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Gaspar Sanz and the Stringing of the
Italian Baroque Guitar Masters

A dissertation submitted in partial satisfaction of the
requirements for the Degree Doctor of Musical Arts

by

Samuel Zachary Vierra

2015
ABSTRACT OF THE DISSERTATION

Gaspar Sanz and the Stringing of the Italian Baroque Guitar Masters

by

Samuel Zachary Vierra

Doctor of Musical Arts

University of California, Los Angeles, 2015

Professor Ian Krouse, Co-Chair

Professor Elisabeth Covel Le Guin, Co-Chair

The following research is an investigation of the baroque guitar stringing used by Spanish composer Gaspar Sanz and many of his Italian contemporaries. In contrast to previous scholarship centered on baroque guitar stringing, this paper attempts to clarify the problems inherently associated with ambiguous terminology, incorrect stringing designations, and the currently accepted baroque stringing options. The confusion and disagreement amongst modern scholars about what Sanz wrote regarding the subject of stringing has severely hindered subsequent related scholarship. As a result, it was absolutely necessary for the following research to include a historical background on Sanz, as well as his commentary on this subject, which has been translated, cautiously dissected, and explained. Additionally, this paper offers a direct challenge to the specious claim of many notable scholars that Sanz used the totally re-entrant stringing for the creation of his compositions. It was my sole intention to make this the most exhaustive research supporting the
employment of upper octaves to date. This research also contains my newly proposed baroque guitar stringing options. Comparative transcriptions of original tablature from several composers including Sanz, Corbetta, Colista, Kapsperger, Granata, and Murcia have been included in order to add visual clarification of the results produced by different re-entrant stringings. Several other related issues are discussed including an examination of the original definitions of gut string names, the guitar’s close development and association with the lute and chitarrone, and a closer look at the 17th century usage of the term “unison.” Also proposed is a new right-hand technique whereby the guitar is approached as a nine (or ten) -string instrument. As part of the conclusion, I have also offered my personal instrumental set-up, showing both my current guitar’s string spacing at the nut and bridge, along with the string type and diameters that I consider a suitable compromise for performance on a modern baroque guitar replica.
The dissertation of Samuel Zachary Vierra is approved.

Olivia Ashley Bloechl

Gordon Henderson

David Samuel Lefkowitz

Peter F. Yates

Ian Krouse, Committee Co-Chair

Elisabeth Covel Le Guin, Committee Co-Chair

University of California, Los Angeles

2015
Dedication

Upon reflection, I have concluded that I would be worse than an unthankful leper whose ailment was healed if I do not pause and reflect on how many have helped me come to this point in my graduate studies at UCLA. I find it both humbling and shocking how much of an unforeseen impact so many have had on this research.

Elisabeth Le Guin. Her scholarly demands in seminar, though difficult to meet, were timely to this research. I now find it amusing that her insistence that I study the compositions of Santiago de Murcia (finally conceded to under protest) caused a turn of events, and ultimately helped me to see that my stringing theory reached far beyond the music of Sanz. As an unforeseen consequence, I was forced to realize that I was at the base of a mountain of research, rather than the top of a hill. Without this awareness, it would have been impossible to offer a complete and thorough defense for my theory. As Committee Co-chair, the bar on her direction/guidance, encouragement, and mentorship could not have been raised.

Ian Krouse. It is without question that the imagery contained in this dissertation would have been severely crippled without his strong suggestion that such a format would be absolutely necessary if one were to attempt to tackle such a far reaching subject. As Committee Co-Chair, his support and defense of my ideas was vital to the completion of this entire process, and for that I offer my deepest thanks.
Thomas Harmon. Where it not for his kindness, direction, and encouragement, I would have discontinued my pursuit of a graduate degree in music. As my first seminar instructor during my graduate study at UCLA, it is now clear that his guidance in pursuing this subject proved to be invaluable. I shall never forget his vociferous reprimand to my peers that this idea (the discovery of a new stringing) was the type of thing that “can make an academic career,” and that they needed to be actively searching for a discovery of scholarly significance. To this day, I marvel at the dead silence he created in the room that day.

Peter Yates. It was his guitar ensemble class I joined on a whim, thinking it would be a simple and easy way to raise my G.P.A., during the first quarter of my undergraduate study as a student of an undeclared major. From the first class meeting I realized that I had just been introduced to a kind of “New World,” not unlike an explorer from times past who had just stumbled across the real “City of Gold.” I am eternally indebted to him for weaning me off of a catatonic and dying music style, while feeding me with music of substance, which ironically was once entombed, but now raised from the grave. I have been unable to find another guitar instructor/mentor capable of matching his inspiring combination of skill, knowledge, and humility.

Gordon Henderson. Only now is it visible to me the necessity of his instruction in music technology. It was his guidance and competence that allowed me to successfully navigate through the dark halls of Finale and Garage Band. At the time,
I could not see the connection between these computer programs and my dissertation, but not it is clear how much I needed the knowledge that he so patiently delivered to our class.

David Lefkowitz. As with any delayed research project, I had lost the desire to finish. Were it not for his “kick in the pants,” I doubt that this research would have continued to its present form. Although I initially resisted his professional attention to detail and unbiased input, I now give thanks for his contribution to this paper.

Olivia Bloechl. Her suggestions and nonlinear ideas have opened me up to a plethora of publishing possibilities. Also, without her cooperation and timely admittance to my committee, I would have been forced to watch my degree go up in the proverbial “ball of flames.”

Lawrence Calderon. Without Lawrence, my friend and personal luthier, I would not have been able to make the transition from hypothesis to experimentation. Thanks to his generous offering of craftsmanship and knowledge, we were able to reproduce a baroque guitar mostly based on one of the surviving instruments crafted by Antonio Stradivari. I cannot overstate how much of the research contained in this paper directly hinges on the use of his instrument in the testing of several theoretical stringing arrangements.
Table of Contents

Introduction ............................................................................................................................ 1
I. Gaspar Sanz: A Biographical Introduction ........................................................................ 4
II. Definition of Terms ........................................................................................................... 9
III: A Major Stringing Debate .............................................................................................. 16
IV. A Word On Stringing/Tuning Issues ............................................................................. 21
V. Sanz’s Discourse on Stringing ......................................................................................... 31
VI. The So-Called “French” Stringing .................................................................................. 39
VII. Bordón: An Investigation of the 17th Century Definition ............................................. 42
VIII. New Stringing Proposals for the Tablature of the Italian Masters ............................... 54
IX. Clues From the Chitarrone ............................................................................................. 56
X. Building the Case For Octaves on the 3rd and 4th Courses ............................................ 67
XI. A 20th Century Composer Agrees .................................................................................. 77
XII. 10-String Italian Master’s Stringing (The 4th Course Double Octave) ......................... 87
XIII. Physical Limitations of Gut Strings ............................................................................. 93
XIV. Back to the Bass(ics): An Investigation Into the 17th Century Meaning of “Unison” .. 97
XV. Conclusion ...................................................................................................................... 109
Bibliography ......................................................................................................................... 114
List of Figures

<table>
<thead>
<tr>
<th>Figure #</th>
<th>Page #</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Image of Baroque guitar fret-board</td>
<td>12</td>
</tr>
<tr>
<td>2. Example of Italian tablature</td>
<td>13</td>
</tr>
<tr>
<td>3. Comparison of Italian tablature and modern-standard tablature</td>
<td>14</td>
</tr>
<tr>
<td>4. Total re-entrant stringing</td>
<td>16</td>
</tr>
<tr>
<td>5. Excerpt from Sanz’s variations on the <em>Jacara</em></td>
<td>17</td>
</tr>
<tr>
<td>6. Portrait of Giovanni Battista Granata</td>
<td>25</td>
</tr>
<tr>
<td>7. Enlarged view of Granata’s right hand of figure 6</td>
<td>26</td>
</tr>
<tr>
<td>8. Image of baroque guitar and totally re-entrant stringing from <em>Harmonie universelle</em> (Paris, 1636)</td>
<td>28</td>
</tr>
<tr>
<td>9. Tablature excerpt from Miguel de Fuenllana, Libro III</td>
<td>29</td>
</tr>
<tr>
<td>10. Additional tablature excerpt from Miguel de Fuenllana, Libro III</td>
<td>29</td>
</tr>
<tr>
<td>11. Common stringing used in 17th Century in Spain</td>
<td>32</td>
</tr>
<tr>
<td>12. Stringing Chart with bordones on strings 4 and 5</td>
<td>33</td>
</tr>
<tr>
<td>13. Diagram of totally re-entrant stringing</td>
<td>34</td>
</tr>
<tr>
<td>14. Example of a Scale in A-minor</td>
<td>35</td>
</tr>
<tr>
<td>15. Chart of composers whose tablature frequently crosses between the 3rd and 4th course</td>
<td>36</td>
</tr>
<tr>
<td>16. Example of “French” stringing</td>
<td>37</td>
</tr>
<tr>
<td>17. Diagram of “French” stringing</td>
<td>39</td>
</tr>
<tr>
<td>18. Diagram of octave addition from totally re-entrant to “French” stringing</td>
<td>40</td>
</tr>
<tr>
<td>19. Campori 612 manuscript stringing image</td>
<td>42</td>
</tr>
<tr>
<td>20. Campori 612 stringing</td>
<td>43</td>
</tr>
<tr>
<td>21. Image of Stradivari’s stringing instructions</td>
<td>46</td>
</tr>
<tr>
<td>22. Enlarged view of Stradivari’s nut template</td>
<td>48</td>
</tr>
<tr>
<td>23. Image of two different ways to string with 4th and 5th course octaves</td>
<td>49</td>
</tr>
<tr>
<td>24. Image of James Talbot’s tuning for English Double Theorbo’</td>
<td>51</td>
</tr>
<tr>
<td>25. Additional theorbo tuning</td>
<td>51</td>
</tr>
<tr>
<td>26. Italian Master’s Stringing #1</td>
<td>54</td>
</tr>
<tr>
<td>27. Italian Master’s Stringing #2</td>
<td>54</td>
</tr>
<tr>
<td>28. Italian Master’s Stringing #3</td>
<td>55</td>
</tr>
<tr>
<td>29. Sample <em>campanella</em> passage from Kapsperger</td>
<td>56</td>
</tr>
<tr>
<td>30. Transcription of a <em>campanella</em> passage composed by Kapsperger</td>
<td>57</td>
</tr>
<tr>
<td>31. Transcription of a <em>campanella</em> passage composed by Sanz</td>
<td>57</td>
</tr>
<tr>
<td>32. Chitarrone tuning diagram</td>
<td>59</td>
</tr>
<tr>
<td>33. Ascending A-minor scale in tablature and standard-music notation for chitarrone</td>
<td>59</td>
</tr>
<tr>
<td>34. Fret-board diagram for chitarrone</td>
<td>60</td>
</tr>
<tr>
<td>35. Arpeggio patterns from Kapsperger, Libro I</td>
<td>62</td>
</tr>
<tr>
<td>36. Musical example of Kapsperger’s arpeggiated notation</td>
<td>62</td>
</tr>
</tbody>
</table>
37. Arpeggio patterns from Kapsperger, Libro IV .......................................................... 63
38. Comparison of arpeggio patterns from Kapsperger and Valdambrini  ..................... 64
39. Transcription of arpeggio pattern by Valdambrini .................................................. 65
40. Diagram of octave addition from totally “French” stringing to IMS#1 ....................... 67
41. Excerpt from Granata’s Alamanda ......................................................................... 68
42. Comparative excerpt from La Jelousie .................................................................... 70
43. Comparative excerpt from La Conty ....................................................................... 71
44. Tablature excerpt and transcription of Corbetta’s

     Chacone (Paris, 1671) ............................................................................................. 75
45. Tablature excerpt and transcription of Lelio Colista’s

     Passacaille dite Marionara ...................................................................................... 76
46. Comparative transcription of Sanz’s first variation of

     Danza de las Hachas ............................................................................................. 78
47. Comparative transcription of Sanz’s first variation of Danza de las Hachas
    including an excerpt from Rodrigo’s Fantasia Para un Gentilhombre ..................... 79
48. Comparative transcription of Sanz’s last variation of Villanos
    including an excerpt from Rodrigo’s Fantasia Para un Gentilhombre ..................... 81
49. Comparative transcription of Sanz’s last variation of Villanos .................................... 82
50. Excerpt from Murcia’s Españoletas por la E, Cifras selectas de guitarra, M.68-70 .......................................................... 84
51. Excerpt from Murcia’s Folias Ytalianas Despacio,

     “Cóndice Saldívar No. 4,” variation # ........................................................................ 85
52. Tablature of Sanz’s last variation of Pavanas .......................................................... 87
53. Comparative Transcription of Sanz’s Pavanas, measures 32-40 ................................. 88
54. Granata’s rare campanela passage, Novi capricci armonici musicali (1674), pg.45, Measures 4-6 .......................................................... 89
55. Comparative transcription of Figure 54 .................................................................... 89
56. Ribeiro’s Image of a baroque guitar with triple-strung 4th and

     5th courses ............................................................................................................. 90
57. Image of a bridge from the Cassas Baña guitar ........................................................... 92
58. James Talbot’s measurements of an archlute, circa 1700 A.D .................................... 93
59. Sanz’s visual fingerings of an open C-minor chord form ......................................... 95
60. Open C-minor chord as fingered in Italian tablature ................................................ 95
61. Valdambrini’s bass/intervallic chart (Book II, pg.37) .............................................. 100
62. Valdambrini’s bass/intervallic chart (Book II, pg.38) .............................................. 102
63. Foscarini’s bass/intervallic chart (libro V, pg.130) .................................................... 105
64. Fret-board image for baroque guitar using IMS#3 .................................................... 108
65. Chart of string types and diameters used by this author ........................................... 110
66. Image of this author’s bridge adjustment .................................................................. 111
67. Measurement of this author’s string spacing at the bridge ....................................... 112
68. Measurement of this author’s string spacing at the nut ............................................ 112
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Biographical Sketch

Sam Vierra is a late-blooming musician who did not begin studying music until the ripe age of 17, during his senior year in high school. Since then, he has earned a Bachelor of Fine Arts from California State Polytechnic University, Pomona, and a Master’s of Music in Performance from the University of California, Los Angeles. While completing his MM and working towards his DMA at UCLA, he was a three-time winner of the Randy Rhoads Classical Guitar Scholarship, winning a Grand Prize during his last two eligible years of competition. He has performed both nationally and internationally, including France, Italy, Ireland, and Thailand. A composer of both popular and classical music, some of his original works include country music ballads, solos for classical guitar, and a fugue for 4 guitars with electric bass. He appears on a number of recordings including David Lefkowitz’s debut recording of (Sur)Real (Cine-)Music I: The Chase Through Escher’s Metamorphosen and Eric Taquino’s remake on Pink Floyd’s epic studio version of Dogs. Additionally Sam is a prolific transcriber and arranger of music. Most of these works were originally written for instruments other than the 6-string guitar, including works composed by Mozart, Satie, Debussy, Chopin, Scarlatti, Stravinsky, Corbetta, Roncalli and Sanz. He is currently in the final stages of his transcription of the complete works of Gaspar Sanz and Ludovico Roncalli. Sam is also a teacher and performer of several types of guitar music (specializing in classical guitar, baroque guitar, and ukulele (the extant 4-course guitar) and electric rock/blues.
Introduction

More than ten years ago I was introduced to the music of Gaspar Sanz, Spanish composer, organist, and guitarist of the late 17th century. His music, originally arranged and composed for the baroque guitar, has been interpreted in a manner that is at best enigmatic. Because his music (and the music of his Italian contemporaries) was written exclusively in tablature form, there has been enormous difficulty with regards to interpretation. It is crucial to understand that 17th-century guitarists used many different stringing methods for the same instrument. Even more confusing is that Sanz, like most of his contemporaries, did not specify which stringing arrangement should be used to perform or decode his tablature. Perhaps the largest impasse to baroque guitar translation is the unavailability of corresponding staff notation of the same music. Consequently, the results of any attempt to reconstitute Sanz's music (or that of his contemporaries) into standard music notation are entirely dependent on the stringing arrangement that he used to create his original tablature. While there have been many attempts by several scholars, most of their results are confusing, contradictory or paradoxically absurd. Newcomers to the baroque guitar literature have often found that the employment of any of the current stringing options available renders successful results in some tablature passages, while many other passages from the same pieces seem inexplicably riddled with severe octave displacements to such a degree that one is left with the impression that something is not adding up. It is my
claim that none of the known stringing arrangements used by 17th century guitarists are viable options for interpretation of Sanz’s tablature, or for the tablature of many of his Italian contemporaries.

