Retuning for a New Age: 
Extending Scordatura Options for the Viola

Andrew Brian Filmer

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The art of retuning stringed instruments has journeyed through four centuries of music under various identities. Retuning can range from its use for polyphonic expansion by Heinrich Biber to its virtuosic application by Niccolò Paganini; from Béla Bartók’s emulation of folk fiddles, to actual use in Scottish and North American fiddling; from the evocation of unusual timbres by Gustav Mahler and Camille Saint-Saëns, to its regular use by guitarists in popular music today.

Its role in Western art music goes by the name ‘scordatura’, and was heralded as a device of the ‘masters’ – the question is: masters of what, exactly? We know that the likes of Bach and Mozart were masters of composition, but perhaps they were, to an equal extent, masters of their instruments, and, by extension, masters of the scordatura technique.

With this in mind, this thesis proposes scordatura to be as much within the purview of the performer as that of the composer, with a specific focus on scordatura for the viola. The research takes historical uses of scordatura and recontextualises them for modern performance. It also explores new opportunities for the use of scordatura for aesthetic effects, as well as to provide new approaches towards problematic issues of instrumentation. Specifically, the research concludes that scordatura can be used for instrumental substitution, as well as retrospectively applied to a composition by the performer for purposes of voicing, resonance, and timbral contrast. The research also builds on the role of the performer in collaboration with a contemporary composer, a process that produces new special effects. Finally, the research expands knowledge in a range of intertwined secondary issues, including studies in genre, instrumentation, notation, the role of an edition, and the use of Fast Fourier Transform analysis.

This thesis indicates that there is an untapped potential for scordatura use, and lays out new pathways for the continued use of this technique. Fundamentally, it argues that as performers everywhere strive to be masters of their instrument, scordatura should be enfolded into their repertoire of skills.
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ACKNOWLEDGEMENTS

Towards the end of writing this thesis, I found myself in a second-hand bookstore, and walked out with a small book from 1936, titled *The Well-Tempered String Quartet*, by Bruno Aulich and Ernst Heimeran.* It combined a delightful wit with surprisingly useful information, including one of the clearest explanations of Lombardic rhythm, which Mozart uses in the final movement of the Sinfonia Concertante. Some moments of humour had an additional layer of meaning when placed next to this thesis’s focus on the art of retuning stringed instruments:

Not for nothing does the music-master go from desk to desk in the school orchestra and see to the tuning himself. Painful experience has taught him that most people’s idea of tuning is merely this: first screw the pegs as high as possible and then turn them down to the other extreme, so that after endless, hideous scraping with the bow, the pitch is much the same as at first.†

These two gentlemen, putting pen to paper in a very different era, made it evident that those who have been most significant to me in my doctoral candidature did not simply impart an academic contribution, but had in some way reminded me that both music and research were founded on good spirit, the joy of sharing musicological observations and performances with audiences. Crucially, they shared a fascination not only for discovering new things but also for viewing ordinary things – like tuning – in a very different light. The following people have, in likewise fashion, assisted in my academic process as well as the larger journey of life these past three years.

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† Ibid, 14.
Many thanks as well to my parents, Dr. Ivan D. Filmer Jr. and Dr. Choo Voon Mooi, and my sister, Andrea Christine Filmer, who have provided a backbone of support in a myriad of fashions, and a continual reminder that personal well-being is paramount.

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Aulich and Heimeran quip once again on tuning, saying: “The viola, to be sure, may have no A at all, as he never practises. From the pitch of his strings, sharp or flat, the state of the weather in the past few days can be deduced.” Indeed, with seven scordaturas explored in the following pages, only one of which has a traditional A, the weather forecast for this thesis is colourful, thanks to all those listed here, who have accompanied me on this journey.

‡ Ibid.
INTRODUCTION

This thesis began as a confluence of two streams of research. In 2010, the author was studying two works by J. S. Bach: Brandenburg Concerto No. 6 and the Cello Suite No. 5, both initially independent of scordatura research. The focus in the Brandenburg Concerto was on genre, while the focus in the cello suite was on the distribution of articulation markings. The latter was part of preparation for a Comus edition of the work, utilizing an extended scordatura proposed by Donald Maurice.

In the process of preparing for a performance of the Brandenburg Concerto, the issue of instrumental substitution took centre stage. The Brandenburg Concerto required two violas da gamba in the instrumentation, and for the Wellington performance only one viola da gamba player was available, putting forward a complication common with many performances of the work. Looking at the various issues with the available instrumental substitutions, it seemed evident that a new approach could be beneficial. While the scordatura in the cello suite was for a different purpose, as will be detailed in the related section in this thesis, the secondary timbral effects provided a road map to address this issue.

The development of an application of scordatura indicated that this aesthetic device could be used as a problem-solving mechanism. It also ignited this question: is there a role for the performer to participate in the use of scordatura, rather than it being simply a compositional instruction? On a more essential basis, it encouraged a curiosity as to the potential of this unique musical technique, and to whether there were additional aspects of its use that warranted further exploration.

This leads us to the research questions. Does the performer have a viable role in the application of scordatura today? If so, in what ways can scordatura provide new options for repertoire from both the past and present? With its particular instrumental focus, these research questions can be summed up in the following: how can scordatura for the viola be applied and extended to provide new performance options in Baroque and Classical-era repertoire, and extend options for contemporary composers? This thesis will endeavour to answer this question, and will include editions and performances of works by Bach, Telemann, and Mozart, and recording samples used in acoustics analysis, incorporated into the research and referenced in the chapters of this thesis. Finally, it will be demonstrated how the performer’s role in using scordatura can extend beyond works of the past, in collaborative work with contemporary composers.
In the process of this research, various works in viola repertoire were examined, to see if there was the potential to answer the following supplementary questions:

1. Can scordatura be used as a problem-solving mechanism for existing issues in performance?
2. In cases where a composer has already applied scordatura, can the scordatura be further extended to advance the compositional aim?
3. Can the process of experimentation involved in answering the two preceding questions be also used in collaboration with a composer to produce new aesthetic effects?

As the various projects developed in their individual directions, it was also evident that the use of scordatura involved a larger contextualisation. These included the study of genre, and tracing the genesis of a work. Eventually, the importance of the role of notation became increasingly evident as well. With the inclusion of Telemann’s Concerto for Two Violettas, there was also a study of the timbral nature of the now-defunct instrument. Finally, in producing editions of all these works, there was a discussion of the characteristics of scholarly, urtext and performance editions, in order to determine the role of these publications. Together, these various aspects provided the framework of this thesis.

The idea of new sound colours available literally at the turn of a peg is a compelling one: it leads to the conclusion that there may be untapped potential available to the performer with resources already available. Pursuant to this, the one significant boundary that has been established in this research is that it explores the effects of retuning, rather than restringing the instrument. This is essentially a question of the somewhat amorphous definition of scordatura, which will be discussed in the following chapter: the historical overview, which includes an evaluation of the literature.
Chapter 1

Historical Overview

The literature on scordatura is fragmented, with considerable focus on the work of Heinrich Biber of the 17th century, and that of cello repertoire of the 20th century. However, considering that the focus of these studies has been on scordatura as a compositional device, the availability of scores has proven to be useful in constructing the overall context. This includes the views of various editors, both in the form of accompanying prefaces/notes as well as editorial decisions in these scores, particularly when autograph manuscripts are available.

This thesis has a particular focus on the use of scordatura by the performer. With this in mind, four texts have proven to be particularly useful references. The doctoral thesis of Nathan Cook is significant in providing a framework of scordatura notation.¹ The doctoral thesis of I-Chun Chiang is also useful for this purpose,² but more so in understanding why there is a resistance by some performers to utilizing scordatura even when it is a compositional instruction. Finally, the collaborative work of Fabrice Fitch and Neil Heyde,³ and the article on vocal fingering by Donald Maurice,⁴ are major references in understanding the potential of the performer in the construction of a scordatura.

I. Scordatura: Early Influences

The first bright spark in the history of scordatura for bowed stringed instruments was with Heinrich Biber, whom Elisabeth Lesser called “the King of Scordatura”.⁵


⁵ Elisabeth Lesser, “Zur Scordatura der Streichinstrumente, mit besonderen Berücksichtigung
However, as some of the early choices for altered tunings looked back to an earlier age for inspiration, it is helpful to consider these briefly alongside the associated literature, following which the context and scope of scordatura will be addressed.

Cook notes the use of an earlier Italian tuning of the cello (with a perfect fourth across the top two strings) as scordatura, the earliest occurrence being of a sonata by Luigi Talietti in 1697. The most well known use of this same tuning is in Johann Sebastian Bach’s Cello Suite No. 5 BWV1011; however a comparison with the lute manuscript, BWV995 indicates the likelihood that the work originated from a now lost earlier version for lute.

The connection to the lute may indicate more than a borrowed interval. Andreas Moser posits that the art of retuning moved from the lute to the viol and then to the violin. Elias Dann notes further the other instruments that could have had a bearing on the eventual use of scordatura for bowed strings: the viola bastarda, the lira da gamba, the viola d’amore and the viola da gamba.

While Biber would construct tunings that were based on chords rather than individual intervals, Dann points out that the use of the fourth in early scordatura is significant:

What is relevant about the tunings is that no other instrument had a mixture of only fourths and fifths, and that these were the fundamental tuning intervals of the two important families that existed side by side – the gambas and the violins. The gambas never tuned two adjacent strings a fifth apart; their interval was a fourth.

In considering the multiplicity of influencing instruments, it will be useful to consider the etymology of scordatura, particularly in relation to the associated term accordatura.


7. Andrew Filmer, “Performers Editions and Additions: A Case Study in Decoding Intent in Early 18th Century Musical Handwriting,” (paper presented at the New Historians Postgraduate Conference, Victoria University of Wellington, Wellington, NZ, August 30-31, 2010.) This will be explored further in the relevant chapter.


9. Ibid., 290-96.

10. Ibid., 295-96.
II. Etymology: Cross-Tuned, Mistuned, Detuned, Retuned

Cook notes that Taglietti used both the terms scordatura and discordatura, with the latter being defined more along the lines of “mistuning”.\(^{11}\) Dann goes into considerable detail in regards to terminology on two fronts: the translation of the term, and distinguishing it from accordatura.

As to scordatura, Dann states that as “the retuning of the instrument”, the Italian origins in scordare had the unfortunate connotation of an incorrect tuning rather than simply different tuning. “The implication... was intensified by the usual Verstimmung, and the occasional English use of ‘mis-tuning’.... In German, Umstimmung would be the better word, in English ‘altered tuning’ is preferable to ‘mis-tuning’.”\(^{12}\) The distinction between the German terms is also discussed by Mark Chambers, who notes that “The old German word for scordatura, Verstimmung, means to put an instrument out of tune, whereas the modern equivalent term, Umstimmung, denotes a change to another pitch,” and further notes the additional terms of discordé, discordable and discordant, as well as the prior use of avallé and ravallé by French lutenists.\(^{13}\) Patricia and Allen Strange refer to a differing etymology, describing the Italian origins as ‘detuned’ rather than ‘mistuned’.\(^{14}\)

As to accordatura, Dann points out that this description fits the lute more so than would scordatura, there being too great a variety of standard tunings, with each tuning called accord. Cook makes a similar observation in regards to the lyra viol: “The history of alternate tunings on the lyra viol is so rich that it is impossible to refer to scordatura on the instrument. The whole concept of scordatura is one of an alternative to a normal tuning, and the lyra viol has no one normal tuning.”\(^{15}\) Bill Schull notes at least thirty

\(^{11}\) Cook, 38.

\(^{12}\) Dann, 274-75.


\(^{15}\) Ibid., 15.
different tunings for this instrument. In this context, Strange refers to scordatura as 'retunings', with Schull referring them instead as 'cross-tunings'.

The way in which Biber instructs the literal crossing of strings behind the bridge for the ‘Resurrection’ Sonata is clearly a metaphor for the Cross on Calvary, and while this does not have bearing on the tuning, one wonders whether this could be a linguistic metaphor for “cross-tuning”.

The tuning for the violino piccolo is a third higher than that of a regular violin in three of Bach’s works. This would at first glance seem to fit the description of scordatura or even, perhaps, accordatura. However, it is more appropriate to view it as a separate instrument, with its own set, single, tuning – thus, fitting neither of these categories. It is in essence a transposing instrument – a “violin in E flat” – with the notation written a third lower than sounding. In assessing the varied terminology for members of the string family in the 18th century, David Boyden has the violino piccolo in an independent category, along with the viola, violettta, violetta marina, Fagott-Geige, violone, and, curiously also as a separate category, the violino scordatura – a violin utilizing scordatura.

III. Heinrich Biber: from Polyphony to Metaphor

While Biber was certainly a pioneer in scordatura explorations, there were precedents for its use: the earliest by Giovanni Gabrielli in 1587, and Biagio Marini when the violin became a leading instrument. It is useful at this point to note the standardization of tuning from which scordatura departs. Peter Holman notes that tunings in fifths for violins began in the 16th century. Cook notes that for the cello, the


17. Ibid.


Italian tuning of C-G-d-a was present alongside what is now the standard tuning in fifths in most of the 17th century, with the first instance of the Italian tuning as scordatura being in 1697.\textsuperscript{22}

While not at the very start of the history of retuning strings, Biber represents the apex of its use, his contributions existing principally for violin in the \textit{Sonatas on the Mysteries of the Rosary} of 1681, commonly addressed either as the \textit{Rosary Sonatas}, or the \textit{Mystery Sonatas}. Additionally, there is the solo sonata of 1681, and the Partia of the \textit{Harmonia Artificiosa-Partia} includes one set for violin and viola (both in scordatura).

In providing a larger context, Dann states that “scordatura writing at its best is closely allied to polyphonic violin playing”.\textsuperscript{23} This approach is extended in Donald Maurice’s approach towards ‘vocal fingering’, and its application in extending the scordatura in Bach’s Cello Suite No. 5.\textsuperscript{24}

For Biber in particular, Dann observes:

The scordatura came from older instruments which were frequently more polyphonic than melodic. The violin was never destined to be a fully polyphonic instrument but it always had, and still has, some polyphonic capabilities. Heinrich Biber’s scordatura writing was neither a novelty nor a personal idiosyncrasy; it was probably the outstanding attempt in the history of violin literature to effect a proper compromise between the melodic and polyphony possibilities of the instrument.\textsuperscript{25}

None of the tunings were intended to extend the range of the instrument, with the lowest string never going below standard tuning. Additionally, there are no instances where the top string is raised in pitch.\textsuperscript{26} Beyond the utility for polyphonic writing, a secondary feature is sonority. Through the use of open strings related to chosen keys, Dann notes the emphasis of tonic and dominant tones, the tonic triad and the second scale degree.\textsuperscript{27} The effect may progress beyond just each individual sonata. Strange observes that “contemporary musicologists have put another spin on his works:

\textsuperscript{22} Cook, 34, 38. The 1697 work was \textit{Suonate da camera a trè due Violini, e Violoncello con alcune aggiunte à Violoncello Solo}, Op. 1 by Luigi Taglietti. Ibid., 38.

\textsuperscript{23} Dann, 282. It is entirely plausible that scordatura is equally beneficial towards homophonic options as it would be for polyphonic ones. This is especially when one goes beyond the scope of the Biber sonatas.

\textsuperscript{24} Maurice, 27-31.

\textsuperscript{25} Dann, 351-52.

\textsuperscript{26} Ibid., 309.

\textsuperscript{27} Ibid., 308.
the scordatura in the *Rosary Sonatas* brings out the fundamental resonance of each individual work, and something of a qualitative change in mood develops through the course of the sonata cycle."

Cook notes the additional benefit of enabling tenths and octaves, with the use of the reordering of strings, and the use of open strings in the twelfth sonata to imitate the trumpet in a method similar to that of the lyra viol in imitating the lute.  

The issue of the calibration of string tension emerges here, and remains relevant all the way to current uses of scordatura. The question with Biber is whether new strings were selected precisely for the new tunings, or whether gut strings were simply more flexible than the metal-wound ones that emerged centuries later. Dann, writing in quite a different era, believed that for performances of his day that used ‘modern’ strings, “There can be little possibility of a satisfactory performance of a scordatura sonata if the strings which sound well as g d’ a’ e’ are retuned differently.” Stowell notes, however, that the change in string tension is a specific utility of scordatura, though this is not specifically evident in the Biber sonatas.  

Other Baroque-era composers who utilized scordatura to a lesser degree included Johann Pachelbel, Antonio Vivaldi, Giuseppe Tartini, Pietro Nardini and Joseph Haydn. Geographically, Greta Haenen notes that scordatura was also used by Carlo Lonati, and that there was some interaction between composers in North Germany and Italy in the use of this technique.  

Willi Apel notes the use of scordatura by Bononcini, and the decision to move from g-d-g’-d” tuning to g-c-g’-c” – and another unusual occurrence for scordatura for the viola in this period, with the top string tuned down a tone. In one instance, Vivaldi instructed a retuning of the G string up a minor third. This occurs in his concerto in B

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28. Strange, 179-80.
30. Dann, 310.
31. Stowell, 73.
flat, RV 583, where there is also the less common occurrence of a written-out cadenza,\textsuperscript{36} and the opening measures of this cadenza utilize the new open B flat string.

In Haydn's Symphony No. 60 in C major "Il Distratto", scordatura is used for special effects. Haydn placed an instruction for the violins to tune G strings down a tone, and back up again (while playing) to sonically depict a 'distracted' conductor.\textsuperscript{37} While theatricality intent was a common purpose of the technique in the 20\textsuperscript{th} and 21\textsuperscript{st} centuries, this was a relatively novel application of the technique for Haydn's time. In having scordatura used to demonstrate 'tuning up' instruments, it mirrors Fabrice Fitch’s \textit{Recercar}, both in musical application and the choice of title, as will be detailed later. The aspect of this that relates to the use of humour through scordatura is also unique; chronologically, the closest application for this use was in 1788 with the quartet attributed to Benjamin Franklin.

It may be useful at this point to note the functions of scordatura, noted by Boyden and Stowell in the New Grove entry on scordatura as:

- Alternative harmonic possibilities
- Extending the range of the instrument
- Imitating other instruments
- Enabling the execution of large intervals, string crossing, or unusual double-stopping (including \textit{bariolage} string crossing)
- Emphasis of particular keys
- Increase of projection\textsuperscript{38}

Biber certainly exercised the use of most of these functions, the only two not included being an extension of the range of the instrument and the increase of projection. For the purposes of the latter function, the application of the transposition scordatura would take precedence in the Classical and Romantic eras. This thesis will apply all of these elements of scordatura, and also explore further uses of scordatura.

\begin{flushright}
35. Boyden, \textit{The History of Violin Playing from its Origins to 1761}, 462.

36. Ibid., 463.


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IV. From the Classical to the Romantic: the Rise of the Transposition Scordatura

David Boyden and Robin Stowell offer some reasons for the eventual decrease in use of scordatura in the Romantic era:

Most 19th-century composers believed that there was more to be lost than gained from scordatura, on account of its special notation and playing requirements, the detrimental effect of higher tensions on the strings and the instrument, the inherent intonation problems (especially if several pieces with different tunings were to be performed in the course of a concert), the need to adapt the bow speed, bow pressure and contact point to suit string textures, tensions and thicknesses, and the resultant changes in instrumental timbre.  

This was not an abrupt shift in the use of the technique. Rather, it is likely that there may have been a gradual change from the Classical era. Use of scordatura was largely limited to increasing projection of violas in both the 18th and 19th centuries. Maurice Riley lists nine viola concertos exercising the technique during this period, by Mozart, Vanhal, Stamitz, Druschetsky, Voigt, Sperger, and Amon. All of these fit the description of “transposition scordaturas”, reflecting a narrowing of experimentation to conform to difficulties of notation and tonal side effects when strings are not tuned in fifths.

With the transposition scordatura, the tuning in fifths is retained, and the effects are restricted to projection and the availability of open strings. As an interesting side-effect of the use of this kind of scordatura, there is one chord in the viola part of Mozart’s Sinfonia Concertante for Violin, Viola and Orchestra in E-flat major KV 364 that can be feasibly played as written only in the scordatura tuning – an interval of a tenth made available with a G-sharp open string.

A preceding, incomplete second Sinfonia Concertante KV Anh. 104 [320e] places the solo viola alongside not only a solo violin but also a solo cello. It emphasizes the use of the transposition scordatura, with the solo viola a full tone higher. The change in timbre in both these works not only affects the instrument utilizing scordatura, but also

39. Ibid.


42. Bar 12 of the first movement cadenza.

distinguishes it from its surrounding environment. As Cook notes in regard to Mozart’s Sinfonia Concertante KV364:

Not only does this tuning brighten the timbre of the viola, but the resonance of the solo violin, with which the viola must compete, is darkened simply by virtue of the fact that the key of E-flat major allows the violin to ring much less freely. Two of the violin’s open strings are pitches outside the key.44

I-Chun Chiang’s thesis addresses this work, including documenting views of modern violists who retain the use of Mozart’s scordatura.45 More importantly, Chiang notes key observations of the reactions of players today in approaching scordatura for the first time with Mozart’s Sinfonia Concertante. The analysis of these reactions and the resistance of some towards scordatura are useful references in decisions on notational systems.

In regard to the transposition scordatura, it is worth noting David Boyden’s observation:

The pitch of the usual violin tuning... must be considered a relative matter, not necessarily that of modern pitch. John Playford (1658), still haring back to the sixteenth century, advises the player to tune the highest (treble) string ‘as high as it will conveniently bear without breaking’. The testimony of Muffat (1698) shows that the violin in France was tuned a whole tone or even a minor third below that in Germany.46

Thus, with intervals rather than pitches as the defining factor of tuning, these tunings would, from the 18th century onwards, have been considered a transposition scordatura.47

Despite the prevalence of the use of the transposition scordatura during this period, there were other uses of scordatura that took differing approaches to string tension. Boyden and Stowell note the case of Emanuele Barbella who wrote a violin scordatura of a-d’-f sharp’-c sharp’ in imitation of the viola d’amore, a tuning later taken on by Bartolomeo Campagnoli, who recommended thick a’ and e’ strings, as well as

44. Cook, 31.
45. Chiang, 45-46.
47. With the caveat that the work was unaccompanied – the distinction of uses of the transposition scordaturas like that of Mozart is that the tuning contrasted with the other performers.
playing con sordino, for the upper strings. Johann Joseph Vilsäyr’s six “partias”, composed in Salzburg in 1715 includes a particularly low retuning of the top string, down a major third to c’.

Geographically, Theodore Russell describes scordatura as having moved to France and Italy in the 18th century, including uses by the likes of Giuseppe Tartini, Antonio Lolli, and Michel Corrette. He describes the Sonate Énigmatique by Pietro Nardini in particular as being ‘curious’ – fitting, considering its title – due to its combination of regular and viol tuning.

The scordatura quartet attributed to Benjamin Franklin chronologically fits in here, though it should be noted that the work stands out as a unique case, both in terms of scordatura as well as the greater musical picture. Its title is in Italian: “Quartetto a 3 Violin con Violoncello” and has an unusual spelling of “Benjamin Francklin”. On a musicological level, the main interest in this work has been in determining whether the author was indeed Franklin; M. E. Grenander was an early proponent of the theory in the 1970s, and there has been somewhat of a revival of interest in recent days. Grenander notes that the compositional ability was of an amateur level, taking into account the 1799 review. Grenander nonetheless highlights the value of the work if indeed it was composed by Franklin, stating: “One is reminded of Winston Churchill’s smug assurance that his paintings would not be judged on their merit alone.”

Hubert Unverricht argues against this attribution, saying that it was probably by an unknown South German musician. W. Thomas Marrocco takes something of a

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51. Ibid., 93.


54. Ibid.

middle ground in finding the evidence inconclusive, saying, “this writer expresses his deepest regrets for depriving our great statesman-inventor of the authorship of this singularly unusual composition.”

That it is ‘singularly unusual’ highlights merits that go beyond purely authorship, particularly in the use of scordatura. On one level, there is uniqueness in how the quartet is played entirely on open strings. Marrocco points out two aspects of this: first, that this would enable any amateur enthusiast to participate; second, that this implies the intent of the work being “tongue-in-cheek, simply as a musical joke.”

If indeed the work was composed by Franklin, the use of scordatura would have additional weight as a method of providing egalitarian access to music, as Grenander notes: “The ‘common man,’ with very little tutoring, could participate in these simple quartets provided he had enough sense of rhythm to keep time. And the septuagenarian Franklin himself could have relaxed in Auteuil from the tensions of international statesmanship by sawing away at one of the violin parts.” It can, however, only be speculative whether the work had this layer of symbolism or whether it was simply an experiment of Franklin, out of scientific curiosity of the capabilities of playing on open strings. The inclusion of a metaphor within the use of scordatura, while rare in this period, is nonetheless something that can be observed in both the preceding and subsequent centuries.

V. The 19th Century: Virtuosity and the Return of the Metaphor

Taking a cue from the use of scordatura in the 17th century to facilitate otherwise difficult intervals, Niccolò Paganini expanded the technique to approach new levels of virtuosity. A transposition scordatura of a semitone upwards was used in the first violin concerto for tonal colour, and in Il Carnevale di Venezia, I Palpiti, and the Le Streghe variations, for options of harmonics otherwise unavailable. Paganini would additionally tune up his G string to A, B flat or even a B natural to produce a brilliant


57. Ibid., 481.

58. Grenander, 84.

tone while in una corda passages, with the most important aspect being that he even tuned up his instrument in the middle of a performance.\textsuperscript{60} Contrastingly, an account of a contemporary of Paganini indicates another use of scordatura in the opposite direction – with the G down a third.\textsuperscript{61}

In revisiting the issue of calibration of string tension, Robin Stowell notes that the stretching of the G string to that extent apparently required very thin strings, that were additionally stretched prior to being wound.\textsuperscript{62}

While Paganini revelled in the idea of people believing that he had sold his soul to the Devil, the likes of Camille Saint-Saëns used scordatura to create the sonic image of the devil. “Since the devil stopped playing the bagpipes around the end of the medieval period, the violin has been his preferred instrument of choice,” notes Janet K. Halfyard, observing that Saint-Saëns’ \emph{Danse Macabre} carries the folklore of the devil taking the form of a village fiddler, performing at a gathering of witches.\textsuperscript{63} The scordatura by Saint-Saëns places the E string down a semitone, such that a tritone is formed. “The demonic tritone falls on the sixth semitone above (and below) the tonic as opposed to the perfect fifth,” Halfyard states, bringing out the image of the \emph{diabolus in musica}.\textsuperscript{64} In Saint-Saëns’ orchestration, a harp plays a repeated D, preceding the entrance of the top two strings of the scordatura violin.

Gustav Mahler similarly has the solo violin tuned up a tone in the scherzo of his fourth symphony, in order to timbrally create the ‘dance of death’.\textsuperscript{65} It is worth noting at this point that Anton Bruckner takes a similar approach to tuning in his third symphony, with a solo violin up a full tone, though not for the same symbolic intent.\textsuperscript{66}

\textsuperscript{60} Ibid., 78-81.


\textsuperscript{62} Ibid., 79.


\textsuperscript{64} Ibid.


\textsuperscript{66} Strange, 180.
For some reason, the association of scordatura abilities with ‘devilish’ qualities seems to extend back to the Baroque, as Russell notes the case of the violinist Nicolas Adam Strunck:

Strunck picked up the violin, put it out of tune, and played on it with such dexterity, at tempering the dissonances occasioned by the mistuning of the instrument with such amazing skill and dexterity, that Corelli cried out in broken German, ‘I am called Arcangelo, a name that in the language of my country signifies an Archangel; but let me tell you that you, Sir, are an Arch-devil.’

In other uses of scordatura in this era, Béla Bartók included a second instrument, tuned G sharp-D-A-E flat in the third movement of *Contrasts* for violin, clarinet and piano. The notes are entirely available for a regularly-tuned instrument; as such, scordatura here was not to extend options of pitches. Rather, the availability of new open strings was the compositional goal, just as it was for Saint-Saëns, in alluding to East European folk fiddles.

Richard Strauss used scordatura simply to extend the range of an instrument: the third variation of *Don Quixote* requires a solo cello to tune the C string down to a B flat – using the somewhat less common choice of notating at pitch rather than that of altered tablature. Schumann did likewise for the viola, in the Andante of his piano quartet. Eugène Ysaÿe instructed the use of scordatura in his *Poème élégiaque*, Op 12, tuning the G string down a full tone to F. “Ysaÿe moved away from the pieces he wrote merely for virtuosic purposes in his youth. The only legacy from the virtuoso practice of the past is the scordatura,” notes violinist Philippe Graffin.

**VI. The 20th and 21st Centuries: Looking Forward, and Looking Back**

The use of scordatura in the works of the 20th and 21st centuries has largely been to facilitate special effects and explore new timbres. These are functions that are largely more central to an overall work than for composers of previous eras. It is interesting to look back to 1938 when Russell noted a certain mistrust of scordatura of his time: “Most

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violinists of today have never heard of it and those who have regard it as a trick of questionable nature.”

Nonetheless, in considering Stravinsky’s use of it in the *Firebird Suite* (1910 version) for options of harmonics, Russell states: “Such examples as this demonstrate the intrinsic value of the idea and suggest that any strict avoidance of the scordatura unnecessarily limits the composer’s resources.”

New options for harmonics are a basic function of scordatura in the modern age. George Crumb used the technique for this purpose in *Vox Balaenae* (*Voice of the Whale*, 1971) for amplified flute, amplified cello, amplified piano, and rattles. Interestingly, and whether by design or coincidence, Crumb’s scordatura of B-F sharp-D sharp-A for the cello had a distribution of regular tuning, tuning upwards, and tuning downwards. In regard to keeping at least one string in regular tuning, the same pattern occurred in works prior to 1750. As Pauline Nobes notes, “A remarkable number of works in this repertory... retain the normal tuning of the second string to a’, and while this may be coincidental, it does present itself as a pragmatic constant.”

Jack Body uses scordatura in the first of his *Three Transcriptions* for string quartet (1994), ’I Long-Ge’, a work that emulates the sound a Jew’s harp from China. The work uses a combination of harmonics, *ponticello*, *pizzicato* and humming, with scordatura for the lowest strings of the Violin II, Viola, and Cello parts intended to provide the performers with more available options for harmonics.

Scordatura has also been used in contemporary music for other reasons. Ross Harris applies a scordatura for resonance just as composers of previous eras had done, in his *Music for Solo Cello* (2003). Harris instructs a cello tuning of B-F sharp-D-G sharp. He writes that the alternative tuning creates a resonance that “dominates the sound of the work.” There are two particular features of the work: first, while the availability of new open strings is usually the obvious benefit of a scordatura, Harris waits until near

70. Russell, 95.

71. Ibid., 96.


73. Nobes, vi.


the end before actually applying the use of all four open strings at once. Second is the application of left-hand *pizzicato* on the lower strings while simultaneously bowing on upper strings – thus, using scordatura for pitch options otherwise unavailable on a regularly tuned cello.

Perhaps the most direct connection with past scordatura use is seen in *Pacific* for unaccompanied scordatura violin, by Christopher Prosser (1992-3). The composer uses 27 different tunings, and the work is inspired by Biber's *Rosary Sonatas*. A significant element in Prosser's work is the use of improvisation, and the prefacing guide indicates a significant use of open strings in this process. The composer notes, “Bow can rock or splash freely over open strings, as long as rhythm is maintained.” Prosser’s compositional style in this work often has most, if not all, fingered notes on the lowest or highest string, with the extemporization created by using the three open strings. Some of the selections also use the open strings to produce drones. Using scordatura to produce drones has some precedents, particularly in folk fiddling. Additionally, Chiang notes that Lionel Tertis did likewise in his extended cadenza for Mozart’s Sinfonia Concertante.

Strange notes the use of ‘dynamic scordatura’ in contemporary music – the application of retuning during a work, much as Haydn did with the “Il Distratto” symphony. Its application in Ton de Leeuw’s String Quartet No. 2 (1964) has strings tuned to the lowest pitch possible, with retuning at the end of the work being a planned part of the performance. Suesse’s *Luft* for solo violin (1986) goes even beyond the range of stable, perceivable pitches, with the instruction to tune downwards by semitones “till string is almost totally loose!”

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79. Prosser, ibid. “Examples from ‘Tearoha’ to explain scordatura and compression aspects of notation”. Based on communication with the publisher, it seems that the spelling of ‘Tearoha’ is intentional, possibly with the association with the musician George Tearoha Kahi.

80. Ibid. Also, Pacific Part One [CD recording], Chris Prosser, violin. (Wellington: SOUNZ, 2000).

81. *A Primitive Calm, Indus, Limits of Circulation, and Speed of Time* movements specify the use of drones.

82. Chiang, 28.

83. Strange, 181.

84. Ibid., 182.
of Alfred Schnittke’s *Klingende Buchstaben* for cello solo (1988). Cook observes that “the main purpose seems to have been to produce an unwinding effect as the piece itself slows down.”85 Likewise, Penderecki uses this ‘winding down’ effect in his second quartet (1968).86 In considering the juxtaposition with higher and higher pitches in alternating measures, Cook notes: “The technique allows Schnittke to combine a feel of a coming to rest through sinking deeper into the abnormally low scordatura registers and a simultaneous floating away into the stratosphere of the highest registers.”87 Holloway’s *Sillage* (2010) is similar, in that the bowed guitar is slowly detuned, finally producing rough scraping noises, in imitation of the sound of water in the wake of a passing ship.88

Dynamic scordatura returns us to the issue of calibrated tensions of strings. The majority of scordatura tunings make intentional use of a string being at some tension other than which it was manufactured, albeit with the occasional proviso that special strings are to be used. Helmut Lachenmann’s *Pression* for cello (1980), in tuning to A flat–G–d flat–f and applying the bow with considerable pressure (and held with two hands) vertically over two strings, produces contrasting timbres between a string at the original, calibrated tension and one intentionally departing from its intended tension.89 This is similar to certain uses of dynamic scordatura in moving from the original tension to a contrasting one, except that it executes the two differently calibrated strings simultaneously.

Dynamic scordatura also serves to show scordatura as a tool of contrast – the changes in string tension moving us musically from one timbre to another. Gavin Bryars takes a different approach towards this goal, by having the lower two strings of each instrument retuned a semitone lower in his first quartet, ‘Between the National and the Bristol’ (1986). Stowell remarks: “The resultant contrasts between eight normally tuned strings and eight scordatura strings produce a striking effect.”90

85. Cook, 83.


87. Ibid., 83-84.


90. Stowell, ibid.
As we can note with the examples above, scordatura has a particular ability to fit into a post-tonal compositional context. Works that employ the use of scordatura for this context include Lukas Foss’ *Divertissement ‘pour Mica’* (1973), Gyorgy Ligeti’s *Ramifications* (1970), and Robert Erickson’s *Pleiades* (1984). Additionally, the following examples of Fitch and Polansky deserve special mention for the use of scordatura in this context.

Fitch’s *Recercar*, from *Per Serafino Calbarsi II: Le Songe de Panurge* for speaking cellist (2002-3) had a scordatura that was developed through collaborative work with cellist Neil Heyde, when it was discovered that with minor adjustments, all four strings could produce the pitch e” as a partial. While previous examples of dynamic scordatura created effects of descending pitches, in contrast, *Recercar* is derived from *recercare lo tono* or “the sense of tuning up, ‘searching’ for the ‘correct’ tuning”. This has the quaint semantic juxtaposition of using the skill of ‘mistuning’ to discover the correct tuning. Fitch describes the use of scordatura as being central to the work:

> The implications of the scordatura in turn precipitated decisions regarding form and material... the very fact that the tuning-up process is incorporated into the piece itself serves as a framing device, pointing to the theatrical ambiguity of the situation. (We’ve all had the unsettling experience, when attending a live performance of a contemporary string work, of wondering whether the tuning has stopped, or the piece proper has begun.)

This makes one reconsider the symbolic implications of the retuning process at the end of de Leeuw’s string quartet.

Larry Polansky’s use of scordatura in *Movement for Andrea Smith (My Funny Valentine) for String Quartet* (1985) utilizes scordatura in the context of just intonation, by only using natural harmonics, an approach previously employed by Larry Tenney. Marco Lombardi’s work *Mihrab* (2005), as with the collaboration of Fitch and Heyde, shows the involvement of the performer in the use of scordatura in the modern

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91. Strange, 183-85.
92. Fitch and Heyde, 83.
93. Ibid.
94. Ibid.
era. In this work, the composer provides three possible tunings. *Mihrab* was premiered at the International Viola Conference in Sydney, 2012, by Paul Groh.

Chris Cree Brown wrote *Two Pieces for Solo Cello* (2010-2011), individually titled *The Imp* and *The Troll*, as a commission by cellist Robert Ibell. *The Troll* uses cross-stringing in the sense of switching the G and C strings, and tuning them both to the same pitch – by tuning the G string a fifth lower. This cross-stringing might be more accurately described as string-switching, rather than the literal crossing of strings as Biber employed in the ‘Resurrection’ Sonata. *The Imp* goes a step further, by using three A strings and one D string.

Finally, an unusual instance of scordatura occurs in the Etude No. 26 of Dinos Constantinides’ *Twentieth-Century Studies for Two Violins* (1979). A tuning of G sharp-D-B flat-F is used as an exercise in aleatoric music with “free” pitches i.e. the use of improvisation, within set parameters such as number of pitches, and the set time frame of 15 seconds per system.96 While this is not meant as a channel to learn scordatura works, the idea of having an etude that utilizes scordatura would certainly provide a new perspective towards notational options. Aaron Farrell notes that the etude uses graphic or contour notation for the indeterminate pitches is one of the benefits this particular etude.97

The use of an etude for scordatura and the use of this form of notation open the question of whether one could learn to play with a complex scordatura, while using notation at pitch. The use of contours and indeterminate pitches could be a starting point for adjusting to a scordatura, before proceeding to more specific pitches.

After all, if we look beyond the scope of bowed stringed instruments, scordatura is not that unusual when we consider that it is essentially a practice of guitarists, and that double basses use at least three tunings: orchestral, soloist, and Viennese. However, scordatura is not part of the skill set for most performers of violins, violas, or cellos, simply because of the limited extent to which it is used, rather than the nature of the technique.

We can also note the use of E-B-E-A tuning for Anthony Ritchie’s *Whalesong* (2007) for double bass and orchestra, for the purposes of projection.

An interesting observation when dealing with the use of scordatura in the

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97. Ibid.
modern age is how often its use reflects the practise of the past. This was probably most
evident with Proesser’s work mentioned earlier, but also extends beyond classical
music, with the use of scordatura in jazz, as noted by Hristo S. Kardijev:

Jonny St. Cyr, a pioneer jazz guitarist, speaks about some of the first dance ensembles in
New Orleans before the First World War: “The violin was also the lead instrument with
the cornet and would take over when the cornet player would ‘take down’ to save his
lip”.... But competition with the sound of instruments such as trumpet and drums was
tough, as well as competition with the noise of the dance halls in which Jazz ensembles
frequently played. Increasing the power of the sound through the increased tension on
the strings was of course one of the reasons why scordatura was first introduced in
classical music.  

Lastly, there is the use of scordatura in re-examining works of the past, which
will become a starting point for the research in this thesis. Donald Maurice’s
recommendation for an extended scordatura in Bach’s Cello Suite No. 5 (C-G-c-g) is a
novel approach on several fronts. First is the extension of a scordatura beyond the
compositional instruction, in this particular case viewing Bach’s scordatura as an
experiment for improving voicing across strings, and following through with finding the
best scordatura that can be applied for that purpose. Second, Maurice’s chosen
scordatura is illustrated as providing better voicing beyond the Cello Suite No. 5 – and
the additional resonance that results from sympathetic vibrations is likely the reason
why similar tunings are applied in Carnatic Indian music well as Scottish and North
American fiddling, though in the latter example, the use of drones would be an
additional feature. While Chambers has noted the application of timbral changes in the
original scordatura for voicing across the top two strings in the Cello Suite No. 5, the
extended scordatura brings this clarity of voicing across all four strings.


99. It should be noted that Chambers attempted scordatura for Bach’s fourth cello suite, but was
unable to find a solution within the key of E flat major, with an option only available in a transposition to F
major. (Chambers, 74).

100. Maurice, 30; Boyden, et al. “Scordatura.”

101. Chambers, 85-86.
VII. The Evolution of Scordatura Notation

Biber’s approach to notation for scordatura was to use a modified tablature and apply modified key signatures.102 In other words, notes on the stave indicate the regular positions one would have on the strings, and not the sounding pitches. In addressing the choice as to whether to write at pitch or otherwise, Dann notes that “When the scordatura is complicated, reading the stop notation may be difficult and annoying, but reading the pitch notation would be almost impossible for the performer.” Transposition scordaturas are fairly straightforward, as the instrument would be generally treated as a transposing instrument, and thus not written in the sounding key. Chambers uses the unusual terminology of “hand-grip notation” to describe the use of modified tablature.103

For works of the 20th and 21st centuries there seems to be a shift in preference. Strauss used pitch notation in Don Quixote. While likely by coincidence, the low B naturals are obtainable simply with bow pressure. Sydney Symphony Principal Viola Roger Benedict states:

Strauss asks that the viola’s C string is tuned down a semitone here, in order to play the B naturals in the first two phrases. Tuning it down in time is easy enough, but finding the right moment to tune it back is more difficult…. An alternative is a trick that I sometimes employ: I leave my C string as it is but play a rather flat D flat, fast but accented, instead of the B.104

In this context, for those choosing this option, it is helpful that pitch notation is used, rather than fingered notation.

In contrasting Kodály’s use of “playing notation” versus pitch notation in Sculthorpe’s Requiem for solo cello (1979), Heyde comments: “The general rule of thumb for choosing between the two seems to have been whether or not the retuned strings are used for complex material. If not, the ‘sounding’ option is usually preferred.”105 For example, dynamic scordaturas would logically be at pitch.

It is also not unusual to have both methods incorporated, with the use of a miniature staff over the main staff. Some editions of Bach’s Cello Suite No. 5 include this,

102. Dann, 284-86.
103. Chambers, 14.
105. Fitch and Heyde, 90.
with both fingered notation (as annotated by Anna Magdalena Bach and Johann Kellner) and sounding pitch, with earlier editions having two equal staves.\textsuperscript{106} Cook notes that Henri Dutilleux’s \textit{Trois Strophes sur le nom de Sacher} (1976-1982) used this hybrid notation as well,\textsuperscript{107} though he reverses its use, with the main staff being the pitch notation. Harris provides two sets of notation for his \textit{Music for Solo Cello}: the first in fingered notation, followed by a version in hybrid notation, which he states is included “for reference”.\textsuperscript{108}

Polansky goes a step further, including both fingered and sounding notation of all the harmonics in a chart – requiring the use of fractions in indicating the extent to which the sounding notes deviated from even-tempered tunings.\textsuperscript{109}

Ysaÿe uses notation written at pitch, and takes the procedure of using square noteheads to indicate notes on the lowest string.

\textbf{VIII. Contextual Literature}

Each of the projects is placed within individual historical and analytical contexts. It is through each of these intersecting fields of research that we can determine the effectiveness and relevance of particular scordatura approaches.

These contexts are largely independent of each other: the various discussions on the nature of the violeetto, for example, are crucial to the discussion of the Telemann project, but not relevant to the Bach, Mozart or Margetić chapters. Taking this into account, these smaller discussions and evaluations of the literature will be left to the individual chapters. This chapter, in contrast, primarily examines research that deals directly with scordatura. Nonetheless, it is worth providing an overview of some of the key texts that will be discussed in detail in the relevant chapters.

1. \textit{Bach’s Brandenburg Concerto No. 6}

Gregory Butler’s research into generic mixing is crucial to the role scordatura

\textsuperscript{106} Two examples being the editions of Julius Klengel (Leipzig: Breitkopf and Härtel, 1900), and Hugo Becker (Leipzig: C.F Peters, 1911).

\textsuperscript{107} Cook, 89.

\textsuperscript{108} Harris, \textit{Music for Solo Cello}, ii. The hybrid version would be not feasible to use in performance, due to the page-turns necessary.

\textsuperscript{109} Polansky, 12-13.
plays in the substitution of the violas da gamba in Bach’s Brandenburg Concerto No. 6. Butler defines generic mixing as “the composer’s often complex and always ingenious play on, and play with, certain generic characteristics in the context of another genre.”  

He goes on to posit that “nowhere is this truer than in the case of the Fourth Brandenburg Concerto”, though the present author suggests that it may just be ‘truer’ in the case of the Sixth. The analysis in this thesis uses Butler’s study as a model, particularly because of the close relation of the two works.

Additional references include a discussion on genre by Claude Palisca, discourses on instrumentation by Charles Terry as well as Maurice Riley, and a survey of the recording history of the Brandenburg Concertos by Dorottya Fabian.

2. Bach’s Cello Suite No. 5

Two studies provide the core of the exploration of scordatura in Bach’s Cello Suite No. 5: Donald Maurice’s study into vocal fingering, and Malcolm Boyd’s brief but essential examination of the Gigue of the suite.

Bettina Schwemer and Douglas Woodfull-Harris’ facsimile edition of the suites provided some important insights into the examination of articulation markings. This was useful in the production of the edition, though not directly related to the scordatura research. The principal observation did prove useful elsewhere in the thesis: “In sum, the Anna Magdalena Bach MS abandons consistency of articulation in favor of systematic change for the sake of variety.” This idea of trading off symmetry for systematic variation proved to be applicable beyond Bach, and became a core observation in the Mozart.

3. Mozart’s Sinfonia Concertante

Schwemer and Woodfull-Harris’ observation of systematic variation was a key approach taken in examining Mozart’s Sinfonia Concertante. This proved useful in deconstructing some of the decisions by contemporary editors, and in understanding

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110. Gregory G. Butler, “The Question of Genre in J. S. Bach’s Fourth Brandenburg Concerto,” in The Music of J. S. Bach: Analysis and Interpretation, ed. David Schulenberg, Bach Perspectives 4 (Lincoln, NE: University of Nebraska Press, 1999), 9. It can be noted that the term ‘genre mixing’ may be more appropriate, but for the purposes of this thesis Butler’s use of the term is applied.

111. Ibid.

the role of diversity in Mozart’s compositional *oeuvre*, and, finally, the role that
scordatura plays in this mix.

References to Mozart’s Sinfonia Concertante included over two dozen recordings
and associated programme notes, I-Chun Chiang’s DMA dissertation, and the Bärenreiter
and Henle urtext editions. The interpretations of various artistes became a component
of the research, particularly in studying the contrasting approaches towards fermatas in
the first movement. Through this lens of intentional variation, a background of diversity
was established. This diversity provided the environment for the extended scordatura.

4. *Telemann’s Concerto for Two Violettas*

This chapter dealt with quite a number of contributing sources, particularly on
the nature of the violetta. Riley’s research was once again relevant: various sections of
his books on history of the viola were helpful in both the Brandenburg and Telemann
chapters. Susanne Staral’s article on the chalumeau and the violetta proved to be the
most specific examination of the subject.113 While Riley’s and Staral’s research are
valuable, there was nonetheless no predominant publication that influenced this
chapter, with research by Peter Holman, David Boyden, Henry Danks, Annette
Otterstedt, Hans Reiners, Michael O’Loghlin, Bettina Hoffmann, Vittorio Ghielmi, Stephen
Bonta, John Catch, Ulrich Prinz, Herbert Myers, and Agnes Kory being equally relevant to
the discussion. The varied and sometimes conflicting opinions in turn provided the
opportunity to break new ground in surveying and compiling the research into the
violetta.

Outside of the research into the violetta, Franz Zeyringer’s discussion of viola
sizes was relevant to the consideration of the modern instrumentation in Telemann’s
Concerto. Editorially, several editions were of use in the production of the American
Viola Society edition, though this had only an indirect impact on the use of scordatura.

5. *Margetić’s Two Translations*

The key contextual research in this area was that of Fitch and Heyde, as will be
discussed in the Methodology. Some precedents in the use of scordatura in
contemporary works were also useful, including Suesse’s *Luft* and Holloway’s *Sillage*.

Überlegungen zur Aufführungspraxis”, Conference Proceedings, Zur Aufführungspraxis und Interpratation
IX. Evaluating the Literature

A. Categorizing Scordatura

A distinctive pattern within the literature is the multiplicity of approaches towards the subject. Thus, an effort to categorize these various angles is necessary, in order to enable a view of the sub-divisions into which scordatura is divided. A rather obvious distinction may be to highlight the uses of scordatura that have some symbolic content: for example, Haydn’s use for theatrical or symbolic function, the possibility of Franklin’s allusions to egalitarianism, Saint-Saëns’s evocation of a demonic fiddler, and the possibility of connections of Biber’s sonatas to some religious imagery. The remaining material could then be categorized for purely acoustical aims, including Mozart’s use for projection, and Bach’s for a change of tonal colour.

However, justifiable though this may be, it may be equally possible to categorize scordatura by whether the strings are tuned upwards, downwards, or in some mixture of the two. This is particularly relevant when considering the French etymology of detuning versus the transposition scordatura. Another approach could be, in consideration to more recent uses of scordatura, divisions of tonal and post-tonal function. Therein lies the complication of multiple possible approaches: there is more than one logical way of demarcating categories of scordatura use.

In reviewing the literature, it seems that the most significant demarcation within the focus of the present research is in the compositional intent – that is, what the composer set out to achieve by using scordatura. The literature also deals with the connection between the composer and the performer in an attempt to define scordatura as a compositional tool or a performer’s technique, or perhaps some hybrid of the two.

So, the resulting question is: how do we sort out categories of compositional aims? Symbolism itself may be a compositional aim, considering its use in just about every historical era, from Biber to Mahler to Holloway. However, a more crucial division of scordatura use exists: first, timbral effects, as primarily noted by Boyden and Stowell; second, providing further options to composers, as noted by Dann. This dichotomy is important, because it opens up the question of whether a scordatura’s primary benefit is to enable the writing of works that would not be playable otherwise, or to affect the

114. This is, albeit, a narrow reading of ‘options’ as designating combinations of pitches unavailable in regular tuning, as is the case in Dann’s focus on the Biber sonatas.
timbre of notes that would be idiomatic for the instrument in regular tuning. One might say that while expanding compositional effects are purely in the domain of the composer, it can be the role of the performer to use scordatura for timbral effects. Thus, it would be true to say that, on a basis of quantity, the concentrations of scordatura research are focused on Biber’s violin sonatas, Bach’s Cello Suite No. 5, and Mozart’s *Sinfonia Concertante.* Nonetheless, despite the briefness of Stowell’s mention of Paganini’s performances, it provides some of the most interesting preludes to further discourse due to it being as much the performer as the composer who has utilized the technique.

Stowell notes: “Paganini’s most important contribution to the development of violin technique lay in his manipulation and expansion of existing techniques to their utmost potential... Paganini was undoubtedly the greatest and most prolific nineteenth-century exponent of scordatura.”¹¹⁵ This is placed in the context of Paganini as a performer rather than a composer. Even his use of the relatively basic transposition scordatura, had the effect of “giving the soloist a unique tonal colour and extra brilliance over the orchestra and facilitating certain bravura passagework.”¹¹⁶

Paganini’s *una corda* work in tuning up the G string to A, B flat or even B natural deserves particular attention.¹¹⁷ This is the only instance in the literature that notes the application of specialized strings. Evidently Paganini “used very thin strings for such remarkable applications of scordatura and had them stretched to the desired pitch prior to being wound.”¹¹⁸

There are significant facets to this approach. We take a second look at the narrowing of the parameters governing the application of scordatura in the 19th century, owing to "its special notation and playing requirements, the detrimental effect of higher tensions on the strings and the instrument... and the resultant changes in instrumental timbre."¹¹⁹ It would seem that Paganini bucked the trend in all these areas: either ignoring the notational requirements by transposing at sight (or considering the notational requirements not an impediment), utilizing higher tension and altering

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¹¹⁵. Stowell, 78.
¹¹⁶. Ibid.
¹¹⁷. Ibid., 78-79.
¹¹⁸. Ibid., 79.
strings accordingly, with resultant changes in instrumental timbre specifically the goal of his scordatura use.\textsuperscript{120} This highlights again the two branches of scordatura use: composers of this era in the category of applying this technique simply for extending pitch combinations may have been discouraged by unexpected timbral changes – contrastingly, those in the category of timbral effects, such as Paganini, utilized scordatura for specifically that purpose. Of course, Stowell’s focus on virtuosity may once again highlight that division between performer and composer: in his dual role, Paganini only had to concern himself with his own willingness to adjust as a performer, rather than that of a composer dealing with external musicians.

Another observation, in consideration of Paganini as well as the likes of Saint-Saëns’s \textit{Danse Macabre}, is that in this era of declined use of scordatura, those who went beyond the relatively simple transposition scordatura chose to adjust either the lowest or highest strings. This suggests that those using scordatura for timbral effects in this period had a predisposition towards retuning only these strings.

\textbf{B. Technical Versus Aesthetic Utility: the Role of Convenience}

Both of the categories listed above do share one element in common: aesthetic effects, whether in the form of pitch combination, range, or timbral effects. There is, however, another possibility: scordatura simply for technical convenience. For this discussion, the Urtext editions of Mozart’s \textit{Sinfonia Concertante} have particular importance within the literature – not just in the scholarly value of identifying Mozart’s compositional aims, but also in reflections of contemporary views of scordatura.

Wolf-Dieter Seiffert, in the Preface to both Urtext editions of Bärenreiter and Henle, notes that:

\begin{quote}
Technical, but also aesthetic sound considerations may be the basis for this decision (to use scordatura). Today, however, many violists play the solo part in E flat major without retuning their instrument. Our edition takes this into consideration inasmuch as we are enclosing both the original D major part (with scordatura) as well as a transposed E flat major part for the soloist.\textsuperscript{121}
\end{quote}

\textsuperscript{120} While the transposition scordatura may have been used purely for projection, the \textit{una corda} applications were undoubtedly designed for timbral effects.

\textsuperscript{121} Wolfgang Amadeus Mozart, \textit{Sinfonia Concertante in Es dur, KV 364}, Wolf-Dieter Sieffert, ed. (Munich: Henle, 2009).
Christoph-Hellmut Mahling, who edited the first Urtext edition,\textsuperscript{122} noted both the technical and aesthetic value, elaborating on the latter:

The performance practice might be the sole determining factor for this (the scordatura) as Hermann Aber already pointed out: “The purpose was to intensify the tone, and, to make the playing easier.” Due to the lighter sound, the solo viola stands out more clearly against the accompanying orchestra and, at the same time, ‘blends’ very well with the concertizing violin. The reduced technical demands refer to the double stops and the possibility to include a greater number of open strings which were used frequently and deliberately in the 18\textsuperscript{th} century.\textsuperscript{123}

These two partly overlapping views allow us to consider the use of scordatura simply for the sake of convenience, and its relative relevance for sonic aims. Mahling seems to take a neutral position, in listing both the effect of technical facility and that of timbral change, without a stated inclination for which of these two represents the principal compositional or performance aim. Seiffert seems to consider the technical ease or ‘convenience’ as paramount, over that of timbral effects. However, it seems that the definition of convenience itself is complex: for some performers, the ability to avoid retuning the instrument can fulfil the intent of convenience in modern day performance settings more so than the ease of D-major fingering.

However, the two factors of timbre and convenience may be compatible – and as such, arguably inseparable. Nobuko Imai said that it gave her instrument ‘another dimension,’ and the added tension allowed her to achieve notes ‘with so much less force, and yet with greater security.’\textsuperscript{124} This seems to combine Mahling’s views on technical and aesthetic advantages, whereby the increased string tension allows for ease of projection, rather than simply considering the scordatura as a means to lower the technical difficulty of the work. Thus we could suggest that instead of ‘convenience’, a more apt classification is ‘facility’.

Philip Wilby’s reconstruction of the Sinfonia Concertante in A (KV Anh. 104 [320e]) provides a more assertive view on the relevance of scordatura. Wilby writes:

The solo part is quite unique in that he requires the instrument to be tuned a whole tone higher than usual, thus transposing into G major; the E flat Concertante uses scordatura.

\textsuperscript{122} Of the New Mozart Edition, also published by Bärenreiter.

\textsuperscript{123} Christoph-Hellmut Mahling, vii-viii.

\textsuperscript{124} Paul Myers, program notes to Sinfonia Concertante in E-flat Major and Concerto for Violin, Piano, and Orchestra in D Major, by Wolfgang A. Mozart, NDR Sinfonieorchester, dir. Christoph Eschenbach, with Midori (violin) and Nobuko Imai (viola), compact disc, Sony, SK89488, 2001, 5.
of a semitone, thus transposing into D major. Violists are reluctant to retune their instruments, but I can strongly recommend this requirement, since the added brilliance is of great assistance in balancing with the violin.\textsuperscript{125}

A focus on a convergence in the two factors of timbre and facility is important, as it allows us to address the E-flat version of the viola part in light of contemporary performance. One question it opens up is why Mozart did not apply scordatura for the violin part, which would have enabled use of open strings for the violin parallel to that of the viola. This would suggest that the primary goal was an effort to bring the viola closer to the violin and increase the contrast to the orchestra, with resultant differences in fingering between the two solo instruments being a worthwhile opportunity cost. As Cook noted, the use of intentionally fewer available open strings for the violin could likely be the effort to darken its tone, and bring it closer to that of the viola.

Other possibilities are that scordatura for the viola has more flexibility than it does for the violin in terms of retaining the characteristic qualities of the instrument, or simply that the nature of the viola is more amorphously defined. Thus, a transposition scordatura for the violin part would have changed the nature of the instrument more so than for the viola. Mahler’s use of a transposition scordatura specifically for unusual effect would seem to match this.

Imai’s observation that the technical benefits are in the form of projection rather than execution highlight the value of Dann’s work on the etymology of scordatura – while also observing a possible contradiction in his discussion of string tension. On the one hand, Dann notes (in reference to the constantly varying tunings of the lyra viol) that “the whole concept of scordatura is one of an alternative to normal tuning”.\textsuperscript{126} On the other, he notes:

Modern metal of metal-wound strings are so carefully standardized in manufacture that the tuning of any of them to an unusual higher or lower pitch is likely to produce a shrill or veiled sound.... There can be little possibility of a satisfactory performance of a scordatura sonata if the strings which sound well as g d’ a’e” are retuned differently.\textsuperscript{127}

This would suggest that the Biber sonatas, on which Dann’s research is focused, would only be played on gut strings, even in performances of his day. The use of metal strings would require some 14 additional, specifically calibrated strings in the late


\textsuperscript{126} Dann, 15.

