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# **Francesco Molino**

Werke für Gitarre

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# 1. Introduction

Francesco Molino is not a well-known classical guitar author. This is probably one of the reasons not much of his biographical data is available. Besides that, about 60 published works involving guitar are available. Many of them were composed to be “easy to play”<sup>1</sup> with the idea in mind their target group were amateur guitarists.

I both transcribed selected works to modern notation and also edited some technically easier parts so they would gather some complexity expected from a recitalist on concert stage. All these alterations are presented in chapters containing compositional analyses.

In comparison with modern classical guitar, early romantic guitar features several differences. These result into significantly other sound timbre and ergonomics, which do have great impact on the interpretation itself.

On the other hand, it is the transition instrument from Spanish vihuelas and baroque guitars or lutes to modern Spanish guitars. Hence, a chapter containing a slight insight into guitar building in 19<sup>th</sup> century and historical predecessors of romantic guitar is included.

That particular instrument used for recording in this work is also briefly shown, as a very close cooperation with its builder made interesting facts easily available.

Results presented in this work are also described, from a technical point of view, by a short chapter about utilized recording technique.

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1 “d'une Exécution Facile” in period publications.

## 2. Biography

Resources about Francesco Molino's biographical details diverge in many aspects, for instance also in such a basic information as the year and place of the birth. All is considered in his short biography which was written with use of available resources.

Francesco Giovanni Molino or François Molino or Don Francois Molino<sup>2</sup> was a guitarist, violinist, composer, and teacher. Bone [1914 p. 209] considered Florence (Italy) and the year 1775 as the place and the year of his birth. However, Dell'Arra [2016] writes that Molino was born in Ivrea (Italy) in 1768 which is in agreement with Pouloupoulos' [2014] opinion. These discrepancies were pointed out also by Centro de Documentación de Música y Danza [CDMD 2012] which suggests that there were two guitarists named Francesco Molino who died in 1847. This biography merges all information; therefore, it is assumed that Francesco Molino, either born in 1768 or 1775, was a person about which there is not enough clear data.

Francisco Molino's father, Giuseppe Ignazio, was an oboist at the service of the Piedmontese troop band [JCGC 2016]. As 15-years old, Molino followed a military career in the Piedmontese troops, where he got his first musical instruction in various instruments, probably oboe and viola [CDMD 2012]. According to Bone [1914 p. 209, 246], Molino was taught the violin and guitar in Florence, studied under Gaetano Pugnani<sup>3</sup> in Turin during the latter part of Pugnani's career, and became a court musician to the King of Sardinia – as his teacher Pugnani in previous years.

Although Dell'Arra [2016] writes that nothing is known about Molino's life between 1793 and 1814, many authors provide some details about Molino's life that are related to publishing of his musical pieces. For example Giglio [2009 p. 4] states that Molino was a violist in the orchestra of the Royal Theater of Turin in the years 1786 – 1789 and violinist in the Orchestra of the Royal Chapel in the years 1814 – 1818. According to Wade [2001 p. 73], Molino was in the service of King of Sardinia in 1795 when his *New and Complete Method for the Guitar* was published. In 1803 he published his first violin concerto in Paris, between years 1812 and 1813 in Leipzig he published also a guitar method and the first catalog of sonatas for guitar and chamber music [Dell'Arra 2016]. As Dell'Arra [2016] writes, Molino left to Paris, perhaps at the turn of years 1818 and 1819. In contrast, Bone [1914 p. 209] stated that Molino “...wandered through Italy and Germany and in 1820 was in Paris, where he remained for a time as a violin and guitar virtuoso and teacher.” Guitar tradition, developed in Paris, was led by Ferdinando Carulli<sup>4</sup>, so Molino “had to create a space for his musical and concert activity, for in Paris he was placing himself in the midst

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2 Molino accommodated his name form according to the local tradition of the country in which he actually located. Bone [1914 p. 209] writes that Molino “acquired the Spanish prefix to his name while living in Spain and several of his published compositions bear this title.”

3 Gaetano Pugnani (1727 – 1805) is recognized as violin virtuoso of the Piedmontese school who was also talented on the guitar. In 1770 he founded a school of music for violinists and guitarists [Bone 1914 p. 245, 246].

4 Ferdinando Carulli (1770 – 1841) was an Italian guitarist, composer and teacher who lived in Paris from 1808 and “was the leading guitarist there for many years until the arrival of Fernando Sor in 1823” [Wade 2001 p. 75].



of a circle of guitar aficionados who were resistant to new idea” [JCGC 2016]. Guitarists in Paris often performed their music at the public Salons [Giglio 2009 p. 4]. Bone [1914 p. 209] suggested that Molino's stay in Paris took several months after which he traveled to Spain: “In Madrid he appeared before the Court and was received with such marked favour that in a very short time he was serving as an officer in the Spanish army. For some years he was engaged with military duties.” Afterward, before his return to Paris, Molino visited London for a seasonal guitar teaching to prominent members of society. During this stay in London he wrote collections of Spanish serenades for guitar and piano: “The first volume of thirty-one pages folio contained a list of subscribers, while the second volume dedicated to Lady Antrobus was issued by subscription by Clementi & Co., London” [Bone 1914 p. 210]. After this successful period, in the 1850s [Wade 2001 p. 87], when guitar popularity declined, “Molino composed his last works for violin and different sets instrumentals” [CDMD 2012].

He died in Paris in 1847. [Bone 1914 p. 209, 210].

## 2.1. List of guitar works

Following table lists known printed works of Francesco Molino which are either composed for guitar solo, or chamber music involving guitar, or a concerto, or for voice accompanied by guitar.

<b>Op.</b>	<b>Title</b>	<b>Instrumentation</b>
1	Three easy Sonatas	Gtr
2	Three Sonatas	Vln, Gtr
3	Three Duos	Vln, Gtr
4	Three Trios	Fl, Vln, Gtr
5	Six Themes with Variations	Gtr
6	Three Sonatas	Gtr
7	Three great Sonatas	Vln, Gtr
9	Twelve Valses	Gtr
10	Twenty-four Valses	Gtr
11	Easy Divertimentos	Gtr
12	Collection of Pieces	Gtr
13	Two Fantasias	Gtr
14	Collection of Pieces	Gtr
15	Three Sonatas	Gtr
16	Three Duos	Fl, Gtr

17	Great Overture	Gtr
18	Four Themes with Variations	Gtr
19	Three Trios (an edition of op. 4)	Fl, Vln, Gtr
20	Collection of Pieces	Gtr
21	Four Themes with Variations	Gtr
22	Three great Sonatas	Vln, Gtr
23	Twenty Variations in a form of Valses	Gtr
24	Method	Gtr
26	Divertimento	Gtr
28	Three brilliant Rondos	Gtr
29	Three Sonatas	Vln, Gtr
30	Great concertant Trio	Fl / Vln, Va, Gtr
31	Variations	Gtr
33	Method	Gtr
34	Great Polacca and two Rondos	Gtr
36	Nocturne	Fp, Gtr
37	Nocturne	Fl / Vln, Gtr
38	Nocturne	Fl / Vln, Gtr
39	Nocturne	Fl / Vln, Gtr
40	Excerpt from the Method	Gtr
41	Brilliant Variations	Gtr
42	Choir and a Vals	Gtr
43	Aria with Variations	Gtr
44	Nocturne	Fp, Gtr
45	Great Trio	Fl, Va, Gtr
46	Great Method	Gtr
47	Supplement to the Great Method	Gtr
49	Method	Gtr
50	Collection of Pieces	Gtr
51	Great Sonata	Gtr
52	Great Bolero	Gtr

54	Great Bolero	Gtr
55	Two Fandangos	Gtr
56	Concerto	Gtr, Orch
57	Nocturne	Pf, Gtr
58	Scottish Song with Variations	Gtr
59	Variations	Gtr
60	Five Pieces	Gtr
61	Three Duets	Fl / Vln, Gtr
63	Variations	Gtr
65	Aria with Variations	Gtr
	Canzonetta	Vo, Gtr

[Tab1] [JCGC 2016]

In the first half of 19<sup>th</sup> century many compositions are published for public satisfaction of entertainment at the expense of musical quality [Giglio 2009 p. 4]. Giglio [2009 p. 4] writes that editors probably pushed Molino to fulfill public demand; therefore, to create easy compositions which would be usable by wide audiences.

Bone [1914 p. 209] stated that Molino was an author of many compositions for stringed instruments published between 1800 and 1820. On the other hand, Giglio [2009 p. 4] insists that many Molino's guitar works were published between 1820 and 1835. *His New and Complete Method for the Guitar* was published in Italian, French, German [Bone 1914 p. 209] and according to [CDMD 2012] it “reached seven editions at the time”. Bone [1914 p. 210] wrote that “It was a comprehensive volume of about seventy pages, published in first-class style and contained numerous diagrams of the guitar, introductory chapters on the elements of music and concluded with original preludes, sonatas and rondos for the guitar with violin accompaniment.”

As Wade [2001] writes, teaching and the pedagogy was, along with the creative work, one of the aspects explored by accepted guitar masters: “The great teachers developed technique, methods of study, and theoretical bases of the instrument...” [p. 75]. Dell'Arra [2016] states that Molino's teaching method, published in 1823, was, in comparison with Carulli's, “deeper and more suited to the experiences of discerning guitarists”.

## 2.2. Method and dispute over interpretation techniques

Many guitarists in those times published their own methods of playing the guitar, and their opinions could differ. A famous lithographic caricature called *A discussion between the Carullists and the Molinists* by Charles de Marescot which was published in Marescot's book *La Gitaromanie*<sup>5</sup> [MoG 2016] reminds differences between interpretation techniques of two teachers – Molino and Ferdinando Carulli.



*A discussion between the Carullists and the Molinists* by Charles de Marescot [Ophee 2016]

In fact, Molino was never in conflict with Carulli as contemporary chronicles suggest [JCGC 2016]; however, “There was some disagreement between various guitar teachers as to the correctness of techniques used” [MoG 2016]. While Carulli supported the use of the fretting-hand<sup>6</sup> thumb to play bass notes on the sixth, sometimes on the fifth string, Molino asserted guitar players to play without fretting-hand thumb, as it would disrupt the hand position [MoG 2016].

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5 The release year is not clear, as Giglio [2009 p. 4] mentions the year 1840 and Stenstadvold [in Ophee 2016] states that the book *La Gitaromanie* was published in 1829.

6 Left hand for the right-handed players, whose plucking-hand is the right hand.

### 3. Selected works

For each work there is a triplet compositional analysis<sup>7</sup> – transcription – period publications provided. Period publications come from Boije's [Boije 2016] and Richel & Birket-Smith's collection of guitar music [Rischel-Birket-Smith 2016] and all are freely available in the public domain.

#### 3.1. Sonata op. 6, No. 1 in D Major

Part of cyclical work “Three Sonatas, op. 6”, the first Sonata consists of three movements.

##### 3.1.1. Allegro

The first movement is composed in strict and basic sonata form [: E :][: D – R :] with three main sections, without any introduction nor finale.

Section	Subsection	Bar # from – to	Key	Function
E exposition	[: fs	0 – 12	D	I
	t	13 – 23	D → A	I → V
	ss	24 – 35	A	V
	c :]	35 – 38		
D development	[: x	38 – 50	A	V
R recapitulation	fs <sup>1</sup>	51 – 54	D	I
	t <sup>1</sup>	55 – 64		
	ss	65 – 76		
	c :]	76 – 79		

Exposition begins, having melody in upper voice, with first subject group E.fs, which is a double-period. Antecedent phrase of the first period makes the dotted rhythm characteristic for the principal theme. The accompaniment keeps 8<sup>th</sup>-note motion in Allegro through the whole first subject group and transition. The consequent phrase starts with, but does not further employ dotted rhythm. It proceeds in smooth legatos to the (VII) – V imperfect cadence in measure 8. The second period begins identically as the first one, but its last phrase flows into transition smoothly. Head of transition resembles previous period's consequent phrase in the measure 13, but introduces a modulation to dominant key in adjacent measure, by stressing the d#2 note with an accent and

<sup>7</sup> There will be used capital roman literals for major triads, lowercase for minor triads (especially lowercase “i” for tonic of parallel minor key) and those written into brackets are to be seen as borrowed from the key whose briefly tonicised chord follows behind the enclosing bracket.

making it a leading note to the dominant of new tonal center. Modulation is finished in bars 17 to 18 with a V6 – I cadence in A Major. Dominant key is confirmed then again in measures 23 to 24, in which second subject group E.ss starts. Second subject features a bass melody in contrast with upper voice melody of first subject. Its accompaniment reinforces the contrast by flowing in a more rapid 16<sup>th</sup>-note motion. Second subject is not ordered into a period or double-period, but after repeating its motif in contrast dynamics in measures 26 and 27, climaxes into a dominant pedal and a tone of the highest pitch used in the beginning of measure 33. I have added octaves in measure 32. This peak is followed by a silent chromatic melodic descend in piano, which erupts into trill on dominant harmony a resolves tension in an authentic perfect cadence V – I. In the transcription of codetta E.c I've made chords fuller to achieve 4-voice harmony, in respect to the original forte. Exposition is then repeated.

Having the development section relatively short, above a permanent dominant pedal for its full duration, the whole movement resembles a binary form's tonal plan [: I – V :][: V – I :] very accurately. In measures 40 and 44 I've changed f2# to e2#. Development does process motivic material of the first subject only. The permanent dominant pedal acts as prolongation of the central key's dominant chord from the bar 46 to 49, where the music calmly resolves tension in an evaded cadence V2 – I6, whose openness signals recapitulation.

In the recapitulation, subsection R.fs<sup>1</sup> contains first subject in a shortened form – its second period. The original transition is also varied in R.t<sup>1</sup>, so that its first 5 measures from 55 to 60 do, with their progression I6 – IV – (V65) – IV – (V65) – II – V – I, not harmonically move away from the central key. Next 5 bars introduce new motivic, coda-like material and prepare the recapitulation of second subject group with the progression V2 – I6 – IV – I64 – V in measures 63 and 64. Subsection R.ss does not bring any new material and is the exact repetition transposed into home key. To keep the repetition consistent, I did same changes – added octaves in measure 73 and 4-voice harmony in its coda. Both development and recapitulation sections are repeated.