The response of many scholars to this dilemma has been to just go with the flow and ignore anything that “didn’t fit,” or just casually claim that this was normal for the repertory of the instrument. While this might seem as an acceptable approach, I was completely baffled that some of the transcriptions produced by these same scholars were rife with inconsistencies that contradicted their own stance on legitimate baroque guitar stringing opinions. It seems that there was some crucial misunderstanding, albeit understandable and forgivable, in the initial research of stringing.

As such, it is my contention that the so-called “totally re-entrant” stringing (or “totally re-entrant tuning”) was not used by skilled performers, namely those who played using the punteado or plucked technique. Rather, it was designed for beginner/intermediate performers of “strummed music” (or rasgueado). I propose that beginners used the totally re-entrant stringing and were accustomed to strumming out chord progressions to accompany songs, not because they were experienced virtuosos who were skilled in playing the mixed-tab virtuosic compositions of the Italian Masters.
Furthermore, I propose a few new stringing options used by the Italian Masters of the guitar (primarily but not limited to Giovanni Battista Granata, Francesco Corbetta, Ludovico Roncalli, Ferdinando Valdambrini, Lelio Colista), and Spanish guitarists Gaspar Sanz and Santiago de Murcia. This research project is primarily aimed at performers of lute and 6-string guitar who are interested in performing original 17th-century guitar works, either on a baroque guitar replica or 6-string guitar. However, I am well aware that others outside this sphere may also share an interest in this topic. As such, in order to aid any interested outsider I have attempted to define and clarify much of the jargon and terms used in the following pages. Due to the plethora of questions that will arise from this topic, I have tried to address as many as possible, but some will have to wait for a more specific research project at a later date, perhaps even by another author.
Chapter I: Gaspar Sanz: A Biographical Introduction

The majority of biographical information about Gaspar Sanz comes directly from his own treatise, *Instruccion de musica sobre la guitarra española* (comprised of three books, published in Zaragoza, 1674, 1675, and 1697).\footnote{Sanz, Gaspar. *Instruccion de musica sobre la guitarra española, y metodo de sus primeros rudimentos, hasta toñearla con destreza*. Libros 1(1674), 2(1675), and 3(1675). 7th edition published in Zaragoza, 1697. Facs. Edn. (3 books), Geneva, Minkoff Reprint, 1976.} Born in the town of Calanda,\footnote{*Instruccion de musica*...Title page books I,II, and III. Book I of this treatise was first published in 1674, after which Books II and III were added in subsequent editions that were released in 1675. The dedication of Book III to Charles II appears in the 7th edition released in 1697. See Tyler, *The Guitar and Its Music*, pg. 161.} Aragón (most likely between 1640 and 1650),\footnote{See Strizich, *The Complete Guitar Works of Gaspar Sanz*, pg.3.} the exact dates of his birth and death remain unknown at the present time.\footnote{Strizich, *The Complete Guitar Works of Gaspar Sanz*, pg.5. Strizich points out that his death could be as late as 1721.} A priest,\footnote{I have been unable to verify that Sanz was a priest, but there seems to be a general consensus among Tyler, Strizich, and subsequent scholars. The evidence to suggest that he was in the employment of the Catholic Church can be found in his publications. All three title pages of books I,II, and III of *Instruccion de musica* state that Sanz had a bachelor’s degree in theology from the university of Salamanca. Strizich also points out that Sanz had two other literary works published: a Spanish translation of *L’uomo de lettere* (1654 by Italian Jesuit priest, Daniello Bartoli (1608-1685), and a eulogy in praise of Pope Innocent XI titled: *Ecos Sagrados de la fama gloriosa de N. muy Santo Padre Inocencio XI... Panegírico económico, devidido en varios Discursos*. See Strizich, *The Complete Guitar Works of Gaspar Sanz*, pg.5. It is possible that Sanz studied theology as a collective means to an end, as his degree would have enhanced his employable status as a musician to the Catholic Church and/or the aristocracy. Also, any published works were subject to the Royal Council, and it is probable that one needed a network of inside connections to the Church in order to navigate through the process (see fn. 7). Furthermore, the Italian composers/musicians he studied under do not appear to have been part of the priesthood, but rather part of the larger body of professional musicians who served as paid employees of the Catholic church (and were probably hired for their skill in performance and composition), and it is quite possible that he was merely part of this societal group.} musician, writer, and composer, Sanz seems to have earned the patronage of Juan of Austria (who at the time resided in Zaragoza, Aragón), the illegitimate son of Felipe IV, to whom he dedicates the first two books of *Instruccion de musica*.\footnote{Sanz, *Instruccion de musica*. Title page of books I and II.} It may very well be that the
patronage of Juan (“Lord Don Juan”) ensured the likelihood of his treatise making it to print, since the publication of any work was a difficult process in 17th century Spain.⁷ Due to the death of Juan of Austria in 1679, the early editions of Sanz’s third book of *Instruccion de musica* bore no dedication until the eighth edition (1697), which was dedicated to the reigning monarch, Carlos II.⁸

Sanz traveled to Italy (most likely between the years 1667-1674),⁹ making stops in Rome, Naples, and probably Venice. He studied music in many “academies” and associated with some of the best Roman musicians of his time.¹⁰ In the section on how to accompany a thorough bass¹¹ (*Instruccion de musica*, Book II, 1675) he mentions that one will find the instructions he learned from “Horazio Veneboli”¹²

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⁷ Beauraucratic red-tape hindered the publication of any books in 17th century Spain. Under the threat of death, writers and publishers were forced to comply with the Royal Council (which even set the price of every book and whose authorization was strictly mandatory), and Inquisitorial Censorship. For more on this topic, see Esses, Dances and Instrumental Diferencias in Spain During the 17th and Early 18th Centuries, Vol. I, pp. 78-81.


⁹ His arrival date in Italy was probably is not before Cristoval Caresana (see footnote 14) assumed the post as “Organista de la Capilla Real de Naples” in 1667. See Strizich, *The Complete Guitar Works of Gaspar Sanz*, pg.4. However, the length of his stay in Italy (currently unknown) should be taken into account, for if it were less than two years, it would make sense that he arrived after 1667, because Pietro Ziani was not appointed as organist to St. Mark’s basilica until 1669. Furthermore, Orazio Benevoli (see footnote #12) died in 1672, so it is likely that Sanz’s stay in Italy was at least between 1669 and 1672.

¹⁰ Sanz, Gaspar, *Instruccion de musica*. Book I, *Regla Primera de Encordar la Guitarra* section, pg. 7. Sanz’s page numbering re-sets at the end of each section, all references to his page numbering from here on handled the same and in reference to the specific section of each book.


¹² Orazio Benevoli (1605-1672) was a Franco-Italian composer of many polychoral sacred works. He served as the choirmaster at Santa Maria Maggiore and Cappella Giulia of St. Peter’s, and was also appointed several times to serve as the Guardian of the Vatican’s Congregazione di Santa Cecilia. See: Alberto Cametti, *La scuola dei pueri cantus di S. Luigi dei francesi in Roma e i suoi principali allievi (1591–1623): Gregorio, Domenico e Bartolomeo Allegri, Antonio Cifra, Orazio Benevoli, Fratelli Bocca*, Torino, 1915, p. 631.
choirmaster of the Capella Guilia of St. Peter’s Basilica, Rome), “Pedro Ciano”\(^\text{13}\) (organist of St. Mark’s Basilica of the Republic of Venice), and “Christoval Carisani,”\(^\text{14}\) (organist at the Royal Chapel of Naples), to whom he refers as “\textit{mi Maestro}.” Also, he includes the suspensions used by Lelio Colista\(^\text{15}\) (whom Sanz calls “the Orpheus of our times”).\(^\text{16}\) It should be noted that Colista, a renowned Roman composer and virtuoso of multiple stringed instruments including guitar, lute, and theorbo, was Sanz’s guitar instructor during his visit to Rome. The commentary, opinions, and tidbits of information contained in Sanz’s treatise should not be taken lightly when combined with the repertory at large of 17\(^{\text{th}}\) century Italy. Several other influential Italian guitarist/composers mentioned by Sanz are Foscarini,\(^\text{17}\)

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\(^{14}\) Caresana, Cristofaro (ca. 1640-1709). Caresana was an Italian composer, organist, and tenor. Born in Venice, he studied music (presumably music theory and organ) under Pietro Ziani, until he moved to Naples where he joined Febi Armonici, a theatre company that produced some early examples in melodrama. In 1667 He became the director of the Neapolitan Conservatorio di Sant’Onofrio a Porta Capuana (a famous orphanic-music school of Naples), and an organist and singer in the Chapel Royal. For more on Caresana, see his entry in \textit{The New Grove Dictionary of Music and Musicians}.

\(^{15}\) Lelio Colista (1629-1680) was an enormous musical figure and influence in mid 17\(^{\text{th}}\) century Italy, Rome in particular. A master of lute, theorbo, and guitar, his performance and teaching career was in very high demand during the last 20 years of his life. His trio sonatas were influential precursors to those of Purcell and Corelli, and unfortunately, nearly all of his music is now presumed lost, save for a few trio sonatas and some pieces for baroque guitar (preserved in the Castillion Manuscript [Ms.S.5615]). For more, see Keates, Jonathan. \textit{Purcell: A Biography}. Northeastern University Press, 1996.

\(^{16}\) Sanz, Gaspar. \textit{Instrucciones de musica sobre la guitarra española}. Book I, 1674, pg. 7.

“Caspergier,” 18 “Pelegrin,” 19 “Granada,” 20 “Lorenco Fardino,” 21 and “Francisco Corbeta.”22 It is certain that he was familiar with at least some of their music, for he laments that they did not offer enough instructional material in their treatises to aid amateurs and less-informed musicians.23

Instruccion de musica is of historical significance because it was the first published collection of Spanish music arranged and composed for the baroque guitar.24 The first book (1674) contains a multitude of insights and instruction ranging from the rudiments of music, tuning, and how to determine the whether a string is of decent quality, interpretation of Italian tablature, chord charts (including what we would now refer to as IV-V(7)-I and iv-V(7)-i cadences), ornamentation, and some autobiographical information. Also, he includes three types of music:

18 Kapsperger, Giovanni Girolamo (c. 1580-1651). An influential German-Italian composer and virtuoso performer of lute, theorbo, and chitarrone. His book/s for guitar has not survived/surfaced, but he seems to be the missing link between the chitarrone and baroque guitar (discussed later in this paper).


20 Granata, Giovanni Battista (1620/1621-1687). As Strizich points out in The Complete Guitar Works of Gaspar Sanz, pg.20 (fn.11), Sanz may have been familiar with his books published in 1646, 1650, 1659, and 1674. Without question, he was familiar with Soavi concerti di sonate musicali per la chitarra spagnuola (Bologna, 1659), since it is Granata’s only book that contains continuo material.

21 Fardino, Lorenzo (ca.17th century). He remains a mystery to the baroque guitar community due to the fact that none of his publications have been discovered or revealed to the public.

22 Corbeta, Francesco (1615-1681). Almost certainly the most popular of the 17th century Italian guitar virtuosos, it is likely that Sanz was familiar with Varii capricci per la ghiattara spagnuola, (Milano, 1643) because more than one of the compositions from this book contain passages that were directly “quoted” in some of Sanz’s compositions. He also may have been familiar with Corbeta’s other books which include Scherzi armonici (Bologna, 1639), Varii scherzi di sonata (Brussels, 1648), La guitare roqaille dediee au roy de la Grande Bretagne (Paris, 1671), La Guitarrre royalle dediee au roy (Paris, 1671), and also Corbeta’s lost book which was published in the Spanish Netherlands (which were under Spanish rule during Sanz’s life).


24 See Tyler, The Guitar and its Music. Pg. 151
rasgueado (strummed), punteado (plucked), and mixed tablature\textsuperscript{25} (a combination of plucked and strummed music that was unique to the guitar). Book II (1675) contains instructions for bass continuo realization, chord charts, and more compositions. His third book, which consisted of a set of passacalles composed in the Italian style, was published in 1675 along with the first two books as a complete set.

\textsuperscript{25} Mixed tablature is a combination of plucked notes interspersed with strummed chords which require the reader to be reasonably knowledgeable of the Italian alfabeto system (a unique system used by Italian guitarists that labels chord shapes by alphabetical letters—which do not correspond to the actual triad name, which makes it initially confusing to modern guitarists and musicians of the current century).
Chapter II: Terms and Definitions

In the event that anyone reading this is unknowledgeable in guitar related terminology, it seemed necessary for me to include this material as early as possible. Any experienced performers of baroque guitar repertory will likely not need this and are welcome to skip to the next chapter.

* **Bordón**: a specific type of wound string whose core and winding were made from sheep intestine (a.k.a. *catline*). In the 17th century, this was sometimes referred to generically as a bass string, as it was much thicker than any “treble” strings in a given string set. Many of the 17th century guitarists used a bordón on their 4th or 5th courses in order to generate a fuller bass sound in the guitar’s lower register.

* **Campanelas**: a 17th century term used to describe the performance of a melodic passage or melody whereby consecutive notes are allowed to audibly overlap one another. Also spelled *campanellas*, this technique is made possible by using cross-string fingerings combined with as many open (or unstopped) strings as possible, so as to produce a harp or lyre effect (in modern times, similar to the use of a piano’s sustain pedal). In sharp contrast, if one were to perform the same melodic passage with successive left hand fingers on the same string, none of the individual note durations would be allowed to overlap with one another.
Chitarrone: a distinct type of bass lute used for both solo music and as a continuo instrument.

Course: a generic term that usually refers to a pair of strings, although it can refer to a group of three strings or a single string. The spacing between the two strings of a course can vary, but is usually between 1.5 mm to 5 mm at the bridge (near the sound hole), and 1 mm to 3 mm at the nut (near the tuning pegs). Performance on a paired course instrument is similar as on a single-strung instrument. Perhaps the easiest way of understanding this is by considering the modern 12-string guitar, which has six courses and is commonly approached the same way as the modern 6-string guitar. Similarly, the mandolin, which has 8 strings (arranged into 4 courses), is approached as though it has only four strings.

Stringing and Tuning: The subject of “tuning” is often confused with “stringing” by many scholars who have tried to tackle the issue. While both subjects are closely related, their meanings are most certainly not interchangeable. The guitar was almost always “tuned” to the same pitch-named set (which could be subject to higher or lower transposition), and unless one’s guitar is tuned accordingly, any performance from corresponding tablature would be entirely nonsensical (just as if one had changed the tuning of several keys on a piano or organ, and then tried to play from a musical score without corresponding rearrangement). Occasionally, a treatise contains a “tuning” chart from which one can infer that a specific stringing is implied. “Stringing” refers to string combinations of the courses, more specifically
whether one was supposed to use bass strings or octaves for any given course. If a performer/transcriber does not use the correct octave combination on a standard-tuned baroque guitar for performance/translation from original tablature, then performance or transcription will consequently produce certain notes that are “off” by one or two octaves. Octave-strung courses have to be predetermined and strung with appropriate strings, or else the strings “tuned” up one octave would break, and the strings “tuned” down would be at too low of a tension. Taking this distinction into account, almost all of the “tuning” instructions found in 17th century guitar treatises deal with tuning and not stringing. Hence, there has been an ongoing debate that is chock-full of confusing arguments that are entirely nonsensical.

**Explanation of Baroque guitar tablature**

To the uninitiated, the ability to read or translate Italian tablature or mixed Italian tablature can seem like an unobtainable skill. However, if my eight-year old son can learn to read it, how difficult can it be? Below is a set of instructions for reading Italian baroque tablature that will only make sense if one has a guitar in one’s hand, or a visual representation of the fret-board (see Figure 1).
(Figure 1) Image of Baroque guitar fret-board

This diagram is positioned so that the reader is holding a guitar on his/her lap, or looking downward while in playing position. The horizontal lines represent the five strings or courses\textsuperscript{26}, and the numerical order of those strings is spelled out on the far right of this diagram.\textsuperscript{27} The vertical lines symbolize the frets\textsuperscript{28} (except for

\textsuperscript{26} A course usually refers to a paired set of two strings, usually tuned in unison, but sometimes at the octave. It can also refer to just one string, or even as many as three tuned in unison or octaves. A paired course is generally approached in a similar manner to that of a single string (i.e. a mandolin has 8 strings (4 courses) but is approached as though it has 4 strings). While the 17th century baroque guitar was referred to as the five-course Spanish guitar, it should be noted that it was common practice to use a single string for the first course.