\textsuperscript{127} Ibid., 310.
1960s into the 1970s. This may make sense within Dann’s parameters of study, considering that the function of Biber’s use of scordatura was to enable further polyphony rather than to produce timbral changes. However, in contrast to this, it is the additional tension beyond regular calibration that provides the projection in the Mozart, as noted with Imai’s practical observations, and the “additional brilliance” noted by Wilby in the Sinfonia Concertante in A.

We might surmise from Dann’s comments that the strings of the 1960s may have been less suited towards flexibility than those available today. They would also possibly be less suited to retuning than even the pure gut strings that Biber used.

We should also note the use of octaves and tenths in the Biber sonatas. Playing tenths would be at the very least rare for the music of the period, though octaves have long been a regular part of violin proficiency. Biber’s ‘Resurrection’ Sonata uses scordatura for the special effect of playing running octaves, being fingered as fifths. If not then for timbral change, as Dann would suggest, therein lies a further aspect of technical ‘convenience’: the availability of different fingerings, that in itself provide a style of execution that is not simply inconvenient, but entirely unavailable in regular tuning. The usual use of the first and fourth fingers require some gap in transitions of octaves in regular tuning, even more so when switching to other strings, whereas Biber’s parallel fingerings allow for the use of only one finger at a time, and thus, the execution of smoother octaves.

Figure 1.1. Biber, ‘Resurrection’ Sonata, producing sounding octaves, with fingered and notated fifths

Therefore, the availability of technical convenience or facility provides for the aesthetic effect of octaves transitioning smoother than would be possible in regular
tuning, regardless of the skill of the player. Roden et al. note that “Scordatura was a means to an end: the purpose of this programmatic sonata was to encourage, and perhaps instruct, the devout with musical meditations on sacred mysteries.”128 These smoother transitions, no doubt an ‘unearthly’ sound to those accustomed to regularly sounding running octaves, helped to provide this meditative aesthetic effect.

C. The Use of Open Strings: Convenience, Symbolism, Resonance, and Aesthetic Effect

The one basic option that almost every scordatura employs is that of the use of open strings, regardless of categories of timbral effects, pitch options, or convenience. The most iconic use of this is in Saint-Saëns’s Danse Macabre, as well as the dynamic scordatura from Haydn to Suesse, which by its very nature uses only open strings.129 The possibility of symbolism in Franklin’s scordatura quartet is rooted in the availability of open strings. The question to be posed is one of magnitude: to what extent do open strings feature in the use of scordatura? We begin with the initial demarcation into two major categories of scordatura.

The first of these is that of additional pitch opportunities. Open strings extend options in various ways – perhaps the simplest being the extension of range, where the scordatura chosen would be to fit a lower limit of the tessitura of the instrument.

For most of the other cases within this category, the opportunities provided deal with double-stops. Of these, some form intervals that would otherwise be impractical on the instrument. The first cadenza of Mozart’s Sinfonia Concertante fits this category; however, it is difficult to classify whether the compositional aim was to extend possibilities otherwise unavailable in the key of E flat major, since the choice of key was to allow the viola to play effectively in D major, where the tenth is not unusual. A good example of this technique can be found in a recent composition by Ross Harris: his Music for Solo Cello, which uses all four strings simultaneously, with the use of left-hand

128. Timothy Roden, Craig Wright and Bryan Simms, Anthology for Music in Western Civilization (Boston, USA: Schirmer Cengage Learning, 2010), 97.

129. Both from the perspective of how composers have used the technique as well as the physical restrictions on trying any fingered notes, with one hand being occupied with adjusting the tuning peg.
pizzicato used simultaneously with bowed notes – the pitch combinations Harris employs would not be possible in regular tuning.\textsuperscript{130}

Some cases of the use of open strings have the compositional aim of timbral effect. In Saint-Saëns's *Danse Macabre*, the pitches are entirely available in regular tuning – however, they would require stopped fingerings at least for the first chord. The availability of open strings emphasizes its surprise entrance amid a brooding orchestral opening. The same would apply for Bartók's *Contrasts*, where the pitches are likewise available in regular tuning, scordatura employed to provide an imitation of a folk instrument.

It is less clear how to evaluate the most significant use of open strings: the string quartet of Benjamin Franklin. Here the open strings do not simply have an undefined aesthetic effect. The likely connection is to water glasses (also known as the glass harp), from which Franklin based his advancement of the 'glass armonica'. Nonetheless, there are also possible implications towards the promotion of egalitarianism where the exhibition of convenience becomes a mission in and of itself. Here we can revisit the third category of convenience – not for projection as would be in Mozart or execution of transitions as would be in Biber, but in the sense that convenience provides accessibility.

It is also important to recall that another use of open strings is for sympathetic resonance. In some cases this is a useful additional effect, as it would be in Maurice's recommended extended scordatura for Bach's Cello Suite No. 5. As a whole, however, this has been largely neglected since the time of Biber;\textsuperscript{131} whose scordaturas, in association to key, had some level of sympathetic resonance.\textsuperscript{132}

**D. An Issue of Etymology**

The approaches taken in Cree Brown's *The Imp* for solo cello – using three A strings and one D string – opens up a question of whether this work extends the boundaries of scordatura further, or whether this is scordatura at all. It is important to clarify that this does not designate that three strings are retuned to A; rather, that the cellist is required to restring the instrument using three ‘A strings’. If we look back at

\begin{itemize}
  \item \textsuperscript{130} Ross Harris. *Music for Solo Cello* (Wellington, NZ: Promethean Publications, 2003).
  \item \textsuperscript{131} Within the sphere of Western art music. It continues to be applied in folk fiddling.
  \item \textsuperscript{132} That being said, though the principal aim was to extend polyphonic possibilities.
\end{itemize}
the section on etymology, we find that this does not quite fit with definitions of scordatura involving strings that are cross-tuned, mistuned, detuned or retuned – at least not in the sense that the strings that are regularly on an instrument are altered in one of these ways. The composer, however, views his scordatura in the category of retuning, with his performance notes including the following: “Two of the retuned open string pitches are retuned to quartertones. If natural harmonics are used, these quartertones will be reliable.”

The starting point for Cree Brown is the intended tuning of each individual string – it is therefore scordatura because three of the strings were tuned to an alternative tension to that which was intended. However, other composers have as a starting point not only the regular tuning of each individual string but the manipulating the four strings usually on an instrument. Within this context, Cree Brown’s work would not fit the strict parameters of scordatura. Perhaps the most accurate classification of his technical requirement is restringing rather than retuning.

As we can note with this overview, scordatura has had a varied journey through the history of Western art music. It has gone through surges of application, periods of relative dormancy, and has had changing roles over the centuries. The question that remains is its future role, which leads us to the next chapter where we shall determine the area of research and applicable methodologies.
Chapter 2

Methodology

I. Identifying the Current Area of Research

Based on the preceding literature review, we can identify five areas in which there are gaps in the research of scordatura. These form the lacuna that the research in this thesis addresses:

1. **Sympathetic resonance as a stand-alone goal.** Sympathetic resonances are a logical by-product of efforts to match an instrument with key, or in Maurice’s case, voicing. However, little has been attempted in researching sympathetic resonance as a stand-alone goal.

2. **Scordatura for the viola.** Scordatura for the viola has only been lightly explored, particularly in contrast to research on scordatura for the violin and the cello. The available literature on scordatura for the viola is often confined to a listing of instances of scordatura use, and of that, the transposition scordatura largely predominates. Furthermore, of the list of functions by Boyden and Stowell, a particular function of scordatura for the viola that has yet to be explored is the imitation of other instruments. There has been no recorded prior use of imitation when scordatura is applied on the viola. This is due to the fact that the instruments that have been imitated thus far (the ‘Devil Fiddler’, folk fiddles, and the earlier tuning of the cello), lend themselves more viably towards the viola’s upper and lower cousins.

3. **Scordatura in ensembles.** One may also note that the use of scordatura for all instruments has been almost exclusively in a solo capacity – the exceptions being quartets by Franklin and Body, as well as Haydn’s symphony. Beyond these

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134. A notable exception is I-Chun Chiang’s thesis, which deals with modern-day performers’ reception of Mozart’s scordatura, as well as perceptions of audiences to its use.

instances, there has been little exploration of scordatura in works of chamber music.

4. **Scordatura applied by the performer.** There has also been a lack of literature on the application of scordatura by the performer, independent of the composer. This includes the use of scordatura retrospectively for aesthetic considerations. Research in this area would take the experimental step in using scordatura as performer’s device rather than purely as a compositional instruction. There are two precedents. The first is that of Paganini’s *una corda* performances as noted by Stowell, showing Paganini the violinist rather than Paganini the composer. The second is the implication of reversing Mozart’s scordatura in publications of the Sinfonia Concertante in conventional tuning – highlighting that the choice of tuning may be regarded as a decision of the performer, in the same category as decisions on fingering.

5. **The performer’s role in the composition process.** A final gap in the literature is the expansion of performer’s role within the process of composition. Lombardi’s *Mihrab*, in providing options of scordatura to the choice of the performer, sets one aspect of this. The article on *Recercar* by Fitch and Heyde provides not only a view into the role of the performer within the process of exploring scordatura options, but also a view of the methodology in which scordaturas can be determined.

While the totality of the composer-performer relationship would be outside the scope of this present research, the nature of scordatura as a technique arguably allows for the unique involvement of the performer. This can involve independent and retrospective application of a new tuning option, or also involve the composer in the process of the construction of a work.

The method of addressing these five areas of research will be described below. However, before this we need to address the issue of resonant frequencies, which was not mentioned in the preceding chapter.
II. Resonant Frequencies

The one area of relevant literature not reviewed in the preceding chapter is that of resonant frequencies. This section relates to the acoustics analysis conducted as a component of understanding the effects of scordatura on the resonances of an instrument. The Brandenburg Concerto project deals with a calibration of the tuning to the specific resonant frequencies of the instrument. The Telemann and Mozart projects involve the effects of sympathetic resonances.

This section is designed to illustrate the basis of the following information:

• The bowed stringed instruments have two principal frequencies in which the instruments vibrate most strongly. The wood resonance is the resonance of the plates, while the air resonance is the frequency that the enclosed air within the instrument vibrates most strongly.

• There are several forms of measuring resonance. The method used in this thesis is that of recording an instrument while bowed, as contrasted to sending vibrations through the bridge and measuring the vibration of the instrument.

The calibration to resonant frequencies of the viola will be referenced as part of one of the explorations of scordatura in this thesis. For this reason, certain aspects of the physics of sound will be referenced, and thus are included here, as part of a review of the literature. There are two specific aspects to this discussion: establishing the resonant frequencies of the viola, and approaches to measuring resonance. The work of James Beaument provides the most comprehensive overall contextualisation, while the work of Neville Fletcher and Thomas Rossing, as well as that of Hans Johannson provide the most relevant and specific information.136 Interviews with instrument-makers David Rivinus, John Ferwerda and Andrew Metaxas were conducted to explore the niche area in more detail. Details of these interviews will be included in Chapter 3.

a. Resonant Frequencies of the Viola

Beaumont points out that there are many resonances on a stringed instrument, and for that matter, most musical instruments, with a certain variability as to whether some resonances dominate over others. In measuring both the concepts of response curves (via bowed instruments), and resonance curves (via the application of vibration to the bridge), Beaumont notes first in regards to a typical response curve: “What violin this came from is not of any special interest because all good violins produce response curves, each of which is very irregular, like the one drawn, but none of them are alike.” Despite variations between instruments, three resonances remain consistent: “These three resonances occur at more or less the same frequencies in all the orthodox instruments which have been examined.”

Additionally, two of these frequencies – the lower body or wood resonance and the principal air resonance – are placed a perfect fifth apart. This matches the data by Fletcher and Rossing, as well as that of Johansson. This may be confused by some finding it hard to reconcile this with the contrasting construction of some instruments where the plates are made roughly with resonant frequencies a semitone apart, coming to false conclusions as to their relation to the principal air mode, $A_0$. The misconception is addressed by Fletcher and Rossing: “The level of the $A_0$ resonance is very sensitive to the level of the free top plate resonance, but the frequency of the $A_0$ resonance is insensitive to the top and back plate frequencies.”

The air frequency is instead determined by the “substantial motion of the closed air”. This thus deals with the volume of the enclosed air, but Beaumont adds that the nature of air resonance is principally determined by the number of holes in the instrument; closing one of the f-holes would alter the motion of the air and move the air mode some four to five semitones lower. With this in mind, we can confidently place the viola’s resonant frequencies at B-flat and F, as applied – and heard – in the instrumental substitution in Bach’s Brandenburg Concerto No. 6. This is confirmed with

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138. Ibid., 77. Beaumont’s emphasis.
139. Ibid.
140. Fletcher and Rossing, 294.
141. Ibid., 286.
142. Beaument, 84-85.
interviews with luthiers David Rivinus from the United States, and Andrew Metaxas from Australia.

b. Measuring Resonance

Beaumont puts forward two major approaches to this: F. A. Saunders’ approach, using the response curve, and the alternative, using the resonance curve. There are two further options for this: the measuring of the resultant vibration of the instrument, or the use of a microphone. ¹⁴³

The first approach, using the response curve, is applicable in this research, despite the variables inherent in a method involving a performer. The same applies to the resonance curve, “while it eliminates the unknown factors of players and bow, it does not give the sound output of a normally played instrument.”¹⁴⁴

In terms of scordatura research, there is only one precedent: the preliminary research of Cook indicating timbral changes of a cello A string when the other strings are tuned differently.¹⁴⁵ His research involved the testing of an A string under normal tuning and with the tuning seen in Kodaly’s Op. 8 Sonata (B’-F sharp-d-a). While this aspect of Cook’s research was necessarily brief, as supplementary and as an appendix to his thesis, it does appear to use the response curve approach as well.

III. Methodology

The process of determining a scordatura, and the subsequent decisions as to how to produce musical editions, follows a five-stage process. The overall process will be described first, under the subtitles ‘Conceptualization’, ‘Experimentation’, ‘Practical Field Tests’, ‘Historical Sources’ and ‘Editions’. Following this, the details of each of the main projects – the two Bach compositions, Mozart’s Sinfonia Concertante, and Telemann’s Concerto – will be discussed, using these five stages. Finally there will be a discussion of the collaborative work with contemporary composer Karlo Margetić in a separate section, as it involves a different method.

¹⁴³. Ibid., 76.
¹⁴⁴. Ibid.
¹⁴⁵. Cook, 123-29.
Stage 1: Conceptualization.

The literature provides precedents for the use of scordatura, but more importantly, it illustrates the functions of scordatura. With this in mind, at this initial stage two things are achieved:

• The identification of an existing issue in performance of a work, to determine if scordatura can provide a new solution.
• Alternatively, an examination of the compositional intent of a work that employs scordatura, to see if there are opportunities to extend the scordatura further.

The second of these two options may be initially seen as leading to the question: why would you change a composer’s choice of scordatura? To answer this, we consider two things: the historical context of the scordatura and the composition, as well as the historical and modern contexts of performance.

With Bach’s Cello Suite No. 5, the role of the historical context is significant. We have to consider that as the sole use of the technique by the composer, it was experimental in nature. This is especially true when we consider that the assignment of transcription was passed to Anna Magdalena Bach, and that various errors that resulted from this process. We also consider that the available primary sources – the manuscripts of A. M. Bach and Johann Kellner, as well as the composer’s manuscript for the lute suite, are very much in draft form, and do not represent the completion of the compositional process.

With Mozart’s Sinfonia Concertante, various factors are taken into account. We consider the use of scordatura in the 18\textsuperscript{th} century: the issue of convenience that led to the limitation to the transcription scordatura, and whether that factor remains relevant in modern performance.

In determining the opportunity to apply or extend a scordatura, the literature is referenced to decide which of the functions of scordatura are most applicable. The three principal functions applied are timbral effects, sympathetic resonance/projection and technical facility.

When extending a pre-existing scordatura, in some cases the same function is extended such as voicing issues in Bach’s Cello Suite No. 5. In other cases, an adjusted scordatura adds a new function, such as that of sympathetic resonance in Mozart's Sinfonia Concertante.
2. Experimentation

The next step in the methodology is practical experimentation of the researcher with his viola, and determining the patterns and parameters. Various questions are addressed at this stage:

- To what extent can strings be tuned upwards without risk of breakage or damage to the instrument?
- To what extent can strings be tuned downwards and still maintain accuracy of pitch and clarity of tone?
- In answering the previous two questions, are the patterns consistent across all four strings? This information will be of use in subsequent projects.
- Following the retuning of one string, what is the effect on the other strings and on the instrument as a whole?
- To what extent can a string be retuned without making physical intervals between two strings unfeasible?

Once a suitable scordatura has been found, the next stage of experimentation is to determine the pros and cons of the new tuning, by means of personal testing with an instrument i.e. playing the relevant excerpts in standard and altered tunings. In doing so, we can determine to what extent the scordatura is beneficial, and what compromises may have to be made.

With the completion of each scordatura project, the results of the experimentation stage allow the next project to proceed more efficiently. The experiments that do not produce usable results are often as useful as the ones that do; these either provide effects that can be used in other works, or clarify the parameters of what scordatura is capable of doing. For example, experiments that produced tunings below which one could produce a stable consistent pitch nonetheless produced effects that could be used in contemporary works.

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146. In some cases this involves more than one tuning considered 'standard', e.g. Mozart's Sinfonia Concertante in conventional tuning and in the composer's transcription scordatura. The transposition scordatura in this case would be standard to the Sinfonia Concertante but not towards a wider array of viola repertoire; in this sense it contrasts with the 'soloist' tuning of the double bass.
3. Practical Field Tests

This part of the process involves the use of performances in order to gauge the effectiveness of a scordatura in the overall musical context, when the work involves a larger instrumental context. The benefits of this stage are often gained from engaging with the performers and seeing if the effects from the experimental stage are consistent when the full ensemble is present. The main focus here is not to gauge audience feedback, but to include the input and feedback of the performers.

As the majority of the works explored involve ensembles, the effect of the scordatura was largely in relation to other musical forces. For example, the substitution in the Brandenburg Concerto is entirely for this purpose, to provide the adequate contrast that substitutions of cellos or violas in standard tuning would find challenging.

Thus, the next stage for these works was to place the retuned instrument in context in the form of performances. This effort has various goals:

- The scordatura is tested on other instruments, to ensure that the effect is not limited to the particular instrument of the researcher;
- The scordatura is tested in contrast to a range of other instruments, to ensure that the effect is consistent relative to the ensemble as a whole;
- It allows for feedback on the scordatura from the various performers;
- It provides the opportunity for feedback from specialists.

The only disadvantage with this is that it was not possible get a chance to hear the new versions of these works alongside the usual performance models. To perform them side-by-side would have been implausible to programme. As with I-Chun Chiang’s research on Mozart’s Sinfonia Concertante in conventional versus scordatura tunings, much was reliant on specialists who had knowledge and memory of these works and could use that to judge the effectiveness of the new version. Thus, while general audience surveys were not a useful option, the presence of specialists in the audience provided useful avenues of discussion. Audio selections, where possible, are included in Appendix D.

There was a supplementary option. Once these tests proved that these scordatura tunings were effective, an external process was undertaken using recorded samples of each of these works in conventional and scordatura (or extended scordatura) formats. These recordings were then subject to Fast Fourier Transform (FFT) acoustics
analysis, producing written findings from a specialist in this field. The FFT analysis provided the opportunity to have a thoroughly objective examination of the timbral effects, and in the case of the Telemann project also assisted in further expanding the scordatura experiments. This approach mirrors Nathan Cook’s thesis on scordatura for the cello, which presents FFT analysis as a supplementary reference rather than as a core segment of the methodology, seeing this as an analytical tool that is beyond the normal scope of many musicologists.  

4. Historical Sources

Concurrently with field tests, efforts were made to publish the editions, with the surrounding research and work with publishers exploring other aspects involved in the use of scordatura. The Bach editions are under the label of Comus in the UK, while the Mozart and Telemann editions are with the American Viola Society. The editions of Bach’s Brandenburg Concerto and Mozart’s Sinfonia Concertante are included at the end of the relevant chapters. Likewise, final drafts of the Prelude of Bach’s Cello Suite No. 5 and the Telemann Concerto are included. Both of these endeavours required referencing historical sources, which will be outlined within the individual chapters. This opened up secondary areas of research, specifically in relation to articulation markings in Brandenburg Concerto No. 6, systematic variation in the Sinfonia Concertante, and the relation of the Cello Suite No. 5 to the lute suite, BWV995.

These had value and findings independent of the scordatura research, and also contributed to demonstrating the relevance of the scordatura editions in individual ways that will be detailed further in this discussion. These allowed added weight to the use of or extension of scordatura, and helped enable publications, not only in the form of articles, but also in the editions.

5. Editions

The final stage involved the production of the editions, which saw the involvement of Michael Dennison of Comus Edition in the UK for the Bach editions, and David Bynog of the American Viola Society for the Mozart and Telemann editions. This stage dealt primarily with issues of notation. It also required a practical approach,
presenting the music in a performable format and providing performance notes as well as historical background.

References to the literature became once again instructive, particularly in pre-empting the handling of potential problems with the various approaches towards fingered notation. Collaboration of researcher and publisher was useful; the researcher could detail problems that occurred in the course of performing the works – for example, the complications of reading over a two-stave format, foreign to most violists. This would lead to discussions as to methods to resolve these issues, with the experience of the publishers invaluable in providing further options. The publication of these editions proved useful on multiple fronts, particularly in discussing issues of notation, and, on a more general basis, the viability of the scordatura approaches.

6. Additional references

The literature review for historical and compositional views of scordatura was completed through the usual channels of published articles, books and theses. The issue of resonant frequencies of stringed instruments for the Brandenburg Concerto No. 6 scordatura required further investigation, as discussed earlier in this chapter, and this also resulted in conversations and interviews with luthiers. This was to augment the available literature on resonant frequencies (to which the scordatura is calibrated), as the available literature is limited, and largely focuses on the violin.

The following details the specifics of the methodology, project by project.

A. Bach: Brandenburg Concerto No. 6

Stage 1: Conceptualization

The Brandenburg Concerto project was originally part of a different research focus: a study of conflict versus cohesion in multiple-instrument concertos. For this study a performance of the work was suggested. The difficulty in bringing in two professional viola da gamba players resulted in a discussion of the problems of modern substitutions: timbre was the issue with cellos, and tessitura with violas. The question of instrumental substitution became the principal issue, though still slightly related to the question of conflict versus cohesion.

Having been engaged in editing work on an initial draft of the Cello Suite No. 5, and realising the timbral effects of the scordatura, the question was posed as to whether
scordatura could provide a new solution to the substitution issue. This therefore involved the following stage of experimentation, in order to determine what might be possible.

*Stage 2: Experimentation*

Early research included examining options in measuring timbral contrasts. This included conversations with a then Master’s student at Cambridge University, examining engineering aspects of sound production of *pizzicato* and publications of her supervisor, Professor Jim Woodhouse, who utilised FFT analysis. Through reading related material it was interesting to note the role of resonant frequencies in instrument making, and how the viola’s resonant frequencies do not match its open strings. This created an individual character to the viola due to the discrepancies of the calibration of instrument size versus its tuning, but also provided opportunities for experimentation with tuning that would not be otherwise possible.

There was an interesting connection that the resonant frequencies of the viola matched the key of Bach’s Brandenburg Concerto – specifically, the resonant frequencies of B flat and F. That these frequencies were harmonically relevant to the work provided the opportunity to experiment with a scordatura that utilized this feature. This in turn opened up the methodology to use FFT to provide a further assessment of its effectiveness.

The experiments also encompassed the effects of sympathetic resonances. The experiments involved determining to what extent one could balance the goals of timbral effects and tessitura, and to what extent effects were from sympathetic resonances or from a calibration to resonant frequencies. This included experiments with both *arco* and *pizzicato*; the latter afforded the opportunity to focus on issues of pitch bending after the string agitator has left the string – in other words, the stability of pitch after the principal sound.149 This would prove to be useful in the collaborative project with composer Karlo Margetić.

*Stage 3: Practical Field Tests*

The new substitutions of the violas da gamba, using scordatura violas, were performed three times of the Brandenburg Concerto No. 6. The two New Zealand events

149. The technical term for this would be the German ‘Der Nachklang’.
were in the form of lecture-recitals while the one in Germany had the lecture segment as a separate event.

- **First performance:**
  Andrew Filmer and John Roxburgh, violas; Leoni Wittchow and Megan Ward, scordatura violas; Lucy Gijsbers, cello; Dr Richard Hardie, double bass (violone part); Douglas Mews, harpsichord.

- **Second performance:**
  2011, 39th International Viola Congress (IVC), Würzburg, Germany.
  Prof. Donald Maurice and Irina Andreeva, violas; Andrew Filmer and John Roxburgh, scordatura violas; Ruben Jeyasundaram, cello; Talia Schwarzwald, double bass; Sofija Grgur, harpsichord.

- **Third performance:**
  2011, Conference of the New Zealand branch of the International Association of Music Libraries, Archives, and Documentation Centres, Adam Concert Room.
  Prof. Donald Maurice and Irina Andreeva, violas; Andrew Filmer and John Roxburgh, scordatura violas; Inbal Megiddo, cello; Dr Jonathan Berkhan, harpsichord.

The first performance was purely to assess the feasibility and effects of substitution. The second performance provided the opportunity to confirm that it would be successful with an entirely different set of players, in essence to ensure that its success was not limited to the particular conditions of the first performance. The second performance also dealt further with the question of how far the new substitution advanced the performance of the work, since the audience comprised those with specialist knowledge. The final performance was following the production of the edition, and the inclusion of historical documentation, to test the value of the substitutions as being beyond simply for modern performances but also historically supported.

Leading up to the first performance, the input of viola da gamba player Robert Oliver was engaged, and for the performance the feedback of Vyvyan Yendoll, who was at the New Zealand Symphony Orchestra for 46 years, retiring as Principal Viola. Yendoll provided a written report with positive comments on the research, while Oliver went on
record in an interview that was later edited to form a documentary that accompanied the article in the *Journal of the American Viola Society*.150

A summarised review of the IVC lecture and performance was presented at the 2012 Sydney Viola Conference. Violist Megan Ward (who was involved in the first performance) was present at the conference, which provided for a discussion of types of strings and their reliability for scordatura. While not an intentional part of the research process, this does indicate a benefit of multiple performances in building an on-going conversation.

*Stage 4: Historical Sources*

This stage deals with the production of the edition of the Brandenburg Concerto No. 6 for Comus, which involves the use of historical sources. The principal reference was the autograph manuscript. Other editions were referenced, particularly in regard to different interpretations of the composer’s vague articulation markings: The articulation markings in the following editions were analysed and conclusions made in relation to the thesis:

- Bach, J. S. *Concerto 6o á due Viole da Braccio, due Viole da Gamba, Violoncello, Violone e Cembalo* [Brandenburg Concerto No. 6], BWV 1051. Manuscript (presentation score to the Margrave of Brandenburg) n.d.151 Reprinted by C.F. Peters, (Frankfurt, 1996).


151. The French preface has the date 24 March 1721, though it is likely that the individual concertos were completed at differing times.
The articulation markings were found to connect to Gregory Butler’s work on generic mixing, which eventually supported the scordatura substitution.

**Stage 5: Edition**

Production of the edition involved the input of publisher Michael Dennison of Comus in the UK. Dennison approved of the efforts of moving the staves closer together to alleviate problems of reading across two staves, and expanded on initial efforts at having note-tails beamed over the staves. He also helped negotiate issues arising from the double-stave approach, illustrating the role of the role of the publisher in producing new solutions to notation, based on issues raised by the researcher.

**Stage 6: Interviews**

In the first attempt to calibrate tunings to resonant frequencies, there was a lack of literature that specifically addressed this issue. Speaking to luthiers helped to bridge this gap. This included brief communication with David Rivinus, renowned for his innovations in viola design that take into consideration research in acoustics. This was conducted at the International Viola Congress in 2011, in Würzburg, Germany, with follow-up communication by email. Further in-depth conversations were conducted with luthier John Ferwerda and violist/luthier Andrew Metaxas in Melbourne in early 2012. As mentioned earlier, this had the primary function of updating the literature review on this area, which had a focus on violin design and only supplementary information on the viola. The impact of these interviews was to confirm the inferences this supplementary data provided, as well as that of practical observations during the experimental stage.

**B. Mozart: Sinfonia Concertante**

**Stage 1: Conceptualization**

The literature review indicated that the additional string tension of Mozart’s transposition scordatura provided additional resonance on the viola. A question that appeared from this is what would happen if Mozart’s scordatura were extended, in moving the lowest string up an additional semitone, especially considering that the entire work does not utilise the lowest open string.
In consideration at this stage of the research was the role of convenience in the transposition scordatura in the Classical era. It was decided that in moving forward with the extended scordatura, there were two factors to consider:

- Convenience should not play as much a role in modern performance, considering the current standards of instrumental proficiency. Thus one need not be limited to the transposition scordatura for the reasons that existed in Mozart’s era.
- Nonetheless, the top three open strings do not simply provide for convenience, but aesthetic effects as well, and the availability of a fourth open string would be taken into account in the experimental stage.

Thus the experimentation stage that followed this did not negate options that increased technical difficulty, but instead had acoustic effects as its main goal.

Stage 2: Experimentation

Mozart’s Sinfonia Concertante has considerably limited use of the lowest string, and so examining the effects was a fairly efficient process. As the extended scordatura affected the lowest string, only a limited number of sections in the work needed to be tested.

Following from the experiments in Telemann’s Concerto for Two Violettas (which will be detailed further in this discussion), as well as the production of the edition of the Brandenburg Concerto No. 6, there was some focus on the effects of sympathetic resonances. The other factor, as mentioned above, was what possibilities were available with having a new open string.

Experimentation thus took into account previous patterns of sympathetic resonances (at the octave above, compound perfect fifth, etc.) to see if the resultant effects within the work were positive. At this stage there was also an examination of the effects of the new open string, to determine if this provided acoustic advantages in the passages where it would now be used.

Stage 3: Practical Field Tests

The extended scordatura was tested in a formal performance setting on two occasions. Once again, this allowed the opportunity to see if the extended scordatura would function with more than one ensemble or set of soloists. In the UK performance,
the work was paired with Telemann’s Concerto for Two Violettas. This allowed the opportunity to see whether any complications arose with multiple tunings within a programme.

- **2011, Across the Continents concert, Moortown Methodist Church, Leeds, UK.**
  Mark Ostyn, violin; Andrew Filmer, viola;
  Leeds Summer Orchestra conducted by John Roxburgh.

- **2011, Sri Pinang Hall, Penang, Malaysia.**
  Lo Mei Yoke, violin; Andrew Filmer, viola;
  Musica Sinfonietta, conducted by Prof. Donald Maurice.

**Stage 4: Historical Sources**

In producing the edition for publication, the following sources were referenced:

- **W.A. Mozart.** Autograph manuscript containing two drafts of a second-movement cadenza for Mozart’s Sinfonia Concertante. MS Mus 177, Houghton Library, Harvard University.
- _______. Solo parts. Offenbach: Johann André, n.d. (c.1840) (Plate 1588).

There is no complete autograph manuscript extant, with only sketches of the cadenzas in Mozart’s hand. These are available from two sources: Harvard University and the report of the NMA. The principal sources that are available publicly are the first edition of the solo parts by André, and the first edition of the score by Breitkopf & Härtel. Additional references, including further sketches of the cadenzas, are unfortunately in
private ownership. The Bärenreiter and Henle editions did have access to these, and they are referenced as well, as part of the study.

The principal focus of the analyses of these sources was once again that of articulation markings. These analyses addressed the question of why there is such a wide contrast in the articulation markings between the Bärenreiter (NMA) and Henle editions, as well as between the Breitkopf & Härtel score and the Offenbach parts.

Stage 5: Edition

The final stage was that of producing the edition, for publication by the American Viola Society (AVS). Extensive email communication was conducted with David Bynog of AVS. Three layers of editing work were explored in this period.

The first layer covered in this process dealt with general editing of scores e.g. the spacing of notes, deciding whether there were exceptions to regular beaming patterns, and the wording of the preface, editorial commentary and editorial notes. This would be required of any edition.

The second layer of editing addressed some general editing issues that were the result of the extended scordatura. The main issue was the choice not to use a custom key signature; this entailed dealing with the resulting spacing issues due to the number of new accidentals. These technical issues are once again common to all editions, but with increased instances due to the extended scordatura.

The final layer of editing encompassed specific issues that resulted from the extension of the scordatura. These are issues that would not be faced in typical editions, due to the necessity of using “hand-grip” or “fingered” notation, and clarifying which string was used when there was some possibility of confusion. These were issues that arose from having an instrument that essentially had two different transposed notation systems (the top three strings in the key of D and the lowest string essentially in the key of C sharp), but lying on a single stave.

C. Bach: Cello Suite No. 5

The Cello Suite No. 5 project covered the longest span, from 2010 to the end of the thesis. There were several unique aspects to this project:
• It had the highest technical demands of all the pre-21st-century works, which made performances of this less feasible within the time frame of the thesis. However, this work did not have the aim of providing a specific timbral change in relation to an ensemble, and thus performances were not crucial to test its effectiveness. Nonetheless, the experimentation stage was expanded to ensure feasibility of eventual performances.

• The extended scordatura was employed by Donald Maurice, originally intended for the purposes of vocal fingering, as will be discussed in detail in the related chapter. Thus the conceptualization stage concerns notation rather than the determination of a scordatura.

• Instead, the significance of this section of the thesis is applying the amalgamation of the cello suite with the lute suite in g minor, BWV995 to test the level of effectiveness of the extended scordatura, and most importantly exploring more detailed options in scordatura notation.

With these factors in consideration, the methodology for the Cello Suite No. 5 project varies significantly from the two previous projects.

Stage 1: Conceptualization
While the study of Bach’s Cello Suite No. 5 preceded and contributed to that of the Brandenburg Concerto, it nonetheless continued well after the production of that edition. In regard to conceptualization of notation, the Brandenburg edition reciprocated the contribution, providing a tested option in the use of two-stave notation, and having resolved initial issues e.g. intra-stave spacing and beaming. Thus the Brandenburg edition proved to be a starting point in providing pathways of notation for the significantly more complicated Cello Suite No. 5 edition.

Stage 2: Experimentation
Experimentation occurred on two levels: examining an issue of feasibility, as well as working out issues of notation. For the issue of feasibility, the principal aspect was the goal of integrating as much of the lute suite into the new edition as would be possible, and technical experimentation included the application of broken chords, restructuring voicing patterns, and finding new ways of executing chords. This was essentially a test of whether the extended scordatura provided the voicing options...
theorized, and what parameters there were to its effectiveness. Within this stage, every part of the suite had to be proven to be feasible to the violist, just as it would be within a performance setting. It thus incorporated the relevant goals of the field test stage of the other works.

For notation, two of Maurice’s initial ideas (coloured notation and note-tail direction) were explored. Further experimentation was conducted with amalgamating the two staves, and providing exemptions to note-tail direction rules that would enable easier note reading. These and other issues are dealt with in detail later in the thesis, as well as in the editions themselves.

Stage 3: Historical Sources

There is a long history of varied interpretations of Bach’s cello suites due to the lack of an autograph manuscript. The two earliest sources are referenced, as well as related manuscripts in the composer’s hand, and external secondary references. They can be summarised as follows:

Johann Sebastian Bach, Six Suites for Violoncello Solo, BWV 1007-1012:

- Manuscript of Anna Magdalena Bach, c. 1727-1731;

______. Lute Suite in G minor, BWV 995. Composer’s manuscript.

______. Violin Sonatas and Partitas, BWV 1001-1006. Composer’s manuscript.


Stage 4: Edition

Once again, this involved Comus publisher Michael Dennison, and conversations primarily centred on notational options. While the Brandenburg Concerto edition did provide a useful exemplar, there was an interest in experimenting with condensing the two-stave approach into a single stave. During this stage there was considerable three-way discussion with Dennison, Maurice and myself in finding an approach that would provide the greatest degree of accessibility for the performer new to scordatura.
D. Telemann: Concerto for Two Violettas

The Telemann project bridges the two major goals of extending applications of scordatura seen in previous projects: it helps to address a historical issue, while at the same time providing an opportunity to use scordatura retrospectively as a performer's skill rather than simply a compositional designation.

1. Conceptualization

This project was the product of a coincidental connection between building the literature review, and an unexpected invitation to perform the concerto. In the first rehearsal, my role was that of Viola I and Irina Andreeva was to play Viola II, but it was discovered that timbrally the acoustic pairing of our instruments worked better if we switched parts. The literature included Maurice Riley's authoritative account of the history of the instrument, with his view that performances of the Baroque era calling for more than one viola should take into account the range of instrument sizes of the era. This seemed to match the observations of timbral contrast we had noted in rehearsal, and the initial question was whether scordatura could accentuate this contrast further.

2. Experimentation

Having noted the effects of Bach's scordatura in the Cello Suite No. 5, as well as the key of G major for the Telemann concerto, the first step was to see the effects of tuning the top string down a tone in darkening the sound of the instrument and providing the required contrast. There was also the suggestion during the rehearsal period by Donald Maurice to tune the C string up to D for the purposes of resonance. The range of the work provided for no pitches to be compromised in the process. This shifted the goal of the scordatura from instrumental contrast to a tuning that maximised the overall resonance of the instrument. This was deemed an appropriate shift of focus, as during the following rehearsals the effects of open string availability seemed to equal in value the timbral effects, and became the definitive feature of the scordatura.

Initially, this was the extent of the scordatura, in only affecting the Viola II part. This was also the application of scordatura in the two concerts. However, in the publication stage further developments were made to the literature review involving the nature of the violetta, and further experimentation was conducted to expand the scordatura to involve the Viola I part as well.
3. Practical Field Tests

The details of the concerts are as follows:

  Recording available: http://vimeo.com/19454427
  Irina Andreeva, Viola I; Andrew Filmer, Viola II.
  New Zealand School of Music Chamber Orchestra, conducted by Donald Maurice.

- 2011, *Across the Continents* concert, Moortown Methodist Church, Leeds, UK.
  John Roxburgh, Viol I; and Andrew Filmer, Viola II.
  Leeds Summer Orchestra conducted by Mark Ostyn.

4. Historical Sources

Georg Phillipp Telemann. *Concerto* for two violettas and string orchestra.
Manuscript of the score and parts by copyist Johann Samuel Endler. Sourced from Technische Darmstadt Technical University website (accessed January 21, 2013).

5. Edition

Two editions, one in conventional tuning and one with scordatura, are due to be published by the American Viola Society in October 2013. This involved extensive communication with David Bynog, who took on an invitation to take on the role of co-editor.

**E. Margetić: Two Translations for Solo Scordatura Viola**

It is useful at this point to return to the research question: How can scordatura for the viola be applied and extended to provide new performance options in Baroque and Classical-era repertoire, and extend options for contemporary composers?

The works of the Baroque and Classical eras extend knowledge that can be applied in contemporary works. However, a project dedicated to extending options for contemporary composers follows a significantly different process, with the crucial difference being the role of collaboration – taking advantage of the fact that the composer is, quite simply, still alive. Unlike that of works of past eras, where the task is to ascertain the compositional architecture, place it within its historical context and determine how scordatura could play a role in modern performance, with a contemporary work the researcher is involved directly in the compositional process. It
is no longer about defining compositional intent and refining its modern-day staging – rather, it is about being involved in the actual construction. The final product remains the intellectual property of the composer, with its role in this thesis being the process in which it came to be and not simply what emerged at the end.

Thus, the significance of the work with New Zealand composer Karlo Margetić is in highlighting this process of collaboration. For this project, the methodology itself is arguably as significant as would be the products of scordatura in other works, as it provides a pathway for further works utilizing the technique. The associated conclusions will deal as much with the effectiveness of the methodology as it will with the compositional product.

The work with Margetić did generally follow the same overall methodology, with certain exceptions. The areas where they diverged from that of Bach, Telemann and Mozart fit well with the related methodology explored by composer Fabrice Fitch and cellist Neil Heyde in their article “‘Recercar’ – The Collaborative Process as Invention”.152 Their work involved the direct collaboration of a performer within the compositional process, and apart from the collaborative feature, its particular relevance in this thesis is that the formation of a scordatura is used as a core element of the final work. Let us begin by discussing how following a collaborative process similar to that of Fitch and Heyde has general parallels to the overall methodology of the other projects.

The element of collaboration has various aspects, discussed by Fitch and Heyde:

- The occurrence of ‘controlled accidents’ due to the conditions/premise of the experimentation;
- The process of “‘invention’ within the piece”;
- The resulting ‘fortuitous discoveries’.

In regard to the first aspect, Fitch notes:153 “Much of our preliminary exploration was a matter of ‘inventing’ (in the original, Latin meaning of the word – ‘discovering’) a sound world whose ethics were implicit in our initial premises”,154 and described some


153. Note that this article has individual comments from Fitch as composer, Heyde as cellist, and other sections with comments from them as a pair. All emphases are as originally published, from Fitch and Heyde.

154. Fitch and Heyde, 83.
of the research outputs as being “as it were, ‘by accident’. (The ‘as it were’ is important, because we were mostly dealing with controlled accidents arising out of the initial premises within which we were working.)”  

This parallels the initial stage of conceptualization, in providing the parameters within which the next stage would operate.

The process of ‘exploration’ is crucial in the process of Fitch and Heyde, and likewise with the collaboration with Margetić. A principal feature of their work is their connection of the explorative process with that of research as a whole:

> It is actually the process of discovery or ‘invention’ within the piece that best represents the way in which its coming into being, and thus its ‘research aspect’, is inscribed within it... by locating our discussion within the domain of methodology, we have tried to stake the claims of ‘practical music making’ to constitute research in the fullest sense of the term.  

This in turn parallels the stage of experimentation in the methodology. With references to their own work, this will highlight the significance of the construction/determination of a scordatura as the primary research feature.

Finally, we have the results of these experiments, with Fitch’s comments that “Fortuitous as these discoveries were, the conditions out of which they arose – both the immediate technical conditions and the rationale underlying them, the ‘how’ and the ‘why’ – had been carefully thought through (hence ‘controlled accidents’).” This underlines the overall process within which the final compositional product was formed. While the stage of historical sources is not as relevant, within the work with Margetić it was clear that precedents in notational methods in other contemporary compositions were part of the stage of the production of the edition.

Having outlined the overall ways in which this project’s methodology is constructed, let us proceed to the specific way it is employed.

1. Conceptualization: Development of the Premise

In the early stages of the work with Margetić, some effort was made at defining and even demarcating the individual roles of the composer and researcher. An early idea was to have three miniatures: one where the composer determined the direction of the

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155. Ibid., 85.
156. Ibid., 93-94.
157. Fitch and Heyde, 86.
scordatura and the researcher provided feedback as to what was possible, one where the researcher determined the scordatura and the composer worked within that framework, and finally an organic collaboration where the scordatura would be developed step-by-step by both parties. It was soon evident that the last of these options provided the most productive results, and best matched the methodology as “a constant exchange of ideas in which concept, technique and realization were held in fine balance”. Due to this it became the sole approach of the project.

We began by establishing the precedents. The Brandenburg Concerto project in particular suggested that the viola was ‘higher strung’ in the upper two strings – meaning that the lower viola strings could be tuned upwards more so than the upper strings. The flip side of this observation is that the two upper strings could be tuned down significantly and still sustain a decent tonal colour and pitch stability. Also, through the calibration to resonant frequencies in the Brandenburg Concerto substitutions, there was the opportunity to build on further resonance than is available in regular tuning.

This is where the process was particularly interesting, and not only formed within the framework of the model of Fitch and Heyde, rather, becoming an extension of their work. Fitch notes that the initial idea for his composition originated well before the collaboration with a performer, while Margetić formed his compositional concept directly from the collaborative process. Based on the preceding research, the composer decided that as a starting point he wanted to explore as wide a contrast as possible – between the maximisation of resonance that the previous research had provided, and something completely opposite to that. The composer visualised this as “resonant fanfare and dead meandering”, a metaphor for the contrast between the two approaches. This became the premise of the project.

2. Experimentation Part 1: “Inventing the sound world” and reconstitution of an idea

This next stage quickly proved that while the previous research may have guided the formation of the premise, the eventual scordatura would involve a great deal of adjustment and further experimentation. It was soon apparent that there was a limitation when we proceeded along the lines of resonant frequencies: these primarily affected open strings rather than the instrument as a whole, which worked in the case of

158. Ibid., 71.

159. Ibid., 74.
the Brandenburg Concerto with its key of B-flat major, but was not as useful in the new work. In order to provide contrast that would not be limited to the instances of the use of open strings, it was proposed to the composer (and subsequently accepted) that we aim for overall projection of sound rather than primary instrumental resonances. This proposal was informed by the related research on Telemann’s Concerto for Two Violettas, and Mozart’s Sinfonia Concertante. These demonstrated that the lowest string could be tuned comfortably up a full tone, and that this created a stark increase in projection.

While the new work no longer relied on the use of resonant frequencies as in the preceding work on Bach, the research into the Brandenburg Concerto continued to contribute in suggesting that much could be gained from experimenting with lowering the tension of the upper strings. There were external works that were useful as well, including Suesse’s Luft and Holloway’s Sillage, which explored the lower extremes of string tension, both to the point that the lack of pitch stability was not a liability but rather an effect of the work. After several sessions of experimentation, we decided to take on a scordatura that further explored the opportunities of a string so slack that the element of pitch could be affected by techniques other than stopping the string with the left hand.

3. Field Test as Experimentation Part 2: Practical applications of performance

Once again in parallel to the work of Fitch and Heyde, whose collaboration was conducted in 2002-3 but with the première of the work was in October 2006,\textsuperscript{160} the field test stage for this project constituted part of the compositional process rather than a performance. This contrasts with the works of Bach and Mozart for the simple reason that in those works the composition had been long in existence and the purpose of the scordatura additions was to advance modern-day performance. In the work with Margetić, the process of experimentation covered both conceiving a scordatura with potential for creative work, and the work of narrowing down exactly how it is to be used and further adjusting it accordingly. The latter part of this process could be seen as a second part of experimentation; however, in comparison to the other research projects, it more accurately acts as the Field Test stage.

In this stage, various techniques are sampled, e.g. bariolage and battuto bowing, and use of natural harmonics, to examine how well the scordatura would function if

\textsuperscript{160} Ibid., 71.
these were applied in the work. The scordatura is then refined further, based on 'fortuitous discoveries' that were encountered in this process.

Two other elements of this research that differ from that of Bach, Mozart and Telemann are as follows: the production of the published score is completed by the composer rather than the researcher; and that as a contemporary composition there are no references to early sources.161

In the work with Margetić, this research shows that scordatura has the ability to not only be used by the performer in solving issues in established works, but also within the compositional process. Put another way: scordatura for the performer is not simply a method of execution, but an avenue to determine a crucial element in a composition that he or she will eventually perform.

Fitch and Heyde point out that this area of research has a unique and innovative approach, in that “the methodology of that research shows clear differences from the modus operandi of musicology... notably when the ‘outcome’ is discovered long before the ‘questions’ have been formulated.”162 This was most evident in the work with Margetić, with some of the special effects discovered through experimentation, though not specifically from the initial aims. It also applies to the works of Mozart and Bach addressed in this research, though in a comparatively limited fashion, as there were the direct aims of instrumental substitution, voicing, and use of open strings that provided initial questions; these were answered with the application of new scordatura or extended scordatura solutions.

In summing up this section, Fitch and Heyde’s article provides a model of methodology within which the current research is framed, though there are certain aspects where the current research departs from this model. The process of research in this project fits within the general methodology of the thesis as whole, with certain aspects being unique to this particular project. Most importantly, the work of Fitch and Heyde illustrate the research relevance of the collaborative work with composers.

IV. Summation and Concluding Comments

The essential aim of this thesis is to provide new avenues of modern-day performance through the use of scordatura. The methodology is thus a roadmap to show how a performer can engage in a process that for the most part has been unnecessarily

161. Nonetheless, the composer’s early sketches have been included in the upcoming discussion.
162. Ibid., 94.
confined to the composer in our current era. In the production of a contemporary work, this goes a further step by illustrating that this does not take away from the composer’s ability to use scordatura – quite the opposite, actually, as the collaboration also introduces new pathways for the composer to use the technique.

References to the literature occur throughout the process. At the start, the literature – particularly in regard to viola repertoire – assists in locating the opportunity to use scordatura, whether in addressing an issue in performance, enhancing an existing aesthetic, or setting the premise of a new composition. This is the stage of conceptualization.

The literature on precedents in scordatura use (both in my previous research and in other compositions) then informs the stage of experimentation. This stage has the goal of crafting a scordatura that shows promise in addressing the issue brought about in the conceptualization.

The next step is field-testing this scordatura to see how it functions when the full context of the work includes larger instrumental forces – a chamber ensemble in the Brandenburg Concerto, orchestra and fellow soloist in the Mozart as well as the Telemann compositions. This helps to determine the effectiveness of the scordatura, and whether any refinements need to be made. For this purpose the input of specialists is useful whenever they are available, but it is the feedback from fellow performers that is of particular import, and on occasion this leads to further discussion such as that of a conference. For work in contemporary composition, field-testing does not involve the performance of the work; rather, further experimentation with the new tuning via the use of various technical patterns, through which new observations can be shaped into musical figures and effects.

A penultimate stage for works of the Baroque and Classical eras is the reference of historical sources. This can be seen as another form of field test for the works of those eras, in seeing if further analysis of supplementary areas like the distribution of articulation markings further support the function of the chosen or extended scordatura. This leads to the final stage of the production of a published edition, and the inclusion of the publisher in a discourse on approaches to notation. In the case of contemporary composition the score remains the purview of the composer in line with the methodology put forth by Fitch and Heyde, though the performer/researcher remains active in sharing the experiences of dealing with this specialist notation, and in providing input as to what would function most efficiently for the performer.
There are two further elements of the methodology that do not fit the strict structure of each individual project. The first of these is interviews with luthiers that specifically address a gap in the literature for the Brandenburg Concerto project. The second is that of Free Fourier Transform analysis, that serves as an external reference for the three projects that involve a scordatura that has some role within a larger ensemble, i.e. Bach's Brandenburg Concerto No. 6, Mozart’s Sinfonia Concertante and Telemann’s Concerto for Two Violettas. These are both supplementary approaches that are fitted in where relevant in the discussion.

There are two particular aspects of this research that make this research distinctive. The first is the emphasis of experimentation, and expanding from the collaborative work of Fitch and Heyde in providing a model for future work in scordatura – a confirmation that ‘practical music-making’ indeed is at the core of this research. The second is the unusual combination of academic research, preparations for scholarly editions, and practical experimentation based on performance that is a definitive feature of this thesis.
CHAPTER 3

Scordatura for Instrumental Substitution:
J. S. Bach’s Brandenburg Concerto No. 6, BWV 1051

I. Historical Contextualisation: Instrumental Diversity and the Impact of Reception History

In prefacing a discussion on instrumental substitution in the Brandenburg Concerto No. 6, there are two areas of relevant contextualization:

- Consideration of reception history and its influences on performances today;
- Historical clues as to the intent of instrumentation in the Concertos.

Malcolm Boyd notes that compositionally, “Bach’s historical position at the culmination of an era, manning one of the last bastions of the Baroque in the face of an encroaching gallant style in music, has tended to obscure the fact that very little in the way of a native tradition stands behind the Brandenburg Concertos.”

One could argue that a parallel exists in the ‘native tradition’ of performances of the Brandenburg Concertos. As ubiquitous and monumental as Bach is today, performance norms of the Brandenburg Concertos are nonetheless relatively new constructions. The Concertos have been in recent public recognition only in the last eighty years – over a century’s gap between that and Mendelssohn’s performance of the St. Matthew Passion in 1829 that became a significant event in the Bach revival.

The autograph manuscript of the Concertos was completed on 24 March 1721, and it was only in 1849 that it was rediscovered in Princess Amalia’s library by Siegfried Wilhelm Dehn. Several of the concertos at that point were unknown to the public of the day. Nonetheless, there are records of prior performances of the other concertos, including at least one movement of the third concerto on 19 May 1835 by Johann Nepomuk Schelble. Outside of the public sphere, there are records of a semi-private performance of the fifth concerto on 19 February 1808, and the second, fourth and sixth

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2. Ibid., 20.
in 1813, by Carl Freidrich Zelter, Mendelssohn's teacher. Early modern editions were by Dehn (1850), and by Wilhelm Rust for the Bach-Gesellschaft edition (1871).

Nonetheless, Boyd notes that it was only Max Reger’s piano duet transcriptions (published by Peters, 1905-6) that brought the Concertos into some general public recognition.

In regard to the title of the work, Boyd notes:

The term 'plusieurs instruments' might be interpreted as meaning 'several different instruments' since one of Bach’s intentions in composing the Brandenburg Concertos (or at least in putting them together as a set), seems to embrace as wide a variety of instrumentation as possible... rarely, if ever, had so many different instruments been called for in a single set of concertos.3

Dorottya Fabian’s comprehensive listing of recordings of the Concertos notes the first recording was in 1935, of Adolf Busch, with Fabian’s brief comment of “lots of pedal in piano part”.4

It was only in 1953 that there was a recording made that employed period instruments, including violas da gamba, by Karl Haas and the London Baroque Ensemble. It is only the fifth recording of the concertos, no doubt in part due to World War II, and the inclusion of period instruments reflects an intersection with the start of the Early Music Movement.

Norman Carrell’s book on the Concertos, published in 1963, gives us a glimpse of some ideas and attitudes of that era.5 With the Early Music Movement still in its fairly early stages, Carrell includes a discussion as to whether gambas in the Sixth Concerto should have frets.6 While there were questions on instrumentation, it was nonetheless already established by the early 1960s that the essence of the dedication – ‘plusieurs instruments’ – directly relates to performance style. Carrell notes that by implication “Bach intended his ripieno parts to be played by one, or only a few, instruments to each line…. and, of course, none of the parts in No. 6 should be doubled.”7 While issues such as that of frets on gambas are no longer in question today, this understanding of a varied

3. Ibid., 24-25.
6. Ibid., 107.
7. Ibid., 24.
instrumentation has been sustained by the topmost names in period performance in recent times, most notably Musica Antiqua Köln, and the Freiburg Baroque Orchestra. Yet for those outside period performance there was a somewhat different scenario. As late as 1983, some two decades after Carrell’s findings, the Huberman Festival that featured the likes of Shlomo Mintz, Isaac Stern, Idan Haendel, Itzhak Perlman, and Henryk Szeryng included a performance of the Brandenburg Concerto No. 6 with Pinchas Zukerman and Daniel Benyamini as soloists, and Zubin Mehta conducting the Israel Philharmonic Orchestra. This not only used substitutions of the gamba parts with cellos, but also had the doubling of various instruments – including the solo viola parts, doubled in what were regarded as tutti sections, essentially creating a ripieno concerto. This is in some ways hardly surprising, considering Zukerman’s infamous opposition to historically-informed performance, as well as the reflection of Arthur Hutchings’ views of the ‘ripieno concerto’, namely, that the players in the Third and Sixth Concertos act in dual roles of soloists and ensemble musicians. Boyd notes that while this may be applied to the Third Concerto, it is not so for the Sixth. There has thus been a plurality of substitutions and instrumental options within the rise and fall of various interpretations and performance styles. Despite this, one reading of the concertos has been consistent: within historically-informed performance, there is the practice of keeping instrumentation to one player per part. The very name of the work, being in such regular parlance today as to no longer require the inverted commas of the ‘Brandenburg’ Concertos is perhaps the clearest sign of how much these works have become reinvented in the past century. Bach’s

11. Hutchings’ book on the baroque concerto was published only four years previous to the Huberman Festival.
13. Note that Carrell did maintain the use of inverted commas, as well as specifically noting that the nomenclature was for aid of identification (p. 23). As a sign of how the recognition of its name has overtaken its actual historical reference, one edition has a picture of the Brandenburg Gate on its cover – which was constructed in the late 18th century, well after the era of both Bach and the Margrave of Brandenburg.
ascription was that of “Six Concerts – Avec Plusieurs Instruments”, not as handy a title as the ‘Brandenburg Concertos’, which referenced the dedicatee of the set, the Margrave of Brandenburg. While Boyd disputes as urban myth that the Margrave did little more than leave the Concertos to gather dust, it is nonetheless interesting to note Archibald T. Davidson’s quip that:

> What sort of man this Christian Ludwig was I cannot say, but I have often thought that it would have been the neatest stroke of poetic justice if he could have known that for posterity his sole distinction would lie in his having possessed the first autograph copy of the immortal Brandenburg Concertos.\(^{14}\)

The original title, however, may be of particular relevance to instrumentation, particularly considering the repeat of this on the dedication page, where Bach writes (originally in French): “…I have therefore followed your most gracious commands and taken the liberty of discharging my humble obligation to Your Royal Highness with the present concertos which I have adapted to several instruments…”\(^{15}\) Boyd notes Arthur Hutchings’ alternative view that ‘plusieurs’ may have been to denote several rather than many players i.e. one player to each part.\(^{16}\)

It has been suggested that there are complications in translating the French, and that “plusieurs” is not as clear an indication of diversity in the instrumentation as would be the phrase “que j’ai accommodé à divers instruments”. However, even this perspective is complicated, as there is considerable doubt as to whether Bach wrote the French himself. Hans Grüß states, “This dedication, written with all the obsequiousness customary for its era, probably exceeded the French that Bach had learned at Lüneberg and was perhaps drawn up or translated by one of his colleagues at court…”\(^{17}\) Whether or not the term signifies diversity in instrumentation, what can be said is that there is at least diversity in the interpretations of “plusieurs”. It is the present author’s opinion that Boyd’s perspective on the dedication seems congruent with the actual instrumentation.

The progenies of these concertos become a pertinent part of the discourse surrounding the role of instrumentation – and thus have relevance to the subject of instrumental substitution utilizing scordatura violas.


\(^{15}\) Boyd, 10-11. The dedication page, like the title page, was written in French.

\(^{16}\) Ibid., 25.

\(^{17}\) Hans Grüß, Preface to the New Bach Edition reprint, (Kassel: Bärenreiter, 2001), XIII. Grüß references Hans-Joachim Schulze and Christoph Wolff within this discussion.
Concerto No. 1 also exists in the version of a sinfonia of BWV 1046a, in copies made by Christian Friedrich Penzel.\(^\text{18}\) The issue of the violino piccolo used in this concerto is of particular interest to us, due to its tuning system a minor third higher than the regular violin. Boyd notes:

Errors in the violin piccolo part (notated in D), however, strongly suggest that the presentation score was copied from a version (such as Penzel’s) which included a violin tuned at the normal pitch. Such errors must support the supposition that the violino piccolo was not included in Bach’s original version of these movements (or presumably, of the minuet), but was added when the margrave’s score was copied out.\(^\text{19}\)

As noted in the Literature Review, this would not constitute an application of scordatura, rather the use of an entirely separate instrument with its own standard tuning.\(^\text{20}\) Robin Stowell notes that the instrument had dual functions of convenience in playing with limited shifting and a tonal quality that was differentiated from that of the regular violin.\(^\text{21}\) The aspect of timbral contrast will be of particular relevance in the upcoming discussion.

