majority group is the 4 string bass in fourths (7 in this list) and in second place, 3 strings in 5ths (4).

English tuning, like English cooking, shows the least variety. No references before 1752 except Talbot reporting on “German” instruments and a note in Cousser’s commonplace book, from which one can also report he was in Dublin in 1723, with Saggione playing a violone grosso - an occasion on which Cousser also records a violoncello, bass viol and bass violin in the orchestra. Sources elsewhere record that Saggione played at London’s Stationers Hall in 1705.

He was also on the roster of the Haymarket orchestra in 1710, the second highest paid musician in the orchestra (after the first violoncello and harpsichordist who received identical remuneration).

Tunings in historical sources only commence with Grassineau, 1740: *4 strings, “it has a noble effect in great concerts”*. 36 years later Hawkins adds that there are also 3 string basses in town; Hoyle (1779) doesn’t commit himself on strings but says the *violone “is used only for great Consorts, Operas, and other publick Musick”*.

Between 1790 and 1818 four strings in 5ths appears three times, noted by Jones as Italian in 1818. He declares the English tune their 3 string basses in 4ths, though Dalmaine and Co. say 5ths 22 years later.

In list 5, I added a note from Forsyth (1914, revised 1935): he knew both 3 string alternatives but stated that A’ D G was more common.

Since terminology is also a complicated issue, I have added list 9. It matches each tuning with the writer’s term for the instrument. Three were not to hand at the time of writing. Some other interesting and relevant information is included.

List 9.

Tunings with name given in source

Contrabass tunings

1609	D’ G’ C’ E A d	Banchieri	BOLOGNA (not 1611)	<i>violone in contrabasso</i>
1619	D’ E’ A D G	Praetorius	WOLFENBUTTEL	<i>gar grosse bass viol</i>
	E’ A’ D G c			<i>gross-bass viol da gamba</i>
	D’ G’ C’ E A d			<i>gross-bass viol da gamba</i>
	E’ A’ D G c f			<i>gross-bass viol da gamba</i>
	F’ C G d a			<i>gross quint-bass</i>
1636	a 5th below the Basse de violon	Bb F c g	Mersenne PARIS	<i>a sixth part in the manner of Lorraine</i>
1661	Nicolo Amati - Duane Rosengard identifies first unqualified use of contrabasso			

				differentiates from “violins, violones, violas da braccio, viola da gamba” a “contrabasso”
1677	E' G A D G	Bismantova	FERRARA	<i>contrabasso o violone grande</i>
1677	F' A' D F# B	Prinner	VIENNA	<i>violone</i>
1687	E' A' D G	Speer	ULM	<i>bass violon</i>
1694	F'/G' A D F# A	Talbot	OXFORD	<i>Germ. gross contra bass geig</i> <i>double bass viol</i>
1701	G' A D G (one octave higher G A d g)	Janowka	PRAGUE	<i>violone grosso</i> <i>violone)</i>
1701	no tuning or number of strings	Brossard	PARIS	<i>violone, c'est un double basse</i> <i>“je suis fort surpris que l'usage n'en soit plus frequent en France”</i>
1722	Picture only	Bonnani	ROME	<i>violone, e armato di sei corde</i>
before 1723	G' C E	Cousser (Kusser)	commonplace book	<i>violone grosso</i>
	<i>Cousser worked in France and Germany, visiting England in 1705 and working in Dublin early 1720s.</i>			
1724	range F' to g'	Rabassa	SPAIN	
	Xosé Crisanto Gádara suggests this implies either			
	F' A' D G or F' A' D G c			
1732	D' G' C E A d	Walther	LEIPZIG	<i>violone grosso</i>
1737	E' A' D G	Stossel	CHEMNITZ	<i>violone grosso</i>
	C' G' D A			<i>violone grosso</i>
	D' G' C E A d			<i>contrabasso da gamba</i>
1738	D' G' C E A d	Eisel	ERFURT	<i>violone grosso</i>
	E' A' D G			<i>violone grosso</i>
	C' G' D A	<i>“but the majority tune it in 4ths”</i>		<i>violone grosso</i>
1740	4 strings	James Grassineau	LONDON	<i>violono “it has a noble</i> <i>effect in great concerts”</i>
1750	E' A' D G	Panerai	FIRENZE	
1752	E' A' D G or 5 strings	Quantz	BERLIN	<i>contraviolon - in French text</i> <i>la Grande Basse de violon</i>
1767	4 or 5 strings with frets	L. Mozart	SALZBURG	<i>grosse Bass oder violon</i>
1776	3 or 4 strings	Hawkins	London	<i>violone</i> <i>“it seems that this appellation [violone] was formerly given</i> <i>to that instrument which we now call the violoncello”</i>

G' C F a d g tunings (and related tunings)