\textsuperscript{27} In order to ease the learning curve, diagrams of the baroque guitar with double-strung courses will be provided later in this paper.

\textsuperscript{28} A fret is a piece of material that protrudes out from the fret-board, so that a string can be sounded at that exact location (of the fret) without the finger/s having to line up at an exact space for each note/chord (as with the bowed string instruments). Before the classical era, frets were almost always made of gut or wood. Ever since that time however, those materials were replaced by thin pieces of metal (a.k.a. fret wire).
the nut\(^{29}\), and a fret position is where one places his/her fingers in order to produce a note at the fret to the right of that fret position (shown on the bottom side of the fret-board diagram). The frets for an individual string/course progress through a series of \( \frac{1}{2} \) steps.

Italian tablature is to be read from left to right, just as with standard notation. Each horizontal gap between the numbers is notated by a note value, placed above a number (or set of numbers which is equivalent to a vertical chord voicing). If a note value is not present above a number, the previous note value will apply to any and all numbers until the a new note value is assigned (see Figure 2).

(Figure 2) Example of Italian tablature

This liberates the reader from the difficult chore of trying to read both note values and numbers for each note/notes (which can be exhausting to both the mind and eyes). The horizontal lines are representative of the courses, hence, five lines are used for notating the five course guitar, while six are used for the renaissance

\(^{29}\) Usually made of bone or plastic, the nut is a essentially a fret, but its number would be represented as a 0 because a string fretted at 0 would be played as open or unstopped.
lute and *vihuela*. It was common practice to only use one line for a course (even though there are usually two strings per course).

For those who are accustomed to reading modern-standardized tablature, Italian tablature will appear upside-down by comparison. It is helpful to imagine Italian tablature as though you are looking at someone else’s guitar (i.e. a teacher) seated directly across from you, rather than looking down on your own instrument (see Figure 3).

(Figure 3) Comparison of Italian tablature and modern-standard tablature

This form of notation only informs the reader where to fret a note by numerical means, and how long its value before the next fretted note is to be played. The actual pitch of fretted notes is entirely dependent on the tuning of the instrument. All of the tablature of a piece of music should be reasonably interpretable if one uses the intended “tuning” and stringing. If one presumes that
standard guitar tuning is the intended tuning for a given piece of tablature, the performance results will probably be self-evident after one reading.\textsuperscript{30}

\textsuperscript{30} Since tablature is essentially a musical form of encoded information, if any portion of the answer key is incorrect, one can expect that the musical outcome will reflect such deficiencies. Furthermore, it would not be shocking if some of the guitar tablature that calls for upper-octave stringing was confusing because it uses a combination of one string of a course vs. the other in different cases throughout a piece of music. The encoded information will only get more confused without some “fleshing out.” One can only imagine how a Morse code transmission would be affected if as few as three or four letters of the alphabet were incorrectly translated from the original coded transmission. Some portions of a message would be unaffected, while others would be enigmatic at best. The same is true for tablature.
Chapter III: A Major Stringing Debate

There is a general consensus among most scholars, most notably James Tyler, Robert Strizich, and Monica Hall, that Sanz composed his guitar music using a “totally” re-entrant stringing (see Figure 4).31

(Figure 4) Total re-entrant stringing

If the original tablature from Instruccion de musica was created (and intended to be performed) using this stringing, then it should be possible to produce an authentic version of this music in standard notation. I have created the following transcription to illustrate the low probability that Sanz used this stringing. This transcription (figure 5) is an excerpt (beginning on measure 16) from a set of variations on the jacara composed by Gaspar Sanz.32 What is wrong with this transcription?

31 This claim is directly attached to Sanz explaining that he didn’t use “bordones” (bass strings) and that his tuning instructions require one to tune the strings of each course to a unison. This specific material will be covered later. The following is a list of publications by scholars who hold this opinion: See: Hall, The Stringing of the Baroque Guitar: A Survey of the Evidence, pp. 9-12, p. 65, Strizich, The Complete Works of Gaspar Sanz, see pg. 7, and pg. 13), and Tyler, The Guitar and its Music, pg. 152, and Appendix, II (pg. 185).

32 Sanz, Gaspar. Instruccion de musica sobre la guitarra espanola. Libro I, p. 7 of music section. 1674.
The middle staff shows the result of a transcription of the original tablature using the totally re-entrant stringing. The bottom staff is a comparative result using my proposed “Italian Masters Stringing.” I have used arrows to signal the obvious contrasts in melodic contour/content. This example highlights some of the problematic issues inherent in theory that Sanz used a totally re-entrant stringing.

Monica Hall is of the opinion that the middle staff is a perfectly acceptable result, and that leaps of 7ths and 9ths were common to the 17th century guitar
literature.\textsuperscript{33} She uses measure 24 of this example to strengthen her argument against the idea that 17\textsuperscript{th} century guitarists possibly used an octave on the third course. Her logic however, is circular because she uses this example to point out that none of the “known” stringing options would be able to ameliorate the note on the fifth course (\textit{a}) and shift it up into the upper octave. What she does not consider is that it is entirely possible that this tablature excerpt is an indication that the stringing database is incomplete.

Tyler, while holding the opinion that Sanz called for the totally re-entrant stringing, had more doubt than Hall. In his later publication: \textit{A guide to Playing the Baroque Guitar} he stated: “Tuning charts found in two other sources suggest that, occasionally, the third course was strung with an upper octave (\textit{g\textsuperscript{'}}) instead of unisons. Certain passages in the music of a number of composers, including Gaspar Sanz (1674) and Ludovico Roncalli (1692), imply the same.”\textsuperscript{34}

Strizich gives the façade of supporting the same position as Hall, and is insistent that Sanz’s tuning instructions call for the totally re-entrant stringing (see footnote 31). However, upon deeper examination, it becomes unequivocally clear that Strizich does not share Hall’s opinion about the results produced on the second line of figure 2. In fact, he went out of his way to avoid the result of line 2 by altering his transcription (of these same measures) so that he produced an identical melodic


\textsuperscript{34} Tyler, James. \textit{A Guide to Playing the Baroque Guitar}. Pg. 25. Indiana University Press, 2011.
copy to the one that I produced using my proposed octave stringing. However, these pitches are “out of bounds” for him and entirely unavailable options from the stringing he used to create his transcription. Unfortunately, his explanation is weak at best. He states: “I have decided to adopt the tuning e’-b-g-d-A (the tuning of the first five strings of the modern guitar) as the basis for the transcriptions in the present volume.” Also, in the Editorial Procedures section he gives the following explanation for abandoning his stringing choice: “Rarely, I have also changed the octave position of pitches in other voices, or even added an occasional extra note, when the voice leading on the modern instrument was improved, and the musical sense clarified, by doing so.” It seems to me that Strizich hid the fact that he couldn’t reconcile the results of certain passages, without the aid of substantial illegitimate alteration. He is not alone either, because I have come across many other transcriptions whose authors have failed to explain why they followed a similar procedure.

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37 Strizich’s claim that he “rarely” changed the position of pitches is specious, because a thorough comparison between Sanz’s original tablature and Strizich’s transcription compared with the Editorial Modifications to the Music section (pp. 157-169) reveals substantial alteration. Even more intriguing is that his modifications section would have grown exponentially if he did not use the lower octave of the fourth course (d) for the fourth string of his stringing arrangement. Somehow, he avoided this issue without being noticed by almost everyone. This will be addressed later in this paper.

It is possible that as listeners to music, many have a tendency to “fill in” missing notes in an octave. The psychology of how music is interpreted is relevant as a counter argument, so I will offer up the following defense. If there exist quick melodic motifs or scale passages that display *campanella* technique, it is likely that the ear will conform to this psychological phenomena. However, this is largely due to issues of tempo, because wherever the same passage is performed slower, the odd leaps are impossible to ignore. As such, we cannot turn a blind eye to the fact that there are many instances where slower paced dances have the same type of passages as the livelier dances. It seems to me that the frequency and consistency of odd leaps is more of an indication of a stringing’s deficiency rather than a stylistic choice that was used by a handful of baroque composers.
IV. A Word On Stringing/Tuning Issues

The issue of how to string a baroque guitar is such a convoluted mess that it is difficult to know where to begin. A complete history of how to string guitars and lutes would reach beyond the scope of this subject, but the lack of such information could impair one’s ability to understand the underlying philosophies and evolution of each stringing method. It may seem impossible to determine which stringing a particular composer used for his tablature, but a more scientific approach can be used through the process of comparative analysis, and statistical probability.

When comparing examples, it is important to bear in mind that I am of the belief that not all 17th century guitarists approached courses as though they were one string. Through years of experimentation on my guitar, I have concluded that most of the difficult repertory requires the performer to only strike one string of a given paired set (course). The “split-octave technique” (to coin a phrase) is painstaking difficult to master, because it requires that the right hand fingers (not just the thumb) be able to differentiate between the strings of courses 2-5. This increases the technical demands of the right hand, because the performer must shift from five courses approached as five strings, to five courses approached as 9 or 10 stings. It is also necessary to realize that the greater the space between strings of a course, the easier this technique is to master.39

39 It is generally recognized by current makers of period baroque guitars that the surviving spacing between strings of a given course on surviving 17th century instruments could be as much as 3mm to 3.5 mm. Due to the fact that my hands are slightly larger than average, and that my fingertips are by no means small, it seemed more
The split-octave technique is vital to voice clarity, and although I was unable to find documentary evidence that this was also part of 17th century performance practice, I was able to find two modern baroque guitarists whose opinions are worth noting. In an interview, Gerard Rebours, internationally acclaimed period baroque guitarist, pointed out that he uses a similar right-hand technique for his lowest two courses.\textsuperscript{40} On this subject, he states:

"Last, but not least, there is the octave course (or courses) problem: very often it brings confusion in the voices because one can clearly hear the two notes, one octave apart, that it produces when only one of the two notes is in fact needed. So I use what could be called the string selection. It is not an invention of mine, but only a few authors (Mouton, Corette, the Mary Burwell lute tutor) mentioned it. Although the two strings of an octave course are only 3mm apart, I only pluck the one that is musically needed: the low, or the high one, and I must miss it on no account! And when there is an ornament on that course, I have to damp the string I just avoided, otherwise its sound comes back during the trill or the mordent. And as it is sometimes necessary to pluck two adjacent courses at the same time, I finally have four different thumb actions: playing one half, one, one and a half, and two courses."

James Tyler seems to concur with the performance practice of Rebours, and also makes reference to selective use of the fourth course octave.\textsuperscript{41} He states:

"The upper octave string of the fourth course should be placed in the position nearest the fifth course. This enables one to pluck it alone more easily in order to achieve the many scale passages and campanella effects required by the music, or both it and its lower "bordon" string for certain cadences and passages requiring the lower notes. What appear to be curious octave leaps in many scale passages, can often be resolved by this selective use of the fourth course."

\textsuperscript{40} The Guitar Under Lully (Gerard Rebours Interviewed by Elizabeth Benson). Guitar International Magazine, June, 1988.

In agreement with the aforementioned opinions of Tyler, and Rebours, the musical effect of interspersed octave-doubling in melodic passages doesn’t sit well with my ears. There also exists a fair amount of solo repertory in this golden age that is mostly homophonic in nature, probably a result of the baroque guitar’s deficiency of a true bass register. Analysis of the music of Sanz, Murcia, and many Italians reveals that “bass” notes commonly fall on the downbeat of a measure and/or at cadence landings, but it is rare to find a bass line that resembles the type of melodic counterpoint that can be found in much of the lute repertory.

In contrast, interspersed octave doubling seems to detract from what would otherwise be a smooth and graceful sounding melodic passage. For an example, see the tablature on measures 24 and 25 of Figure 5. It should be clear from that example that a bass line was not intended, but rather a simple melody. Therefore, I have concluded that advanced performers almost always chose one string of an octave set in order to supply the intended note.

The split-octave is better facilitated with the use of right-hand fingernails, because it is easier to place a nail in between strings than the flesh of a fingertip. This might be a hair-raising claim, but based on my own experimentation, it eases the difficulty of the right hand thumb (in cases where the lower pitched string of a course is intended) and the index and middle fingers (when the higher pitched string of a course is intended). While such technique makes the instrument much more difficult from a technical standpoint, it also produces superior musical results.
in my opinion. Another thing to keep in mind is that if the space between strings of a course is enlarged, the space between two courses will likewise have to be reduced. The overall visual difference is that all of the strings on the instrument will begin to appear as though they are evenly spaced between each other at the bridge. A quick look at the image of Giovanni Battista Granatta\textsuperscript{42} (Figure 6) shows the use of equal string spacing, and also the use of right hand fingernails (Figures 6 and 7). Both are needed for this approach.

\textsuperscript{42} This portrait appears Granata’s \textit{Soavi conenti di sonate musicali per la chitarra spagnuola} (1659) and in \textit{Armoniosi toni di varie suonate musicali per la chitarra Spagnuola, et alter suonate concertate a doi violini, e basso} (1684).
(Figure 6) Portrait of Giovanni Battista Granata
(Figure 7) Enlarged view of Granata’s right hand of figure 6

Note: Right Hand Fingernail of Index Finger

This creator of this intricately detailed portrait of Granata has given us a virtual photograph. Note that his strings are almost evenly spaced apart from one another at the bridge. This is not an accident, nor is it more obvious to the artist, as he even compensates for the string tension of Granata’s right arm, which is leaning up against the strings and affecting the spacing between his arm and the bridge. Notice the strings to the right of his left arm. One can see that they are almost exact in their even placement between one another. This is necessary if one is to perform in a split-octave style. It is also necessary to have right hand fingernails in order to perform in this style. To the far right of this portrait you can see that Granata has a
noticeably sized fingernail on the index finger of his right hand (Figure 6 and 7). It’s also interesting how he has it extended, as if to call attention to it. In contrast, the fingernails on his left hand have been significantly shortened (used for the fretboard) as one can see the flesh beyond the fingertip.\(^4\)

If one is not going to use octave selection or the “split-octave technique,” it is not necessary to have a 3-4 mm gap between the strings of a given course, because the 5 courses will ultimately be plucked or strummed as though they were 5 strings. Such a string set up was common among guitarists who played solely strummed music (see figure 8). This can be clearly seen in the image provided by Marin Mersenne.\(^4\) With that in mind, we can now proceed to the issue of stringing.

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\(^4\) While it may at first appear that Granata has long fingernails on his left hand as well, further inspection reveals that all of his left hand fingernails have been shortened to a similar length as many modern guitarists.

On a side note, it might possible that the string spacing of the Spanish Baroque guitar was influenced by the earlier Spanish vihuela (a guitar-like instrument) that was the preferred instrument of choice by many learned musicians during the 16th-Century. Spanish composer Miguel de Fuenllana showcased his
ability to fret only one string of a course while plucking the other as an open string in more than one occasion. This technique is only achievable if the strings of a course have a large enough distance in between to enable the open string to vibrate unimpeded. Such a technique would still require a high degree of technical precision by the left hand (as opposed to the right hand in the case of a split-octave technique). The following figures which demonstrate this technique have been notated by a box with a 30; which I presume indicates that the highest string of the course is intended to be the open string, while the lowest string of the course is to be fretted at the 3rd fret.