# Sonata

op. 6, No. 1, I. Allegro

$\text{♩} = 60$

8 *p*

4

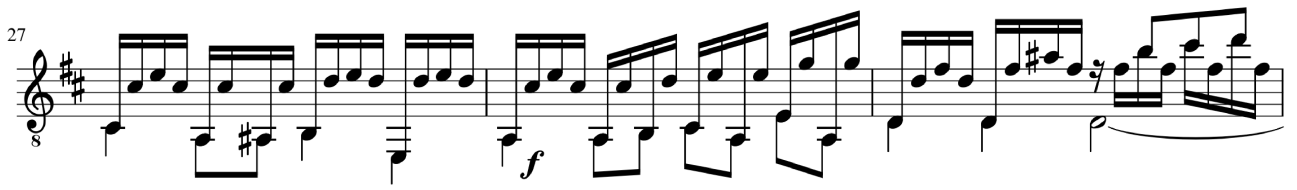
8 *f*

12 *sf*

16 *con espress.* *sf*

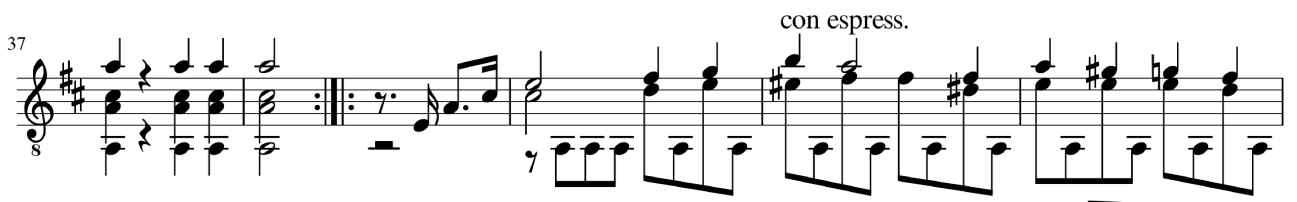
20 *sf*

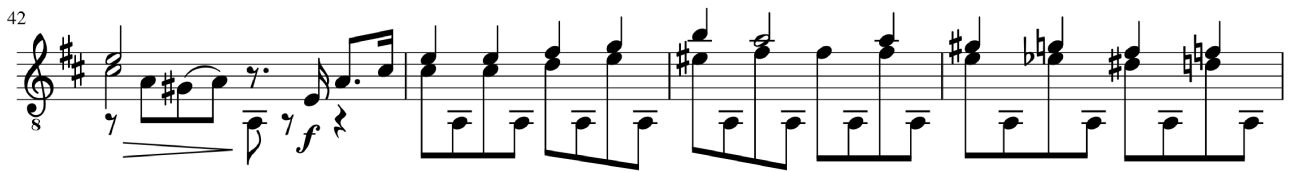
24 *f* *p*

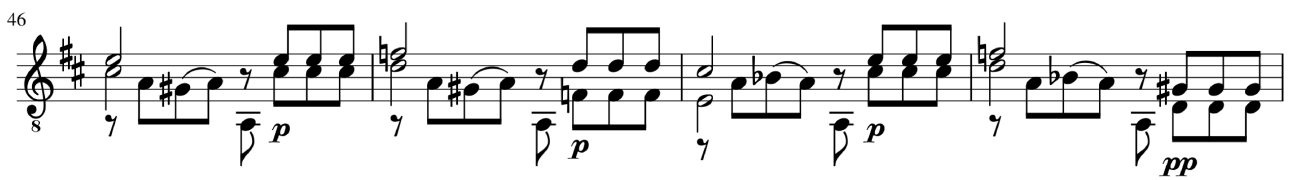
27 

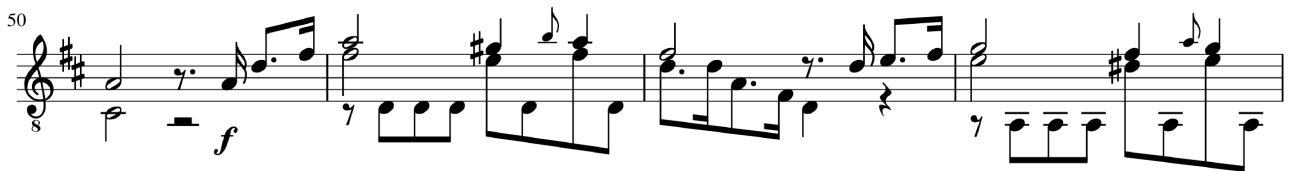
30 

33 

37 

42 

46 

50 



54 *con espress.*

58

62

65

68

71

74

78

Gitarre.

*Allegro*  
*Sonata 1*

*p*  
*f*  
*espress.*  
*f*  
*p*  
*con espress.*  
*p*  
*pp*  
*con espress.*

This musical score consists of ten staves of music. The first six staves feature a complex melodic line with various rhythmic patterns, including eighth and sixteenth notes, and some triplet markings. Dynamic markings include *f* (forte), *p* (piano), and *pp* (pianissimo). The seventh staff is marked *Andante* and features a slower, more sustained melodic line. The final three staves continue the melodic development, ending with a *pp* marking and the number 1795.

### 3.1.2. Andante

The slow movement of this sonata consists of a single section in ternary form, in a key dominant to the central key of sonata.

Section	Subsection	Bar # from – to	Key	Function
A ternary form internally	a	0 – 16	A	I
	b	17 – 26	E	V
	a	27 – 42	A	I
	coda	42 – 52	A	I

Subsection A.a is a double-period. In its first period's antecedent phrase ends on tonic triad in fourth measure and the second, consequent phrase begins with horn fifths and ends in VI – (VII) – I64 – V imperfect cadence. The second period starts with same phrase as the previous, but in opposite dynamics. To support this contrast, I changed bass motion from quarter to 8<sup>th</sup>-notes in the transcription. In the final subsection's phrase there are same horn fifths as in measure 5, but it leads into VI – II6 – I64 – V – T6 imperfect, but authentic cadence at its end.

Subsection A.b is made of two 5-bar phrases, mostly in E Major, but the dominant key is never confirmed and adopted as tonal center. The first phrase uses pedal E in bass, then borrows F Major triad from key parallel to the central one, but avoids phrygian cadence in measures 21 to 22 by inserting a borrowed VII degree before the dominant. The phrygian cadence comes in next two bars 23 to 24 and the phrase finishes with pair of voices moving in contrary motion, suggesting a phrygian cadence in A minor ending on its major V.

The next subsection is exact repetition of A.a, which encloses piece's ternary form, but also flows into a coda.

The coda sustains tonic pedal tone for its full duration. In the transcription, I've changed most of its motion to 8<sup>th</sup>-notes. There is an imitation of the middle voice containing chromaticism in measures 42 and 43. This material gets imitated in the upper voice 46 to 48. The coda ends with a V2 – I6 evaded cadence.

For period publication of this movement see previous chapter.

II. Andante

♩ = 77

8 *p* *sf*

9 *f* *sf* 3

17 *p* *sf* *sf* *p*

23 *f*

29 *sf* *f*

37 *sf* 3

45 *p* *pp*

### 3.1.3. Rondo – Cantabile non tanto allegro

Sonata's last movement, the rondo, begins directly with theme, which is repeated four times, though there is no well-defined 2<sup>nd</sup> episode.

Section	Subsection	Bar # from – to	Key	Function
A theme	t	0 – 16	D	I
	b	17 – 26	A	V
	t'	27 – 34	D	I
B episode	[: a :]	35 – 42	G, D	IV, I
	[: b :]	43 – 56	D → G	I → IV
	c	56 – 68	e	II
A theme	t	0 – 16	D	I
	b	17 – 26	A	V
	t'	27 – 34	D	I
F finale	[: a :]	69 – 77	D	I
	t <sup>1</sup>	78 – 93		
	coda	93 – 99		

The theme is periodically built. Subsection A.t is a double period, where both antecedent phrases end on V in measures 4 and 12, first period ends with authentic perfect cadence V – I in A Major, the dominant key, measure 8, and the second period ends with V7 – I in central key, 16<sup>th</sup> bar. Next subsection A.b features pedal tone A and a “con espressione” passage suggesting rather a cadenza. Second period of the principal theme is then repeated.

First episode keeps up the periodical built-up by introducing new motivic material in a form of repeated period. Its antecedent phrase, measuring 4 bars, end with a V7 – I cadence in sub-dominant key of G Major while the consequent phrase leads back to V7 – I in central key. Subsection B.b, although repeated too, is not that periodical. Its consequent phrase holds the chromatically escalated flow with a fermata in measure 50 on a dominant seventh chord of G Major. After melodic descend into G Major's I6, a subsection B.c in key relative to sub-dominant is to start. Section B.c introduces yet another material, in E minor, and with the IV7, which in central key is a dominant seventh chord, and its pedal A from bar 64 to 68 lets the melody climax on high E, from which I play a brief cadenza not written-out into the transcription.

The theme section after episode is repeated intact, without any changes. Therefore, in the transcription I used “D.C. al Coda” and “Segno” repetition marks. This is the reason why bar indexes remain the same.

Finale begins with a coda-like material in a single 8-bar period F.a which is repeated, in central key, hence this section cannot be classified as 2<sup>nd</sup> episode. In the transcription, I've changed rhythm in measures 73 to 75, and both measures 76 and 77 slightly, the latter to make the dominant chord fuller and the former to contrast with this change. Principal theme returns again, what confirms the otherwise-disputable form of rondo, and with a varied second half. This variation is repeated and leads into F.coda subsection, where I again made the chords fuller by adding a voice to achieve 4-voice harmony, in respect to the original ff dynamic marking. There are also two extra bars added to the end.

### III. Rondo, cantabile non tanto allegro

♩ = 92 ~ 96

8 *p*

8 *p* *f* *ff*

15 *p*

21 *con espress.*

26 *p* *rit.* *a tempo*

32 *mf*

37

43





*Cantabile non tanto allegro*

*Rondo*

*p*

*f*

*p*

*f*

*con espress.*

*4 2*

*4 2*

*p ritard.* *a tempo*

*ff*

*molto f*

*4 2*

*4 2*

*ff*

*1 2*

*1 2*

*2 1 2*

*2 1 2*

*p* *f* *f* *p* *f* *p* *f*

*p*

*f*

*p*

*f*

*con espress.*

*ritard.*

*al tempo*

*f*

*p*

*f*

*p*

*f*

*p*

*f*

*f*

1195

Detailed description: This is a page of musical notation for piano, consisting of 12 staves. The music is written in a key with one sharp (F#) and a common time signature. The notation includes various rhythmic values such as eighth and sixteenth notes, often beamed together. Dynamic markings are used throughout, including piano (*p*), forte (*f*), and *con espress.* (with expression). Performance instructions like *al tempo* and *ritard.* (ritardando) are also present. The score concludes with a double bar line and the number 1195 in the bottom right corner.

### 3.2. Theme with variations, op. 5, No. 1 in C Major

Part of cyclical work “Six themes and variations, op. 5”, the first Theme with Variations begins with a theme “of J. Pleyel”<sup>8</sup>, as the title page suggests, and 4 relatively short variations. The theme is built periodically, in ternary form [: A :] [: B – A :], where each part is 8 measures long. Following variations are non-evolutionary, of the same form and all adopt the very same harmonic progression, which is varied only slightly:

Section	A						B					
Key	C Major						G Major					
Bar #	[: 1, 2	3, 4	5	6	7	8 :]	[: 9, 10	11	12, 13	14	15	16
Theme	I	V	I	II	V	I	I	V	I	IV	V	I
Var. 1	I	V	VI	II	V	I	I	VII	VII, I	IV, II	V	I
Var. 2	I	V	I	II	V	I	I	V	V, I	IV	V	I
Var. 3	I	V	I	II	V	I	I	V	I	IV	V	I
Var. 4	I	V	I	II	V	I	I	V	I	IV	V	I

The table does not show repeated section A, because the repetition is exact. There is no introduction before the theme nor a finale after the last variation.

The theme features an upward going melody consisting of arpeggiated tonic triad. All variations either use this motif or at least keep melody direction. First 4 measures are left harmonically open on a V7. Second half of the section answers with the initial motif taken into sequence and closes with an authentic perfect cadence V – I. Accompaniment keeps rhythmical pulse very steady using a constant eighth-note movement.

The 1<sup>st</sup> variation keeps besides before-mentioned similarities also 8<sup>th</sup>-note movement and direction of the initial motif in measures 1, 3, 5, 6 and at first varies it in last two bars of the first section. Section B continues in the same manner first two bars varied the theme before in the section A, which creates a melody vertically contouring the harmonic tension. This variation introduces dynamics indications and occasional grace-notes.

The 2<sup>nd</sup> variation speeds up the motion into 8<sup>th</sup>-note triplets and works with interchanging up-with down-going melody in upper and lower voice, always supporting the contrast with opposite dynamics. In the last measure I expanded the bass note into a triplet leading to the repetition of B section, in which also its eight measure was changed similarly to flow into the section A back.

The 3<sup>rd</sup> variation speeds up accompaniment's motion ever more into a flow of 16<sup>th</sup>-notes. Initial

<sup>8</sup> most probably Ignace Joseph Pleyel (1757 – 1831)

motif is resembled in its original form in first two measures. Section A copies melodic contour of the 1<sup>st</sup> variation. In section B, I've used modern notation to bring up the two accents on a2 and c3.

The final 4<sup>th</sup> variation keeps moving in 16<sup>th</sup>-notes and preserves the initial motif even more than the previous one, as the theme is repeated nearly exactly in section A, featuring only a short chromatic descent in its second measure. The bass line is varied more, in the fourth bar, utilizing all the inversions of dominant seventh chord consequently in V43 – V65 – V7 – V2 which is properly resolved into I6 in adjacent measure. Section B brings in its upper voice the melody intact, adding only two leap-notes in its seventh measure, arranged into descending line, making itself consistent with the descending in the second measure of previous section.

# Theme with variations

op. 5, No. 1

Andante  $\text{♩} = 44$

dolce con espress.

8

9

17

## Var. 1

25

*p* *f* *p* *f*

31

*p* *f* *p* *f*

37

*sf* *f* *mp* *p* *f*

dolce

43

*p* *f* *p*

Var. 2

49 *f* *p* *f* *p* *f*

55 *p* *f* *p* *f* *p*

61 *f* *p* *f* *p*

67 *f* *p* *f* *p*

Var. 3

73 *f*

78 *p*

83 *p*

88 *f*

93

Var. 4

97 *con espress.* *cresc.*

102 *p*

107

112 *dolce* *cresc.*

117 *f* *p*



Guitarre.

Andante

Tema:

Var. 1.

Var. 2.

Var. 3

Musical score for Variation 3, featuring six staves of music in 2/4 time. The piece begins with a forte (*f*) dynamic. The notation includes various rhythmic patterns, including eighth and sixteenth notes, and rests. Fingering numbers (1, 2, 3, 4) are indicated above several notes. The key signature has one sharp (F#).

Var. 4

Musical score for Variation 4, featuring six staves of music in 2/4 time. The piece begins with a piano (*p*) dynamic. The notation includes various rhythmic patterns, including eighth and sixteenth notes, and rests. Fingering numbers (1, 2, 3) are indicated above several notes. The key signature has one sharp (F#). Dynamic markings include *cresc*, *crespi*, and *dolce*. The piece concludes with a double bar line and the number 1794.

### 3.3. Rondo op. 28, No. 1 in D Major

The cycle of three rondos, op. 28 begins with one in D Major, which does not have any introduction, but begins directly with the principal theme. It returns two more times in between two episodes and a finale.

Section	Subsection	Bar # from – to	Key	Function
A theme	t	0 – 8	D	I
	b	9 – 22	A	V
B  1 <sup>st</sup> episode	a	23 – 36	A	V
	b	37 – 48	D	I
	c	49 – 52		
A theme	t	53 – 60	D	I
C  2 <sup>nd</sup> episode / development	t <sup>1</sup>	61 – 76	b	VI
	b	77 – 92	G	IV
	B.c <sup>1</sup>	92 – 118	G, e, d	IV, II, i
A theme	t	119 – 126	D	I
F  finale	a	126 – 145	A	V
	GP	146 – 147	-	-
	t <sup>2</sup>	148 – 155	D	I
	t <sup>3</sup>	156 – 162		
	coda	163 – 173		

The principal theme consists of a melody in upper voice inside a period with 4-measures long antecedent phrase of I – V – I progression closing itself harmonically perfectly. Consequent phrase uses contrast dynamics and I6 – IV – V – I progression. Subsection A.b is a double-period which begins in dominant key. Both its phrases end with V. Accompaniment of both subsections moves in 8<sup>th</sup>-notes.

First episode starts with melody in bass and dominant key of A Major accompanied in 16<sup>th</sup>-note movement. In the transcription, I've changed its movement to 16<sup>th</sup>-notes triplets in measures 24, 28 and 30 and added octaves in bars 32 and 33, which represent a cadenza-like climax, following into adjacent subsection B.b with a V – I perfect authentic cadence. Upper voice melody in subsection

B.b reminds the principal theme both directionally and rhythmically. To introduce some contrast into a repeated phrase I've shifted bass notes an octave higher in measures 43 and 44. Another four bars lead into subsection B.c, where a sudden change in tempo occurs. Adagio continues in central key mostly on its dominant seventh chord, borrowing only a (IV6)<sub>i</sub> sixth chord from parallel D minor briefly. In the beginning of this subsection I've filled the A7 chord with a fifth voice in measure 49, to make it arpeggiable with plucking-hand thumb only. Short cadenza in measure 52 leads from and imperfect V – (iv6)<sub>i</sub> – V phrygian cadence to repetition.