1528	G' C F A d g	Agricola	WITTENBURG	<i>der grosse geigen (bassus)</i>
1546	G' C F A d g A' D G B e a	Gerle	NUREMBERG	
1592	range G' to d	Zacconi	VENICE	<i>viola basso</i>
1609	G' C F A d g	Banchieri	BOLOGNA	<i>viola basso, violone da gamba</i>
1611	G' C F A d g	Banchieri	BOLOGNA	
1613	G' C F A d g A' D G B e a	Cerone	NAPLES	<i>viheula de arco - baxo ,</i> <i>“templada la parte del Paxo por una Quarta mas grave del Tenor”</i> <i>Also gives tuning Bb' F c g for “viheula da braço - baxo”</i>
1620	G' C F A d g G' C E A d g A' D G B e a	Praetorius	WOLFENBUTTEL	<i>klein bass-viol da gamba</i> <i>viola bastarda</i>
		these first 4 tunings all called		
		the third one also appears as		

	F# B' E A d g			
1635 + 40	G' C F A d g	Doni	ROME	<i>violone da gamba</i>
1677	G' C F A d g	Prinner	VIENNA	<i>basso di viola</i>
1687	G' C F A d g	Speer	ULM	<i>bass-violon</i>
1688	G' C F/E A d g	Falck	NURNBERG	<i>violon</i>
1695	A' D G B e a	Merck	AUGSBURG	<i>bass giece</i>
	G' C F A d g	<i>also gives "French" bass tuning Bb F c g</i>		
	A' D G A d g			
1694	G' C F A d g	Talbot	OXFORD	<i>violone or double bass with 6 strings. German</i>
c.1715	no tuning, 5 pegs	Weigel	NUREMBERG	<i>violone</i>
1722	depicts 6 pegs but 4 strings	Bonnani	ROME	<i>violone, e armato di sei corde</i>
1732	G' C F A d g	Majer	NUREMBERG	<i>grosse bass geige</i>
		<i>a plagiarist of Matheson and Walther</i>		
1732	G' C F/E A d g	Walther	LEIPZIG	<i>violone Gall. basse de violon ein grosse bass-geige</i>
1738	G' C F A d g	Eisel	ERFURT	<i>violon</i>
1752	<i>"the so called German violone [Deutsche violon] with 5 or 6 strings has been justly abandoned" Quantz</i>			
	The French text of Quantz' Versuch was for the benefit of Frederick the Great who would have had difficulty reading it in German.			

List 10

Total numbers of each tuning.

In the group as a whole the total number of references for each tuning are:

G' C F/E A d g	-	16
A' D G B e a	-	4
A' D G A d g	-	1
C E A d g	-	1
G' C F A	-	5
D' G' C E A d	-	5
G' A' D G	-	5
F' A' D G	-	8
E' A' D G	-	18
D' A' D G	-	1
C' G' D A	-	10
B' E' A D	-	1
A' D G c	-	1
F' C G	-	1
F'/G' C F	-	1
A' D G	-	4
G' D A	-	8
G' D G	-	1
G' C E	-	1
E' A' D	-	2
F' G' D A	-	1
F# B E A d g	-	1
D' E' A' D G	-	1

E' A' D G c	-	1
F' C G d a	-	1
F' A' D G c	-	2
F# B E A d	-	1
F' A' D F# A	-	9
F' A' D F# B	-	1

29 alternatives (5 x 8 ft pitch, 24 x 16 ft pitch)

The largest groups are the 4 string bass in fourths with the variant tunings D', F' and G' of its bottom string (32 references) and the 6 string "G or A violone" (21 references + Hizler 5 string). The 4 string bass in fifths and Viennese tuning (including Prinner) both show up 10 times. 3 string basses in various tunings appear 16 times (excluding the extra low E' A' D).

Splitting the list at 1752, before:

G' C F/E A d g	-	16
A' D G B e a	-	4
A' D G A d g	-	1
C E A d g	-	1
D' G' C E A d	-	5
G' A' D G	-	2
E' A' D G	-	6
C' G' D A	-	2
G' C E	-	1
D' E' A' D G	-	1
E' A' D G c	-	1
F' C G d a	-	1
F' A' D G c	-	1
F' A' D F# A	-	1
F' A' D F# B	-	1

15 alternatives
(4 x 8 ft pitch, 11 x 16 ft pitch)

and after

G' C F A	-	5
A' D G c	-	1
F' A' D G	-	8
B' E' A D	-	1
D' A' D G	-	1
G' A' D G	-	3
E' A' D G	-	11
C' G' D A	-	8
F' C G	-	1
F'/G' C F	-	1
A' D G	-	3
G' D A	-	7
F' A' D G c	-	1
F' A' D F# A	-	8
E' A' D	-	2
F' G' D A	-	1

16 alternatives (16 ft pitch only)