(Figure 9) Tablature excerpt from Miguel de Fuenllana, Libro III, Fo. Lx. 10-02-1123-9283-60 Rjpg, Measures 33-35

(Figure 10) Additional tablature excerpt from Miguel de Fuenllana, Libro III, Fuenllana , Libro III, Fo. 1xij. 62 Rjpg, Measures 11,12
While this technique was rare, it was noted by Fuenllana 13 times in his third book, and two times in his fifth book.45

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V. Sanz’s Discourse on Stringing

Gaspar Sanz is the central figure to the discussion of how to string a guitar. In his first treatise\textsuperscript{46} he writes:

“In Stringing there is variety, because in Rome the Masters only string the guitar with thin strings, without putting any bordon (bass string) on either the fourth or the fifth (course). In Spain it is to the contrary, because some use two bordones on the fourth (course) and others two on the fifth (course), or at least as is usual, one on each course. These two methods of stringing are good, but for different effects, because for one who wishes to play guitar with loud music (literally “noisy” music) or accompany a bass with some song or sonata, the guitar is better with bordones than without. However if one wants to pluck with delicacy and sweetness, and to use campanelas (little bells), which is the modern style of composition, bordones do not work well, but only thin strings used on the fourth (course), as well as the fifth (course), as my great experience shows. The reason is because with performance of the trills, slurs, and other ornaments of the left hand, if there is a bordon it impedes (the hand), being a thick string, and the other thin. The hand is not able to stop them as equally, holding down a thick string, as (it can) with two thin strings. Furthermore, with bordons, if you play the letter or chord “E” (which corresponds to a D minor chord)\textsuperscript{47} which is De la-solre, solre, in the music the open fifth (course, i.e. the unstopped A string) will sound a fourth below the bass, and confuses the principle bass (a d note located on the unstopped fourth course of the chord) and results in an imperfection as taught in the rules of counterpoint. From this you can choose the method which pleases you best, according to the manner in which you play.”\textsuperscript{48}

\textsuperscript{46} Instruccion de musica, Book I, Regla primera de encordar la guitarra section, pg.1

\textsuperscript{47} The chord shape “E” in the Italian alfabeto system corresponds to a D minor chord. Sanz clarifies this reference in his Labyrinth Section of Instrucción de musica. Book I, pg.1

\textsuperscript{48} En el encordar ay variedad, porque en Roma aquellos Maestros solo encuerdan la Guitarra con cuerdas delgadas, sin poner ningun bordon, ni en quarta, ni en quinta. En España es al contrario; pues algunos usan de dos bordones en la quarta, y otros dos en la quinta, y à lo menos, como de ordinario, uno en cada orden. Estos dos modos de encordar son Buenos, pero para diversos efectos, porque el que quiere tañer Guitarra para hacer musica ruidosa, ó acompañate el bajo con algun tono, ó sonada, es mayor con bordones la Guitarra, que sin ellos; pero si alguno quiera puentar con primor, y dulcura, y usar de del las campanelas, que es el modo moderno con que aora se compone, no salen bien los bordones, sino solo cuerdas delgadas, assi en las quartas, como en lea quintas, como tengo grande experiencia; y es la razón, porque para hacer los trinos, y extranos, y demás galanterías de mano izquierda, si ay bordon impide, por ser la una cuerda gruessa, y la otra la delgada, y no poder la mano pizzar con igualdad, y sugetar también una cuerda rechea, como dos delgadas; y á mas desto, que con bordones, si hazes la letra, à punto E que es De la-solre, en la musica sale la quinta vacante en quarta bajo, y confunde el principio bajo, y le dà algo de imperfeccion, conforme el contrapunto enseña; y así puedes escoger el modo que te gustare de los dos, segun para el sin que tañeres.
Unfortunately, Sanz does not specify the exact stringing used by the Italian Masters, but he does allow us to eliminate some of the options. Several pieces of information are given, and should not be overlooked. First of all, he is addressing a Spanish audience specifically, and points out that the Italian Masters do not string their guitars with *bordones*;\(^\text{49}\) while Spanish guitarists commonly use at least one *bordón* on each course. Because Sanz makes reference to paired courses (and not necessarily single strung courses), the following stringing charts\(^\text{50}\) can be safely deduced:

(Figure 11) Common stringing used in 17th Century in Spain

Unison stringing with bordones

<table>
<thead>
<tr>
<th>4th and 5th courses</th>
</tr>
</thead>
</table>

octaves with one bordón

<table>
<thead>
<tr>
<th>4th and 5th courses</th>
</tr>
</thead>
</table>

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\(^{49}\) *A bordón* is a specific type of string, namely the first true bass string which consisted of a gut core (sheep intestine) and gut winding. *Bordones* are very fat when compared to any of the gut treble strings, due to the large amount of material used in order to increase the overall mass needed to produce a string that would resonate at lower pitches.

\(^{50}\) For those not accustomed to reading a stringing or tuning chart, the highest pitch (*e*' or *e'\(^\text{e}\)) represents the first course or string (the one closest to the ground when holding the instrument in playing position). The fifth course (A,A or a,A) is closest to the sky.
Another possibility is that some performers only used single-strung courses. That stringing would be as follows:

(Figure 12) Stringing Chart with bordones on strings 4 and 5

The 17th Century Spanish composer/guitarist, Francesco Guerau, seems to suggest this because he refers to “the bordón” on the fifth course.\(^{51}\)

Sanz then explains that the bordones are not well suited for any type of ornamentation, and that they also cause some chord voicings to sound imperfect, working against the rules of counterpoint. The example that he cites should be noted, because it only deals with the presence of a bordón (or lower octave) on the

\(^{51}\) Poema Harmónico, Madrid, 1697 (pg. 17). Francesco Guerau was a priest and Royal musician of the chapel and household of Charles II, and a contemporary of Sanz. Lo primero, ha de saber que las cinco rayas denotan los cinco ordenes, ó cuerdas de la Guitarra; la mas alta al bordón, y las demás descendiendo por orden. The first, the five lines denote the five courses or strings of the guitar; the highest the bordón, and the others descending in order. However, he later mentions bordones while discussing right hand technique. It is possible that he only used one bordon on the fifth course or that his guitar was strung to a higher tessitura. For example, if his instrument was tuned to either g’ or a’, it certainly would have fallen into a perfectly acceptable audible range concerning the imperfect 6/4 chord inversions mentioned by Sanz. In fact, he literally says in his 6/4 example that the low A string sounds a fourth below the root of the chord. His reference almost certainly cannot be used in reference to the fourth course sounding a fourth below in an open C chord (omitting the fifth course), because the that would be the tessitura of a Renaissance guitar; and the 6/4 chord inversions are not nearly as audibly distinct to the human ear. Furthermore, it is almost certain that his right hand technique reference to bordons was intended for the same group that Sanz mentions as always having at least one bordon on the fourth and fifth course, and that these instructions actually had no bearing on how his guitar was strung. Either way, it is as unclear here as it is in some of the other sources that contain tuning charts.
fifth course, and not the fourth course. From this information, scholars have deduced that Sanz and the Masters in Italy used the following stringing:

(Figure 13) Diagram of totally re-entrant stringing

As mentioned earlier, this stringing is commonly known as the “totally” re-entrant\(^{52}\) stringing. As you can see, it does not employ \textit{bordones} on either the fourth of fifth courses. This was a popular stringing used in France and Italy, and found in many of the simple guitar manuals that only contain strummed music. However, major problems arise when the totally re-entrant stringing is used for much of the advanced tablatures Sanz or his fellow Italian composers. For an in-depth explanation one must understand that the pitch gap between the third and fourth courses in this stringing makes it impossible to perform a scale in the same manner as the other stringing methods. This is not a small detail, but rather a massive barrier. The examples below illustrate the difference between the first three stringing methods and the totally re-entrant stringing.

\footnote{\textit{Re-entrant} is a 20\textsuperscript{th} Century label coined by modern scholars as an attempt to describe the strangeness of some of the baroque stringing combinations that used higher pitched strings in the lower register of the instrument. The term is derived from the idea that if one plucks or strums from the first course to the fifth, higher pitched strings “re-enter” in the lower register of the instrument (hence: re-entrant). The “totally” re-entrant stringing and the stringing that employs octaves on the 4\textsuperscript{th} and 5\textsuperscript{th} courses would both be considered as re-entrant. But, it is important to remember that 17\textsuperscript{th} century guitarists never used this term.}
(Figure 14) Example of a Scale in A-minor (all examples include identical tablature)

With Unison (or single) Stringing and no octaves

Octaves (with bordons) on 4th and 5th course

Results for totally re-entrant stringing

(note: a leap arises in transition from the 4th to the 3rd course)

The top two examples enable the performance of a two-octave scale in the key of A minor. If the totally re-entrant stringing is used, a huge break in the scale forms between the 3rd and 4th courses. If a performer/composer were to use this stringing, caution would have to be taken for any scales that pass from the fourth course to the third course (or vice versa), because there is the interval of a 7th between \( f' \) and \( g \), not a 2nd as with the other aforementioned stringing combinations. As such, if a composer's tablature contains frequent passages that transition between the 3rd and 4th course, it seems to me more likely that the music was not intended to be interpreted using the totally re-entrant stringing.
After a thorough examination of the original tablature of the sources named below, I created an informational chart to demonstrate the likelihood that this was not the stringing used by Sanz (figure 15). It shows how many times a scale passage crosses over the “great divide” and produces a severely broken line. I have compared the number of times and shown a few other composers for comparison.

(Figure 15) Chart of composers whose tablature frequently crosses between the 3rd and 4th course

<table>
<thead>
<tr>
<th>Author and Book</th>
<th># of times a scale (of at least 3 or more notes) crosses between the 3rd and 4th courses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sanz/Book I (1674)</td>
<td>77</td>
</tr>
<tr>
<td>Sanz/Book II (1675)</td>
<td>91</td>
</tr>
<tr>
<td>Sanz/Book III (1697)</td>
<td>127</td>
</tr>
<tr>
<td>Corbetta/Book II (1643)</td>
<td>66</td>
</tr>
<tr>
<td>Roncalli/Book I (1692)</td>
<td>62</td>
</tr>
<tr>
<td>Granata/Book IV (1659)</td>
<td>62</td>
</tr>
<tr>
<td>Granata/Book V (1674)</td>
<td>50</td>
</tr>
<tr>
<td>Carré/Book II (1720)</td>
<td>19</td>
</tr>
<tr>
<td>Valdambrini/Book I (1646) and Book II (1647)</td>
<td>45</td>
</tr>
<tr>
<td>*Robert di Viseé/Book I (1682) and II (1686)</td>
<td>50</td>
</tr>
</tbody>
</table>

As you can see, Sanz’s music crosses this gap a staggering 295 times. In other words, either he was careless when he translated his music into tablature form, or he did not use the totally re-entrant stringing for his music or tablature. And, while some, like Monica Hall, try to minimize the importance of this phenomenon; it cannot be so easily overlooked when other viable options exist. I have included Robert de Viseé in this chart because we know that his stringing included an octave on the fourth course, which would allow for a scale to cross between the third and
fourth courses without a break in the musical line. The example below (Figure 16) has been provided to illustrate this fact:

(Figure 16) Example of “French” stringing

“French” stringing with octave on 4th course

Scale example using octave on 4th course

If one were to combine the split-octave technique with this stringing (also sometimes referred to by some modern scholars as the “French” stringing), it would now be possible to transition up and down a scale between the 3rd and 4th courses. The transition between the 4th and 5th courses is still the same as with all other re-entrant stringings.

One would think that all the numbers for the other composers who used the totally re-entrant stringing would be less than those of Viseé.\(^{53}\) Hence, from a statistical standpoint, it doesn’t seem that any of the above composers used the totally re-entrant stringing. In the very least, it would seem that all of the above used a stringing that had at least one octave at the fourth course.

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\(^{53}\) Only Carré appears nominally less, but the amount of music in Viseé’s books is more than double that of Carré. Statistically, they come out quite similar after all. In the case of Valdambrini, the numbers would be much higher if I counted the ascending/descending thirds sequence that moves up or down according to a scale. However, these were excluded in order to give an equal standard to all statistical figures.
Also, Sanz mentions campanelas\textsuperscript{54}, which was a performance technique used by the Italian composers of lute and chitarrone. This signals a clear link to the past because both the re-entrant stringings and campanelas come from performers/composers of these two instruments.

\textsuperscript{54} See: Chapter IX: \textit{Clues From the Chitarrone}, for a detailed explanation of campanelas.
VI. The So-Called “French” Stringing

When thoroughly examining a treatise, it can be just as important to note which subjects the author elects not to explain or comment. I find it curious that Sanz says nothing about octave-strung courses that do not include bordones. As a result, it is necessary to consider whether or not another stringing combination would be a viable option.

The so-called “French” stringing (Figure 17) became popular in France after the arrival of Francesco Corbeta (The most influential Italian guitar master, also mentioned by Sanz as “the best of all”)\(^55\). In *La Guitare Royalle* (1671) Corbeta’s advice to beginners was to use an “octave” on the fourth course\(^56\), resulting in the following stringing:

(Figure 17) Diagram of “French” stringing

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\(^{55}\) Aside from mentioning him in his treatise, Sanz also used “inspired borrowing” from Corbeta’s music. It is clear that Sanz had intimate knowledge of Corbeta’s music (at least book II, 1643). For more on Corbeta, see Pinell, Richard T. *Francesco Corbeta and the Baroque Guitar: with a Transcription of his Works*. UMI Research Press, c1980.

\(^{56}\) Corbeta, Francesco. *La Guitare Royalle*. (Paris, 1671). There are two versions of this publication, one in Italian and the other in French. In the Italian version (pg. 3) he advises: “Averti di mettere una piciol ottava alla seconda corda que e D sol re perche li dui unissoni non fanno armonia, come anche le mie sonate lo ricercano; e batti sempre le consonanti con la mano et il polzo insieme che ti riuscira piu armoniosa la batuta.” The French version (pg. 7) reads: “Je vous avertis de mettre une octave à la 4.me corde de. la. re. sol. parceque les deux unissones ne comosent point d’harmonie...”
This stringing has one octave placed at the fourth course. If his advice to beginners consisted of adding an octave at the fourth course, it stands to reason that the beginners are to transition from the totally re-entrant stringing to the “French” stringing. Thus the equation would be as follows:

(Figure 18) Diagram of octave addition from totally re-entrant to “French” stringing

(totally re-entrant stringing + 4th course octave = “French” stringing)

He also seems to point out the taboo of using the totally re-entrant stringing for his plucked/mixed tablature because he openly states in the French version (fn. 56): “I advise you to put an octave at the fourth string (course), .... because the two (strings of the fourth course) in unison do not produce harmony.”

From James’s Tyler’s timeline of printed guitar sources in 17th century, it is probable that most of the French population had only been exposed to strummed guitar accompaniment (with re-entrant stringing).57 Therefore, it seems that Corbetta’s advice directed to French amateurs signals a transition away from the

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57 Tyler, James. The Guitar and its Music. Pg. 118, Table 7.1. Of the five known five course guitar printed sources before Corbetta’s arrival, at least three recommend the totally re-entrant stringing. See: Luis de Bričeho: Metodo mio facillissimo para aprender a tañer la guitarra (Paris,1626). Mersenne, Marin, Harmonie universelle , livre second, poposition XIV, (Paris, 1636), and Mersenne, Marin, Harmonicorum libri XII, (Paris, 1648). None of these sources contain music in the plucked or mixed style.
employment of the totally re-entrant stringing towards the “French” stringing. This also might indicate that there was a differentiation between intended uses of certain stringing options, namely that the “French” stringing was a necessary step towards the plucked/mixed repertory, and that the totally re-entrant was specifically designated for strummed music.
VII. Bordón: A 17th Century Definition

Coincidently, the “French” stringing hasn’t been considered as an option for Sanz’s music because it has been presumed that one must string the lower octave of the fourth course with a bordón, something that Sanz himself recommends against, as we have seen. However, I would like to propose instead that the Italian Masters merely used the thickest of the treble strings for their lower-pitched string of the fourth course. While an octave can be created by pairing a bordón with a thin string (tuned an octave higher), that is certainly not the only way to create an octave. Two thin strings of different diameters could be tuned an octave apart to create an octave as well. The Campori manuscript\(^\text{58}\) shows the following stringing/tuning chart:

(Figure 19) Campori 612 manuscript stringing image

which could be interpreted as follows:

\(^{58}\) Ms. Campori 612. An anonymous manuscript containing a tuning interval chart and alfabeto (strummed) music.
If lowered by one whole step, it would appear as follows:

![Musical notation](image)

Some tuning charts in the 17th century begin with the fifth course, but it is most common today to list a tuning from the first string. If one were to spell this backwards (using unisons on courses 2, 4, and 5), it would be easily recognizable as the following guitar tuning/stringing:

(Figure 20) Campori 612 stringing

![Musical notation](image)

This stringing option has one octave at the third course and does not use a bordón on the fourth course. More than 10 years ago I thought that this might be a viable stringing option for the music of the Italian Masters. Two major problems arise with that theory however. In the first case, you would loose the lower register created by the fourth course lower octave string, and would not be able to produce all of the voicings or cadences used throughout the mixed-tablature and punteado repertory. Also, you would still not be able to perform a lower octave scale passage that transitions from the fourth course to the second course (or vice versa), and many original tablature sources of much of the 17th century contain such cases. Furthermore, the Campori manuscript consists of only strummed music that is
devoid of either lyrical content or melody and scarcely similar to the more difficult Italian repertory. Hence, it is basically a dead end for those searching for the stringing used by the Italian Masters.\(^{59}\)

It also should be noted that Francesco Corbeta and Robert de Viseé advised the French beginners to put an “octave” at the fourth course and not a bordón. Unfortunately, many previous scholars have made the mistake of oversimplifying the stringing options into three main categories, and hence they began to look for bordones instead of octaves. As a consequence, if any of the aforementioned composers mentioned that bass strings were not to be used, scholars just automatically assumed that the only option left was the totally re-entrant stringing (as with Sanz and Valdambrini). The fourth string on a guitar is almost always a wound bass string, but that certainly doesn’t mean that that is absolutely the only way to string a guitar, nor should one infer that the first string is the thinnest string possible and that it is impossible to achieve a higher pitch for the first string. One could simply use a thinner string tuned to a higher pitch for the first, and then place the same set from 1-5, starting at string 2, which would give the stringing of a guitar from a\(^4\)-A (this stringing would relocate the first wound bass string of the fourth string to the fifth).

\(^{59}\) Like many of the other strummed music books (see: Tomasso Marchetti and Pietro Millioni, and Luis de Briceño), this one is a confused mess and basically useless to performers. Both Strizich and Hall dismiss this stringing as an acceptable alternative. See Strizich, The complete Works of Gaspar Sanz, pg. 7, fn. 41, and Hall, The Stringing of the Baroque Guitar: A Survey of the Evidence, pp. 60-64.
It is certain that this was an option for many Italian guitarists when we consider the documentation of the distinct types of sheep intestine that were used for the creation of different types of strings. During the 17th century, these choices were as follows: *abbacchio* (before the creature was weaned, whose slaughter took place between October and May) *agnello* (lamb, after weaning up to almost one year old, when it had already been shorn twice), *ciavarra* (or *ciavarella*: from one to three years of age), *pecora* or *montone* (sheep or ram, at least three years old or more), *castrato* (castrated sheep Capra), and *capra* (goat). The *agnellos* were divided into two groups: *primaticci* (7-9 month old lambs) and *mezzarecci* (3-6 month old lambs). Barbieri also points out that the *capra* was used much more at Naples than Rome, “owing to the wider consumption of unweaned kids (*capretti*) practiced in southern Italy (see footnote 60).

Also, of key importance is that different gut materials were used to make strings according to the pitch range needed. For example, *canti* or *cantini* of violins used two to four strands (names given the *chanterelles*) were made with *agnello* or *castroto*. The middle range strings, or *tenori*, were made with *castrato* or *pecora*. However, and perhaps most important, the *bordini/bassi* (low range strings previously referred by Sanz as: *bordones*) were made of *pecora* or goat (see footnote #60). Taking this into account, it would seem that Antonio Stradivari’s stringing

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instructions (Figure 21) for the guitar (c. 1700) do not indicate that bordones should be used either.61

(Figure 21) Image of Stradivari’s stringing instructions

(1st course) These should be paired two of the small top strings (cantini) of the guitar

(2nd course) These should be paired two second (sotanelle) of the guitar

(3rd course) These should be paired two small top strings (cantini) of violin thickness.

(4th course) This should e a canto of a violin./ This other should be the second (sotanella) of a guitar.

(5th course) This should be the canto of the violin but a bit larger. / This other should be a top string (cantino) of a violin.62

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62 “Questi deve esser company due Cantini di Chitara / quested eve essere compane due Sotanelle di chitara / quested eve essere compane dei Cantini da Violino grossi / queste altra corda deve essere una sotanella di chitara /
It should be clear that while Stradivari indicates the need for octaves on the fourth and fifth courses, he did not call for the inclusion of bordoni in his string set. Rather, only the following violine strings: cantini, canto, and the largest available canto (“canto da violino ma di più grossi”). Monica Hall considers this as a recommendation for the inclusion of bordones. However, the canto and cantini strings used for violins in the 17th century typically consisted of two strands of gut, and not the 3, 4 or 5 strands that were used for the construction of bordini. Barbieri also points out that the term “thin strings” was a generic reference to cantini (corde sotille). The second string of the violin was not strung with a bordón because Stradavari specifically calls it by its name: “canto.” The largest string that he calls for is not even the third string of a violin, but instead, the largest canto available (still string 2 of the violin). Both of these strings would be noticeably thinner than the fourth string of a violin (a bordón). So, if the canto strings used by Stradivari were not large enough to be considered as “thick” (i.e., similar in diameter to a bordón), it stands to reason that they could be considered in the “thin” category due to their comparative diameter. Furthermore, the grey area of generic description lies in the two middle strings of the violin, so it is likely that the violin’s third string could be put into either general classification, namely “thick” or “thin.”

_questa altra corda deve essere un Canto da Violono ma di più grossi / questa deve essere un cantino da violin/corda._ Translation by Stewart Pollens.

63 Hall, Monica. _The Stringing of the Baroque Guitar: A Survey of the Evidence_, pg. 38.

Lastly, an enlarged view of Stradivari’s diagram (Figure 22) shows that there is a much larger difference between the string diameters of the ninth and tenth strings (fifth course), which has been illustrated to the far left of the image.

(Figure 22) Enlarged view of Stradivari’s nut template

This appears to be some kind of template for the string size and spacing for the guitar’s nut. The size of each type of string appears to have been matched accordingly. There is clearly a substantial difference in diameter between the strings of the fifth course (strings #9 and 10 located, at the bottom left of Figure 22). The ratio between these strings appears to be about 3:1 or even 4:1. However, the strings of the fourth course (#7 and 8) do not have a similar difference in diameter, but rather a nominal ratio (about 1.5:1 or 2:1).
In any event, it seems likely that either of the two charts (Figure 23) could also be possible alternative approaches to stringing.

(Figure 23) Image of two different ways to string with 4th and 5th course octaves

Either way, we should be able to reasonably conclude that Stradivarius’s stringing combination is a validation of Sanz’s statement about Italian masters using “thin” strings, at least in regard to the “French” stringing arrangement that uses one octave on the fourth course.

Barbieri also points out two crucial pieces of information that are relevant to this discussion on stringing.65 He cites a document (1660) that states: “agnello strings must be for guitars, and those of castrato for violins” (“le corde d’agnello debbano esser per chitarre, e quelle di castrati per violini”). Even more fascinating is that an economic divide existed between string types. He adds: “almost all documents distinguish between thin and thick strings by price,” and that the “seventeenth century thick strings cost at least 50% less.” Furthermore, he reveals a deed (dated 1787) which claims that “guts pecora or ciavarella were used to

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manufacture 'second quality, or ordinary strings.' While this deed describes a practice roughly a century later, it is highly probable that this was a common practice that originated earlier (namely the 17th century), and could be yet another clue we need to understand Sanz’s reference about the Italian masters' preference for “thin strings,” over bordones. There was not the same availability of abbacchio and agnello gut in Spain as there was in Rome and Naples. As pointed out by Barbieri, the consumption of lamb was much higher in Rome and Naples than other European cities, and since fresh guts could not be transported (unlike today) string production was high in both cities. Taking all of this information into account, it seems to me that Sanz’s advise on the use of bordones was not intended to imply that he used the totally re-entrant stringing. Rather, his discourse seems more related to issues of performance and music theory, and perhaps the availability and cost of “thin” strings in Spain. And, since Naples was a colony under Spanish rule during the time of Sanz (due to one of the earlier military victories of Juan of Austria), it is probable that Italian-made strings (from Naples) were available in Spain, but more expensive than Spanish strings.

The notion that the fourth course of a guitar had to be strung with a bordón is further challenged by the following tuning charts of the chitarrone and theorbo.67


67 Spencer, Robert. Chitarrone, Theorbo, and Archlute. The theorbo was a special kind of bass lute. The exact specification reaches beyond the scope of this paper, but this article effectively explains the basic differences between the three.
Both charts show that the 6th course (A string) is the first to receive an upper-octave (see Figures 24 and 25).  

(Figure 24) Image of James Talbot's tuning for English Double Theorbo'

(Figure 25) Additional theorbo tuning

This would correspond to the 5th course on a guitar. So, it is not unreasonable to presume that there is at least an ambiguity in regards to which course the bordón appears for both the guitar and lute-related instruments.

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Many lutes were commonly strung with upper octaves (beginning on the 6th course downward) order to help out the weak sound of the bass strings, despite the objection of some notable masters.\(^{69}\) That would correspond with the fifth course of the baroque guitar, not the fourth. If the average guitarist (of meager means) living outside of the territory of Rome or Naples did not have access to the best of the thinnest strings, it only stands to reason that a different diameter string set would have to be used, namely, a set that used a bordón on the fourth course (and possibly fifth course).

The advice of Corbetta and Viseé to put an “octave” at the fourth course was necessary for filling in the bottom end of the guitar’s tessitura. I’m convinced that Corbetta didn’t bother to mention the addition of an upper octave on the third course (to add to the guitar’s tessitura) for two reasons. First, it is not needed to play most of the music contained in *La Guitare Royalle* (1671). Secondly, plucked technique on baroque guitar is not easy. It takes a great deal of time and practice. The inclusion of one octave will complicate the technical demands placed on both hands if it is approached using the split-octave technique. In my estimation, the idea of starting off a novice with two octaves and this right hand approach would just be downright torturous and cruel. I think that the few pieces that indicate a need for an octave on the third course were really intended to for his intermediate students.

\(^{69}\) Dowland, Robert. *A Varietie of Lute Lessons*. London, 1610. (John Dowland)“Secondly, for on your Bases, in that place which you call the sixt string, or r ut, these Bases must be both of one bignes, yet it hath been a generall custome (although not so much used any where as here in England) to set a small and a great string together, but amongst learned Musitions that custome is left, as irregular to the rules of Musicke.”
If this were the case, it shows Corbeta as a seasoned teacher and businessman, in that he tried to offer something for everyone in this publication.

Unfortunately, the “French” stringing also proves to be insufficient for all of the tablature of Sanz (and many of his contemporaries as well). Therefore, I have concluded that the so-called “French” stringing is only the base model used for most punteado. As such, it can be added to with the incorporation of upper octaves as a means of satisfying the whims of more skilled performers, but it basically serves as an introductory stringing structure for intermediate and beginning players of plucked repertory.
VIII. New Stringing Proposals for the Tablature of the Italian Masters

If the “French” stringing is in fact the base model for constructing a stringing combination but insufficient, and if a bordón is not to be used for the fifth course (at the lower octave), there remains but a few possibilities for alternative stringing arrangements. These are as follows:

No bordons with two octave-strung courses (located on courses 3 and 4)\(^70\)
(this should be referred to as IMS#1=Italian Master’s Stringing #1,\(^71\) or the Michael Lorimer stringing)

(Figure 26) Italian Master’s Stringing #1

No bordons with four octave-strung courses (located on courses 2, 3, 4, and 5)
(my proposed stringing referred to as IMS#2)

(Figure 27) Italian Master’s Stringing #2

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\(^70\) This is the stringing arrangement first proposed by Michael Lorimer, and used by Craig Russell for his transcription of Códice Saldivar no. 4 by Santiago de Murcia (although no documentation could be found to support such a stringing combination). Even more curious is that Russell claims to use the “French” stringing for his transcription. For more on this mind teasing subject, see: Russell, Craig H. Santiago de Murcia’s “Córdice Saldivar no. 4”: A Treasury of Secular Guitar Music from Baroque Mexico. (Volume 2, Transcription Procedures and Tuning: xviii).

\(^71\) Michael Lorimer was unable to find any document or source to verify this stringing arrangement. As such, if this paper is successful in providing enough circumstantial evidence for this it’s existence, then I feel compelled to give it the name of my choosing.
No bordons with three octave-strung courses (located on courses 2, 3, and 5) and a triple-string/double octave (located on the 4th course)

(my proposed stringing referred to as IMS#3)

(Figure 28) Italian Master’s Stringing #3

All of these stringing options contain the base model from the “French” stringing, and all of them use at least two octave-strung courses. Although none of these three stringing options are specifically mentioned, they can be deduced through the process of octave addition to the bass stringing model (or so called “French” stringing). And from here, we will need more information and history.
IX. Clues From the Chitarrone

The next huge clue revealed by Sanz is his mention of *campanelas* (literally “little bells”), which are not original to the baroque guitar, but rather to the *chitarrone*. In fact, many of the composers of the *chitarrone*\(^{72}\) repertory were directly responsible for the promotion and creation of 17th century guitar literature, even producing guitar treatises that used techniques and philosophies borrowed from the *chitarrone*. The following *campanela* example (Figure 29) is an excerpt from Kapsperger’s fourth book for *chitarrone* (1640):

(Figure 29) Sample *campanela* passage from Kapsperger

While this technique appears simplistic and visually mundane, a more sensitive realization can illustrate the complexity and striking beauty that could be achieved when executed skillfully.

\(^{72}\)Also spelled, *chitarone*, this bass lute had a six to eight strings placed over the fretboard, and the remaining bass strings stretched out along an extension tuning arm (giving the instrument an overall length of roughly six feet). It was developed in Rome around the beginning of the 17th Century, and was employed for much of the chamber music composed during the Early to mid-Baroque Era.
(Figure 30) Transcription of a campanela passage composed by Kapsperger

![Image of musical notation]

This next excerpt (transcribed using the IMS #2 or 3) from Sanz’s second book (1675) shows a striking similarity to previous one by Kapsperger:

(Figure 31) Transcription of a campanela passage composed by Sanz

![Image of musical notation]

So, from these examples it should be possible to spot a campanela passage in any piece of tablature for chitarrone or baroque guitar. It should also be remembered that the idea of campanelas comes from chitarrone to the guitar, not the other way around. It marks a clear intent to take the guitar in a different direction through the use of a different stringing set up. Lastly, this conceptual approach to stringing faded away during the following century in order to give way to the emergence of the standard-tuned six-string guitar. Re-entrant stringing
arrangements today can be found of 12-string guitar banjo and ukulele, and the steel strung 12-string guitar.

One fascinating element to the baroque guitar stringing enigma is that it is nearly impossible to judge the “total re-entrant” stringing without discussing its former employment on the *chitarrone*. There seems to be a direct lineage between the tablature of the *chitarrone* and baroque guitar vis-à-vis the lutenists who performed and wrote for both instruments. The crossover between multiple instruments among guitarists/composers should not be overlooked because the list of names of guitarists who wrote for both guitar and chitarone/theorbo includes Kapsperger, Bartolotti, Granata, and Lelio Colista (all mentioned by Sanz except Bartolotti). Gielolamo Kapsberger seems to have been one of the most important links to both repertories, because he was one of the earliest teachers of the baroque guitar (his book has not been discovered but we know it existed because it is cited in Valdambrini\textsuperscript{73} (1646, 1647) and Sanz\textsuperscript{74} (1674).\textsuperscript{75}

The *chitarrone* was tuned according to lute pitch, often to $a$ or $g$, according to the following diagram (Figure 32).

\textsuperscript{73} Valdambrini, Ferdinando. *Libro primo d'intavolorura di chitarra a cinque ordini*. Rome, 1646, pg. 2.

\textsuperscript{74} Sanz, Gaspar. *Instruccion de musica*. Book I, pg.

\textsuperscript{75} Tyler claims that Kapsperger published two books containing guitar solos which are now lost: *Intavolatura di chitarra*, and *Intavolatura di chitarra spagnola pizzicato*. It is possible that this second book contains music in the mixed style, in the likeness of Valdambrini’s books. See Tyler, *The Guitar and it’s Music*, pg.72, (footnote 48).
(Figure 32) *Chitarrone* tuning diagram

The gap between the third and second courses is quite noticeable when attempting to perform a piece of music originally written for a standard tuned lute. Below, I have included a scale diagram to point out this difference.

(Figure 33) Ascending A-minor scale in tablature and standard-music notation for chitarrone

Notice the downward leap of a minor 7th between d’ and e in the scale. On a lute standard-tuned lute, the performance of the same tablature above would produce a scale passage that would continue upwards without leaping down, but not on this instrument. This strange stringing arrangement was new to the string world and unique to the *chitarrone*. The leaping off point is perhaps easier to see in a diagram of the fretboard.