Principal theme is repeated without any changes.

Second episode begins subsection C.t<sup>1</sup> in B minor, key relative to the central D Major, with a variation of theme. The subsection is a double-period, with its first period ending (VII6) – V on major dominant and the second one V – i perfect cadence in relative key. Subsection C.b starts in sub-dominant G Major key, in strong fortissimo dynamic, introducing descending fanfare-like octaves contouring its tonic triad as its new material. The subsection is a double-period too, similarly like the previous one with the first period of 8 bars finishing with a (V) – V cadence and the second one with V7 – I, having its resolution overlapped with adjacent subsection. Subsection C.B.c<sup>1</sup> takes its material from B.c subsection and puts it into sub-dominant key, making this rondo a sonata-rondo, as its second episode C develops motifs from now quasi-exposition, sections A and B, where A.t together with A.b form first subject group and subsection B.a stands for second subject. The development continues through E minor, relative to subsection's G Major, with a V – I cadence in measures 98 to 100 and settles in D minor, key parallel to the central key, with V – I in measures 102 to 104, letting sound the dominant pedal A tone often enough so that it prepares recapitulation. Sonata-like prolongation of the V7 then occurs in measures 116 to 118. A short cadenza on this chord leads into the recapitulation. In the transcription, I've turned 16<sup>th</sup>-notes to 16<sup>th</sup>-triplets in a way similar to subsection B.a, to keep it both consistent and more textured.

Principal theme is repeated intact for the last time, having last measure overlapped with finale.

Finale begins in bar 126 with period full of coda-like tonic and dominant changes, no particular melodic motif, and calm 8<sup>th</sup>-note motion of the principal theme. The period is then repeated intact in the original publication, but in the transcription, with I varied its consequent phrase rhythmically, switching to 16<sup>th</sup>-triplet motion. This variations end with a (V) – V imperfect cadence in measure 145. A 2-bar general pause follows. After the silence, considerably varied principal theme for two times. In the transcription I've added a wind-like “sul tasto” to the first one and shifted an octave higher and modified the second one to brass-like “sul ponticello”. From the measure 160 on I've added fourth voice to achieve 4-voice harmony. Coda starts in bar 163 silently but gains on tempo and dynamic, with a tonic pedal and constant V7 – I cadences above it.

# Three Rondos

op. 28, No. 1

**Allegro non troppo**

*dolce*

Musical notation for the first system of the first rondo, measures 1-7. The key signature is one sharp (F#) and the time signature is 2/4. The music features a melody in the right hand and a bass line in the left hand. A dynamic marking of *f* (forte) is present at the end of the system.

Musical notation for the second system of the first rondo, measures 8-14. The key signature is one sharp (F#) and the time signature is 2/4. The music features a melody in the right hand and a bass line in the left hand. A dynamic marking of *p* (piano) is present at the beginning of the system.

Musical notation for the third system of the first rondo, measures 15-21. The key signature is one sharp (F#) and the time signature is 2/4. The music features a melody in the right hand and a bass line in the left hand. A dynamic marking of *dol.* (dolce) is present at the beginning of the system, and a dynamic marking of *f* (forte) is present at the end of the system.

Musical notation for the fourth system of the first rondo, measures 22-26. The key signature is one sharp (F#) and the time signature is 2/4. The music features a melody in the right hand and a bass line in the left hand. A dynamic marking of *sf* (sforzando) is present at the beginning of the system. There are triplets indicated by a '3' above the notes.

Musical notation for the fifth system of the first rondo, measures 27-31. The key signature is one sharp (F#) and the time signature is 2/4. The music features a melody in the right hand and a bass line in the left hand. A dynamic marking of *sf* (sforzando) is present at the beginning of the system. There are triplets indicated by a '3' above the notes.

Musical notation for the sixth system of the first rondo, measures 32-40. The key signature is one sharp (F#) and the time signature is 2/4. The music features a melody in the right hand and a bass line in the left hand. A dynamic marking of *dol.* (dolce) is present at the beginning of the system.

Musical notation for the seventh system of the first rondo, measures 41-48. The key signature is one sharp (F#) and the time signature is 2/4. The music features a melody in the right hand and a bass line in the left hand. A dynamic marking of *f* (forte) is present at the beginning of the system.

**Adagio** *dol. con espress.*

**Tempo primo**

Musical notation for the eighth system of the first rondo, measures 49-56. The key signature is one sharp (F#) and the time signature is 2/4. The music features a melody in the right hand and a bass line in the left hand. The tempo changes from Adagio to Tempo primo.

56 *dol.*  
*p*

64 *mf* *p*

72 *f* *ff*

80

88 *f* 3 3 3 3

94 *sf* 3 3

98 *sf* 3

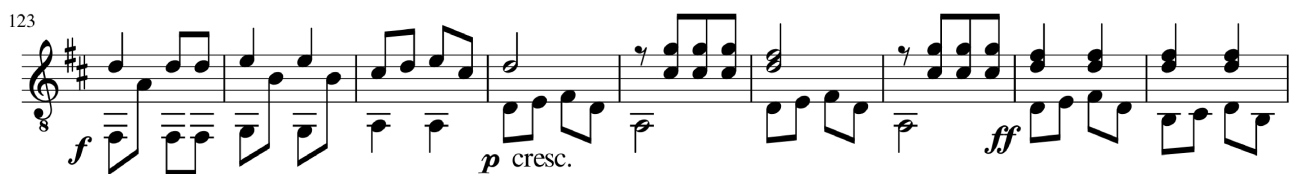
102 *sf* 3

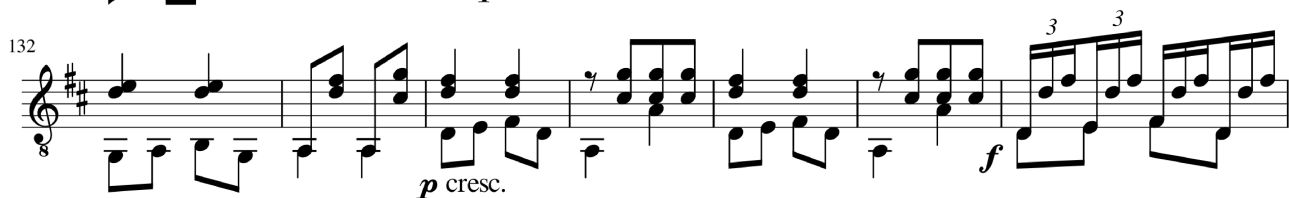
106

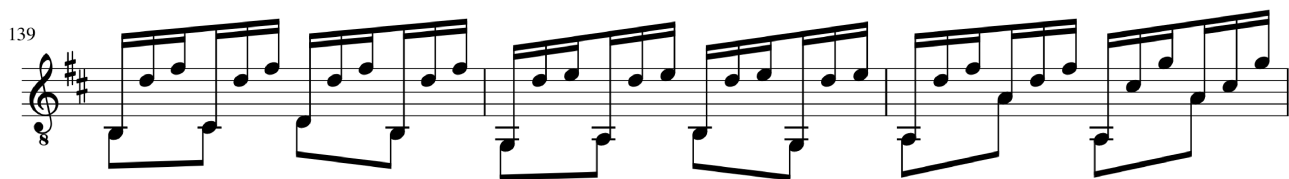
109 3

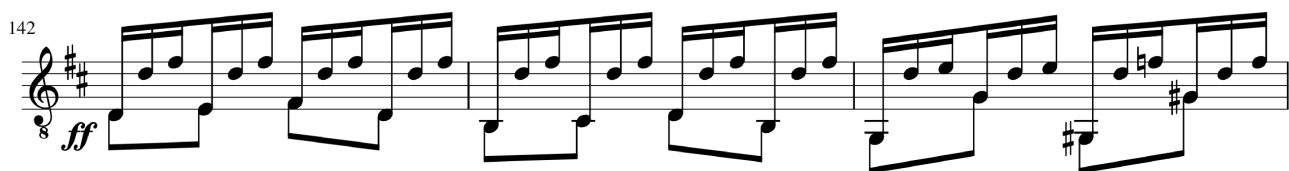
112 

116 

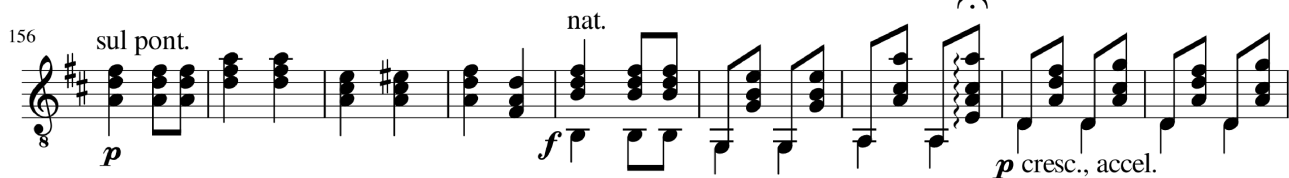
123 

132 

139 

142 

145 

156 

165 

Allegro non troppo.

RONDO I.

The musical score consists of ten staves of music. The first staff begins with a treble clef, a key signature of one sharp (F#), and a 2/4 time signature. The tempo is marked 'Allegro non troppo.' The first staff includes the instruction 'dol.' and a fermata over a measure. The second staff includes a piano dynamic 'p' and a fermata. The third staff includes 'dol.' and a fermata. The fourth staff includes a fermata. The fifth staff includes a fermata. The sixth staff includes a fermata and the instruction '5 Pos.' at the end. The seventh staff includes a fermata, '9 Pos.' at the beginning, and 'dol.' in the middle. The eighth staff includes a fermata and 'Tempo!' at the end. The ninth staff includes 'Adagio dol. con espress.' and a fermata. The tenth staff includes a fermata and a final double bar line.



1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60

dol.  
2 Pos.

*p* *f*

*ff*

*f*

*sf* *p* *f*

*sf* *p* *f*

dol. con espres.

The image shows a page of musical notation for a brass instrument, likely a trumpet, in the key of D major (one sharp). The score consists of ten staves of music. The notation includes various dynamics such as *dol.*, *f*, *ff*, and *p*, as well as articulations like accents and slurs. Fingerings and breath marks are indicated throughout the piece. The score concludes with a double bar line and the word "do." written below the final staff.

*dol.*

*f*

*ff*

*p*

*dol.* 2 Pos.

*dol.*

2 Pos.

crescen 7 Pos.

bar.

do.

*f*

*ff*

### 3.4. Rondo op. 28, No. 2 in F Major

Second rondo of the same cycle shares its predecessors overall scheme. Principal theme appears three times and is alternated by two episodes. Rondo is closed by a finale.

Section	Subsection	Bar # from – to	Key	Function
A theme	t	0 – 16	F	I
1 <sup>st</sup> episode	a	16 – 27	F → C	I → V
	b	28 – 35	C	V
A theme	t	35 - 51	F	I
2 <sup>nd</sup> episode	a	51 – 59	C	V
	b	59 – 67		
A theme	t	67 – 82	F	I
F finale	a	83 – 94	F / d	I / VI
	a <sup>1</sup>	95 – 108		
	coda	109 – 119	F	I

Principal theme is structured periodically, with first 8 measures closing imperfectly on the dominant triad and next 8 measures repeating the theme again but now closing perfectly on tonic triad. For the head of theme there is a very characteristic dotted rhythm used, at first followed by melody accompanied with figures in 8<sup>th</sup>-note motion and then from fifth bar by arpeggiated chords moving in 16<sup>th</sup>-notes. Having this pattern repeated by next 8-bar unit, the theme possesses motivic contrast in its self.

Episode represented by section B opens as it would develop the theme, , but only inherits the before-mentioned contrast in the characteristic dotted motif and 16<sup>th</sup>-note passage in the second half of the B.a subsection. Resolution of authentic perfect C Major cadence in bars 27 to 28 overlaps in measure number 28 with start of subsection B.b, which climaxes into a V2 in central key. The return of theme is supported by a fermata on this harmony.

It is resolved into I6 by repeating the theme in unchanged form.

Second episode introduces new motivic material, but keeps the accompaniment in 16<sup>th</sup>-note motion. It is set into key dominant to the central key, in a binary form of usual lengths fo its subsections, both measuring 8 bars. The internal tonal plan meets the traditional binary form too,

moving from I to V in first section and back from V to I in the second one.

After the principal theme is repeated for the third and last time, again without any variations, a finale follows.

Finale consists of code-like material in constant 16<sup>th</sup>-note motion. Subsection F.a is shifting between central and relative minor key with its dominant seventh as borrowed chord. The subsection F.a<sup>1</sup> does not move from I64 to V7 and back to I as the previous one, but is varied and flows into coda using progression I6 – (VII) – II6 – T64. In this subsection I've added 16<sup>th</sup>-triplet motion to the accompaniment of bass line, starting in the measure number 96, so the same would not be repeated four times note by note. To keep the intensification towards coda I changed 16<sup>th</sup>-note arpeggios into sextuplets in bars 105 to 108.

In the coda I've added octaves from measure 109 to 112 and again triplets instead of 8<sup>th</sup>-notes in bars 113 and 114.

No. 2

**Allegretto**

*dolce*

Musical notation for measures 1-5. The piece is in 2/4 time with a key signature of one flat (B-flat). The melody features eighth-note patterns and rests. A dynamic marking of *f* (forte) is present at the end of the first system.

Musical notation for measures 6-11. The melody continues with eighth-note patterns. A dynamic marking of *dolce* is present above the staff.

Musical notation for measures 12-16. The melody features eighth-note patterns and rests. A dynamic marking of *f* (forte) is present at the end of the system.

Musical notation for measures 17-22. The melody features eighth-note patterns and rests. Dynamic markings of *p* (piano) and *f* (forte) are present.

Musical notation for measures 23-28. The melody features eighth-note patterns and rests. Dynamic markings of *p* (piano) and *f* (forte) are present.

Musical notation for measures 29-32. The melody features eighth-note patterns and rests. A dynamic marking of *f* (forte) is present at the end of the system.

A tempo  
dolce

34

*f* *f* *f*

40

45

51

*f* *f* *f* *f*

56

dol.

61

66

dol.

71

*f* dol.

76

Musical notation for measures 76-81. The piece is in 8/8 time with a key signature of one flat. Measure 76 features a dynamic marking of *f*. The notation includes eighth and sixteenth notes, rests, and a fermata over a measure.

82

Musical notation for measures 82-86. The notation includes eighth and sixteenth notes, rests, and a repeat sign.

87

Musical notation for measures 87-91. The notation includes eighth and sixteenth notes, rests, and a repeat sign.

92

Musical notation for measures 92-96. The notation includes eighth and sixteenth notes, rests, and a repeat sign.

97

Musical notation for measures 97-100. The notation includes eighth and sixteenth notes, rests, and a repeat sign.

101

Musical notation for measures 101-104. The notation includes eighth and sixteenth notes, rests, and a repeat sign.

105

Musical notation for measures 105-108. The notation includes eighth and sixteenth notes, rests, and a repeat sign.

109

Musical notation for measures 109-112. The notation includes eighth and sixteenth notes, rests, and a repeat sign. Dynamic markings include *p cresc.* and *f*.

Allegretto.

RONDO II.