1600-1700

G' C F A d g	-	13
A' D G B e a	-	3
A' D G A d g	-	1
C E A d g	-	1
D' G' C E A d	-	2
G' A' D G	-	1
E' A' D G	-	2
F# B E A d g	-	1
D' E' A' D G	-	1
E' A' D G c	-	1
F' C G d a	-	1
F' A' D F# A	-	1
F' A' D F# B	-	1

13 alternatives
(4 x 8 ft pitch, 9 x 16 ft pitch)

1700-1800

G' C F/E A d g	-	3
G' C F A	-	1
C' G' D A	-	4
F' A' D G	-	3
D' G' C E A d	-	3
G' A' D G	-	3
E' A' D G	-	7
G' D A	-	4
G' C E	-	1
F' G' D A	-	1
F' A' D G c	-	2
F' A' D F# A	-	3
F# B E A d	-	1

13 alternatives
(1 x 8 ft pitch, 12 x 16 ft pitch)

1600-1650

G' C F/E A d g	-	6
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1650-1700

G' C F/E A d g	-	3
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A' D G B e a	-	2	A' D G B e a	-	1
C E A d g	-	1	A' D G A d g	-	1
D' G' C E A d	-	2	G' A' D G	-	1
F# B E A d g	-	1	E' A' D G	-	1
D' E' A' D G	-	1	F' A' D F# A	-	1
E' A' D G c	-	1	F' A' D F# B	-	1
F' C G d a	-	1			
8 alternatives			7 alternatives		
(3 x 8 ft pitch, 5 x 16 ft pitch)			(3 x 8 ft pitch, 4 x 16 ft pitch)		

1700-1750			1750-1800		
G' C F/E A d g	-	3	G' C F A	-	1
D' G' C E A d	-	3	G' A' D G	-	2
G' C E	-	1	G' D A	-	3
E' A' D G	-	3	E' A' D G	-	3
C' G' D A	-	2	C' G' D A	-	2
F' A' D G c	-	2	F' A' D G	-	3
			F' G' D A	-	1
			F' A' D G c	-	2
			F# B E A d	-	1
			F' A' D F# A	-	3
6 alternatives			10 alternatives (16 ft pitch only)		
(1 x 8 ft pitch, 5 ft pitch)					

The creeping obsolescence of non-transposing large string basses, first in Italy and then in the German speaking countries can in part be traced in these lists. Were it not for Praetorius, an impression of the gradual development of contrabasso instruments, their dissemination throughout Europe and the slow descent of the lowest string would also be well supported.

However, Praetorius cannot be brushed under the carpet. Neither can Banchieri, but it is significant that he does not repeat a contrabasso tuning in 1611.

Sybil Marcuse's measurement of the sounding string lengths of the largest instruments shown in Praetorius' *Theatrum Instrumentorum* is 130cm, just over 50 inches. In plate VI the bridge of the *Gross viol da gamba bass* (lowest note D' or E') is set below the f holes, maximising the sounding string length. Not so however on plate V for the 5 string *Gross contra bass geig* that is presumably the *Gross quint-bass* (lowest note F') whose tuning is included with the Geigen.

The 1616 organ by Esaias Compenius for Castle Hessen in Braunschweig is now in Frederiksborg Castle in Denmark. It is still in its original condition and is pitched at A470: Praetorius "acted as the consultant in its building and was its first organist" [Bruce Haynes "A History of Performing Pitch", Scarecrow Press 2002 p. 80]. Though Michael Praetorius was well aware of the different pitch standards of his day, it's worthwhile considering his information in the context of this high pitch and for instruments of great size.

Seventy six years later Merck (Augsburg 1695) notes both G and A violone tunings but then a third tuning: a mixture of *chorton* and *kammerton*, two pitch ranges a tone apart (c. A470 and A415). The lower 3 strings are tuned up a tone to chorton, the top three stay in kammerton (as they may already be near to breaking point) - A' D G A d g. Merck's reference pitch for the tunings he gives must therefore be in kammerton, a tone lower than Praetorius' reference pitch.

This may explain why more than 100 years passed after the publication of *Syntagma Musicum* before low D' was mentioned again (Walther, 1732).

If maximum string gauges had already been achieved, such low tunings in a lower pitch regime could only be managed by lengthening the string (and therefore the neck) unless some revolutionary new string making process was invented. Dr. Stephen Bonta has clearly pin pointed such a process, gut over spun with thin wire, to Bologna in the 1660s. Thereafter, a stream of low contrabass tunings for instruments of more manageable size begin to appear in contemporary sources, though the lower limit for the bottom string was still in a state of flux.

Observations about performance pitch must always be tempered by caveats about regional variations, but as a result of the general rise in northern European concert pitch in the classical period, to between A.430-450, low F' strings magically became E's.

Peter McCarthy. 2009

With thanks to Bret Simner for spotting an error in my original tuning lists