Martin Bernstein suggests an earlier origin for Concerto No. 2, with the availability of an appropriate trumpeter in Bach’s Weissenfels era (this is to say that the work was conceived earlier and then incorporated into the Brandenburg set, rather than being a reuse of previous material).\(^\text{22}\) The first movement of Concerto No. 3 is duplicated in the Sinfonia to the sacred cantata BWV 174, with added two oboes, taille, two horns, and a bassoon.\(^\text{23}\) Concerto No. 4 also exists as the Clavier Concerto in F, BWV 1057. There is the possibility of an early version of Concerto No. 5,\(^\text{24}\) nonetheless with the “plausible assumption” that it was the last to be composed and intended for the procurement of the new harpsichord for Bach’s ensemble in Cöthen.\(^\text{25}\) Lastly, while

\(^{18}\) Ibid., 11-12.

\(^{19}\) Ibid., 13-14.

\(^{20}\) Robin Stowell, *The Early Violin and Viola: A Practical Guide* (Cambridge: Cambridge University Press, 2001), 172-3. Note also that there was more than one standard tuning or accordatura for the violino piccolo, with the possibility of a tuning in fourths. This would be similar to the viola d’amore.

\(^{21}\) Ibid., 172.

\(^{22}\) As noted in Boyd, 15.


\(^{24}\) Boyd: 11.

\(^{25}\) Ibid., 15.
Martin Geck suggests that the Concerto No. 6 may be (possibly in part) an arrangement of a preceding trio sonata,²⁶ Michael Marissen’s analyses of these hypothetical claims convincingly lays this question to rest.²⁷

The use of the Brandenburg Concertos in other works – either as preceding or proceeding works – makes the discourse of instrumental substitution a complex one. Underlying the role of the scordatura viola substitutions in Concerto No. 6 is the prerequisite claim that timbral contrast between the instruments is an important compositional element. The use of the Brandenburg Concertos in various other forms by the composer himself could, on a surface level, be seen to undermine this understanding.

There are two ways of addressing this issue. The first is to point out that of all the concertos, the two that remain independent works are Concerto No. 2 and Concerto No. 6. Even if they were written prior to the compilation of the Brandenburg set, there is no conclusive evidence to show that they were performed separately from the Brandenburg set. These arguably demonstrate a timbral focus in two very different ways: Concerto No. 2 through extreme variety in the solo instruments (trumpet with flute/recorder in particular, as well as the oboe and violin), and Concerto No. 6 through its instrumental restriction to the lower strings, thus placing some emphasis on the subtle differences between the instruments. Thus, the aesthetic effects of these two concertos are the most complicated to replicate in any other form, and possibly the reason why they were not utilized elsewhere like the other Brandenburg Concertos.

Carrell noted the unique nature of Concerto No. 6 was “not a concerto of any kind but a piece of pure chamber music written in the style of the period,”²⁸ and: “One would not expect to find Concerto No. 6 – written in or before 1718 – in a collection of six concerti as it is really no more a concerto than is the so-called ‘Italian’ for harpsichord.”²⁹ Furthermore, even if Geck’s hypothesis were valid and Concerto No. 6 did stem from an earlier cantata, it would almost certainly be for the second and third movements: the complexity of instrumental interplay, as well as the use of five-part canonic writing make the first movement almost certainly written directly for specific use in the Brandenburg instrumentation. As such, it is fair to say that the impact of the

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²⁶. As noted in Boyd: 14-15.


²⁸. Carrell, 23.

²⁹. Ibid., 110.
instrumental substitution is clearest in the first movement of the concerto, as that parallels the role of the gembas in the work.

A second avenue of addressing this issue is that whatever use 'Bach the Borrower' may have had in redesigning and reusing his works, the form in which they were presented in the Brandenburg Concertos had timbral variety as its primary aim. We recall Boyd's observation that even if they were originally written for other purposes, instrumental variety was certainly the intent in having them in the Brandenburg set, or, perhaps for selecting these particular works for the Brandenburg set.

While Geck suggests that Concerto No. 3 may have originated in the larger form of a sinfonia to a church cantata, it should be noted that the additional instruments in the cantata version do not extend the contrapuntal complexity, instead simply building instrumentation deemed suitable for a sinfonia. One can argue that Bach does the same to the sinfonia of Wir danken dir, Gott, wir danken dir, BWV 29 – the two trumpets, timpani, oboes and strings simply embellishing the organ line that was borrowed from the Partita No. 3 for unaccompanied violin. The form in which it exists in Brandenburg Concerto No. 3, BWV 1006 – as contrasted to the church cantata – is best suited to demonstrate the timbral variety of plusieurs instruments.

The same is certainly true of Concerto No. 4 in its concerto grosso form in the Brandenburg set, in contrast to its use as a solo harpsichord concerto – particularly when considering Gregory Butler's observations as to instrumental interplay in the work. Likewise, Bach's decision to use a violin piccolo in Concerto No. 1, altered from a previous version for a regular violin, underlines this point further, as that instrument had a distinct function in providing timbral variety.

In summation, there are two historical aspects that are involved in a contextualization of instrumental substitution in Bach's Brandenburg Concerto No. 6. One is that of the 18th century, and addressing whether the composer’s extensive recycling of material detracts from a claim of the importance of timbral calibration in performing the Concertos. The answer is that while some flexibility is shown in reusing

30. To paraphrase the title of another of Carrell's publications.


32. Carrell, 110.

the musical material, Concerto No. 6 stands out as a unique part of the Brandenburg set, arguably less malleable to transformation. Furthermore, even for those works that are used elsewhere, the form in which they are presented in the Brandenburg set has instrumental variety as the principal aesthetic.

The second aspect of the history of Bach’s Brandenburg Concerto No. 6 is that of its contemporary performance practice, which involves a complex web of factors. This includes the late discovery of the presentation manuscript, the role of the recording industry and the disruption caused by World War II, and the contrasting interpretations by the Early Music Movement and its opponents. In this more recent history, one can note a sustained viewpoint of instrumental variety particularly by Early Music proponents, and changing practices in ‘modern’ performance, particularly in the number of players engaged, as noted earlier in the use of multiple players in tutti sections. The proposed instrumental substitution in this chapter in some part attempts to bridge the gap by providing an arrangement for instruments of the present day that remains nonetheless historically informed.

II. Scordatura in J. S. Bach’s Brandenburg Concerto No. 6

The application of scordatura in Bach’s Brandenburg Concerto No. 6, using violas to substitute the violas da gamba can be viewed from multiple angles. Traditional aspects of scordatura that overlay the approach include tuning to match a specific key, intervallic relations that employ sympathetic resonances, and adjustment of string tension to provide some level of contrast or timbre change.

The areas whereby this approach breaks new ground is in the calibration of the scordatura to the resonant frequencies of the instrument, as well as testing the viability of tuning of the entire instrument down to intervals as large as a major third. In terms of function, it is the approach of instrumental substitution that is unusual; the closest example to this might be Bach’s Cello Suite No. 5. This example would depend on whether the intent of that scordatura was to create some connection to the lute, rather than simply to affect a tonal colour in that work – in either case, the use of scordatura in the Brandenburg Concerto No. 6 would have some similarity in intent. Another comparison may be with Bartók’s Contrasts, in the use of a separate, retuned violin (G-

sharp-D-A-E-flat) in the third movement as a reflection of gypsy performance, more specifically substituting for a folk instrument. This also highlights the rather primary but nonetheless consistently principal basis of scordatura in providing new options of open strings.

The various aspects of the use of scordatura in this project will be discussed in line with their individual contexts of history, performance, and the scientific aspects of instrument-making. In 2011, this research was published in the *Journal of the American Viola Society* and the edition published by Comus in the United Kingdom, and it was presented at the XXXIX International Viola Congress in Würzburg, Germany in a lecture and performance. The study of articulation markings was presented at the annual conference of the New Zealand branch of the International Association of Music Libraries, Archives and Documentation Centres in 2011, with a performance of the edition, and published in *Crescendo*. The studies of articulation will prove useful in confirming the role of the scordatura substitution.

**III. Instrumental Substitution**

**A. Instrumentation**

To establish the function of the scordatura in Bach’s Brandenburg No. 6, a discussion of historical context is necessary, particularly in regards to the treatment of the concerto grosso genre. When dealing with the complexities of instrumental substitution, it is important to note the flexibility that Bach employed with instrumentation in his works. Even the idiomatic unaccompanied violin sonatas and partitas, which Robert Donington believed “requires the violin, and nothing else will do,” was malleable enough for Bach to turn one movement into the sinfonia for *Wir danken dir, Gott, wir danken dir*, BWV 29. Thus, to posit a specific instrumental substitution for timbral effects, one must first address how the Brandenburg Concertos have a clear definition of musical forces. The diversity of timbres in Bach’s compositional style and use of specific instrumentation creates an aesthetic where general substitution might be disruptive.

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36. See Methodology for details.
There is no mention of the term concerto grosso in Bach’s presentation autograph to the Margrave of Brandenburg – or for that matter the title ‘Brandenburg Concerto’ to which we have become accustomed. The composer’s transcription reads simply the concertos as being *avec plusieurs instruments*, highlighting that they are designed for a diverse span of instruments. The choice of these instruments is as follows:

- **Concerto No. 1**: two horns, three oboes, bassoon, violin piccolo, two violins, viola and cello, with basso continuo;
- **Concerto No. 2**: concertino of one trumpet, one flute (recorder), one oboe; ripieno of two violins, one viola and violone with cello and basso continuo;
- **Concerto No. 3**: three violins, three violas, three cellos, with basso continuo;
  - **Concerto No. 4**: concertino of violin, two recorders; ripieno of two violins, viola and violone, with basso continuo;
- **Concerto No. 5**: concertino of flute, violin and harpsichord; ripieno of violin, viola, cello, violone with harpsichord also acting in this role;
- **Concerto No. 6**: two violas, two violas da gamba, cello, basso continuo.

The impetus for the variety in the instrumentation had various possible contributing factors – from an impressive display towards the aim of procuring an appointment with the Margrave, the exhibition of the new harpsichord, the membership of collegium musicum, and the inclusion of Prince Leopold as a performer. These factors tend to overlap – the commission of the set was from Christian Ludwig, the Margrave of Brandenburg, whom Philip Pickett, among others, suggests Bach met while in Berlin in 1719 to collect a Mietke harpsichord.37 This new instrument was for Prince Leopold of Cothen, whose *collegium musicum* (more commonly regarded as a court orchestra) Bach led. One could argue that tailoring the instrumentation for this court orchestra suggests that there is less of a take towards diversity and more of an accommodation of available resources. However, it can also be ventured that the role of the harpsichord in Concerto No. 5 and the prominence of the violas in Concerto No. 6 suggest that instrumentation is the major feature of the set.

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Of all the concertos, the sixth concerto stands out in having the narrowest range of instrumentation – a tight range of the lower stringed instruments, and a juxtaposition of the old and new stringed instrument families. From the perspective of timbre, this means that in consideration of the Brandenburg set as being a presentation of a wide spectrum of sound, particularly specific timbral contrasts exist within this concerto. In other words, instead of the stark contrast one sees in the second concerto, the aesthetic of the sixth is one of subtle, carefully crafted contrasts.

Michael Marissen suggests that the instrumental treatment may have unusual implications towards Prince Leopold as a gambist: "Bach’s virtuosic treatment of the viola in one piece or his orchestral treatment of the gamba in another piece might not necessarily in itself be meaningful, but his juxtapositioning these treatments in the same piece creates a striking internal opposition." The relevance of this is sociological rather than acoustical, but no doubt the resultant sound of switching of roles would be as equally prominent as any visual impression – since the gamba was a celebrated solo instrument of the day. More importantly, it provides support to a specifically chosen instrumentation, ‘calibrated’ to produce certain timbral contrasts. It should be mentioned that this view is not unanimous. Malcolm Boyd suggests that "the music would be just as well served by an ensemble which included violins, flutes and oboes.” Nonetheless, even Boyd notes that the exclusion of violins and higher-pitched instruments has been frequently noted as providing a “distinctively ‘dark’ or ‘veiled’ tonal hue.” He further notes that – despite his liberal views on how the music could have otherwise been written – the form in which it did emerge provides challenges in performance, as:

> the absence of violins and the inclusion of bass viols make it a difficult work to include in concerts given by a normally constituted string orchestra, and it is only when it is played on the correct instruments, and with a single instrument to each part, that its intimate, undemonstrative textures make their effect.

Beyond simply the choice of instruments and their hierarchy within the ensemble, the specific usage of the instruments is at times curiously unidiomatic. The use of the gambas is restricted to the upper part of the usual register, opening the

38. Marissen, ibid., 57.
40. Ibid., 91.
possibility that it was geared towards the lesser-played alto version of the instrument. Also, while inconclusive, Marissen addresses Geck’s observations of corrections within the autograph, noting that the pattern of corrections suggested an earlier version for four violas. The significance of this is twofold: a possible timbral calibration by means of instrumentation to provide a distinction from the concertizing violas, and the idea that violas (rather than the more commonly applied cellos) as substituting instruments match what is possibly the original conception of the work. Lastly, there is the issue of the violone, the predecessor to the double bass. Together with the gambas, they represent the old stringed family, and like many instruments of the era – including the violas – there was a considerable variety of instrument sizes. Laurence Dreyfus notes that the violone of the concertos actually imply three differently sized instruments, with the smallest one applied in the second and sixth concertos, as well as the earlier version of the fifth. This further reinforces the concept of instrumentation far narrower than any of the companion concertos, with narrower gradations of timbre from one instrument to the next.

B. Genre

The ability of the instrumentation to provide these contrasts in sonorities was utilized by Bach as the principal feature of the set. As such, further discussion as to his employment of these timbral connections emphasizes the necessity of an adequate substitution of the viola da gamba parts. It further highlights the unique compositional approach towards the concerto grosso genre.

Earlier studies of the work, such as that of Maurice Riley, presumed it to be a double viola concerto, and editions often provided a piano reduction with only the solo viola parts published separately. Watson Forbes’ edition highlighted this conception of the work with his comparison of it to the ‘Double’ violin concerto.

More contemporary discourses acknowledge the more significant role the cello provides in the ensemble. Boyd notes:

41. Marissen, 54. Also note that the Bärenreiter reprint of the New Bach Edition has the gamba parts in alto clefs, rather than the tenor clefs noted in the composer’s presentation score.

42. Dreyfus, 151.

It is no doubt the scoring of the opening ritornello that has led to the common misconception that the solo group in this concerto is formed by two violas.... It becomes apparent as the first movement unfolds, and even more apparent in the ritornello structure of the last movement, that Bach treats the two violas and the cello as the solo group.\[44\]

He further notes Arthur Hutchings’ designation of the first, third and sixth concertos as being ‘ripieno’ concertos. Zukerman, Benyamini, and Metha certainly took to this view of the work, with viola sections doubling the soloists during \textit{tutti} sections.\[45\]

However, Boyd opines:

The term ‘ripieno concerto’ may with some justification be used for the Third Brandenburg Concerto, since each member of the ensemble (except for the continuo players) is both soloist and a member of the tutti \textit{(or ripieno)}; but the sixth concerto is a kind of hybrid, with clearly identified solo and tutti components (but with the solo instruments fulfilling a tutti role).\[46\]

Boyd’s view, then, is that the violas and cello take on solo roles, but are also called upon in a \textit{tutti} capacity. The nature of this hybrid is, however, far more intricate – with a complexity that emphasizes the value of the gambas. In a mirror effect of the ‘solo’ instruments in taking on \textit{tutti} roles, the gambas also emerge from the continuo texture at key moments, in Bach’s bold compositional take on genre. Let us examine this in detail.

The cello does indeed take on an important role in the first movement; it begins the five-part canonic/imitative section from the upbeat to bar 17 (and likewise from bar 56) and is exclusively connected to the solo violas at bars 29-31, 68-72, 80-83 and 110-114. However, the gambas are likewise aligned to the solo violas – and in exclusion of the cello – at bars 21-24, 36-39, 62-65, 95-100, and 107-109. It could, of course, be argued that these sections have the gambas in a less crucial role than those of the cello, and that they display less internal variety than the cello parts. Nonetheless, at the very least the gamba parts in these sections provide the recurring principal motif, and they certainly are not only active in the \textit{tutti or ripieno} sections – and they have moments of ‘exclusivity’ with the solo violas well before the cello does. Most importantly, they play an equal role in the five-part canonic sections. If we were to assign a hierarchy of

\[44\] Boyd, 91-92.

\[45\] \textit{The Huberman Festival}, Kultur Video, 2007.

\[46\] Ibid., 24-25.
soloists, one might place the gambas in this movement below the role of the cello, but they are nonetheless at a minimum as much associated to a concertino function as a continuo one.

The following chart examines the variations that occur throughout the first movement:

<table>
<thead>
<tr>
<th>Bars</th>
<th>Form</th>
<th>Notes</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1–16</td>
<td>Two-part canon</td>
<td>Tutti</td>
<td></td>
</tr>
<tr>
<td>17–20</td>
<td>Five-part canon</td>
<td>Tutti</td>
<td></td>
</tr>
<tr>
<td>21–24</td>
<td>Violas and gambas</td>
<td></td>
<td></td>
</tr>
<tr>
<td>25–28</td>
<td>Two-part canon</td>
<td>Tutti</td>
<td></td>
</tr>
<tr>
<td>29–31</td>
<td>Violas and cello</td>
<td></td>
<td></td>
</tr>
<tr>
<td>32–35</td>
<td>Five-part canon</td>
<td>Tutti</td>
<td></td>
</tr>
<tr>
<td>36–39</td>
<td>Violas and gambas</td>
<td></td>
<td></td>
</tr>
<tr>
<td>40–45</td>
<td>Solo viola</td>
<td>Tutti</td>
<td></td>
</tr>
<tr>
<td>46–52</td>
<td>Two-part canon</td>
<td>Tutti</td>
<td></td>
</tr>
<tr>
<td>53–56</td>
<td>Solo viola</td>
<td>Tutti</td>
<td>All other instruments, including Viola II, are in a supporting role.</td>
</tr>
<tr>
<td>57–61</td>
<td>Five-part canon</td>
<td>Tutti</td>
<td></td>
</tr>
<tr>
<td>62–64</td>
<td>Violas and gambas</td>
<td></td>
<td></td>
</tr>
<tr>
<td>65–72</td>
<td>Violas and cello</td>
<td></td>
<td>Three-part canon. Gambas and continuo only up to bar 67; cello takes over gambas' previous figure from bar 70.</td>
</tr>
<tr>
<td>73–79</td>
<td>Two-part canon</td>
<td>Tutti</td>
<td></td>
</tr>
<tr>
<td>80–83</td>
<td>Violas and cello</td>
<td></td>
<td>Cello plays both a solo and supporting role</td>
</tr>
<tr>
<td>84–85</td>
<td>Solo viola</td>
<td></td>
<td>Where it may have been predictable for it to be the turn of Viola II, Viola I instead reprises the solo role</td>
</tr>
<tr>
<td>86–95</td>
<td>Two-part canon</td>
<td></td>
<td>Gambas parallel to the violas, cello has a combination of passage-work and supporting material</td>
</tr>
<tr>
<td>96–102</td>
<td>Violas and gambas</td>
<td></td>
<td>In the final two measures, virtuosity displayed in Gamba I part. Gamba II independently takes on a continuo role. As this section transitions to the next, the canonic viola parts are continued in the gambas, creating a momentary four-part canon.</td>
</tr>
<tr>
<td>102–106</td>
<td>Five-part canon</td>
<td>Tutti</td>
<td></td>
</tr>
<tr>
<td>107–110</td>
<td>Violas and gambas</td>
<td></td>
<td></td>
</tr>
<tr>
<td>110–115</td>
<td>Violas and cello</td>
<td></td>
<td></td>
</tr>
<tr>
<td>115–130</td>
<td>Two-part canon</td>
<td><em>Tutti</em></td>
<td></td>
</tr>
</tbody>
</table>

*Note that some sections may begin with an upbeat from the previous bar e.g. the first five-part canon that begins with an upbeat in bar 16. Some sections begin mid-bar, e.g. bar 115, which has violas and cello in the first two beats, and the two-part canon from the third beat.

Table 1: Variations in the first movement of Bach’s Brandenburg Concerto No. 6

This is not simply a compositional ride through just about every possible instrumental combination available. Marissen goes a step further in highlighting the unexpected nature of the appearance of the first five-part canon, noting that “the tonic cadence does not mark the entrance of a soloist of subgroup, for the entire ensemble keeps playing”.47 He goes further to state, “the absence of strong textural contrasts between orchestral ritornellos and soloistic episodes might suggest... even that the piece is not really a concerto at all.”48

What we have then, is a clear example of generic mixing – a cornucopia of allusions to other genres, to the point of redefining the concerto grosso. Gregory Butler’s analysis of the first movement of the fourth Brandenburg Concerto parallels the patterns observed in the sixth. He notes that in the fourth, “in Bach’s original scoring, *flauti* I and II function as concertino parts, no matter how brief their statements”49 – in similar fashion, we observe the allusions to a solo concerto, the brief appearance of a four-part canon, and in the second movement, the unusual appearance of the head motive in the continuo, doubling the cello, at bars 40-45. It is only the third movement that unfolds in a more predictable format of a clearly demarcated concertino of two violas and cello.

Articulation markings in the autograph have certain patterns that seem to correlate with the idea of generic mixing in the first movement of the sixth concerto. A detailed look at Bach’s autograph manuscript indicates that what may initially seem to be incongruences in the use of articulation markings could be seen as a support structure to generic mixing. Take for example the appearance of the solo viola:

47. Marissen, 36.
48. Ibid., 52.
49. Butler, 16.
The expectation, then, in the complex arena of ‘missing’ slurs, is that the same figure earlier in the work should be revised to have articulation likewise aligned. However, the form of the five-part canon provides for distinctly contrasting articulation due to parallels elsewhere in the score:

While the factor of articulation markings by itself may not be conclusive in confirming generic mixing, it does lend some weight to the argument. This is especially so, considering the parallels to Butler’s analysis of Concerto No. 4.
Thus, what we have here is first discerning the intent of Bach’s unusual instrumentation, and the relevance of the designation of ‘plusieurs instruments’. Next, the use of generic mixing – evident in the scoring, and confirmed by an analysis of articulation markings. The conclusion of this is that while timbres may be flexible in some works of Bach, the specific range of tonal colours in this work is an essential element in illustrating the systematic variation in the composition.

In modern-day ensembles, this requires a re-evaluation of current substitutions, and the development of a new solution. The use of scordatura violas can provide a new option that alters the timbre to sufficiently fulfil the textural requirements of the score.

Early editions, such as that of William Rust, which led to the Bach-Gesellschaft edition, seemed to aim for some sort of congruency between the two solo violas, in reading the score on a purely ‘horizontal’ manner. Note in the excerpt below that there is some aversion to detached notes: slurs are assumed to be missing, or assumed to cover three notes.

![Figure 3.3. Bach-Gesellschaft edition, ed. Rust, viola parts, first movement, bars 4-5](image)

This did not take into account that on a ‘vertical’ level there is a necessary contrast that emphasizes the evolving allusions of genre. The intentionally detached notes in the following excerpt contribute to the application of the hint of a ‘double concerto’, and emphasizing the two-part canon.

![Figure 3.4. Autograph manuscript, viola parts, first movement, bars 1-5](image)
The preservation of these contrasts is a major aspect of the production of the new edition, parallel to the intent of providing a new substitution solution to the violas da gamba.

On a final note on genre, it is worthwhile to view Pickett’s interpretation of the concerto as having the allegoric representation of the ‘Meeting of the Three Quick and the Three Dead’. In this comparison, the violas and cello portray three young Princes, while the gambas and violone play the role of three ‘death figures’ or ‘cadavers’, who “warn the Princes to repent, for wealth and beauty vanish – all must eventually succumb to death”.\(^{50}\) One would venture that Pickett’s description is based at least in part to the timbral contrasts between the instruments, and the specific tonal colour of the violas da gamba. While Pickett’s conclusions do seem subjective at best and possibly speculative, it is important to note that he did specify it as “a new interpretation”. Thus it is more pertinent to consider this as a possible way in which listeners of the day heard the work rather than Bach’s compositional intent. It nonetheless highlights the value of appreciating the timbral differences in order to provide that effect to listeners. In turn, this highlights the importance of the substitution.

C. Current Substitutions

Boyd notes that it was Max Reger’s piano duet transcriptions that made the Brandenburg Concertos accessible to the general public, but that it was the ascent of the gramophone record that brought the music into the concert sphere.\(^{51}\) He also notes the use of cellos as substitutions for the gambas in the earliest recording by the Busch Chamber Players, directed by Adolf Busch. Dorottya Fabian’s extensive review of recordings of Bach’s works from 1945-1975 notes that the first use of gambas was in 1953, some 18 years after Busch’s recording.\(^{52}\) Fabian notes that of the options faced by ensembles in instrumentation, most recordings during this period applied a mix of modern and period instrumentation, and that the cello was the common substitution for the gambas.\(^{53}\) This substitution may have simply been the result of the distribution of

\(^{50}\) Pickett, ibid.

\(^{51}\) Boyd, 21-22.


\(^{53}\) Ibid., 68.
the resources of orchestras, though the cause was more likely the complication of bar 95 in the first movement, which reaches two tones below that of the viola’s tessitura.

It is of particular interest to note that recordings in Fabian’s study demonstrated some inconsistency in the use of period instruments. Fabian notes:

It is puzzling why particular performers opted to employ recorders in the flauto dolce parts of Concerto No. 4 while assigning the flauto part of Concerto No. 2 to a flute.... Perhaps a fear of loss of balance among the solo instruments, especially in relation to the oboe and trumpet, deterred some modern performers from using the soft timbre of the recorder in Concerto No. 2.54

Fabian leaves open the question of why cellos as well were used as substitutions for gambas, mentioning that of two possibilities of maintaining balance and availability of players, the latter issue was unlikely in the context of the period.

Therein lies the issue that even when gambas are available, Bach’s original scoring provided for contrast between baroque violas and cello with that of gambas – not a contrast between modern violas and cello, where the gambas would have the same issues of balance as the use of recorders in Concerto No. 2.

One might place the value of a substitution with the use of cellos over that of violas within the historical context of cellos being part of the new violin family. The old violin family included that of the violone and the gamba, and the new family includes the cello, which due to range eventually took over the role of the gamba. Boyd describes this as follows: “(Bach) places the member of the new violin family in the foreground, those of the older viol family in the background, almost as if he intended an allegory on the changes taking place at the time.”

The issue of tessitura is certainly the most relevant, as mentioned earlier, with substitutions of violas having to jump up an octave at bar 95. However, an issue affecting timbre occurs when the substituting instruments play at a much higher range than the solo cello, and at a range that could arguably be seen as awkwardly sitting on the instrument, exploring only its upper range.

Support for viola substitutions, despite having to compromise for range, come from the primary position that it is more viable texturally to have violas within the ensemble. However, beyond all these issues is that of contrast, and having substituting instruments – whether violas or cellos – already present as a solo instrument.

There is also the prospect that while the gambas should have enough contrast with the violas, their place in Brandenburg 6 is more closely aligned timbrally with the

54. Ibid., 69.
violas than with the cello. While this may be a subjective assessment, consider this: the instances of the solo viola within the generic mixing assign all other instruments to a chordal accompaniment; however, in the bridging areas, we note a connection of Viola II with the gambas, while the cello and continuo maintain their quaver pulse:

![Sheet music image](image)

Figure 3.5. First movement, bars 40-43. Instrumentation: Viola I, Viola II, Viola da Gamba I, Viola da Gamba II, Cello, Cembalo

This is coupled with the possibility of an original draft for four violas, as mentioned earlier in this discussion.

**D. The Scordatura Substitution**

A new substitution of the gamba would then be effective if it provided a timbre that is appropriately differentiated from both the solo cello and solo violas, with the secondary ability of preserving the tessitura. These aims can be largely achieved with the use of scordatura for violas.

The scordatura alters the tuning of the lower two strings of the violas down a tone, and the upper two strings a third below. The result is having a tuning of a fifth, a fourth, and a fifth – intervallically similar to tunings in fiddling, and that of Carnatic Indian music:
I. Resonance within the viola: calibration to the instrument’s resonant frequencies

This project contributes in two distinct ways. The first is in using scordatura to resolve the issue of balance and instrumentation in the Brandenburg Concerto in modern-day performances – an issue that has remained unresolved for the greater part of a century. The second is presenting a scordatura in a way that has not been previously attempted: one that is calibrated to the resonant frequencies of the instrument. Thus, this research contributes both to providing a new solution to a problem in performance, as well as providing a new use of the scordatura technique that has the potential to be used elsewhere.

The determination of those resonant frequencies – to which the lower two strings are adjusted, and to which the upper strings further emphasize – has been discussed in the Literature Review; here we have a further look at the specific relevance for violists and makers of the instrument. We look at the following questions:

1. What is the nature of the resonant frequency or frequencies of an instrument?
2. Is there a consistent resonance among violas?
3. What is the effect of emphasizing those frequencies?

This will be crucial in understanding the parameters in which the scordatura may be effective on instruments, and in so doing, the applicability of the edition.

The pre-eminent violist Kim Kashkashian addressed the characterization of the viola as a “sad” instrument, not dissimilar to the view of the Brandenburg Concerto as having allusions to death: “‘Sad?’ she retorts. ‘An instrument can’t be sad. An instrument can become anything, depending on the hands and the imagination of the person who’s
However, she does offer an explanation to what she views as a misconception of the instrument:

The viola is still in a state of flux, of experimentation; every few years somebody comes up with a new, differently shaped viola. But one thing they have in common is that the string length and the pitch aren’t exactly right for each other. The viola is tuned a fifth lower than the violin but is only a few inches longer. Ideally, the viola should have a longer string, acoustically speaking, but then you couldn’t play it. This discrepancy gives it that particular kind of tone quality that we might characterize as human, perhaps because it’s less reliable.

The selection of the B flat–F–B flat–F tuning was extrapolated from that of Donald Maurice’s recommended scordatura for Bach’s Cello Suite No. 5. While in that work the function of the scordatura is to allow for better voicing across strings, the principal effect in the Brandenburg is a contrast in timbre, allowing for the compositional intent of contrast evident within the instrumentation and analysis of generic mixing. This is achieved not only with a lowering of tension – were this the only requirement, multiple options would be equally feasible – but an increase in resonance, both within the instrument, and within the compositional context.

As we have just noted, Kashkashian brings up these particular issues: the nature of acoustics within the viola due to size and tuning, the ideal string length and the experimentation of instrument making, and its effect on a characterization of its sound.

On the subject of acoustics, Fletcher and Rossing provide the technical details of this incongruence with the violin:

Its dimensions are only about 15% greater than those of the violin, and the principal resonances lie from 20 to 40% below those of the violin. The air resonance and main body resonance tend to lie between the open string frequencies instead of on them, as in the violin. Thus, the viola is not a scaled-up violin; it is a distinctly different instrument.

This makes us revisit Kashkashian’s view that acoustically the viola’s string length should be longer – she seems to have two almost contrasting views: on a negative note that the construction of the viola would be best if scaled to the violin ("acoustically speaking"); however, on a positive one, this unique property has defined the “human” quality of the instrument.

56. Ibid.
58. Fletcher and Rossing, 318.
A similar observation goes back over a century, with Arthur T. Froggatt writing in 1910: “It seems to be forgotten by many that the very defect of the viola has come to be its chief virtue; and that to the fact that its strings are too heavy for the size of the body, its rich and sombre tone-colour is chiefly owing.”

Fletcher and Rossing also note that the cello is more closely related to the violin acoustically, with a principal resonance close to its second string – this is particularly relevant in ruling out a similar scordatura on the cello as an instrument of substitution, not to mention the fact that such an approach would require the cellos to play even further up on the instrument to that of current substitutions, without the advantage of the use of open strings.

Kashkashian’s side mention of experimentation in the making of violas – far more so than with violins – relates directly to the use of resonant frequencies. The approaches are multiform, each with a differing intent in redesigning the instrument. Franz Zeyringer’s early study of viola sizes in 1979/1980 was geared towards proposing size calculations that would produce the largest amount of sound within a reasonably sized instrument. Zeyringer, perhaps echoing the experimental nature of viola making, seems to have a flexible approach towards whether the resonant frequencies are altered. On one hand, he notes that with Hermann Ritter’s ‘viola alta’ model, “He did not take into consideration that violas which are too large approach in sound the baritone quality of the cello, which should be avoided.” Additionally, he states:

Let us now consider the problem purely from the aspect of sound, and let us determine whether it is practical to consider the viola, with respect to sound, as a larger violin. In no way does this prove right. The viola tone is so characteristic that it cannot be confused with the violin tone.”

On the other hand, Zeyringer notes that a Schembera viola has a high arching – and therefore a greater volume of air within the instrument, and a lower resonant frequency, but he did not consider this in the same negative light as the

61. Ibid., 22.
62. Ibid., 26.
'baritone' effect of the Ritter model. In contrast, this effect was described amiably as having "an especially mild, dark tone."\(^{63}\)

What we might venture from this apparent contradiction is that at the time when Zeyringer wrote the article, there was a range of experimentation whereby the primary goal was projection. The side effect of timbre as a result of altering resonant frequencies would be considered welcome as long as it remained within a limited range.

Over three decades later, we can note that many of these views remain active today. Selected luthiers in this study provide a look into the continuing development of violas, and in so doing, we also note a variety of new instrument designs, while also discussing more standard instruments from which they diverge. Melbourne-based luthier John Ferwerda’s interview was conducted alongside Andrew Metaxas, acting Principal Viola at the Melbourne Royal Philharmonic Orchestra and an associate in Ferwerda’s instrument-making workshop. David Rivinus is one of the world’s most experimental luthiers, and combines the science of acoustics with that of instrument-making with designs that readjust the discrepancy between resonances and the range of the instrument.

Ferwerda takes note of Maurice Riley’s observations of the varieties of sizes of instruments in the time of Amati and Stradivarius. Rather than limiting his craft to adopting the patterns of current violas, he notes that the nature of the tenor voice of the viola has a range, and that it may be useful to experiment with aiming for a lower, deeper tenor voice.

To get that sound between the violin and cello is problematic because the cello is large and the viola being a fifth lower... as a maker I always believe in trying to match [the] violin and cello, and halve it.

The ribs play a big role. The standard size of the ribs in Germany is 38mm. It’s a middle-of-the-range size; because it’s 38mm, the volume inside is not quite big enough. If you make 39-40mm, you have a larger volume inside, and you may have a slightly deeper sound in the instrument.\(^{64}\)

His approach then, rather than purely noting the discrepancy with the violin, is instead to note where the instrument lies between its upper and lower cousins.

In modelling after a 17¼-inch instrument of Carlo Bisiach, Ferwerda notes that the primary feature of its darker timbre is the increase of the rib height, from the

\(^{63}\) Ibid.

\(^{64}\) John Ferwerda, interview by author, Melbourne, Australia: March 17, 2012.
standard 38mm to 40mm. Ferwerda graciously permitted practical experimentation with the Bisiach, showing a remarkable resonance in the range of A flat to A.

This matches the observations of Metaxas who notes a stark separation between perceptions of tap tones (being determined in free plate status) versus the primary resonance being tied to the volume of air within the instrument. Metaxas notes that violas with larger volumes of air range from having a primary resonance A flat or A, to smaller instruments which have these up to middle C – though the majority of violas have a resonant frequency of B flat or B natural. All of these still fit Fletcher and Rossing’s general description of resonances between strings, and this range explains why literature in this area has been hesitant about placing precise Hertz measurements to these resonant frequencies, instead placing them visually in the middle of the D and G strings.

Essentially, Rivinus’ self-described “radical” Pellegrina model, which is the cornerstone of Rivinus’ work, does not seek to simply improve upon current models, but rather completely redesign the instrument, placing ergonomics and sound production at the forefront. In this process, the luthier addresses the part of Kashkashian’s comments that deal with string length, “acoustically speaking”, with the unique design extending the length of the strings. In doing so, Rivinus considers the typical resonant frequencies of violas as a movable aspect of construction.

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65. Ibid.

66 Meaning, the resonance of the upper and lower plates of the instrument, prior to being assembled with the ribs and neck.

67. Ibid.

These various approaches indicate that the aims of instrument-makers are multiform. Rivinus seeks to redesign the instrument for string length and projection with the resonant frequencies as a flexible element. Ferwerda’s designs are aimed at intentionally lowering the usual resonant frequency of the instrument for a darker timbre. Zeyringer seems flexible to the idea of darkening its tone, while establishing boundaries in the case of the Ritter *viola alta* to what he considers a characteristic sense of the instrument.

A crucial point, however, is that Rivinus confirms that for standard designs of the viola, the resonant frequencies are indeed at approximately B flat and F – confirming the potential of a scordatura calibrated to these frequencies, at least for most instruments.

It is at this point that we might address the second of these resonant frequencies – that of the F – that may seem out of place in the context of the discussion to this point. It is also useful to note why Metaxas refers to a certain range of resonance, particularly why most violas have a principal resonance of B flat to B. In relation to common sizes, he notes:

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70. David Rivinus, interview with author, XXXIX International Viola Congress, Würzburg, Germany, October 14, 2011.
It seems to me that fashions change, and so in the late 18th century smaller violas were more the norm than in the 17th century when bigger violas were the norm. And now in the 20th-21st centuries you’ll find the average size is 16 inches or so, give or take a quarter of an inch.\(^71\)

James Beaument describes the concept of a resonant frequency with this observation:

Everyone has heard of a singer shattering a glass with a note to which the glass naturally resonated; the circumstances must be most unusual, or trumpet players would cause a lot of damage. Everything in a room receives vibration at all the frequencies in every sound, and they will vibrate very very slightly at all of them, but when something is vibrated at a frequency of one of its resonances, it vibrates much more.\(^72\)

Beaument notes that in general objects demonstrate one of two kinds of resonances: sharp and broad resonances. Objects with sharp resonances resonate considerably only within the range of a fraction of a semitone above and below the resonant frequency, while objects with broad resonances have a range of a few semitones.\(^73\) Beaumont further notes that the air resonance is of the category of broad resonances,\(^74\) which explains the range in audibly detectable resonances to which Metaxas referred, as well as those noted in the Bisiach. As for the second resonance, it is in reference to the wood resonance of the plates; this seems to be somewhat downplayed in both the literature and in interviews in relation to the air resonance. One of the complexities leading to this is that the wood resonance is largely related to body length,\(^75\) which has more restrictions due to the factor of playability, whilst changing the volume of air has multiple contributing factors, including the arching and the height of the ribs\(^76\) or alternatively the experimentation of tapered ribs by Eugen Sprenger.\(^77\)

In conclusion, there are certainly a variety of violas, and Kashkashian was quite right in not only commenting on the span of instruments, but in saying, “We no longer even agree that there’s such a thing as a particular viola sound.”\(^78\) With that caveat, we

\(^{71}\) Andrew Metaxas, interview with author, Melbourne, Australia: March 17, 2012.

\(^{72}\) Beaument, 72.

\(^{73}\) Ibid.

\(^{74}\) Ibid., 84.

\(^{75}\) Beaument, 85.

\(^{76}\) Metaxas, ibid.

\(^{77}\) Zeyringer, 21.
nonetheless can state with reasonable boundaries that the majority of violas, particularly those around 16-inches and with rib heights of 38mm, would have resonant frequencies that allow for the acoustical emphasis within the scordatura substitution in the new Comus edition.

II. Compositional Context

Within the context of the key, two major benefits of the scordatura are the availability of open strings and the available sympathetic resonances. The latter is the result of having the top two strings an octave above the lower two strings.

There is a helpful connection between the resonant frequencies of most violas with the key of B flat major in which the Brandenburg was composed. The available open strings then allow for particular use of tonic and dominant harmonies, with the section of most interest being the unusual momentary parting of the ways between the two gamba parts in bars 101-2 in the first movement:

![Sheet Music](image)

Figure 3.8. First movement, bars 101-2. (Instrumentation: Viola I, Viola II, Viola da Gamba I, Viola da Gamba II, Cello, Cembalo.)

This moment for the first gamba – remarkably distinct to any other section in the movement, and a stand-alone section – allows not only the use of three open strings, but also the additional benefit of sympathetic resonances. This is particularly apt, considering the structure of viola da gamba technique includes this. Wellington-based

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78. Eisler, interview.
gambist Robert Oliver notes a similar sound within the gambas: “If you play a B flat... on the viol, you also automatically finger the B flat major chord as well because it falls very easily under the fingers.” He further notes that the frets “give a kind of open string tone to every note and so you can hold a B flat down and bow it, and then your bow leaves it and bows something else but that B flat can go on sounding.”

Oliver was the specialist adviser in the field test stage of this project in late 2010, and in the recorded interview involving Donald Maurice and myself that was eventually broadcast by the American Viola Society, he notes the specific nature of the gambas:

RO: And that’s why I was thinking for those chords, you want to go for resonance rather than accents – use as little vibrato as possible and so on and so forth so that the actual resonance of the chord is what you hear. And that’s what I think is the contribution of the viols.

AF: And considering that the viola or the cello would be a C major instrument typically, the open strings wouldn’t help you in this sort of work, whereas with the substitution with... the two B flat strings and two F strings at least for some of the time you would have a little bit more of the resonances for the chords which are important.

RO: Yes.

There are convergences that only allow for speculation. The first is that of the unusual choice of key; one featuring violas would more predictably have been in the key of an open string, considering the violin concertos and the majority of the unaccompanied works for violin and cello. It would be overly convenient to consider that Bach had in mind a key in which the viola resonated best, taking into consideration the range of instrument sizes and designs of the era, many of which are no longer in use – not to mention that today’s B flat-B range of resonance would have been rather higher (though we could take note once again of Metaxas’ observation that the instruments were also larger at the time) and also likely less consistent.

A second unusual factor is the principal resonance of the viola da gamba. Literature on the subject is even scarcer than that on the viola, Fletcher and Rossing saying “Acoustical research on bowed string instruments has traditionally been concentrated on the violin... one must search diligently to find 1 or 2% as much published material on their (violas’ and cellos’) acoustical behaviour.” Nonetheless,

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80. Fletcher and Rossing, 318.
Andrew Brown notes that in his case study of a gamba, the principal air mode as well as that of the upper plate appeared at 115Hz, which is approximately an octave below that of the B flat evident in the viola. Once again, considering the unusual range used within the Brandenburg Concerto it is difficult to come to any conclusions as to whether this played a role – or even if these principal resonances were in the instruments of Bach’s day. However, were the alto viola da gamba used instead of a more typical bass viol, it is interesting to additionally note the availability then of an open B flat string.

While these are indeterminate factors, practical exploration in the edition has proved to have significant results. Oliver’s assessment of the result clarified that the fundamental goal should be the larger picture of the textural requirements of Bach’s work. Rather than determining the extent to which it might mimic the viola da gamba, Oliver notes that the significance of the new substitution is to affect the overall texture:

RO: The retuned viola doesn’t sound like a gamba, not that it should necessarily try. The aim is to produce something of artistic beauty rather than something which is a replication of something else.

AF: It’s less about how closely the sound approximates the timbre of the viola da gamba, but how much it fills the same role that the viola gamba is meant to play in this...

RO: I agree totally; there is no point in trying to, as it were, imitate, but you can take your cue from it, and that’s what I think you have been doing. And to me what it does is that it just lightens the texture enormously... with three cellos and double bass you really have to work quite hard against the nature of the instrument in a way that I think is easier for the viola, perhaps, to achieve this sort of result.

Donald Maurice: It’s been very interesting to me... in the first movement, when you are doing (this) with cellos, the violas are trying to compete with the cellos, whereas in this version you’re playing down to accommodate the softer sound of the retuned violas. So it’s quite a different thing for the solo violas.

AF: And I imagine that that’s what would happen as when gambas would be...

RO: Yes, yes. Because a baroque cello or a baroque viola always outspeaks, or can outspeak, a viola da gamba.

The new tessitura preserves all but one pitch (a lower neighbour tone adjusted to an upper neighbour tone in bar 96), most significantly preserving descending scales that would otherwise be moved up an octave at some point in a regular viola substitution:


83. Ibid.
On a broader front, it also explores new ways of approaching notation for scordatura, which will be discussed in the associated chapter.

### III. Results from Field Tests

The scordatura substitution had an overall positive effect in the field test stage, and the different performance situations allowed for the assessment of practical aspects of the research.

The first performance had the optimal conditions, with extensive rehearsals, and the specialist input and feedback from viola da gamba specialist Robert Oliver. To emphasize the circular nature of the five-part quasi-canonic sections that the new arrangement assists, the performance was held ‘in the round’, with the harpsichord in the centre. To further emphasize these areas – which only exist in the first movement – the following arrangement was made:

![Figure 3.9. First movement, bars 33-36](image-url)
After the first movement, the Scordatura Viola I and Viola II players changed places with each other. This is as the second movement has the gamba scoring *tacet*, while in the third movement the gambas play more a sectional role than in the first.

Both violas playing scordatura roles being of typical 16” designs had identical resonant frequencies, and exhibited noticeable effects when retuned to these frequencies. We had the ability to tune all instruments relative to $A = 437\text{ Hz}$, precisely matching these resonant frequencies. Vyvyan Yendoll, who led the New Zealand Symphony Orchestra viola section for more than four decades, considered the research “profound”, and effective. Oliver provided the following feedback during the interview:

> It’s simply that he wants a consort sound which is going to sound good. And here, having the bass viols in there just lightens that texture... The other instruments have got to make way for them a little bit. The viol has always been a softer instrument than the violin family, the bass viol is softer than the cello and so on and so forth. A certain level of balance is imposed on the viols whereas when we have four cellos everybody can 'let rip' – it just encourages the wrong kind of approach; I think with baroque cellos it would be the case. So I think your idea of having violas there and retuned violas actually does fulfill that obligation; I think it’s a very creative idea.\(^{84}\)

The following two performances, which involved different players for the scordatura viola parts, confirmed that resonant frequencies are fairly consistent for instruments sized 16”. However, the conditions of performance were quite different – the in-the-round format was not applicable, and the retuning of the harpsichords to

\(^{84}\) Ibid.
A=437 was impractical due to time constraints and the use of the harpsichord for other performances. These challenges provided an opportunity to test whether the arrangement had the flexibility to function without precise calibration.

The results remained positive, indicating that the lowered string tension and the sympathetic resonances were sufficient to provide timbral variety – though the open strings did have somewhat less of a ‘ring’ or ‘shine’, which will be discussed in more empirical terms shortly. With entirely different personnel, it was also noted during rehearsals directed by Maurice and myself that the violas and cello had to be accommodating in order for the effect of the scordatura parts to be effective, just as Oliver had advised in rehearsals. In the first performance, the researcher played the first viola part and was naturally inclined to ensure the research focus was evident to the listener; the later performances indicated that the new arrangement affects the entire approach, and may require some time for performers to adjust to the ‘new’ timbral balance – ironic terminology considering that it is in fact closer to the original, 18th-century timbral balance.

The FFT analysis confirmed the overall effects as producing a darker timbre, noting however, that overall the lowering of string tension decreased resonance as a result. It should be noted that this observation covered all notes both open and fingered, ultimately reminding us that sympathetic resonances and a calibration to an instrument’s resonant frequencies only affects the open strings. The remaining effects on fingered pitches primarily deal with string tension instead. It can be argued that lowered resonance of fingered notes contributes to that lighter texture and the accommodation required of the rest of the ensemble. This would certainly be logical and consistent with the problems of a regular substitution involving cellos – the requirement of playing higher in the range of the cello would also mean playing in higher positions, thus lowering vibrating string length and heightening overall string tension that would contribute to creating a heavier overall balance of the ensemble.

The FFT analysis provided one additional important piece of information: spikes in the graph when open strings were used. These were in a brighter timbre and provided a noticeable contrast with the surrounding notes, which as noted earlier, occurred at areas which were harmonically helpful in the key of the Brandenburg Concerto. What this suggests is that acoustically speaking, there is a particular emphasis in the scordatura when these spikes occur i.e. where the open strings are located, matching once again the value of having additional resonance at harmonically
appropriate areas. This suggests that the importance of the substitution in attempting to fill the role of the gambas is not only in overall texture or timbre, but also of individual nature of the instrument, in layman’s language: to ring more, at the right places.

IV. Concluding Comments

In the Methodology chapter, it was stated that the purpose of field tests was to see whether a scordatura would work when the viola is placed back in a full instrumental context. The interesting effect of the Brandenburg Concerto project is that it not only showed the appropriate contrast to other instruments, but also that the significance in preserving the role of the gamba is the effect it creates to the ensemble and interpretation as a whole. In other words, the gamba parts are not at all simply a passive element in the Concerto, emphasizing the importance to an adequate substitution in modern performances.

Earlier in this discussion, we included two perspectives on Bach: Butler’s views on generic mixing, and Pickett’s suggested symbolism. There is a significant difference between these two approaches: Pickett’s is of an extrapolative nature, and one of many interpretations, all valid in their own right. In contrast, generic mixing is based on analysis and can provide a new light on crucial patterns and connections that are within the score itself. Performances that ignore generic mixing in situations like this may be aesthetically pleasing to particular audiences, but they arguably contain less information than what the composer put forward in the score. The essential contribution of the scordatura substitutions then is the effort to inflect an overall balance in the ensemble that reveals to the listener the full web of Bach’s intricate compositional design, from five-part canons to a fleeting moment of a solo concerto.

In conclusion to this chapter is the edition of the Brandenburg Concerto No. 6, published by Comus in 2011. It is located in the back cover pocket, and listed as Appendix E. Audio samples of the viola substitution (viola da gamba I part, movement I, bars 101-2 and 103-4) in both conventional and scordatura tunings are available in Appendix D, tracks 7-8. These were recorded for use in the FFT analysis. See page 351 for full listing of audio tracks.
Chapter 4

Scordatura for Voicing Across Strings:
J. S. Bach’s Suite No. 5 in C minor for solo cello, BWV 1011

I. Introduction: Historical Context

This chapter on the use of scordatura in Bach’s Cello Suite No. 5 incorporates a network of intersecting issues that eventually resulted in an edition for viola that applies an extended scordatura. These issues include:

- The decision to arrange the work for viola;
- The unique nature of the Cello Suite No. 5 out of the set of six, likely being an arrangement in itself from an earlier lute version;
- The concept of voicing across strings.

A central part of this discussion will be the connection between the Cello Suite No. 5 and the lute suite in g minor, BWV 995. Thus, in prefacing this discussion it is useful to examine Bach’s frequent borrowing of his own musical material. A look at his other major set of unaccompanied string works – the Sonatas and Partitas for solo violin, BWV 1001-1006 – will prove particularly relevant. As John Butt notes, the two sets are intrinsically connected:

The title-page of Bach’s autograph fair copy of the six Sonatas and Partitas for unaccompanied violin includes the words ‘Libro Primo’.... These words dearly imply that Bach intended to continue the series with a ‘Secondo libro’ of works for unaccompanied cello, as indeed he did.¹

With the earliest extant manuscripts by Johann Kellner dated 1726, there is some speculation as to when the cello suites were composed. There is a suggestion that the dates of composition of these two sets are also linked, Derek Katz noting, “It seems reasonable to assume that Bach composed the cello suites around 1720 in Cöthen, at

about the same time as the six sonatas and partitas for solo violin, but there is no hard evidence to support this.”

Of the six cello suites, only the Cello Suite No. 5 has a connection to another work of Bach. Material from the unaccompanied violin works, however, was used far more often:

- Fugue of BWV 1001: BWV 539 for organ;
- BWV 1003: BWV 964 for harpsichord;
- BWV 1005: BWV 968 for harpsichord;
- Prelude of BWV 1006: BWV 1006a for lute, harp or keyboard; and sinfonias of BWV 29 and BWV 120a.

The manner in which Bach constructs these other works becomes an important point of comparison with the Cello Suite No. 5, BWV 1011, insofar as addressing the importance of the lute suite, BWV 995. Bach has a considerable range of approaches across the aforementioned works. Some of these works show considerable effort in producing a work that is conscious of the individual characteristics of the new instrument; others seem to be a more direct appropriation of musical material.

As Richard Troeger notes in the notes to his recording of BWV 964, BWV 968 and BWV 1006a:

The Adagio in G represents a more radical approach to transcription, with wide bass intervals and broad-ranging arpeggio accompaniments that help to evoke on the keyboard a fullness of sound comparable to that of the violin in the original version.

The Partita in E Major, unlike the other transcriptions, retains the original tonality and is the most conservative of the arrangements; it may have been intended for either the lute or keyboard. The violin part, lowered by an octave, is often followed literally; at other times the implied bass and other parts are added. Where the original contrasts high and low registers of the instrument, the keyboard version often expands the range downward, to create similar contrasts in terms of the new medium.

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2. Derek Katz, programme notes to the recording by Helen Callus (Bach: Six Cello Suites, Analekta, 2011), 4.

3. Wolfgang Schneiderhan, Editor’s Notes, J. S. Bach, Sechs Sonaten Und Partiten für violine solo, (Munich, 1987: G. Henle). Note that the Henle edition notes BWV 946 instead of BWV 964, which is likely an editorial misprint.

As Troeger notes, Bach does make certain considerations of instrumentation – the works nonetheless retain a certain character associated to the original instrument; as Troeger notes of the Prelude to BWV 1006a: “A few chords in the first movement nominally exceed any normal hand span, but arpeggiating them in violin style solves the problem.”

The Adagio in G (BWV 968) is curious in that it ends on the dominant chord – this makes sense in the violin work as it progresses to the proceeding fugue, but less so considering that the keyboard work is a stand-alone movement. This may lend weight to the idea that the works may have been arranged by Bach’s student Johann Christoph Altnikol.

Bach maintained a solo instrument at the core of his reworking of musical material when expanding a work for a larger ensemble, and it is uncertain if this was simply for ease of production. In contrast, approaches by some modern composers take a different approach towards Bach’s polyphonic intricacies, such as that of Yuriy Leonovich’s expansion of the prelude of the Cello Suite No. 5 for cello or viola quartets, and Ichiro Nodaira’s ‘transformation’ of the Chaconne of the second violin partita, which tend to spread out the material evenly across four parts. These arrangements for four voices parallel certain aspects of the approach taken in this thesis, in viewing voicing across strings. However, it should be noted that there are various other arrangements that take other varied approaches, including various transcriptions of the Chaconne, including the solo piano arrangement by Busoni, and an arrangement for violin and piano by Mendelssohn. The two expansions (BWV 1006a) of the Prelude to the Partita in E major, BWV 1006 are interesting to consider as possibly successive arrangements, due to the minimalistic approach chosen. Likewise, the BWV 120a sinfonia only provides light additions in the viola and continuo, with the rest of the orchestra tacet, and the organ part independent of the score:

5. Ibid.

6. Ibid.

7. Yuriy Leonovich, 2007 and 2011, respectively. The cello quartet is available from the International Music Library Score Project: imslp.org; the viola transcription of this was sent by the composer via email, for the Viola Viva ensemble in Wellington, and was performed at the International Viola Conference in Sydney, 2012.

The larger expansion in BWV 29 on one level simply expands these existing chords and fills in gaps. However, it is interesting to note that while in BWV 120a the principal motif is only seen in the orchestral parts when it is played by the solo instrument, in BWV 29, it is reiterated when the solo instrument does not, as in bar 4:

From bar 130 to the end of the work, Bach also adds counter-melodic interest in the trumpets and violins, adding a slightly more complex textural level to the arrangement. Nonetheless, there is nothing to indicate that BWV 29 preceded the violin

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version. The original violin work provides a complete musical picture, in contrast to the Cello Suite No. 5, as we will note further in this discussion.

The fugue in the first movement of the Cello Suite No. 5 is the only such occurrence in the entire set of cello suites. As such, BWV 539 is particularly relevant to the Cello Suite No. 5 in that it deals with an expansion of a fugue. What is crucial to note is that while the organ version does display an expansion of the score, the fugue in the violin fugue is written as completely as is physically possible to execute, rather than the much scaled-down version of the Cello Suite No. 5 seen in the manuscripts of Anna Magdalena Bach and Johann Kellner.

For example, the following is a look at the opening bars of both versions:

![Figure 4.3. BWV 539: Fugue, bars 61-67 (for organ)](image1)

![Figure 4.4. BWV 1001: Fugue, bars 1-8 (for unaccompanied violin)](image2)

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12. J. S. Bach, autograph manuscript. Note: excerpt begins in the second half of bar 59.
Only after four complete fugal entries, with triple stops, does the violin not extend to a further entry (in bar 5) – instead taking a different route in the expansion of the following episode.

This suggests two possible implications: that Bach simply used the same core material to compose two different pieces (a more complex application of borrowing, or to use the more technical term: parody), or that he worked out the fugues to be idiomatic for each instrument. As Alfred Mann noted:

It is evident that the creative process does not cease when Bach begins to “copy” – this is, when he turns to an old score in order to modify it for a new purpose. Transcription leads to revision and revision to the expression of totally new ideas. It is composition in the original meaning of the word: Bach produces new works, as did the medieval masters of the parody mass. What guided him in the process must have a keen awareness of parts of his past œuvre – what in particular he remembered and what, to his mind, held special promise for further elaboration. The composer’s memory of his own works extends from the obvious to the remote – and practical necessity merges with critical choice, “borrowing” with abiding inspiration.13

Regardless of which of these pathways Bach followed, the point remains that the fugal structure was maximized for the violin. This stands in stark contrast to the relationship between the lute suite, BWV 995 and the cello manuscript, BWV 1011 (our work under study):

Figure 4.5. J. S. Bach lute manuscript, BWV 995, Prelude: bars 26-41

Here the entire fugue – the only fugue in all six cello suites – is implied, unlike every instance of a fugue in the solo violin works. As early as the second fugal entry in bar 36, even double stops are not applied in sustaining an increasingly layered texture.

One might argue that a contributing factor would be differences in what would have been considered idiomatic writing for the violin versus that of the cello for the period. In this context one considers the level of complexity of Gavotte I of the sixth cello suite in suggesting that in contrast to this, the Cello Suite No. 5 has indications of an over-simplified condensation.