The musical score consists of 12 staves. The first staff is the vocal line, starting with a treble clef, a key signature of one flat (B-flat), and a 2/4 time signature. The tempo is marked 'Allegretto.' and the dynamics include 'dol.' (dolce), 'f' (forte), and 'sf' (sforzando). The second staff is the first piano accompaniment, also in treble clef, with dynamics 'dol.' and 'f'. The third staff is the second piano accompaniment, in bass clef, with dynamics 'p' (piano) and 'f'. The fourth staff is the third piano accompaniment, in bass clef, with dynamics 'p' and 'f'. The fifth staff is the fourth piano accompaniment, in bass clef, with dynamics 'p' and 'f'. The sixth staff is the fifth piano accompaniment, in bass clef, with dynamics 'p' and 'f'. The seventh staff is the sixth piano accompaniment, in bass clef, with dynamics 'p' and 'f'. The eighth staff is the seventh piano accompaniment, in bass clef, with dynamics 'p' and 'f'. The ninth staff is the eighth piano accompaniment, in bass clef, with dynamics 'p' and 'f'. The tenth staff is the ninth piano accompaniment, in bass clef, with dynamics 'p' and 'f'. The eleventh staff is the tenth piano accompaniment, in bass clef, with dynamics 'p' and 'f'. The twelfth staff is the eleventh piano accompaniment, in bass clef, with dynamics 'p' and 'f'. The score includes various musical notations such as slurs, accents, and dynamic markings. The word 'crescen-do.' is written across the sixth and seventh staves. The word 'dol.' appears at the beginning of the first staff and at the end of the eleventh staff. The word 'sf' appears in the eighth and ninth staves. The word 'p' appears in the third, fourth, fifth, sixth, seventh, eighth, ninth, tenth, and eleventh staves. The word 'f' appears in the second, third, fourth, fifth, sixth, seventh, eighth, ninth, tenth, and eleventh staves. The word '2 Pos.' is written above the fourth staff. The word '99' is written at the bottom of the page.



This page of musical notation consists of 12 staves. The music is written in a single melodic line with a bass clef and a key signature of one flat. The notation is dense, featuring many sixteenth and thirty-second notes, often beamed together. Dynamics include *f* (forte), *dol.* (dolce), and *p* (piano). There are also performance instructions: "5 Pos." (five positions) and "99" (likely a fingering or position number). The piece concludes with a double bar line and a repeat sign.

### 3.5. Rondo op. 28, No. 3 in A Major

Whole opus encloses third rondo, by its structure leans toward sonata form, having only one episode, which contains development of before-presented motivic material.

Section	Subsection	Bar # from – to	Key	Function
A theme	t	0 – 8	A	I
	b	9 – 20	A → E	I → V
	c	21 – 26	E → A	V → I
	t	27 – 34	A	I
B episode / development	a	35 – 42	a	i (tonic parallel)
	b	43 – 58	C	(III) i
	a	59 – 66	a	i
	coda	66 – 79	a → A	i → I
A <sup>1</sup> theme	t	80 – 86	A	I
	b	87 – 94	F → A	(VI) i → I
F finale	a	94 – 104	A	I
	a <sup>1</sup>	104 – 114		
	coda	114 – 120		

Principal theme appears three times, but subsections A.b and A.c do not introduce enough contrast to be classified as an episode. They are derived from the theme instead, hence I consider them being subsections of the main section A.

The theme is 8 bars long, with 4<sup>th</sup> bar having opened on V. Motif is used in adjacent section A.b which by a d# note in 12<sup>th</sup> bar suggests shift of the tonal center into E major, key dominant to the central one. The new key is confirmed by measures 15 to 17 which contain VII6 – I6 – II6 – I6 progression in E major, definitely finishing with an authentic perfect cadence V7 – I in measures 19 to 20. Subsection A.c finishes with a fermata which supports return to the principal theme and its A Major progression VII43 – D2 – T6 very well, “holding breath” on the dominant.

First contrasting section is B, internally structured as a – b – a – coda, where both subsections B.a and B.b use motivic material of the principal theme and place it into A minor key, parallel to central A major key. Subsection B.b then jumps from A minor's dominant into major relative key, which is C Major. Measures 57 to 58 enclose this subsection with an authentic perfect cadence. Section B.a gets repeated and links to coda, which keeps the harmony stuck through a grand prolongation on dominant seventh chord and so prepares the repetition on theme well, both

harmonically and rhythmically using a fermata. In bars 72 and 73 I've added octaves and dominant pedal accentuation.

The rondo theme, now returned for its last repetition, ends with an irregular resolution of the dominant into deceptive cadence resting on F Major triad, borrowed from parallel key as VI degree. Following subsection A<sup>1</sup>.b behaves like A.b in its first two measures which may feel like a false recapitulation of a sonata form, but then leads back from F Major to central A Major key using (VI – (VII)<sub>V</sub>) – i64 – (VII) – V2 – I6 – IV – I64 – V – I progression:

The image shows two systems of musical notation. The first system, starting at measure 85, features a treble clef and a key signature of two sharps (F# and C#). It includes annotations: "Deceptive cadence: V - (VI) i" above the first few measures, "False recapitulation?" above a measure with a fermata, "(VI)" above a measure, and "(VII\_V)" above the final measure. Dynamics include *f*, *sf*, and *p*. The second system, starting at measure 91, continues the piece and includes annotations: "i64", "(VII)", "V2", "I6", "IV", "I64", "V", "I", and "Finale back in central key A Maj." above the measures. Dynamics include *sf* and *p*. The piece concludes with a final chord and a fermata.

Finale keeps motion in 16<sup>th</sup>-notes to its coda, where I have in the transcription added octaves and prolonged this 16<sup>th</sup>-notes pace two more measures by accentuating the tonic pedal, just like in the coda of episode / development section B, to make these two consistent. I also made the very final chord fuller to make it arpeggiable with plucking-hand thumb only.

No. 3

**Allegretto**  
dolce

6

12

18

25

30

35

**Adagio** **Tempo primo**

dol.

dol.

**Minore**  
dol. c. esp.

*f* *p* *f* *f* *f* *f* *f* *mp*

40 *f* *p* *f*

45 *dolce*

50 *f* *f* *f*

55 *f* *mp* *dol.*

60 *f* *mp* *f*

65 *p* *sf* *sf* *sf*

70 *sf*

75 *rall.* *Maggiore dolce* *sf* *sf* *sf*

80 *f* *dol.*

85 *f* *p* *f*

91 *f* *p*

96 *p*

101 *f* *p*

106 *p*

111 *f*

116

**RONDO III** *Allegretto.*

The musical score consists of ten staves of music. The first staff is marked *Allegretto.* and begins with a *dol.* dynamic. The second and third staves also feature *dol.* markings. The fourth and fifth staves continue the piece with various dynamics including *f* and *p*. The sixth and seventh staves are marked *Tempo!* and *Adagio.*, with *dol.* and *f* dynamics. The eighth and ninth staves are marked *Minore.* and *dol. con espres.*, with *f* dynamics. The tenth staff concludes the piece with a *f* dynamic. The score includes various musical notations such as treble clefs, time signatures, notes, rests, and dynamic markings.

A musical score for guitar, consisting of ten staves of notation. The score is written in a key signature of one sharp (F#) and a 2/4 time signature. The notation includes various rhythmic patterns, such as eighth and sixteenth notes, and rests. Dynamic markings are present throughout, including *p* (piano), *f* (forte), *sf* (sforzando), and *dol.* (dolcissimo). The score is divided into two systems by a dashed line. The first system contains the first seven staves, and the second system contains the last three staves. The final staff of the second system is marked *rallent.* (rallentando) and features a series of chords. The notation is clear and legible, with a focus on melodic and harmonic development.



Maggiore.

Tempo 1º dol.

dol.

ff

p

f

p

f

p

f

p

f

5 Pos. ————— 9 Pos.

FINE.

## 4. Romantic guitar

### 4.1. Classification of the guitar by Hornbostel-Sachs

Hornbostel-Sachs catalogue registers classical guitar under code 321.322-5, which encodes following:

- 3: sound is produced by one or more vibrating strings (chordophones)
- 32: the resonator (composite chordophone) and string bearer are physically united and can not be separated without destroying the instrument
- 321: strings run in a plane parallel to the sound table (lutes)
- 321.3: the string bearer is a plain handle (handle lutes)
- 321.32: the handle is attached to, or carved from, the resonator, like a neck (necked lutes)
- 321.322: whose body is shaped like a box (necked box lutes)
- 321.322-5: sounded by bare fingers

As will be presented later, there were experimental designs of neck adjustment and tuning mechanisms which do not fall into the 32 and 321.3 category in their strict meaning. Some of them appeared repeatedly and were adopted into historical every-day praxis of 19<sup>th</sup> century; therefore, became not experimental anymore.

Secondly, considering the late 19<sup>th</sup> century designs were not changed significantly, except further 20<sup>th</sup> century experiments, and modern guitars are built by them to the present day, above mentioned classification appears not to be sufficient and leaves some room for serious questioning whether it doesn't need an improvement.

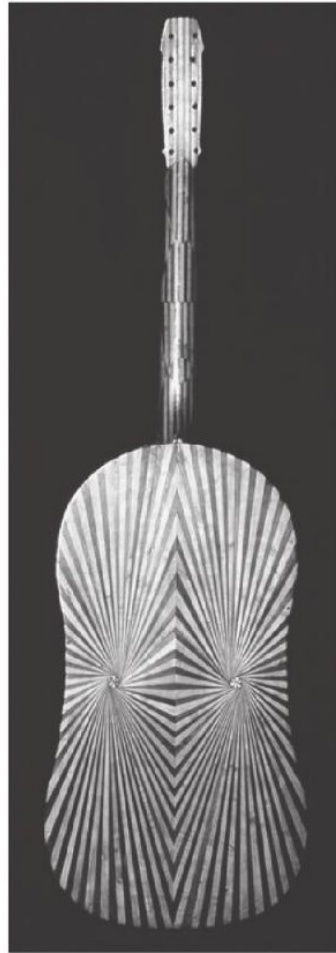
### 4.2. Historical predecessors before 19<sup>th</sup> cent.

#### 4.2.1. Renaissance

##### 4.2.1.1. Spanish vihuela

In a context of classical guitar, the term vihuela is always understood like the vihuela “da mano”. It has to be noted that in 16<sup>th</sup> century Spain the term alone could be connected with “de arco” – played using a bow, “de penola” – played using a plectrum and “da mano” – plucked by bare fingertips [Turnbull p. 5].

However, only three original instruments today classified as “vihuela” have survived [Koonce 2008 p. 11].



*The “Guadalupe” vihuela. [Koonce 2008 p. 11]*

Picture “the Guadalupe vihuela”, displays an instrument currently residing in Jacquemart-André Museum in Paris, featuring word “Guadalupe” burnt into the peg box possibly indicating that Joan de Guadalupe made it in Toledo around 1525 [Koonce 2008 p. 11].

In comparison with other two original instruments labeled “vihuela”, this one resembles iconography [ElMaestro] in Luis de Milán's (c. 1500 – c. 1561) publication “El Maestro” probably most accurately.



*Orpheus playing a vihuela. [ElMaestro]*



*The “Chambure” vihuela. [Koonce 2008 p. 13]*

“Was the Spanish vihuela da mano considered a guitar?” [Tyler-Sparks p. 3] is a good question asked by James Tyler in introduction to his chapter about the guitar in the 16<sup>th</sup> century. His answer to this question is no, as under the terms “guitarra”, “chitarra”, “guiterre” and “gittern” was understood a 4-or-5-course instrument.

The 6-course vihuela flourished between years 1536 and 1576, as there are seven known printed publications regarding vihuela:

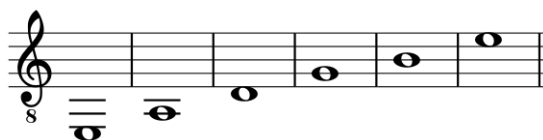
- “El Maestro” – 1536 by Luis de Milán; mostly for vihuela solo, or vihuela accompanying a voice; texts in Castilian Spanish and Portuguese
- “Los seys libros del Delphin” – 1538, Luis de Narváez (1526 – 1549)
- “Tres Libros de Música” – 1546, Alonso Mudarra (c. 1510 – 1580)
- “Silva de Sirenas” – 1547, Enríquez de Valderrábano (c. 1500 – a. 1557)
- “Libro de Música de Vihuela” – 1552, Diego Pisador (c. 1510 – a. 1557)
- “Orphénica Lyra” – 1554, Miguel de Fuenllana (c. 1500 – 1579); contains works for 5-course vihuela as well

- “El Parnasso” – 1576, Estevan Daça (c. 1537 – 1591/1596)

All these books were printed in Spain and all feature tablatures in 6 lines, meaning 6 courses. No further publications for this instrument after 1576 are known, whereas “the oldest known vihuela tablature is a single, one-page piece” from 1514 [Koonce 2008 p. 4].

Features common or similar to 19<sup>th</sup> century guitars include:

- tuning and stringing



*19<sup>th</sup> century guitar tuning<sup>9</sup>, intervallic configuration: 4-4-4-3-4*



*Usual 6-course vihuela tuning, in unisons: 4-4-3-4-4*



*5-course vihuela tuning, in unisons: 4-4-3-4*



*6-course vihuela tuning in unisons and octaves on last 2 courses.*

- flat or near-flat backboard
- flat fingerboard

These features make the Spanish vihuela, which is according to [Tyler-Sparks p. 3] “still viewed as a Spanish equivalent of Italian renaissance lute”, in tuning identical to 6-course renaissance lute. Consequently, the Spanish vihuela repertory is extremely adaptable to 6-course or 6-string guitar appearing at the end of 18<sup>th</sup> century, or even modern guitar. Far more than that of Baroque guitar or Baroque lute<sup>10</sup>.

<sup>9</sup> Identical to modern guitar.

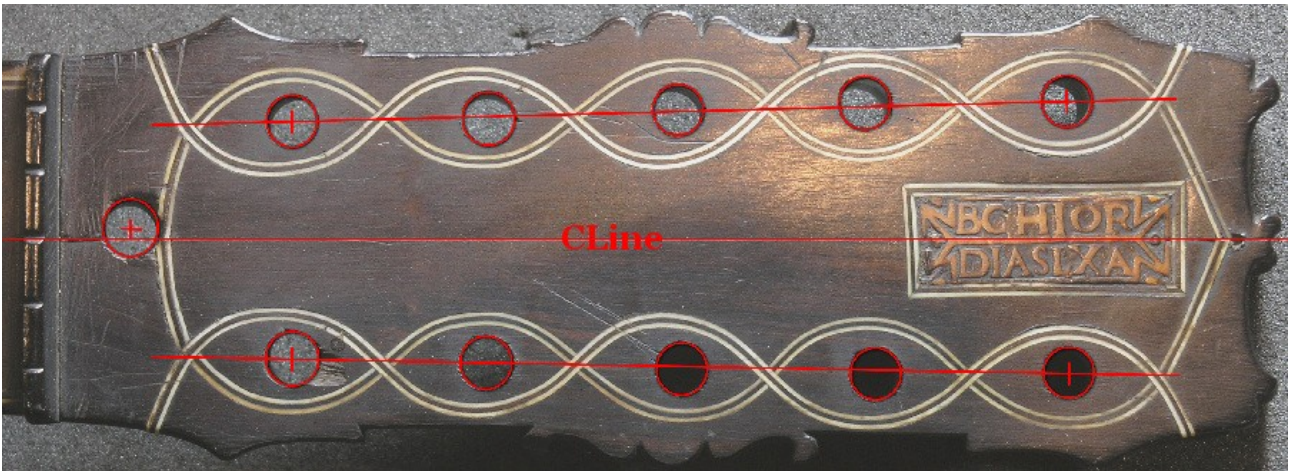
<sup>10</sup> because on the 6-string guitar one only has to tune the 3rd string half step lower to achieve the same intervallic configuration as 6-course vihuela or lute employ. Use of capo in 2<sup>nd</sup> or 3<sup>rd</sup> position is then optional, but highly recommended, as this shortens the scale length to mimic the older instruments even more accurately.