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The *chitarrone-players* also used a variant of this strange stringing for their unique approach to the baroque guitar. This will be discussed later in this paper.
The first two strings were commonly tuned (with the appropriate gauge strings) one octave lower because it was not possible to make a string that could achieve the higher pitch of a' at so large a string length.

Girolamo Kapsperger is most relevant to this discussion because it seems that he may well have been the most important figure to advance the status of the baroque guitar. Furthermore, he seems to have been the one who cross-pollinated the playing styles of both instruments. And, since he was a prolific composer and teacher of both lute and chitarrone, his books are a crucial piece to understanding this puzzle.

The pitch gap between the third and second string on the chitarrone would pose a huge problem for a one attempting to arrange a transcription from the lute
literature, and great care would have to be taken to avoid such a large intervallic gap between these two strings. Otherwise, the resulting transcription would be filled with odd leaps at every place a scale crossed this string break.\(^{77}\) It should not be surprising that upon analysis, Kapsperger's first book, *Libro primo d' intavolatura di chitarone*\(^{78}\) (1604), has a few instances of odd scale leaps (eight in total). When compared to his fourth book, *Libro quarto d' intavolatura di chitarone* (1640), virtually all of these issues have been resolved (I could only find three that might be an issue)\(^{79}\). It would seem that there was more of a conscious effort made to avoid such occurrences.

Of particular relevance is that fact that there exist certain ascending chord patterns that are particular to stringing relationship contained in this instrument. Kapsperger was probably the first to display a *chitarrone*-influenced arpeggio (or rolled-chord) pattern for guitar. However, we need to understand this pattern in its original *chitarrone* form before we proceed to guitar. This can be seen in Figure 35.

\(^{77}\) It would also be reasonable to presume that one could not borrow a rolled chord pattern from the *chitarrone* and use it for the baroque guitar to achieve a similar sounding result, unless the guitar shared a similar relationship between the courses.


\(^{79}\) It is likely that the music for *chitarrone* was originally written for lute, and mistakes were made in the rearranging process.
(Figure 35) Arpeggio patterns from Kapsperger, Libro I

It is necessary that the performer memorize the corresponding pattern for the different chords, in order to simplify the visual aspect of the tablature and liberate the compositional redundancy that occurs when they are all written out. For example, only a block chord would have to be notated by a composer, followed by a symbol that resembles a percent sign (%), which would indicate that the performer should roll the chord according to the predetermined right-hand pattern.

(Figure 36) Musical example of Kapsperger’s arpeggiated notation
As seen in the Figure 35, Kapsperger’s first book for *chitarrone* shows only three arpeggio patterns. The first two ascend upwards from low to high (root-3rd-5th and root-3rd-5th-root respectively). The last (third) pattern does not resemble the other two, and may even have been a mistake due to accidental typeset. When we compare these three arpeggios from Kapsperger’s first book to those of his fourth book, we can see that it is the only one not replicated.

(Figure 37) Arpeggio patterns from Kapsperger, Libro IV

It is no accident that all of the arpeggios from Kapsperger’s fourth book end on the third string (the highest pitched string) and all form some type of arpeggio pattern that moves in an upward manner.

A further surprise is that Ferdiano Valdambrini\(^{80}\) admittedly took his suggested arpeggio pattern for guitar straight from Kapsperger’s book (this was

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\(^{80}\) Valdambrini, Ferdiano. *Libro primo d’intavolatura di chitarra a cinque ordini*. Rome, 1646, pg. 2. Valdambrini is integral to the discussion because he is cited by both Tyler and Hall as an example of an Italian composer of punteado/mixed-tablature music who employed the totally re-entrant stringing. As such, his acknowledged link to Kapsperger (and subsequent *chitarrone* link) can help falsify the Hall’s claim that he employed the totally re-entrant stringing. See: Hall, *The Stringing of the Baroque Guitar: A Survey of the Evidence*, pg. 21-22, and Tyler, *A Guide to Playing the Baroque Guitar*, pg. 72-73.
possibly from his lost guitar book, but it is identical to the arpeggio pattern found in his first and fourth book for *chitarrone*. The numbers located on the first and third strings in both examples are one fret apart from one another due to the comparative intervallic difference between the third and second courses of these instruments. However, the right hand plucked pattern (thumb, middle, ring, index) is identical, and the ensuing upward pitch set (root, root, third, fifth) of Kapsperger’s 1st example from books I and IV.

(Figure 38) Comparison of arpeggio patterns from Kapsperger and Valdambrini

<table>
<thead>
<tr>
<th>Kapsperger, Book I, and IV</th>
<th>Valdambrini, Book I</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Chitarrone</strong></td>
<td><strong>Baroque Guitar</strong></td>
</tr>
<tr>
<td>0 0 3 3</td>
<td>0 0 2 1</td>
</tr>
<tr>
<td>2 3 2</td>
<td>1 3 2</td>
</tr>
</tbody>
</table>

Right Hand Fingering (thumb, middle, ring, index)

Also: T i m T

It is important to realize that the line contour that would result of the *chitarrone* tablature example will only be matched if a 3rd course upper octave is employed on the guitar tablature example and (using the split-octave technique).

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81 See Kapsperger, Girolamo: *Libro primo d’intavolatura di chitarone* (1604), and *Libro quarto d’intavolatura di chitarone* (1640). Since Kapsperger’s arpeggio for *chitarrone* is identical (in terms of relative pitch set and string/course order) to Valdambrini’s arpeggio for guitar, we can confidently infer that Kapsperger used the same arpeggio (found in Valdambrini 1646/7) for his guitar treatise (essentially a mere transcription from his books for *chitarrone*).
Compare the results from a stringing that employs a 3rd course octave (transcribed by me) with the one by James Tyler (as transcribed Tyler using a totally re-entrant stringing):

(Figure 39) Transcription of arpeggio pattern by Valdambrini

The pattern notated in the both guitar tablature examples is undeniably identical, but the results will not sound identical unless the intervallic pattern between courses is identical. Bearing in mind that last note in the ascending examples of Kapsperger’s Book IV is always the highest pitched note of the chord shape, we should question whether or not the pattern displayed in Tyler’s notated example is an accurate depiction of Valdambrini’s intented arpeggio.

So, are we to presume that Kapsperger used the same chitarrone-influenced arpeggio pattern for guitar, while knowing full well that it produced a different

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melodic contour because he didn’t account for the intervallic gap difference between a guitar and a *chitarrone*. Or are we to presume that maybe Kapsperger knew what he was doing, and that the employment of an upper octave (3rd course) on his guitar example was implied? Furthermore, are we also supposed to think that even if Kapsperger had employed an upper octave (3rd course), Valdambrini did not, and was ignorant of the connection between both instruments? It seems to me more probable that both composers knew exactly what they were doing, and that they both wrote for a guitar with at least one octave located at the 3rd course.
X. Building the Case For Octaves on the 3\textsuperscript{rd} and 4\textsuperscript{th} Courses

Both Tyler and Russell have suggested that one octave on the fourth course should be used for performance and interpretation of the tablature Giovanni Batista Granata and Santiago de Murcia.\textsuperscript{83} These examples will demonstrate that such a stringing would also have to include an upper octave on the third course as well. Therefore, the following formula has been provided in order to add clarity to the formulation of a base stringing.

(Figure 40) Diagram of octave addition from totally “French” stringing to IMS#1

\begin{align*}
\text{“French” stringing} &+ 3\text{rd course octave} = \text{Italian Masters’s Stringing #1} \\
\end{align*}

A stunning example that Granata used an octave on the third course can be found in his 1674 publication, \textit{Novi capricci armonici musicali}, which contains trio music for baroque guitar, violin, and viola concertati. This is a unique and revealing source because the guitar arrangement includes the melody line of the violin, along

with some chord filler and an occasional bass doubling. The following example is an excerpt taken from an *Alamanda* in the key of E minor. (pg. 20, measure 5).

(Figure 41) Excerpt from Granata's *Alamanda*

Note the open third course that falls on beat 2 in the middle of a descending melodic passage. This note can only be produced by an upper octave on the third course. However, without that octave and hence, available note, the melodic line would be unnecessarily disturbed by an inexplicable jump down and then back up. And, since we are dealing in the realm of probabilities, it seems more probable that

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the line should be a perfect copy of the one noted for violin (shown directly underneath. If this appears to be comparable to the “finding a needle in a haystack,” it is! Or, are we to believe that Granata was careless or not concerned about octave displacement? If he hadn’t employed an upper 3rd course octave, he could have just as easily chosen the fourth upper octave string course at the 5th fret to produce this note (as is common for many Italian and French composers who only used 1 octave at the fourth course) to avoid the gap all together. It seems more likely that this is a substantial due to the stringing that he had employed.

A further support for my theory can be found in Santiago de Murcia’s *Resumen de Acompañar la Parte Con La Guitarra.*\(^85\) This compilation of popular music and original compositions is the perfect source to examine due to the parallel tunes published by Raoul-Augur Feuillet.\(^86\) Thanks to the research of Craig Russell, we know that a large portion of Murcia’s compilation follows the same chronology of dances/tunes choreographed by Feuillet.\(^87\) Some of these pieces can serve as prime examples for further study of the probable existence of baroque guitar’s 3rd course octave. In Figure 42 (*La Jelousie*), measure 8, there is a *campanela* passage

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that begins on beat three.\textsuperscript{88} It ascends up along a D-minor scale from d to a' using the open 1\textsuperscript{st}, 3\textsuperscript{rd} and 4\textsuperscript{th} courses. This is a very common \textit{campanela} pattern that can be found in much of the baroque guitar literature. We can see that the note that falls on the offbeat of beat 4 is clearly a g' in the Feuillet manuscript (arranged in tablature as an open third course by Murcia). It seems unlikely to me that this is a mistake by Murcia, or an intentional displaced octave because he could have easily avoided it by shifting the open third course note to the fifth fret of the fourth course, whereby the performer would have the option of either g or g'.

(Figure 42) Comparative excerpt from \textit{La Jalousie}

\textsuperscript{88} Feuillet, R.A. \textit{Recueil de dances}. Paris, 1701. \textit{La Jalousie}, pp. 4-7 (Feuillet’s pagination re-sets for each dance). This excerpt has been spliced together with the corresponding dance from Santiago de Murcia’s \textit{Resumen de acompañar la parte con la guitarra}. (La Conty, pg. 83) Facs. Edn. Arte Tripharia, Madrid, 1714.
Santiago de Murcia showcases this again in his arrangement of *La Conty*. From Figure 43, we can see that measure 31 shows the third course employed for a melody note that could only be produced by an upper octave.

(Figure 43) Comparative excerpt from *La Conty*

It is important to point out here, that Craig Russell’s transcription of Santiago de Murcia’s *Códice Saldívar no. 4* is somewhat baffling because he used a different stringing to interpret the original tablature than the one he claimed to use. In his Transcription Procedures and Tuning section he states:

“In transcribing Murcia’s “Códice Saldívar No. 4,” I have tried not so much to produce a theoretically perfect version with idealized voice leading as to represent as much as possible what will actually sound if someone plays from the tablature using Murcia’s fingerings. For the reasons stated above, it seems probable that Murcia used the same re-entrant tuning no. 3 (the “French” stringing) that was the standard among his French contemporaries: I therefore have chosen to utilize this tuning in my transcriptions of the musical compositions.”

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89 Feuillet, R.A. *Recueil de dances*. Paris, 1701. *La Conty*, pp.68-72. This excerpt has been spliced together with the corresponding dance from Santiago de Murcia’s *Resumen de acompañar la parte con la guitarra*. *(La Conty, pp.64-65) Facs. Edn. Arte Trípharia, Madrid, 1714.*

This turns out to be a bold claim, because as early as the second composition of Murcia’s collection, it becomes obvious that Russell used Michael Lorimer’s proposed stringing arrangement for his transcription (see footnote #90). In this way he was able to reap the benefits of using the third-course octave for his transcription, while publically claiming to have not used it. Consequently, there remains an unexplained inconsistency in Russell’s handling of this issue. Considering the fact that he was clearly in favor of Michael Lorimer’s proposed stringing arrangement, it is more than possible that he could not reconcile the transcribed results produced by any of the any other scholarly accepted stringing options. Instead, he slyly elected to use an unaccepted stringing arrangement in an attempt to produce a more sensible transcription.

If the previous examples from Murcia and Granata are the evidence necessary prove that a 3rd course octave was used for the creation of their tablature, then it would also stand to reason that any tablature containing similar types of campanela passages from other composers is a likewise indicator. If anything, these examples demonstrate the high probability that many of the virtuosos of the baroque guitar used at least an octave on the third and fourth course.

A further clue is that Sanz names names in his treatise, most of which we are familiar with today. We have enough of the music of the contemporaries named to piece together what he was talking about. The tablature of Francesco Corbetta, Giovanni Battista Granata, and Lelio Colista is more than enough to show a pattern
of stringing preferred by the Italian masters. From the previously notated example
of Granata (Figure 41) we can see the need for octaves on the third and fourth
courses in order to produce the notes notated from the violin part one octave lower.

(Measure 2 from Figure 41)

Measure 2 shows a descending motif that includes a low f# and e. These notes
would necessitate the inclusion of a lower octave fourth course string. The need for
the fourth course’s upper octave companion can be seen in measure 5 from Figure
41, located at beat 2, 4th sixteenth note: d’, which is noted by a 0 on the fourth
course.

(Measure 5 from Figure 41)
Likewise, we can follow a similar pattern of deduction for the third course. From Measure 5 of (Figure 41), we see that it’s upper octave companion is needed to produce the note (g’) on the downbeat of beat 2. The lower companion is needed to produce the note (c#’) on the downbeat of beat 3. This brings us a stringing that uses at least two octaves (3rd and 4th courses), or IMS#1.

Using a similar process, we can also deduce that it is more than probable that two other Italian Masters (and the most esteemed by Sanz), Francesco Corbeta and Lelio Colista, used at least two octaves for their music. Figure 44 shows an excerpt from a Chacone composed by Corbeta.91 It was originally published in French tablature, a notation form that uses letters instead of numbers, which can be confusing. I have therefore decided to transcribe this example into Italian tablature and standard notation so that Corbeta’s example is easier to compare to the tablature of Granata and Colista.

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We have already covered that Corbeta’s instructions were to use an octave on the 4th course for the music in this volume. Taking into account that Corbeta already advised guitarists to use an octave at the fourth courses, this example (Figure 44) shows the need for the addition of a third course octave. On the offbeat of beat two, it is more probable that this note intended is $g’$ and not $g$. It also should come as no surprise that both examples (Figure 44, Measure 1, and Figure 41, Measure 5) contain a descending scale run (from $b’$ to $c#$) whose tablature is identical.
This extracted portion of Lelio Colista’s *Passacaille dite Mariona*,\(^{92}\) reveals similar results, and confirms that Colista\(^{93}\) also probably used at least two octaves.

(Figure 45) Tablature excerpt and transcription of Lelio Colista’s *Passacaille dite Mariona*

I have noted where it is likely that Colista has the inclusion of a lower octave on the 4\(^{th}\) course, and an upper octave on the 3\(^{rd}\) course.\(^{94}\) By now, we can begin to formulate a type of “school” of guitarists who were using at least two octaves (IMS#1), all specifically named by Sanz.

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\(^{93}\) At this point it is crucial to remember that Sanz was mentored by Lelio Colista, and familiar with some of the music of Granata. Furthermore, Santiago de Murica was also influenced by some of the Italian Masters (including Corbetta and some of his French pupils) and most certainly familiar with the treatises of Gaspar Sanz.

\(^{94}\) Tyler also suggests this same piece is better suited for stringing that includes two octaves (IMS#1). However, this stringing combination is not included as an option in his chapter titled: *Tuning and Stringing*. See: Tyler, James. *A Guide to Playing the Baroque Guitar*: pp. 4-5, and pp.65-66. Indiana University Press, Bloomington, Indiana, 2011.
XI. A 20th Century Composer Agrees

In the event that someone might object to the idea that campanelas passages should not be used to determine the likelihood of octave stringing, I have provided an alternative “odd-ball” approach. There are plenty of melodic melodic examples that don’t use campanelas. I have selected excerpts from Danza de las Hachas, and Villanos, both of which were are found in Sanz’s treatise\textsuperscript{95} and well known to the 17th Century Spanish court.