Furthermore, the choice of the form of a suite over that of the sonata would have allowed the composer the freedom to work without a fugal movement, as he did with the other five suites. Butt notes:

As a compositional model for the unaccompanied solo works, the suite must have seemed fundamentally more suitable than the sonata, since the sonata tradition demanded at least one fugal movement. For three of his works for solo violin, Bach nonetheless ventured into the field of the sonata, with fugal second movements that exploit the violin's capacity for polyphonic effects.\textsuperscript{14}

Considering the unique place of the Cello Suite No. 5’s fugue within the overall set, one can come to two possible conclusions. The first is that Bach intended the singularity of this movement to match a likewise unique compositional approach: composing a fugue that only exists in the form of implied polyphony. David Ledbetter is of this belief:

The fugue is an even greater tour de force than the violin fugues in being essentially a single line throughout. Within this constraint Bach manages to give the impression of a four-voice exposition. He does this by the ingenious way in which he has devised his subject, by placing of entries, and by their type. As Casals pointed out, the subject in itself

\textsuperscript{14} Butt, 127.
gives the effect of having two voices, the first consisting of the first two notes, the second by the next three, and so on.15

While it is conceivable that this is a new approach of Bach towards fugal writing, the absent counterpoint in the Gigue does not seem to have a similar discernable compositional intent.16 An opposing viewpoint can be seen in Butt’s description of Bach’s approach in the violin works:

Although these fugues include longer episodes in which performer and listener can recover from the rigours of the polyphonic writing, these episodes certainly do not overshadow the fugal sections. On the contrary, the composer seems determined to prove that a violin fugue is not necessarily inferior to a fugue written for an ensemble. A glance at the structure of the fugue from the C major Sonata BWV 1005, for example, reveals the extent to which the whole weight of the composition rests on its elaborately developed fugal structure, with a ratio between the fugal and non-fugal sections of around five to two.17

In this context, one could ask that if Bach’s intent was to demonstrate that a violin fugue is “not necessarily inferior” to that of an ensemble, would the same not apply to that of the cello? A reasonable counter-argument could be that the role of the cello in this period did not quite warrant the same treatment. Once again, this brings us to the question of whether what was idiomatic for the violin was idiomatic for the cello – considering that the role of the cello in his Brandenburg Concerto No. 6 can be seen as taking over from the soloistic position of the old violin family, it does not provide us any easy answers as to the lengths that Bach wished to go to in expanding the role of the cello. To complicate matters further, we will note in further detail later in this discussion the theory of the viola da spalla being a possible instrument for these suites, which would eliminate the question of the technical expectations of cellists in this period. All we can note for certain is that the approach to the cello does not seem to parallel his compositional style in the violin works. Whether this has implications for the instrument or the preparation of the manuscript remains an elusive issue.

The other possible conclusion is that the unusual condensation was a result of A. M. Bach’s role in preparing the manuscript. Marvin Jarvis’ controversial findings in regards to A. M. Bach’s role in the production of the cello suites intersect this aspect of

15. David Ledbetter, Unaccompanied Bach: Performing the Solo Works (Padstow, Cornwall: Yale University Press, 2009), 216. We will note here that Pablo Casals is credited with the promotion of the suites into the regular repertoire (regardless of the veracity of claims that he ‘rediscovered’ the suites).

16. This is the position of Malcolm Boyd, which will be seen in further detail further in this discussion, as a crucial aspect of the role of the lute suite.

17. Butt, 127.
the research. Jarvis proposes that rather than purely as a copyist, A. M. Bach “may well have been the ‘composer’ of the Suites or at least the composer/compiler of the Suites.”\(^\text{18}\) Jarvis notes the similarities in handwriting of J. S. Bach and A. M. Bach, and explains the context of the historical position of women in the 18\(^\text{th}\) century and the history of women composers who have ascribed their works under the name of associated male musicians. He also notes the discrepancies between the Kellner and A. M. Bach manuscripts, as well as between the A. M. Bach manuscript and the J. S. Bach manuscript of the unaccompanied violin works.\(^\text{19}\) He also points to the structural symmetry or uniformity of the suites, i.e. the choice of movements, as being atypical of Bach.\(^\text{20}\) While the idea that A. M. Bach may have chosen to put forward a work she composed under the name of her husband, it does seem less likely that J. S. Bach would then replicate the entire suite in the form of the lute suite under his name.

Jarvis does preface his research as being speculative,\(^\text{21}\) and has even said, “My conclusions may not be wholly accurate, but the way in which tradition has put A. M. Bach into this pathetic role... is rubbish.”\(^\text{22}\) Reception to his findings seem to be mixed, with Bach scholar Yo Tomita of Queen’s University in Belfast in support, while Stephen Rose of Royal Holloway, University of London as well as cellists Julian Lloyd Webber and Steven Isserlis remain sceptical.\(^\text{23}\)

Jarvis’ views and the perspective put forward in this thesis do clash in the role of A. M. Bach: Jarvis believes that A. M. Bach may have been the composer, while the analysis of the Cello Suite No. 5 in this thesis strongly reinforces the idea of A. M. Bach as a copyist. However, both perspectives do share something in common: A. M. Bach did have a strong influence on the form of the Cello Suite No. 5 with which we are now familiar. Even Jarvis notes that the A. M. Bach manuscript is not the original:


\(^\text{19}\) Ibid., 28-32.


\(^\text{21}\) Ibid., 28.

\(^\text{22}\) “Bach’s wife ‘may have been composer’”, \textit{ABC News}, http://www.abc.net.au/news/2008-10-04/bachs-wife-may-have-been-composer/531206 (accessed 11 August 2012).

It is also unlikely, given the missing note in the Gavotte of the Cello Suite No. 5, that A. M. Bach’s manuscript of the Six Cello Suites is the original manuscript of the works, making it most likely a copy of some other working manuscript. Notwithstanding that, there is evidence through the many corrections and adjustments in notation, to suggest that A. M. Bach’s manuscript is of a work still in progress.24

Owing to the level in which ‘corrections and adjustments’ generally indicate A. M. Bach’s involvement in the work, one might argue that that work in particular allows a greater licence for interpretation and reconstruction than would, for example, the unaccompanied violin works. It is uncertain whether the level of condensation and reduction in the Cello Suite No. 5 is from J. S. Bach’s instruction as Casals’ aforementioned viewpoint would suggest, or whether these are the result of independent actions by A. M. Bach.

In closing this introduction, two additional points need to be made; the first concerns the extent to which the lute version is amalgamated into the cello suite. One will note that in his discussion of Bach’s approach, Butt had the side mention that Bach included “longer episodes in which performer and listener can recover from the rigours of the polyphonic writing”.25 One will note in the excerpts from the Comus edition these episodes do extend the incorporation of Bach’s polyphony in the episodes. While this may differ from the approach taken in the violin works, the primary exemplar remains Bach’s own route in the lute suite. In addition to this, the purpose of the edition is to provide a maximum number of options to the performer rather than determining a single performance pathway – as will be discussed in further detail when dealing with the role of the edition, in the final section of this discussion.

The second, related point is that the appropriation of the suite for another instrument may have a historical connection that dates back further than one might presume. Russell Stinson suggests that the earliest source we have, that of Johann Kellner’s manuscript, already has suggestions of plans further use:

Kellner’s notation of these passages would seem to reveal that he did not copy out the Cello Suite No. 5 for it to be performed on a cello. If the work is played without the scordatura, certain alterations have to be made in the chordal writing that Kellner did not bother to incorporate into his copy.

24. Jarvis, Written by Mrs Bach, 252.

25. Butt, 127.
The natural conclusion is that Kellner copied the cello suites primarily to have a reference copy at his disposal. But the possibility that he also had keyboard transcription in mind should not be dismissed out of hand.²⁶

This study of Bach’s Cello Suite No. 5 can be seen to encompass various aspects of research. It is in one sense the re-evaluation of whether the suite as we know it accurately represents the musical intent of the composer. On another front, it is the extrapolation of the compositional intent of the scordatura. In either case, the approach taken here does have the aim of being rooted in a historical contextualisation. Even if one argues that the approach here constitutes a modern rather than historical approach, one thing is certain: the approach is at the very least in the spirit of specific musical appropriation that has existed just as long as have the very works we address.

II. The Extended Scordatura

A. Aims of the approach: scordatura, voicing, and the alternative progeny hypothesis

The fifth of Bach’s suites for unaccompanied cello has two principal features that distinguish it from the rest of the set. The first is the use of scordatura – the only clearly documented case of the composer’s application of the technique for cello. The second is the connection to the version for lute, BWV 995.

Bach’s use of scordatura has left a multitude of questions and theories as to its compositional intent. Some remark on its ability to bring a darker sonority to the instrument; other possibilities include a connection to an earlier tuning of the cello, or possibly a link to lute tuning, which could shine some light on its reappearance in the form of a lute suite.

The reuse of material by the composer is of course hardly uncommon, as noted in the preceding discussion. The aspect which sets the Cello Suite No. 5 apart is Malcolm Boyd’s observation, based on the final movement, that comparisons with the lute suite suggest contrapuntal elements that seem to ‘complete’ the version for cello – rather than simply realizing implied harmony, as would be the case in the reuse of material from the E major prelude from his third partita for unaccompanied violin in the sinfonia of Wir

danken dir, Gott, wir danken dir, BWV 29. Boyd noted that absent counterpoint in the Gigue suggests that “the cello version sometimes seems to need completion by another strand”. This becomes the starting point of a re-evaluation of the principal sources: the manuscripts of A. M. Bach and Johann Kellner, and the manuscript of the lute version by J. S. Bach.

In examining Bach’s use of scordatura, as well as Boyd’s theory of an alternative genealogy of the suite, Donald Maurice and I prepared the new edition of Bach’s Suite No. 5 for solo viola, in press, by Comus Edition. This edition works on two academic fronts. First, it investigates Boyd’s suggestion of the progeny of the cello suite beyond his comments on the final movement. This is done by the examination of discrepancies in the three principal autographic sources, mentioned above. From this it confirms Boyd’s observation, and posits that the lute manuscript should stand as an equal if not predominant reference for the work, which then links to the second aspect of its production.

Second, the edition applies the use of the extended scordatura recommended by Donald Maurice, dropping the second string down a tone for the purpose of better voicing across strings. The scordatura additionally allows for the benefits of sympathetic resonances in the key of C minor. This extended scordatura is also more relevant to the lute version, and incorporates the concept of ‘vocal fingering’ from Maurice’s approach.

Thus, these two aspects of incorporating the lute suite and applying the extended scordatura do work in tandem. From the perspective of producing an edition that represents a compositional development, if not the original conception, of the suite, it benefits from the application of the extended scordatura. From a technical vantage, some sections of the incorporation of the lute suite require the extended scordatura. From the perspective of the scordatura, the additional material from the incorporation of the lute suite maps out the voicing to a greater extent, further highlighting the relevance and advantages of this approach.

27. Composer’s manuscripts, Wir danken dir, Gott, wir danken dir, BWV 29 and Partita in E major, BWV 1006.


Due to the level of complexity, it also opens up new questions of notational methods, which will be discussed in fuller detail later in the thesis, and placed in comparison with the notational approaches of the other projects.

The aspects of my research concerning the connection to the lute suite were published in *Arco*, the journal of the British branch of the European String Teachers’ Association, in March 2011. Related peripheral research on articulation markings leading to the production of the Comus edition was published in the February/March 2012 issue of *Crescendo*, published by the New Zealand branch of the International Association of Music Libraries, Archives, and Documentation Centres.

**B. Incorporation of the Lute Suite in C minor, BWV995**

The validity of incorporating the lute version into a new edition is a significant component of demonstrating the benefits of the extended scordatura. These benefits will be shown in the process of this chapter. The extended scordatura is intended to provide better voicing across strings, and while this is possible with the scaled-down cello version we have become accustomed to, it is tested to a greater extent with full polyphony. The fact that the full polyphony is that of the composer rather than a realisation strengthens this field test of the extended scordatura.

Could the same process of testing the scordatura be done with a realisation of the implied polyphony by another musician, in the same way that the famous D minor Chaconne from Bach’s second violin partita was explored by Busoni, Mendelssohn, Schumann and others? The question thus deals with the extent to which it is important to have a historical and musicological study into the role of the lute suite.

The simple answer to this is yes, the study of the origins of the Cello Suite No. 5 is crucial to understanding the relevance of the scordatura. For one, there is the issue of compositional intent: for what purpose Bach used scordatura and why the cello suite seems to be summarised from a larger work. In ensuring that the new edition is of a scholarly nature and not simply another performer’s edition, the research needs to establish what Bach intended to accomplish.

Also, there is a crucial difference in knowing Bach’s full polyphony rather than extrapolating from the implied polyphony. The research indicates that instead of using harmonic or polyphonic expansion, the existing cello manuscripts are instead reductions or compressions of a wider work. The edition would then not be as much an exercise in
realising implied harmony or polyphony; rather it would act as a reconstruction of the work. Thus, the question arises as to what extent the scordatura assists the viability of the restoration, in addition to the clarification of the extended voicing patterns. In other words the relationship between the restoration and the extended scordatura may be illustrated as follows:

![Diagram of Amalgamation and Expansion of the Scordatura]

Figure 4.7. The incorporation of the lute suite vis-à-vis the expansion of the scordatura

The amalgamation of the cello and lute suites is a result of the underlying text analysis of the lute suite, picking up on Boyd’s hypothesis. This amalgamation becomes the most appropriate vehicle for testing out the effectiveness of the expansion of the scordatura. In turn, this expansion is based on the underlying principle that Bach’s scordatura was intended as a better distribution of voices across strings.\(^\text{30}\) Finally, the benefits as well as limitations of this ‘vocal fingering’ are tested with the full polyphony of the work, as heard through the amalgamation of the lute and cello versions in this new edition. The reason this reconstruction is for the viola instead of the cello will be detailed later in this discussion. Let us first examine the timeline of the composition of the cello suites, and how this contributed to the decision to combine the two suites.

Bettina Schewemer and Douglas Woodfull-Harris, editors of the Bärenreiter Urtext edition, considered the A. M. Bach manuscript to be the principal source, written somewhere between 1727 and 1731, due to the connection to the composer as well as a track record for accurate transcription in the unaccompanied violin works, save for nebulous articulation markings.\(^\text{31}\) The transcriptions of Johann Kellner are by


comparison unreliable, particularly in regards to the Cello Suite No. 5: the Sarabande is missing, the Gigue is incomplete, and there are various 'scribal errors'.\textsuperscript{32} Kellner's manuscript is thus considered secondary to A. M. Bach's. However, there is one important factor to consider in regards to the Kellner manuscript: it is dated 1726, at least a year before that of A. M. Bach, making it the earliest available source.

The lute manuscript, BWV 995 is in the composer's hand, and written in the same period as the A. M. Bach manuscript. The handwriting suggests that it was written in haste, particularly in comparison to the beautifully handwritten presentation manuscript of the Brandenburg Concertos. There are also various errors, sometimes noted with small symbols, and at other times, crossed out with letter names added in clarification, as in the following excerpt:

![Figure 4.8. Lute manuscript, BWV 995, bars 177-80, in the key of G minor and with tenor and bass clefs](image)

The lute manuscript has been considered a peripheral source, listed as Source H by Schwemer and Woodfull-Harris, with Sources C to E being the early editions, and Source F a 'lost fair copy'. The implication of this is that the lute suite is simply an extrapolation of the cello suite,\textsuperscript{33} which in itself indicates a philological bias, which we will discuss in more detail at a later stage. For now, the task is to ascertain whether this is indeed true – whether the lute version is based on the cello suite. As noted earlier, Boyd's initial observation was about the final movement of the suite. The next step is to examine the suite as a whole in order to come to a conclusion as to his hypothesis.

A look at the areas in which the two cello manuscripts diverge provide a possible answer to this study. There are six bars where Kellner's manuscript differs from that of A. M. Bach:

\textsuperscript{32} Ibid., 7.

\textsuperscript{33} Ibid., as can be gathered from their timeline, which will be directly referenced towards the end of this section.
• Prelude: bars 154-55 (additional notes in the Kellner manuscript);
• Allemande: bar 5 (likewise, additional notes);
• Courante: bar 5 (missing notes);
• Gavotte: bars 10 (missing notes) and 27 (additional notes).

Missing notes would seem to be the result of scribal errors, as would be the instances in the Prelude and the Gavotte, for in the latter instance bar lines are also misplaced. However, the final instance in the Allemande deserves a certain degree of focus. As we can note in the following excerpts, a chord appears in the Kellner manuscript and Bach’s lute suite that does not exist in A. M. Bach’s manuscript:

![Figure 4.9. Source A – A. M. Bach manuscript, Allemande, bar 5](image)

The additional notes match the lute manuscript by Bach (in tenor and bass clefs, in the key of G minor):

![Figure 4.10. Source B – Johann Kellner manuscript, Allemande, bar 5](image)

![Figure 4.11. Source H – J. S. Bach lute manuscript, Allemande, bar 5](image)

This link may initially suggest that Bach utilized Kellner’s manuscript, especially considering it was written at pitch, while A. M. Bach’s was adjusted for scordatura. However, this is unlikely considering the numerous errors in the Kellner source,
particularly those that Schwemer and Woodfull-Harris note are the result of misconstruing a scordatura-based notation. It is more likely that as Boyd suggested, the original source for this suite was the lute version rather than the cello version.

A second observation in the Prelude matches Boyd’s observations of the Gigue. Here the top voice inexplicably disappears in the A. M. Bach manuscript:

![Figure 4.12. A. M. Bach manuscript, Prelude, bars 216-19](image)

Considering Bach’s skill as a contrapuntalist, unsurpassed in three hundred years, it makes the disappearance of the top voice seem rather unlikely. This point is especially pertinent as the lute version, in Bach’s hand, has complete ‘voices’.

Let us review sections of the Gigue that led to Boyd’s hypothesis:

![Figure 4.13. Gigue, A. M. Bach manuscript bars 8-19, and J. S. Bach manuscript of the lute suite bars 10-20](image)

Bars 15 and 18, marked in blue, indicate areas where Boyd notes the “completion” of the cello part via the lute version.

With these factors in mind, it is possible to postulate an alternative timeline to the construction of the cello suites. In this timeline, the set originally comprises five suites written specifically for the cello, and one based on a pre-existing lute suite condensed for cello. The following illustration overlays as Source Y where this pre-existing original for lute would be placed in the timeline. The strands that come from this source Y are then related to the timeline of Schwemer and Woodfull-Harris, and the various other sources for the Bach suites. If this is true, one can then argue that the lute
manuscript for BWV 995 holds more than peripheral value in regards to the Cello Suite No. 5.

Figure 4.14. Alternative timeline for the construction of Bach’s cello suites. Note that only sources A to G were noted directly in the diagram of Schwemer and Woodfull-Harris, with the lute suite being only referenced peripherally in the text.

This conclusion, as demonstrated in the preceding discussion, is based on analyses of the manuscripts, as well as contextualization with the unaccompanied violin works. While the proposed revision to the understood genesis of the work is based on logical patterns and comparisons, let us nonetheless hypothetically consider an entirely reversed scenario. Even if Source H were a later arrangement unrelated to a pre-1726 source, and Source Y did not exist, it provides a view of the progression of compositional thought and revision or development of the work. Source H, after all, is the only source in the composer’s hand. Furthermore, there are parts of the score that significantly differ from both the A. M. Bach and Johann Kellner manuscripts. This suggests that the lute version represents as close as we might come to the final destination of the composer’s progressive thought process. One distinct example of this is the Tierce de Picardie at the conclusion of the Prelude in the A. M. Bach manuscript, which does not occur in Bach’s lute manuscript.

The issue of what version of a musical composition should take priority is a complex one. The ‘urtext’ version is not necessarily the most reliable one, as Sion M. Honea makes clear in the following quotation, which addresses what the author terms a
philological bias (the consideration of the earliest source as being authoritative) and its complications in music scholarship:

The philological method was originally formulated for the purpose of establishing authoritative literary texts of works in the classical languages. The basic assumption of this method is that there once existed an original and authoritative text that represented the exact intentions of the author. The philological method provides the means for evaluating a given text or texts and deriving the authoritative original. One of philology’s basic principles, though now somewhat modified, concerns historical priority and maintains that the earlier the date of the text, the more it may be presumed to be representative of the author’s intentions.

Composers may change their minds, and the manuscript is not necessarily the composer’s last word. Until the early nineteenth century, and sometimes even later, the first edition was often not the best printed representation of the composer’s intentions, for it was often produced hurriedly and without the composer’s supervision. Thus, philology’s basic tenet of historical priority does not hold in regard to music. There are, therefore, problems inherent in placing unconditional trust in editions purporting to be “urtext” (the German word for “original text”), “from the original,” or “from the earliest” text.34

There are five significant areas in which the lute manuscript diverges from the cello manuscripts: three harmonic areas in the Prelude, a rhythmical passage in the Allemande, and a melodic passage in the Gigue. The role of the lute manuscript thus goes beyond determining the full polyphony of the work. When considering the philological bias, and Bach’s revisions, the process of evaluating the role of the lute version reassesses the way performers and editors should approach the cello suite (the Tierce de Picardie area being one example). In other words, the lute version provides more than notes to fill in where convenient – it provides some rather contrasting ideas that better represent the composer’s conceptualization of the work.

C. The Extended Scordatura, and Implications Alongside the Incorporation of the Lute Suite

Donald Maurice makes the following primary points in regard to the concept of ‘vocal fingering’.35 The first point is from a historical perspective: once Western European music had moved beyond an adherence to the vocal principles of the Baroque, the use of the four strings to represent four voices became an almost forgotten art in the


35. Maurice, ibid.
19th and 20th Centuries. The string writing of Bach clearly exploits the four strings in this manner, itself possibly viewed as evidence in support of the concept of “vocal fingering”. Maurice notes:

J. S. Bach’s Six Sonatas and Partitas for unaccompanied violin and Six Suites for unaccompanied cello provide an excellent example of the concept of four strings representing four voices.... We can take any of the movements of these twelve works of Bach and clearly identify the presence of SATB voicing. It is proposed here that the clear definition of these voices is paramount in any performance of these works and that the difference in tone colour between strings can be intentionally exploited to differentiate the voices to very good effect.36

The second point comes from a theoretical perspective: the change from one tetrachord to another is normally the optimum place to change string. Thus, we have tunings in fifths that allow an ideal division of the seven-note scale into two tetrachords e.g. the open A string with fingered B, C sharp and D, and the open E string with F sharp, G sharp and A. Maurice notes:

While it tempting to argue that tonic-dominant tuning is the principal reason that fifth became the favoured tuning for the violin family, it is probably more likely because, with this tuning, violinists and violists can change string whenever they run out of fingers! Whatever the reason, it is a fortunate coincidence.37

Additionally, Maurice highlights that in passages where there is a mixture of stepwise intervals and leaps of a minor third or greater, it is advised, where practical, to change string on the leaps.38

The final point links these two observations: Bach’s Cello Suite No. 5 in particular possibly indicates an attempt at distinguishing the soprano line by enabling A-flats (in the key of C minor) to be placed on the top string. In this light, there would seem to be significant issues in the alto line that could be resolved by tuning the D string down to a C.

In addition to voicing and voice-leading, Maurice notes that this new tuning is reflective of similar tunings in Carnatic music,39 which like the music of the Baroque era remains rooted in vocal training. This produces the effect of additional resonance, without taking away from the other possible hypotheses of Bach’s scordatura: that of the

36. Ibid., 28.
37. Ibid., 27-28.
38. Ibid., 28.
39. Additionally, North American and Scottish fiddle music often match this tuning.
production of a darker timbre, and the inclusion of a perfect fourth in the tuning that would mirror that of the lute. This reflects the now century-old observation by Fox Strangways, now celebrated as an important contribution to the history of ethnographic research. Fox noted that the study of Indian music has particular value in that it is independent from European influences with regard to harmony, mirroring an earlier part of history: the song of medieval Europe or ancient Greece.  

The following illustrates the distribution of pitches across strings when the suite is played on the viola. The three sets of fingerings are for the instrument in conventional tuning, the original scordatura of Bach, and the extended scordatura:

![Diagram of string fingerings]

Figure 4.15. Distribution of pitches across strings. The original scordatura is that noted in the A. M. Bach manuscript, while the extended scordatura is that of the new Comus edition.

The incorporation of the lute suite allows us to see some of the advantages of the extended scordatura that would not be as evident otherwise. In some cases, the availability of the new open string allows for the incorporation of pitches that would otherwise be difficult to execute. A prime example of this is at bar 40 of the Prelude. The following excerpt shows the incorporation of the lute suite, with all the double-stopped notes reduced to single notes in the conventional cello version.

![Prelude Excerpt]

Figure 4.16. Prelude, bars 36-42

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As we might note, the lower voice in bar 40 is physically unmanageable in regular tuning, though the use of an intermediary note could be applied. A predictable reduction would be to delete the lower voice, but both A. M. Bach’s and Kellner’s manuscripts also show the two last notes of the bar in reverse order:

Figure 4.17. A. M. Bach manuscript, bars 34-42

This possibly indicates another revision by Bach from the original source to the lute suite, or possibly an intervening source between Source X and the manuscripts of A. M. Bach (Source A) and Kellner (Source B). It can be argued that the eventual form seen in the lute manuscript has clearer voicing patterns, particularly considering that the following bar has the symmetrically descending line. This is taken into account in viewing the lute manuscript as the primary reference.

The extended scordatura allows for the use of an open string in incorporating the lute manuscript:

Figure 4.18. Extended scordatura, bars 36-42

The availability of these open strings allow for certain combinations that would not be possible otherwise. An example of this is bar 41 in the excerpt above: the second double stop is only available with the extended scordatura. In regular tuning, the notated D (sounding C, marked with the blue circle) would fall on the third string instead of the second, making the double stop unfeasible without inserting an intermediary note.

There are other areas that benefit from the extended scordatura, independent of the incorporation of the lute suite. Bar 74 of the Prelude is one such example:
In regular tuning or with the single-string scordatura, the second beat of bar 74 would have to utilise the third string, breaking up the voicing pattern. The extended scordatura allows this bar to remain on the second string, and thus in the alto voice. However, one could argue that so long as the second and third beats of bar 74 remain in the same voice – whether it be the alto or tenor voice – a fidelity to voicing would be maintained. This is to some extent true; however, the issue that arises is the relation to the preceding voicing. Let us take a second look at bar 74 in a compressed form, with excerpts in boxes denoting the strings on which the notes would be executed in order to remain compliant to voice-leading patterns:

This likely distribution of strings would be for the following reasons:

- In conventional tuning, the third excerpt could not be played in a single voice on the top string, and would have to be played on the second string in order to do so;
- In the single-string scordatura, the third excerpt could be played on the top string, but the fourth excerpt could not be played in a single voice unless played on the third string. Thus the player has the option of having a voicing pattern of soprano-tenor here, or alto-tenor shown above. The latter is more likely, both for technical reasons as well as for voicing concerns.

The likely string distribution does maintain some similar contrast of voicing (soprano-alto, alto-tenor), however, this is still different from the original parallel voicing pattern of soprano-alto, soprano-alto. The incorporation of the lute suite makes
this even clearer. It expands the counterpoint to the extent that the double stops make this not viable to perform in regular tuning or in the single-string scordatura.

![Figure 4.21. Extended scordatura, Prelude, bars 70-75](image)

Without the extended scordatura, one of two complications would occur at bar 73 (excerpt 3 in the previous illustration):

- There would either have to be some break-up in the voicing patterns, or
- There would be an effort to maintain the upper line in a single voice, using an intermediary note just as we noted earlier in bar 40. This would then cause a leap from the soprano to the tenor voice in bar 74.

The extended scordatura allows the incorporation of the lute suite without the disruption of voicing, with a notational system that uses colour to outline the overall voicing patterns. The edition can be useful even if a performer chooses to use the condensed A. M. Bach version, that has become a standard part of the repertoire. It can be informative in the sense that the new edition outlines the composer’s overall voicing. More importantly, the performer will note that the optimal execution of voicing patterns in the suite is reliant on the scordatura even in condensed form, with the inclusion of the full counterpoint serving to highlight its function. That being said, as we might note from how bar 75 does not parallel bar 73 (with the fourth semiquaver having to necessarily move to the alto voice), there are sections that will have no easy solutions.

We can only say that actual voices will still be more flexible than strings can be, no matter how much we may retune them. We nonetheless face the question and the challenge of discovering what tuning allows the best options of voicing possible.

Bars 146-54 of the Prelude indicate related issues. There are two pairs of examples, indicated in boxes:
Figure 4.22. Prelude, bars 146-54, suites incorporated and at pitch; the A. M. Bach manuscript has no double stops in this selection.

The first pair comprises excerpts 1 and 2. It is not viable to keep excerpt 1 in one voice with regular tuning (with the affected note in blue); however, the use of Bach’s original scordatura solves this issue. In addition to keeping the section within the same voice, it also allows this section to parallel excerpt 2, both in matching fingerings and closing with the use of an open string. The single-string scordatura does not, however, have the same effect on the incorporation of the lute suite in excerpts 3 and 4. The C in the first chord of excerpt 4 is necessarily on the third string in conventional tuning or the single-string scordatura, and thus the a would have to be placed on the second string (affected notes in blue). Thus, it is not only unable to be kept within the span of a single voice, but can no longer parallel the voicing pattern in excerpt 3. The extended scordatura addresses this issue, allowing excerpt 4 to parallel excerpt 3 in voicing.

Figure 4.23. Extended scordatura, Prelude, bars 146-54

A final area of focus in the Prelude indicates the importance of the extended scordatura in allowing for the incorporation of the lute suite, as well as further editorial challenges.
The first chord in bar 179 is simply not viable in regular tuning, as the two top notes share the same string. The extended scordatura enables this to be performed, with the availability of the new open string. However, a second issue appears when dealing with voicing:

![Figure 4.25. Extended scordatura, Prelude, bars 175-83](image)

The editorial challenge is that excerpts 1 and 2 do not have parallel voicing patterns. An available option is to adjust the first two chords of excerpt 1 to the tenor and bass voices, thus solving this issue – however, this would disrupt the voicing of the three-quaver motive that forms the basis of the entire fugue. A second option is to simplify the final chord of excerpt 2 to retain voicing of the top three notes in the tenor line, but in so doing losing the three-note chord and the parallel to excerpt 1. A third option is to reduce both excerpts to only the tenor and bass voices, which would be in contradiction to the function of the scordatura in allowing for optimal voicing patterns.

The question then is what is more important: keeping a motive within a single voice, or ensuring that three voices remain heard in these parallel sections? In cases like this each choice would seem to have its drawbacks, with no perfect solution; nonetheless, the extended scordatura does at least allow us these options. This issue also highlights for us that while the extended scordatura was constructed to allow better voicing across strings, it also has the independent function of providing options for the incorporation of the lute suite. At times, these goals are independent, and it may even be preferable at times to incorporate the lute suite at the expense of parallel voicing patterns. The scordatura has more complicated usage than initially envisioned.

Previous examples demonstrated how the retuned string was necessary in order to establish the appropriate voicing patterns. The following excerpts from the Courante indicate the complexity of the issue.
In these two excerpts, with scordatura fingered notation, the notes circled in blue are of the same sounding pitch i.e. the sounding C can be either played as an open second string, or a stopped note on the third string. The similar patterns at the end of bars 13 and 21 would suggest that the same string be used in both excerpts; however, the larger voicing patterns are significantly different, as noted by the notes circled in green. Thus, the availability of the open string does not denote its usage whenever possible – or even in what may seem at first to be parallel sections. The important matter to note is that the voicing pattern in bar 21 would not be possible in either conventional tuning or with the single-string scordatura.

The Comus edition incorporates to the greatest extent possible the lute version, but there are times when the number of strings on the cello or the viola creates some restrictions. In addition, the tessitura of the lute is such that certain parts of the score may need to be moved up an octave, whether for the cello by A. M. Bach or in the new edition for viola. The important factor with these choices, particularly in relation to the extended scordatura, is the preservation of voicing patterns. Let us have a look at one such case in the third bar of the Prelude:
In the sections marked in blue, we note that the lower voice in the lute part has to be moved up an octave for any edition for cello or viola. In regular or in the single-string scordatura, the pattern has to be truncated, with the third note blending into the upper line. We can see this in the A. M. Bach excerpt. The availability of the new open string with the extended scordatura allows us to preserve the voicing, even if the final note of this selection is in unison on the second and third strings.

III. The Role of the Edition

There are two particular issues that concern the role of the Comus edition: the choice of preparing it for viola rather than the cello, and the related question of how idiomatic it remains in terms of Bach performance when the lute suite is amalgamated into the cello suite. In dealing with these issues, it is important to demarcate them from a possible bias from reception history.

An example of this is the Sarabande, arguably the most distinctive movement of the suite. It was performed by Yo-Yo Ma at the first annual 9/11 Ground Zero memorial ceremony in 2002, and considered by Baroque dance specialist Anna Mansbridge as

the only sarabande in the suites that seemed unsuitable for actual realisation in dance.42 There is minimal expansion in this movement in the lute suite, with only six additional notes additional. The sample below shows three of these six additional notes:

![Figure 4.28. The final five bars of the cello suite (A. M. Bach manuscript, in c minor) and that of the lute suite (J. S. Bach manuscript, g minor in tenor and bass clefs)](image)

Though the additions in the lute suite are minimal, this is still a major departure from familiar territory, with Thomas Tatton characterizing the movement of the cello suite as being “almost anorexic”.43 Thus, our view of the peculiarity of the Sarabande is due to the way we have become accustomed to hearing it rather than how it may actually been constructed and edited. Reception history has played as much a role as the music itself; if we discount reception history for a dispassionate view of the music, it increases the plausibility of amalgamating the two versions of this suite. That being said, the very production of an edition for unaccompanied viola does owe some of its relevance to modern reception that has allowed the suites into the standard repertoire of the instrument.

The choice of the viola does have some connection to research in performance. While the original cello suites were indeed an octave lower than the viola transcription, playing the suites on today’s viola may be closer in performance style than on today’s cellos. Dimitry Badiarov suggests that the suites in Bach’s era could have been played on a viola da spalla or “shoulder cello”, an instrument with the same range as today’s cello.

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but hung over one’s neck with a ribbon and played like a violin.\textsuperscript{44} Even closer to today’s viola would be the use of a tenor violin with modified strings to sound in the cello range.\textsuperscript{45} Agnes Kory notes that this instrument, with a tuning in between that of the viola and the cello, may have suffered from an issue of nomenclature: “It is my contention that this instrument played a more significant role than is generally realised today, one possible reason for its neglect by present-day theorists being that many baroque composers may have referred to it merely as the ‘violoncello’.”\textsuperscript{46} Katz concurs with this opinion, and links it directly to the suites:

> Even the seemingly straightforward designation of suites as being for “violoncello” is problematic. The word “violoncello” could refer to instruments of different sizes and playing techniques in the early 18\textsuperscript{th} century. The cello as we now know it emerged in Italy around the 1660s, with its size standardized by Stradivarius at the beginning of the 18\textsuperscript{th} century. In Bach’s day, “violoncello” could refer to the older larger instruments or to the smaller instruments on the Stradivarius model, as well as the so-called violoncello da spalla (or viola da spalla).\textsuperscript{47}

The historical implication of this is considerable, with Badiarov suggesting the possibility that a single player, perhaps Bach himself, may have feasibly played all of the Suites as well as the Sonatas and Partitas for unaccompanied violin on the viola da spalla.\textsuperscript{48} Even Anner Bylsma, the preeminent pioneer of baroque performance practice on the cello, suggested the possibility of the suites being played by Bach on the viola, with certain chords and string-crossings better physically suiting the violist than the cellist.\textsuperscript{49} Schwemer and Woodfull-Harris also support this possibility: “It is uncertain what instrument Kellner actually had in mind. He may conceivably have been referring to a small violoncello roughly the size of a viola and played on the arm – an instrument that would have enabled Bach himself, who was not a cellist, to perform his suites.”\textsuperscript{50}

Furthermore, we can note that the title page of the Kellner manuscript has the

\begin{itemize}
\item \textsuperscript{45} Ibid., 127-28.
\item \textsuperscript{47} Katz, ibid.
\item \textsuperscript{48} Badiarov, 140.
\item \textsuperscript{49} As noted by Katz, 5.
\item \textsuperscript{50} Schwemer and Woodfull-Harris , ed. \textit{Bach: Six Suites for Solo Cello}, 7.
\end{itemize}
ambiguous title of *Sechs Sonaten Pour le Viola de Basso*. Nonetheless, in the absence of accounts of performances by Bach of this work, this remains in the arena of conjecture. The Comus edition has the goal of exhibiting a new perspective towards the practices of the era, more so than taking on a “modern” interpretation.

More importantly, the use of the viola allows us to maximize the extent to which the lute suite is incorporated into the music. The incorporation of the lute suite certainly increases the technical level to an extent that goes beyond anything that Bach wrote for the viola, but in doing so it has the inclusion of intervals that may not be viable on the cello.

This being the case, why was the edition not simplified further and prepared for the cello? One answer is that the aim of the edition is to include as much of the counterpoint as would be possible within the parameters of a bowed stringed instrument. This basically revisits the task put to A. M. Bach and Kellner, within updated parameters as to what would be idiomatic for the viola. Another answer to this is the role of the edition. The diverse range of editions tends to share the goal of producing a *single available reading*. Let us briefly examine the various categories of editions.

On the one hand, urtext editions aim to produce definitively accurate records of the original, and there are different kinds of urtext editions. Some still have a certain level of editorial involvement, not in adding articulation markings or bowings but rather in deciding if and when the composer unintentionally made errors. Others take an entirely different approach, choosing to keep everything intact, including areas that are quite clearly incongruent. These two approaches have their own distinct challenges. Editorial involvement has the risk of breaking away from the idea of preservation implied in “urtext”. Contrastingly, leaving everything intact has the philological bias we discussed earlier, assuming that the original form of the work was the final product of the composition.

Johann Hummel seemed to have the view that printed notation by nature had a certain ambiguity that was to be filled in by the role of the performer. Walter Schenkman notes the views of Hummel on the composer’s piano method of 1828:

Expressive performance (or more literally, expressivity in performance) is directly associated with the subjective nature of feeling; it has nothing to do with that quality which enables the player to communicate the essential emotions held by the composer (“was der Komponist für das Gefühl in sein Werk hat”). At the most, the precise nature of this expressivity may merely be intimated through a vocabulary so vague as to be virtually meaningless except for those who already have a firm grasp of the matter well
in hand... For those who do not grasp the sense of the musical communication, the "allgemeine Kunstworte" are meaningless anyway, and of no use.51

Thus, the urtext, even its most accurate reproduction of the original, has a certain level of ambiguity and may not be the most authoritative form an edition can take.

On the other hand, a performer’s edition defines and determines a sole interpretation. Cristina Urchueguía notes: “the dichotomy between the idea of a scholarly edition, which a musician is not supposed to understand, and a practical edition which tells the scholar explicitly to keep out.”52 Urchueguía further states:

The paradigmatic value of this dichotomy is that the editions try to offer the user only what they think he or she will be able to apply due to his physical capabilities or to his specific interest. The editor of a practical edition acts as a filter, whose function is not a critical but rather an organic one: he has to "digest" the textual evidence of the sources which is poisoned with uncertainitude [sic] in order to present something the musician can eat without getting sick.53

Both of these approaches, despite clear contrasts, put forward one reading of the text. The urtext aims at presenting the form deemed to best represent the composer’s intentions, while the performer’s edition presents the viewpoint of one editor deemed ‘digestable’ by the performer.

This new edition of the Cello Suite No. 5 has a somewhat divergent role. In one respect it does try to recreate the initial assignment of restructuring a lute suite for a bowed stringed instrument. On the other hand, the editorial decisions required in the incorporation of the two suites do demonstrate certain characteristics of a performer’s edition (one can then argue that even A. M. Bach’s manuscript is that of a performer’s edition, as a condensation of a larger work refitted to presumed physical limitations). However, its main goal is that of providing as wide a repository of options as possible. At times this means restoring certain ambiguities within the score as Hummel described, with a primary example being that of the rhythm of the opening bars of the Allemande:


53. Ibid.
In this excerpt, we note that the lute manuscript has what seems to be missing beats. A. M. Bach’s editorial decision was to alter the rhythm. Some editions of the lute suite, like that for guitar by Eva Jaksch extend the tie, ‘correcting’ the rhythmic issue so that the demisemiquavers can be read literally:

The third option was to write triplet designations over the demisemiquavers. Donald Maurice and I decided to retain Bach’s rhythm. On one hand, this emulates the approach of an urtext edition in preserving the original manuscript and leaving it to performer to discern the composer’s intention. On the other hand, performance practice seemed to indicate that the appropriate rhythm was somewhere in between triplets and

A. M. Bach’s semiquavers,⁵⁵ and that Bach’s original writing could be seen to indicate this.

Wolfgang Schneiderhan, in editing the Henle edition of the Bach unaccompanied violin works, noted his intent “to provide the student with a set of instructions enabling him to come to grips with Bach’s original text... the editions of Bach’s solo sonatas and partitas at my disposal offer little concrete assistance as to how long one note or another in the contrapuntal texture should sound.”⁵⁶ A similar situation exists in the incorporation of the lute suite. One example of this is the motivic figure seen early in the Prelude:

Figure 4.31. Prelude, A. M. Bach manuscript, bars 2-3, motivic figure highlighted

There are times when the editors have to make choices similar to those of A. M. Bach and Kellner. For example, within the framework of a lute progeny as discussed earlier, A. M. Bach makes the choice required of a performer’s edition in the condensation of the lute version. We see this in the Allemande:

Figure 4.32. Allemande, J.S Bach lute manuscript, bars 21-23, condensed area highlighted

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⁵⁵ A prime example of this is Helen Callus’ recording. (Domaine Forget, Canada: Analekta, AN 2 9968-9, 2010). This is particularly because Callus directly references the use of the Simon-Roland Jones edition for viola, which retains A. M. Bach’s approach. The performance nonetheless demonstrates the rhythmic interpretation mentioned above.

In the process, the lower note is shortened, with semiquavers following. The Comus edition retains the same approach in shortening the lower note, but retains the rhythm of the upper stave of Bach's lute manuscript.

However, there are similar situations when the edition contrasts to the choices made in the cello manuscripts. For example, in the second Gavotte, A. M. Bach omitted this repeated motivic figure, either intentionally in favour of a sustained melodic line or possibly unintentionally in the course of compressing a larger work.

This is reinstated in the amalgamated edition, highlighted in blue:
However, it is impossible to sustain the top line in the highlighted area while preserving the motivic figure. Thus, what the edition does is to regard as an editorial choice A. M. Bach’s decision to preserve the melodic line above that of the motivic figure.

A final example is that of the Prelude, and the approach of the edition in providing as full an incorporation of the lute version as possible. Let us recall once again Bach’s approach in the fugue of the first violin sonata, as discussed in the introduction. After the first five bars, the line of semiquavers does not include chords, along the lines of what Butt described as “longer episodes in which performer and listener can recover from the rigours of the polyphonic writing”.57 We can note that in the Comus edition we chose to preserve the full polyphony of the lute suite:

![Figure 4.37. Prelude, bars 25-42](image)

Let us examine two entirely plausible interpretations. The first is to perform only the semiquaver lines from bar 40 onwards, under the argument that this would parallel Bach’s writing in the violin fugue. A second interpretation is to argue that while there are no further fugal entries at this point in the composition, motivically the lower voices in bars 40-41 mirror that of bars 36-37. The intent of not compressing the suite and notating a chord-free semiquaver line is to provide the opportunity for the performer to choose from these interpretations. In other words, the performer is not bound by a

57. Butt, 127.
requirement to play the entire amalgamation of the two suites. The edition ultimately provides more than one possible reading.

What is important in regard to the edition and eventually to that of the use of scordatura is the choice of notation. Rather than emulating A. M. Bach’s style of compression as demonstrated in the Allemande, the new edition aims to produce a full incorporation as far as possible rather than to “try to offer the user only what they think he or she will be able to apply due to his physical capabilities or to his specific interest” as Urchueguía noted. The edition then aims at providing multiple streams of performance options, rather than one selected pathway. The performer has then the ability to perform the work in its incorporated whole, but with the ability to perform a compressed form if the use of the extended scordatura is to be explored as an individual and independent feature. A third option is to use the edition to influence performances of a standard edition in a manner that is somewhat more accessible than referencing the lute manuscript, which is in a different key, with different clefs, and various errors.

The level of incorporation of the lute suite, the instrumental choice of the viola, and finally the use of scordatura all fit into the larger picture of providing an edition that acts as repository of performance options, beyond the limitations of a performer’s edition – or even that of an urtext.

IV. Summation and Conclusions

The project of the Cello Suite No. 5 is extremely complex, and occupied the longest span of time of all the projects covered in this thesis. The individual aspects of research are as follows:

• A study investigating whether the lute suite, BWV 995 has a greater significance than previously regarded, based on initial observations of Malcolm Boyd;
• An extended scordatura for purposes of clearer voicing across strings, based on a recommendation by Donald Maurice;
• The likelihood of systematic variation in the articulation patterns.

The research on articulation is not discussed in this chapter, as it is not directly related to scordatura, though it does peripherally impact the production of this edition, as well as that of the Brandenburg Concerto No. 6. The first two of these aspects are
intertwined. The primary value of incorporating the lute suite is establishing the full harmonic and polyphonic texture. This is particularly in view of A. M. Bach and Kellner as not simply having scribal roles, but also having editorial and interpretive input in compressing the composer’s larger work. The primary function of the extended scordatura is to allow the voicing to be more clearly distributed across the four strings. Thus the two goals are inter-related: the scordatura allows a greater amalgamation of the suites, and the expansion of the suite demonstrates the functions and viability of the extended scordatura. These two goals approached simultaneously have allowed the establishment of an edition that acts as a repository of multiple performance options, rather than a predetermination of one performance stream.

While demonstrating benefits on both fronts, the experiment also established parameters for the application of the scordatura:

- There are occasions when voicing in Bach is more flexible than any scordatura would be able to provide. Nonetheless, from an overall perspective the extended scordatura does assist in voicing patterns.
- There are a few sections where the goals of incorporating the lute pitches and sustaining voicing across strings are not mutually compatible. However, seen from a different perspective: the extended scordatura has shown the ability to extend the incorporation of the lute suite, independent of its effects on voicing.
- Bars 175-78 of the Prelude illustrated the additional complicated choice of sustaining parallel/imitative sections versus maintaining appropriate voicing. In cases such as this, it was decided that maintaining the number of sounding voices, in relation to previous sections, was as relevant to the benefits of scordatura as is the distribution of voices across strings.

In conclusion to this chapter, the following is the first movement of the Comus edition, published in September 2013.
1. Prelude
Solfedjara tuning

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Chapter 5

The Retrospective Scordatura: Mozart’s Sinfonia Concertante, KV 364

I. Overview

There are certain functions of scordatura that are clearly compositional requirements, particularly those categorized by Nathan Cook as the ‘feasibility scordatura’; he defines it as that which “makes the awkward or impossible playable”.\(^1\) However, its other functions, e.g. for timbral effects, resonance and projection, are just as much goals for the performer as the composer. The player of the bowed string instrument often approaches these from adjustments to the bow, fingering, or vibrato. In this chapter we look at the potential for the performer to include scordatura into this list of skills.

The concept of a retrospective scordatura then is the use of the scordatura by the performer, independent of the composer. This relates to the amorphous issue of composer-performers of the 17th and 18th Centuries using scordatura. Did they apply scordatura as composers, or instrumentalists, or both? This chapter asserts that the technique can be equally useful and viable as a performer’s technique rather than only as a compositional tool.

If we define a retrospective scordatura as a tuning that departs from the composer’s instructions, we could first consider as precedents works originally in scordatura but redesigned for conventional tuning. There are two well-established examples: Mozart’s Sinfonia Concertante and Bach’s Cello Suite No. 5, which are often performed in regular tuning. In both of these cases, the primary motivational factor is convenience i.e. ensuring the stability of the instrument when works in regular tuning are programmed on the same instrument within one performance. A more common perception amongst those inclined to restructure works for the sake of conventional tuning is that the relevance of the scordatura is no longer evident – for example, that the development of the modern viola negates the use of the transposition scordatura in the Mozart for boosting projection, though this seems to ignore that the principal effect of the technique in the Sinfonia Concertante is to affect timbre in relation to the solo violin,

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rather than to ‘fix’ a problem with the viola. I-Chun Chiang details various other aspects of a resistance to attempt any departure from regular tuning, including the difficulties faced by those with perfect pitch who have trouble reading a transposing score.

Whatever the reasoning, and relative merits, it is interesting to note that editions that include these restructured versions of works for regular tuning reside among those considered scholarly or even urtext. Prominent examples would be the Peters edition of the Bach cello suites arranged for viola and edited by Simon Rowland-Jones that has been cited as the most scholarly edition available,2 and the Bärenreiter and Henle editions of Mozart’s Sinfonia Concertante. The essential point is that departing from a composer’s tuning is a well-established practice when considering these scordatura works adjusted for conventional tuning. The issue addressed in this chapter is as follows: if we are capable of doing so for the sake of convenience, should we not be equally capable of doing so for aesthetic considerations, in the case of applying a retrospective scordatura?

To address this question, this chapter focuses on an extended scordatura in Mozart’s Sinfonia Concertante. It is undoubtedly the most well-known viola work using scordatura, and as such there is sufficient literature relating to the compositional intent. Also, Mozart’s choice of the transcription scordatura is likely the most prominent of all scordaturas, owing to its popularity in the 18th century. The literature indicates that the composer’s chosen scordatura was likely simply based on the practices in a period of history where the aspect of convenience determined its parameters. This notion of convenience is in a sense similar to violists today who opt against the use of Mozart’s scordatura because of the complications of playing other works on the same programme.

The retrospective scordatura in this chapter discounts convenience as being a prerequisite element as a part of modern-day performance practice. This is in the same way that most performers today probably spend more time preparing a Mozart concerto than Mozart himself ever had time to do. The approach taken is one of updating the scordatura for modern-day performance with the aim of preserving and even extending Mozart’s aesthetic goals. In discounting the necessity of convenience, it is accepted that in effect, it may be that the increased difficulty of the new scordatura may overtake the relative acoustic benefits. Nonetheless the purpose of the effort is to understand and

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execute the functions of altered tunings, to find the best tuning possible, and to test the boundaries of its effectiveness.

It should be noted that Bach’s Cello Suite No. 5 is essentially also a retrospective scordatura. Due to the complexities of that work, and other implications to scordatura, it was deemed necessary to address that project separately in the preceding chapter.

The case of Mozart’s Sinfonia Concertante opens up further questions about scordatura, in part due to the two accepted editions available today: one with Mozart’s transcription scordatura, and the second rewritten in regular tuning. The new extended scordatura edition we are about to discuss was constructed in 2011, and performed in the United Kingdom, Malaysia, and New Zealand. The scordatura was introduced in the inaugural edition of String Praxis, and editions in both regular and extended scordaturas were published by the American Viola Society in 2012, with further discussion in the October 2012 issue of Stringendo.

II. Introduction: A Context of Diversity

The aim of this introduction is to provide a contextualization of the Sinfonia Concertante, K. 364 by examining the genre and historical details of the composition, and how they relate to Mozart’s compositional style. This is in an effort to establish that a sense of brilliant diversity is evident in the work, that provides the basis for both the application of the original scordatura as well the further exploration of the technique. It will demonstrate this diversity between the two solo parts, in the relationship of the solo parts with the orchestra, within performance options, and most importantly the role this work plays within the genre.

The recognition of the Sinfonia Concertante has stretched to inclusion in film soundtracks, a recent example being the award-winning 2002 Turkish film Uzak (‘Distant’). It also became a point of inspiration for poet Jon Davis, who penned his “Essay on Joy Beginning with Mozart’s Sinfonia Concertante in E-Flat Major” with these opening lines:

Imagine Mozart, in the warm haze of his gift, blurting
"Melody is simple!" then sitting at the piano to improvise
a dozen.\(^4\)

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4. Jon Davis, "Essay on Joy Beginning with Mozart’s Sinfonia Concertante in E-Flat Major" Poetry,
We will note later that while we may dispute the level of joy in Mozart’s life in 1779, melodic variety and extemporization most certainly are important ingredients in his compositional process.

Part of the significance of this work in musicological research can be attributed to a wide array of reactions to the scordatura, and I-Chun Chiang’s research details these opposing viewpoints. These range from the views of Donald Francis Tovey in the 1930s who posits that the technique was only intended for a weak instrument, to exponents of the scordatura including Lionel Tertis and Nobuko Imai. Chiang makes two important observations.

First, reception history and the influences of both editors and recordings have helped shaped certain perceptions:

The majority of performing editions for Mozart’s sinfonia concertante exclude the scordatura in the solo viola part. Editors transpose it from D major to E-flat major without even acknowledging Mozart’s scordatura request. Many young violists, therefore, are unaware of the scordatura history of the piece and they do not have the options to execute it. In addition, popular recordings from the 1950s to the present have helped to bury the original notion of transcription scordatura.

Second, there are opposing views regarding whether the aim of the scordatura is to contrast or to blend with the concertizing violin. The effect of contrast is linked to theorists Hans Keller and Johann Mattheson suggesting that the transposed key of D major for the viola juxtaposes the ‘key colors’ of the two solo instruments.

This is a minority opinion. In contrast, Chiang references Maxim Vengerov’s views that the solo instruments should blend in timbre, echoing the views of Christoph Hellmut-Mahling of the New Mozart Edition. We will note at the end of this introductory discussion that these two opposing viewpoints are not mutually exclusive.


6. Ibid., 24-25.

7. Ibid. 25-26, 37.

8. Ibid.

9. Ibid, 33-34.

10. Ibid, 35.

goals. In order to understand the role of timbre, we need to address the intricacies of the genre.

Historical evidence points to two complete works in which Mozart experimented with the genre of the sinfonia concertante.\(^\text{12}\) Mozart first composed a sinfonia concertante for flute, oboe, horn, bassoon and orchestra in Paris, which ‘reappeared’ as the Sinfonia Concertante for Oboe, Clarinet, Horn and Bassoon, K. 297b.

John Spitzer notes the initial positive reception for the K. 297b:

The favorable scholarly verdict on the Sinfonia Concertante was made official, as it were, by Alfred Einstein's third edition of the Köchel catalog in 1937. Einstein identified the Sinfonia Concertante squarely with the lost work of 1778 and moved it out of the Anhang and into the main body of the catalog, with the chronological number K. 297b. He acknowledged in a note that the history of the work was obscure and its text corrupt, but asserted that, “the autograph was probably still extant as late as 1865 and may perhaps turn up again.”\(^\text{13}\)

By the 1960s, views as to its authenticity had changed, leading to its eventual designation as K. Anh. C 14.01. A 1977 concert review by Stanley Sadie was scathing: “Finally there was the Sinfonia Concertante for wind instruments ascribed to Mozart on the flimsiest evidence and never sounding remotely like a piece he would have put his name to, with its cheap and repetitive invention.”\(^\text{14}\)

Spitzer notes that the complexities surrounding the work:

The Sinfonia Concertante has never been authenticated as a Mozart work, nor has it been shown to be spurious. To this day, the piece remains doubtful.... Perhaps Sadie’s conviction that the Sinfonia Concertante is spurious contributed to the vigor of his condemnation.”\(^\text{15}\)

The relevance of this peripherally connected work is Sadie’s perception of the telling nature of its “cheap and repetitive invention”. Sadie’s assessment, while subjective, certainly has some grounding, particularly when put side-by-side with the more complex variations in Sinfonia Concertante for Violin, Viola and Orchestra, K. 364. It is somewhat ironic that the simplicity of the work for winds is more idiomatic of the

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\(^\text{12}\) There is also a third work, incomplete, that will be mentioned later in this discussion.


\(^\text{14}\) Quoted by Spitzer (319, from: Stanley Sadie, "Brussels Mozart Orchestra – Queen Elizabeth Hall", London Times, April 21, 1977, 12.)

\(^\text{15}\) Spitzer, 320.
compositional style of the genre in that period than its more mature cousin. It is perhaps not by accident that only a handful of the sinfonia concertante works remain in the repertoire today, despite some 600 works written by 200 composers from 1770 to 1830: many of these were simply not intended as compositions intended for repeated use, and included a level of repetition that many have been considered less than substantive.

Whether or not the work for winds was truly penned by Mozart, the principal point is the centrality and vitality of melodic invention within the genre that becomes the platform from which Mozart adds musical diversity. This in turn becomes the umbrella under which scordatura is explored – both Mozart’s as well as the extension for scordatura proposed in this chapter. That there is an unusually substantive level of contrast in K. 364, contrasted to other works and the historical compositional context, provides grounding for the exploration of the scordatura use.

Barry S. Brook notes: “Melodic variety is a hallmark of the symphonie concertante. Although it may sometimes include a poignant andante, its mood is usually relaxed, gracious, and happy. Rarely is it very dramatic, never somber or intense.” Here we deal with two distinct aspects of Mozart’s Sinfonia Concertante, K. 364. First is the manner in which Mozart’s compositional approach takes melodic intricacy to remarkable levels, in line with the unique genre. While doing so, we deal with a second aspect: areas where Mozart goes against the grain in redefining the genre. This includes an unexpected approach toward the C minor second movement that shows an inclination against convention, in a stark contrast from the ‘relaxed, gracious, and happy’ model audiences would have been accustomed. In a sense, one can argue that this is a more adventurous spirit than that exhibited by those reluctant to take up Mozart’s designation of scordatura.

K. 364 was written in Salzburg in 1779, shortly following sketching 51 bars of a Sinfonia Concertante in A major for Violin, Viola, Cello and Orchestra, K. Anh. 104 [320e]. K. 364 is a musical picture of Mozart at a crossroads, exhibiting influences from

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17. Ibid, 134. Note: Brook supports the use of the French spelling overall, though he mentions that the Italian version would be appropriate for K. 364.

the places from where he had come, connections to his situation in Salzburg, and possibly its relevance to the composer’s future plans.

The connection to Paris is clear – the genre had its basis there, flourishing in the 1770s. Brook notes that Mozart used the French designations of the genre – “Sinfonie concertante” and “Synfonie Concertante” – for this first work in his letters to Leopold Mozart. Additionally there is likely borrowing in the third movement from the Rondo of the second violin concerto of Chevalier de St. George (in D major, Op. Posth. 2 G215) – a fitting link to the man dubbed “The Black Mozart”. A link to Mannheim exists in the use of the orchestral crescendo in the first movement, the other location of Mozart’s travels prior to his return to Salzburg.