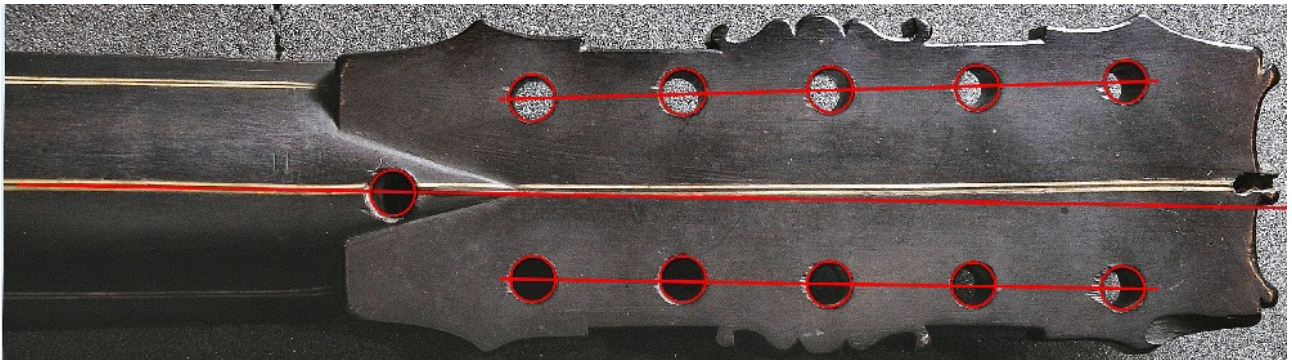
*Belchior Dias guitar or vihuela. [Koonce 2008 p. 14]*

Regarding the third surviving vihuela by Belchior Dias, a 5-course instrument made in 1581 in Lisabon, which looks more like a Baroque guitar, Frank Koonce mentions other organologists' disputes, that terms “guitar” and “vihuela” were interchangeable at the time.

What allows the dispute whether this instrument is a 5-course guitar/vihuela or 6-course vihuela is firstly the rare occurrence of 5-course guitar/vihuela repertory in Fuenllana's “Orphénica Lyra”, which makes even a 5-course instrument “classify as vihuela”, and secondly an 11<sup>th</sup> hole in the peg box, a slightly “displaced” one, which may also suggest the instrument underwent multiple changes over extended periods of time. Non-original pegs from late 18<sup>th</sup> century, which likely were of a larger diameter hence the holes were re-rimmed broader, suggest this also.



[Belchior1]

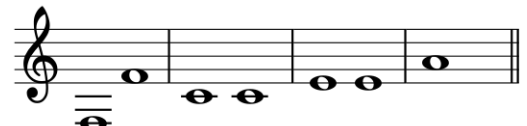


[Belchior2]

It is not clear whether this slight inaccuracy was there before, which leaves a good chance the instrument could be strung in 6 courses with only a single string in the first one, as it was a general practice in stringing lutes.

#### 4.2.1.2. Renaissance guitar

At the same time, a “Guitarra de quatro órdenes” coexisted in Spain. A book “El libro de la declaration de instrumentos” by Juan Bermudo (c. 1510 – c. 1565), published in Osuna in 1549, documents two tunings of this rather small in size, descant instrument.



*Two renaissance guitar tunings: 4-3-4 or 5-3-4*

In the same book, Bermudo gives tunings of 6-course vihuela and notices they are identical to the “vihuela de Flandes”, under which he understands the renaissance lute [Tyler-Sparks p. 6].

Renaissance guitar was, in contrast with vihuela, known and played outside Spain also: in England under name “gyttron” around 1550 [Tyler-Sparks p. 24] and in France it was labeled “guitarre” or “guitarne”. Having 4 volumes of music published in Paris between 1550 and 1552



only [Tyler-Sparks p. 12] by a publisher with his privilege granted by King<sup>11</sup>, one could conclude it was established on a comparable level to vihuela in Spain.

I. E  
PREMIER LIVRE DE  
CHANSONS, GAILLARDES, PAVANNES,  
Bransles, Almandes, Fantaisies, reduictz en tabulature de Guiterne  
par Maistre Guillaume Morlaye ioueur de Lut.



A P A R I S.  
De l'Imprimerie de Robert Granlon & Michel Fezandat, au Mont  
S. Hylaire, à l'Enseigne des Grandz Ions.  
1552.  
Avec priuilege du Roy.

[RoyPremierLivre]

Iconography in one of these four books “Le Premier Livre de Chansons, Galliardes, Pavannes, ... de Guiterne” [RoyPremierLivre] shows a 4-course renaissance guitar with only a single string in its 1<sup>st</sup> course.

#### 4.2.1.3. Renaissance lute

The renaissance lute's closest features to 19<sup>th</sup> century guitar, as mentioned before, are tuning and flat fingerboard.

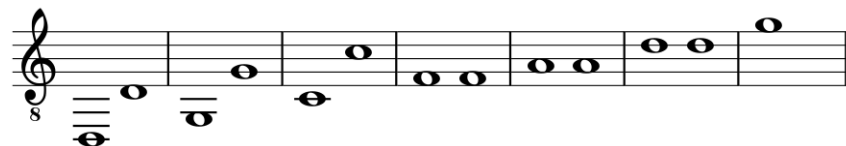


6-course lute tuning: 4-4-3-4-4

Many new courses were added over time. One of the most prolific composers of this era, John

<sup>11</sup> Henry II (1519 – 1559) ruled in France from 1547 to 1559

Dowland (1563 – 1626) requires at least 7 courses in his works.



*Lute tuning required by J. Dowland.*

With the end of renaissance era, 10-course lutes were common, although with bourdon strings tuned in a very different way, making these instruments very suitable for playing basso continuo parts in the upcoming Baroque era.



*10-course renaissance lute tuning: 1-1-1-1-4-4-3-4-4*

This pattern of adding bourdon basses in diatonic fashion repeats itself later in guitars of 19<sup>th</sup> century<sup>12</sup>.



*[SizeComparison1]*




Picture [SizeComparison1] displays non-original instruments, but can give a to-scale comparison of what sizes they could be in relation to each other. On the left there is a 6-course vihuela, this particular relatively small, in the middle a 4-course renaissance guitar, on the right an 8-course renaissance lute.

<sup>12</sup> 7-stringed Heptacorde of Napoléon Coste or Décacorde by René Lacôte with its 10 single strings.

## 4.2.2. Baroque

### 4.2.2.1. Baroque guitar

Baroque guitar is a somewhat larger instrument compared to its renaissance predecessor when it comes to the volume of its resonator, and has 5 courses with 2 strings each. This tuning and stringing was settled well around more European countries, in contrast with renaissance 4-to-6-course guitars/vihuelas.

<p>1646 Italy – Francesco Valdambrini [Tyler-Sparks p. 73]          1674 Spain – Gaspar Sanz [Koonce 2006 p. 4]</p>	 <p style="text-align: center;">4-5r-3-4</p>
<p>1671 France – Antoine Carre          1671 Italy, France, Englands – Francesco Corbetta          1682 France – Robert de Viseé          1690 Netherlands – Nicolas Derosier</p>	 <p style="text-align: center;">5r-4-3-4</p>
<p>1606 Italy – Girolamo Montesardo          1620 Italy – Benedetto Sanseverino          1694 Spain – Francisco Guerau</p>	 <p style="text-align: center;">4-4-3-4</p>

[Tab2]<sup>13</sup>

Table Tab2 shows a listing of years, countries and authors of published methods or books containing Baroque guitar repertory.



[Wadsworth1]

13 “5r” stands for a 5<sup>th</sup> reentrant, which means in an opposite direction.



[Wadsworth2]

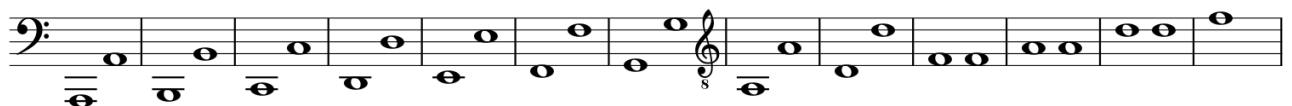
Pictures Wadsworth1 and Wadsworth2 show a Baroque guitar replica, depicted with no gut-frets tied on the neck.

#### 4.2.2.2. Baroque lute

Transitioning from renaissance to Baroque period, lute underwent development in its own direction, which made it even less similar to vihuelas. What is today known as “Baroque” or “d-minor” tuning originated in France by around 1670.



14-course Baroque lute tuning: 1-1-1-1-1-1-1-1-4-4-3-4-4



13-course Baroque lute tuning: 1-1-1-1-1-1-1-1-4-3-3-4-3

#### 4.2.3. Transition to and adoption of 6-string guitar

There are two most significant differences between modern guitars built at the end of 19<sup>th</sup> century and those of earlier designs. The most obvious and early change occurred in stringing, which abandons double-strings in courses and relies on single strings only. This happened at the end of 18<sup>th</sup> and in the beginning of 19<sup>th</sup> century. The other difference is a top bracing pattern which moves from the ladder-pattern away, leaving fan-pattern and its derivatives come into foreground nearly exclusively. Minor differences include fixed frets made of metal alloys, adjustable string action, mechanized tuners, top and resonator size, and some others, which are going to be described in following chapters.

Coexistence of more stringing and bracing patterns could be illustrated by Graham Wade's chapter "A multiplicity of Guitars, 1750 – 1815" [Wade 2001 p. 63-64], which lists a selection of instruments, providing the year of construction, stringing, builder, place of origin and current possession<sup>14</sup>, and if available, bracing pattern recognition.

<b>Year</b>	<b>Stringing</b>	<b>Origin</b>	<b>Fan bracing</b>
c. 1750	5-course	Spain – Barcellona, J. Massague	No
c. 1759	7-course	Spain – Seville, F. Sanguino	Yes
1773	6-string	France – Orléans, F. Lupot	?
1777	5-course	Spain – Seville, J. de Frías	Yes
c. 1780	7-course	Spain – Seville, F. Sanguino	Yes
1783	6-course	Spain – Cádiz, J. Benedid	Yes
1784	6-course	Spain – Cádiz, D. Guerra	No
1786	5-course	Spain – Madrid, L. Alonso	No
1790	6-string	Italy – Naples, A. Vinaccia	?
c. 1790	6-course	Portugal – Lisbon, P. F. Oliveira	No
1792	6-string	Italy – Naples, G. Trotto	?
c. 1792	6-course	Spain – Málaga, J. Martínez	Yes
1792	6-course	Spain – Cádiz, J. Pagés	Yes
1794	6-course	Spain – Cádiz, J. Benedid	Yes
1795	6-string	Italy – Naples, G. B. Fabricatore	No
1796	6-course	Spain – Seville, I. de los Santos	No
1797	6-course	Spain – Madrid, B. Sánchez de Aguilera	No
1800	6-string	Spain – Cádiz, J. Benedid	Yes
1803	6-string	Spain – Granada, A. Caro	Yes
1804	6-course	Spain – Madrid, M. Muñoa	No
1815	6-course	Spain – Barcelona, J. Matabosch	No

[Tab3]

<sup>14</sup> A museum or a private collection.



*[MariaWallpole]*

Iconography [MariaWallpole] from 1765 shows an instrument with no Baroque-guitar-like parchment or any other rosette, strung with 12 strings in 6 courses, in a body shape featuring lower and upper bouts well resembling 19<sup>th</sup> century guitars.

Listing in Tab3 shows a majority of instruments originating from Spain, which were originally built for mentioned stringing. “The 6-course guitar was widely used in Spain and Latin America, and flourished during the years ca. 1759 – 1805.” [Coelho 1997 p. 199]

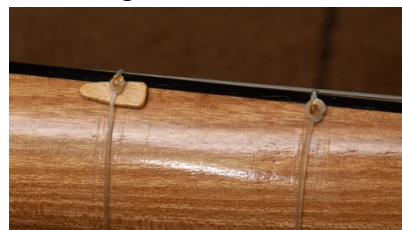
Refitting older Baroque instruments' bridges and nuts, or simply stringing them with single strings only without any refit, was a common practice, as it was often cheaper to buy an old Baroque guitar and string it with 5 single strings, than to order a brand new 6- or even 5-string guitar. [Coelho 1997 p. 197]

There may be several causes:

- In a practical point of view, fewer strings may cost less and take less time to produce. With

the upcoming industrial revolution and changing political views<sup>15</sup>, a wider market was going to be available.

- For players, the strings also take less time to tune and maintain. In the beginning of 19<sup>th</sup> century there still were no mechanized tuners, which made the difference in tuning of 6 or 12 strings even more obvious. “...difficulty of pairing strings is eliminated, which takes less time to tune.” states Charles Doisy in his “Principes Généraux de la Guitare” from 1801 [Coelho 1997 p. 197].
- The same goes for frets. Gut-frets wear themselves off many times faster than those made of metal-alloy. Players also have to tune them by shifting up- or downwards the neck, having in mind their tension too – the gut loosens itself over time, which is to be aided by inserting some padding, a small wooden wedge for instance, which brings the fret back into tension.



*[FretgutWedge]*

- Single strings are usually easier to master. “...the French and Italians use single strings for their guitars, and in this way achieve a faster tuning and longer life for their strings before going bad. It is difficult to find two equal strings giving exactly the same pitch. I follow this system, and I advise beginners to do the same thing, having known its great utility.” says guitar method of Federico Moretti, from Spain, 1799; “...it is very easy now to find a great number of true strings. The single strings are very easy to tune and pluck cleanly. They make a pure sound, strong and mellow and approach that of a harp, especially if one uses thicker strings...” states Giacomo Merchi in his “Traité des Agréments de la Musique executés sur al Guitarre” from 1777 [Coelho 1997 p. 197]. Besides the ease of play, there is a notable shift of tastes from courses which provide always a little discrepancy in frequency between its strings, to single strings which “make pure sound”.
- Mentioning industrial revolution, one could also consider the demand of louder playing being another reason – having the number of strings halved, there is certainly a greater potential left per string when it comes to the tension. The stiffer the tension, the louder the sound, as far as both the construction of instrument and the string itself allow. The other way how to make an instrument louder is to use wire strings instead of gut – “we should briefly note the popularity in Italy (especially in the south) of the 'chitarra battente'. This wire-strung guitar was widely used to accompany songs and dances, and its classic form seems to

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15 French revolution, 1789 – 1799

have been perfected in Naples in about 1740...had a vaulted back, a distinctive inward bend in the soundboard (at bridge level), five courses of wire strings (usually pairs, but sometimes triplets, attached not to the bridge but to pegs at bottom of the instrument), and fixed metal or bone frets. It was played with a plectrum, usually in strumming style, and was capable of producing a loud and forceful accompaniment. However, it was never widely played outside Italy...” [Tyler-Sparks 2002 p. 199]



*[ChitarraBattente1]*



*[ChitarraBattente2]*

- A change in aesthetics itself – one can hardly describe what drives the constant search and proving over human history, but maybe simple curiosity, or longing for something new, fresh, more fashionable is the simplest answer.

“By 1780, 6-string guitars were regularly being built in southern France and the popularity of the 5-string guitar was fading fast.” [Coelho 1997 p. 199]. “The 6-string classical guitar emerges at different times from different cultures, yet if Europe is considered as a whole, we can recognize that the 6-string guitar is established ca. 1780 in a form that is an extension of the earlier five-course Baroque guitar – that is, with a fingerboard that is flush with the top of the instrument and bridge without a saddle. It should be noted that many 5-course Baroque guitars were expanded to 6 strings during the late 18<sup>th</sup> century.” [Coelho 1997 p. 200].

Regarding frets, the gut was replaced by wood, bone, mother-of-pearl, but in the end mostly by metal alloy. There were two fret types, earlier I-type and the later T-type, named after what letter's shape the profile of a fret resembled – the latter type being somewhat more complex, having two parts – a crown upon a tang.





*Mother-of-pearl I-type frets in a scalloped fretboard [FretsMotherOfPearl]*



*I-type frets made of bone embedded into a flat, non-scalloped fretboard [FretsIvory]*

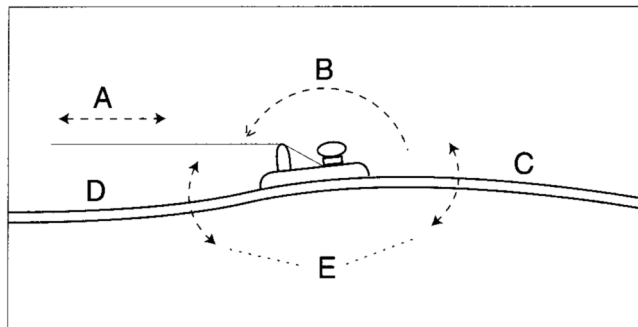


*T-type frets [FretsModern]*

### 4.3. Early romantic guitar

#### 4.3.1. Bracing pattern

As the design of guitar's top influences its overall sound at most, one aspect of guitar design, by which one could evidently distinguish two guitar types throughout the whole 19<sup>th</sup> century, is undoubtedly the internal bracing pattern of the top. Together with the top thickness, its bracing is that what distributes the mass and what dictates how it will respond to the vibrations of strings.