For the first example, we have Figure 46, which shows the first 8-bar variation of Danza de las Hachas (Dance of the Torch\textsuperscript{96}). I have placed the transcription result of the original tablature using the totally re-entrant stringing on line 1 and one that uses octaves on line 2, followed by the tablature on line 3.


The case could be made that the melody on line two is the actual melody, but Sanz changed it because he had the limited range of the totally re-entrant stringing. However, he could have compensated for that by simply transposing up a whole step to the key of G, thereby eliminating the issue of range. Nevertheless, his tab demonstrates scalic fluidity from the fourth course all the way up to the first, followed by a connection between the fourth and the third. If the second line is, in fact, the real melody of this popular tune, it could only be produced using octaves on the at least the third and fourth courses.\footnote{Unfortunately, all comparable melodic content of Danza de las hachas in Esses is useless, because it comes from Ruis de Ribayaz's treatise, Luz y norte musical, which is full of borrowed guitar pieces from Sanz's treatise. Even worse, Rybayaz's music examples do not contain any of the rhythms that were originally notated in Sanz's book. In my professional opinion, we would have been better suited if his book had remained lost in place of one of the lost guitar books of Corbetta or Kapsperger. The other pieces (one for harp, one for keyboard) follow the same harmonic scheme, but are not useful for this melodic comparison because they follow different melodic ideas and contours. See: Esses, Maurice. Dance and Instrumental Diferencias in Spain during the 17th and Early 18th Centuries. Vol. II: Musical Transcriptions, pp.347-349. Stuyvesant, N.Y.: Pedragon Press, 1992.} I have also notated the correct strings to be plucked below the melody on line 2 to demonstrate the dexterity and skill needed by the performer.
We also have a 20th century composer’s handling of this exact melodic example. The following figure is a comparison chart of the transcribed tab using the totally re-entrant stringing, octave stringing, and lastly Rodrigo’s excerpt from *Fantasia Para un Gentilhombre* (1954).\(^98\)

(Figure 47) Comparative transcription of Sanz’s first variation of *Danza de las Hachas* including an excerpt from Rodrigo’s *Fantasia Para un Gentilhombre*

Rodrigo’s transcription more than likely came from a standard 6- string guitar stringing (e’-b-g-d-A-E). However, it appears that he simply shifted fragments up an octave (or two) that seemed out of place in order to produce a melody that would

make the most sense. Unbothered as he was about the musicological ramifications
of whether or not his arrangement was a legitimate transcription, he seemed more
concerned with finding melodic subject matter from which to compose. As a result,
he ends up with the identical the melody that I have been able to notate using octave
stringing.99

The second musical excerpt that I have chosen is from Sanz’s variations on
the Villano, appropriately titled: Villanos. The previous examples have
demonstrated the need for octaves on the third and fourth courses and only once on
the fifth course. These next two examples will showcase the need for upper octaves
on the fifth and second courses. In the figure below we have the first variation with
Sanz’s tablature on line 1, a transcription using the totally re-entrant stringing on
line 2, a transcription using octave stringing on courses 2-5, and an excerpt from
Rodrigo’s Fantasia Para un Gentilhombre on the bottom 3 lines.

99 Not all the note values are identical, but the pitch content is the same on everything except for measure 7,
where he uses a harmony of the melodic bass cadence.
Figure 48) Comparative transcription of Sanz's last variation of Villanos including an excerpt from Rodrigo's Fantasia Para un Gentilhombre

Villanos, Instrucciones de Musica Sobre La Guitarra Espanola, Libro II

Gaspar Sanz's Tablature, Book II

Transcribed using totally re-entrant stringing

Transcribed using octave stringing on courses 2, 3, 4 and 5

Extracted from Joaquin Rodrigo's Fantasia Para un Gentilhombre (for Guitar and Orchestra, beginning on Measure 4 of Villano y Ricercar)
The next example is from Sanz’s last variation. This one showcases that with the notes made available from octaves, composers were freed up to use open strings to simplify the fingerings of a melody.

(Figure 49) Comparative transcription of Sanz’s last variation of Villano

Villanos, (Instrucción de Musica Sobre La Guitarra Española, Libro II)

On the first line we have Sanz’s tablature, again followed by a transcription using the totally re-entrant stringing on line 2, a transcription using octave stringing on line 3, and a transcription, by Robert Strizitch, using the standard guitar stringing (excluding the low sixth string). The first note in the pick-up measure is an “a” if one uses the totally re-entrant stringing to interpret the tablature. The third line of the same beat shows that “a” transcribed up 1 octave (a’). That note can only be produced if there is an upper octave on the fifth course. And it clearly makes more
sense because the ensuing melodic phrase is little more than a re-cap of the first melody in the previous 8-bar example (Figure 48, Measures 1-4). Even more enlightening is that on the fourth line of Figure 49, Strizich abandons his transcription stringing arrangement and elects to raise what should be an “A” (which clearly wouldn’t work in this case) two whole octaves. Strizich’s executive decision seems to be both deliberate and suspicious. The note was moved because he clearly believed that this should be interpreted as a melody note, since he placed it in the same octave range of the other melodic notes. More curious is that no explanation is given in his critical edition’s Modifications to the Music Section as to why he moved this note up 2 octaves, only that he moved it.\footnote{Strizich, Robert. The Complete Works of Gaspar Sanz. A Transcription and Translation of the Complete Music and Text in Sanz’s Instrucciones de musica sobre la guitarra española (Zaragoza, 1674/5 & 1697). Les Éditions Doberman-Yppan, Bibliothèque nationale du Québec, Bibliothèque nationale du Canada, 1999. See: pp. 99, and 162 (note 63, m20).} Can it be that even he had difficulty reconciling the incongruity of using the totally re-entrant stringing for Sanz’s music?

A similar instance can be found in Alejandro Vera’s transcription of Santiago de Murcia’s Españaletas por la E.\footnote{Mucia, Santiago de. Cifras selectas de guitarra: Facsimile. Pp.6-7. Edited by Alejandro Vera. Pontificia Universidad Católica de Chile, Sistema de Bibliotecas, 2010. Compare with Mucia, Santiago de. Cifras selectas de guitarra: Introduction, Transcription, and Critical Report. Pp. 17-18. Edited by Alejandro Vera. A-R Editions, Inc., Middleton, Wisconsin, 2010.} At least he had the “guts” to admit that he had raised an open a (fifth course) up in to the upper register (a’), and provide a precise explanation. In defense of his transcription (see: figure) he states: “I had to interpret the open fifth course as a treble a’; nonetheless, the c’ following it supports this solution (example 7 of his book). Obviously, my purpose has not been
to remove all the octave displacements—it is as impossible as it is unnecessary—but to supply a transcription that better reflects the nature of such passages, evidently thought of linear scales instead of broken melodies. And this purpose has supposed decisions of a critical and interpretive nature at any moment."^102

(Figure 50) Excerpt from Murcia's Españoletas por la E, Cifras selectas de guitarra, M.68-70

So far we have seen examples that have called for upper octaves on courses three four and five. This next example will showcase that sometimes there is also a need for the second course to contain an upper octave as well. Below is the sixth of a set of variations on the folia arranged/composed for baroque guitar by Santiago de Murcia.^103

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103 Russell, Craig H. Santiago de Murcia’s “Códice Saldivar No. 4”. (See manuscript folios no. 62,63).
(Figure 51) Excerpt from Murcia's *Folias Ytalianas Despacio*, "Códice Saldívar No. 4," variation #6

Santiago de Murcia

Transcribed using "French" Stringing

Transcribed with upper octaves on courses 2, 3, 5

Please note that whenever a note is played as an open string on the 2nd, 3rd, or 5th courses in the tablature, the musical context calls for those notes to be at the
higher octave.\textsuperscript{104} The comparison between the two different transcriptions should be self-evident, especially when comparing the melodic contour of measure 1 with measure 5. It is essentially the same fragment transposed up a third in order to conform to the chordal structure of the \textit{folia}.\textsuperscript{105} If one follows the tablature, the notes of these phrases can only be produced if the upper octaves are employed on these. Also, it seems that Murcia went out of his way to showcase the stringing being used here, for he uses as many open strings as possible to produce the notes used in the melodic figure. At this point, our stringing arrangement would look like this:

\begin{figure}
\centering
\includegraphics[width=0.5\textwidth]{music.png}
\caption{Italian Master's Stringing #2 (IMS#2)}
\end{figure}

\textsuperscript{104} The only places where this is not the case is measures 2, 8, 10, and 16, and it seems more likely that these places necessitate an \textit{a} in the bass (produced by the lower string of the octave set).

\textsuperscript{105} The fragment is first played over a D minor harmony, followed by an imitation one third higher over an F major harmony. The folia harmonic pattern is as follows: (I, V, i, VII, III, VII, i, V).
XII. 10-String Italian Master’s Stringing (The 4\textsuperscript{th} Course Double Octave)

Finally, we have arrived at the last option stringing arrangement option that could have been used by the Italian Masters.

Italian Master’s Stringing #3 (IMS#3)

It consists of a triple-strung course at the fourth course (covering two octaves), and the octaves shown in the stringing chart above. The triple strung 4\textsuperscript{th} course is possibly the most controversial, and in many ways the most extreme possibility in octave grouping. However, it should not be overlooked because this stringing is immensely helpful in terms of rounding out some of the most odd melodic passages. I have two different examples from late 17\textsuperscript{th} century contemporaries. The first example (below) shows an extract from Gaspar Sanz’s \textit{Pavanas}.\textsuperscript{106}

(Figure 52) Tablature of Sanz’s last variation of \textit{Pavanas}

\textsuperscript{106} The last seventeen measures of this piece are often omitted from the transcribed editions available for 6-string classical guitar. This is largely due to the fact that it is nearly impossible to form a cohesive arrangement from using either the re-entrant stringing or a 6-string guitar stringing to translate the original tablature.
Once again, I have displayed a comparative transcription between the “totally” re-entrant stringing and a stringing that uses octaves on courses 2-5, with the addition of an extra octave on the 4th course (forming a double octave: \(d''', d', d\)).

(Figure 53) Comparative Transcription of Sanz's Pavanas, measures 32-40

I have noted with an arrow the open 4th course in the tablature of measure 2 in order to highlight where we would have a need for the upper-upper octave \(d''\).

Also, I have circled the cascading motif that forms when octaves are used to translate the tablature. The sequence created by the octave stringing is typical of what we should expect from a composition of the baroque era. In contrast, there is no sequence when the totally re-entrant stringing is used to interpret the tablature.
The next example is from Granata’s 1674 book, and it showcases a *campanela* passage quite unlike any others that I’ve found.

(Figure 54) Granata’s rare *campanela* passage, *Novi capricci armonici musicali* (1674), pg. 45, Measures 4-6

The second measure of this excerpt shows an extreme interplay between the 1st course (9th fret) and the open 4th, 2nd and 5th courses (notated with 0s). Below is a comparative transcription into standard notation. This example also highlights the need for the open 4th course to contain a d”” in order to retain the musical line. Once again, the open 2nd and 5th courses would need upper octave companions as well, in order to give clarity to the line.

(Figure 55) Comparative transcription of Figure 54
The contrasting transcriptions are noticeably different, which led me to suspect that the 4th course was triple strung with two octaves. And, while this would demand a greater technical prowess, it would also allow the greatest range in an open position, and allow for campanelas to be performed to the most extreme degree.

An image of a five-course viola toieira (Portuguese version of the five course guitar) which was triple-string on both the fourth and fifth courses was can be found in a publication by Manoel da Paxão Ribeiro\textsuperscript{107}.

(Figure 56) Ribeiro’s image of a baroque guitar with triple-strung 4\textsuperscript{th} and 5\textsuperscript{th} courses

This source (1789), while not contemporary, demonstrates that at least some five course guitars were strung in such a manner. The instrument shown here has twelve tuning pegs, where as the standard 17th century guitars only had ten. The triple-strung fourth course would still be a viable option if the first course is single-strung, thereby freeing up an extra peg for the fourth course.

Since guitars typically have a shorter lifespan than many other stringed instruments, much of the information we have today comes from paintings rather than surviving specimens. It is likely that many 17th century guitars had M shaped cutouts, which are perhaps easier to alter with the use of a small file. It is also possible that new holes were drilled in order to accommodate a triple-strung octave. The bridge from the Cassas Baña five-course guitar, probably built in the 17th century, and possibly contemporaneously with those built by the Voboam108 family is a prime example of a bridge that has been altered in order to accommodate a different string set-up. 109

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109 Photograph and historical information made available on the website of master luthiers, Stephen Barber & Sandi Harris. See: The Vihuela and the Viola da mano, (The Quito vihuela). www.lutesandguitars.co.uk/htm/cat12.htm
(Figure 57) Image of a bridge from the Cassas Baña guitar

Note, the M-shaped cutouts are original, the drilled holes probably added later in order to accommodate a different string set up. While I am not suggesting that this instrument used such a stringing, it does appear possible to the instrument up with this stringing if the fifth course is strung through the two holes on the far left, and the fourth course strung using the right side of the adjacent notch, the hole, and the right side of the next notch. This would leave a wide enough gap between the fourth course strings to enable the split-octave technique. Another option would be to have the guitar’s bridge and nut replaced by newly constructed additions that would meet the performer’s specified needs. Since almost all instruments of this period were constructed with some type of fish glue or animal based adhesive, it would have eased the luthier’s ability to replace such parts.\textsuperscript{110}

\textsuperscript{110} See: \url{www.lutesandguitars.co.uk/htm/cat12.htm}, [see homepage: glues].
XIII. Physical Limitations of Gut Strings

Now it’s time to address the physical limitations of strings in order to answer the critics who would insist that it would be impossible to find a string from the 17th century that could achieve too high a pitch on a baroque guitar.

An analysis of physical limitations of gut strings would reach beyond the scope of this paper. However, I have chosen to use a tuning chart for theorbo in order to show the availability of strings that could reach the pitches needed for the stringing of the Italian Masters. Around 1700, James Talbot measured an Archlute with the following tuning and string measurements (shown below). Based on this information, it seems that there existed treble strings that were capable of reaching $g'$ at a length of 68.5 cm.

(Figure 58) James Talbot’s measurements of an archlute, circa 1700 A.D.

This is approximately one fret beyond the nut of a guitar with a standard

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111 See Spencer, Chitarrone, theorbo and Archlute. (p. 417).
scale length of 65 cm. Using this string, we can start to deduce some rough estimates as to the scale length of a guitar used by the Italian Masters. While there was not a set standard for pitch during this period, I have delayed factoring in the pitch variability for $a'$ until after my calculations.

A string tuned up to $a' = 61.5$ cm scale length
A string tuned up to $b' = 54.7$ cm scale length
A string tuned up to $d'' = 46$ cm scale length

Since pitch was not standardized, and greatly varied from region to region, all of this is relative and subject to that the fact that we don't have a precise pitch that we can designate for $a'$. I have therefore chosen $a' = 410$ (though it could have been much higher or lower), and since many 17th century guitarists down-tuned\(^\text{112}\) the instrument from $e'$ to $d'$, it is not unreasonable that we could combine that practice to arrive at the following dimensions:

A string tuned up to $a' = 68.5$ cm scale length
A string tuned up to $b' = 61.5$ cm scale length
A string tuned up to $d'' = 54.7$ cm scale length

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\(^{112}\) Tyler, James and James Sparks. *The Guitar and Its Music* Appendix II, pp.184-186. Oxford University Press, 2002. This lists shows 9 sources that recommend a $d'$ tuning, and 18 sources that give tuning instructions without a specified pitch. Also, Sanz does not specify an exact pitch in his tuning instructions (Sanz, Gaspar. *Instruccin de musica sobre la guitarra espinola, y metodo de sus primeros rudimentos, hasta tenerla con destreza*. Book 1, pg. 2-3 (1674), Zaragoza, 1697. Facs. Edn. (3 books), Geneva, Minkoff Reprint, 1976.
Surprisingly, a scale length of 54.7 cm is strikingly close to the dimensions of many of Renaissance instruments including the renaissance guitar, lute, and vihuela. Many of the difficult fingerings (like the fingering for an open C minor\textsuperscript{113}) are made much easier at this scale length as well (see Figures # Sanz’s voicing for an open C minor\textsuperscript{114}).

(Figure 59) Sanz’s visual fingerings of an open C-minor chord form

(Figure 60) Open C-minor chord as fingered in Italian tablature\textsuperscript{115}

\textsuperscript{113} This chord fingering was common during the 17\textsuperscript{th} Century, but is rarely seen today due to its technical difficulty on the modern six-string guitar.