There are also two connections to Mozart’s time in Salzburg: another possible quotation from Michael Haydn’s D major duo for violin and viola, as well as the use of the Italian spelling of Sinfonia Concertante for the inclinations of a Salzburg audience.

The Sinfonia Concertante is also linked to Mozart’s eventual departure from Salzburg. This is seen in the preparations for the composer’s trip to Munich in late 1780, with the travel due to the commissioning of Idomeneo, as suggested by Maynard Solomon:

To bolster his prospects, he apparently assembled a portfolio of other works to bring with him, just as he had on earlier trips to Munich and Vienna. Probably, the main compositions in the portfolio were two mature masterpieces – the Divertimento in D, K. 334/320b, and the Sinfonia Concertante, K. 364/320d, plus the Symphony in C, K. 338, with its brilliant opening fanfare.

The inclusion of the Mannheim influence in itself demonstrates the unique nature of Mozart’s Sinfonia Concertante, particularly considering that the role of the orchestra

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21. Additionally, the first sinfonia concertante, for winds, was written for soloists from Mannheim.


23. Brook, 137.

was never meant to have a particularly crucial role in the genre. Brook notes that there is often an inaccurate link made with the concerto grosso:

In the symphonie concertante, the forces are usually unequal; the solo group is master, maintaining itself in the forefront much of the time, hoarding the important thematic material, and performing extended cadenzas. The orchestra provides the (often meagre) accompaniment, a background for the solo group, and a frame out of which the soloists may glitter. The symphonie concertante is more closely related to genres of the classical era. To some extent, it represents a fusion of elements from the divertimento forms (serenade, concertino, cassation), the symphony and, especially, the solo concerto.25

The significance of the solo group additionally highlights the role of Mozart’s scordatura: not simply to modify the viola individually as Tovey had presumed, rather to affect the timbre of the pair as a unit. Simultaneously, and under the veneer of imitation in the outer movements, Mozart imbues elements of individuality and melodic intricacy – and not just within the obvious examples of the cadenzas. Take, for example, the primary theme of the third movement, which is the aforementioned quotation from Chevalier de St. George’s concerto. Beyond simply providing variations between the solo parts, Mozart exhibits the theme first in the orchestra, making K. 364 stand out as an atypical example of the genre.

<table>
<thead>
<tr>
<th>Primary theme, third movement</th>
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<tr>
<td><strong>First statement:</strong> bars 1-24</td>
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<tr>
<td><strong>Second statement:</strong> bars 204-235</td>
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<tr>
<td><strong>Third statement:</strong> bars 343-374</td>
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Note: Parts A and B overlap, thus the discrepancy between the lengths and bar numbers.

Table 2: Variations of the primary theme of the third movement of Mozart’s Sinfonia Concertante

25. Brook, 134.

26. ‘Parallel’ here infers part writing often a third or sixth below the melodic line i.e. parallel in rhythmic patterns.
The dual existence of convergence and divergence we can note in the various appearances of this theme leads to the diversity within the work. The fermatas in the development section of the first movement provide a similar opportunity – most recordings have a literal reading of the fermatas at bars 176 and 189, but there are performers who choose to add small cadenza-like *Eingänge*. Those of Monica Huggett and Pavlo Beznosiuk deserve some special attention:

![Figure 5.1. Transcription of the *Eingänge* by Huggett and Beznosiuk, at bars 176 and 188, respectively](image)

Their collaboration resulted in lines that had individuality as well as independence: similarly shaped lines nonetheless containing individual musical personalities. This brings out Mozart’s use of colour far more than two completely autonomous lines would have. It is the act of subsuming the variety within a cohesive structure that is the essence of the compositional style, which these particular *Eingänge* demonstrate.

The development section is also distinct in that Mozart takes the approach of leaving melodic interest to the orchestra, with arpeggiation keeping the soloists firmly occupied. Once again, Mozart manages to sustain a role of the genre – a display of virtuosity – while maintaining the symphonic element as a more equal partner than would normally be expected. As if in an almost imperceptible nod to the orchestra, Mozart adds an extremely brief imitative section in bars 312-13 of the recapitulation, from the 1st Violins to the 2nd Violins and finally to the 1st Violas:

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This might in other circumstances be unsurprising; however it is unusual on two counts: first, that the same pattern does not exist anywhere else in the work, including the exposition; second, that it provides a contrast to the usual treatment of orchestration in the sinfonia concertante genre.

The bar preceding the first movement cadenza (bar 338) creates another interpretive grey area. The orchestral parts have a fermata over a rest in the second half of the measure with the fermata designating the cadenza, while the soloists have a fermata over a semibreve.

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28. Note that the Bärenreiter urtext has the cello and bass parts in a single system, while the Dover reprint of the Breitkopf & Härtel Complete Works Edition retains the two separate systems. In both editions, the solo parts are titled "Violino principale" and "Viola principale".
Figure 5.3. The double fermata issue, excerpt of the solo parts and violin and viola tutti parts, first movement, bars 334-38: The tutti parts, incorporated into the solo parts up to bar 337, mirror the rest of the orchestral parts in the application of the fermata in bar 338.29

This would be common practice in a usual concerto, with the longer fermata designating a cadenza. However, having multiple soloists requires a cadenza to be written out, after the fermata bar, making the discrepancy in this measure unusual. What would have been more predictable is a fermata that is the same length as that of the orchestra, followed by Mozart’s written cadenza. Instead, the notated fermata over a semibreve allows the soloists to carry on playing beyond the orchestra, before the formal start of the cadenza – an unusual occurrence in Mozart, which may explain why various recordings indicate a choice by some performers to coordinate the fermatas of the soloists and that of the orchestra. However, the manner in which it is written has the orchestra mirroring the entrance of the soloists at the start of the movement (bars 72-73).30


30. Additionally this section is notable due to the contrast to the preceding historic use of the orchestral crescendo compositional device (bars 46-56).
As we can note in the excerpt above, the entrance of the soloists overlaps with the end of the orchestral introduction, proceeding onwards while all instruments other than the *tutti* violins stop playing. Volker Scherliess pictures this as “the unexpected entry of the soloists ‘as from another world’”, Paul Myers as “one of those magical musical moments where they seem to materialize out of thin air”, and Philippe Mougeot expresses this in the following way: “the two soloists emerge even before [the introduction] has ended, hanging from it like an echo”. Finally, Maxim Vengerov states, “We have tried to make the transition as imperceptible as possible so that momentarily the listener isn’t quite sure whether the soloists have come in or not!” Vengerov additionally notes: “The soloists must come in very discreetly, as not to disturb the oboe line, which can stand alone without the soloists.” This may once again highlight the hybrid nature of the work, with Vengerov noting that it is only at bar 126 that “we have arrived where the concerto really starts for the soloists.”

This section is by itself an example of the unique nature of the work, with no other work with soloists exhibiting this feature. When juxtaposed, the previous double


fermata section can be seen as another magical musical moment, as the soloists materialize once again from the orchestral texture, hanging once again like an echo, before the calisthenics of the cadenza.

These elements of variation coalesce into an environment of diversity within which we shall see that scordatura plays its role. There is also evidence of systematic variation in the distribution of articulation markings in the first movement. This can be seen in the example below that compares repeating passages on the viola.

![Figure 5.5. First movement, viola solo, bars 115-17, 266-68](image)

Even pitch patterns show some evidence of systematic variation. Mozart varies the solo part writing in the first movement in areas preceding the return of an extended tutti section, when further imitative writing would have been easily possible and more predictable.\(^{36}\) There is evidence of further variation internally within the viola part, the clearest example being in bar 326:

![Figure 5.6. First movement, bars 326-27, as noted in the first editions of the parts and the score\(^{37}\)](image)

Wolf-Dieter Seiffert of the Henle edition regards this as an error, because of the incongruence in the second half of bar 326, favouring an alternative stream of sources.\(^{38}\) This reasoning does make some sense when compared to bars 156-57:

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36. Ibid., 31.

37. Score as noted earlier. First edition of the parts, with piano reduction published by Offenbach: Johann André, n.d. (c.1840) (Plate 1588).

However, if we take a second look at the second violin section (bar 337), Mozart’s application of systematic variation makes the variation an entirely viable reading.

The nature of the second movement provides the final display of compositional diversity, in which the scordatura research will be embedded. Whether due to the death of his mother in Paris (and to some extent being blamed for this by his father), dissatisfaction at his conditions in Salzburg and an eagerness to leave, or a different reason entirely, the second movement has a certain melancholic imagery, particularly when contrasted to the outer movements. The significance of this, as we will note further on, is that within the context of genre, a slow movement of this variety is quite extraordinary.

Adélaïde de Place describes this as “one of Mozart’s most sorrowful movements” and that it “exudes an almost desperate sadness: the three notes of the principal theme are breathed by the orchestra like a stifled lament, taken by the soloists, then developed and varied in a dialogue full of pathos.” Solomon takes this a step further, noting that rather than a moment of respite between the bookending movements, the second movement may have a greater relevance:

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39. Offenbach: Johann André, n.d. (c.1840) (Plate 1588).

We tend to valorize origins and goals, beginnings and endings, first and final causes. That may be why we often want to view the slow movement of the classical sonata cycle as tangential or transitional, as a meditative or affective interlude that happens to lie on the route between the fundamental complicating narrative of the opening sonata-allegro and the transcendent, simplifying strategies of the finale.41

Solomon further notes that the slow movement of the Sinfonia Concertante fits into a particular model that “is derived from opera seria, using copious dramatic gestures and recitative-like interjections to impart a somewhat objectified sense of the tragic or pathetic.”42

Finally with this contextualization, Solomon surmises:

It may be because we often read Mozart’s music with lenses adjusted to Beethoven’s ‘heroic-style’ paradigms that we sometimes overlook that Mozart’s slow movements are conceived as the gravity center of many of his sonatas, piano concertos, and other instrumental cycles, that they are indeed ‘central’ in the most fundamental sense. Issues of interiority are reserved for these slow movements, while the framing movements are briefer in length and lighter in texture; some opening movements are crafted to serve as prologues to an exploration of feeling and subjectivity and the weight of the compositions resides in the slow movement.43

Unlike the other examples Solomon provides of this slow movement model (the String Quartet, K. 157 and the Piano Concerto in E-flat, K. 271), that of the Sinfonia Concertante stands out due to its effect within the genre. Brook notes that a distinctive feature of the sinfonia concertante, in contrast to the concerto grosso, is the avoidance of minor keys and slow movements entirely, and that “even in the three-movement works, andante is usually as slow as the tempo is permitted to go; an adagio is almost unheard of.”44 Mozart’s link to Paris further highlights this factor; Brook notes that while over fifty percent of the examples of the genre exhibit only two movements, this is even more so for Paris by a ratio of two to one.45 Mozart’s second movement certainly went against the convention of having an aesthetic that was “never sombre or intense”.46

41. Solomon, 206.
42. Ibid., 207.
43. Ibid., 206.
44. Brook, 134-35.
45. Ibid.
46. Brook, 134. See full mention of this at footnote 12.
In summation, Mozart’s approach in K. 364 was to preserve the fundamental melodic variety of the genre, while adding more variation and originality than would be expected in the genre. The effect is to have an adventurous mixture of cohesion and divergence, with the Sinfonia Concertante becoming a metaphorical crossroads for Mozart in 1779.

The use of scordatura is certainly a significant factor in this juxtaposing of cohesion and divergence. The use of a transcription scordatura may not in itself have been novel, though James Boyd, in his review of the Henle edition, described it as "Mozart’s inspired reinvention of the instrument".\(^\text{47}\) In either case, it is its placement within the genre of the sinfonia concertante that is unusual. In terms of cohesion, we noted earlier that an aesthetic function of the scordatura is to provide a blend of timbres in the solo instruments; this parallels Brook’s mention that in contrast to the concerto grosso, it is the solo group that has precedence. The scordatura for the viola, as well as the unidiomatic key of E flat major for the violin, establish this timbral effect. At the same time, the retuned viola naturally causes a distinctive contrast to the solo violin, with a great number of parallel sections in the outer movements where the viola uses open strings unavailable to the violin. This is underscored in the final movement by variations in the orchestration when the viola takes centre stage as contrasted to preceding parallel sections for the solo violin.\(^\text{48}\)

It is additionally interesting to note that the key of C minor in the second movement, while still having some open string use for the scordatura viola, does so in a manner that does not emphasize key tonal areas or cadential moments, effectively darkening the viola relative to the outer movements. Regular tuning, with its open C and G strings provides sympathetic resonances; the scordatura essentially making the instrument resonate best at C sharp and G sharp instead – and negating the usual effect of C and G strings.

What we can gather from this is that the scordatura has very specific aesthetic effects, which can be misconstrued by viewing the viola separately from its role within the ensemble. It needs to be seen in relation to the solo violin. More importantly: as we have seen, Mozart’s compositional style shows a distinct degree of experimentation, an adventurous context in which the experiments in a retrospective extended scordatura


\(^{48}\) For example, bars 120-127, as contrasted to bars 112-119.
will be couched. We should recall that the sinfonia concertante in the 18th century was at its core an expedition: an effort of composer-performers working together to establishing some independence from the limitations of patronage of either the Church or the aristocracy.49 Efforts today should emulate that free spirit, challenging the conventions placed on the role of the performer – parameters foreign to Mozart as he pushed the boundaries in his Sinfonia Concertante.

III. Compositional intent, aesthetic considerations and an extended scordatura

Thus far, we have established the environment of diversity displayed in the Sinfonia Concertante, and how Mozart’s scordura fits into this overall compositional style. From here, we can now explore further aspects of modern performance. The following will be covered:

• The compositional intent of Mozart’s scordura. This addresses not only its effect on the instrument, but also the wider context of its relationships to the solo violin and the orchestra;
• The role of Mozart’s scordura in the context of modern performance;
• The process of experimentation with an extended scordura, and the ensuing results;
• A discussion of the roles of compositional intent and modern aesthetic considerations.

We will find that Mozart’s Sinfonia Concertante provides an opportunity for the use of a new scordura in the contexts of compositional intent rather than just as an aesthetic alternative.

The literature indicates some resistance to the use of scordura, even when it is clear that it was the composer’s instruction – a situation no doubt complicated by the convenience provided by editions altered for conventional tuning. I-Chun Chiang’s research deals with these issues, including complications resulting from those who have perfect-pitch and find it awkward to read fingered notation.50 Chiang also notes

49. Ibid., 142-43, 145-47.

confusion from a familiarity either with conventional tuning in general, or the specific use of Mozart editions in standard pitch; nonetheless she concludes based on audience surveys that the reception favours the scordatura over regular tuning. Chiang notes:

Scordatura is a serious technique that requires profound study for genuine appreciation. It is neither a device that is mastered overnight nor a decision that works for every artist. A violist who wishes to follow Mozart's request needs to commit to it and attain a high comfort level with it before a performance.

This brings up the issue of scordatura requiring a certain time frame for adjustment both of reading as well a certain aural acclimatization.

It is also interesting to note that three of the five responses from performers in Chiang's field test considered only the independent effect of the sound of the instrument, rather than its effect towards the overall ensemble. The views in that study matched the views of some performers talked to in the course of the research, that the regularly tuned version not only allows for the convenience of remaining in regular tuning but rather the view that playing in regular tuning is the most suitable version possible. The arguments for this include:

- The scordatura was intended at projecting a ‘weak’ instrument of the period, and the modern construction of the instrument takes away the need for this form of assistance.
- The increased tension for this tightens the tone of the instrument – the tension of modern strings is far more calibrated to specific pitches, making any deviation from regular tuning a disadvantage.

These views tend to neglect two important observations:

- The most valued instruments today, of the like of Stradivarius and Guaneri, are those that did exist during Mozart’s time. The alterations to these instruments in adjustments of the neck, fingerboard and bridge, are parallel to those of the

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51. Ibid., 45-46.
52. Ibid., 53.
53. These views from violists were encountered in various discussions in the process of publication, who remain anonymous within this thesis.
violin. Essentially then any ‘weakness’ in the 18th century would be in relative terms equal today.

- There is a presumption that gut strings allowed for a greater flexibility of tone than modern strings. This underscores the lack of understanding that scordatura is intended specifically to utilize a deviation not only from standard tuning, but from standard string tension. A change in string tension is not an unfortunate side effect: it is the point of using scordatura.

Overall, the focus on the viola individually, rather than the effect on the overall performance, is the main issue. Scordatura in Mozart's Sinfonia Concertante has effects beyond simply projection, but rather causing a change of timbre that works in the unique genre. This misunderstanding of the compositional device seems to parallel that of Biber's sonatas. As James Clements notes:

> The purpose of the scordatura in the Mystery Sonatas has not always been appreciated, however... In 1923, the violinist Robert Reitz edited the Mystery Sonatas for Universal Edition, in an arrangement for a conventionally tuned violin. Such an attitude stems from the misconception of Biber's use of scordatura merely as an external gimmick, employed only as an artificial device to enhance the virtuosity of the set. The scordatura tunings do indeed facilitate the playing of triads in close position, and other technical features which would otherwise be more difficult on a conventionally-tuned violin. More importantly, however, each individual scordatura creates its own resonance or sound world, which helps enhance the mood of each sonata.54

In a similar manner, the aesthetic role that scordatura plays in the Sinfonia Concertante is to form a new resonance in its pairing with the solo violin – and not simply for increased projection, or even the timbre of the viola separate from its concertizing partner. Cook’s observation that the key of E flat major darkened the violin by virtue of the lack of available open strings further emphasizes the function of this particular scordatura.55 This is not to say that the increased projection or the new timbre could not be used by a composer in his or her own right; after all, Maurice Riley’s account of solo concertos doing exactly this proves the versatility of scordatura. However, in Mozart's Sinfonia Concertante the compositional aim is primarily to redefine the pairing of soloists as a distinct timbral unit.

Christoph-Hellmut Mahling’s preface to the New Mozart Edition illustrates the progression of scholarship in regard to the function of the scordatura:

The performance practice might be the sole determining factor for this as Hermann Abert already pointed out: “The purpose was to intensify the tone and, to make the playing easier.” Due to the lighter sound the solo viola stands out more clearly against the accompanying orchestra and, at the same time, ‘blends’ very well with the concertizing violin.56

Roland Würtz perhaps described it best, in clarifying the role of scordatura in relation to both the solo violin as well as the orchestra, stating that it was “to bring the viola closer to that of the more brilliant violin, producing a better partnership between the two soloists and clearly separating the alto instrument from the tutti.”57

At this point it is worth noting that the tuning would cause the viola to have the frequent use of open strings in the key of E-flat major, while the violin would not. Thus, the viola is to some extent differentiated from the violin, while having a change in timbre that is more cohesive with it.

Philip Wilby’s notes to his reconstruction of the Sinfonia Concertante in A, KV Anh. 104[320e] for Violin, Viola, Cello and Orchestra further highlighted both the function of the scordatura as well as the general resistance to the technique: “Violists are reluctant to retune their instruments, but I can strongly recommend this requirement, since the added brilliance is of great assistance in balancing with the violin.”58 The reluctance in this case may be justified, in consideration of the scordatura of a full tone, and in that gut strings may be more flexible than metal wound ones. Nonetheless, the function of this scordatura provides clues into compositional intent. Mozart’s choice of this scordatura indicates a differing approach in this ‘triple’ sinfonia concertante, having the choice of A major and the viola in G major. It is possible that the approach was to allow the violin and cello to ring freely (as contrasted to the key of E flat major) but nonetheless bring the viola closer to the other solo instruments, thus requiring a more extensive retuning. The key of A major would have placed the altered third string within


range of the resonant frequency of a smaller viola, though available measurements of Mozart’s violas do not as yet confirm that the composer’s instruments would have fit this category. This being said, it would appear that one of his violas was smaller than the standard 16-inch instrument.59

Considering the key of E flat major in the Sinfonia Concertante K. 364, for performers reluctant to execute Mozart’s instruction it would make more sense to leave the viola part as is, and transpose everything else to D major just as Bernard McWilliams did in Carl Stamitz’s Concerto in E-flat major for violin, viola, and orchestra.60 Ironically, such an alteration might result in an unusual scordatura for the violin, keeping the lowest string tuned to G, with the interval of a minor sixth between this and the third string.61

The application of an extended scordatura in this work then is to maximize the compositional intent. It should be noted that the timbral effects are not only tied to the increased tension, but are related to the availability of open strings which, as mentioned earlier, is a key element in the use of the scordatura. The extended scordatura then has the goal of providing even greater appropriate use of open strings, and the use of sympathetic resonances in the transposed key of D major. Due to the circumstance that no pitches in the work utilized the lowest open string, experiments with scordatura probed the question of whether an extended scordatura of that string up a further semitone would provide beneficial effects. It was determined within this experimentation that while the difficulty level did increase, there were various areas where the newly available open low D string, and the altered sympathetic resonances from the instrument, decidedly assisted the performance of the work acoustically, at some expense to convenience.

There are two principal areas that indicate benefits of the new scordatura. The first of these is in the first movement, at bar 101:

59. Riley, 132-33. Exact measurements are only available for one of Mozart’s two violas; Riley states that the instrument mentioned here is kept in a glass case at the “Mozart House” in Salzburg and was not made available for measurement.


61. This is with the presumption that areas like the start of the first movement cadenza intentionally used the open G string. Unlike the viola, Mozart used the lowest open string on the violin in this work.
Figure 5.9. First movement, bars 90-102, in original scordatura of C sharp, G sharp, D sharp, A sharp – first edition, with additional fingerings

Figure 5.10. First movement, bars 98-102, with extended scordatura of D, G sharp, D sharp, A sharp

The lowest note, originally a C sharp, has the tendency to be clipped, due to the following interval of a tenth, which either requires moving from the fourth to the second string (indicated with the fingerings), or a shift to third position. Both of these options require a momentary break to execute. The availability of the open string addresses this issue, allowing the performer to leave the lowest string earlier, allowing it to ring while securely preparing the following note. Also note the additional advantage of having the option to use the first finger for the second note of bar 101, without the complication of using the same finger for the previous note.62

The second principal area where the extended scordatura assists the performer is in the cadenza of the first movement. The opening bars have the unusual circumstance of having the violin utilize its lowest open string, with the viola not having the same advantage.

Figure 5.11. First movement, opening bars of the cadenza, first edition, with additional fingerings

62. Albeit that alternatively, half-position could have been maintained. This would, however, require a string crossing over the semitone, while the use of first position provides the opportunity to avoid this.
It should be noted that matching fingerings did not seem to be a concern to Mozart, in intentionally providing the key of E flat major for the violin, and the transposed key of D major for the viola – one of the many aspects of the work which demonstrate a startling level of diversity.\textsuperscript{63} However, the use of open strings is always for the benefit of the viola, whereas the harmonic nature of the cadenza places this unidiomatically in reverse. The extended scordatura addresses this issue, allowing the viola to mirror the violin’s use of a low open string.

![Figure 5.12. First movement, opening bars of the cadenza, with the extended scordatura](image)

Another area where the extended scordatura provides a benefit is the cadenza of the second movement. Here we address the use of scordatura not for the availability of open strings, rather the sympathetic resonances of those open strings. It should be noted that at this point we diverge from compositional intent, and consider an aesthetic consideration instead.

![Figure 5.13. Second movement, opening bars of the cadenza, first edition](image)

Independent of the violin part, one might note that the first note of the final bar in this excerpt has a particular resonance due to the second string being of the same pitch, while the parallel section two bars earlier does not have parallel resonances. The extended scordatura provides sympathetic resonances to both of these notes, as noted in the sections highlighted below:

\textsuperscript{63} Andrew Filmer, “Mozart’s Sinfonia Concertante: Diversity and the Role of Scordatura” \textit{Stringendo}, (October, 2012).
An additional benefit is the use of parallel fingerings in these sections. Sounding fifths in conventional tuning have the complication of usually requiring the same finger. This occurs in the first two notes of solo viola part in the cadenza, which tends to complicate the connection of the upbeat to the downbeat. This is particularly important considering that upbeats constitute a signature feature of the second movement as a whole.

There is a credible alternative perspective that the advantages to the viola in the second cadenza do not match the violin part: there is no sympathetic resonance for the first bar of the violin part, and the violinist has to contend with the fingering of a fifth moving from bar 2 to bar 3. However, it should be noted that fingering issues will always be more challenging in the violin part in all three movements, and that in offsetting the lack of a sympathetic resonance, the violin has the advantage of entering unaccompanied in the cadenza.

There are other relatively minor advantages to the extended scordatura. These likewise fall into the categories of available open strings and the corresponding fingering patterns, and that of sympathetic resonances. The first of these is in the first movement, in bar 318.
There are two particular benefits here. The first deals with the availability of the low open string. While the crossing of strings at an interval of a semitone is often avoided in string playing, nonetheless the additional option is available in the second half of the bar to begin and end on open strings, also utilizing a third open string in between. The second advantage is that the availability of the new open string assists the performer, who is likely returning from second position, as noted in the fingerings to the first excerpt. (The only other option is to leap from the second string to the fourth, which would be far more complex and less likely to succeed in either edition.)

Sympathetic resonances are also available on a relatively peripheral basis in two other sections, noted below.

Figure 5.16. First movement, bars 156-57; and third movement, bars 342-50. Areas of sympathetic resonances highlighted in boxes.

In these sections, previously only the notated Ds had sympathetic resonances from the second string – with the new edition, the C sharps also exhibit this feature. This is of particular benefit in the second excerpt, where the viola has to compete with a violin soaring high in on the E string, and with a crescendo in the orchestra.

Overall, the experiments with the new scordatura on the work demonstrate that while the idea of applying scordatura retrospectively may be novel, the acoustic effects are traditional. The benefits of sympathetic resonances and the availability of new open strings date back to Biber, well preceding Mozart. The benefits of this scordatura relate both to the instrument individually, as well as in relation to the violin. The field tests of rehearsals and performances indicate one area of caution: depending on the kind of strings that are used, there is some risk of the lowest string sounding timbrally different from the other three strings. However, this risk is minimal, and is certainly outweighed by the benefits of the new tuning. Another point to note is that the FFT analysis indicated that the overall resonance of the instrument is less when the scordatura departs from conventional tuning of fifths.64 This clarifies that an approach of

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64. FFT Analysis by Jason Post, see Appendix A.
scordatura can be intended towards specific effects towards individual sections, rather than being aimed towards an overall change in sound quality. It is then important to weigh the overall result i.e. whether specific positive effects outweigh the side effect of overall resonance. The selections affected by the scordatura in the Sinfonia Concertante include areas such as the cadenzas, and the prominence of these sections once again justify a decrease in overall resonance, particularly since the majority of the instrument remains in Mozart’s original transposition scordatura.

In concluding this chapter it may be useful to re-contextualise that the key of E flat major is not necessarily unidiomatic to the violin or the viola in general terms – the choice of that key in the Divertimento for Violin, Viola and Cello, KV 563 is evidence of that. However, the key does indicate a darkening of tone of the violin, and additional brilliance for viola in scordatura, illustrating a very specific aesthetic aim in the Sinfonia Concertante. One can argue that despite the physical complications of playing an instrument with the interval of an augmented fourth between two strings, in contrast to Mozart’s original the extended scordatura only alters one string, while editions in conventional tuning affect all four.

The process of extrapolating from Mozart’s use of scordatura is complex. Take for example the Serenata Notturna, KV 239: a retrospective scordatura could be applied to the Viola I part, with the C string tuned up a full tone without affecting any of the pitches. It is also possible that the G string be tuned upwards a full tone, providing a most resonant setup for the key of D major. This would be particularly striking, considering these are the only two tones available to the timpani, and the harmonic structuring related to the instrumentation.

However, unlike the Sinfonia Concertante, where it is clear that the scordatura is used to unify the solo group, the role of the solo viola in the ‘Orchestra I’ ensemble contrasts to this. The opening bars suggest cohesion of the solo strings and tutti in a more traditional manner:
If a retrospective scordatura were to be applied here, it would have to be carefully considered as a modern application rather than an extrapolation of Mozart’s use of it elsewhere. Whether or not the application here is successful would then depend on the specific circumstances of a performance, rather than an interpretation or extension of performance practice of the composer.

Thus, it is important to demarcate a possible modern approach in the Serenata Notturna, versus the approach taken in the Sinfonia Concertante, which takes as its basis the compositional intent of the use of scordatura. In other words, compositional intent for certain aesthetic goals is a very different issue compared with whether it matches performance practice for the era in question. Mozart, who quite possibly played the viola himself for the Sinfonia Concertante, had the aim of producing more resonance and the availability of open strings. We know that scordatura use in the Classical era, in contrast to the previous era, was simplified for convenience – thus, the use of a transposition scordatura that arguably did not maximise those compositional goals. The argument made in this chapter is that this aspect of convenience has little, if any, to do with the aesthetic aims of using the technique today.

As a final comment on the extension of Mozart’s scordatura, a question that was raised in publication-related discussion was whether scordatura should be restricted to an approach of period performance. This is likely the most complicated question in regards to this edition. Period performance has the implication that Mozart would have applied the extended scordatura, once again bringing up the question of convenience. This would not necessarily be the case, considering that Mozart may have been

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surprised that performers nowadays take months to prepare for a performance of one of his concertos. We have already eliminated a certain aspect of ‘what Mozart would do’ in modern music-making, whether period performance or otherwise, by investing the kind of time that the composer did not possess. In that sense of sacrificing convenience for aesthetics, as well as moving away from replication of the performance practice of the 18th century, the extended scordatura fits modern performance far more than period performance.

This edition has taken the question of period performance versus modern performance into account, with the goal of providing multiple options to the performer. This can be seen, for example, in the use of an ossia stave in the one case where these two approaches might use different fingerings and string use:

Figure 5.18. Third movement, bars 330-39

This is further discussed in the chapter on notation; however suffice to say in this context that a modern use of vibrato would lead a performer to use the ossia option, while one couched in period performance would likely use the open string.

The principal matter is that Mozart composed a remarkable work, which utilized a scordatura that should be applied in both period performance as well as contemporary performance. By eliminating the aspect of convenience, it is possible to further extend aesthetic options, keeping in the forefront the idea of musicality and compositional intent rather than a specific performance style.

In conclusion to this chapter, the following is the edition of Mozart’s Sinfonia Concertante with the extended scordatura, published by the American Viola Society in 2012. Audio samples in both original and extended scordatura tunings (movement II, bars 1-5 of the cadenza) are available in Appendix D, tracks 9-10. These were recorded for use in the FFT analysis. See page 351 for full listing of audio tracks.
SINFONIA
CONCERTANTE
K. 364

W. A. Mozart
(1756–1791)

Principal Viola Part
Extended Scordatura Edition
Edited by Andrew Filmer

AVS Publications 019
Sinfonia Concertante for Violin, Viola and Orchestra, K. 364

THE EXTENDED SCORDATURA

At times, Mozart is the unexpected adventurer. He placed the viola in the spotlight, applied the use of scordatura, and explored the sinfonia concertante—individual endeavors not marking him as a trailblazer, but in combination revealing a subtle revolutionary.

The composer put his quill to the genre of the sinfonia concertante only three times—K. 364 for violin, viola and orchestra; the fragment K. App. 104 for violin, viola, cello and orchestra; and one for winds, which comes down to us in the rather dubious form of K. 297b. In the one complete and verified case, the composer redefines the genre, bringing conversation not only between the soloists, but between soloists and the orchestral forces. Additionally, in both works that feature string soloists, the viola employs scordatura: up a semitone for K. 364 and up a full tone in K. 104.

The use of scordatura, particularly for the viola, has three historical stages: the use of expansive experimentation, most notably with the “Rosary” Sonatas for violin of Heinrich Biber; the use of the transposition scordatura in which Mozart operated; and finally the use of it for special effects as well as post-tonal era opportunities, from Mahler to Lachenmann. The transposition scordatura was largely for the function of projection—for the convenience of keeping strings tuned in fifths—though Mozart’s application of the technique was to additionally affect timbral change in the solo group.

Here, revising the scordatura reexamines that trade-off in preserving its original acoustic effects and extending its benefits beyond projection, albeit at some cost of convenience. While the approach historically sustains the compositional intent, it does deviate from the performance practice of the day; it can be seen either as an approach of a modern performer, or contrastingly as an extrapolation of Biber-esque experimentation.

The extension pushes the lowest string up an additional semitone, made possible by the lowest pitch that Mozart employs being a D and the fairly limited use of the lowest string. In doing so the extended scordatura particularly contributes to three areas.

The first of these occurs in the first movement, where the availability of a low D string allows the open string to ring as the bow leaps over the adjacent string, instead of necessitating a premature abbreviation of a low stopped D.
The second instance occurs at the start of the first-movement cadenza, where the violin has the opportunity to begin with the open G string. The viola now has the ability to do likewise, with the low D string allowing for almost identical fingerings in this passage.

The final area is at the beginning of the second-movement cadenza, where the second note of the viola has additional sympathetic resonance from the open string an octave below.

It can be noted that in two of these cases, the advantages of resonance or open string use are not accordingly made available for the violin. However, it has been argued that Mozart’s original scordatura for the viola created systematically different approaches with the two solo instruments—a principal compositional aim in providing further projection for the viola rather than for both instruments equally.\(^1\) Contrast to projecting the viola, the key of E-flat major “darkens” the sound of the violin, bringing the two instruments closer as a concertizing unit.

It is this goal of strengthening the viola part that the new scordatura further advances, in an era where musicians invest more time in preparing and performing works of Mozart than the composer ever had the opportunity to do himself.

**EDITORIAL COMMENTARY**

This arrangement is the product of research into the larger context of scordatura discussed in this author’s article “Building a Framework for Scordatura: New Possibilities for the Viola, and Beyond,” in the online journal *String Praxis*, vol. 1, no. 1.

A complete autograph of the score no longer exists. Christoph-Hellmut Mahling, in the *Neue Mozart-Ausgabe* (NMA), notes that parts of the autograph score exist in private collections and are limited to sketches of the cadenzas. Currently, two facsimiles are available in the critical report of the NMA,\(^2\) and one is further available on the Harvard University Library website.\(^3\)

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In preparing this edition, the first edition of the viola part as well as the full score, both in the public domain from the International Music Score Library Project (IMSLP), have primarily been used, as well as the three facsimile manuscripts mentioned above. The viola part is published by Offenbach: Johann Andrè, n.d. (c.1840) (Plate 1588). The score is from Wolfgang Amadeus Mozarts Werke, Serie XII: Concerte für die Violine mit Orchester. Leipzig: Breitkopf & Härtel, 1877 (Plate W.A.M. 364), also known as the Alte Mozart-Ausgabe, the first complete edition of the composer’s works. IMSLP states the editor to be Johannes Brahms, and while the New Grove does note that Brahms did indeed edit works of Mozart, there is unfortunately a lack of confirmation that Brahms edited this particular work. Additionally, two modern editions have been consulted: one edited by Wolf-Dieter Seiffert (Munich: G. Henle Verlag, 2006, HIN 798) and one edited by Christoph-Hellmut Mahling as part of the Neue Mozart-Ausgabe, Serie V: Konzerte; Werkgruppe 14, Band 2 (Kassel: Bärenreiter, 1975).

The principal differences in the two nineteenth-century sources regarding the viola part are in the distribution of slur markings, which are likely due to the lack of an existing complete autograph manuscript, and contrasting strands of secondary sources, as noted by Seiffert. There are inconsistencies in the use of slurs in both the Offenbach and Breitkopf & Härtel editions, and reconciling these discrepancies is the major issue faced in the production of this edition.

The Offenbach edition has numerous inconsistencies between the solo violin and viola parts. In addition, there is a conflict in the first movement between the placement of the fermata in m. 189 with the orchestral parts (of the Breitkopf & Härtel edition), which have a fermata over the first two beats:

![First movement, mm. 176–89 (Offenbach edition)](image)

The Breitkopf & Härtel score displays only occasional issues between the solo parts; there are, however, more prominent irregularities between sections. An example of this is the cadenza of the first movement, where the slurring of the sequential pattern is disrupted:

![First-movement cadenza, mm. 9–17 (Breitkopf & Härtel edition)](image)
Nonetheless, in having fewer irregularities than the Offenbach edition, the Breitkopf & Härtel score serves as a more reliable basis overall. Corrections, and occasional sections where the editor has decided that the Offenbach edition provides a preferable or possible alternative, have been recorded in the Notes.

This process is complex, even for the sections where Mozart’s autograph is available. A clear example occurs at the end of the second-movement cadenza:

![Mozart’s autograph, Breitkopf & Härtel edition, Offenbach edition]

A literal reading of the autograph would be impractical; the sixty-fourth notes would be clearly slurred, in essence functioning as embellishments. The Breitkopf & Härtel edition clarifies this, but there is the additional argument that these sixty-fourth notes should be connected to the preceding trill, as in the Offenbach edition, with the complication of the slur adding an unjustified tie, along with the fermata in the following measure. References to the previous movement suggest that the second beat should be over one slur, despite its contrast to all three excerpts shown above. Added articulation not originally found in the principal sources—such as in this example—has been denoted with broken slurs. Grace notes have been left separate as in the available sources.

Andrew Filmer, editor

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Notes

The two principal sources used in preparing this edition are the first edition of the viola part, published by Offenbach: Johann André, n.d. (c. 1840) (Plate 1588) and the full score, published in Wolfgang Amadeus Mozart's Werke, Serie XII: Konzerte für die Violine mit Orchester, Leipzig: Breitkopf & Härtel, 1877 (Plate W.A.M. 364). Three facsimiles of Mozart's autograph (limited to sketches of the cadenzas) were also used: two published in the critical report of the Neue Mozart-Ausgabe (NMA) and one available on the Harvard University Library website. Additionally, two modern editions have been consulted: one edited by Wolf-Dieter Seiffert (Munich: G. Henle Verlag, 2006, HN 790) and one edited by Christoph-Hellmut Mahling as part of the Neue Mozart-Ausgabe, Serie V: Konzerte; Werkguppe 14, Band 2 (Kassel: Bärenreiter, 1975).

First movement

mm. 30–31: The Breitkopf & Härtel edition has the second violin, viola and cello parts with detached bowing, as does the Offenbach viola part. The Breitkopf & Härtel edition has a conflicting first violin part (and correspondingly, the solo violin part) that slurs over the barline. However, as the first violin part does not slur over the barline from m. 31–32, it seems that the detached bowing is correct.

mm. 38–45: Originally slurred in groups of eight, these have been adjusted to correspond to the orchestral parts; in addition to this, the groupings of four make the fp articulation markings more practical.

mm. 84–85: Note that the Offenbach edition consistently slurs five notes instead of four across both solo parts. This is an entirely viable option.

mm. 106–107: The Breitkopf & Härtel score has a slur only over two notes; the slur over three notes is from the Offenbach edition. Though the Offenbach solo violin part is inconsistent regarding the number of notes slurred, nonetheless, the slur over the barline remains consistent.

m. 124: The slur over the first two beats has been added in viewing this—though with differing notation—as an embellishment aligned with m. 157 of the solo violin part. Note also a comparison with tutti areas, such as m. 339.

mm. 138–39: Slurs on the second beat have been retained from the Offenbach edition, despite incongruity within the part and with the solo violin part within that score. The melodic pattern is repeated at mm. 301–302, without the slurs.

m. 140: Additional slurs added to sustain sequential pattern from the preceding two measures.

m. 149: The Breitkopf & Härtel score has the slur from the first note of this measure; the Offenbach edition is deemed more congruous with the sequential pattern across both solo instruments.

m. 152: There is a view in some newer editions that the first note of this measure should be a g' natural, with a harmonic view as to the V chord—however, this is not evident in either of the early editions, suggesting that the g' sharp can be contrastingly viewed melodically as a lower neighbor tone.

mm. 156–57: An unusual section within this movement, considering that the divergence between the two solo parts is not inverted in mm. 326–27. Both principal sources consistently lack slurs; however, there is a possible relation to mm. 138–39, and performers may prefer to adapt some of the bowings from those measures.

m. 189: The Offenbach edition has the second fermata on the following rest. While this is inconsistent with the solo violin part of the same edition at m. 176, on a musical level this is an entirely viable option.

mm. 218–20: Both principal sources have slurs over the first two beats and the third and fourth beats. However, the present edition has opted to work toward congruity with mm. 149–52.

mm. 227–29: Both principal sources have double stops, combining both Viola 1 and Viola 2 parts of the orchestra. However, this is incongruous with mm. 3–9.

mm. 301–304: Both principal sources consistently lack slurs, possibly as a continuation of systematic variation. However, performers may prefer to adapt the bowings of 138–39.

m. 318: The Breitkopf & Härtel edition has a d' natural (seventh note), while the Offenbach edition has a d' sharp.
m. 326: Both principal sources are consistent; however, it can be argued that the pattern of this measure is inconsistent with the following measure. Comparisons with other areas immediately preceding tutti sections are useful here, and mm. 156–57 would suggest a correction to m. 326. However, the second half of m. 222 suggests that additional areas of emphases here and in m. 237 may illustrate a compositional intent for the purposes of the anticipation of tutti sections. The possibility of systematic variation already evident in the articulation patterns in the recapitulation would make the contrasts with mm. 136–37 viable. Perhaps most importantly, one can note that the same pattern is subsumed into the orchestral texture, with the second violins playing this same pattern in mm. 336–37.

Cadenza: The principal reference for the cadenza is a facsimile of the autographic sketch, available from the critical report of the NMa. Both the Offenbach and Breitkopf & Härtel editions display inconsistencies, and there is ambiguity in the autograph as well, particularly between the solo violin and viola parts in mm. 12–14. There is also no clear indication whether the return of the original tempo is at the tutti of m. 339 or in the preceding measure. However, the Offenbach edition has an additional fermata over the final trill, which is not in the autograph.

mm. 348–50: Edited to include only Viola 1 line; see mm. 227–29. While it would be useful to enable both orchestral viola parts within the score, areas such as the tutti beginning at m. 158 make this impractical.

Second movement

m. 20: The principal sources conflict in the second beat of this measure:

Neither of these options preserves a three-note upbeat that seems prevalent throughout this movement (e.g. mm. 16, 18 and 26). While consistency in this respect is not always possible (see m. 22), it would seem that Offenbach’s slur neatly completes the sub-phrase, and a three-note slur following this is consistent with the rest of the movement.

m. 49: See m. 72. Likewise, separate bows constitute an equally viable option.

m. 51: The Offenbach edition has this measure split somewhat ambiguously over two slurs; the Breitkopf & Härtel edition has one slur over the entire measure, but the associated section in the violin part has three slurs. The three-scar option is deemed the most practical.

m. 67: The Offenbach solo viola part has two sixteenth notes contrasted to the dotted rhythm in the Breitkopf & Härtel score; however, the Offenbach solo violin part does not correspond in this regard.

m. 70: Slur over three notes instead of four, following the Offenbach edition and to match m. 79. Note that consistently slurring four notes in these two sections is a viable alternative.

m. 72: There is considerable inconsistency, and the editor has opted to use the slurs as they exist in m. 69 of the solo viola part and m. 71 of the solo violin part of the Breitkopf & Härtel edition. That being said, there is the viability of the use of systematic variation in detached notes for both solo instruments, mm. 72–73, especially considering the cadenza; for this reason, broken slurs are used.

mm. 75–77: The Breitkopf & Härtel score has the first slur of each measure covering the first five notes. The slurs adopted here are from the Offenbach edition, despite inconsistencies, as it is deemed a more practical option.

m. 77: The fourth note in the Breitkopf & Härtel edition is a d’ sharp, however, this seems inconsistent with the relation to the violin part in the two preceding measures. The Offenbach edition has an unnecessary natural, which may suggest a correction to a previous copy.

m. 78: There are various bowing possibilities in this measure; the solo violin part of the Offenbach edition has been referenced here, though the solo viola part of that edition has errors in emulating this. The Breitkopf & Härtel edition has the last two notes separate and with dots consistently in both solo parts; however, the single note upbeat option seems to be consistent with mm. 75–77. Note that both principal editions combine the tie with the following slur, which is entirely viable; this edition splits these in view that the bowing allows more effective execution of the p dynamic.
Chapter 6

A Hybrid Case Study: Telemann’s Concerto for Two Violettas, TWV 52:G3

I. Introduction

Georg Philipp Telemann’s Concerto for Two Violettas, commonly known today as the Concerto for Two Violas, provides an approach to scordatura that spans multiple aspects of research. This in turn leads to a synthesis of the previous approaches: a scordatura that functions for instrumental substitution much like that in the Brandenburg Concerto No. 6 project, that provides sympathetic resonances and a timbral adjustment in a retrospective scordatura in the same vein as the Sinfonia Concertante, and has a consideration of voicing across strings seen in the Cello Suite No. 5.

Telemann had particular interests in two compositional areas. The first is that of instrumentation: the composer’s prolificacy extended to 52 concertos for multiple instruments, 37 of them being double concertos.¹ These works covered over a dozen instruments, including other instruments specific to the era, such as the oboe d’amore, viola d’amore, and the chalumeau as solo instruments, and the mandora and calchedon in supporting ensembles.² Even more overtly, Telemann wrote to Johann Mattheson in 1717 of his intention to write a treatise on instruments, which unfortunately was never completed.³ The second interest of Telemann’s was in French music, seen clearly in the concerto under study, with at least two of the four movements having French titles (Avec douceur and Vivement), and the title of Concert rather than Concerto or ‘Konzert’. Additionally, the title of the second movement, Gay, is seen by some editors as a misspelling of the French Gai.⁴ The concerto was written around 1740,⁵ and this timing


². The oboe d’amore being a mezzo-soprano oboe, and the chalumeau a relation of the clarinet.
³. Zohn, ibid.
⁵. Cover page of the facsimile (manuscript by copyist Johann Samuel Endler), Darmstadt University of Technology Digital Collections, Mus Ms 1033-17a, http://tudigit.ulb.tudarmstadt.de/show/Mus-Ms-1033-17a/0001 (accessed January 21, 2013).
links to French influences on this composition, being soon after his one trip to France, from late September/early October 1737 to May 1738, at the invitation of Parisian colleagues. In the forthcoming discussion (in Section III), we will note that this French connection will play a significant role in determining aspects of instrumentation, which consequently provide the relevance for the application of scordatura.

The initial purpose of applying scordatura in this work was to create a timbral difference between the two solo instruments. This was in response to this observation by Franz Zeyringer, that is has become “so customary in music since the Classical period that even in the few cases in which the composer calls for two violas, any two instruments of the multiform and varied viola family are used, without regard to their size.” The initial scordatura, had the A string of the second solo viola down a tone, which paralleled the original scordatura in Bach’s Cello Suite No. 5. This was thus intended to darken the sound of the second solo part in relation to the first solo part, to reflect the timbre of a larger viola.

This scordatura had particular benefits to having adjustments to voicing that allowed an increase of parallel string use between the two solo parts. Furthermore, the advantages of resonances, with the availability of the new open string in the key of G major, became a prominent feature. In the process of preparing for the first performance at the Illott Theatre of the Wellington Town Hall in October 2010, the effect of resonances seemed to be of considerable benefit, that the contrast between the two solo parts became only of secondary consideration. The new focus on overall resonance led to the expansion of this scordatura of the Viola II part in tuning the lower string up a full tone. This changed the direction of the scordatura approach, with a focus on the independent benefits for the instrument, if at the expense of the original goal of timbral differentiation between the two solo parts. This was the approach taken in the performance, and measured in the FFT analysis.

Like the Cello Suite No. 5 project, the Telemann Concerto project progressed over a significant period of time. The availability of the primary source (the manuscript of copyist Johann Samuel Endler) two years after the initial experiments, as well as the results from the FFT analysis, allowed the opportunity to revisit the work in 2012, and


8. FFT Analysis by Jason Post, in Appendix A.
to discover that the initial and eventual goals of using scordatura in the work were not mutually exclusive. Essentially, it determined that a scordatura could be applied to the first solo viola part as well, allowing the second viola part to retain sympathetic resonances from the retuning of the C string up a tone, while maintaining some timbral distinction between the two solo parts. The importance of returning to the original intent of the scordatura was emphasized by the original scoring: Telemann wrote this concerto for the now defunct ‘violetta’. This leads us to a historical hunt to discover the nature of this instrument, in order to determine how scordatura can play its role in instrumental substitution.

II. The Violetta

Let us begin with a chronological contextualisation of the use of the violetta. We will find that the existing scholarship on the issue does not provide conclusive findings as to the nature of the instrument.

15th century: There is a mention of a ‘violeæ’ [sic] played by St Caterina de’ Vigri. Peter Holman notes:

The small four-string instrument, preserved today in her tomb in the convent of Corpus Christi in Bologna, with, it seems, its original fittings, has a gently arched bridge.... An account of her life mentions that she asked for ‘a violeta to play and praise with’ during an illness, which sounds as if she used the instrument to accompany herself when she sang monophonic laude.9

16th century: David Boyden notes that from the 16th century, “Some terms as lira, violetta, and rebechino undoubtedly meant ‘violin’ in certain contexts.”10

1520: Holman additionally notes the mention of the ‘violeæ’ at the English court, as music for the purposes of dance, and states that the “violeæ is most likely to mean a rebec at this period”, akin to St Caterina’s instrument.11 This matches David Boyden’s view that ‘violetta’ was the diminutive form of the ‘violone’,

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11. Holman, 63.
which in turn represented viols as a whole during this period.\textsuperscript{12}

1533: The earliest mention of the violetta is by G. M. Lanfranco, who refers to a "violetta da arco senza tasti" i.e. a small viola that is played with a bow, and is without frets.\textsuperscript{13} In the 	extit{Grove} article on the instrument, Howard Mayer Brown and Stephen Bonta note that the original source for this is 	extit{Scintille di musica}, written in Brescia.\textsuperscript{14} Brown and Bonta note that this could have referred to rebecs but are probably of the violin family.

1619: Michael Praetorius in 	extit{De Organographica} (Wolfenbüttel: 25) draws a set of instruments, after a description of the North Alpine string band by Joseph Jacob Prinner. It notes a treble viol tuned G-C-f-a-d'-g', and is often cited as a violetta.\textsuperscript{15} However, the full name is that of "Violetta picciola, Cant. Viola de Gamba" and it is uncertain how the 'picciola' version would differ from a regular violetta, though he does also state equivalence to 'Discangeig', 'Violino', or 'Rebecchino'.\textsuperscript{16}

1672: Sebastiano Cherici, following the Venetian usage encompassing both the treble viol and the violin family, used the term for the violoncello in 	extit{Inni Sacri}.\textsuperscript{17}

1673: The first ‘English Violet’ is made – a viola d’amore larger than usual, and with more sympathetic strings. Harry Dank suggests that the terminology is equivalent to the violetta, though Brown and Bonta demarcate this instrument as being of the viola d’amore family.\textsuperscript{18} The link in terminology may have been due to the

\textsuperscript{12} Boyden, 23.
\textsuperscript{13} Harry Danks, 	extit{The Viola D’Amore}. West Midlands, (England: Stephen Bonner, 1979): 59.
\textsuperscript{15} Annette Otterstedt & Hans Reiners, “What Old Fiddles Can Teach Us…” 	extit{Galpin Society Journal} 52 (April 1999), 232. Brown and Bonta state that this references Zacconi’s 	extit{Prattica di musica} of 1592.
\textsuperscript{17} Brown and Bonta, ibid.
\textsuperscript{18} Ibid.
‘violette all’inglese’,\textsuperscript{19} English-made viols, without sympathetic strings.\textsuperscript{20}
Additionally, Bonta notes that violetta marina may have been an equivalent term for the English Violet.\textsuperscript{21}

1695: Daniel Merck uses the term, as interchangeable with ‘viola’.\textsuperscript{22}

18\textsuperscript{th} century: Boyden notes that in the early part of this century, a violetta could be either a treble viol or a viola, with the use of the C clef as an alto or soprano clef.\textsuperscript{23}

1701: Giovanni Grancinco of Milan makes at least four “festoon-shaped” instruments; one now on display at the Metropolitan Museum of Art in New York has been considered to be a “violetta” with six strings.\textsuperscript{24}

1713: Johann Mattheson in Das neu-eröffnete Orchestre (Hamburg: 283) finds it to be synonymous with ‘viola da braccio’.\textsuperscript{25}

1732: Johann G. Walther, in Musikalisches Lexikon (Leipzig: 573) comments on the violetta: “Eine Geige zur Mittel-Partie, sie werde gleich auf Braccien, oder kleinen Viole di Gamben gemacht’”, and the translation of this causes some significantly conflicting interpretations. Here are three:


\textsuperscript{23} Boyden, 324.


\textsuperscript{25} O’Loghlin, ibid.
• Charles Sanford Terry in 1932 reads it as Walther suggesting either a ‘medium violin’, or an alto viola da gamba;
• John R. Catch in 1992 translates it to be “a fiddle for the middle part; they are made to resemble violas or small viole da gamba”;26
• Hans Reiners in 1993, in dissenting with Catch, translates it to be “a fiddle for the middle part, no matter where this (i.e. the middle part) be rendered on a ‘braccie’, or ‘small viol’.”27 Reiners also notes Walther’s view that the tenor viol is regarded as the violetta.28

1724, 1727, 1734:
J. S. Bach uses the violeetta in three Cantatas. Terry notes that it is unlikely that it is equivalent to the regular viola, nor would it be synonymous with the viola pomposa.29 In the context of Bach’s use of the violeetta, Terry concludes that it was “employed as a convenience, not as an embellishment,” and that “it raises merely an alternative voice.”30 Ulrich Prinz states that the use of the violeetta by Bach does not establish any idiomatic characteristics that would distinguish it from the regular viola.31 Prinz notes that in BWV157, the part cannot be traced directly to the composer, in BWV16 it acts as a substitute for the oboe da caccia and in BWV215, with the heading “Viola”, it is in unison with the Violin I part.32

1738: J.P. Eisel uses the term, as synonymous with the viola.33

1741: Joseph Majer uses the term, as synonymous with the viola.34

28. Ibid.
30. Ibid.
31. Ulrich Prinz, Johann Sebastian Bachs Instrumentarium, (Mannheim: Internationale Bachakademie Stuttgart, 2005), 519. Note that this is a truncated, but fairly direct, translation of the German original.
32. Ibid.
1746: Elsler of Mainz creates a hybrid instrument, described by Catch as “having viol-like outlines, flat backs, and ribs finished flush, but with shallow ribs and narrow necks”, played “in the upward position”, and without a specific name. Catch suggests that this might be the violetta, an instrument used for convenience rather than for timbral change. Reiners disputes this conjecture.

1750: A quartet by Johann Janitsch in Berlin distinguishes the violetta from the viola, and O’Loghlin suggests that it refers to a smaller sized viola. Citing a variety of examples, including Telemann and Janitsch, Reiners suggests:

> All that can be fairly concluded from these far from comprehensive observations seems to be that the case is somewhat similar to that of the ‘viola bastarda’, or the lyra viol, a lot of confusion arising from the fact that the term was evidently used to describe both an instrument and a function or style of playing.

Catch disputes this assessment.

18th century: Boyden notes that in the 16th century the term could refer to either a viol or a viola, and in 18th century Italy the latter definition continued to apply.

As we can note above, there is not only a lack of a consensus, but also at times a direct conflict of opinion. Reiner’s rebuff to Catch was provocatively subtitled, “A Confutation”, and stated that Catch’s conjecture gave “such short shrift to its own premise”. Perhaps even more colourful was the following argument: “So before you all
rush out to lay on hybrid ‘violettas’ it might be a good thing to remember that ‘a good match for the rest of the wood’ is just what one would expect to find where an instrument has undergone changes.”

Catch’s response was equally impassioned: “He [Reiner] does not like my conjectures but his own counter-conjectures are not well considered.” Perhaps even dismissively, he also stated: “I would indeed be happy for some student with more time, energy and expertise than I have to look more carefully at this long-standing puzzle.”

The dispute does not simply pit against each other two differing interpretations of the available scholarship. Rather, this demonstrates the pitfalls of trying to find a solution that might fit all circumstances. Catch’s efforts are aimed at determining a sole, specific instrument that would reconcile considerable discrepancies in the indication of a violetta, and it is perhaps then unsurprising that his solution is a hybrid instrument. Reiner’s solution is on the other end of the spectrum, suggesting that the discrepancies indicate a general, multi-purpose nomenclature, with “a lot of confusion arising from the fact that term was evidently used to describe an instrument and a function or style of playing.”

The problem here is consistency, but not in the manner that generally comes to mind. Both Catch and Reiner are aiming for a solution that is consistent across a slew of compositions, but the underlying presumption is that composers across two centuries consistently used the term. It seems more likely that that the usage of the term was inconsistent. In cases such as Merck, Eisel and Majer, the violetta may indeed have had a specific equivalence to some kind of viola; in other cases such as that of Bach, it is possible that a greater flexibility may have been implied, considering its use in doubling as well as substituting other instruments.

In regard to this likely inconsistency, there are two additional observations worth noting. The first is that of Herbert W. Myers: “The terms violino, violetta and viola da braccio gradually acquired more restrictive connotations as designations of particular sizes.” This explains the early uses of the violetta nomenclature for rebecs,
and possibly also why it was at one point synonymous to the violin. The second, related view is that of Agnes Kory, in noting the multiple terms for smaller members of the instrument family, including bassetto, bassetto di viola, violetta, violoncino, violoncino, violoncello, violonzino, violonzono. Kory notes: “Terminology for members of the violin family appears to have varied from country to country, from town to town, from time to time.”

This is also true within the individual works of Telemann. Susanne Staral makes the important point that “in every instance, it needs to be determined which instrument Telemann might have meant by the term ‘Violetta’.” Staral finds contrasting circumstances, where the use of the term may have suggested the English Violet or the viola d’amore. Furthermore, Staral, following consultation with gambist Siegfried Pank, notes that in Telemann’s Concerto in A for Violetta, 2 Violins and Bass, the violetta part seemed to be most suited for the viola da gamba.

The crucial question is this: what is the specific compositional intent behind Telemann’s Concerto for Two Violettas? It is from this question that we will find that scordatura can play a role in modern performance.

From the wider research, it seems evident that at times, a composer may have a specific instrument and associated timbre in mind, and for other composers it may have been less important which instrument filled the role of the violetta. Thus, the next stage of this discourse examines clues and patterns available in the history of instrumentation, stylistic trends in scoring, and the manuscript, to unlock the violetta’s role in the Concerto.

III. A French Connection: Defining the Specific Context of Telemann’s Concerto

One possible clue to addressing the role of the violetta in Telemann’s Concerto lies within the composer’s connection to French music. The Grove article on Telemann


49. Ibid., 79, 81

50. Ibid., 80.
by Steven Zohn notes the following links: 51

- 18th-century composer, critic, and theorist Johann Scheibe was of the opinion that Telemann expanded the use of the French-style orchestral suite in Germany.