*[Siminoff 2008 p. 8]*

“On a fixed bridge instrument, the longitudinal vibrations (A) of the string play a critical role by driving the bridge through a rocking motion. The soundboard is torqued at the bridge (B) causing a bulge behind the bridge (C) and a hollow in front of the bridge (D). This leads to a pumping action (E).” [Siminoff 2008 p. 8] “On a ...guitar, internal bracing is important to keep the large, flat soundboard from bending out of shape or self-destructing as well as to control the amount of stiffness of the soundboard. By comparison, on a mandolin or violin, the arched and graduated soundboard is a very strong and deflection-resistant shape so braces are not needed for strength.

Instead, tone bars are used to adjust the stiffness of the soundboard and are an important element of the tuning process<sup>16</sup>. Basically, braces and tone bars are both pieces of wood glued to the underside of a soundboard. The only difference between them is how they are used and the job they perform: a brace is for structure and a tone bar is for tuning.” [Siminoff 2008 p. 9]

For an early romantic guitar, the ladder-pattern is typical.



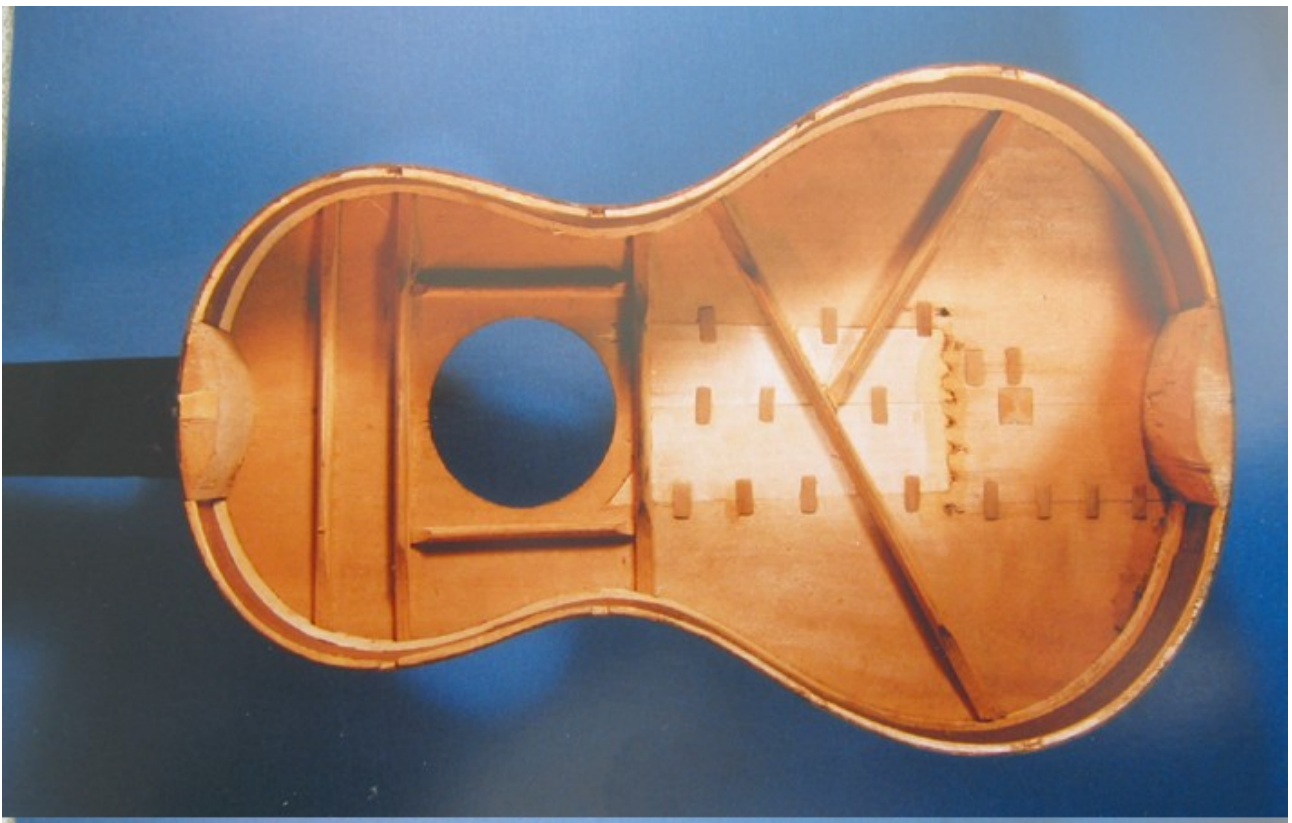
*Ladder-bracing on an A. Stauffer & Comp. guitar, ca. 1825 [Bracing1]*

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16 Tuning response to string vibrations – tuning of the instrument itself, not tuning the pitch of strings.



*Slanted ladder-bracing on a R. F. Lacôte guitar, 1828 [Bracing2]*



*Pons<sup>17</sup>-style Y-bracing, a variated ladder-bracing, Lavigne of Paris guitar, ca. 1815 [Bracing3]*

17 “Several instrument makers by the name of Pons are known to have produced bowed instruments, guitars and lyre guitars in Grenoble, Paris and London. These different locations, coupled with the frequent absence of given names on Pons labels, make it difficult to tell how many Ponses there actually were, and whether or not they were all from



*Fan-braced top of an instrument by L. Panormo, 1832 [Bracing4]*

For the later 19<sup>th</sup> century, fan-braced top is typical, originating from and mostly used in Spain. This bracing pattern was then widely adopted and remains the far most frequently used to this day.

#### **4.3.2. Number of strings**

As the stringing of guitar was well settled at the end of 18<sup>th</sup> century, in the course of the 19<sup>th</sup> century, same pattern from the Baroque period repeated itself – guitars were equipped with more and more strings, mainly open sub-basses placed outside the fretboard, tuned stepwise, just like late Renaissance and Baroque lutes or arch-lutes. There was no augmentation to the upper register.



*“Heptacorde” played by N. Coste [Heptacorde]*

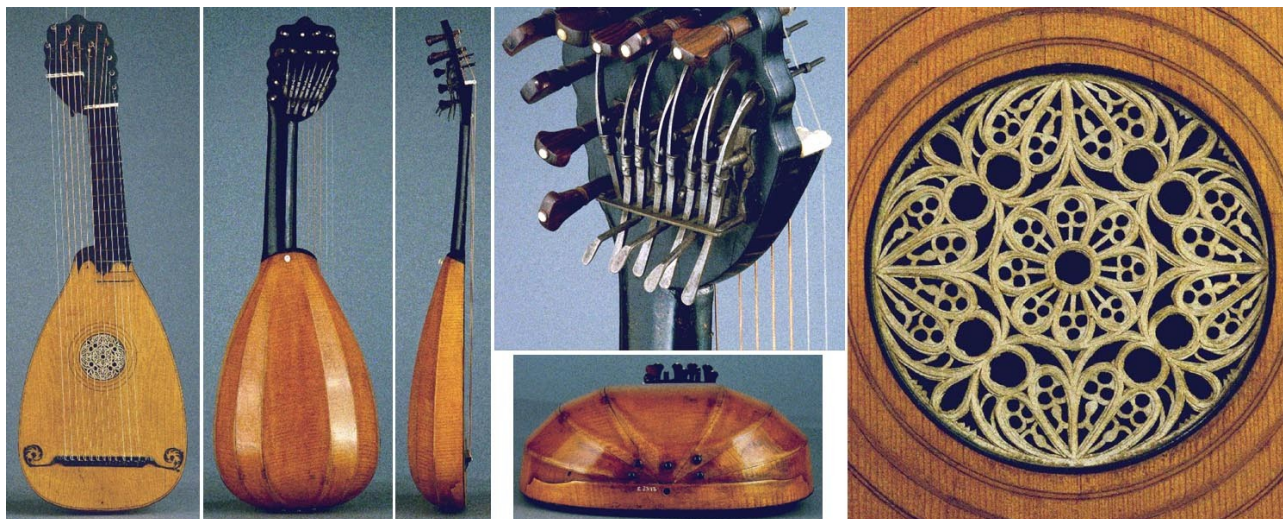
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the same family. ...Later, the Paris Pons is known to have used a Pons à Paris label, having dropped the fils designation. ...In addition to emerging as an important early maker, Joseph Pons also has the accolade of having taught an apprentice who was later to become the most renowned 19th-century French guitar maker: René François Lacote (17??- after 1853). Lacote set up his own business in Paris around 1820, an early guitar of his dating from that very year. On its label he calls himself “élève de Mr Pons”, Pons obviously having been considered a reputable firm. We do not know when Lacote entered Pons’s service, nor when he left.” [Pleijsier 2001 p. 9]



*A “Décaorde”, one of many made by F. R. Lacote in 1820's and 1830's [Decacorde]*

Lacote Décaorde's tuning mechanisms are surprisingly not a new idea. In 1770's and 1780's, inside the transitional period in which a usual 6-string guitar emerged out of the 6-course one, there were instruments made mixing ideas from both old-lute and new-guitar worlds.



*A “Bissex” - “twice six” [Bissex]*

Bissex was one of the lute-guitar hybrid instrument. The one shown here was made in Paris in

1773 by Jean-Henri Naderman. Aside the body shape and 6+6 stringing pattern, only first 5 strings were tuned like guitar. Its pattern was 5+7, where 7 sub-bass strings had been equipped with a mechanism capable of swiftly shifting their tuning a half-step higher, just like the harp tuners do.



*12-string Bissex tuning. The same used Décacorde, except of the last 2 sub-basses.*

Regarding the Décacorde, Miner writes “Though 'ten-string' could be considered the literal English translation, Lacôte's first extended range guitar – developed and patented in 1826 in collaboration with famed guitarist Fernando Carulli – was not a standard 'ten-string' floating-bass guitar, as would soon become popular in Vienna. In fact, the inventors sought to distance their creation from the 'guitar' itself. Besides the unique headstock, neck design and sharpening levers, this fascinating, though short-lived, instrument had a unique and distinctive tuning. Only the top five guitar strings were tuned to standard and fretted. From there the floating basses descended (from the A rather than an E) diatonically down to C.” [Miner 2008].

The expansion of “floating-bass” range continued to the number of 13, in a 6+7 pattern where the first 6 strings were of common guitar tuning.



*13-string guitar of J. G. Scherzer, leaving Stauffer's ordinary 6+2 somewhere in the middle.*

*[KresseScherzer]*

### 4.3.3. Alternative body shapes



*[BeethovenLyre]*



*[LyrePons]*

Iconography [BeethovenLyre] depicts composer Ludwig van Beethoven (1770 – 1827) around 1805, symbolically<sup>18</sup> holding a lyre-guitar. Lyre-guitars were popular in the beginning of 19<sup>th</sup> century in France. Picture [LyrePons] shows one of these instrument, with “a printed label inside ...reads: 'Pons / fils / luthier, / Rue du Grand Hurlleur / No. 5 / A Paris, an 13'. The phrase 'an 13' refers to the thirteenth year (1804–1805) of the French Revolutionary Calendar.” [MetMuseum1 2016] They were built with pedestals allowing them to stand upright, which is another feature suggesting their fashionable, rather decorative or symbolic purpose.

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18 “The interpretation is that, with his hand holding the instrument, Beethoven draws forth music. But lyre-guitars normally have six strings, while the one Beethoven is holding has only five. With the pegs of the strings arranged in two rows, Jander [Jander 2000] identified the missing string as being one of the higher-pitched strings, suggesting a visual metaphor for Beethoven's inability to hear high frequencies.” [WikiBeethovenLyre 2016]





*"Harpolyre" made by André Augustin Chevrier around 1830 [Harpolyre]*

The "Harpolyre" was patented by Jean Francois Salomon (1781 – 1831) in 1829. “This three-necked instrument features a central neck tuned like a conventional guitar (E-A-d-g-b-e'), plus a neck on the left tuned chromatically (A-B flat-B-c-d flat-d-e flat) and one on the right tuned diatonically (c'-d'-e'-f'-g'-a'-b'-c2). The back and sides are of figured walnut. Ormolu (mercury-gilded brass) mounts decorate the yoke of the guitar.” [MetMuseum2 2016] Although there was some original repertoire written for it by F. Sor, M. Carcassi and F. de Fossa, the instrument was rather short-lived.

#### **4.3.4. Terzguitar**

A terzguitar is in construction nearly identical to a regular guitar of 62 to 65 cm scale length, it only is tuned a minor 3<sup>rd</sup> upwards and has a shorter scale, usually 54 to 57 cm. Somewhat shorter body means less air volume inside the resonator and smaller vibrating surface of its top, but having these diminished in ratio with scale, sound timbre remains more or less the same. Its tuning makes it a transposing instrument, which means the sheet music is written in A, but sounds in C. The instrument was almost exclusively coupled<sup>19</sup> into a duo with another regular guitar, or with a pianoforte.

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<sup>19</sup> There is only a single work for a solo terzguitar with full orchestra accompaniment, Concerto in F Major, op. 70 by Mauro Giuliani – F Major being uncommon key.

### 4.3.5. Tuning systems

During the first half of the 19<sup>th</sup> century, tuning machines were developed gradually through sophistication of plain wooden friction pegs.

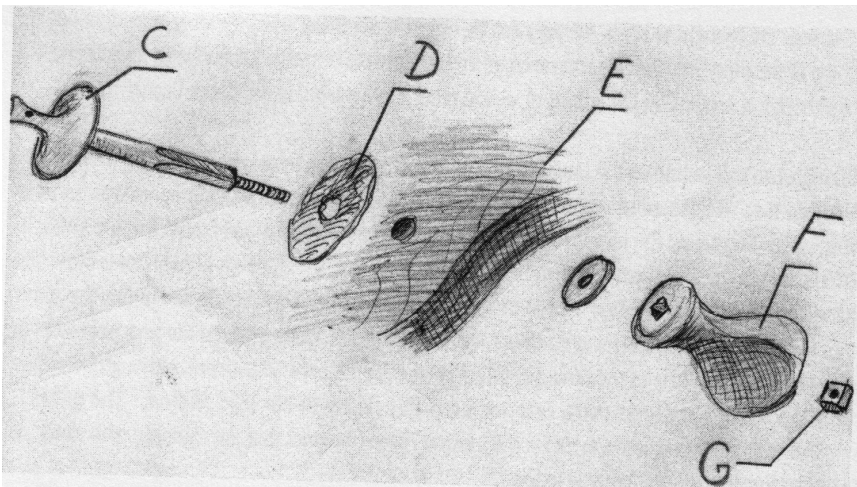


[Pegs1]



[Pegs2]

“Friction Tuning Pegs were used exclusively before about 1820, but were also found in later designs, and are still used in some guitars today - especially flamenco guitars. ...They are tapered with higher diameter toward the peg, and lower diameter toward the end. They work by pushing the peg in the wooden hole; friction keeps it tight. To tune, you pull the peg out slightly, tune to pitch, then push it in while being careful not to turn it. Pegs are ...light in weight and allow you to rapidly tune from slack to pitch. The downside is they can slip, thus slacking the string, it's harder to tune them without moving the pitch, and they aren't as precise as mechanical tuners.” [ERG 2016]



A disassembled “Russian peg” [PegRussian]



[PegButterfly]

“Instead of pursuing the idea of mechanical tuners with worm gears, the Russian makers preferred a peculiar peg construction that is not to be seen in West until the beginning of the 20<sup>th</sup> century. These pegs (sometimes called 'semi-mechanical') were clearly invented to replace the usual wooden pegs. Instead of relying on friction between the outer surface of a wooden peg and the inner surface of the hole, the Russian pegs exploit the friction between the place C, leather washer D, and the pegplate E [PegRussian]. The main rod is firmly fastened in the pegs 'handle' F, with the help of the nut G. The latter also offers the means of adjustment: by tightening this nut one increases the

friction between the peg and the pegplate.” [Timofeyev 2001 p. 237]

Picture [PegButterfly1] shows R. F. Lacote's “butterfly-” or “wingnut pegs”, which were able to stay locked in a given position by tightening the screw. These screws of shape resembling butterfly were used between 1823 and 1824.



[PegGeared1]



[PegGeared2]



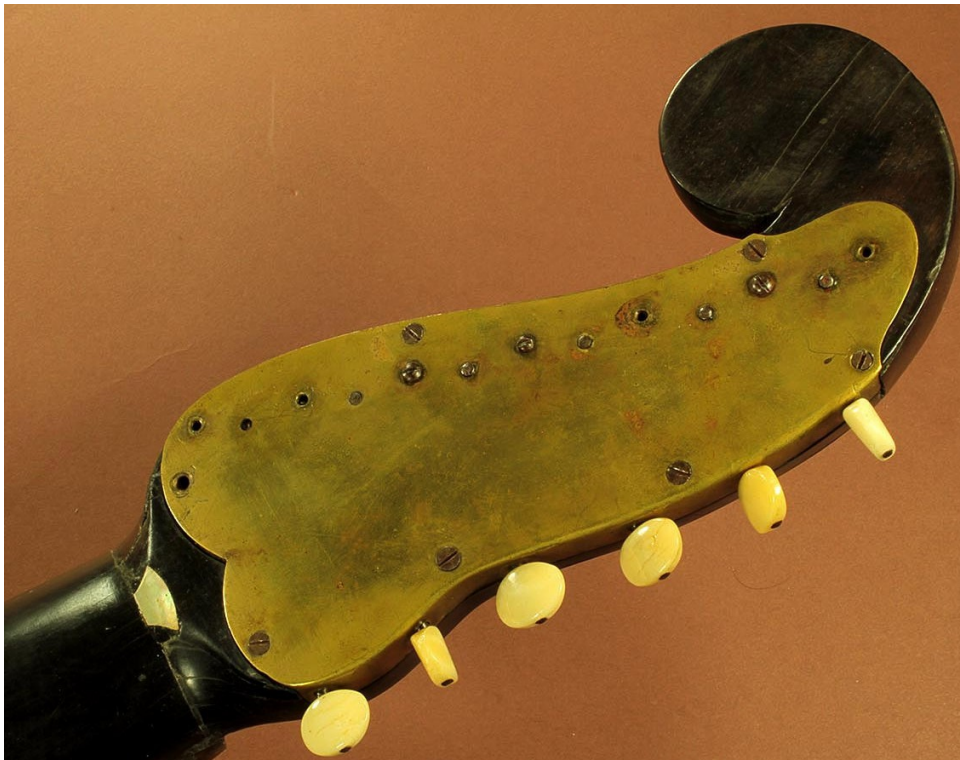
[PegGeared3]

Pictures [PegGeared1-3] depict another innovation by R. F. Lacote, mechanical pegs with gear assembly, used on a guitar built in 1830.



*G. Vinaccia, 1847 [TunerStaufferStyle1]*

Pictures [TunerStaufferStyle1-2] show an advanced tuning machine encapsulating a geared mechanism much like that of modern tuners. Depicted is an instrument by Gaetano Vinaccia from 1847, although these tuners and head-plate shape were typical for Stauffer's guitars.



*[TunerStaufferStyle2]*

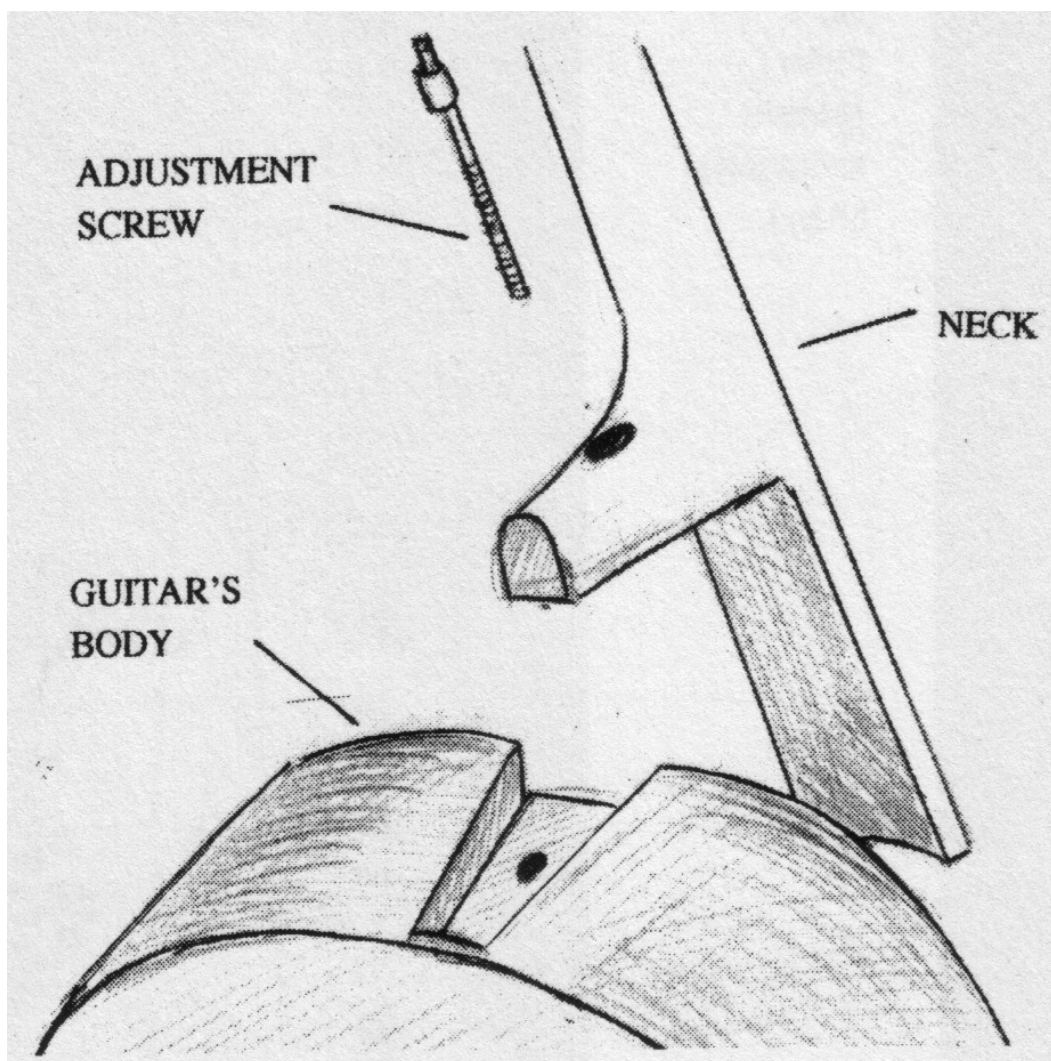


*G. Manby, 1840 [TunersModern]*

Between ca. 1830 to 1840 the use of geared tuners can be considered widely spread. The principle of these tuning machines remained unchanged to current times.

### 4.3.6. Neck adjustment

“...the instrument's neck is adjustable, and it also can be completely detached from the instrument. This type of construction allows the player to change the angle between the fingerboard and the body of the instrument, and thus control the action (i.e., how high or low the string are above frets<sup>20</sup>). According to A. Batov, the first historical reference to this neck construction is found in the 1769 French edition, 'Les facteurs d'instruments de musique'. However, this feature did not prove popular in Western Europe until the second quarter of the 19<sup>th</sup> century, when the famous Viennese maker Johann Stauffer and his students began to use it on their guitars. ...Prior to Stauffer and his school, however, this type of construction is rarely found among surviving Western Europe guitars. Conversely, with Russian guitars, the detachable (adjustable) neck seems to have been norm from the very beginning, and it remained a permanent feature until the middle of 20<sup>th</sup> century.”  
[Timofeyev 2001 p. 232, 234]



*[NeckRussian]*

20 ...and hence control the amount of physical power required to fret the strings. There is a limit to lowering the action, as the strings need certain room to oscillate clearly without impacting the frets, which produces unwanted buzzing noises.



*Stauffer-style guitar from 1890's [NeckAdjustable1]*



*[NeckAdjustable2]*

Picture [NeckAdjustable2] shows detached neck of J. A. Stauffer's guitar made in Vienna, ca. 1840.

#### 4.3.7. Materials

Top + braces	Almost exclusively Spruce, rarely Cedar.
Back and sides	“The most common wood for back and sides was maple; many guitars have very beautiful tiger stripe or swirled natural patterns of flamed or curly European maple. During the mid 1850's, maple was still the most common. ...However, many other woods were used, such as Pear-wood and Mahogany, depending on what was readily available. ...Brazilian Rosewood was used in some period guitars; in fact, many pieces of antique furniture from this time period are also made of Brazilian Rosewood. During those days, this wood was plentiful, with old growth trees right on the coast line, with trade routes to Europe. Originally it was chosen because it was cheap and plentiful. ...The top and back were sometimes one piece, possible in part to the smaller size of the instrument, as well as more plentiful old wood supplies. In other cases, the guitars have two-piece tops and backs.” [Tab4 2016]
Veneering (optional)	Another option, during a decorative wood supply shortage period, was to use the abundant one, like spruce, for the back and sides too, and veneer it with a decorative one (rosewood for instance).
Neck	Cypress, Mahogany, Maple, often other woods and painted black.
Nut	Wood – mostly ebony, or bone / ivory.
Frets	Wood, bone, mother-of-pearl, brass, later mostly metal-alloy.

Strings	Usually 3 plain gut string and 3 (or more) copper-wire wound on gut or silk basses.
Bridge	“Guitar bridges were typically ebony wood. The modern guitar has higher tension strings, thus a larger bridge is required to distribute the stress over a wider area. The tips of the mustache are usually the tops of the bridge pins.”
Saddle	Commonly a piece of fret-wire or bone / ivory embedded in the wooden bridge, or ebony.
Purflings	“Purfling is the decoration that runs around the edge of the guitar. Sometimes purfling was painted on like today, but more commonly it was comprised of very thin sandwiched layers of wood, or intricate, interlocking saw designs of wood. In this case, thin sandwiched layers of wood.”
Glues	“Glues were natural animal hide glue.”
Finishing	“Varnishes used were often Shellac, which is basically insect resin and tree sap. ...Commonly, the shellac would be mixed with walnut oil and liquor, or a "spirit varnish". ...Other varnishes were egg-yolk based. Varnishes were usually custom-made by the luthier, using available organic materials, and were closely guarded secrets. Their composition varied considerably between guitar makers.”

*[Tab4]*

#### 4.3.8. Notable builders and players



*[KresseReplicas]*



*Guitars by G. Fabricatore were usually more ornate [Fabricatore]*

<b>Builder</b>	<b>Specimen</b>	<b>Picture</b>
Austria – Vienna, Johann Goerg Stauffer (1778 – 1853)	6-string guitar scale 64 cm, 22 frets	[KresseReplicas] from left to right
France – Paris, René François Lacôte (ca 1785 – after 1868)	6-string guitar scale 63 cm, 17 frets	
England – London, Louis Panormo (1784 – 1862)	6-string guitar scale 63,5 cm, 17 frets	
Austria – Vienna, Johann Goerg Stauffer	6-string terzguitar scale 56 cm, 22 frets	
Austria – Vienna, Nikolaus Georg Ries (worked ca 1820 – 1843)	8-string guitar in 6+2 pattern scale 62,5 cm, 21 frets	
Austria – Vienna, Johann Gottfried Scherzer	13-string guitar in 6+7 pattern	[KresseScherzer]
Italy – Naples, Gennaro Fabricatore (1800 – 1853)	6-string guitar	[Fabricatore]

[Tab5]



<b>School of construction</b>	French (Mirecourt, Paris)	Italian	Austrian (Viennese)	Spanish
<b>Bracing pattern</b>	Ladder-braced	Ladder-braced	Ladder-braced	Fan-braced
<b>Builders</b>	Pons R. F. Lacote	G. Fabricatore G. Guadagnini	Staufer, Schertzer, Brunner	Panormo, Martinez, Lorca, Pages
<b>Players</b>	F. Sor F. Carulli N. Coste Z. de Ferranti F. Horetzky	M. Giuliani L. Legnani F. Carulli N. Paganini	M. Giuliani J. K. Mertz L. Legnani G. Regondi N. P. Makaroff I. E. Padowetz F. Schubert	F. Sor D. Aguado

[Tab6]

#### 4.3.9. Ergonomics

“Regarding ease of play on the scale length, many early 19<sup>th</sup> century guitars were also 650 scale. They range from 596 to 650. While 630 and 650 scale is only 3% different, it does make a huge difference, since 3% of 650 is 19.5 mm – a large percentage of the size of your hand. It makes a difference in reach – often a millimeter's distance on a guitar is a huge gulf. I have found the difference say between the Lacote and modern guitar in terms of playing ease is a stark contrast. It's many things: scale length, neck width, neck thickness, neck angle, string tension, neck shape, fret height and shape, and action – all of which contribute to the playing experience.” [ERG 2016] Recordings presented in this work were all recorded on an instrument of 62 cm and from my own experience, I can only confirm cited facts.

Player's seating also varied in 19<sup>th</sup> century. When seated, players employed a footstool or a pillow under one foot, or a strap. The strap also allowed players to stand or move around while performing.

#### 4.3.10. Hornbostel-Sachs' definition disputability

Previous chapters described a concept of adjustable and detachable neck, which was widely used in 19<sup>th</sup> century Russia and to a significant degree in Austria too.

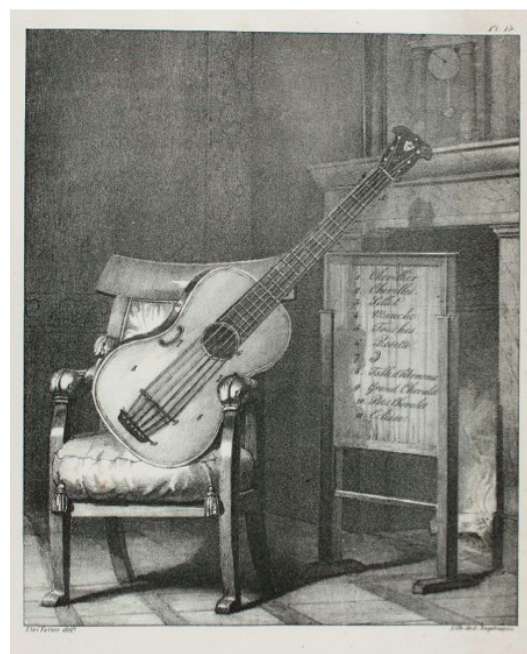
This concept contradicts Hornbostel-Sachs' definition of guitar in its part “32: the resonator (composite chordophone) and string bearer are physically united and can not be separated without destroying the instrument”.

#### 4.4. Experimental design of Francesco Molino

Poulopoulos [2014] states that Molino also invented a new type of guitar in 1823 “described and depicted in some of his methods and evidenced by a number of surviving examples”; however, this has not been sufficiently studied. Poulopoulos [2014] further continues that Molino’s guitar design “is one of the earliest attempts to introduce a guitar with violin features, and possibly predating the arpeggione, but also ... it may have paved the way for the development of the arch-top guitar in Europe and America in the beginning of the twentieth century.” The design was close to violin family instruments, especially “those introduced in 1817 by François Chanut<sup>21</sup> of Mirecourt” [Poulopoulos 2014] and emerged at about same time as two kinds of guitar. Firstly, it was a bowed guitar, currently called arpeggione, made in early 1820s in parallel by Johann Georg Stauffer in Vienna and Peter Teufelsdorfer in Budapest. Secondly, it was a bowed fretted zither, named Streichzither, produced by Johann Petzmayer in Munich [Poulopoulos 2014].