\textsuperscript{114} Sanz, Gaspar.  \textit{Instruccion de musica sobre la guitarra espanola, y metodo de sus primeros rudimentos, hasta tañerla con destreza.} Book II (1675), pg. 1 of music section. Zaragoza, 1697. Facs. Edn. (3 books), Geneva, Minkoff Reprint, 1976.

\textsuperscript{115} Sanz, Gaspar.  \textit{Instruccion de musica sobre la guitarra espanola, y metodo de sus primeros rudimentos, hasta tañerla con destreza.} Book I (Zaragoza, 1674), pg. 1 of music section. Facs. Edn. (3 books), Geneva, Minkoff Reprint, 1976.
The only downside to this scale length is the fact that the lowest pitched course (d) would likely be at a low tension, which would reduce its overall presence within a chord voicing. It seems likely that it would be impossible to achieve an optimal sound on each string, and that a compromise would eventually prevail.\textsuperscript{116}

Also, I am convinced that the d” string would have the shortest lifespan, and was sometimes omitted by performers. It’s construction would have almost certainly been from \textit{abbacchio} gut, and possibly made of anywhere between 1-3 strands. This type of gut would probably have demanded a premium, due to the very young age of the animal. It is even possible that some stringmakers were using infant lambs in order to make this type of string. In any event, I think that this would be the least durable and most expensive type of string possible. As such, its absence (due to breakage) would necessitate some form of re-arrangement or sensitivity when reading from tablature that indicates its necessary inclusion. Nevertheless, if the b’ string is the highest pitched of all the strings, the scale length could be 61.5 cm, and quite close to that of the modern guitar. This would also aid in helping the increase the of the overall scale length of the fretboard.\textsuperscript{117}

\textsuperscript{116}Just as with the sales triangle (which consists of good, cheap, and fast) you can only get two out of three, and never three out of three.

\textsuperscript{117}Since to the invention of the nylon string and its ensuing popularity, almost all 21\textsuperscript{st} century baroque guitarists are hamstrung by the current methods used by gut string manufacturers, who are still trying to figure out how to replicate the quality and preciseness of strings that were made in the 17\textsuperscript{th} century. Although this is irrelevant to my conclusions regarding the physical limitations of gut strings, I feel that it should at least be noted.
XIV. Back to the Bass(ics): An Investigation Into the 17th Century

Meaning of “Unison”

In the event that none of this has been effective in conquering the beliefs of totally re-entrant stringers, I will address the terminology used in so many of the tuning charts of the 17th century. Bare in mind, only beginners were the intended audience for these charts. Virtuosic performers of the baroque era did not need a “tuning” chart because they already knew how to tune their instruments. Nevertheless, sometimes words like “unison” or “misma voz” are used in describing how to tune two strings of the same course. The 20th and 21st Century definition of the word “unison” is not entirely in alignment with how it was defined back in the 17th century.

The notational charts of Foscarini and Valdambrini are integral to the discussion of stringing because they reveal a different definition of the word unison. They seem to use this term ambiguously, which is probably more true to its literal meaning: uni + sonos = one sound. Two notes at identical pitch would fit this meaning, but so would two notes tuned to an octave, because they end up resonating as one sound. And, the only way to prove that these composers used this word liberally is to dissect the notational charts found in their treatises.
Ferdinando Valdambrini assembled an ambitious bass and intervallic chart in his second book for baroque guitar.\textsuperscript{118} The ensuing chart shows where to fret the bass note shown (far left), followed by a series of fretted intervals whereby the interval created above the principle bass is noted vertically above the tablature of each note. This chart is incredibly confusing, but must be examined because it clearly shows an ambiguity regarding the meaning of the term “unison,” which is currently defined as two notes at equal (not octave) pitch. And, since Valdambrini is the earliest known composer of mixed tablature music that was supposedly composed using the totally re-entrant stringing, it must be carefully examined. The chart is preceded by the following broken translation: \textit{“(This is a) Table where you see any bass note with its intervallic relationships, that is, the second, the third, the fourth, the fifth, 6\textsuperscript{th}, 7\textsuperscript{th}, octave and unison. If (for?) example, wishing to find the sixth over the note F (example), one first finds at the left hand side of the table the pitch in the bass part, and then one goes directly from F to the 6\textsuperscript{th}, minor or major, whichever you need, adding it to the said bass note, like this (example). Similarly you can add other tones, checking as always the easiest number. And so one can do the same for any sort of (bass) notes or (??)”}.\textsuperscript{119}

\begin{flushright}
\textsuperscript{118} Valdambrini, Ferdinando. \textit{Libro secondo d’intavolatura di chitarra a cinque ordini}. Libro secondo, pp. 37, 38. Rome, 1647
\end{flushright}

\begin{flushright}
\textsuperscript{119} “Tavola dove se vede in qualsivoglia nota del basso la sua composizione cioè la seconda la terza la quarta la quinta 6\textsuperscript{th} 7\textsuperscript{th} ma ottava et unisono. En (...) essempio volendo dare ad un ef-fa-ut la sesta (example) si trova nella taula il (...) efero che fa la parte del basso che qto example) doppo si cerca nella sot.ta (...) vola cioè diretto all ef-fa-ut la 6\textsuperscript{th}. o minore o maggiore come bisognera (...) aquingendola al detto basso come (example) così ui sì aggiungono l’altre parti (...) gliando sempre il numero più commodo farsi operando il medemo in al(cunt?) sorti de note ouero chiqui.” Literal Translation: “(This is a) Table where you see in any bass note its composition, that is, the second, the third, the fourth, the fifth, 6\textsuperscript{th}, 7\textsuperscript{th}, octave and unison. If (for?) example, wishing to give the sixth (over) ef fa ut, one finds in the table the (tone) directly to ef fa ut the 6\textsuperscript{th}, minor or major, whichever you need (...)adding it to the said bass, like this (example). And so you add the other parts (Checking), as always, the easiest number, one can do the same for any sort of notes or (??).”
\end{flushright}
So, due to the poor condition of the original page, it is difficult to deduce exactly what Valdambrini is revealing through his chart. On one hand, he is spelling out the exact intervals one can produce on the guitar. The other hand might be a simplistic approach to the instrument, whereby the line between a note and its octave is blurred to such a degree that they are approached as if they are one and the same. So, with that in mind, we proceed to an investigation of the chart.
(Figure 61) Valdambrini’s bass/intervallic chart (Book II, pg.37)
Valdambrini’s bass/intervallic chart begins with the note $g$, and shows intervals all the way up to the octave and a unison, which is located between the fourth course (located on fret 5) and first course (located at fret 3). From this sequence it is revealed that Valdambrini is using some sort of re-entrant stringing because his interval of a 2$\text{nd}$ above $g$ is shown as an $a$ at the open fifth course, and the 5$\text{th}$ above $g$ is shown on both the fourth and second courses. One can produce these intervals using any kind of re-entant stringing. Things start to change however, when we examine the next line of the chart. Beginning with $a$ represented by an open fifth course, everything makes sense until you arrive at the interval of a 7$\text{th}$, whereby there are two options given for the note $g'$. The table shows one at the 3$\text{rd}$ fret of the first course and another as an open 3$\text{rd}$ course. And, since the octave produced in the next measure is shown at the 5$\text{th}$ fret of the first course, it would seem that this indicates the employment of an upper-octave placed on the third course. Otherwise, Valdambrini is not showing us the open third course (represented as a 0) as representative as a seventh above $a$, but rather as a 2$\text{nd}$ below. The third line shows the same intervallic issue at measures 6 and 7, where identical intervals are placed on the 1$\text{st}$ and 3$\text{rd}$ courses.

So far we can construct a stringing that is re-entrant, but uses one octave on the third course. If we follow the same logic to the top line of the next page in the chart (Figure 62), we have another important addition to Valdambrini’s stringing.
(Figure 62) Valdambrini's bass/intervallic chart (Book II, pg.38)
It begins with the note c, and again proceeds up in ascending order all the way up to a 7th above (which would be represented as b'). Measure 7 clearly shows that there are three places to produce a major 7th above c'. The note on the first course (7th fret) can only be a unison with the second course (0) and the fifth course (2nd fret) if upper octaves are employed. The same thing occurs in the next line, where both the 6th and 7th above the note d are noted as identical upper intervals, and fretted on the 1st, 2nd, 3rd, and 5th courses. Again, this only makes logical sense if there are upper octaves employed on the 2nd, 3rd, and 5th courses. That would bring us to a stringing with three upper-octaves on the 2nd, 3rd, and 5th courses.

Line two of this page shows a d in the bass, which is noted as a 0 on the fourth course. The same type of intervallic comparisons happen again where upper octaves would be needed in measures 4 through 7. This is also the only line that shows three whole notes (double octave) in the bass clef, containing both the highest and lowest pitched strings. It might be that Valdambrini is also showing that the fourth course should be triple strung to a 3-octave set. Or, it could just be that he is not going beyond one ledger line in either direction.

If upper octaves are needed to make sense of this chart, the third line would indicate that there is a switch between the middle string of the fourth course to the lower string.\textsuperscript{120} Measure 5 shows the interval of a 12th is shown at the 7th fret of the first course. Since this line starts with intervals above e, the note fretted (first

\textsuperscript{120} If a triple string course was employed, the fourth course would likely be strung with a progressive order (d'', d', d) where the lowest string would be closest to the ground.
string, 7th fret) is b’, which is only a 5th above the principle bass. The only way to make sense of this is to presume that Valdambrini is now showing an interval starting from e (which would create the interval of a 12th) and not e’.

It would seem that there are two ways of working through this ambiguity. The first would be to presume that we cannot use this chart to deduce anything about stringing. As such, it would seem that Valdambrini’s usage of the term unison is at best vague. Or, we can presume that it leads us to octaves on every course except the 1st, with the possibility of a double-octave string set for the fourth course. If so, the intervals on the chart would then necessitate the reader to differentiate between the strings on each course in relation to the principle bass. Also, it is possible that unison means the same note name, and any octaves used in the chart are ambiguously applied.

Giovanni Paolo Foscarini (also mentioned by Sanz) included similar charts in his fifth book. The figure below is from page 130 and shows a line in staff notation and another with a tablature diagram of where the above note can be produced on the guitar. At the bottom the staff line reads: Way to notate the “notes” (toni), It should be noted that the numbers are all unisons.121

121 Modo di intavolar gli tre sopran, si deve avertire che gli numeri sono butti unisoni. Foscarini, libro V (pg.130).
One of two things can be deduced from this chart. Either the word unison means two notes at identical pitch, or it means two notes at either identical pitch or of the same name but not same octave. The following diagram extraction shows
that the following notes can be played at the following places:

Line 2, cell #9 = b can be produced on the second course (unstopped/open), third course (4th fret), and fourth course (9th fret)

Line 5, cell #7 = d” can be produced on first course (10th fret), second course (3rd fret), third course (7th fret), fourth course (unstopped/open), fifth course (5th fret)

Line 5, cell #1 = a’ can be produced on first course (5th fret), second course (10th fret), third course (2nd fret), fourth course (7th fret), and fifth course (unstopped/open)
Line 4, cell #1 = \( g' \) can be produced on first course (3\(^{rd} \) fret), second course (8\(^{th} \) fret), third course (unstopped/open), and fourth course (5\(^{th} \) fret)

Line 5, cell #3 = \( b' \) can be produced on first course (7\(^{th} \) fret), second course (unstopped/open), third course (4\(^{th} \) fret), and fourth course (9\(^{th} \) fret)

The only way this can happen is if upper octaves are used on courses 2 through 5 (with the addition of a double octave at course #4). Once again, that would bring us to the following stringing arrangement:

\[\text{Italian Master's Stringing #3}\]

The following fingerboard image (Figure 64) demonstrates this possibility.
If these upper octaves are not used, it is impossible to conclude anything other than the fact that the 17th Century usage of the word “unison” is ambiguous. And, since this word’s modern definition has been used as a proof for how to string (or tune) the baroque guitar, it seems that the time has come for a recall of such a stance. My hope is that this will at least alter the debate of stringing to a more rational and broader vantage point.
XV. Conclusion

I suspect that any answers found here regarding the question of baroque guitar stringing will be the starting point for yet another flood of debate and unanswered questions. As such, I have tried to focus primarily on the subject of stringing, and offer the most critical examination of the totally re-entrant stringing to date. I would also like to hereby officially name that stringing: “the beginner’s stringing,” because it has been shown in this paper that it is not likely that any virtuosic guitarists used it for composition or performance. If nothing else, I hope that this research will serve as a cornerstone for guitarists seeking scholarly support for their employment of upper octaves.

Any guitarists wishing to string their instruments to either IMS#1, 2, or 3 should be advised that a gradual incorporation of octaves would likely prove most effective. It can be an overwhelming feat of the mind to separate the performance of 4 to 5 octaves with the right hand, while not separating them with the left hand.\footnote{No matter which technique employed by the right, the left hand’s approach is still similar to that of a five-string guitar.}

In regards to which strings one should use, I will only focus on the solution that I have used to date. There are two reasons that I do not currently use gut strings. The first is for practical reasons: I use nylon strings for my classical guitar, and I possess a rather large amount of treble strings that I do not use, due to the
relatively short life span of the basses verses the long lifespan of the trebles. It seemed financially prudent to use these “left over” strings for my baroque guitar. Secondly, the current unavailability of the type of high-end 17th century strings has led me to search for a more practical alternative... namely nylon.

As such, I typically use a combination of two different classical string sets available by D’Addario (D’Addario Pro-Arté classical guitar Ej46 Hard Tension and Ej45 Normal Tension). Below is a diagram of the exact configuration that I have settled into.

(Figure 65) Chart of string types and diameters used by this author

<table>
<thead>
<tr>
<th>String #</th>
<th>Set</th>
<th>Diameter</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 (e’)</td>
<td>Ej46 (1st string)</td>
<td>.724 mm</td>
</tr>
<tr>
<td>2 (b)</td>
<td>Ej46 (2nd string)</td>
<td>.831 mm</td>
</tr>
<tr>
<td>3 (b’)</td>
<td>Ej45 (1st string)</td>
<td>.711 mm</td>
</tr>
<tr>
<td>4 (g)</td>
<td>Ej46 (3rd string)</td>
<td>1.041 mm</td>
</tr>
<tr>
<td>5 (g’)</td>
<td>Ej46 (1st string)</td>
<td>.724 mm</td>
</tr>
<tr>
<td>6 (d)</td>
<td>Ej46 (4th string)*</td>
<td>.76 mm</td>
</tr>
<tr>
<td>7 (d’)</td>
<td>Ej46 (2nd string)</td>
<td>.831 mm</td>
</tr>
<tr>
<td>8 (a)</td>
<td>Ej46 (3rd string)</td>
<td>1.041 mm</td>
</tr>
<tr>
<td>9 (a’)</td>
<td>Ej45 (1st string)</td>
<td>.711 mm</td>
</tr>
</tbody>
</table>

* Although this is a silver-plated wound string for this set, during the 17th century, it would have consisted of only gut, thus making it the thickest string of the set
Some will also realize that alteration to their instrument’s bridge might be necessary, particularly if period construction techniques were not used to for its design and creation. The notch design found on a few surviving 17th century guitars is as integral to the versatility of stringing as it is to the spacing between the individual strings of a course. Unfortunately, those whose bridge’s construction is similar to that of a six-string classical guitar, which consists of a solid piece of wood that has holes drilled for the strings, will notice that any attempt to change the string spacing will be directly hindered by the bridge’s initial design. This can be dealt with a number of ways. Since my instrument has a classical guitar style bridge, I made a string divider (out of plastic comb handle) that sits between the saddle and the string holes in order to redirect the strings into a wider spacing configuration.

(Figure 66) Image of this author’s bridge adjustment

The following pictures (Figures 67 and 68) show the string spacing in cm for the bridge and nut respectively.
(Figure 67) Measurement of this author’s string spacing at the bridge

Although it is likely that some of these dimensions will be subject to change, should I move on to another baroque guitar, they nevertheless seem to serve my
purpose at this present time. If nothing else, my goal in all of this was to offer an alternative approach from a practicing musician’s perspective on performance and transcription. Perhaps my greatest satisfaction will arise from a reader’s interest in unfamiliar but rewarding repertory, either through transcription for other instruments, or performance on a baroque (or modified) guitar.
Bibliography