- Zohn notes:

  French influence is evident not only in the suites’ style, scoring and structure, but also in their frequent use of programmatic titles for entire works or individual movements (for example ‘Hamburger Ebb und Fluht’, ‘Burlesque de Quixotte’). Among the programmatic movements are representations of emotional states.

- Telemann, in his 1729 autobiography included the following: “What I have accomplished with respect to musical style is well known. First came the Polish style, followed by the French, church, chamber and operatic styles, and [finally] the Italian style, which currently occupies me more than the others do.”

- Zohn also notes:

  The earliest works, again probably written at Eisenach, show the clear influence of Corelli and the post-Lullian generation of French composers.... Among the most significant works from before 1720 are the concertos ‘alla francese’ for pairs of treble instruments, which strongly 'smell of France'.

  In addition to the French titles for movement names, Telemann chooses to use French terminology for the ensemble instruments, with the term “taille” for the tutti violas. The significance here is that the taille and viola are not direct equivalences, with the French instrumentation of this era having several variants of violas. Maurice Riley cites Marin Mersenne’s Harmonie Universelle in 1636, with the three inner parts assigned to three sizes of the instrument: quinte/cinquiesme played by the small viola of the high alto range, haute-contre played by the large viola of the low alto range, and taille played by the tenor viola.

  The orchestration of the concerto links it to the observations made above: a connection between the taille and the basso continuo/cembalo parts, and a connection between the tutti violins and the solo instruments. These connections are illustrated in the following excerpt:

51. Zohn, ibid. The two quotes in the list are also from this source.
It was common in music of this time (and the Classical period following it) for the solo violin or solo viola to replicate the *tutti* parts when they appear. Clear examples of this are the violin concertos of Bach and Mozart. However, modern day performance practice has treated works from the Baroque era somewhat differently from that of the Classical era. While it remains standard practice for the Bach violin concertos to have the soloist play *tutti* sections, it is equally common for soloists not to play in *tutti* sections of Mozart violin works, including the Sinfonia Concertante. This particular issue has bearing on instrumentation, and determining the nature of Telemann’s violetta.

This modern practice of demarcating *tutti* from solo sections is a problematic one when Telemann’s Concerto is performed with modern instrumentation, with violas taking over the violetta parts. The *tutti* sections, if played by the soloists, now have solo violas playing *tutti* violin parts, with two contrasting timbres playing this melodic line. It is probably for this reason that Lebermann takes out the opening and closing *tutti* sections entirely from the solo parts, but had to leave in sections such as bars 7 and 9 in the excerpt above, these sections being integrally and seamlessly subsumed into the solo lines.

With the original instrumentation – no matter what side one takes in the violetta debate – it is clear that the solo instrument was such that the duplication with the violins in *tutti* areas was more feasible than with modern instrumentation. Additionally, note the similar use of the violetta by Bach, to duplicate a violin part in BWV 215.
The excerpt above also highlights the connection of the *taille* part with the basso continuo, for the most part having more rhythmic connections to the basso continuo than to the violins.\(^{52}\) Additionally, while there are certain inconsistencies in the work as a whole, note that in bars 8 and 10 there is a crotchet only for the lower two lines. Admittedly, this parallel with the lower line may not be unidiomatic, and the prolificacy of the composer makes a determination difficult. Nonetheless, it does have a clearer parallel than, for example, the scoring for Telemann’s Viola Concerto, TWV 51:G9, also written circa 1740.

Overall, these linkages tentatively indicate to us that the *taille*, being in French instrumentation the larger of the violas,\(^{53}\) may indeed be intended here. Likewise, the violettas – if a viola rather than a viola da gamba – would be the smallest of the violas, and closer in timbre to the violins. Even if the conclusions drawn in terms of the specific connection to French instrumentation may be speculative, what is clear from the scoring is the timbral connection of the violettas to the violins. *Tutti* violins in Telemann’s Concerto for Two Violins 52:B2, for example, have similar patterns in doubling the solo lines, as seen in the following excerpt:

![Figure 6.2. Second movement, bars 29-33. Instrumentation: Solo Violin I, Solo Violin II, *tutti* Violin I, *tutti* Violin II, viola, basso continuo.](image)

Such patterns of duplication are conspicuously absent in Telemann’s Viola Concerto, and the opening *tutti* sections are clearly without the solo viola. This informs us that doubling of parts was likely with timbre in mind, and that the solo viola doubling a violin

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52. This is even more so when comparing the separate violone part to the *taille* part, rather than that of the score, which reflects the cembalo part.

53. Riley, 79.
line was not considered suitable. These observations may not fully ascertain the constructional details of the violetta, but they do point towards the composer's intent insofar as timbre is concerned. Therefore, the role of scordatura for performances of this work is geared towards addressing the issue of timbral contrast when modern violas are used.

IV. Development of the Scordatura and Resulting Effects

A. Examining the Manuscript

As mentioned in the introduction, the priorities and goals evolved in the development of the scordatura applications in this work. The initial scordatura, prepared for the 2010 performance,\(^\text{54}\) was intended simply to provide contrast between the two solo instruments, and the importance of this once again became evident when the primary source came into the public domain two years later.

Not only does Telemann score for two violettas, but he also uses two different clefs:

![Image of the manuscript](image)

Figure 6.3. Opening measure of the Concerto, with soprano clef for Violetta I and alto clef for Violetta II

The use of two clefs, when combined with the research into instrumentation, reemphasizes the role timbre plays in Telemann's concerto; namely, that distinct timbral

\(^{54}\) Details available in the Methodology chapter.
contrasts were part of the compositional intent, and that the use of the violetta had a specific function. Essentially, Telemann's instrumentation indicates that in modern performances using violas, with three parts on the same instrument (the two soloists, and tutti violas), the composer's original instrumentation indicates three different timbres.

Telemann also used soprano and alto clefs for viotttas in the Quintetto in F major, TWV 44:6, scored for two chalameux, two viotttas, and bass. In the Trio 42:c5, which the cover page states is scored for oboe (hautbois), violetta and cembalo, the individual part is titled 'viola' instead of 'violetta', suggesting some equivalence between the two terms. However, we also note Bärenreiter's urtext edition of Telemann's Die wunderbare Beständigkeit der Liebe oder Orpheus, TWV 21:18 which has the use of "Violetta all'inisono" as well as violas. These other works highlight that violas could at times be used to substitute the violetta, but that the violetta did have a position distinct from the viola.

From a wider angle, this also confirms for us a certain level of instrumental variety when it comes to the violetta: not only could it refer to a braccio or gamba styled instrument, but even within those branches, there seems to have been a diversity of sizes and timbres.

Thus, the scordatura tunings utilized for this work have the following eventual aims:

• To establish a timbral contrast between the two solo instruments;
• To provide a differentiation between the solo instruments and tutti violas;
• This differentiation should allow the solo instruments to better blend with the tutti violins.

The following scordatura tunings allowed for the goals above:


B. String Crossing and Voicing Options

There are benefits beyond timbral contrasts that the scordatura offers. Firstly, there are opportunities to provide matching string use in the two solo parts. The following excerpts show two string distribution options in regular tuning, and a further option provided by the scordatura:

![Likely string distribution in conventional tuning](image1)

![Possible string distribution in first position](image2)

![New option for string distribution with scordatura](image3)

Figure 6.5. Bars 23-24 of the first movement, and string distribution options between Viola I and Viola II parts. The first two samples are at pitch, and the third sample in fingered notation, with the A string tuned down a tone. Blue designates notes on the top string, and red the notes on the second string.58

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58. While it was determined that the Concerto worked best with a custom key signature, as will be noted in the Notation chapter, for purposes of expediency accidentals are used in the samples in this chapter. 

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The first excerpt has the second violist largely in third position in order to keep bar 23 on one string, to match the Viola I part. With this fingering, there is the additional benefit of timbral contrast between the two solo voices, before they converge in bar 24. The other possibility is that the violist would prefer the first position, with the common view that this may be more idiomatic for Baroque music, particularly with the availability of the open string. This is shown in the second excerpt, and it is arguably less likely as it lacks both the aforementioned aesthetic feature of keeping the notes on the second string.

The scordatura combines the benefits of both these options. It allows the instruments to match string use in this section, the violist maintains playing in the first position and using the top open string, with the decreased tension of the retuned string providing the timbral contrast between the two solo instruments.\footnote{Note that the scordatura allows for contrast in bar 25, unavailable in regular tuning.} It should be additionally noted that if the Viola II player still preferred playing on the second string, as in the first excerpt, that option would still be available, though from an editorial viewpoint this may necessitate the use of an \textit{ossia} stave to illustrate the two options in fingered notation.\footnote{In the American Viola Society edition co-edited with David Bynog, it was surmised that this additional option was less likely to be used, and thus we did not opt for the expansion of the notation.}

The new tuning also helps in issues of string crossing, as seen in the excerpts below.

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{figure66.png}
\caption{Bars 40-44 of the second movement. The first excerpt, above, is in regular tuning and at pitch, and the second excerpt, below, is with the scordatura and with fingered notation. Once again, blue designates the top string, and red the second string.}
\end{figure}
As we can note from the first excerpt, the patterns of string crossing in conventional tuning are not parallel between the two solo parts, with the G necessarily on the second string. A second possible option is for the Viola II part to be entirely on the second string. While convenient, this would further alienate the Viola II part from the string crossing of the Viola I part. The scordatura alleviates this issue, allowing the semiquavers to all be executed with string crossings as noted in the second excerpt.

C. The Fast Fourier Transform Analysis and its Role in the Research Process

As mentioned briefly earlier in the discussion, the scordatura Viola II part underwent FFT analysis, and was examined in field-tests i.e. the rehearsals and performances in Wellington and Leeds. It should be noted that this was prior to the availability of the manuscript of the concerto under study, and the further development of the Viola I scordatura. The following details the somewhat different procedure that was applied in this project, from the invitation for Irina Andreeva and myself to perform the work in 2010, to the publication of the edition, enclosed at the conclusion of this chapter.

- The present author received an offer to perform the concerto in mid-2010;
- Experimented with the possibility of scordatura use in the Viola II part, first with top string, then with the lowest string. Here, priorities change from a contrast between the two solo parts to the individual and independent benefits towards the Viola II part;
- Field-tests of the Viola II part in 2010 and 2011 in rehearsals and concerts;
- FFT analysis by Jason Post in early 2012, results in second half of 2012;
- The primary source of Endler’s manuscript becomes available mid-2012;
- Combining the results from the FFT analysis and further research emerging from the production, expansion of scordatura use in the Viola I part, to revisit the importance of the contrast between the two solo parts;
- Discussion with the American Viola Society for publication of the edition in early 2013.

61. For details, see Methodology.
We can note a few variations to the procedure, due to this being the only project within this thesis that applies scordatura to two instruments, with two aspects of particular importance. First, there was the change of priorities in the research, due to the emergence of new information highlighting issues of instrumentation and the role of the violetta. Second, the FFT was not simply to confirm the effects of the scordatura at the end of the process. Rather, it was part of the process of developing the scordatura for the Viola I part.

The FFT confirms that this tuning produces greater resonance. Note the sympathetic resonances available, particularly for the key of G major:

![Diagram of the violin showing sympathetic resonances](image)

Figure 6.7. Effects of sympathetic resonances

The scordatura creates sympathetic resonances that follow the overtone series. The first of these is the octave connections: the red lines indicating sympathetic resonances one octave higher. There are two pairs of octaves: the D of string IV to the d’ on string II, and the G of the string III to the g’ of string I. The increase of tension of the lowest string has the additional effect of increasing the resonance of the adjacent string, as marked with the blue arrow, which in turn would affect the top string.

The initial and eventual scordatura tunings of the Viola II part were analysed in the FFT. The initial scordatura had the top string independently down to G, and the eventual tuning also adjusting the lowest string up a tone. This indicated that the retuning of the top string produced a “rich and dark sound quality”, and the further adjustment of the lowest string produced “a brighter tone and rich sound” owing to the
fact that “the strings are tuned in octaves, which is the best possible condition for resonances to occur”.62

The scordatura for the Viola I took the effects of tuning the lowest string up a tone, which was also noted in the extended scordatura of Mozart’s Sinfonia Concertante. It did not, however, replicate the scordatura of the top string, and this left the Viola II darker in timbre by comparison. It should be noted, however, that while the contrast of timbre was achieved, the richness of resonances in the Viola II scordatura are more evident, due to the tuning in octaves.

V. Concluding Comments

This project provides an avenue to see how the various approaches explored in the Bach and Mozart works can be applied in combination. This hybrid project provides a method of crystallising the various scordatura functions.

While the use of scordatura in this work is an approach for modern-day performances, it has the traditional effects of scordatura: sympathetic resonances, feasibility of new patterns of distribution for pitches across strings, and timbral effects. Though there certain differences from the previous projects, the overall process of applying a scordatura was similar: a historical context was first established, followed by practical experimentation, an examination of its effects, and testing it in performance as well as with acoustics analysis, and finally further experimentation and an expansion of scordatura use.

The only difference between this and Biber’s works is that the scordatura is applied retrospectively, and by the performer rather than the composer. This poses the question of whether scordatura can be considered a performer’s technique rather than an editorial choice.63 This idea of a retrospective scordatura matches that of the Mozart project. Furthermore, the approach of using sympathetic resonances, and the consideration of the timbral relationship between the two soloists, also link to the scordatura applied in the Sinfonia Concertante.

Additionally, the Telemann project matches that of the scordatura used in the Brandenburg Concerto No. 6 project, both in the use of the technique for instrumental

62. See Appendix A.

63. Note that this would apply to the extended scordatura in Bach’s Cello Suite No. 5 as well. It was deemed less complicated to address that work separately from this discussion.
substitution, as well as in identifying the relevance of instrumentation in timbral calibration and the subsequent role scordatura can play in preserving contrasts in timbre. Finally, the additional benefits of voicing options parallel that of the extended scordatura in Bach’s Cello Suite No. 5.

Finally, we have the importance of the involvement of historical contextualization and analysis as crucial elements of the research. In the concerto under study, the primary issue is the use of the soprano clef for the Violetta I part, as contrasted to the alto clef of Violetta II. This connects to a larger discussion on instrumentation, and the compositional intent of timbral contrast.

We cannot say with any certainty how Telemann would have reacted to the application of scordatura in his concerto, or if he would have considered its benefits worth the additional investment in re-evaluating the score either by the composer or the performer. It is clear that timbral variety was part of the compositional intent, but would Telemann have acquiesced to the use of regular violas out of convenience over aesthetics?

This is the same question we faced in Mozart’s transposition scordatura, and just as it was with that project, it is impossible for us to tell. However, unlike the application of modern aesthetic options like extensive vibrato or the changes in articulation with the use of a modern bow, at the very least, the availability of open strings appropriate to the key would certainly have been idiomatic of the Baroque era. In the final analysis, it must be emphasized again that the question of certain aspects of performance practice such as convenience must take a secondary position to the primacy of aesthetic considerations.

This chapter concludes with the solo violetta parts from the final draft of the American Viola Society edition, co-edited alongside David Bynog, due to be published in October 2013. Audio samples of the viola substitution are available in Appendix D, tracks 7-8. These samples are of Violetta II, movement II, bars 14-15 and 19-27 and are recorded in conventional tuning, the initial C-G-D-G scordatura and the final D-G-D-G scordatura. These were recorded for use in the FFT analysis. See page 351 for full listing of audio tracks.
CONCERTO
FOR TWO VIOLETTAS
TWV 52:G3

Georg Philipp Telemann
(1681–1767)

Scordatura Edition

AVS Publications 025a
Performance Notes

The following are the scordatura tunings for the solo violas replacing the violettas:

![Scordatura Tunings Diagram]

Left: Viola I (replacing Violetta I); Right: Viola II (replacing Violetta II).

Scordatura notation has a varied and colorful history. At times this is quite literal, with colored notation alongside “Sul __”, custom note-heads, and even note-tail directions being used to distinguish ‘at pitch’ notes for unaltered strings versus ‘as fingered’ notation. In this edition, where affected areas are minimal, the use of fingerings is used. In more extended areas in the Viola II part, brackets above the stave are used, which designate that all notes above the top line of the stave should be played on the top string, as seen in this example:

![Second Movement Example]

Second movement, mm. 42-43. Upper excerpt: sounding pitches.
Lower excerpt: ‘as fingered’ notation.

There are occasional exceptions to this, e.g. mm. 26-27, where additional information is provided in the footnote, as well as the notated fingering.
Viola 1 (Violetta 1) – Scordatura Version

Concerto for Two Violettas
TWV 52:G3

Georg Philipp Telemann
ed. Andrew Filmer and David M. Bynog

Avec douceur

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Viola 1 (Violetta) – Scordatura Version

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Violetta 2 (Viola 2) – Scordatura Version

Concerto for Two Violettas
TWV 52:G3

Georg Philipp Telemann
ed. Andrew Filmer and David M. Bynog

Avec douceur

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* In these areas, string-crossing is implied. In measures 12 and 27, fingerings have been added to further highlight this.
Chapter 7
Scordatura Notation

I. Introduction: the Complexities of Notation for Scordatura

The execution of scordatura places the performer of a stringed instrument outside of his or her comfort zone and, in so doing, reveals an element of performance so easily taken for granted: the relationship of notation and performance. Violinists, violists, and cellists are used to the shaping of their hands in producing certain intervals or chords. A major third, for example, looks and feels a very specific way – it has a specific 'hand-grip'. Training that utilizes studies is geared specifically for building 'muscle memory' to execute these intervals. Scordatura fundamentally changes this, with every interval involving an altered string requiring a new geography on the fingerboard. String-playing musicians have become accustomed to equating notated intervals to associated hand grips: simply put, how an interval looks on the page determines how it feels on the instrument, and vice versa: a particular hand shape is expected to produce a particular sounding interval. Scordatura notation deals with this tricky issue of whether to notate how the music sounds, or how it feels.

Even if we take out chords, individual notes are affected. Notation provides information about pitch, but to the performer whose instrument has a standard tuning, notation also codifies geographical markers for the fingers. An inscribed note does not simply denote a particular pitch but, for the performer of a bowed stringed instrument, it equates to particular locations on the fingerboard, regardless of whether that note is a part of larger chord. In other words, notation is location.

Keeping in mind notation's dual functions of sound and finger placement, there are various ways to classify the different methods of scordatura notation. The literature is consistent with the use of "at pitch notation", but for those dealing with the 'location' or tablature function of notation, the terms "fingered notation" and "hand-grip notation" have seen equal usage. An unsuccessful selection of a method of notation can provide impediments to learning a work and, by extension, delay or discourage its performance. Thus, it is significant to discuss the various approaches towards scordatura notation.

I-Chun Chiang’s DMA thesis, in part dealing with resistance to playing Mozart’s Sinfonia Concertante in its original scordatura, highlights several of the critical issues.

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1. Additionally, Elias Dann uses the terms "stop notation" and "pitch notation". Dann: 199.
Chiang’s observations deal with a transcription scordatura, which is far simpler than works that depart from tuning in fifths. She notes two contributing factors to learning a work in scordatura, particularly one well-established in the repertoire. The first is the element of perfect pitch, to which she cites Edith Eisler’s caution of “visual and auditory hazards” as well as studies noting a greater frequency of errors for those with perfect pitch than those without.² These conclusions of the challenges for those who equate a particular pitch to a particular location on the fingerboard are unsurprising. However, of particular interest is the observation that even among those who do not possess perfect pitch, the performance-related results can depend on whether the work was originally learned in regular tuning, or the specific and subjective viewpoints of each performer.³ Chiang used field-tests of violists approaching the Sinfonia Concertante in the original scordatura. She noted that on the one hand, the field test of violist Miks Silis produced the comment: “As for playing wrong notes goes, I just trusted that playing the fingering the page had written would ensure that the piece would sound correctly.”⁴ On the other hand, the field test of Henry Haffner led to the response: “What I hear is inextricably linked to what I see on the page, and where I place my fingers. For those not to match just bothers me!”⁵ This could be equated to those having known only relative-do solfege trying to learn fixed-do solfege.

These observations highlight several aspects of performance concerning the works under study. The factors leading to the resistance to scordatura could then include two factors:

- The first complication could be prior experience in learning the Sinfonia Concertante in the transposed E flat major part. This has the challenge of transposing one’s finger positions, without any change of sounding pitches – e.g. acclimatizing to having E flat as an open string rather than as a first finger.
- The second complication is that the difficulty in adjusting to the scordatura could be caused by the continual reminder from the other instrumental forces that


³ Ibid.

⁴ Ibid., 46.

⁵ Ibid.
one’s open strings fall on very different notes: the solo violist is the only instrumentalist to have those open strings.

While perfect pitch may play some role in adjustment, it does seem evident that the background of the performer is a major contributor. This is particularly so when considering a wider context involving musicians who play transposing instruments – not just orchestral wind instruments, but those of viola d’amore, and many guitarists who adjust the tuning of the lowest string on their instruments, or apply “open tunings”.

Silis’ and Haffner’s comments illustrate a primary issue with many instrumentalists: notation becomes both a designation of intervallic relations as well as a physical designation of where the fingers lie on the strings. The most basic of scordaturas – that of the transcription variety used by Mozart – do not impact on the intervals as would be the case in a selection of Bach’s Cello Suite No. 5; however, some performers are simply used to a finger on a string producing a particular pitch.

The most common approach in trying to resolve this issue is the employment of two staves, with one showing the sounding pitch, and the other indicating the finger positions. Contemporary compositions use this regularly, and some editions of Bach’s Cello Suite No. 5 do so as well. Essentially, this separates the engraver’s communication of pitch and tablature. Theoretically, the same could be done for Mozart’s Sinfonia Concertante, though this would be highly impractical – the lack of any such attempt, in the light of the complications highlighted by Chiang’s research, suggests that composers utilizing a transcription scordatura view the manuscript as a designation of intervals and finger positions but not necessarily pitches, as would be the case on a transposing instrument.

More complicated uses of scordatura force editors to make more difficult choices. In cases where one string is altered and thus the majority of the instrument lies in regular tuning, the notation for regularly-tuned strings denotes not only intervals and physical locations, but specific pitches. For an altered string then, the notation only designates finger positions; the physical interval is either lengthened or shortened when moving from any of the other three strings. Double-stops in particular can become quite a mental exercise as a familiar hand-grip would then produce a different sounding interval.
Figure 7.1. The physical interval of a major third in first position. Left indicates standard tuning of fifths, and the right indicates the intervals for the lower two strings of the extended scordatura in Mozart’s Sinfonia Concertante, and that of the scordatura used in the works of Bach.

The composer or editor, in deciding on a method of notation, faces the choice of whether it is intervals of pitch, or intervals of physical spaces between fingers when crossing strings, which would be of foremost concern to the performer. Heyde’s suggestion of ‘sounding’ notation where the material is less complex suggests a preference for notation in its role of designating pitches. This suggests that for limited alterations in tuning, performers are more able to adjust to new positions on the strings, or physically transposing finger positions at sight. This is contrasted to having a notational approach that indicates physical locations, but does not allow the performer to hear the sounding pitches. Put another way: performers are more able to calculate unconventional changes to the geography of the fingerboard than they are able to ‘trust what they see and not what they hear’, but only when there is a limited degree of alteration.

At some point, however, one reaches the limits of the ability to physically adjust, at which time the performer then requires notation in the tradition of tablature. An interesting question is where this limit is: an invisible line that is almost certainly different from player to player. A second issue is how one classifies these different levels

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6. Paraphrased from Chiang, who noted, “in other words, the violist must trust what she sees and not what she hears.” Chiang: 45.
of complexity. The transposition scordatura for Mozart’s Sinfonia Concertante for example is relatively less complex from the point of view that it maintains the tuning in fifths, and thus all the intervallic relationships remain the same. However, it would nonetheless be a monumental task to attempt performing this in scordatura, reading a part written at pitch. Here it is the interval of one semitone being transposed that is the complex issue. This can be contrasted to violists who use violin editions of the Bach unaccompanied works, to an extent transposing at sight down a fifth, but in reality, viewing the printed material as tablature as well as intervals, but not exact pitches. These violists are more often than not able violinists who are playing the instrument as would one a violin – but nonetheless, this highlights the role of the score in geographically denoting finger positions, rather than actual pitches.

Depending on the player, it may be comparatively more or less challenging to transpose at sight Bach’s Cello Suite No. 5. Players who do not find this task particularly challenging are those who can adjust quickly to the new interval of a fourth between the top two strings. Contrastingly, those finding it more challenging consciously or subconsciously refer to notation as trained physical intervals, and find it difficult to view this differently. These varied reactions highlight that even for those who have a preference for notation first and foremost designating pitches, notation nonetheless retains a role in designating specific positions on the fingerboard.

With this in mind, and in consideration of the preference of some performers to have at-pitch notation at all times, it allows us to take another look at Johann Kellner’s attempt to write Bach’s Cello Suite No. 5 at pitch.

Figure 7.2. Opening measures of the Cello Suite No. 5, manuscripts of Johann Kellner at pitch, and that of A. M. Bach, with the scordatura of the A string tuned down to G
Schwemer and Woodfull-Harris suggest that this may be an attempt to keep an at-pitch document for Kellner’s personal reference. However, we can ponder whether it was instead an attempt at a different notational system for scordatura: playing with scordatura, but reading the entire suite with at-pitch notation. Instead of restricting the role of notation to its function as tablature, it is possible that Kellner simply thought it easier to relearn fingering on the altered string. After all, unlike performers today, Kellner’s contemporaries would have been new to the work, and at-pitch notation would allow the performer to accurately predict the sounding pitches more so than fingered notation. This is especially so considering that the scordatura was an older tuning of the cello, which may have been known to some players of the time. Thus, the performer would use scordatura, but read it at pitch and in essence ‘transpose’ the physical locations of those sounding pitches at sight. There is no way to be certain of Kellner’s intentions in this regard, but issues with A. M. Bach’s strict and literal writing of the work illustrate early complications with the approach.

Whether the scordatura tuning Bach used in the work was intended as a link to either the lute (in consideration of the lute suite in C minor, BWV995), or the previous tuning of the cello, no such indication would have been meant to disrupt voicing patterns. However, a historical contextualization of scordatura notation indicates few if any available precedents during this period for dealing with issues such as the following:

![Figure 7.3. Bach’s Cello Suite No. 5, A. M. Bach manuscript, bar 23](image)

It is quite clear that the B naturals (sounding As) would be played on the D string, preserving the voicing patterns, simultaneously avoiding the awkwardness of the string crossing. The question remains whether A. M. Bach was simply enforcing a strict formula without consideration of exceptions to the rule, or whether a performer would simply have been able to transpose at sight anything from the top line of the stave onto its relative pitch position on another string. A third possibility is that A. M. Bach was

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aware that this section would not have been played with the string crossing, but that no notational precedents were available to her as to how to address this situation. While the cause of these anomalies could be that A. M. Bach may have been less versed in technical issues faced by a cellist – particularly if Bach’s lost draft was indeed for lute instead of cello – it is at least possible that the available notational options did not provide for a comprehensive and well-established toolbox.

Nathan Cook points out some additional complications with the scordatura notation, observing that the chord in bar 27 would fit more conveniently with the use of open strings. He suggests that,

There are moments in the suite in which the A. M. Bach manuscript is careful to indicate which G should be used. Whether these distinctions were copied correctly from Bach’s own manuscript cannot be known... either the manuscript contains an error here, or Bach wanted the sound of the open-string G reserved for the pickup into bar 28.9

Figure 7.4. A. M. Bach manuscript, bars 26-27

If Bach’s original was indeed at pitch, the use of sounding Gs on two different strings may illustrate that A. M. Bach (either independently or through some instruction from the composer) did attempt to consider some aspects of voicing. It opens up the possibility that beyond the G, the concept of notating higher positions on the D string seemed too complex, thus opting for a more literal transcription – which in turn suggests that not all pitches that were written for the top string were necessarily to be played as such.

The edition of Julius Klengel around 1900, like that of some contemporary works in scordatura, places sounding and fingered notation side-by-side.

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8. Andrew Filmer. ‘Bach’s Cello Suite No. 5: Sources, Theories, and Performance Pathways’, Arco, European String Teachers Association (British branch), 2012.

Klengel did not do this simply to provide additional clarity to the performer. Unlike the ambiguity surrounding Kellner’s intentions at notating at pitch, Klengel’s inclusion of fingerings inform us that it was the practice of the day to perform it with regular tuning. In addition to fingerings, we can note that as early as the second bar, there has to be some truncation to make it feasible to be played in regular tuning. Most current editions would produce two separate versions for this purpose. If it were simply for pitch reference while reading fingered notation, current editions would reverse the staves, and use an ossia stave for the sounding pitches.

Biber’s approaches, though far more complex in exploring scordatura, had greater simplicity in notation. A contributing reason for this is that the writing was in many ways meant to illustrate the possibilities of a chosen tuning, rather than having a pre-written work modified for scordatura at the end of the compositional process. Biber’s chosen notational scheme was to alter the key signature:

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Figure 7.5. Julius Klengel edition, opening bars of the Prelude, with fingered notation above, and sounding pitches below, as indicated to the left

10. J. S. Bach, Julius Klengel, ed. Six Cello Suites (Leipzig: Breitkopf & Härtel, c. 1900.)

and in one case, the use of stems to indicate a switching of strings, literally indicating ‘cross-tuning’:

Figure 7.7. Sonata XI in G, ‘The Resurrection’ and the crossing of string behind the bridge. The indication of the scordatura preceding the clef indicates the switching of strings, and, once again, a custom key signature is used.

The use of specialized key signatures takes Cook’s ‘rule of thumb’ a step further. It suggests that, as Cook suggested, it is preferable to use sounding pitch notation if the material is less complex, and it may be preferable to use accidentals when the material is somewhat more complex. In extension of this, at the highest level of complexity it is preferable to use a key signature as a blueprint for the entire work.

Based on these observations, the approaches towards notational options are as follows:

- For minimally applied scordatura, sounding pitch notation is used. The principal relation of the score to the performer remains an indication of pitch; the

12. Ibid.

performer then decides how best to execute this. An example of this is Strauss’ extension of tessitura of the viola in Don Quixote. When sounding notation is used, there is a certain additional independence granted to the performer in deciding on the method of execution, since the alternative of fingered notation to some extent pre-sets fingerling, or at least on which string certain notes are played.

- At a higher level of complexity, fingered notation is applied, and the score loses some of its function as an indicator of pitch. The relation of the score becomes to a limited extent an indicated physical placement: limited when the scordatura only affects one or some of the strings. The majority of the work thus still indicates specific pitches. In Bach’s Cello Suite No. 5, for example, all notes that reside on the lower three strings still maintain the function of indications of pitch. On these strings, it still provides the opportunity for the performer to explore options of different fingerings or choice of string, without having to rewrite or retrospectively transpose the music.

  Considering the limited extent of their use, accidentals are applied where necessary. This provides the additional complications of an instrument that does not observe enharmonic equality in notational spelling: the choice of a B flat or an A sharp would be in a sense the same in transposed notation, but can have a psychological impact for a string player in adjusting intonation. Losing the relationship of printed notes to the key has this side effect. This is where the use of a second stave in some editions indicating the sounding pitches provides the information lost in the process of transposing a selected range of the work.

- At the highest level of complexity, such as the Biber sonatas, the use of accidentals becomes prohibitively repetitious, and hampers reading the music. The use of specialized key signatures aids this process, but requires more concentration from the performer. The performer has to not only detach from any inclinations of viewing notes as pitches, but additionally invest time in reshaping the geography of an instrument. Once this additional requirement of mental preparation is invested, however, the score is arguably clearer to read without the over-frequent use of accidentals. This does, however, come at the
cost of having a score that is initially less accessible for those unaccustomed to scordatura.

The extensions of scordatura in this thesis take into account these three options and their implications, in deciding in collaboration with publishers the clearest method for individual application. Essentially, all these approaches are valid for their specific circumstances. They have at their core an attempt to compare the level of complexity of a scordatura to the likely reactions of a performer to each approach. There will necessarily be some element of subjectivity in this process simply because of the diversity of performers. As Chiang’s research noted, factors such as that of perfect pitch affect the reaction of a particular form of notation. Nonetheless, precedents stretching back four centuries provide reliable guides.

**II. Repeated accidentals – Mozart’s Sinfonia Concertante**

The edition of Mozart’s Sinfonia Concertante extends the original scordatura of all strings up a semitone by having the lowest string tuned up a further semitone, for effects of resonance and availability of an additional open string. There is a certain increase in difficulty, as a sacrifice of convenience for aesthetics, and it is up to the individual performer to decide whether he or she can afford the additional investment for a limited acoustic advantage.

The increase in difficulty is for the most part not due to any real additional physical requirements, but rather what linguists might classify as mother-tongue interference: the issue is not the difficulty in placing fingers in the newly designated positions, but rather dealing with the expectation of key and a history of performance that has a certain level of in-built finger memory. Through technical exercises, performers of stringed instruments build certain expected patterns in tonal repertoire. A particular key will have a familiar set of finger positions established through time spent with scales and arpeggios and etudes, similar to how a pianist becomes familiar with the pattern of black keys in a particular key. A scordatura that affects one string provides the challenge to the performer of not taking finger positions for granted. In the extended scordatura in the Sinfonia Concertante, the altered interval of a semitone causes notes on the new D string to lie essentially in the notated key of D flat major. Thus, the performer’s instrument has three strings in the D major finger positions, and
one string with D flat major finger positions, and a key signature of D major. This means a high number of accidentals for notes on the altered string. This significant number of accidentals would generally incline one towards the specialized key signature of the likes of Biber’s sonatas; however, many violists would be too familiar with the regular D major version, and this could lead to the risk of errors. It is also likely that the familiarity with the fingerboard geography of D major makes the use of accidentals a necessary precaution.

It becomes evident then that there are additional factors to take into account when writing scordatura editions of well-established works, primarily dealing with what is in essence the psychology of the performer. This is a principal concern in deciding whether to use sharps or flats. In the new function of accidentals for the purposes of finger location, the choice of accidental would not be related to the key – and both a G flat or an F sharp would essentially be correct, with no implications to the structure of harmonic ‘spelling’. However, in the extended scordatura of the Mozart project, as a matter of perception, there has been some consideration given to the visual connection to the original D major. The use of flats and naturals, rather than sharps, generally allows the note-heads to remain in familiar territory.

Take for example bar 192 of the first movement, where a G flat serves this purpose more grammatically effective than would an F sharp.

![Figure 7.8. First movement, bars 187-92. The written G flat and F natural in the final bar of this excerpt sound a semitone higher.](image)

This choice of accidentals also allows for maintaining visually descending lines, as with the F natural in bar 90 of the second movement, rather than an E sharp, which would, in any case, be a less comfortable spelling. One can argue that it also allows for an easier transposition by removal of the accidental – thus, the closing D flat being a D in the usual edition.

![Figure 7.9. Second movement, bars 89-90](image)
Thus, this approach to scordatura notation is novel in that it takes into account the possible previous experience of the performer in playing the work in Mozart’s original scordatura. This highlights two important factors. First, that the choice of notating finger positions has various options because the accidentals do not fit into the harmonic structure of the work; second, that when dealing with a new scordatura for a well-known work, editors should factor in the likely background of the performer. Even in cases where the performer may not have tried Mozart’s scordatura, the choice of accidentals here provides a smoother transition if the performer should decide to examine the original scordatura.

There is one exception, in the first movement cadenza. The use of an F sharp instead of a G flat allows better ease perceptually for the fingered interval of a fifth in bar 16 – the performer reads an F sharp and C sharp somewhat easier than would otherwise be a G flat and C sharp.

Figure 7.10. First movement cadenza, bars 15-17

The first draft of the edition excluded cautionary accidentals for pitches one octave higher, but in the editing process, these were reinstated, as in the following sample from the first movement:

Figure 7.11. First movement, bar 213

The two different approaches to the use of cautionary accidentals signalled two different performance views. Without the cautionary accidentals, the performer keeps in mind the key of D major on the upper three strings and the accidentals become a
reminder that the last string is physically demarcated from the regular expectations of finger placement within that key. In other words, the accidentals for the last string are simply a notation of tablature – not an indication of a modulation. Thus the cautionary accidentals for the upper octaves would be unnecessary. The other approach that uses cautionary accidentals considers that having two separate identities of accidentals and mentally separating the lowest string may be a challenge to those relatively new to the use of scordatura.

The complication of transposing only one part of a stave is the ambiguity of notes that are within the range of more than one string. As can be seen in the illustrations above, there are occasions when fingerings can be useful in designating a string when some ambiguity is possible. This does mean, however, that a limitation of scordatura notation is that the editor has to make some decisions that would otherwise be left to the performer. Nonetheless, in most cases in the Mozart edition, the required designation is simply whether a notated G refers to the open string, and overall the affected areas are not extensive.

There are, however, certain occasions where larger areas are affected. In these cases string designation may be indicated with brackets rather than fingerings. In these areas, a larger editorial role can be seen. One example of this is at bar 318 of the first movement.

![Figure 7.12. First movement, bar 318](image)

Here the editorial decision considered the original segment and the possible fingerings. While it was possible to play this in first or half position, it was also rather unlikely, considering that the eventual arrival on the second string would cause technical issues with string-crossing for the third beat. The only other option would be to start in first position and shift, which would cause issues with having to shift in the middle of a slur. In second position, the fingering would be parallel to the same section in the original scordatura; here the spacings between fingers remains mirrored on the third and fourth strings. This designation was thus considered fairly unobtrusive as it was the most likely fingering used.
The use of bracketed string designations occurs usually when a greater number of notes are involved; however, in bar 256 of the third movement, the use of brackets is simply to provide the performer with the options of fingerings – the second and fourth fingers are most likely, but it is possible that the first and third could be applied.

![Figure 7.13. Third movement, bars 253-57](image)

The choice of placing these two notes on the fourth string is indeed an editorial decision, with only the F natural (sounding G) required in this tuning. It is entirely possible that the performer might choose to stay in first position, and the notation here does limit options that the original transposition scordatura would not. However, it may be argued that since the final pitch in that bar is the same as the first, it would not require too much of a performer familiar enough with the music to know where on the third string the required pitch is located, should he/she prefer that option. Once again, this highlights the visual value of the use of an A flat, rather than a G sharp in this instance: the player could simply cross out the string designation and accidental, which would not be possible if it were a G sharp.

There is also the issue of the use of open strings in this movement. The primary theme utilizes this extensively, and is likely one of the clearest advantages of the scordatura. It would be highly unusual for any performer utilizing either the extended or the original scordatura edition to avoid the use of the open strings. Performers seeking the use of vibrato or a more sustained articulation would likely use a transposed edition in regular tuning, though it should be mentioned that various performers outside of period performance practice have utilized Mozart’s scordatura, including Lionel Tertis, Nobuko Imai and Paul Coletti.14

There is a prominent section in the third movement where two options are equally viable. It occurs at the end of each *calando poco a poco* instruction, first from bar 199, and again from bar 338. Here there is the unique use of the *ossia* stave to designate the other fingering option. In most cases the small stave would indicate the sounding pitch, but this particular context would not present any confusion, particularly with the additional fingering provided.

At this section, one interpretation could be that the preceding bars indicated the use of fingered notes, likely with some level of vibrato that would not be available with the open string – thus offering a legitimate continuation of a fingered option. It could also be argued that with the use of the open string, the following note would cause a slur across a semitone as it moves to the fourth string in bar 341, which would be unidiomatic for string playing.

Alternatively, it could be said that the general feel of the section winds down in energy, in particular noting that the sforzando of bar 331 is not replicated in bar 335, and that the open string provides for a progression of the calando. It also spreads the notes – particularly the sustained notes – from the first to the second and finally to the third string, rather than skipping the third string through the use of the fingered notation.

The availability of two options that are both significant as well as equally weighted required a unique extension to the usual methods of notation. Thus, it plays the role of both a scholarly edition as well as a unique kind of performer’s edition. It takes a scholarly role, not in its preservation of the composer’s manuscript, but rather in examining and executing the compositional intent. In doing this, however, there are various elements of a performer’s edition; the clearest is that the new scordatura notation requires the editor to decide on fingerings and string distribution. The crucial distinction with a regular performer’s edition is this: the subjective element of deciding these fingerings is simply due to a requirement of scordatura notation, rather than an individual inclination to personalise an interpretation. The use of the ossia stave, when there is more than one viable option, and careful consideration of these fingerings,

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15. Beyond the range of the excerpt; for reference of this section, see the AVS edition, at the end of the Mozart chapter.

16. Nonetheless, aspects other than the scordatura, including discrepancies of pitches and distribution of articulation markings are addressed in the edition. Furthermore, a separate edition using Mozart’s original scordatura is published alongside the extended scordatura edition by the American Viola Society.
brings a sense of objectivity to a kind of edition often regarded as subjective and non-scholarly. It is in a sense a performer's edition, but it is not simply one performer's interpretation.\textsuperscript{17}

\section*{III. Double-Stave Approach – Bach: Brandenburg Concerto No. 6}

The Brandenburg Concerto project occurred in 2011 with some final edits in 2012. In contrast, the Cello Suite No. 5 project spanned a wider time frame, beginning in 2010 and with major decisions made well into 2012. With these two projects running concurrently, there were some aspects of the production of the Cello Suite No. 5 edition that influenced the Brandenburg Concerto edition, and vice versa.

While the use of the double-stave approach in the Cello Suite No. 5 was primarily to facilitate a designation of all four strings (a function not required in the Brandenburg Concerto edition) the similar intervals applied in the two scordaturas made it a practical matter to put forward a similar approach. In addition to the practicality of having a shared approach that would allow greater accessibility from one edition to the other, the double-stave approach in the Brandenburg Concerto had certain independent benefits.

A major benefit of the use of the two staves is the clear indications of notes that could fall on more than one string – specifically, the second and third strings. This avoids any ambiguity as to which string a note implies, and avoids the use of bracketed string indications as well as fingerings. This arguably would make for more straightforward note-reading by avoiding the additional layer of textual information.

For example, we can examine the Scordatura Viola I part, at bars 105-6 of the first movement. The following is the original viola da gamba part, followed by the Comus edition:

\textsuperscript{17} Some performer's editions have tried to bridge the gap between the personal interpretation of the editor and the freedom of the individual performer. One example is the Henle edition of the Stamitz Viola Concerto No. 1, with various options to construct a cadenza from recommended segments.
Figure 7.15. First movement, bars 105-6, original viola da gamba part, and viola scordatura of B flat-F-B flat-F

The same extract could be written out in the two following options, depending on which key signature one chooses to apply:

Figure 7.16. Single-stave options, first movement, bars 105-6

The complication of a single stave would be that there is no obvious or predominant key signature, since the scordatura is evenly divided across the instrument, with the lower two strings in the transposed key of C, and the upper two in that of D. Also, unlike the edition of the Cello Suite No. 5 that has the lower two strings in regular tuning, in the case of the Brandenburg concerto none of the strings conform to regular tuning.

The benefit of the double-stave approach is that it bypasses these complications, while allowing accidentals to play their traditional role in signifying some harmonic change. Unlike the case of the Mozart work, the use of the double-stave approach remains practical, as it does not occupy a prohibitive amount of space on paper. The Brandenburg Concerto does not have complications of page turns that would occur if the Sinfonia Concertante used the same approach.

In addition to this, the division of two strings per stave as well as the balanced distribution of notes across both staves were supporting factors. Furthermore, the scordatura that resulted in an interval of a fourth between the second and third strings allowed for the use of key signatures instead of accidentals. Unlike the Mozart, which
involves rather awkward finger positions on the lowest string relative to the other strings, the scordaturas applied in both Bach editions resulted in additional symmetry in locations of relevant pitches on the fingerboard. It is the simplicity provided by this scordatura of having fingerings that are parallel across all four strings in the key of B flat major, that makes the key signature the most practical approach. While the performer does have to adjust the finger memory involved, the parallel fingering is a fairly natural approach, arguably more so than in regular tuning which gains its familiarity only artificially through training.

Due to tuning in fifths, even the simplest keys do not have parallel fingerings across all four strings, with complexity of fingering generally dependent on the number of available open strings. Consider the key of B flat major used in the Brandenburg Concerto No. 6, and the finger positions in regular tuning contrasted to the finger positions in the scordatura:

Figure 7.17. White dots marking fingering positions in first position in the key of B flat major. Left, conventional tuning; right, scordatura for the Brandenburg Concerto No. 6 edition.

The scordatura’s approach of creating B flat and F open strings simplifies the fingering layout of the key, and subsequently creates the parallel fingering seen above. The approach to notation, particularly in the choice of two staves with different key signatures, can be useful in setting up this fingerboard geography. This is especially
useful as the intervallic relationship of this scordatura is used in other genres of music, with the clearest examples being North American and Scottish fiddling, as well as Carnatic Indian music.\textsuperscript{18}

It is of course possible to amalgamate the two staves and apply a custom key signature in the style of Biber, but it can be argued that the double-stave approach shows the new finger geography more clearly – and avoids errors in this process. Considering that the purpose of the instrumental substitution in the Brandenburg Concerto is to provide various aspects of accessibility in modern performance, it makes sense to go with the choice of a notational system that allows some ease to those new to scordatura.

The key signature option, over that of repeated accidentals, also possibly allows for an easier transposition to sounding pitch, should that be required in the course of rehearsal. In summation: despite initial appearances, the use of the double-stave method is not necessarily more complex than the use of a single stave – it is simply a different method of distributing notational material, a decision made in consideration of the particular context of the work. However, there are various additional considerations in using two staves, including dealing with additional and redundant rests, as well as linking the two staves.

The following is an early draft of the scordatura score, preceded by the original viola da gamba part. The D in bar 22 is the lowest note on the upper stave, and the C in bar 19 is the highest note on the lower stave for the majority of the work.

\begin{figure}[h]
\centering
\includegraphics[width=0.8\textwidth]{figure718}
\caption{First movement, bars 19-23. Above: original viola da gamba II part; below: scordatura viola II (initial draft)}
\end{figure}

The approach taken towards the note-tails in bar 21 was an initial attempt to ensure a connection between the two staves. This was to remedy the confusion caused by the two-stave approach, which was noted during initial rehearsals. While there are fewer errors in adjusting fingering with the demarcated key signatures than there might be with a single-stave approach, violists are not always accustomed to reading across two staves. The violist would continue reading across the top stave in bar 21 and stop after the fifth note – realising only then that the music was meant to continue, seamlessly, in the lower stave. Linking the note-tails, such as in this example, helped resolve this issue. Two other aspects of this issue were the automatically notated rests and the spacing between the staves.

The issue of spacing was fairly easily dealt with: in most areas the parts were in first position, meaning that the lower stave rarely went higher than as seen in bar 19, and the upper stave by virtue of the new tessitura did not go any lower than as seen in bar 22. As we can note from Figure 5.18, there is thus considerable space that would allow the two staves to be moved closer together.

The inclusion of the additional rests seemed to be not only redundant but, as noted earlier, was also potentially misleading, particularly when a line was to continue in a different stave. Comus editor Michael Dennison recommended the use of grey rests.

![Figure 7.19. Scordatura viola parts, first movement, bars 15-19, with use of grey rests](image)

The benefit that we might note in bar 17 is that the choice of which rests are in the traditional black – essentially the ‘real’ rests – can be indicative of an upcoming section. Note that for the Scordatura Viola I part, the black rests move from the top stave to the lower stave, indicating that the next section will use the lower stave. For the Scordatura Viola II part, the rests remain black in the lower stave, as the next entry will be on this stave as well.

Another aspect proposed by Dennison was whether to use horizontal or slanted stems as seen in these options for bars 20-21 of the first movement:
Figure 7.20. Two notational options for first movement [drafts], bars 20-21. Above: beaming parallel to the stave; below: beaming matching the direction of the melodic line.

Note that in the first approach, the note-tails are horizontal to the stave, while in the second, they are slanted in the direction the pitches are headed.

The use of the latter option seemed to allow visually for a more effective presentation of a connecting line progressing from one stave to the other. One might also note that the decreased space between the staves, in tandem with the inclined stems, allowed the stems to not be much longer than would be usual. That being said, the extent of the effect is dependent on the interval – the presentation of the Scordatura Viola I in bar 20 being visually more ‘natural’, as it were, than Scordatura Viola II.

IV. Custom Key Signature – Telemann: Concerto for Two Violettas

The Telemann Concerto for Two Violettas, in the key of G major, provides an opportunity to examine in greater detail the intricacies of multiple notational options that were explored in process of producing the edition.

The function of the retuning of the A string down a tone in the second solo viola is principally to exploit the use of the open string, with additional resonance as a secondary benefit. Thus, on a notational basis, the approach is fairly basic, with the use of fingerings that utilize the open string unless it creates a slur that inappropriately crosses strings.
In contrast, the availability of a low D string is designed solely for effects of resonance. Also, unlike the use of scordatura elsewhere, the function of the adjustment of the lowest string is not for affecting the notes on the relevant string. Rather, this retuning has an effect on the overall instrument. However, the minimal effect on notation for the lower-range pitches provides unusual effects for performance. Only one bar of the entire concerto – bar 31 of the final movement – requires the use of the lowest string:

![Figure 7.21. Viola II, fourth movement, bars 30-32 (notated at pitch)](image)

One can argue that a performer could decide on a fingering in bar 32 that would apply the use of the lowest string as well, parallel with the previous bar. Even so, the use of the lowest string would be considered minimal. The adjustment of notation for this is interesting in that it does not require any accidentals:

![Figure 7.22. Viola II, fourth movement, bars 30-32 (notated for scordatura, in fingered notation)](image)

To clarify the string distribution, the only additions necessary are that of fingerings:

![Figure 7.23. Viola I, fourth movement, bars 31-32 (notated for scordatura, in fingered notation)](image)

Thus, the effect for the Viola I part is as minimal as is possible, with only one note being affected, since only the lowest string is retuned. We might recall at this point that using fingered notation when the scordatura has such minimal effect on the work seems to go against convention. Following Cook’s observations, and precedents such as that of Richard Strauss, one would expect this to be in sounding notation.
The problem here is that the scordatura affects such a small part of the work: in fact, being only one note that is altered, it is as minimal a selection as possible in any work. To leave it in sounding notation would be to run a rather high risk that the performer would just forget that the string has been retuned.

With this in mind, we have to add an unusual proviso to the convention: when there is a limited selection of a work in scordatura, sounding notation should be used; however, if the selection is so minimal as to be overlooked, fingered notation should be used.

Let us return to the Viola II part. With the scordatura also moving the A string down a tone, all the additional accidentals are C sharps on the top string. The combination of these notated C sharps and no accidentals on the lower string can, on a visual basis, potentially misleadingly imply a modulation to D major, as will be exemplified shortly in this discussion. This will not affect accuracy of the notated fingering, but could lead to a false expectation that may impact on performance. Thus, where the number of the accidentals in the Mozart project may have provided an unavoidable and almost inconvenient sense of complexity, it is the relatively low number of accidentals that can provide a misconception in the Telemann.

Counter-intuitively, the fewer the number of accidentals, i.e. the more minimal the adjustments of scordatura notation, the greater the risk of errors. Take, for example, the extended scordatura of Mozart’s Sinfonia Concertante when there are numerous accidentals. While it is sometimes a tedious process of notating cautionary accidentals, the performer has a continual visual reminder of the special tuning of that string. This can be helpful in ensuring that muscle memory does not cause the performer to accidentally place his or her fingers in the position of the original tuning – whether this is due to muscle memory from learning the work in Mozart’s transposition scordatura, or simply the training of the patterns with the notated key of D major. For occasions like Bach’s original scordatura in his Cello Suite No. 5, the notation is ‘cleaner’ in the sense that it does not have to incorporate many accidentals – however, without this reminder of the retuned string, it is more likely that at least in the early rehearsals some mistakes will be made. This is because of the tendency to forget that the scordatura forces the composer or arranger to decide on string distribution. In other words, the performer may use higher positions on lower strings to play notes, thinking they are written at pitch because of the lack of a reminder in the form of frequent accidentals. In actuality these sections use fingered notation for first position on the upper string.
For example, consider the following, showing the initial Viola II entry in the final movement. This section shows the potential errors of misreading the score, and also demonstrates a section where the notated C sharp would provide misleading information as to a modulation.

![Notation at Sounding Pitch/Without Scordatura](image1)

![Notation with Scordatura](image2)

![Possible Errors in Early Rehearsals](image3)

Figure 7.24. Potential errors with the notational approach of repeated accidentals. Notation in blue indicates fingered notation, and notation in red indicates sounding errors.

In regular tuning, the performer has several choices of fingering i.e. distribution of pitches across strings. The notes most likely in question are indicated in green – in the opening bars the performer could utilise the open D string, or may prefer cross-stringing, using the fingering below the stave. In the final measure of the excerpt the A would likely be played on the D string to avoid string crossing on a semitone interval; however, it is possible that a performer would prefer the use of the open string, in keeping with some perspectives of Baroque era performance. These sections show how a single line can have multiple forms of execution, without any change in notation. The important factor to note is that it is common practice that fingerings in performer’s editions are used or ignored at will.
A scordatura that does not keep strings tuned in fifths has the complication of having to determine string distribution, as seen in the second excerpt. In this excerpt the notes to be played on the top string (a scordatura of the A string tuned down to G) are additionally indicated in blue. If, for publishing cost or other reasons there was not the use of colour, it would be relatively easy in early readings of the score for a performer to choose a different pathway and play the wrong pitches. The final section in the above illustration shows possibilities of these errors in reading scordatura notation. In this scenario, the errors could include viewing the score as sounding pitches instead of having a component in fingered notation. Misreading the printed fingering, and re-finger these notes as one would do in regular tuning would produce the resulting errors (in sounding pitches), indicated in red. This hypothetical example would be that of playing the first two bars of the excerpt on the D string and misconstruing the use of the open string in the following bar. It is of course highly unlikely to have all these errors at once, but this hypothetical situation highlights the complications of notation for scordatura.

It also highlights the potential of the use of coloured notation in preventing some of these possible misreadings. However, the field tests also indicated that given considerable time and adjustment, it is possible to restructure one’s muscle memory and read sounding-pitch notation, while using scordatura. It is also more challenging to do so in Bach’s scordatura in the Cello Suite No. 5 (replicated in the Viola II scordatura in the Telemann project) than the extended scordatura in Mozart’s Sinfonia Concertante. This is again counter-intuitive because the extended scordatura is far more complicated. The reason for this is that when reading Bach’s scordatura, one would have to not simply recalibrate the position of the fingers, but use different fingering patterns entirely. For example, the second finger would be adjusted down to the first, and the third finger down to the second. In the extended scordatura in Mozart, the same fingers can generally be used, just adjusted half a step lower.

A long-term solution may be inspired by the etudes in scordatura by Dinos Constantinides. While these etudes were not intended to provide performers with the skill of being able to read works written at sounding pitch while using scordatura, the extrapolated idea of having etudes to do so could prove very useful. This would enable a greater facility for the performer, in not having to rewrite entire works or wait for the publication of works in scordatura notation. The performer would be able to use an existing publication, and gain the ability to execute it in a tuning of his or her choice,
making scordatura as much of the capability of a performer as is the current ability to adjust and individualise fingerings.

Let us take a moment to consider the idea of this approach. The following is a sample of how these etudes could appear:

![Figure 7.25. Sample of a potential manual for training in playing scordatura with at pitch notation](image)

The C major scale on a viola is indicated in standard tuning and with two scordaturas: the original and extended scordaturas of Bach’s Cello Suite No. 5. The fingering indications will be familiar territory for string players, with parallel first and third fingers, but two different positions of the second finger, L2 being a “low second finger” a semitone above the first finger, and H2 being a “high second finger”, a semitone below the third finger.

The application of the two scordaturas in this example does not use fingered notation, instead keeping the at-pitch notation. The notes that now fall on different locations on the fingerboard are highlighted, and are attached to new fingerings. The whole basis of fingered notation is that a particular note on the stave relates to specific position on a string. The approach above would eventually take away this bias: the top C
for example would no longer be equated to a “low second finger” on the top string, because it could very well be the third finger instead.

Given sufficient practice, particularly if instituted as part of early music education, some, if not all, scordaturas could be performed without needing to revise the score. A likely additional benefit would be the ability to transpose at sight.

As this situation does not yet exist, for the Telemann Concerto, we consult a second option: the use of a specialized key signature, in the tradition of Biber.

Figure 7.26. Custom key signature for the Viola II part, Telemann’s Concerto for Two Violettas

While complex insofar as it diverges from the norms of key signatures, in the larger picture the key signature for scordatura fingered notation is essentially a blueprint of the altered finger positions. In essence, this is a form of a modified tablature. In the context of the Telemann Concerto, the adjustment of finger position geography would only effectively need to be kept in mind for the top string. Thus, while it may seem unusual, the application of a custom key signature is a relatively simple affair. It simply informs the performer that the new layout of the fingers is as follows:
The fingers fall largely in parallel positions, similar to that of the Bach editions. This is more so as the lowest note is only minimally used. Let us take a look at how this custom key signature approach was similarly applied by Biber. The following is from the fifth of the *Mystery Sonatas*:

![Figure 7.27. Finger positions in Telemann’s Concerto for Two Violettas with scordatura applied on the first and fourth strings of the Viola II part](image)

![Figure 7.28. Biber’s fifth ‘Mystery’ Sonata: scordatura tuning and custom key signature on the left, and finger positions across the four strings on the right. The red circle demonstrates that the custom key signature does not apply to notes in other octaves.](image)
This sonata is in the key of A major, and with the tuning provided, the finger positions are as shown on the right side of the illustration. The key signature instructs the performer to have his/her fingers as would be for C major except for the three specific alterations indicated by the composer. The fingered F# on the third string is a sounding G# sharp, the C sharp on the second string remains at regular tuning, and the first string has the use of the flat to designate a low first finger on the top string, producing a sounding D.19

Thus, the key signature informs the player of the new geography for playing A major in this tuning. One may note one important detail of Biber’s custom key signature: Biber’s sharps did not apply to the octave above or below. Thus as indicated in red, the C sharp in his key signature does not apply to the lowest string, which has a third finger placed as though in C major.

The issue of notation in all the projects, but particularly so in the Telemann Concerto, is whether to select a format that is relatively familiar and thus readily accessible, or to aim for a format that is at first likely to cause errors due to ‘mother-tongue interference’, but in the long-run allows users to better acclimatize to the flexibility of non-traditional key signatures. The latter option could possibly allow editions like that of the Mozart to be published without the extensive use of accidentals and cautionary accidentals. A third option would be to publish two versions to allow for immediate accessibility while re-establishing Biber’s approach toward scordatura notation.

The American Viola Society edition took into account various factors. This encompassed not only the comparative merits of the other approaches, but the specific factors surrounding the edition. For example, a major factor was that the edition will be made available to the public without charge on the Society’s website, and the use of coloured notation would lead to complications in printing for some users. There was also the intent in making the edition accessible to a certain degree.