Natalie Houzé [Barceló 2011 p. 43]



[Poulopoulos 2014]

“...was apparently an accomplished performer and almost certainly the same Mlle Natalie Houzé for whom the guitarist Francesco Molino had written his *Grand Sonata, op. 51*, and also the Mlle N. H. depicted as 'élève la plus forte de Mr F. Mo' in his *Grande Methode, op. 46*.” [Long 1996]

21 François Chanut (1788 – 1825) was a mathematician, scientist and violin maker [Dilworth 2016].

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## 4.5. Instrument used to record selected works

I played a replica made by Martin Okenica in 2012, built after [Tsuruta 1999], using Aquila 19C strings.



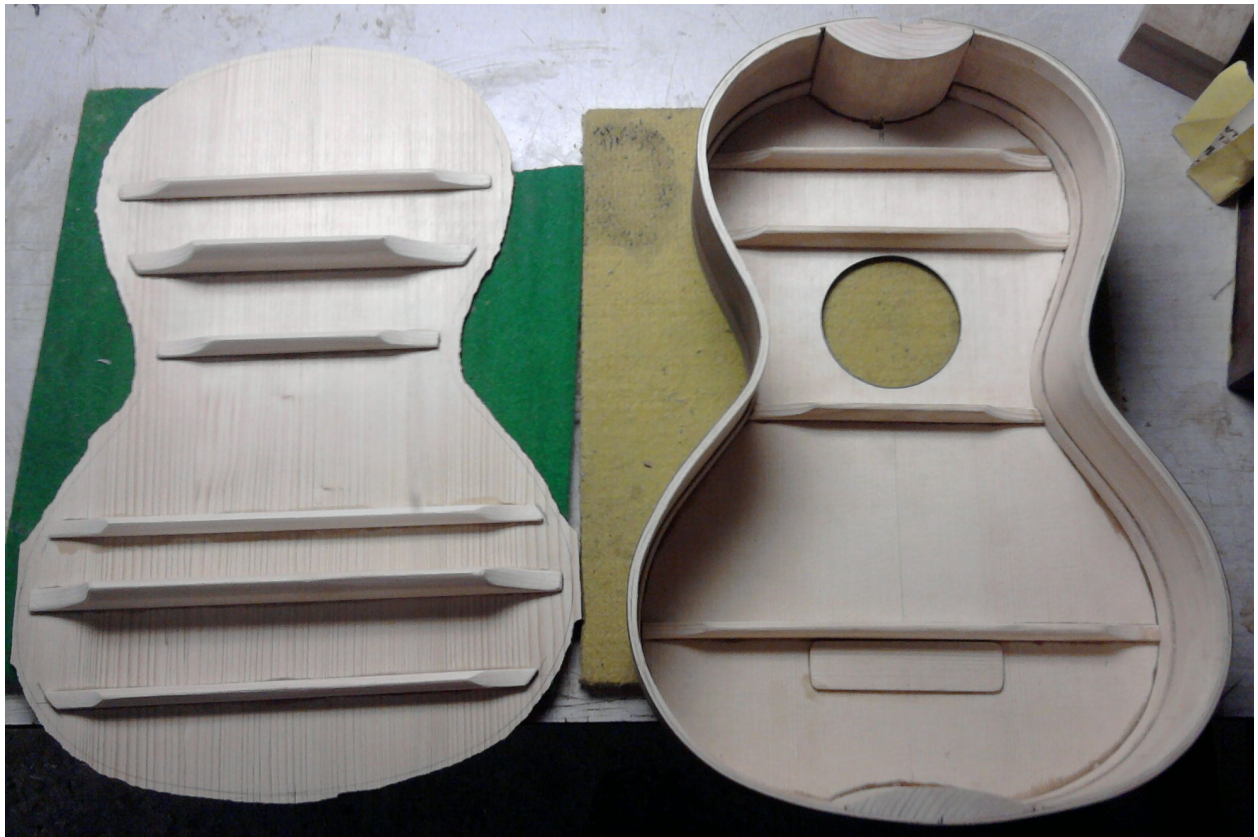
*[Okenica1]*



*[Okenica2]*

This instrument features a 62 cm scale length and a fingerboard fretted by 18 frets. Unlike most of period instruments whose neck is slightly thinner, string spacing at the bridge is 11 mm and at the nut 8.5 mm.

Used materials: top – European spruce, back and sides – Indian rosewood veneered spruce, binding – mahogany strips, bridge – wenge, ebony pins, saddle – fret-wire, fingerboard – Indian rosewood, fret-wire – 18% nickel-silver, neck – walnut, head-plate – ebony, nut – ebony, friction tuning pegs – maple. It underwent tuning mechanism replacement – traditional friction pegs were changed by mechanized planetary tuners. [Okenica 2016]



*Ladder bracing of Okenica guitar [Okenica3]*

Picture [Okenica3], taken at the time of the instrument's construction, shows a Lacôte- or Stauffer-like ladder bracing, typical for early romantic guitars.

As I received this beautiful instrument as a gift back in the year 2012, I would hereby like to thank Martin Okenica for such a contribution, which allowed me to dedicate myself to its repertoire like no other instrument probably would.

## 5. Recording technique and software

This work includes my own audio and video recording, editing and mastering. For the audio, mid-side stereo technique was used in all recordings. This technique was invented by Alan Blumlein<sup>22</sup>.



[MicArray1]



[MicArray2]

The microphone array consists of two Oktava MK-12 condenser microphones. Amplifier body depicted as the lower one was equipped with omni-directional capsule and fed the “mid”-channel and the latter with two cardioid capsules assembled into a figure-of-eight adapter fed the “side”-channel.

The array was arranged so that figure-8 microphone's axis was tilted perpendicular to strings, the omni-capsule parallel to guitar's top, put approximately 25 centimeters away and pointed in between the bridge and the sound hole. Close-up positioning was used both to neglect room acoustics and pick as much signal directly from its source as possible, and to achieve the best signal-to-noise ratio by not requiring much gain (signal amplification). Having the array this close, its tilt allows the string spacing to be recognizable, to a certain very small degree. It also does not pick fretting noises very much. Downside of this position is huge sensitivity to player's movement.

Microphones were connected to a RME Babyface USB audio interface with firmware version 220, which allows it to run in class-compliant mode, thus working with Debian<sup>23</sup> 8.5 and its Linux kernel 3.16.0-4-amd64 flawlessly; Input channels were recorded in Ardour<sup>24</sup> version 3.5.403; The video was shot using Canon G7X camera and merged with audio in Kdenlive<sup>25</sup> video editing software, version 0.9.10; Transcriptions were typeset in and exported from MuseScore<sup>26</sup>, ver. 2.0.3

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22 Alan Dower Blumlein (1903 – 1942) was an English electronics and sound engineer.

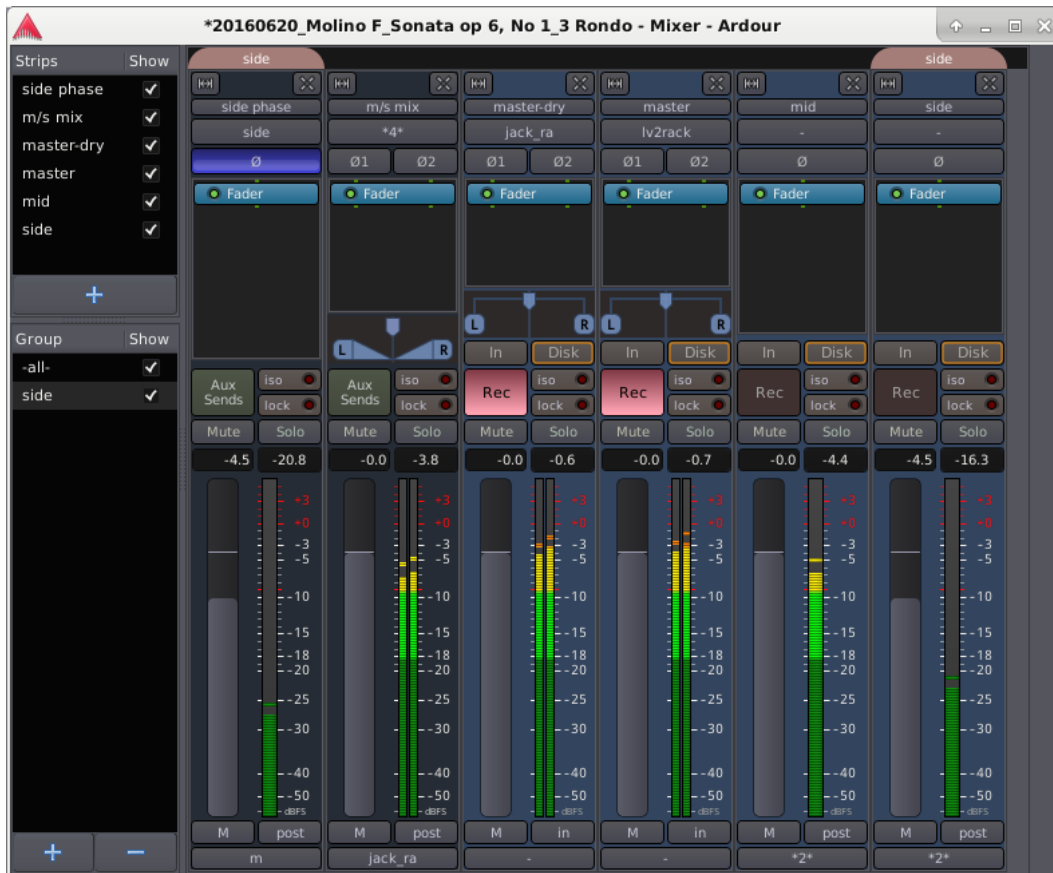
23 Debian – the universal, free operating system: <http://www.debian.org/>

24 Ardour – multichannel digital audio workstation: <http://ardour.org/>

25 Kdenlive – a free and open-source video editor for GNU/Linux: <http://kdenlive.org/>

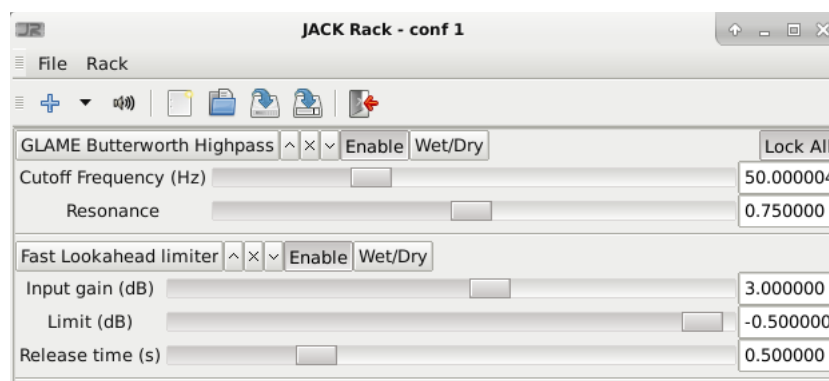
26 MuseScore – free and open-source, multi-platform score writing software: <http://musescore.org/>

Audio data were post-processed using following signal path. Decoding raw mid-side data is done by feeding the mid-channel into both left and right channel of a stereo track, while side channel is routed into left channel unchanged and into right channel with an inverted phase. When decoding mid-side stereo, there is a possibility to shrink or widen the stereo image. When both mid and side signals are left at 0.0 dB, the stereo image is equal. I shrunk stereo image by dampening the side signal by 4.5 dB.



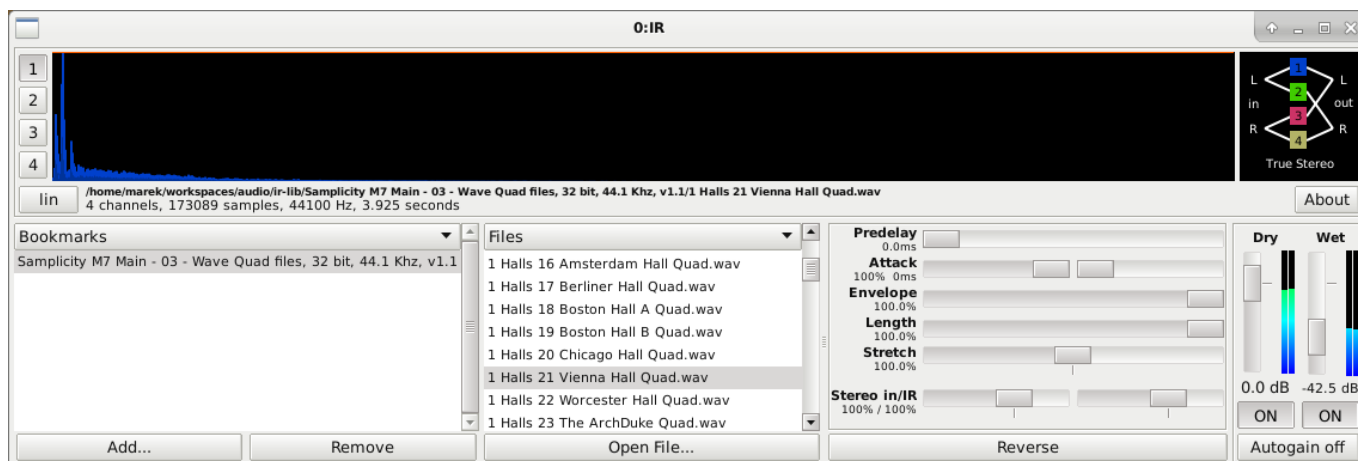
Screenshot depicting the mixer panel in Ardour software during mastering.

Resulting stereo data were routed into high-pass filter with cutoff frequency of 50 Hz and resonance factor of 0.75; using lookahead limiter (expander) the signal of both channels gained +3.0 dB with limit of -0.5 dB and release 0.5s.



Screenshot depicting a pair of LADSPA plugins in a JackRack control panel.

Finally, the stereo data were routed into a convolution reverb process.



*Screenshot depicting a convolution reverb LV2<sup>27</sup> plugin's control panel.*

The reverberator was configured to modify the signal only slightly with its “wet”-signal at -42.5 dB. It used [Samplicity 2010] impulse response library, which was the final step of the mastering.

There are two media attached, a CD with recorded selected works in CDDA format and a data DVD containing these recordings in both FLAC<sup>28</sup> and MP3 formats, this document and sheet music in PDF format - both transcriptions and period publications, and videos in MKV format.

Recordings are also available on-line at my YouTube channel:

- Sonata op. 6, No. 1: [http://www.youtube.com/watch?v=1s5Bu1-zB\\_k](http://www.youtube.com/watch?v=1s5Bu1-zB_k)
- Theme with Variations, op. 5, No. 1: <http://www.youtube.com/watch?v=JJpnhERxUZ4>
- Rondo op. 28, No. 1: [http://www.youtube.com/watch?v=M\\_JBQqLaunA](http://www.youtube.com/watch?v=M_JBQqLaunA)
- Rondo op. 28, No. 2: <http://www.youtube.com/watch?v=0JNUSpqahiM>
- Rondo op. 28, No. 3: <http://www.youtube.com/watch?v=PND3xSQv25Q>

Having brought this work together using all the before-mentioned free software running in a free operating system, I would like to thank all the numerous developer communities and encourage everyone in exploring open-source software solutions.

This document was written in LibreOffice<sup>29</sup> Writer, version 4.3.3.2

All hypertext links mentioned in this chapter were valid on 27.6.2016

<sup>27</sup> LV2 (LADSPA version 2) is an open standard for software audio-plugins: <http://lv2plug.in/>

<sup>28</sup> Abbreviation stands for Free lossless audio codec: <http://xiph.org/flac/>

<sup>29</sup> LibreOffice – free office software suite: <http://www.libreoffice.org/>



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