In areas where there larger sections of the notation were affected, an altered version of the ‘Sul I’ designation was also attempted for the second violetta part. Unlike the edition of Mozart’s Sinfonia Concertante, the Telemann Concerto had a particular complication: areas of cross stringing where it would have been very complicated to attach a conventional ‘Sul I’ designation. As such, the approach taken was to use an upper bracket similar to a ‘Sul I’ marking, but include a set of prefacing notes informing

19. The use of a flat instead of a natural sign was idiomatic for the era; Telemann did likewise in his Concerto for Two Violettas.
the performer that notes above the top line of the stave were to be played on the top string. Technically, this was simply a clarification of the approach, since notes below the top line of the stave could not be played on the top string in any case.

![Image](251)

Figure 7.29. Second movement, bars 42-43. Upper excerpt: sounding pitches, from the edition for violas in conventional tuning. Lower excerpt: ‘as fingered’ notation, in the edition for violas in scordatura tuning.

There are occasions when exceptions are made, a footnote and additional fingering was applied. The following excerpt indicates one affected section:

![Image](251)

Figure 7.30. Second movement, bar 27. Upper excerpt: sounding pitches, from the edition for violas in conventional tuning. Lower excerpt: ‘as fingered’ notation, in the edition for violas in scordatura tuning.

Fingerings were also used for areas where only individual notes were affected (see Figure 5.23). There was an attempt to use only fingerings throughout the entire work, instead of the bracketed device. Two drafts, one for each of these approaches, were prepared and discussed with other violists. While the version with only fingerings had the benefit of avoiding prefacing performance notes, it was felt that the use of fingerings to designate string distribution had the effect of limiting the freedom of the performer to determine his or her own fingerings, albeit on pre-determined strings. Additionally, the bracketed markings provided a clear reminder of when the top string was to be used.
The process of experimentation with notational methods was more intensive and varied in this project than in any other, and provided observations that could assist in future scordatura projects.

V. Coloured Notation – Bach: Cello Suite No. 5

The approaches in scordatura in the two Bach projects are related, with each project contributing to the other. The edition of the Cello Suite No. 5 influenced the double-stave approach modelled in the Brandenburg edition. At the same time, in draft form, the Cello Suite No. 5 project provided a useful reference for trying out the two-stave format.

There are several distinct additional notational factors that were dealt with in the production of this edition, the foremost being:

• Experimenting with the use of stem (note-tail) direction to communicate the choice of strings, owing to the distribution of notes according to voicing patterns;
• The incorporation of the score of the lute suite, resulting in the need to find creative solutions to execute certain chords;
• The eventual use of coloured notation.

A significant portion of the following discussion deals with the interim outcomes and observations at various stages of the research, even though many of these were eventually not applied, due to the use of coloured notation. Nonetheless, the findings in regard to the use of note-tail directions and beaming remain significant, and have the potential to be applied in future projects.

There are precedents for the use of stems to indicate additional information. Peter Williams notes various methods composers or editors use to indicate hand distribution in keyboard works, including slurs, clefs, the use of additional rests as noted earlier, and the directions of stems:

The first movements of Mattheson’s first two suites begin with preludes in which one might expect a composer to suggest some such distribution. Perhaps he did suggest it and the engraver simplified or regularized the notation, misunderstanding the position of the note-tails (up for right, down for left) and believing that they should be up or down
depending only on where the notes come in the staff. He would not be the only publisher whose ‘house rules’ have blotted out an author’s intentions.\textsuperscript{20}

Mark Clague additionally notes that while uncommon, there are precedents for the use of note-tail direction for additional communication:

The beams and barlines of music notation are only rarely considered to encode meanings that lie outside of the sounding surface of the music represented.... A notable exception is the use of musical notation as a form of cryptography. Beginning at least as early as the fifteenth century, music notation has been the basis of codes for communicating secret messages.\textsuperscript{21}

Clague also notes the use of beaming for visual purposes by Charles Ives.\textsuperscript{22}

Williams notes that early copies of Bach included rests that were editorially included to clarify hand distribution in keyboard works, and cites the Passacaglia, BWV582.\textsuperscript{23}

Figure 7.31. Manuscript of Passacaglia BWV582 (bars 120-23), and the Bach Gesellschaft Edition.\textsuperscript{24} Upwards tails indicate the use of the right hand, and downwards tails indicate the use of the left hand.


\textsuperscript{21} Mark Clague, “Portraits in Beams and Barlines: Critical Music Editing and the Art of Notation.” \textit{American Music} 23, no. 1 (Spring, 2005): 39, 64.

\textsuperscript{22} Ibid, 64. The Ives works cited are ‘The Cage’ and ‘Maple Leaves’.

\textsuperscript{23} Ibid., 106.

\textsuperscript{24} Breitkopf and Härtel, 1867.
It would be useful at this point to recall the issues with A. M. Bach’s manuscript of the suite. With few, if any, available precedents in scordatura notation, A. M. Bach could do little else but put forward a literal ‘translation’ for scordatura. In the manuscript, most Gs and all notes above G are transcribed a tone higher, as if to be played on the top string even when the more musical option would have been to play in a higher position on the D string. A. M. Bach did not have precedents that would have provided her options of indicating which string was to be used.

The use of stem directions can be a useful way to provide this information, without additional fingerings or bracketed markings. Considering the vast majority of notes have to have stems anyway, it is about utilizing what is already in print. It is also useful to theorize that Bach may have used the stems for hand designation, as noted in Figure 5.31, which would suggest that their use in scordatura notation would not be too much of an extrapolation of the composer’s own use of notation. Instead of Bach’s additional information of hand distribution, the stems are used to inform the player which string is in use. This is seen in the scordatura instruction:

![Figure 7.32. Scordatura for the two-stave approach for Bach's Cello Suite No. 5](image)

As we can see, each stave covers two strings, and the stem direction informs the player whether it is the higher or lower string that is applied. The disadvantage to this is remembering that stems have this additional instruction, which despite precedents in keyboard works, is not a regular skill for players of stringed instruments. Nonetheless, while this does require additional investment from the performer to keep in mind this additional layer of notational semantics, it is a far neater approach than would be the use of fingerings or brackets, which in the context of this work (rather than that of Mozart or Telemann works) would be too frequent and thus intrusive. What we can note from this is that the notational approach towards a particular scordatura is very dependent on the amount of information that is conveyed. This is similar to Cook’s observations of at-pitch versus as-fingered notation, and takes it a step further, in
suggesting that the choice of the specific method fingered notation is also dependent on the extensiveness of the scordatura notation. This is, however, determined not simply by the number of bars affected by an altered tuning, but rather by the complexity of a particular scordatura.

There were unique issues concerning stem lines, due to a higher level of complexity in the cello suite compared to that of the Brandenburg Concerto project. While connecting semiquavers between the staves was as viable as in the Brandenburg edition, the construction of chords was a more complex process. This is simply because the downward facing stems of the second string are on the left side of the note-heads, while the third string had stems on the right side of the note-heads. The regular approach to this would be to construct chords with a single stem on the left, a process that would sacrifice consistency in the use of stem-line directions as an indication of the distribution of notes across strings. That being said, it was considered that there are chords for which this would apply as they could only be distributed across the strings in the manner befitting accurate voicing. Thus the use of a single connected stem would be applicable, since this would provide greater ease in reading. The following are the final bars of an initial draft of the Prelude:

![Figure 7.33. Prelude (initial draft), bars 215-23](image)

The stems above are notated strictly for the indication of string designation. The following are the same bars in another draft, with the application of the chordal notation discussed above, as well as an early attempt to connect the two staves:

![Figure 7.34. Prelude (second draft), bars 215-23](image)
The chords with connected stems have no other viable distribution across the strings, so the voicing is preserved. The issue is balancing the benefit of reading those chords with a single stem with the possible side effect of having stems that do not consistently provide the same information. Also, the length of the stems required in these chords create an inclination to bring the staves even closer – though, this does have the additional benefit of having stems no longer than would be usual in the run of preceding semiquavers. However, this makes some fingering suggestions impractical, as can be noted in Figure 5.34 as contrasted to Figure 5.33. A final issue is that the G preceding the penultimate chord is notated on the C string, while the following G is intended to be an open string.

While the Brandenburg edition had scordatura viola parts that were uncomplicated enough to not require fingerings, the edition of the Cello Suite No. 5 did have a level of complexity whereby fingering suggestions may have been useful. However, none of the fingerings required were crucial in the sense that they are in the Mozart: fingerings in this edition only had the role of recommendations, because information about string distribution was indicated through the double-staves and stem directions. Due to this, and the eventual overall complexity of the score, it was decided that leaving out fingerings helped with overall visual presentation.

Another issue that arose in the production of the edition was the use of arpeggiated or broken chords. Part of the incorporation of the lute version with the cello suite concerns the re-evaluation of chords that are simplified in the latter. In certain situations chords may be re-spelled, largely due to issues of tessitura. This is so long as they do not significantly alter voice-leading patterns – thus the melodic line is the primary concern, and the harmonic structure may have some alterations, so long as they remain idiomatic of Bach’s compositional style.

One example of these complications occurs in bar 26 of the Prelude. While the chord on the third beat could quite easily be spelled differently by transferring the sounding g’ (notated a’) down an octave to the open string, this would disrupt the alto voice, and as such, it became preferable to have a broken chord instead, which also fitted well with the choice of arpeggiation in the first chord of the 3/8 bar.
Several issues arose from this method. The first issue was clarifying when grace notes were also originally intended as embellishments in one of the manuscripts, as contrasted to when grace notes were used as part of the execution of a chord. The second issue was that grace notes have been traditionally notated with stems upwards, which in the case above made it inconsistent with the application vis-a-vis string designation.

The incorporation of the lute suite also highlighted that the transposition of areas of the lute version on occasion caused voicing issues. An example of this is in the first Gavotte:

One notes that the leading voice in bar 27 is clear, but the identical section in the second half of bar 30 has some level of ambiguity in performance. In bar 30, the new alto voicing caused by the incorporation of the lute manuscript (which had this notated an octave lower) took an unintended prominence. In other words, the simplicity of bar 27 is such that there is a clear melodic line. However, in the second half of bar 30 there is a tendency for one to follow the alto line. There are technical and interpretive measures that can be applied to fix this in bar 30. Specifically, one could place a staccato marking on the alto voice, allowing the upper voice to be maintained, in doing so also clarifying that the slur connects the notated d” to the f’. However, in a scholarly edition this could easily be misconstrued as representing source analysis i.e. that the articulation marking was Bach’s rather than an editorial addition.
In addressing this issue, beaming was amended, which in itself may not signal a change in articulation but does visually align the second half of bar 27 with that of bar 30:

![Image](image_url)

Figure 7.37. Gavotte I (draft) bars 26-30

Performance notes on the issue would allow for a clarification of the intent of the amended beaming patterns. In the final edition, the voicing was further altered, but nonetheless, this highlighted that at this stage of the editorial process, both the direction of the note-tails, as well as the beaming patterns, had some significant connection to the performance of the work. Therefore, it could be stated that modern approaches to scordatura notation have the ability to redefine the functions of traditional notation.

After weighing the various options, and after extensive three-way communication between myself, co-author Donald Maurice and publisher Michael Dennison, it was decided that coloured notation was a viable alternative. We experimented with its potential in allowing the amalgamation of the two staves. Coloured notation provided greater accessibility to the performer with its clearer reminder of string designation, due to the potential for a performer to forget that the direction of note tails carried more information than usual. Once again, this highlights the unique role of the scholarly edition in predicting the challenges for the performer, based on the results of field-testing the edition.

![Image](image_url)

Figure 7.38. Opening measures of the Prelude, with red notation designating the second and fourth strings.

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25. We can recall at this point that the tuning at this stage was modelled after that of the
While coloured notation allowed for the benefit of an amalgamation of the two staves, there were two resulting complications. First was the necessity of frequent accidentals – unlike the Mozart project, this did not particularly help in denoting the strings which were effectively transposed. The second factor was related: the amalgamation into one stave blurs the distinction between the ‘at pitch’ notation and the transposed, fingered notation. The use of multiple colours may have resolved this and retained compact notation, but this would have made the notation even more complex and require further preparation by the performer. This results in decreased accessibility to the edition, which would be counterproductive to the single-stave approach.

The final compromise was to utilise the double-stave format, but retain the use of coloured notation instead of note-tail direction. This was deemed to provide the most accessibility: a clear demarcation of the transposed, fingered notation, as well as a clear and consistent reminder of voicing across strings. The following is an excerpt from the edition, using this approach:

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Brandenburg Concerto project, because the timbral change was deemed appropriate. In addition to its greater resonance, the lower string tensions somewhat appropriate to the amalgamation of the lute part.

26. This is due to the more complex harmonic nature of the composition, with frequent existing accidentals on the lower strings.
Figure 7.39. Measures 1-19 of the Prelude, with red notation designating the second and fourth strings, double-stave version

VI. Concluding Comments

The approaches that the notational process engenders illustrate the etymology of scordatura: in the many cases of fingered notation the pitches shown are truly “mistuned”, when a portion of the notation is associated to pitch and the other is only associated to a particular ‘hand-grip’. The common denominator in the various approaches is the attempt to provide notation that can be clearly understood by the performer, with the most efficient use of print. Notation communicates to the performer in two distinct ways: it provides indications of pitch, but also specific locations on the fingerboard. This is in the same way as would be at the piano, where a particular note is both a specific pitch as well as a recognizable place on the keyboard. The only difference
is that there is one set location for each note on the piano, whereas for stringed instruments the same pitch can often be achieved on more than one string.

The literature indicates to us that when it comes to using scordatura, the performer prefers sustaining the role of notation in providing information of pitch. Thus we have the minimal use of scordatura in Strauss’ Don Quixote written at pitch, and at the next level up, the various uses of a second, smaller stave in providing both fingered and sounding notation.

A performer may be able to make small adjustments, but almost always not be able to transpose large sections – or deal with areas where the scordatura is particularly complex. Furthermore, the use of the additional stave can sometimes reach a prohibitive level, whether due to the number of pages, or the practical complications of page turns. Thus, as the musical material becomes increasingly complex, the editor has the challenging task of making a determination of when accommodating both pitch and fingered notation becomes too complicated. The editor also has to decide if conventional notation is sufficient, or whether new options need to be explored. In these situations the edition then requires the performer to establish a new skill set in reading a significantly altered notational system, whether this be in the form of an unusual key signature, or the use of the double-stave approach and the use of stem directions, brackets, fingerings, or coloured notation. These advanced approaches do take away from immediate accessibility because they significantly depart from standard notational practices. However, once the performer becomes accustomed to the new system, the efficiency of the notation can aid the eventual performance.

In this chapter we have looked at the specific use of one of these unconventional notational systems for each of the projects. However, the multiplicity of approaches also means that in some cases more than one approach could be applied. We could apply coloured notation to the Telemann project, or a custom key signature to Bach’s Cello Suite No. 5. It is the consideration of the specific circumstances of each project that lead us to the choice of a specific notational system. Let us consider one hypothetical example. It is theoretically possible that the application of stem directions could be used in the Mozart edition, with all notes on the lowest string having stems pointing downwards, eliminating fingerings and bracketed string indications. To some extent, this would increase the space taken because of the downward stems, though not as much as a double-stave approach. This is in part because the use of the alto clef for the viola places its conventional lowest note with the use of only one ledger line below the
stave. Thus, the example below does not occupy an unusual amount of space between the systems when in the context of general music publication, but it certainly has relatively more space than would be found in a typical viola part. This would cause some visual incongruence with the rest of the edition, particularly considering that the areas where the viola part utilizes the lowest string are fairly limited. This is in contrast to its application in the edition of the Cello Suite No. 5, where the double-stave approach as well as the overall structure of the work did not lead to these complications.

Figure 7.40. First movement 33-71, scordatura notation as applied in the AVS edition

Figure 7.41. First movement 33-71, alternative notational option utilizing stem directions instead of fingerings and brackets

A second complication would be that with the use of a single stave, the notes in the upper range would also have downward stems – though, to be consistent with the scordatura notation, these notes should have stems pointing upwards. While there would be no confusion as to where these notes would be placed, it would nonetheless cause some level of inconsistency that may lead to errors. If stem directions are to provide additional instructions, then the message must be consistent in order for it to be effective. Additionally, the relatively minimally adjusted Mozart edition draws upon a
sense of familiarity with its potential users in using easily recognizable editorial indications.  

Take, for example, the following sample:

![Figure 7.42. Third movement, bars 247-52](image)

While it is neater without the use of a bracketed string designation, the lack of consistency creates the possibility of error. Note the other stems in bars 251-52 that point downwards but do not designate a particular string.

Thus, as much as one would like to create a standardized system of how to apply a notational system for scordatura that would help performers acclimatize to using scordatura more frequently, in many cases this really depends on the individual context of the work. The use of stem directions in the Cello Suite No. 5 might provide efficiency of print in that context, but would have the opposite effect in the Mozart. The primary issue when notating works with scordatura is the attempt to negotiate with a performer the most practical approach towards communicating the information and reducing the number of potential errors from misreading the score. It is possible that some of these issues were less pressing when A. M. Bach worked on the manuscript of the Bach cello suites, particularly considering that it is the first recorded use of the older tuning of the instrument as scordatura. If it were indeed the case that performers of the period were able to transpose at sight areas that deviated from the strict transposition A. M. Bach applied, that skill is less likely today.

The function of notation as a designation of pitches, whether consciously or otherwise, has become for many also an extension of tablature, particularly when crossing strings. We have become accustomed to the sounding interval of a third having a particular physical interval between the fingers and within the hand-grip, no doubt reinforced with today’s required repertoire and related studies that build this into muscle memory, none of which were an issue in the 18th century. Scordatura notation in this context will by design challenge the performer to mentally restructure muscle memory if left at sounding pitch, or challenge the performer to rethink the score as no longer being a traditional representation of pitch if written in fingered notation.

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27. Bach’s Cello Suite No. 5 is in contrast a major departure in exploring new options in editing, and requires a significant commitment from interested performers.
All the other tools employed in notation are simply to smoothen this transition: the use of fingerings and string designations, the option of a unique key signature, grace notes, the double-stave approach, and the use of stems and beaming. The paradox is that when the more extensive notational tools are applied to make the score clearer to the performer, the more complex it will look on the page. The simplest approach would be at-pitch notation with a simple scordatura instruction; this may have the most straightforward appearance in publication, but would require so much of the performer to continually ignore patterns in-built into technical training, and result in a daunting level of continual recalculation of the geography of the fingerboard. Once again, the only across-the-board option would be some kind of etude system that trained performers to play with different tunings but transpose their fingers at sight. This system would restore the ability to transpose at sight, but the dominance of music written in conventional tuning makes it unlikely that this approach will become part of regular training for performers. Without this training, notating at pitch when having an extensive application of scordatura would create a prohibitive level of learning for the performance of these works. Until the day scordatura becomes a regular part of the training of string players, the creative task of notation lies with composers and editors in providing the easiest access to what is, equally paradoxically, essentially a performer’s technique.

The following chapter, dealing with the collaboration with composer Karlo Marjetić, will include the notational approach of custom note-heads to designate both string designation as well as timbral contrasts. Unlike the editions of Bach, Telemann, and Mozart discussed in this chapter, the aspects of scordatura notation were completely in the purview of the composer rather than the researcher, and thus were not discussed in this chapter.

We close this chapter with an overview of the scordatura approaches, as they span from the minimally-altered notation to more complex systems, with the chart on the following page.
Figure 7.43. Overview of scordatura notation, on a spectrum of complexity.
CHAPTER 8

Scordatura for the Viola in 21st-Century Composition: Karlo Margetić’s Two Translations

Contemporary Western art music has embraced scordatura with some renewed vigour, and this chapter has been designed to see what role the performer continues to have, not only in looking back to works of the past, but also in influencing the course of future compositions. For this purpose, New Zealand composer Karlo Margetić produced a work specifically designed for this thesis on request from the author, entitled Two Translations. (The full score may be seen in Appendix B.)

Margetić is the Emerging Composer-in-Residence with Orchestra Wellington, and was previously the Composer-in-Residence with the National Youth Orchestra, and Young Composer-in-Residence with the Auckland Philharmonia Orchestra. He has received commissions and performances from NZTrio, STROMA, the Auckland Philharmonia Orchestra and Auckland Chamber Orchestra, among others, and is Co-Director of the SMP Ensemble.

The collaborative work with Margetić was to explore how collaboration between composer and performer could advance the application of string retuning. The new work focuses particularly on the use of a variety of timbres, which has been a component of the composer’s oeuvre, one clear example being Svitac, for clarinet and piano. On this work, Margetić states:

The combination of clarinet and piano is a rather problematic one for many reasons, so I wanted to see if I could make the two instruments blend better. My solution was to completely negate the percussive nature of the piano by writing for an upright with a practice pedal so that the sound is transformed into a wash for the clarinet to sit on. The result was quite luminous and strange and reminded me of bioluminescence, so I gave it the title Svitac, which means firefly in Bosnian. It turned out that it wasn’t absolutely necessary to have an upright piano and actually in large halls a grand is preferable. 28

In Two Translations, much of this timbral exploration is linked to the scordatura, along with external effects such as humming from the soloist. Even this effect of humming is crafted with very specific timbral calibrations, as seen in this initial conceptualization of the instruction:

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This is further highlighted by Margetić’s own description of the use of humming:

In one way it is an independent effect. However, the point of the first movement was to make the viola sound timbrally different and unusual – like a singing voice. I thought it would enhance the effect (and blend very nicely) if the player started humming softly after the ff passage.\(^{29}\)

In addition to humming, more common timbral effects are used, such as *senza vibrato* and *laissez vibrer*. In other sections, we will note that timbral effects that relate to the scordatura are essentially built into the work, without the necessity for the usual specifications of timbre e.g. *sul tasto* or *sul ponticello*.

To begin the discourse on this work, we will first examine two relevant contexts: the functions of scordatura, and the connections between findings from the other research projects.

**I. Contextualisation, Conceptualization and Experimentation**

**A. Contextualization**

1. *Locating the scordatura within overall categories of scordatura use*

   In the literature review, it was observed that it is extremely complicated to categorise scordatura use. This is particularly so when we attempt to group scordatura uses by function. Take, for example, a model of scordatura use for several of the projects in this thesis created in 2011:

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Figure 8.2. Model in *String Praxis*, contextualizing the role of the current projects in the larger picture of scordatura use.

1: Various, including Strauss’ *Don Quixote*;
2: the Brandenburg Concerto No. 6 project;
3: Various, including Saint-Saëns’ *Danse Macabre*;
4: Bach’s Cello Suite No.5 project;
5: extended scordatura in the Mozart project;
6: possibilities for new scordatura works. Note that the two grey areas represent major existing categories, while those in colour represent extensions of the use of scordatura.  

While this does represent the major projects of this thesis in a visually accurate way, models have the restriction of representing works that have already been completed; it is a virtually impossible task to create a model of this kind that would encompass all future works without being overly simplistic. For example, adjustments would be required in order to include the Telemann Concerto project into the model above (the research for that project occurred following the publication of the *String Praxis* article). Owing to the varied functions of the scordatura used in the Telemann project, within this model a new section would have to be constructed, combining tonal effects and voicing.

Nathan Cook’s categorization of scordatura use faced similar complications. Cook separated the use of scordatura into three major groupings: scordatura for feasibility, scordatura for timbral changes, and scordatura for special effects, and noted that the transposition scordatura could function simultaneously in the first two categories. Nevertheless, Cook’s categories are particularly useful in contextualising the


collaborative work with New Zealand composer Karlo Margetić, which was specifically targeted at maximising the features of the scordatura. The eventual scordatura was calibrated to showcase scordatura’s ability to do all three functions: providing new options of note combinations, changing timbral colour, and producing special effects.

2. Locating the scordatura within the specific context of the present research

The next step was to find a more specific setting of the collaborative project within the overall context of the scordatura research – in other words, linking to the Bach, Telemann, and Mozart projects. This had the goal of demonstrating how scordatura research has a cumulative effect, with findings from one project providing a direction to further projects. We have noted this to a smaller extent previously, with the scordaturas of the two Bach projects, and the matching tuning of the lowest string in the Telemann and Mozart projects. This collaborative work with Margetić had the intention of doing the same, at a much higher level.

These previous projects indicated three pathways in which timbral change could be achieved: a calibration to the resonant frequencies of the instrument, a change in string tension, and sympathetic resonances. These specific research findings formed a starting point for the collaborative work and can be summarised as follows:

- The lowest string is more susceptible to upwards retuning than the highest string;
- There is a significant effect of sympathetic resonances of the compound perfect fifth of the lowest string, when tuned upwards;
- The upper strings can be tuned down at least a minor third and still maintain stable pitches.

In addition to this, we note that there is a connection between resonance and key. Specifically, the more available open strings within the key, the more notes that will be affected by some level of sympathetic resonance.\(^{32}\) It should be mentioned that this is restricted to tonal music, due to the sympathetic resonances of the overtone series; in post-tonal music, it would be up to the composer whether to intentionally emphasize those sympathetic resonances. In tonal music the use of sympathetic resonances is seen clearest in the works of Biber; additionally, James Tyler notes the use of this approach

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\(^{32}\) Personal communication with Jason Post in regard to the FFT analysis, January 28, 2013.
for scordatura for guitar: “By playing scale passages that used as many open strings as possible, an effect was achieved which enhanced resonance. Scordatura facilitated this aspect of guitar technique even further.”

The work of Fabrice Fitch and Neil Heyde was taken as an exemplar, as discussed in the Methodology chapter. This collaborative work extended the process by using these related research findings as a starting point, and having scordatura as not only the centrepiece of the work in the manner of Fitch and Heyde, but as the primary feature.

**B. Conceptualization and Experimentation**

This project began with general discussions between the composer and performer about the state of present research, and how our collaboration might advance the use of scordatura. Specifically, the goal of the composer was to examine the findings from the other projects, to see if these findings had the potential to be extended beyond the works of Bach, Mozart, and Telemann. In viewing the added string tension for resonance in the Mozart project and the lowered string tension in the Bach projects, Margetić decided to approach the work from the perspective of creating a stark contrast of high and low string tensions. The composer communicated the compositional concept as being a “resonant fanfare” on a high tension string, paired with “dead meandering” on a low tension string, and asked the performer to consider what retunings might provide for this goal.

The initial scordatura was as follows:

![Initial scordatura](image)

**Figure B.3. Initial scordatura for collaborative work with Karlo Margetić**

The adjustments of string tension, both upwards and downwards, were extrapolations of previous findings. We knew the C string could be tuned up a full tone, and found that the next string could do likewise – the combination providing a

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significant increase in overall projection than would be the case individually. From the precedents in other projects we knew we could tune down the second string more so than would be previously expected, and the interval of a fourth was not far from the minor third previously tried and tested. This provided the additional advantage of having two strings of the same pitch, one with higher tension and one with lower tension, providing the required contrast: the lower two strings provided the ‘fanfare’, while the second string provided the ‘meandering’.

Having two A strings at this point, it made sense initially to retain the tuning of the top string. Seeing two strings tuned to the same pitch, the natural curiosity was to see how far that might extend, even if the resulting sympathetic resonance took away from the original concept of ‘dead meandering’:

![Adjusted scordatura for Margetić composition](image)

**Figure 8.4. Adjusted scordatura for Margetić composition**

We found that lowering the tension of the fourth string took away from the projection of the third, and as such took away from the overall contrast. Both composer and performer found this to be an undesirable feature that was best avoided. Thus we reverted to the original tuning of the lowest string. The top string tuned down a full octave did, however, provide quite a few timbral possibilities. In particular, as the string tension decreased so did the stability of a sustained pitch.

The scordatura we had settled on at this point had the overall characteristics that we had hoped for: some strings that had increased projection, and other strings that provided considerable contrast to these. This platform now allowed us to experiment with various fingering and bowing patterns, in order to create special effects, as well as to discover what combinations of pitches would fit the compositional conceptualization of the work. Put another way, the formation of the scordatura created a syntax of the work, and the further experimentation was to build up a vocabulary.

With further experimentation we found that the top string, being tuned a full octave below, had the curious effect of creating noticeable changes in pitch directly related to bow speed. The pitch of the string would go up approximately a semitone with a quick bow, and it should be noted that bow pressure was increased as well. The effect
of pitch bending has been documented before, with Cook noting the effect as a result of bow pressure.\textsuperscript{34} Further experimentation allowed us to consider tuning this string a further whole tone lower.

The exploitation of the contrast seemed most effective if one could juxtapose identical pitches on the two middle strings, in the manner of what Fitch and Heyde would call a “fortuitous discovery”.\textsuperscript{35} A complication that arose was that beyond the open strings, playing these in tune was increasingly difficult the higher one went up the fingerboard (as would also be the case in regular tuning and playing in fifths, due to the difficulty in retaining parallel positions on the fingerboard). A solution was to retune the second string once again, to allow for more feasible fingering that would produce sounding octaves. The question was whether to retune this string upwards a semitone or downward a semitone, and the decision was left to the composer as to which of the two provided other preferable options. Margetić opted for the latter, and the effect of this tuning subsequently opened up the possibility of replicating the effect across the top two strings.

The final scordatura was thus as follows:

\begin{figure}[h]
\centering
\includegraphics[width=0.5\textwidth]{figure85.png}
\caption{Final scordatura for Margetić composition}
\end{figure}

We noted that as the player moved from the third string to the second, and finally to the first, there was a dramatic lowering of string tension, with resulting timbral changes.

Once the scordatura was set, the next stage of composition was left entirely to the composer. Margetić notes that he first documented all available double stops, as can be seen in the following sample from the composer’s sketches:\textsuperscript{36}

\begin{itemize}
  \item \textsuperscript{34} Cook, ibid.
  \item \textsuperscript{35} As discussed in the Methodology.
  \item \textsuperscript{36} Karlo Margetić, email message to author, March 30, 2013.
\end{itemize}
From this pool of resources, Margetić choose harmonics to form pitch cells, with the condition that they avoided ‘Aeolian harp’ sounding combinations. On this issue, Margetić writes:

The ‘seventh chord’ of the harmonic series is harmonically obscured. There is still the timbre of the harmonic present in the music, but not (obviously at least) the pitch structure of a harmonic series. What allowed me to do this was the presence of three spectra a semitone apart, so that double stops in harmonics that are not usually available become available – minor seconds, tritones, minor sixths etc.37

These pitch cells became the basis of the second movement.

The first movement, which was composed following this, had a tune within a restricted range, both for reasons of the tuning as well as to facilitate the humming effect that was eventually employed.38

The final stage was left primarily to the composer in deciding the form of notation. While there are available precedents in the previous research on Bach and Mozart, there were more available options in contemporary compositions, such as the use of diamond or square note-heads, which would not have been used in works of Baroque and Classical era music. Early drafts used these custom note-heads exclusively to denote timbres in the lower stave, as seen in the following selection from the composer’s drafts.

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37. Karlo Margetić, email message to author, April 13, 2013.

38. Ibid.
Eventually, it was noted by the composer that the note-heads could serve the additional purpose of illustrating the string distribution, since these were inextricably linked to timbre. This provided the opportunity to streamline the score, as it no longer needed repeated Roman numeral string markings to indicate string distribution, except for use for emphasis or for additional clarity in complex areas. Thus, these note-heads indicate different information in each stave: timbres in the sounding notation, and string distribution in the upper stave, though these are intrinsically linked.

In other projects, the function of a notational choice is to clarify which parts of the score are not at pitch. For this project, however, the final scordatura had considerable timbral contrast as the principal feature, and the notational choices were geared towards identifying this in the clearest manner possible. An assortment of note-heads, one for each different string, will be discussed in the following section.

II. Application

As with various other works and editions that apply scordatura, from Bach to Body, this work used a two-stave approach to indicate both pitched and fingered notation. This was not only useful, but necessary, due to the complexity of the composition. The scordatura allowed for one pitch to be easily played on the upper three strings in close succession, with three distinctly differentiated timbral colours. In conventional tuning, unisons would be available when the pitch matches an open string, and would be otherwise challenging over two strings, and all but impossible over three. To not only indicate pitches but timbres in the second at-pitch stave, Margetić

39. In the case of the Mozart project, the approach was to clarify parts of the score that were not in the transposed pitch of D major; all the notes, whether with the extended or original scordatura, would not be at sounding pitch.

40. In the latter case it would require a physical interval the equivalent to a ninth over two strings
chose to apply a variety of note-heads. The following indicates with this notational approach, with rotating timbres across a single pitch.

![Image](image.png)

**Figure 8.8.** First movement, bar 2. The as fingered notation is on the upper stave, and the sounding notation on the lower stave. [See Appendix D, Track 2.]

In addition to this, a glissando can be executed over multiple strings, while once again changing timbres in the process:

![Image](image.png)

**Figure 8.9.** First movement, bar 6

It is crucial to note here is that the largest contrast of timbres occurs across the two middle strings. In sections like the one above, Margetić has used the tuning not to illustrate the contrast, but produce the effect of blending the two strings – the lower string being of significantly high tension and the upper being of considerably low tension.

When the instrument is in regular tuning, it is true that there will always be some differences in timbre between the strings, particularly for the top string. This parallels Randy DeBey’s survey of string tensions.\(^{41}\) Despite these contrasts, the overall sound of

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\(^{41}\) Randy DeBey, ‘String Tensions’ [http://www.rdebey.com/string_tension.htm](http://www.rdebey.com/string_tension.htm) (accessed March
double stops has a generally blended sound. In other words, the individual timbres of
the strings and the timbre of the combined sound are roughly similar. In the scordatura
applied in the Margetić composition, there are three distinct timbres: that of the two
individual strings, as well as the combination of the two, which forms a distinctly new
blend.

This is where scordatura in the modern age can produce particular effects by
deporting from the regular string tension defined by manufacturers. The greater the
extent to which strings are calibrated to a specific tuning, the more a distinction can
arguably be created by diverting from that standard tuning.

The three timbres are seen in sections such as in the following excerpt:

![Figure 8.10. First movement, bars 3-5. [See Appendix D, Track 3 for an audio sample of bar 3.]](image)

A second feature of the scordatura is that of pitch bending, with the top string
tuned down significantly. Nathan Cook has the following description of this function of
scordatura: “the looser the string, the more susceptible the resultant pitch is to bow
pressure. Playing a crescendo then has the added effect of bending the pitch upwards as
well.”42 Margetić indicates this effect in the at-pitch notation, with the *sforsando* in the
top stave creating the pitch bend notated with the open triangle. These are indicated in
red:

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42. Cook, *ibid.*
Margetić does not simply have this as a monochromatic effect. Rather, he uses bow speed and pressure, as intrinsically linked to dynamic and articulation markings, to produce the varied uses of pitch bending. The previous example was that of a ‘basic’ pitch bend, moving upwards and downwards at equal rates. In the following example, we can note that the rise and fall differ significantly:

![Figure 8.12. Second movement, bar 59](image)

In this section, the pitch bend upwards is quick, accompanied by a gradual return to the original pitch after the bow has left the string, with enough force granted in the fffz that this return is audible. A contrasting effect is applied soon afterward in this movement:
What is additionally interesting to note here is that the descending section of the pitch bend occurs once again as part of the notated rest, illustrating the natural sound of the string as it continues to vibrate naturally after the bow leaves the string.

There is an additional timbral effect in this section, as a result not only of the retuning of the top string, but that of the adjacent one. The pitch bend upwards of the open string creates a temporary unison with the second string, meaning that there is a distinct sympathetic resonance for part of the note. This creates a unique, albeit subtle, timbral effect, which only emerged in the field-test of the first draft, in what Fitch and Heyde would consider another ‘fortuitous discovery’. We nicknamed this effect an “autodynamic scordatura”, since it automatically synced with the sympathetic resonance of the adjacent string, and with the pitch bending being to some extent related to the dynamic scordatura.

A third feature appeared in the experimentation process, and was eventually applied in the composition. The extremely low tension of the top string not only allowed pitch bending with the use of the bow, but through pressing down on the side of the string behind the bridge.43 This was used to create a fast vibrato, which is a novel effect for an open string.

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43. An additional option was the use of the fine tuner, which had a significantly greater pitch range than would be in convention tuning.
As noted earlier, but perhaps nowhere clearer than in Figure 6.11, the effect occurs after the bow has left the string, following the \textit{laissez vibrer} instruction.

A more subtle effect, was that the differences in projection – that of ‘resonant fanfare’ and ‘dead meandering’ – were even more obvious when harmonics were applied. Harmonics on the third string were significantly more prominent than those on the second string. This does not necessarily mean that the higher pitched harmonic is more prominent; for example, in the first chord of the following excerpt, the harmonic on the third string is the higher pitched of the two.

The ability to move from a lower pitch to higher one is available in regular tuning as well – but only for cases of harmonics, like the one above. In all other cases, the lower-pitched note is almost always on the lower string, and thus, the higher-pitched note on the upper string. Therefore, the subtle changes in timbre when notes are spread across two strings are restricted; when there is a change of string, the upper note will almost always fall on the upper string. Trying to reverse this would in many if not most cases be impractical.
However, with the scordatura providing strings that are close in pitch, the composer has to have the additional option of having the higher pitched note on the lower string. For this, Figure 6.12 above is perhaps not a prime example, since as mentioned above similar harmonics in regular tuning would be feasible. It is, however, available in other circumstances, as seen in the second beat of bar 48 of the second movement:

![Figure 8.16. Second movement, bars 47-48.](image)

### III. Concluding Comments

While the concept of collaborative creative work as research may depart from mainstream methodology, it holds one crucial connection to scordatura: the historical role of the performer-composer. The application of scordatura by Mozart and Paganini was realised by the composers in their overlapping role as performers. In the case of Bach, the theories surrounding the viola da spalla provide the possibility that the composer performed the suites, which was discussed in the respective chapter. For Benjamin Franklin, the use of scordatura was not just a product of a composer-performer, but rather it was likely used to enable Franklin and his contemporaries to perform it.

It is difficult, if not impossible, to determine if the decline of the use of scordatura is related to the parallel split of the composer-performer into two largely distinct species. All that is ventured within the scope of this research is that there seems to be a correlation between the two, and it is only speculative in nature whether this indeed implies causality as well. It is possibly linked to the rise of the symphony as the *de rigeur* genre of the 19th century, over that of the concerto in the 18th century, providing more constraints on the use of scordatura. It is also possible that it is linked to the establishment of the modern violin family. This is in part because of the standardization
of tuning in fifths, but also, as time passed, being historically further and further away from instruments like the lute, which as we have observed earlier may have influenced some uses of scordatura. Additionally, it may be useful to note that in earlier eras, an alternative tuning in fourths would not have been too foreign a concept, with instruments like the viola da gamba at least within the recent memory of composers, if not still in frequent use, as well as the prior tuning of the cello. Cook ventures: “Perhaps the imaginations of composers were simply taken up with the new sounds possible on instruments rather than strings”, and that the development of Western art music, particularly in regard to modulations, would have rendered tuning specific to a key less feasible.\textsuperscript{44}

Whatever the case, we can note that in the work of Fitch and Heyde and in the collaborative work with Margetić, a greater output of scordatura options evolved organically from the creative collaboration, than would have been the case in individual endeavours.

It is extrapolated from this that the composer-performers of previous eras had the benefit of collaboration. As Fitch and Heyde note, “Most manuscript sketches trace a compositional process in which the performer’s role can only be implicit, although the autographs of some of the great nineteenth- and twentieth-century composer-performers show clear traces of an internal ‘dialogue’.”\textsuperscript{45} In the cases of Bach and Mozart explored in this thesis, the methodology employed, as was with Fitch and Heyde, was an extrapolation of the internal dialogue of composer and performer, to that of composer, performer, and researcher. In the words of Margetić on the prospects for using scordatura in the future:

\begin{quote}
I think I would now happily ask for semitone adjustments in solo and chamber music, but for anything more than that I would have to collaborate with the performer. Because the non-standard tunings are novel, the pre-compositional stage is very important and takes much longer than usual. Documentation of possibilities is very important, as is the creation of various charts to make the compositional process run smoother. It’s almost like having to learn a new language – hence the title I gave to the pieces on which we collaborated: \textit{Two Translations.}
\end{quote}

From the perspective of the performer, I would volunteer the opinion that the discoveries resulting from this collaboration extend beyond what the performer could achieve independently. The performer has specialised knowledge on various techniques,

\begin{flushright}
\textsuperscript{44} Cook, 69.
\end{flushright}

\begin{flushright}
\textsuperscript{45} Fitch and Heyde, 72.
\end{flushright}
and more so the researching performer on a selected area of study, such as scordatura. However, the focus of the performer is to enhance an aesthetic or to find a solution to an interpretive issue. While these are entirely useful, it is only with the process of collaboration that this specialised knowledge is adjusted to meet the goals coming from the imagination of the composer. This in turns spurs new questions for both the composer and performer, and provides for experimentation that leads to unexpected effects.

The following flow chart details the overall process from contributing research to the formation of the scordatura that underpinned this composition. The accompanying CD includes brief audio samples from Margetić’s *Two Translations*. 
Figure 8.17. The experimental process, as seen in the determination of a scordatura during the collaborative work with Karlo Margetić
Chapter 9

Conclusions

This thesis has dealt with a range of issues and questions: what are the effects of sympathetic resonances? How do changes in string tension affect timbre, and how can these timbral changes be utilized? How do the effects of scordatura fit into the larger compositional context? The overarching concept is that of the nature of scordatura: whether it is a compositional instruction,1 a performer’s technique, or both.

The answer to this issue is complex. There are certainly occasions when it is an instruction, particularly ‘feasibility’ scordaturas,2 without which the work could not be performed. At other times it is an aesthetic device rather than a constructional one; it provides a particular timbral effect, as would be expression markings like flautando or sotto voce.

Logically then, just as performers apply flautando where appropriate – even when not specifically instructed – so should scordatura be a part of the expertise of string technique. Scordatura can be viably applied to enhance the performance of works of the past, particularly that of the Baroque and Classical periods.

A. Core Implications

The core implications of this thesis demonstrate the viability of scordatura use in three ways: instrumental substitution, vocal fingering, and the retrospective use of scordatura for aesthetic considerations.

The Brandenburg Concerto project identified the potential of scordatura use for instrumental substitution. In doing so, it allowed modern performances of the work to be more idiomatically capable of preserving Bach’s contrast of timbres, which the composer paired with motivic variation and a diversity of articulation markings. While certain parameters do exist (e.g. key and tessitura) and do affect the extent to which it can be applied, the thesis concludes that timbral change can be sufficient for the purpose

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of instrumental substitution.

In addition to affecting an instrument as a whole, scordatura can also produce specific contrasts within an instrument as well, i.e. between strings. The extended scordatura in Bach’s Cello Suite No. 5 indicates that the tuning of strings can be effective in redistributing pitches across strings, and by doing so creating clearer SATB voicing patterns. Just as Heinrich Biber utilized scordatura to extend polyphonic capabilities,\(^3\) so can the modern-day performer use the technique to clarify the polyphony.

Scordatura’s effect of producing new open strings can be utilized to affect changes to overall resonance and sympathetic resonances. The Telemann and Mozart projects approached this from two different angles. Telemann’s Concerto for Two Violettas demonstrated that scordatura could be applied retrospectively, increasing the overall resonance of the instrument while simultaneously providing appropriate contrast between the two solo instruments. Mozart’s Sinfonia Concertante for Violin, Viola and Orchestra provided very specific contexts within the composition where an extended scordatura proved beneficial with the use of the new open string as well as the resulting sympathetic resonances. Both of these cases addressed historical issues from a modern perspective: viola sizes in the Telemann project, and the influence of convenience in the transcription scordatura of the Mozart work.

Collaboration with composer Karlo Marjetić illustrated the continued potential for scordatura use and that the process of experimentation established by Fabrice Fitch and Neil Heyde is a fruitful pathway for the determination of a scordatura. More importantly, it has confirmed that this collaboration can lead to special effects that might not be achieved by either the performer or the composer independently.

Three conclusions can be made in regard to these core implications.

First, scordatura can change the entire textual balance of a work. For example, in the Brandenburg Concerto project, by affecting the timbre of one instrument, the entire performance changes. Mozart’s transposition scordatura was intended for this purpose as well, and it was towards this aim that the extended scordatura was designed. The scordatura used in the Telemann project impacted the instrument directly, and also had effects to the pairing of the two solo instruments.

Second, while the Mozart and Telemann projects were geared at providing further performance options, the Brandenburg Concerto project aimed at addressing a specific problematic issue of performance. Taking into account these varied approaches,

we can observe that scordatura can be applied to enhance aesthetic goals, as well as to serve in a problem-solving capacity.

Third, the thesis also advances options for scordatura notation. It illustrates the pros and cons of two established methods of notation: the use of repeated accidentals, and the application of a customised key signature. It identifies the parameters of the effectiveness of each of these approaches. New methods of notation have also been explored: the double-stave approach, note-tail directions, and coloured notation. These approaches, field-tested in rehearsals and performances, provide new options for future works that employ scordatura.

B. Contextual Findings

As with any performer’s technique, the application of scordatura is associated with contextualization that determines its viability in enhancing aesthetics. This second level of implications involves research into intersecting fields of study, which illustrate the impact of scordatura use by the performer.

Two of the works involved the role of timbral calibration as part of the wider conceptualization of the composition. In the Brandenburg Concerto project, it was established that the concept of generic mixing applies, and furthermore that it is linked to Bach’s choice of instrumentation [see Journal of the American Viola Society article, reprinted in the Comus edition, Appendix E]. The various allusions to genre match the timbres of these instruments, and are further emphasized by variations in Bach’s articulation markings [see Crescendo article, Appendix C].

The Mozart project dealt with the composer’s unique approach towards the genre of the sinfonia concertante, and the effect of the scordatura not only toward the viola, but also towards the ensemble as a whole. This study of diversity and variation within Mozart’s compositional style allowed for a revision of prevalent editorial decisions involving discrepancies of pitches and articulation markings in the early editions [see Stringendo article, Appendix C]. This eventually resulted in the production of a second, urtext edition of the solo viola part in Mozart’s original scordatura, also published by the American Viola Society.4

As an unaccompanied work, the role of scordatura in Bach’s Cello Suite No. 5 has a differing set of implications. Contextually, the findings centre on the genealogy of the

4. Available at this link: http://americanviolasociety.org/resources/scores/multiple-violensemble-music/
work. The re-evaluation of the role of the Lute Suite in g minor, BWV 995 not only confirms Malcolm Boyd’s theory of an alternative primary source to the Cello Suite No. 5, but also highlights a new look at the compositional process. This ultimately serves to establish the grounds for amalgamating the two versions of the suite, and in doing so, provides the vehicle through which the viability of scordatura for vocal fingering was affirmed. By reassessing the timeline for the construction of Bach’s Cello Suite No. 5, the research not only led to a new edition, but also provided new views about A. M. Bach’s role in this work [see the Arco article, Appendix C]. Specifically, it shed new light on the reasons for apparent incongruities in the work, in the context of notational options and precedents (or lack thereof) for scordatura in the early part of the 17th century.

Additionally, the research into scordatura notation has provided findings that can be used elsewhere, e.g. grey rests, beaming across staves, and the effectiveness and limitations of note-tail directions to convey additional information.

Finally, by conducting interviews with luthiers and with the use of Fast Fourier Transform (FFT) analysis, the thesis contributes to a greater understanding of resonances, particularly that of the viola. It also extends the use of FFT analysis in scordatura research, with the only prior use of this being the peripheral use in Cook’s research on scordatura for the cello.5 While the original aim of the FFT analysis was simply to confirm observations made during field tests, the approach ended up having a greater contribution. The acoustic importance of the open strings in the Brandenburg Concerto No. 6 project was highlighted with the analysis, and the expansion of scordatura options in the Telemann Concerto project was a direct result of this approach.

C. Philosophical Issues

The principal philosophical issue is, as previously discussed, the role of the performer in utilizing scordatura. In part, this thesis considers that the major uses of scordatura have been by performer-composers: Biber, Bach, Mozart, Paganini – even Christopher Prosser in modern-day composition. In an age when the roles of composer and performer are largely independent, it is imperative that we consider whether (and to what extent) the likes of Mozart and Paganini were acting in their roles of performers as much as composer in their use of scordatura. This issue has been addressed by Hristo

5. Cook, Ibid.
S. Kardjie in understanding the resistance of some violinists to using scordatura, even when indicated by the composer:

Mainstream orchestral violinists do not, on the whole, understand these issues or even acknowledge their importance, to the extent that sometimes orchestral passages written in scordatura will be transposed and played in normal tuning (for example the famous scordatura passage in the second movement of Mahler's Fourth Symphony.) This situation arises today partly because violinists and composers are no longer one and the same person, as they normally were for example in the sixteenth to early nineteenth centuries.6

A second philosophical discourse deals with the concept of a philological bias. We delved into this issue in the context of Bach’s Cello Suite No. 5, but it is just as relevant to the extended scordatura in the Mozart project – or for that matter other uses of the transposition scordatura in the 18th century. More importantly, this beckons us to consider how we assess historical documents as well as historical techniques: that they can be refitted for a modern age without losing any of the veracity of historical contextualization or even compositional intent. Specifically, we can sift out the aspect of convenience of the 18th century transposition scordatura as being part of performance practice but not necessarily compositional intent.

A final issue for philosophical consideration is the role of the edition, as discussed in the chapter on Bach’s Cello Suite No. 5. Essentially, the research indicated that a scholarly performer’s edition can maintain fidelity to historical sources without having to accept a philological bias. The research in regard to the Cello Suite No. 5 also indicated that an edition can be a repository of options, rather than a presentation of a single interpretation.

D. Summation and Concluding Comments

This thesis has explored new approaches towards established functions of scordatura, as well as setting out new functions that the technique can provide. Extensions to conventional routes of using scordatura encompass the following:

- Sympathetic resonances;
- Changes in timbre;
- Effects to polyphony;
- Special effects in a contemporary composition.

New approaches to scordatura in this thesis are as follows:

• Using the viola’s resonant frequencies;
• Retrospectively applying or extending a scordatura;
• Scordatura for instrumental substitution;
• New approaches towards scordatura notation.

Additionally, this thesis has demonstrated that scordatura is often used for its impact on the texture or balance of an overall ensemble. This understanding consequently better prepares us for interpretive choices that best represent the constructive elements of a work.

One can argue that no other technique – whether performer’s techniques or compositional ones – can match this range of effects that scordatura offers. The advantages of taking up scordatura go beyond resolving performance issues or enhancing aesthetics in selected repertoire. As it is with the use of any technique, the application of scordatura provides the performer a better understanding of how the instrument functions. Decisions of when and how to use scordatura are like any other decisions of technique: they are enclosed within considerations of theoretical analysis, aesthetics, and the historical context.

This understanding of history is key to understanding that scordatura is not a new skill; rather, it is a lost art. We noted Corelli’s encounter with violinist Nicolas Strunck, as well as Paganini’s una corda technique, both of which showed us the abilities of performers able to use scordatura even without the need for adjustments in the notation. Much has changed since then. While performers have explored various new techniques and performance styles, scordatura has somehow become restricted to the purview of composers. This not only limits the performer, but the composer as well.

Let us return to the research questions: does the performer have a viable role in the application of scordatura today? If so, in what ways can scordatura provide new options for repertoire of both the past and present? The answer is as follows: indeed, the performer has a viable role and also likely played an influential part in the use of scordatura in the 17th and 18th Centuries, and even on occasion in the 19th century. By returning this skill to the performer’s toolbox, new approaches can be developed, whether towards works of past eras, or in collaboration with today’s composers.
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Bach’s Brandenburg Concerto No. 6

Bach’s original title for this work is *Concerto 6th á due Viole da Braccio, due Viole da Gamba, Violoncello, Violone e Cembalo*. It is a complicated issue in determining whether the commonly recognised title fits into the category of a ‘popular title’, which in following with Turabian/Chicago style would be italicised. Unlike the established example of Mozart’s *Jupiter Symphony*, which has a title not conceived by the composer, the title ‘Brandenburg Concerto No. 6’ has been used consistently since the discovery of the manuscript in 1849, and is a shortened title from Bach’s dedication page. Earlier sources, like that of Norman Carrell, quite accurately use inverted commas, i.e. ‘Brandenburg’ Concerto No. 6, but all modern sources have dropped the use of the punctuation. This thesis follows this convention.

Mozart’s Sinfonia Concertante

There are various spellings of the genre and of Mozart’s work, as the sources in Mozart’s hand are incomplete. The first edition of the score uses the ‘Sinfonia Concertante’ variant, while the first edition of the parts has the spelling ‘Sinfonie Concertante’. In writing to his father, Mozart uses the spelling ‘symphonie concertante’ for a preceding work. The leading authority on the subject, Barry S. Brooks, stated that the genre is best referred to with this French spelling; however, he noted that the Italian spelling is viable for Mozart’s work due to the specific context of its intended audience. Once again for the sake of consistency, both the work and the genre are referred to as ‘sinfonia concertante’. Italics are not used in this work or any of the other works, in keeping with the Turabian/Chicago style of reference when titles refer to genre; note that ‘sinfonia concertante’ is in the Oxford Dictionaries, but not ‘symphonie concertante’.
Telemann’s Concerto for Two Violettas

This work is commonly referred to as the Concerto for Two Violas, simply because of the substitution of the violetta with violas. However, the current editions surveyed all refer to the violetta, with Kurt Flattshacher (Müller edition, 1966) referring to “2 Violetten concertato”, with “Bratschen” (violas) within brackets. The composer’s manuscript is simply titled “Concert”.

Scordatura, viola da gamba

It can be argued that these should be regarded as foreign terms and treated accordingly with italics and the plurals being ‘scordaturae’ and ‘viole da gamba’. However, the crucial observation is that there are no translated versions in the English language, in the same light as ‘viola’ or ‘cello’. In light of this, as well as the frequency in which they are used, these terms will be treated as anglicised words, supported by their inclusion into Oxford Dictionaries Online.1

1 http://oxforddictionaries.com
APPENDIX A

FFT SPECTRAL ANALYSIS
FOR SCORDATURA
PERFORMANCE

A report for Andrew Filmer, PhD Candidate at Otago University

By Jason Post
What is a Sonogram?

The sonogram is a three dimensional (x, y and z) graph representing the frequency content in an audio sample. The three dimensions are time (horizontal), frequency (vertical) and volume (depth). If an area on the graph is darker, the frequency content in that area is louder at that point in time in the audio sample.

How to Read the Sonogram

The frequency axis is logarithmic, which is because this is the way human beings hear sound. For example, $A_4$ is 440Hz, while an octave above that is 880Hz, and an octave above that is 1760Hz. If the graph were linear, then there would be more space between higher octaves than lower octaves, making it more difficult to visually identify interesting timbres. This guide shows an example of a sonogram. As you can see on the sound with multiple arrows pointing towards it, the lower partials are louder than the higher partials. This is characteristic of most sounds.

You will notice that the frequency axis shows information up to 22500Hz. This is to do with the FFT calculation and the sample rate of the audio file. The standard sample rate (how often a recorder samples) is 44100Hz per second. While humans can (theoretically) hear up to 20,000 Hz, the Nyquist theorem states that one needs a sampling rate two times the size of the frequency content desired to avoid aliasing - audible artifacts of the recording process. The FFT gives us frequency information for the first half of the Nyquist frequency range (in this case – 0Hz - 44100 Hz). However, there are some problems with FFT, which can be discovered and assessed here."

* [http://music.columbia.edu/cmc/musicandcomputers/chapter3/03_05.php](http://music.columbia.edu/cmc/musicandcomputers/chapter3/03_05.php)
Why Use it?

In this particular project, the examples of different scordatura alter the sonic qualities of the musical examples. Some tunings may change the resonances of the instrument, while others may work against the harmonic series by avoiding octaves and fifths. While one may hear these changes and describe how the qualities change, the sonogram offers empirical evidence to support these claims. If a harmonic series is stronger on some notes more than others, then they may appear brighter than the notes that surround it in the melody. If some notes have less information in the higher partials, then the resulting sound will be darker and perhaps whanner, one can think of this like the difference between *sul ponticello* and *sul tasto*, the same note coloured differently depending on where the string is bowed.
Bach: Brandenburg Concerto No. 6

The different tunings for this excerpt are B♭F♭♭F and CGDA (standard)

B♭F♭♭F

For this first image, the pitches shown here have an evenly spaced harmonic series (F⁴), suggesting both brightness and resonant qualities. The surrounding pitches will sound darker in comparison. These notes are open strings, which may also account for their brightness. While the open strings are often always quite discerned, F is the 3rd partial/overtone of B♭ (making B♭ the 3rd undertone of F - making the relationship between the two notes strong) so this accounts quite a lot. It is similar to when one plays a low D on a cello and the open D vibrates as well, though a little more subdued.
In second excerpt, the harmonic series is quite strong towards the low end, while the partials above 10,000 Hz are weaker. This suggests a darker, warmer tone for the sound, also because of the fact the strongest partials are concentrated heavily at the bottom, it may potentially sound muddier.

The CGDA excerpt shows very strong partials in both the low end and above 10,000 Hz. This suggests that the Bach excerpt is its most resonant in the CGDA tuning. However, if the performer wants this particular excerpt to exhibit a darker sound, then the BBEH tuning should be used.
The second image confirms this for the second Bach excerpt. The partials are very strong below the 5000 Hz mark, and still strong above this. This would sound like a cross between the CDGA and ENFA tunings.
Mozart: Sinfonia Concertante for Violin and Viola

The different tuning for this excerpt is C#G#D#A# and D#G#D#A#

C#G#D#A#A#

This image shows very strong partials below 5,000 Hz and medium strength partials above it. This suggests a dark but rich spectrum — full but not as overly saturated as seen in the Bach excerpt tuned CGDA.
This image confirms this, though the higher partials are a little stronger in this section. What is interesting here is that you can see the vibrato on certain partials, which is more obvious higher in the spectrum.
Here the spectrum is very rich below 4,000 Hz, and quite weak above it. This suggests a very dark tone without many strong higher partials. This won’t necessarily be a rich sound, which could be to do with the elimination of completely perfect 5ths in the tuning system, limiting the amount of resonance possible between the strings.

The second image confirms this analysis. I would suggest that to get less resonance between the strings, to not use completely perfect intervals, which is what most of the intervals at the beginning of the natural harmonic series are (and strongest as well).
Telemann: Concerto for Two Violas

The different tunings for this excerpt are CGDA, DGDG, and CGDG (standard).

CGDA

The partials here are uniformly strong, suggesting strong resonances and a rich spectrum, sounding both warm and full.

This is confirmed in the second image.
This excerpt has a very full rich spectrum throughout, suggesting a brighter tone and a rich sound; this would relate to the fact the strings are tuned in octaves, which is the best possible condition for resonances to occur (the octave being the first interval in the harmonic series), meaning that any closely related interval any of the open string notes (of the harmonic series: octave, fifth, or fourth) will make the other strings resonant strongly.
The partials are very strong here.

CGDG

Here the spectrum is very strong, with medium strong higher partials. A rich and dark sound quality.
However, this section would suggest a brighter tone, with very strong partials above 15,000 Hz (above the range of an average middle-aged adult's hearing), this is most likely due to Andrew's playing slightly louder in this section.
APPENDIX B

for Andrew Filmer

Two Translations

for viola with scordatura

I

Karlo Margetić

Scordatura

IV III II I

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315
poco rall. . . . . . . . . molto rall. . . \( \uparrow = c. 56 \)

Più Mosso \( \uparrow = c. 96 \)  

pochiss. rall. . . .

Hum, \( pp \), in unison with melody (or at the octave below), \( \textit{lontano} \), \( \textit{poco portamento} \), senza vibrato(!).
The voice should meld with the timbre of the viola and must never stick out.
molto accel. \( \ddot{=} 160 \)
APPENDIX C: PUBLISHED ARTICLES

This appendix contains the following articles by the present author, published in the course of this thesis:

• “Mozart’s Sinfonia Concertante: Diversity and the Role of Scordatura” *Stringendo*, (October, 2012).

The following additional article is reprinted in the Comus edition of Bach’s Brandenburg Concerto No. 6, located in the back cover pocket:

Building a Framework for Scordatura: New Possibilities for the Viola and Beyond

Andrew Filmer, New Zealand School of Music/ Victoria University of Wellington and Massey University

Scordatura has a remarkable history, with some of the most adventurous forms now four centuries old. The Baroque performer-composer Heinrich Biber turned his violin upside down – or at least right side left – when he switched strings and even crossed them. Some of the greatest names in classical music including Vivaldi, Paganini, Bach and Mozart, also used this device. The American Founding Father Benjamin Franklin is attributed to have experimented with it as well, producing a string quartet played entirely on open strings.1

From the 19th Century a period of simplification and standardization emphasized convenience, limiting re-tunings to the projection-focussed transposition scordatura to retain tuning in fitths. When scordatura re-emerged in the 20th Century, it became a way of exploring new sounds. It was addressed as a form of extended technique, which is ironic on two counts: firstly, this “extension” had been around since the Baroque era (if not earlier), and secondly, this “technique” was used only at the determination of the composer (not the performer).

This article proposes that this historical process reduced the artistic possibilities of the performer and that there are new options for scordatura – not only for contemporary composers but particularly for performers of works from the Baroque and Classical eras. The following includes a framework for a renewal of its use, and discusses three current developments in which well-known and much-performed works can be advanced with the application of scordatura.

The Case for Scordatura

In advocating a return to experiments in scordatura tunings particularly on the viola, it may be useful to consider why musicians gave it up in the first place. David Boyden and Robin Stowell offer some reasons for its downturn:

Most 19th-century composers believed that there was more to be lost than gained from scordatura, on account of its special notation and playing requirements, the detrimental effect of higher tensions on the strings and the instrument, the inherent

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1 Marocco, W. Thomas. "The String Quartet Attributed to Benjamin Franklin". Proceedings of the American Philosophical Society, Vol. 116, No. 6 (Dec. 21, 1972) pp. 477-485. Marocco notes that the authorship is inconclusive as he was unable to verify through means of examining the watermarks. M. E. Grenander through a wider look at Franklin’s life supports the attribution, while Hubert Bevercich puts forward that it was more likely an unknown German musician who wrote the work that was eventually attributed to multiple composers, including Haydn, Pleyel, and Franklin.
intonation problems (especially if several pieces with different tunings were to be performed in the course of a concert), the need to adapt the bow speed, bow pressure and contact point to suit string textures, tensions and thicknesses, and the resultant changes in instrumental timbre.²

Although articulated some two centuries later, it is useful to assess these five concerns about scordatura:

(1) Two of these five factors – notation and bow use – are a matter of convenience rather than a concrete argument against scordatura – the former for the composer and the latter for the performer.

(2) The factor of tension on the instrument is the most serious of the five, but would likely refer to scordatura tunings that push the strings upwards rather than downwards in pitch, or possibly a mixture of tunings that are unstable for the bridge or body of the instrument.

(3) The issue of intonation (insofar as the stability of the strings is concerned) may indeed limit a programme, but arguably programming should be arranged to provide the best context for performance, rather than limiting performance options for the sake of a particular programme.

(4) Changes in timbre would seem to be limited to cases where scordatura is used to facilitate an extension of range or harmonic possibilities and timbral side effects are unintentional. Even if one accepts that these particular scordatura tunings may be disadvantageous, it should not be seen as a reflection of the endeavour as a whole – particularly considering the number of scordatura tunings specifically intended at creating changes of tonal colour.

It would seem that convenience has overtaken aesthetic concerns (and in some modern editions, historical fidelity as well) and perhaps a misconception or generalisation that scordatura was used only as a cure for poor projection. The case of Amon’s Viola Concerto in A Major, discussed by Maurice Riley,³ highlights this even further. When faced with scordatura some performers would rather transpose an entire orchestra in order to conform to today’s standardized tuning.

The arguments for the revival of scordatura do not ignore its limitations. This writer’s opinion is that it should not be categorically discounted and should instead be regarded and further explored as a specialized technique. Musicians of the 21st-century performing music of the Baroque and Classical periods face more limitations than their 19th-century counterparts, most importantly the presence of two more centuries of music largely written for an era of more homogenous tuning. In the case of the viola, Franz Zeyringer notes the issues of standardizing performance of an instrument with an

early history of diversity in size and with alto and tenor violas in five-part harmony. It is similarly limiting to require performances today to conform to standard tuning when dealing with works of the Baroque era and to some extent the Classical era as well. The technique need not be limited to specific scordatura tunings composers prescribed for specific pieces, although this is a crucial first step. Maurice Riley notes that scordatura was "used by mature players who performed solos requiring advanced technique" which accounted for its omission in method books of the period geared towards a younger target audience. In 1688, Georg Falek went a step further when considering the experiments of Heinrich Ignaz Biber, calling it a tool of the "masters". The point here is that beyond specific instructions by composers, historically the adventurous challenges of scordatura were considered a part of professional technical expertise.

**Functions and Application of Scordatura**

In the New Grove entry on scordatura, Boyden and Stowell list these as the various ways in which scordatura has been used:

1. Alternative harmonic possibilities;
2. Extending the range of the instrument;
3. Imitating other instruments;
4. Enabling the execution of large intervals, string crossing, or unusual double-stopping (including bariolage string crossing);
5. Emphasis of particular keys;
6. Increasing projection.

Many of the examples provided served as independent, specific goals of a particular scordatura. This list can be thus viewed as selected possible options rather than as categories of overall effects. From another perspective the unusual quartet by Benjamin Franklin surprisingly reflects more than one of these: it extends options for the ensemble allowing a performance using only open strings, in part as a musical joke. It possibly also serves as a philosophical metaphor, "so the 'common man,' with very little tutoring, could participate". It also possibly imitates the technique of water-filled wine glasses which led him to develop the **glass armonica**.

To discuss this in more detail, we have to approach the scordatura traditions of different instruments.

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7 Ibid.

Convergences of Scordatura Use on the Violin and Cello

The violin and the cello share a number of surprisingly similar traditions in the use of scordatura, in ways that are somewhat distinct from that of the viola.

Biber’s Rosary Sonatas for unaccompanied violin and Bach’s Suite No. 5 for unaccompanied cello have very obvious initial differences. The Rosary Sonatas take advantage of switching strings and even taking the term “cross-tuning” literally in having strings cross paths behind the bridge. There is ambiguity in the use of scordatura in the fifth suite, with the A string tuned down to G possibly to link it to lute tuning, or as an attempt to better place voicing and voice-leading across the four strings – a concept called vocal fingerling which will be discussed further below. However, a commonality of both works is the use of scordatura not only to affect timbre, but the underlying changes in resonance. Patricia and Allen Strange write of the Rosary Sonatas:

“It was originally assumed that the tunings in von Biber’s works were specified to facilitate various fingerings, but contemporary musicologists have put another spin on his works: the scordatura in the Rosary Sonatas brings out the fundamental resonance of each individual work, and something of a qualitative change in mood develops through the course of the sonata cycle”.

In contemporary works, composers for both the violin and the cello have used what would seem to be a disadvantage of scordatura in so far as the affected string is tuned differently to the specified pitch of the string makers. In other words, the usual handicap of reaching a scordatura on a string that is too loose or too tight – more so the former than the latter – instead creates novel sound effects.

In tuning to A flat–G–d–flat–f and applying the bow with considerable pressure (and held with two hands) vertically over two strings, Lachenmann’s Pression for cello produces contrasting timbres between a string at the calibrated tension and one intentionally departing from its intended tension. This is similar to the use of “dynamic scordatura” for the violin, progressively detuning strings to the point that the volume is diminished alongside a rusty timbre. In Ulrich Suesse’s use of this device the direction is unambiguous: “Scordatura by ½ tones ’till string is almost totally loose” and still underscored by additional sound effects: “Imitate sleeping, snoring voices interrupted with light scraping noises”.

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10 Ibid., 162.
11 It is similarly applied to the bowed guitar in Samuel Holloway’s Sillage in imitating the sound of water in the wake of passing ships (2010).
12 Strange and Strange. The Contemporary Violin: Extended Performance Techniques, 182.
This use of scordatura seemingly for extra-musical effect has been around for quite some time with Haydn placing an instruction for the violins to tune down G strings to F, and back up again to sonically point to a ‘distracted’ conductor. As for the cello, the initial part of the humorous introduction in the Musette of Hush, by Yo-Yo Ma and Bobby McFerrin, could be said to be in the same vein.

The violin diverges from the cello in the occasional use of the “transposition scordatura” – keeping the strings in fifths, but moving the strings upwards in pitch to produce additional projection (in effect to the opposite end of Lachenmann and Susse’s approaches in using strings calibrated for lower than standard pitches). Even with its notable use on the violin by Mahler and Paganini, the violin finds itself with a partner with unusually far more experience in the transposition scordatura: the viola.

*Scordatura for the Viola*

Scordatura was largely used to increase projection of violas in the 18th and 19th centuries. Riley lists nine concertos with the technique during this period, by Mozart, Vanhal, Stamitz, Druschetzky, Voigt, Sperger, and Amon. All of these fit the description of “transposition scordaturas” which reflects withdrawal from experimentation to conform for difficulties of notation and tonal side effects when strings are not tuned in fifths. As a likely unintentional result, there is one chord in the viola part of Mozart’s *Sinfonia Concertante for Violin, Viola and Orchestra in E-flat major KV 364* that can be played without alteration only in the scordatura tuning.

In modern repertoire, Riley mentions Fernando Griller’s 1984 concerto for viola, which combined projection with increasing options of natural harmonics. It is unclear whether the additional effect of tonal colour was a simultaneous goal or incidental. The former would demonstrate the ability of scordatura to perform multiple roles, while the latter would engage the 19th-century argument against timbral side effects resulting from the use of scordatura.

The application of the other functions of scordatura in the Baroque era is more relevant to violin rather than viola repertoire. This is largely due to the extent in which solo material for the violin outnumbered that of the viola and also to the large role that Biber played in the extension of scordatura possibilities in his violin sonatas. In later repertoire, the third variation of Richard Strauss’ *Don Quixote* requires a solo viola to tune the C string down to a B – using one of the rare instances of notating at pitch rather

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14 Riley, *The History of the Viola.* (Volume II), 139-140.
15 Boyden and Stowell, *et al.* *Scordatura.* In Grove Music Online.
16 The tenth utilizing an open G-sharp string, m. 12 of the first movement cadenza.
17 Riley, *The History of the Viola.* (Volume II), 143.
In an extension of this model, data on the viola’s resonance frequencies has been applied in order to approximate the role of the viole da gamba in Bach’s Brandenburg Concerto No. 6, BWV1051. The issue of instrument size versus the standard tuning of the viola in comparison to the violin is certainly well-known. Kim Kashkashian provides this description:

“The viola is still in a state of flux, of experimentation; every few years somebody comes out with a new, differently shaped viola. But one thing they all have in common is that the string length and the pitch aren’t exactly right for each other. The viola is tuned a fifth lower than the violin but is only a few inches longer. Ideally, the viola should have a longer string, acoustically speaking, but then you couldn’t play it. This discrepancy gives it that particular kind of tone quality that we might characterize as human, perhaps because it’s less reliable.”

This issue has been approached largely from the point of view of construction with Hermann Ritter in the early part of the last century trying to adjust the instrument’s dimensions to better match the proportions of the violin. Even then it was recognized that “violins which are too large approach in sound the baritone quality of the cello, which should be avoided.” Ritter was possibly moving the viola’s resonant frequencies and in that process departing from Kashkashian’s description of the ‘human’ nature of its tone.

The approach taken in the new substitution of the viole da gamba parts in Bach’s Brandenburg Concerto No. 6 is to emphasize resident resonant frequencies, determined by Hans Johansson to be at approximately 230Hz and 350Hz, equivalent to B flat and F, relative to A = 437. This is the scordatura substitution:

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The significance of it is the new application of scordatura based on resonant frequencies with the additional benefit of some clearer voicing than would be possible with regularly tuned violas and a tessitura that avoids the jumping of octaves that would otherwise be necessary. In having strings at a lower tension, the overall texture also better approximates the role of the viole da gamba – in a sense, similar to the approaches of Lachenmann and Suesse on the cello and violin, respectively.

Mozart’s *Sinfonia Concertante*, K364 contains possibilities of a further development of scordatura. It is important to address a possible and credible argument on historical fidelity, namely that this undermines the very concept of preserving a composer’s intention in relation to scordatura. There are a few factors to consider when dealing with interpretation in this context. Firstly, the aim is to preserve the use of scordatura as a technique rather than an instruction, which would then involve the idea of experimentation. Secondly, the historical use of this transposition scordatura was intended to increase projection with the possible benefit of convenience in keeping the strings in intervals of fifths. Projection is a musical consideration and any developments to the scordatura should preserve this intent; convenience, however, is negligible in a musical sense. Thirdly, we should consider that in this specific case of the *Sinfonia Concertante* as a genre, there was a marked emphasis towards the work’s commercial potential in providing independence to a composer; rather than art exclusively for art’s sake which returns the argument to pragmatic considerations. Two centuries later we are able to adjust priorities and to advance artistic concerns over pragmatism in a way that Mozart or Bach could rarely afford in their day.

For the most part, Mozart’s scordatura serves the viola well in allowing not only emphasis through increased projection, but also the use of open strings. This is balanced by muting the solo violin and the orchestra with the key of E flat major. In addition Mozart scored the work in the upper part of the viola’s range, roughly evidenced by the number of measures of the solo sections that employ the lowest string:

*Allegro maestoso*: 9 measures out of a 357-measure movement

*Andante*: 8 measures out of 129-measure movement

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Presto: 16 measures out of a 490-measure movement

This is unusual by any comparison be it patterns of the composer himself (e.g. the Mozart violin-viola duos) or be they similar works (e.g. Bach’s Concerto for Two Violins or Brandenburg Concerto No. 6).

The limited use of the lowest string allows us to address one equally unusual pattern in the cadenza of the first movement: in its opening, the violin uses the open G string, while the viola has to resort to a stopped note. While the discrepancy between open and stopped notes occurs throughout the Sinfonia Concertante, it occurs everywhere else in the opposite direction to add additional resonance to the viola and on top of the projection the higher string tension provides. Considering that the lowest open string (C sharp) is not utilized anywhere in the work, a further scordatura upwards of this string to D not only allows the viola to match the violin in the use of the open string, but allows the sequence to match in fingering.

Illustration 3: Opening sequence, 1st movement cadenza, scordatura of A sharp-D sharp-G sharp-D

The application of this new scordatura was tested in every part of the work that uses the C string, and while some fingerings became more complicated, there were no instances that affected the work detrimentally from a musical perspective. The use of the open string D is additionally useful earlier in the first movement:

Illustration 4: 1st movement, mm. 98-101

The support of the open D string also helps to boost resonance in the second measure of the second movement cadenza (the printed C sharp being a sounding D):

Illustration 5: Opening measures, 2nd movement cadenza

This unusual scordatura may only be applicable in this one work, which highlights it as a particular feature. Placed in the hands of the performer rather than the composer, it would be interesting to consider scordatura in the realm of instrumental technique rather than purely through musical composition.

**A Framework for Scordatura**

With both the history and current developments of viola scordatura in mind, it is possible to outline a model illustrating the functions of scordatura and areas in which it can be developed.

![Illustration 6: A Framework for Scordatura](image)

The model above illustrates the primary functions of scordatura as affecting range and tonal effects, intersected with larger areas of resonant frequencies, voicing, and fingering.

Section 1 refers to the range and covers both the pitch range of the instrument as well as the range of harmonic possibilities available in a particular tuning. A clear example of pitch range is Strauss' *Don Quixote*, while Griller’s *Viola Concerto* extends the range of harmonic options.

Section 2 relates to the present author’s use of scordatura in Bach’s *Brandenburg Concerto No. 6, BWV 1051* allowing violas to approximate the sound of *viole da gamba* and extending the range of the instrument a full tone, while using data on resonant frequencies to adjust its timbre.

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Section 3 includes, but is not limited to, the frequent use of the transposition scordatura (e.g. in Mozart’s two Sinfonia Concertante\textsuperscript{30}). In most cases this limits the lower range of the instrument to provide higher string tension resulting in greater projection.

Section 4 relates to cases such as the forthcoming arrangement of Bach’s Suite No. 5 for viola with extended scordatura aimed at facilitating fingeriing to match voicing. These represent an overlap of the areas of voicing and fingering. The application of vocal fingering has both the intentional tonal goal of voicing as well as extending the more sombre tone some have argued may be characteristic of this suite.\textsuperscript{31}

Section 5 refers to cases such as Mozart’s Sinfonia Concertante, K364 discussed earlier which can be advanced with a scordatura D string. This facilitates the use of open strings to match sequences, particularly in the first movement cadenza, additionally emphasizing certain relevant notes elsewhere in the work.

Section 6 demonstrates various new possibilities for contemporary composers to use data on resonance frequencies to determine scordaturas that produce new timbral effects.

**Concluding Thoughts**

There is some grey area whether the term scordatura should be applied to instruments with no standard tuning system or whether the term *accordatura* is more suitable here.\textsuperscript{32} Apart from a question of terminology (and of course the many other instruments to which that would then apply, not least being the *lyra viol*) it is a question whether deviation from a standard tuning part of the scordatura experience. This author would argue that it is: Lachenmann’s contrast of a regularly tuned string against one tuned lower than the string tension calibrated during manufacturing creates a distinct effect; likewise, the use of transposition scordaturas for projection is partially due to the added tension and the resonances with open strings and not with distinctly calibrated strings for the new tuning. Even where changes in string tension are not the primary focus (as in the case of Bach and Mozart discussed earlier) these often become a useful secondary function or at the very least a convenient by-product.

Perhaps the most significant question posed here is: who gets to ‘do’ scordatura? As a noun it seems to imply a permanent instruction; as a hypothetical verb, it underscores that it is essentially a technique of the performer. Beyond the classical string world, fiddlers and guitarists use this technique on a regular basis. Within it our current

\textsuperscript{30} The second being the fragment of the Sinfonia Concertante in A for Violin, Viola, Cello and orchestra KV Anh. 104 [320e], with a reconstruction by Philip Wilby available.

\textsuperscript{31} Malcolm Boyd, *Bach, (J.M. Dent and Sons, 1983). It should be noted that Boyd, while acknowledging this opinion, suggests that Bach was reviving an earlier tuning of the cello.

\textsuperscript{32} David Boyden, et al. "Scordatura." In Grove Music Online.

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musical age separates composers and performers while much scordatura use prior to our times was put forward by composer-performers such as Biber, Mozart and Bach. Perhaps for Mozart, even Bach and most clearly for Paganini scordatura remains a tool for performers as much as for composers. For Biber it also becomes a tool of composition intended to increase the possibilities of the instrument and the new opportunities then presented to him as a violinist. In this light we have to ask whether scordatura has been an item which was handed by the performer to the composer some time ago and if so whether the time has come for its welcome return to the performer’s toolbox.

Andrew Filmer, New Zealand School of Music/ Victoria University of Wellington and Massey University andrewfilmer@gmail.com

References


Electronic Resources


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Additional Sources


Bach articulation markings: generic mixing and systematic variation in two case studies

By Andrew Filmer, Victoria University of Wellington

The allocation of articulation marks for bowed string works of Bach has been a continually contentious issue, not in the least because the autograph manuscript for the cello suites is now lost and we have to reconcile conflicts between the copies of Anna Magdalena Bach and Johann Kellner. Even for the carefully prepared presentation score of the concertos for the Margrave of Brandenburg, certain apparent inconsistencies exist. The question that arises is whether these are in actuality errors, particularly considering the concept of systematic variation put forward by Bettina Schwemer and Douglas Woodfull-Harris. This has increased relevance when seen in parallel with Gregory Butler’s application of generic mixing, where genre is the system being varied. Two case studies – Gavotte II of the fifth suite for unaccompanied cello and the first movement of the sixth Brandenburg Concerto – are examined. In the fifth suite, we look for the possibility of an additional layer of variation within the penultimate movement, beyond the usual contrast of the first and second Gavottes. In the sixth Brandenburg Concerto, we examine how the variations of articulation markings further support the concepts of both systematic variation and generic mixing. Why Watson Forbes’s edition stands out in the decision-making process, and how the choice of articulation affects performance. In both case studies, we observe how apparent discrepancies are instead often part of an intricate network of colours that makes Bach the cornerstone of classical music.

Introduction: the enigmas of identifying errors

One of the merits of Henle editions, from the point of view of performers, is their rather generous allocation of space, including the occasional page with the words “This page has been left blank in order to give the player better page turns” – just in case you were wondering why there was an empty page.

This of course was not quite the scenario in the early 1700s, when manuscript was quite a commodity. One can imagine that if Johann Sebastian Bach could come back today and see the various editions of his works, particularly with the frequent addition of slurs considered ‘missing’, he might just say, “This space was intentionally left blank because I really didn’t mean to have a slur here, to be honest.”

The concept of systematic variation suggests that there was a certain sense of spontaneity and diversity that we have lost in conceptualizing the performance of Bach with repetition and replication rather than variation at its core.

One approaching the music can face the task of proving that something does not exist – and many editors have decided that the easier route is to assume that slurs are missing, essentially making square pegs fit into round holes.

Reading the music directly from an Urtext edition or even the autograph manuscript is not always the solution for performance – and not just due to the cases where the autograph is now lost, as is with the Bach cello suites. The issue with performing from an autograph is dealing with actual errors, and distinguishing these from intentional variations. Bach of course, did not have the benefit of being able to erase errors, and when they are serious enough, or when the particular edition was a working manuscript, the difficulties of corrections come through clearly, as seen in Illustration 1.
where Bach has to make clear the correct notes by writing the letter names above:

It is understandable then that there may be minor errors — such as articulation markings — that go unaddressed in the manuscript, particularly in a presentation score. Even if noted by the composer, one has to take into account such things as time and cost of replacement parchment. This does not aid us with a clearer situation, but brings us back to the essential point: in the end decisions have to emerge from the language of the notes themselves. In approaching the ever difficult task of figuring out what Bach really had in mind, gambist Robert Oliver said in regards to the autograph manuscript of the Brandenburg Concertos,

“That’s what is so wonderful to actually sit and look at what he wrote. That’s his message to posterity and everything he can tell us is in there somewhere.”

Systematic variation and Gavotte II of the Fifth Suite

It is perhaps puzzling how many inconsistencies and ambiguities exist in Anna Magdalena Bach’s copy of the cello suites, considering that they otherwise keep a clear and accurate notational record. In the effort to decode the intent of articulation marks in the cello suites, an initial issue is the deceptively simple task of deciding how many notes a slur covers. This is challenging indeed:

Some of these slurs may indicate connections over two, three or four notes — and even if a forensic handwriting specialist could decipher exactly how many notes were intended, it would not account for inconsistencies from parallel sections. Consistency then becomes the justification for the interpretation of slurs, under the presumption that it would be the “musical” thing to do.

In doing so, the complication that arises is the possibility that consistency was never intended — that contrast instead was the compositional trend. As Schwemer and Woodfall-Harris note, “In sum, the Anna Magdalena Bach MS abandons consistency of articulation in favour of systematic change for the sake of variety.”

The second Gavotte of the fifth suite allows us to examine this in detail. A missing tie in the very first full measure in the Anna Magdalena manuscript underlines the possibility of error (this omission is confirmed with the corresponding tie in measure 5, as well as Bach’s autograph manuscript of his arrangement for lute). Some eleven groups of triplets also do not have slur markings, and the majority of these do not fit the criterion of “systematic change”. Editions to date have largely come to the conclusion that all eleven sets are inaccurate, and that slurs prevail through the entire Gavotte II. However, one of the eleven has the possibility of systematic variation:

Illustration 3a: Suite No. 5, Gavotte II, Measures 3-4.

Illustration 3b: Suite No. 5, Gavotte II, Measures 9-10.

Illustration 3c: Suite No. 5, Gavotte II, Measures 21-22.
The possibility of intended contrast is evident – a connected first half, followed by a variation in the second half. It is the only of the eleven “missing” slurs that provide for a possible pattern. However, in light of the number of undisputed omissions, further evidence is needed to support this possibility, and a comparison to the Bach manuscripts for the works for unaccompanied violin proves useful. In Partita No. 2 in D minor for solo violin, Bach specifically employs a similar variation:

Illustration 4a: Couplet from Partita No. 2 for solo violin, final measures of the first half.

Furthermore, in this movement of the autograph manuscript, there do not seem to be any other cases of the omission of slurs.

Sections in Anna Magdalena's copy of Cello Suite No. 4 provide similar patterns of variation:

Illustration 5: Opening measures, Suite No. 4, Gigue.

While Anna Magdalena certainly left out some slurs, it is less likely she would make these errors in a predictable fashion – that her quill would run out of ink in the same place every time.

Performances of various cellists do not reflect the accuracy or inaccuracy of the manuscript, but nonetheless provide interpretations of the musical intent, which can then be related back to the score. Cellists seem to fall into two basic categories of interpretation. The first, evidenced by Mstislav Rostropovich and Mischa Maisky, puts forward that the element of contrast lies between the two Gavottes – a militant first, followed by a demure second. The second interpretation, heard in the recordings of Pablo Casals and especially so in that of Yo-Yo Ma, suggest that the crotchets in Gavotte II provide internal contrast in addition to that between the two Gavottes. It is also interesting to note that the absence of slurs in the lute version, BWV995 negates some of the contrast between the two Gavottes, such as in the recordings by Yasunori Imanura on lute, and Göran Söllöcher on guitar.

One can argue that the logic of this second interpretation lies in the rhythmical differences evident in the score, overlaid with contrasts in voicing, seen here in the upcoming edition for the suite arranged for unaccompanied viola, and based on Donald Maurice’s research into ‘vocal fingering’:

Illustration 6: Initial draft of the double scordatura edition by Andrew Fleming and Donald Maurice, Gavotte II, final measures.

In this context, one might additionally consider that a further internal contrast exists between similar material in the tenor and bass voices in the final two notes, in line with the second category of interpretation.

One would consider the totality of the argument, that the pattern from Partita No. 2 and Suite No. 4 applies specifically to the end of the phrase. Here it also overlaps with a contrast of voicing as well as the emphasis of the cadence.

The Sixth Brandenburg Concerto: Generic Mixing as Systematic Variation

Gregory Butler discusses how the fourth Brandenburg Concerto demonstrates the use of “generic mixing: the composer’s often complex and always ingenious play on, and play with, certain generic characteristics in the context of another genre.”

Likewise, similar use of generic mixing can be seen in the sixth Brandenburg Concerto, as Butler observes that in the fourth, "Here instruments assume not only double identities but in some cases even triple identities", so does it occur in the sixth.
In the first movement alone, the violas, viole da gamba and cello take on unique and changing roles throughout. The first viola da gamba acts in the triple capacity of an equal in five-part quasi-fugal sections, as a complex part of an accompanying with or without the continuo, and at one point splits away from the second viola da gamba, becoming part of a three-part concerto texture as the second viola da gamba takes on the entire accompanying role. Additionally, the concerto moves from a hybrid but primarily concerto-based first movement, to a trio sonata-like second, and finally to a ripieno final movement.

Taking into account this level of complexity is crucial in providing a context of diversity when determining the placement of slurs. While in the analysis of the fifth suite the task was to determine whether a system of articulatory variation existed across the unaccompanied works for violin and cello, in the sixth Brandenburg Concerto slurs can become an extension of a core system of genre variations already in place. Thus, the decisions regarding slurs are in one sense simply a matter of seeing where they synchronize with the generic structure, with the edition by Wason Forbes standing out as having fidelity to this.

The clearest example of this is within the second subject first heard in bar 17 (Illustration 7), and heard again in various forms from bar 28, bar 32, bar 40, bar 53, bar 84 and bar 103.

Out of these seven occurrences, there is some inconsistency in slurring patterns of the initial running semiquavers. The following chart outlines these discrepancies, basing the interpretation of the number of notes slurred on the Bärenreiter Urtext, ed. Heinrich Besseler, 2001.

<table>
<thead>
<tr>
<th>Opening Bärenreiter measure</th>
<th>Context</th>
</tr>
</thead>
<tbody>
<tr>
<td>Uttext</td>
<td></td>
</tr>
<tr>
<td>bar 17 Detached</td>
<td>Five-part quasi-fugal</td>
</tr>
<tr>
<td>bar 28 Detached</td>
<td>Three-part quasi-fugal</td>
</tr>
<tr>
<td>bar 32 Detached</td>
<td>Five-part quasi-fugal</td>
</tr>
<tr>
<td>bar 40 Slurred</td>
<td>Solo viola, minor key</td>
</tr>
<tr>
<td>bar 53 Detached</td>
<td>Solo viola, minor key</td>
</tr>
<tr>
<td>bar 84 Slurred</td>
<td>Solo viola, minor key</td>
</tr>
<tr>
<td>bar 102 Slurred Viola 1</td>
<td>Five-part quasi-fugal</td>
</tr>
<tr>
<td>Detached Viola 1</td>
<td></td>
</tr>
</tbody>
</table>

Illustration 8: Detached versus slurred bowing in the second subject of the first movement of Brandenburg Concerto No. 6

This inconsistency is, however, easily overgeneralized—an early example being the Bach-Gesellschaft edition of 1871 edited by Wilhelm Rust, who interpreted all the detached sections as 'missing' slurs. One can understand the logic that led to this opinion—even if Rust did consider the differing contexts in which the second subject appeared, even within the sub-categories of quasi-fugal and solo sections, internal inconsistencies appeared. The Breitkopf & Härtel edition of 1966 echoed Rust's choices.
Forbes’s decision that the semiquavers in the quasi-fugal sections were all detached, while those in the solo viola section are slurred could have been purely statistical: two corrections for consistency, contrasted to Rust’s five. There is also a musical justification: the solo viola sections are in themselves an unusual occurrence, placing the viola 2 in a five-part background:

Illustration 9: Excerpt of a recurrence of the second subject within a solo viola section, bars 44–46.

In addition to this, the solo viola sections occur in modulations to a minor key and include the leaps of a seventh at the start, contrasting to that of fourths earlier, which Nicolaus Harnoncourt believes indicates a kind of “Romanticism in Baroque music.”

Finally, these sections are one of the rare occasions marked with dynamics, and where there are the only sections marked piano. In performance of this, the application of slurs consistently in the solo viola sections match the overall articulation and dynamic – an unsurprising result, particularly considering this fits in with Rust’s edition as well – and more importantly, set this section as distinct. As Michael Marissen notes,

“Bach also injects into the structure a viola solo (bars 40–43), accompanied chordally by the full ensemble... This constitutes a third kind of event in the cantata movement. By its lack of complex counterpoint, this episode strongly distinguishes itself textually from the surrounding material.”

The question which appears is whether it is three or four notes that are meant to be slurred – practical considerations (especially considering the possibility that Bach himself may have played the viola?) suggest that it is the former. Rust sees slurs of four semiquavers, while Forbes takes a cautious approach:

“It is not clear from Bach’s MS whether he intended three or four notes to be slurred – both bowings are given in this text; choose one and apply it consistently.”

The present writer agrees with Besseler’s decision that three slurs are intended, particularly in consideration of similar sections e.g. bars 96–98, as well as complications of the recapitulation of the primary theme, that will be discussed further on.

The quasi-fugal/imitative sections prove to have far more complex effects on performance. The presumption of missing slurs – rather than ones being intentionally absent – may be with the interpretative preconceptions of smoothening out the entries of the instruments, or perhaps to homogenize the feel of the overall melodic line, particularly when trying to match the articulation in the solo viola sections. This is, however, at the expense of the parallel thirds; bar 19 is the most obvious of these, and without even taking into account the contrary motion of the first viola da gamba and the cello, also in parallel thirds. It is, however, not the first occurrence, having already surreptitiously crept into the preceding measure between the cello and the first viola, an area easily obscured in the texture due to the extended intervals.

This raises questions of performance – specifically that these may be areas to emphasize, which one can arguably do effectively with matching detached bowings. In this interpretation, the question of consistency arises again when addressing the slurred solo viola sections. The answer for this may be that there is not meant to be consistency: that the function of systematic variation, seen here in the use of generic mixing, is to provide variation. Whether or not a Harnoncourt’s ‘Romanticism’ is evident, something more basic surely is diversity.

A similar observation can be made in the opening of the movement, where keeping detached articulation highlights the quasi-fugal nature of the two
viola parts — akin to the previous section, this would suggest an emphasis of these interjections, much like small burst of light within the texture. One can additionally argue that this musical gesture is derived from the very start, with the second viola interrupting, as it were, the first viola.

This editorial and interpretative decision comes with two complications, the first being the third beat of bar 4, which seems to have an omitted slur, which in this case one has to consider to be legiti-
mately missing. The second is the recapitulation of the opening theme from bar 114 (unnaturally starting in mid-measure), where the second viola has slurs of three semiquavers, followed by a detached fourth, while the first viola is scored as at the start of the movement. It would seem that Rust has decided that the clarity of the second viola part in the recapitulation in slurring three semiquavers should be applied retrospectively to the opening, where it can be argued that the slurs are somewhat ambiguously marked (Illustration 12). Contrastingly, Forbes has
considered these as unintended inconsistencies, instead choosing to correct the second viola part in the recapitulation.

In agreeing with Forbes's position on this, there is an additional consideration of the similarity to the earlier section of the five-part quasi-fugal section. The present writer suggests that this error may suggest an answer to the number of notes slurred in bars 40-45 (Illustration 9), while at the same time providing a reason why there is a discrepancy in the recapitulation: an unintentional mix-up with the varied articulations. While certainly debatable, it could demonstrate the application of articulation markings as a compositional tool both for systematic variation and generic mixing — processes complex enough to allow even the great Johann Sebastian Bach the occasional mistake. It is perhaps a tribute to the composer that even his occasional mistakes offer us valuable clues.

Concluding Comments

The issue that we are continuously dealing with is that of consistency. Deciding what this means to us can tell us as much about ourselves as performers and editors as it does about the composer. Conclusions as to missing slurs in the Gavotte of the fifth suite, all the way from the very first printed edition c. 1824 — an easy enough generalization, considering Anna Magdalena's track record as far as articulation markings are concerned — have helped to build an interpretation of intra-section consistency and inter-section contrast, at least within this work.

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Suite in G minor, for lute, BWV 995 (Manuscript, n.d.)
Arrangement for unaccompanied viola, ed. Simon Rowland-Jones (Peters, 1998)
Arrangement for unaccompanied viola, reconstructed from the cello and lute manuscripts, Andrew Filmer and Donald Maurice, COMUS Edition (Forthcoming)
Bach, Johann Sebastian. Concerto 6to o de due Viole da Braccio, due Viole Da Gamba, Violoncella, Violone e Cembalo (Brandenburg Concerto No. 6), BWV 1051.

The same can be said of Bach’s sixth Brandenburg Concerto. Rust’s decisions, particularly in standardizing the second viola’s articulation markings (with consistency of the part as the priority rather than its changing role within the ensemble), suggest a purely horizontal reading of the score. Some modern editors, who have the tendency to have slurs occur consistently simultaneously for multiple instruments, on the other hand indicate a possible vertical reading. Forbes’s choices largely demonstrate that in Bach both of these can be taken into account, as well as a consideration that melodic lines are likely similar by design, accentuating internal variations. Within this there seems to be a kind of deceptive baroque minimalism: choosing instruments with apparent closeness (especially when contrasted to the likes of the second Brandenburg Concerto) in order to demonstrate subtle variations and choosing close links between the compositional subjects in order to showcase variations of genre, aided by systematic changes in articulation.

For the performer, the method in which these variations occur — in the case of the sixth Brandenburg Concerto, generic mixing — provide further interpretative options. Changes of articulation further suggest areas in which various grades of emphasis are musical options. In doing so, Bach brings to us not only concertos “ave plurimum instrumentum,” but concertos “ave a myriad shades and possibilities.”

Manuscript (presentation score to the Margrave of Brandenburg) n.d. Reprinted by C.F. Peters, (Frankfurt, 1996)
Ed. Besserer, Heinrich. (Bärenreiter Urtext edition, Kassel, 1956)
Bach, Johann Sebastian. 6 Violin Sonatas and Partitas, BWV 1001-1006. Composer's manuscript, 1720.


Additional Resources

Bach, J. S. Brandenburgische Konzerte, Nikolaus Harnoncourt and Concertus Musicus Wien (Hamburg, Germany: Deutsche Grammophon, 2009), DVD.


Bach, J. S. Brandenburg Concerto VI, ed. Fabrizio Ferrari, virtualsheetmusic.co.uk

End-notes

1. A look at the Johann Kellner manuscripts of the Bach cello suites indicates that the scribe did not have the luxury of starting movements on a fresh sheet, and that the thinness of the manuscript caused ink to bleed from one side of a page to the other.


8. Bars 96-100 are scored for two violas and two viole da gamba, the gambas in an interlocking mechanism that doubles in function in supporting the violas.


11. The theme actually begins with the upbeat to bar 17 – unusually a semiquaver rather than a quaver in the other four instruments – from the cello, which in the manuscript appears in the previous system and is omitted here for brevity.

12. J.S. Bach, Brandenburgische Konzerte, Nikolaus Harnoncourt and Concertus Musicus Wien (Hamburg, Germany: Deutsche Grammophon, 2009), DVD.


15 Forbes, Editor’s Notes to the Hinrichsen edition of Brandenburg Concerto No. 6.

16. Forbes alternatively describes these as being in “close canon”.

17. From the score of the 1976 Dover Publications reprint via the International Music Library Score Project, in the public domain.

18. e.g. Fabrizio Ferrari’s choice of adding a slur to bar 3, fourth beat of the 2nd Viola part.


20. The original title. That title “Brandenburg Concertos” was coined and made popular long after, is another example of the asymmetrical concept of modern traditions.
Bach’s Cello Suite No. 5: Sources, theories, and performance pathways by Andrew Filmer

While the six cello suites by Johann Sebastian Bach were undoubtedly prepared as a set, an active discourse remains as to instrumentation and the viability of a range of performance options. The fifth suite in particular is open to a range of possibilities.

There have been various initial attempts to incorporate within the fifth suite elements of the lute version, BWV995, which is regarded as a supplementary reference. This article examines the connection to the lute suite in more detail with further exploration of Malcolm Boyd’s suggestion that contrapuntal completion in the Gigue could suggest a source originally scored for lute. In addition, Dmitry Badianov puts forward the intriguing theory that the cello of the composer’s day may have been played on the shoulder in one of the variates of the viola da spalla. This context of instrumentation allows us to consider the modern viability of an arrangement for viola, which in turn affects the amalgamation of the lute suite. A further discussion proceeds on the forthcoming Corusc Edition for viola, which includes an extension of the scordatura from one to two strings, further developed from earlier experimentation by Donald Maurice.

The Role of the Lute Suite in G minor, BWV995

Two principal issues surround the application of the lute suite in addressing performance options in the cello suite: the date of composition, and its relation to the instrumentation. Schwemer and Woodfull-Harris note that the lute suite has roughly the same compositional date as the Anna Magdalena manuscript, 1727–1731. More importantly, Johann Kellner’s manuscript—though incomplete, with errors, and likely for private study—was dated one year earlier. This timeline has to date suggested that the original source, possibly a working copy, was the basis for these sources.

The significance of Boyd’s suggestion of an original source is his focus on compositional elements. Specifically he notes that the missing counterpoint in the Gigue suggests “why the cello version sometimes seems to need completion by another strand.” The concept of completion is the salient detail—that the fifth suite, as contrasted to the rest of the set, seems to be a compressed or condensed form of a larger work, originally with full rather than implied counterpoint. The adjusted timeline for the source of the fifth suite is shown in the green notation in Illustration 1, with the present timeline of Schwemer and Woodfull-Harris still relevant for the other five suites. See Illustration 1 opposite.

In exploring this possibility further, an analysis of the manuscript indicates six bars where Kellner differs from that of Anna Magdalena:  
- Prelude: bb. 154-5 (additional notes)  
- Allemande: bb. 5 (additional notes)  
- Courante: bb. 5 (missing notes)  
- Gavotte: bb. 10 (missing notes) and bb. 37 (additional notes)

A further look at the additional notes allows us to extrapolate the nature of the original source. The instances
in the Prelude are likely scribal errors, and the additional note in the Gavotte occurs in the same area where bar lines are misplaced, suggesting that it is also an error. The final instance of additional notes provides us an important clue:

Similar examples can be found in the Prelude. Bach’s contributions to counterpoint and voicing, unsurpassed in 300 years, makes the disappearance of the top voice rather unlikely:

In view of Bach’s normal contrapuntal practices, it would be more idiomatic to retain a C in the upper voice; this is likely a practical rather than musical decision of Anna Magdalena in dealing with the use of scordatura. This is especially noteworthy as the lute version, in Bach’s hand, is complete in this respect – additionally with a restructuring of the middle voices in bar 219 that would make the four-note chord playable on the cello. Thus, even if the lute manuscript were a later arrangement unrelated to a pre-1726 source, it provides a view as to the progression of compositional thought and revision, that at times assists in practical as well as musical considerations. The lute suite allows us this, while concurrently providing an alternative theory towards multiple original sources.

One could view the roles of the lute suite as having three levels. Minimally, it provides a utility of confirmation when dealing with conflicting sections of the Anna Magdalena and Johann Kellner manuscripts. The next level up continues to have the cello manuscripts as primary, but includes attempts to add notes from the lute suite where
The Cello Manuscripts of Anna Magdalena Bach and Johann Kellner

This theory is not without complications, particularly when considering the issues surrounding Kellner’s manuscript. It is uncertain for what purpose Kellner wrote without scordatura, or why the Gigue is incomplete and the Sarabande missing altogether. Schwerner and Woodfull-Harris put forward this opinion:

‘There are many scribal errors in pitch to indicate that he misconstrued the notes of the scordatura. At the same time, they prove that the model he used was written in scordatura. Perhaps this accounts for the truncation of the Sarabande and Gigue: Kellner may have found the labour of transcribing his model to concert pitch so tedious that he finally abandoned it altogether.’

The basis in a scordatura model conflicts with Boyd’s analysis, and one might argue it odd that Kellner would have completed the most difficult of the transcriptions, and leave out the simplest parts of the suite. The choice of scordatura does not lead us to a conclusive result, with both the use of fourths in the lute and the former ‘Italian’ tuning of the violoncello historically inspiring retunings in this manner.

On a purely practical level it seems highly unlikely that Bach — or any composer of the era — would write any original manuscript directly with scordatura notation, for transposing scordaturas, which would be treated as composing for a transposing instrument. With this in mind either a further source exists between Source Y and Source B (see Illustration 1), as a draft scordatura, in a parallel manner to Source F.

At the end of the day, save for a doubly historic find of any of these extant sources, one is unlikely to come to any concrete answers as the nature of these progenitors; rather, the performer is tasked with taking into account this myriad of factors, and coming to the best musical decision possible.

The Use of Scordatura

It is with this performance pathway that we can address Bach’s use of scordatura — a rare instance by this composer, especially when we consider that the use of the violino piccolo in three of his works was not a return of as much as it was the use of a part of the violin family that has since been out of common use.

The scordatura could have been purely experimental, to link to the history of the cello, or to underline the connection of the suit with the lute. It could alternatively be to extend the colours of the cello from the use of keys of open strings in the first three suites (G major, D minor, and C major), to a darker use of E flat major in the fourth, a change of timbre with scordatura in the fifth, and finally the use of a five-string cello in the final suite.

Another theory as to the intent of its application is an effort to better facilitate the distribution of notes into four voices, which would certainly be a benefit for a composer who defined the way we think about counterpoint. If this was the intent, and the assignment passed on to Anna Magdalena in the preparation of her manuscript, the role of the performer would be less to perform the results of this preliminary experiment, but to examine and maximize its compositional intent.

Donald Maurice discusses this in The Art of Vocal Fingering in String Playing, in which the following primary points were made. First, from a historical perspective: once Western European music had shaken off its adherence to the vocal principles of the Baroque, the use of the four strings to represent four voices became an almost forgotten art in the nineteenth and twentieth centuries. The string writing of Bach clearly exploits the four strings in this manner, itself possibly viewed as evidence in support of the concept of “vocal fingering.”

Second, from a theoretical perspective, Maurice notes that the change from one tetrachord to another is normally the optimum place to change string. In passages where there is a mixture of stepwise intervals and leaps of a minor third or greater, it is advised, where practical, to change string on the leaps.

Third, in linking these two observations, Bach’s Fifth Suite in particular indicates a possible attempt at distinguishing the soprano line by enabling A-flats (in the key of C minor) to be placed on the top string. In this light, there would seem to be various issues in the alto line that can be resolved by tuning the D string down to a C. In addition to voicing and voice-leading, Maurice observes that this new tuning is reflective of violin tuning, in Carnatic music of India, which like the music of the baroque era remains rooted in vocal training. This additionally increases resonance.
This reflects the now century-old observation by Fox Strangways, now celebrated as an important contribution to the history of ethnographic research. Fox noted that the study of Indian music has particular value in that it is independent from European influences on the aspect of harmony, mirroring an earlier part of history: the song of medieval Europe or ancient Greece.

The Edition: Extended Scordatura and the Condensation of the Version for Lute

With these factors in mind, the production of a new edition in press by Comus (edited by myself and Donald Maurice) with the extended scordatura and incorporation of the lute manuscript, has two distinct musico-logical intents that attempt to explain and extrapolate from Anna Magdalena’s role in producing her manuscript:

- Maximising the compositional intent of the scordatura
- Preserving the lute version as an indication to the original and (more importantly) complete musical picture, within the limitations of a bowed stringed instrument

These often work hand-in-hand, with options of incorporating notes from the lute suite available with the retuning. Illustration 6 provides an example of this, utilising the second open G string, which was an option unavailable with the single scordatura.

Illustration 6: Prelude, b. 18 – lute manuscript, Anna Magdalena manuscript, and a draft of the forthcoming Comus edition, in extended scordatura

At other times, the task takes on a more editorial view in revising Anna Magdalena’s choices when it comes to condensing the lute manuscript – in Illustration 7 (see above), the decision was made to address the issue of ‘missing’ counterpoint as highlighted by Boyd.

A third aspect of the edition has the context of instrumentation as particularly relevant, particularly the perspective of the viola da spalla as discussed by Dmitri Badaroe. He states that the use of a violoncello piccolo is and exclusively for the sixth suite is by modern convention, noting that the direction was simply for a five stringed instrument (‘à cinq cordes’). He puts forwards two proposals first, that the entire cycle of the suites is feasibly for the same instrument; second that the version of the instrument could have been played on the shoulder:

‘J.S. Bach never used this term (violoncello piccolo) in any of his works, so it is possible that Anna Magdalena is entirely responsible for it, as the use of a small violoncello piccolo in the sixth suite is the choice of modern players. Due to the loss of the original Bach manuscript, and the possibility of input from Anna Magdalena, it is feasible that all six suites were meant for the violoncello piccolo with four or five strings, and could have been performed by the player who played the Sonatas and Partitas for the violin solo, Johann Sebastian, being proficient on both the violin and viola could have been one of the first to play the Suites for an unaccompanied violoncello on a horizontally held violoncello piccolo of Hoffmann’s type: The Suites I to V on four-stringed and Suite VI on five-stringed instrument.’

This is of particular relevance when considering to what extent one can incorporate the lute suite within the production of the new edition – not from the available

Illustration 7: Prelude, b. 61-64, lute manuscript, Anna Magdalena manuscript, and draft of the Comus edition.
open strings, but rather the available intervals for a player of a smaller instrument that would be too large for today's regular-sized cello. This theory lends feasibility to an edition of the suite for viola as the current most available instrument fitting this description.

In the production of the edition, the one aspect of Anna Magdalena's edition not applied is the condensation of a preceding lute version for purposes of practicality; instead the intent is to incorporate as much of the lute suite as possible. This is for two reasons: first, that as a working copy the original autograph may well have been less detailed than the BWV995 manuscript. Illustration B (see below) indicates the effects of the fugue in the Prelude no longer as implied. In bar 40, the use of parentheses indicates a transposition of an octave in order to preserve this.

Second, a maximization of the transcription allows for the full use of the extended scordatura, both in the further chordal possibilities and the illustration of the voicing for which the retuning was determined. This may place the fifth suite as somewhat incongruous if we consider the cycle of suites as being intentionally increasing in difficulty; however, it can be argued that at least part of this perception of the suites is based on the performance of the sixth suite on a four-stringed instrument. Additionally, while it was certainly the practice of the time to produce sets of six, it is certainly unusual to have the entire cycle of these suites presented in a single performance today.

Concluding Comments
While there will continue to be discussion on the sources of the Bach cello suites, one thing is certain: there is much that Bach's lute version can contribute in the performance of the fifth suite.

The production of the new edition has provided for experiments with scordatura notation, leading to the use of two staves rather than the extended use of accidentals. An additional benefit of this is to have note-tall directions used to distinguish between the upper and lower strings of each stave; while pitches would not be affected by this, it provides for the separation of voicing.

There may be those who would glace askance at an edition exploring numerous areas at once: expanding scordatura while redefining the role of the lute suite in the interpretation of the fifth cello suite, all within a new framework of instrumentation. However, as Harold Schonberg notes: 'Without the interplay between the minds of the creator and interpreter, music is not only stale, flat and unprofitable. It is meaningless... Musical notation is an inexact art, no matter how composers sweat and strive to perfect it. Symbols and instructions on the printed page are subject to various interpretations, not to one interpretation.'

It is in this sense of experimentation at its core – the same process Bach and Anna Magdalena explored three centuries ago – that we keep at the forefront a concept of the process of composition, rather than a standardization of performance since Pablo Casals brought the suites into the mainstream of music-making. In so doing perhaps this is also in the spirit of various interpretations – with value on various – rather than a single interpretation.

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Illustration B: Prelude b. 35-42, forthcoming Comus edition for viola, with the extended scordatura of the top two strings down a tone
Mozart’s Sinfonia Concertante
Diversity and the role of Scordatura

Andrew Filmer

We celebrate the best of musicians for their unique merits. Bach for counterpoint, Beethoven for impact, and Schoenberg and Cage for making us rethink the way we conceive music. Mozart’s unique spark of greatness is in the celebration of diversity, heard so clearly in his Sinfonia Concertante in E flat major for violin, viola and orchestra.

This diversity can be seen in textual analysis of the score, as well as in the variety of approaches taken in recordings of the work. In the outer movements, varied interplay is enfolded subtly within the part-writing beneath a veneer of imitation. In the third movement, the primary theme is introduced in the orchestra, and then becomes the sole purview of the soloists, which then has further variation, first from the original statement, and then with independence of the solo lines. This dual existence of convergence and divergence is what highlights the diversity within the work. The fermatas in the development section of the first movement provide a similar opportunity—most recordings have a literal reading of the fermatas at bars 176 and 189, but performers such as Monica Huggett and Pavlo Besnosiuk choose to add a small cadenza-like Eingänge.

Illustration 1: Transcription of the Eingänge of Huggett and Besnosiuk

Here we note the coupling of similarly shaped lines, yet with individual personalities, which bring our Mozart’s use of colour far more than two completely independent lines would have. Subsuming the variety within a cohesive structure is the essence of the compositional style, which this particular Eingänge demonstrates. Mozart applied a transposition scordatura, tuning up the viola a semitone, which, according to Christoph-Hellmut Mahling, results in the viola both standing out against the orchestra and coming closer timbrally to the solo violin. Where certainly applied in period performance, various other performers have applied the scordatura, including Nobuko Imai, Paul Coletti, and Lionel Tertis, with I-Chun Chiang’s DMA thesis comprehensively examining the benefits of the tuning. Thus, while bringing the concertizing instruments closer together timbrally in this fashion, Mozart also diverges when it comes to the availability of open strings, giving the viola every benefit, while leaving the violin without matching options. As Nathan Cook notes: Not only does this tuning brighten the timbre of the viola, but the resonance of the solo violin, with which the viola must compete, is darkened, since the key of E-flat major allows the violin to ring much less freely. Two of the violin’s open strings are pitches outside the key.

The bar preceding the first movement cadenza (bar 358) puts forward a unique situation. The orchestral parts have a fermata over a rest in the second half of the measure, in itself common practice, with the fermata designating the cadenza. However, as the cadenza is written out, the notated fermata over a semibreve allows the soloists to carry on playing beyond the orchestra, an unusual occurrence in Mozart, which may explain why various recordings indicate a choice by some performers to coordinate the two fermatas. However, as written, the sonic image of these voices floating over the orchestra mirrors the entrance of the soloists at the start of the movement (bars 72-3), in stark contrast to the preceding historical use of the orchestral crescendo compositional device (bars 46-56).

Primary theme, third movement

<table>
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<th>Primary theme, third movement</th>
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<tbody>
<tr>
<td>First statement</td>
</tr>
<tr>
<td>Bars 1-24</td>
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<tr>
<td>Part A 16 bars</td>
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<tr>
<td>Part B 8 bars</td>
</tr>
<tr>
<td>1º violins, single line</td>
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<tr>
<td>Oboes, parallel</td>
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<tr>
<td>Second statement</td>
</tr>
<tr>
<td>Bars 204-235</td>
</tr>
<tr>
<td>Part A 16 bars</td>
</tr>
<tr>
<td>Part B 16 bars</td>
</tr>
<tr>
<td>Solosists, parallel, and with octave jump Viola solo, then violin solo, imitative</td>
</tr>
<tr>
<td>Third statement</td>
</tr>
<tr>
<td>Bars 345-374</td>
</tr>
<tr>
<td>Part A 16 bars</td>
</tr>
<tr>
<td>Part B 16 bars</td>
</tr>
<tr>
<td>Solosists, parallel, and with octave jump Viola solo, then violin solo, divergent/independent lines</td>
</tr>
</tbody>
</table>

Note: Parts A and B overlap, thus the discrepancy between the lengths and bar numbers.

Nikolaus Harnoncourt, in conducting the Vienna Philharmonic, made an idiomatic choice: the second violins play a d at bar 53, when every other instrument playing at that point has a b flat, fleshing out a harmony uncommon in performances of the work. Though inconsistent, it is not illogical or unmusical, adding to the diversity in the orchestration during certain imitative sections. The aesthetic viability of a clearly divergent edition reveals the impact of the diversity resident in this work; it engenders a greater spectrum of plausible ideas.

It is within this platform that the present author has suggested an extended scordatura, pushing the lowest string up an additional semitone, having the effect of allowing for open string options, as well as additional resonance. It is published in the American Viola Society’s Score Project. As has been noted, the second note of the viola in the cadenza—a sounding of d—now has the benefit of the sympathetic resonance from the lowest string tuned up to a D. It is useful to observe that with this scordatura, there is an even pattern of resonances, with the first note of the second measure mirroring that of the fourth measure, which benefits from the adjacent d sharp string.

Illustration 2: Second movement, bar 121 and the first four bars of the cadenza

Scordatura of d, c sharp, d sharp, a sharp

One might argue that this pattern does not exist in the violin part—with sympathetic resonances occurring in the upbeat to the first measure, and the first beat of the third. However, that returns us to the very concept of diversity; Mozart’s original scordatura was to elevate the viola in timbre and projection, while intentionally having a key which did the opposite for the violin. The new tuning extends the compositional aim of the use of scordatura, with the concession of convenience, which was perhaps a consideration more prevalent in Mozart’s time than today. The edition additionally re-examines the options of articulation markings, noting that of the often conflicting early editions (there being no complete extant autograph manuscript), there is the possibility of systematic variation applied to the recapitulation section in the first movement.

While recognising the primacy of source and text analyses, this certainly emphasises the inclination towards a cornucopia of colours that the Sinfonia Concertante engenders. It is almost as if in Mozart’s mind was the thought, “Replicate this? Exactly as it was? What on earth for?”

5 Out of a survey of over 20 recordings, this is the only one that has this unusual occurrence. Kalmus includes this in its edition, but the early editions edited by Gleichauf and Brahms, as well as the earliest editions of the New Mozart Edition, Bärenreiter as well as Henle, do not indicate this option.
7 American Viola Society Score Project: americanviolasonline.org/resources/scores/multiple-viola-ensemble-music/

Andrew Filmer has been published in Strings and the Journal of the American Viola Society (JVS), String Praxis (Australia), Arco (UK) and Crescendo (NZ). He holds a Master of Music degree in viola performance, two Leadership Recognition Awards from Indiana University and prizes from the American Viola Society and the Lillburn Trust. He is a New Zealand International Doctoral Scholar at the University of Otago. Andrew presented research on Bach’s Brandenburg Concerto No. 6 at the 2011 International Viola Congress in Würzburg, Germany, which was published in the Summer 2011 issue of JVS and the new Comus (UK) edition. In 2011 Andrew performed as violist in New Zealand, Germany and the UK and as violist and conductor in Malaysia.
www.andrewfilmer.wordpress.com
## APPENDIX D

### CD of Audio Samples

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<td>All samples: D–A–A flat–G</td>
</tr>
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<td></td>
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<td></td>
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<td>Movement I, bar 3</td>
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APPENDIX E

Comus edition of Bach's Brandenburg Concerto No. 6
http://www.comusedition.com/items/i119sapg.htm

The Comus edition includes a reprint of the following article: