A NEW THEORY OF CHROMATICISM FROM THE LATE SIXTEENTH TO THE EARLY EIGHTEENTH CENTURY

by

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Abstract

A NEW THEORY OF CHROMATICISM FROM THE MID-SIXTEENTH TO THE EARLY EIGHTEENTH CENTURY

by

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Advisor: Professor William Rothstein

This dissertation is intended as a solution to a perceived problem with existing theories of pre-tonal chromatic music: many modern theories of this repertoire have made anachronistic uses of models from major/minor tonality, and contemporaneous theories were not broad enough to adequately represent the phenomena that, to my own (and, I believe, many other modern listeners') ears, gave chromatic music its unique sound. Both groups of theories missed the mark by treating all chromatic events in this repertoire equally.

This dissertation is therefore in three parts. The first part surveys existing theories of sixteenth-, seventeenth-, and eighteenth-century chromaticism, both from the period in question and from our own, and shows the specific ways in which these theories are deficient. The second part presents my own theory, which provides a model for separating chromatic tones according to their structural function and an analytical method for reducing chromatic works to their diatonic foundations. The third part applies this theory to selected works and passages of the sixteenth, seventeenth, and eighteenth centuries, with an attendant discussion of the ways in

which changes in musical style affected changes in chromaticism. The appendices show the analytical results of my research into the most common of chromatic progressions, the chromatic fourth, and also present an extensive catalogue of chromatic music from the mid-sixteenth to the mid-eighteenth century.

Acknowledgements

My deepest gratitude goes to my wife Nancy. She consistently gave me the support and confidence I needed to move my work forward, and allowed me the time and space necessary to complete whatever task was at hand. In addition, she not only put an enormous amount of work into creating the appendices, but also provided me with invaluable input on my writing style, giving me gentle but firm criticism that dramatically improved the clarity and force with which I expressed my ideas. Her kindness and patience have been essential in completing the present work.

This dissertation would also not have been possible without Prof. William Rothstein, whose commitment to honesty, clarity, and comprehensiveness will always inspire my work as a scholar. While his demands were great, they were always in service of greater truth and scholarly precision, and were therefore always welcome. Prof. Rothstein's unwavering commitment to the highest quality of scholarship made me secure in the knowledge that when my work met with his approval, it was not merely passable: if he said it was good, it was truly good. Also remarkable is his eagerness to explore an area of music theory outside of his specialty; this, I believe, is the mark of a truly exceptional scholar.

I literally could not have started this work without the encouragement and guidance of Prof. Ruth DeFord, who was the first to indicate that my ideas were both original and worth writing down. The breadth of her knowledge of early music theory is astounding, and she has brought an essential historical perspective to bear on this work. At the same time, I admire her willingness to accept challenges to conventional

musicological wisdom, and her ability to give me objective reasons why such challenges were or were not valid.

Prof. David Gagne, whom I have known both as a teacher and as a colleague for nearly fifteen years, was able to provide me with a fresh viewpoint on both the content and style of my writing. I am grateful to him for giving me the perspectives both of a musician well versed in earlier music theory and a reader far enough removed from the creation of this dissertation to give me an objective assessment of its ideas.

Great thanks are also due to the following people, who have all shaped this work in innumerable ways: Dr. Glenn Marcus, who is a much more astute and sensitive musician than he realizes, provided a much-needed grounding in reality whenever I lost sight of my long-term goals. The inimitable Cody Franchetti saved me months of work by helping translate many tortuous passages of seventeenth-century Italian and by editing my work for greater clarity and vigor. Finally, Harold Brown has been a source of inspiration since my childhood, always reminding me that music is a means of communication, meant to be performed, listened to, and loved.

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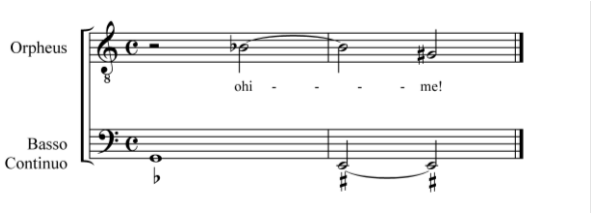
Introduction



Example 1. Jacopo Peri, *Euridice* (1600b).

Orpheus' terrified cry as he begins his descent into Hades in Peri's *Euridice* perfectly conveys the dread felt by any analyst confronted with early chromaticism. The vast amount of repertoire from the sixteenth, seventeenth, and eighteenth centuries that can legitimately be classified as chromatic, coupled with the equally vast discrepancy in theories put forth to explain it, could elicit this sort of exclamation from even the most seasoned analyst. The example also illustrates one of the most significant problems with the study of this repertoire: while most musicians would agree that this is a chromatic progression, no theory of early chromaticism, whether from Peri's day or from our own, provides a sufficient framework for understanding it. Orpheus' cry of despair therefore provides an ideal introduction to the three main purposes of this dissertation: to summarize and critique existing theories of chromaticism from this period; to provide a new theory; and, through analyses, to show how this new theory might further our understanding of chromaticism from this period.

This dissertation arose as a response to a perceived deficiency in theories of pre-tonal chromaticism. I began by examining Lasso's *Prophetiae Sibyllarum*, one of the most famous Renaissance chromatic works, and one that will play a significant

role in the present work. I found that modern theoretical writings on the piece lacked an adequate historical perspective, and relied too heavily on modern theoretical models. Furthermore, sixteenth-century theories also seemed to miss the mark in significant ways; they did not seem to capture what, to my ears, gave the music its chromatic sound. Through analysis of that single work, I began to develop a new analytical model that paid a decent respect to earlier conceptions of chromaticism while still accurately representing a my own present-day experience of the piece. The next logical step, which became this dissertation, was to survey all earlier theories of chromaticism in order to gather as many different viewpoints as possible, and, by examining a wide body of chromatic works, to refine my own ideas into a comprehensive theory of sixteenth-, seventeenth- and eighteenth-century chromaticism.

This Introduction will detail my research methods, and will also summarize some of the tangential issues that my research uncovered, but which do not have a place in the main body of the work. First, however, a brief note about the nomenclature of my examples: through a procedure that I will explain in the following paragraphs, one of the main tasks of my research was to compile as complete a list as possible of chromatic works from the mid-sixteenth to the early eighteenth century. The resulting list, which appears as Appendix 1, labels each work with its approximate date of composition, followed in most cases by a letter indicating the composer's alphabetical position in the roster of pieces I uncovered from that year.[1] Certain works whose date of composition could not be determined

[1] In dating the pieces, I followed either the edition in which I found the piece, or, failing that, the *New Grove Dictionary of Music and Musicians*, 2nd ed. My apologies in advance for the inaccuracies that

with any certainty were given approximate labels, such as "Late 17th Century (c)." Thus, the Peri example above is labeled "1600b," because Peri comes alphabetically second in the composers of pieces that I found from 1600.

The Selection of Chromatic Works

One of the first problems with research into chromatic music from this period was a methodological one. How could I gather all of the chromatic works from the late sixteenth to the early eighteenth centuries in order to induce from them a valid theory, when I began with the premise that all of the standard ways of identifying such works were insufficient?

The answer, which details my research methods, has many parts. I gathered chromatic works according to five criteria:

1. I chose pieces whose title or text contains the word "chromatic," or some variation of it. This was the most obvious indication that the composer intended to write a chromatic work. Many works from the seventeenth century, particularly keyboard works, have some variation or translation of the word *chromatic* in the title (Early 17th century (a) and (c), 1600a, 1609a-b, 1620a-d, 1620i, 1624d, 1635f-g). Other titles contain the term *durezze* (Early 17th century (k), 1624e, 1627a, 1641c), a seventeenth-century term for a type of keyboard piece containing many harsh dissonances and unusually resolving suspensions. In addition, many vocal works dating back to 1560 (including, most notably, the *Prophetiae*

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have almost surely resulted from this procedure; I trust that future interested scholars will correct the dates as necessary.

Sibyllarum) contain the word "chromatic" in their texts. The way in which composers set the word can often indicate what they conceived as chromatic (for additional examples, see 1606b and 1611a).

2. I chose pieces with features that conformed to contemporaneous or earlier theoretical conceptions of chromaticism. At a time when the dividing line between theorist and composer was blurry at best, one can assume that composers would have been conversant with theories of the chromatic genus. This assumption led me to select three types of pieces:

    a. Pieces containing conspicuous uses of the ancient Greek chromatic tetrachord,[2] that is, A-B-flat-B-natural-D or a transposition or retrograde thereof, as it was transmitted by Vicentino and other sixteenth-century theorists. Examples of pieces that use this tetrachord unambiguously are 1579, 1581a, 1624j, 1627c, 1634d, 1635b, 1645b, 1649a, and 1680-84, to name only a few.

    b. Pieces containing widespread use of "black-key," (that is, chromatically altered) tones. Many earlier theorists defined the chromatic genus as the use of these tones, as we shall see in chapter 1.

    c. Pieces containing the chromatic fourth, that is, the use of six tones to fill in the interval of a perfect fourth by semitone. Over the course of the seventeenth century, some theorists began to include this succession as a defining feature of the chromatic genus, probably because it was used so often in deliberately chromatic

[2] This chromatic tetrachord will be discussed in detail in chapter 1.

works. I have devoted chapter 5 to my analytical findings regarding the chromatic fourth.

3. I chose pieces that did not necessarily have any of the melodic successions that conform to earlier theorists' conceptions of the chromatic genus, but that nevertheless had widespread use of what a modern musician would call chromatic figuration. Two notable examples of this type of work are 1630/70 and 1736a, the former being the *Toccata ad manuale duplex* by Delphin Strunk, the earliest example I uncovered of the use of chromatic figuration.
4. In addition to the categories above, I chose two tangentially related types of works:
    a. "Enharmonic" pieces. The titles of several works contain the term "enharmonic" as opposed to "chromatic," and other works very clearly make use of enharmonic relationships to juxtapose distantly related sonorities. I felt it important to include those works here, even though this dissertation does not deal explicitly with enharmonic music.
    b. "Labyrinth" or "circle" pieces. Beginning in the sixteenth century, composers became intrigued by music that, through sequential repetition, travels to very distant tonalities and returns back to its starting tonality. Such pieces generally took two forms: Earlier works often modulate up by successive whole tones until they arrive back at the tonal starting point one octave higher; for an

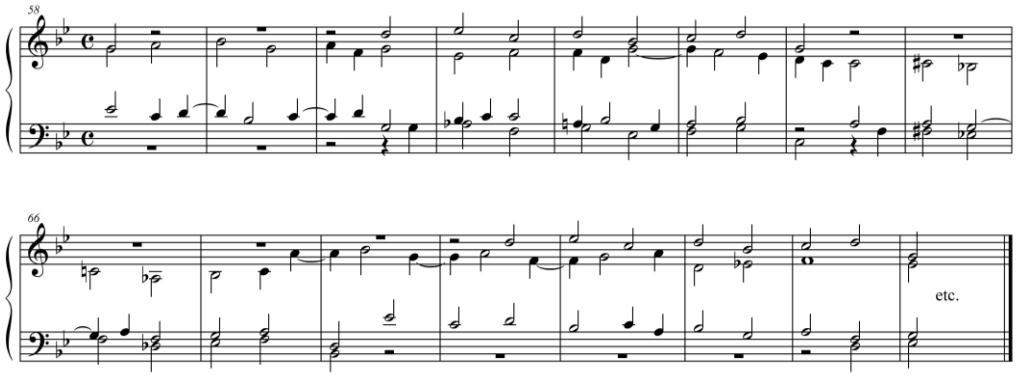
example, see John Bull's *Ut, re, mi, fa, sol, la* from the *Fitzwilliam Virginal Book* (1609d). Later, composers begin to make use of the complete chromatic circle of fifths, the most intriguing example being Marin Marais' *Le Labyrinthe* (1717a). Bach's *Kleines harmonisches Labyrinth* (Early 18th Century (b)), on the other hand, does not fit in either of these categories. While it does begin in C, modulates wildly, and returns to C, it does not do so through use of a chromatic sequence, as do the other pieces mentioned here.

5. Finally, I chose works that conformed to my own subjective sense of what I, and presumably other modern musicians,[3] would perceive as chromatic, whether or not that perception was based on any of the objective criteria given above. One of the purposes of this dissertation, as I will explain further in chapter 1, was to develop a theory that accounted for the phenomena that either musicians from this period or modern musicians would perceive as chromatic. I therefore felt it important to include music that might not have been explicitly conceived of as chromatic by its composer, and would not necessarily even have been considered chromatic by earlier theorists, but which nevertheless had a chromatic sound to modern ears.

[3] Many times throughout this dissertation, I refer to modern listeners and their perceptions. I cannot presume to speak for all modern listeners—or any, other than myself—but I do not believe that my perception of what is and is not chromatic differs substantially from the views of many of my contemporaries. Thus, in the present work, when I refer to the "modern" or "present-day" listener, it should be assumed that I refer only to myself and those listeners that would share my own perceptions.

Appendix 1 contains a chronological list of all of the chromatic works that my reseach uncovered using these criteria, and appendix 2 contains the same list organized alphabetically by composer. There may be some disagreement about the pieces I have included (or excluded). Some theorists might feel, for example, that virtually every piece by Bach contains *some* chromaticism, if, in the strictest possible tonal sense, chromaticism consists of the use of any tones outside the key. But such a definition of chromaticism would have been far too broad and inclusive to allow for any useful analytical conclusions about chromaticism. Instead, therefore, I selected pieces in which the entire work, or a significant passage thereof, contained explicit and seemingly deliberate use of chromaticism, as defined by the criteria above. My research focussed on works and passages that seemed self-consciously different from standard contemporary diatonic music.

Even though modern analysts generally try to avoid making value judgments about the music they analyze, I must point out that, especially in the early seventeenth century, the dividing line was often blurry between deliberately chromatic music and badly composed music. Example 2 illustrates an instance of the latter, excerpted from the keyboard work *Allein zu dir Herr Jesu Christ mein Hoffnung* from the Tablature of Celle (1601), whose composer is identified only as "O.D."



Example 2. O.D., *Allein zu dir Herr Jesu Christ mein Hoffnung*, mm. 58-73.

This work is indeed chromatic, but one wonders how much of the chromaticism was due to deliberate compositional choices and how much was due to lack of compositional skill: the voice leading in mm. 64-7 speaks for itself. On the other hand, my research also uncovered many intriguing works by composers whose music, I believe, is not nearly well enough known outside of the scholarly community. The two most notable of these are Luca Marenzio and Johann Jakob Froberger. I would point the interested reader to Marenzio's *Dura legge d'amor; E so come in un punto* (1599a) and *Solo e pensoso; Sì ch'io mi cred'homai* (1599b) and Froberger's *Suite VI. Auff die Maÿerin* (1649c) for wonderfully creative examples of early chromaticism.

The Choice of an Appropriate Chronological Period

The theoretical works I chose to critique in chapter 1, and the chromatic music that I chose for analysis in chapters 3-6, all date from roughly 1555 to 1740. The choice of these starting and ending points may seem arbitrary—surely there were

chromatic works written before 1555, and there is of course a huge body of chromatic music written after 1740—but my selection of them was based on the time frame in which theorists discussed chromatic music as a separate genus of composition. True, these discussions began in classical antiquity, and theorists before Nicola Vicentino discussed the applicability of the term *chromatic* to music of their contemporaries, most notably Spataro in his discussion of the Willaert "duo." However, Vicentino was the first theorist of the Renaissance to argue in print for the use of the chromatic genus in music of his day, and to attempt, as he put it, a "completely chromatic composition," in his *Antica musica ridotta alla moderna prattica* of 1555. Likewise, Jean-Philippe Rameau was the last to discuss the chromatic as a separate genus of composition, in his *Génération harmonique* of 1737. I therefore chose the dates of these two treatises as the chronological boundary points of the survey of theorists in chapter 1, and of the musical examples I chose for analysis. This led to some seemingly arbitrary decisions about which musical examples to include—does Bach really use a different variety of chromaticism after 1737 than he did before?—but it was necessary to have some boundaries for the musical examples in order to keep their number from becoming unmanageably large. I did allow for a certain amount of flexibility in musical examples; for example, since we cannot date much of Vivaldi's work with any accuracy, I included all of the examples of chromaticism that I found in his works, even though many of them were undoubtedly written after 1737, since the composer died in 1741.

A Word about the Survey of Theories of Chromaticism

To many readers, the survey of theories that I present in chapter 1 might seem to focus on quite a small number of theorists, and might lead those readers to wonder whether the small sample size that I present is truly representative of theorists' writings on chromaticism from such a large period. However, most theorists of the seventeenth century were either mute on the subject or simply repeated what other authors said before them. Thus, my bibliography presents many treatises from the sixteenth, seventeenth, and eighteenth centuries that are never discussed in chapter 1. This is because I chose to focus on those treatises that had the most to offer about chromaticism. I tried to include in the text as many examples as possible, for the reason that even theorists who repeated their contemporaries' views on chromaticism were significant, insofar as their writings usually represented the dominant view. One can therefore assume that a treatise that appears in the bibliography of that work but which is not discussed in the text said little or nothing about the chromatic genus.

Let us then set aside both Orpheus' fears and our own, and begin the exploration of chromaticism in the sixteenth, seventeenth, and eighteenth centuries.

Part One: Existing Theories of Chromaticism

Chapter One: A Survey of Theories of Chromaticism from the Late Sixteenth to the Early Eighteenth Century

Introduction

One can ask a group of contemporary tonal music theorists, "What is chromaticism?" and be assured that, while the answers would likely be quite diverse, the phenomena they attempted to address would be quite similar. The respondents would all understand that *chromaticism* was the noun form of the adjective *chromatic*. They would all use similar conceptions of what was diatonic as a backdrop for understanding what was chromatic. If asked to give examples of highly chromatic music, several of the tonal theorists would probably name some of the same pieces, and all of them would probably agree with the others' choices. If asked to identify the specific chromatic elements in those pieces, most would probably point to the same sonorities. While the theorists might differ over the most precise definition of chromaticism or the way in which various composers integrated chromatic elements into their music, their discussion would likely be founded on an implicit agreement about the nature of chromaticism and the types of musical phenomena the term described.

Ask a group of sixteenth-century theorists the same question, and none of the preceding statements would be true. First, the term *chromaticism* did not exist as a noun to describe the incorporation of chromatic elements into diatonic music, because there was not general agreement that the mixture of chromatic and diatonic was even possible, much less desirable. Chromatic music, insofar as there was any agreement

on what that was, was seen as a different genre of music altogether. An analogous, if not quite identical, situation exists between so-called "classical" and "popular" music in our own day. Musicians might speak of the incorporation of elements of one into the other, but the two types are seen as completely separate genres, and there is no term such as "popularism" to describe the integration of "popular" elements into an otherwise "classical" piece of music—probably because, as with the chromatic genus in the sixteenth, seventeenth, and early eighteenth centuries, there is no universally accepted formulation of what those elements are. Likewise, the group of sixteenth-century theorists would not all agree on which pieces of music were chromatic, mostly because they would not be able to agree on which specific elements defined the chromatic genus. Unlike the tonal theorists, their answers would not be based on a strong implicit agreement about which musical phenomena were chromatic. Thus, we must approach pre-tonal theories of chromaticism with a different set of expectations from those with which we approach theories of tonal chromaticism: to understand earlier theorists' formulations, we must consider chromatic music a completely different genre, and understand that theoretical writings about this genre aimed to describe what it comprised and how it might be used, not necessarily how it was incorporated into existing diatonic music—although this, too, eventually became a subject of much debate.

One fact is certain: the study of chromatic music gained unprecedented popularity among musicians in the middle of the sixteenth century. In keeping with the late-Renaissance revival of interest in all things pertaining to classical antiquity, composers and theorists alike turned their attention to the study of the ancient Greek

chromatic and enharmonic genera. Nearly all the theorists from the late Renaissance were interested in understanding the nature and composition of these genera; however, as we shall see, similarities between the theorists stopped there. Both speculative and practical music theorists, from Vicentino in 1555 to Rameau in 1737,[4] weighed in on such topics as the nature of the chromatic and enharmonic genera, the affect of these genera, and the appropriateness of their application to music of the day. Although these theorists disagreed about what, exactly, the genera comprised, they never debated their existence or their status as something outside the normal diatonic genus.

This section is intended to be a survey of the relevant theorists, not a detailed exploration of any of their viewpoints. For a comprehensive look at several of the theorists under consideration, see Berger (1976). The purpose of this survey is to understand the ways in which various theorists formulated the chromatic genus[5] in order to find useful parallels among their formulations, and to categorize the theorists based on these parallels. The resulting categories will form a backdrop for my own theory, presented in chapter 3. I will begin by discussing three important (if tangential to my own theory) points regarding earlier theorists' ideas on the chromatic genus: their views on the origin of the genus in the chromatic tetrachord; their explanations of the etymology of the term *chromatic*; and their ideas on the affect of the chromatic

[4] As I explained in the introduction, I have chosen these two theorists as the beginning and end points of the survey, because (after classical antiquity), they were the first and last theorists both to discuss the chromatic and enharmonic as genera, relating them to the conception of the ancient Greeks, and to apply the concept of the genera to music of their own day.

[5] I will touch on their formulations of the enharmonic genus as appropriate, but, for the sake of brevity, the enharmonic will be largely absent from this discussion.

genus. After discussing these points, I will continue with a detailed discussion of the two categories of theories of the chromatic genus from this period.

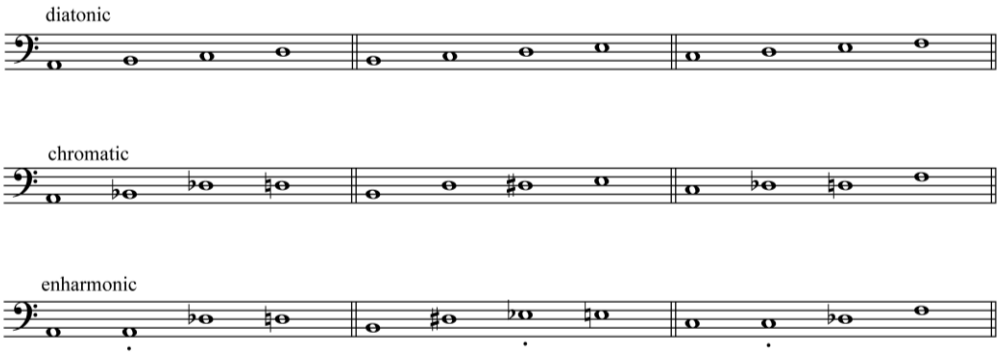
The Origins of the Chromatic Genus

Nearly every theorist from this period agreed that the three compositional genera—diatonic, chromatic, and enharmonic—originated as different ways of filling in the interval of a fourth, which they called *diatessaron* or *tetrachord*. Just like the very concept of the genera, this method of deriving them had its origins in ancient Greek theory, according to which each genus of tetrachord had the following distribution of intervals:

1. Diatonic: Two whole tones and a semitone.
2. Chromatic: Two semitones and a minor third.
3. Enharmonic: Two dieses[6] and a major third.

Since Vicentino is the earliest theorist under consideration, I present his three species of diatonic, chromatic, and enharmonic fourth as example 3.[7]

[6] For a definition of this interval and its derivation, see Vicentino ([1558] 1996), book I, chapter 16.
[7] The dots under some of the notes in the enharmonic genus were Vicentino's way of representing a note raised by the minor enharmonic diesis. Vicentino measured all of the intervals smaller than a whole tone in fifths of a tone. Thus, the minor enharmonic diesis (that is, from A to A-with-dot) is one-fifth of a tone; the major enharmonic diesis (from D-sharp to E-with-dot) is two-fifths of a tone, the same size but not the same function as the minor semitone (from D-flat to D-natural); and the major semitone (from D-sharp to E) is three-fifths of a tone.



Example 3. Vicentino's three genera.

No theorist from this period would have argued with Vicentino's three chromatic tetrachords as valid possibilities for representing the chromatic genus, but, continuing an argument that stretched back to classical antiquity, theorists were unevenly divided over how to tune the two semitones therein. With one exception, all the major theorists of the late sixteenth century who discuss the chromatic genus—Vicentino ([1558] 1996), Zarlino ([1558] 1968), Lusitano ([1561] 1989), Bottrigari ([1594] 1962), Morley ([1597] 1973), and Artusi ([1598] 1969)—tune the two semitones unequally, referring to them as major and minor. Bottrigari ([1594] 1962) gives the whole-number ratios most commonly used to produce these different semitones. His chromatic tetrachord comprises "the semitone called major, contained … in the proportion *sesquiquindicesima*, that is 16 to 15; then of the semitone called minor, in the proportion … of *sesquiventiquatresima*, or 25 to 24; and finally by the semiditone in the proportion *sesquiquinta*, or 6 to 5" (34). Doni (1640) shares the view that the two semitones were unequal, but describes their difference not in terms of ratios but of different divisions of the major whole tone. He divides the whole tone

into "five equal parts, of which four make up the minor whole tone, three the major semitone, two the minor, and one the prime, the smallest interval of the enharmonic progression … The chromatic [genus] modulates [that is, progresses] by the major semitone, and the minor, and the incomposite semiditone [minor third]" (4-5).[8] This conception of unequal semitones persisted all the way to the end of the seventeenth century and later; Printz (1696) and Werckmeister ([1697] 1970) both devote a considerable amount of text to discussing different ways of tuning the two semitones.

The other way of tuning the semitones in the chromatic tetrachord was, of course, equally. This was the favored method of Vincenzo Galilei (1581), the exception to the group of theorists named above, although Bardi ([1578] 1989) also posits the equal division of the whole tone for the sake of argument: "let me be permitted to pass over the ratios of numbers in each genus," he asks, "and from here on call the *semitone* the interval that is from *mi* to *fa* and the others *tones*, because my goal for now is not to set forth the theory of music but to adapt these ancient things to our practice" (97). Bardi goes on to mention several times that different theorists tune their semitones different ways, and that *mi* to *fa* could be a "long step" or a "short step" (97), which suggests that he was well aware of the different ways of tuning and only left them out of his discussion for the sake of simplicity. Galilei, on the other hand, strongly advocated tuning the semitones equally. He followed what he thought

[8] "Egli assegna dunque al Tuono maggiore cinque cotali particelle eguali, delle quali quattro ne dà al minor Tuono; tre al Semituono maggiore, a due al minore; e l'una pone per il primo, e minimo intervallo della progressione Enarmonica … e così nel Cromatico vuole che si moduli il Semituono maggiore, il minore, & il Semiditono incomposto." (See below for a discussion of the incomposite minor third.) In this dissertation, I have included the original language whenever I translated the passage myself. For sources with commonly accepted translations, such as Guy Marco and Claude Palisca's translation of Zarlino's *Istitutione harmoniche*, I have not included the original.

was the Aristoxenian division of the diatessaron into 60 parts,[9] and the three intervals that made up his chromatic tetrachord were 12 parts (semitone), 12 parts (semitone), and 36 parts (minor third). Galilei ([1589] 1933) also notes that Aristoxenus divided the entire octave into twelve equal parts, and he gives a very forceful argument in support of his thesis that the whole tone should be evenly divided: he provides a musical example in which the movement of each individual voice is diatonic, but taken together, they create very unusual chords, for example B-F-sharp-B-E-flat. He challenges singers using unequally tuned semitones to "sing the present song and let us have it played on an instrument tempered according to the said usage [i.e., equal temperament]. They will reply after hearing it sung and played that it satisfies them more played than sung" (Galilei [1588] 1989, 207). In other words, he feels that in order to sound in tune, his example and presumably others require that D-sharp and E-flat be equivalent.

These Aristoxenian divisions were obviously not widely accepted, as one can see from the long list of theorists above who divided the whole tone unequally. Nevertheless, theorists were still recognizing the use of equally tuned semitones a century later. Holder ([1694] 1967) was better versed in Greek theory than Galilei; he discusses all of the possibilities for unequal tuning according to Ptolemy, then gives the accurate Aristoxenian divisions of the diatessaron as follows: "The followers of Aristoxenus divided a *Tone Major* into 12 equal parts; i.e. Supposed it to be divided: Six of which being the *Hemitone,* (*viz.* half of it,) made a Degree of *Chromatic*

[9] In this division, Galilei was misinformed by Ptolemy: Aristoxenus only divided the diatessaron into 30 parts. For the true Aristoxenian divisions, divide all of Galilei's numbers by two. See Galilei ([1581] 2003), pp. 105-6, especially Palisca's explanation of the Ptolemaic and Aristoxenian divisions in footnote 169.

Toniæum … The *Chromatic* Fourth rose thus, viz., from the first Chord to the Second was a *Hemitone*; from the Second to the Third, a *Hemitone*; from the Third to the Fourth, a *Trihemitone*" (130). Incidentally, Holder is also the only author I examined who explicitly recognized the Greek conception that any tetrachord whose largest step was *between* a whole tone and a minor third qualified as chromatic, and that the size of the two combined semitones was itself variable. He therefore gives three types of chromatic tetrachords, which (expressed in twelfths of a whole tone) are 4+4+22, 4½+4½+21, and 6+6+18.[10] Likewise, Malcolm ([1721] 1970) discusses both the Ptolemaic and Aristoxenian divisions of the tetrachord, but concerning the latter, he had the same misinformation that Galilei did; he, too, gives the three possibilities for equal semitone division in double the actual Aristoxenian numbers. In sum, the issue of tuning and temperament regarding the division of the whole tone was far from being settled.

The theorists I have discussed above differed from each other in how they created the different species of chromatic tetrachord: some, like Vicentino, rearranged the order of the intervals; others, like Holder, tuned the intervals differently. But all of them shared the notion that the chromatic tetrachord comprised two semitones and a minor third. Among the points of disagreement, as we shall soon see, were whether these melodic progressions constituted the genera by themselves, whether the genera had to be used alone or could be mixed together, and whether their use was applicable to music of the authors' own time.

[10] Other authors do give different species of chromatic tetrachord that are made up of different sizes of minor third, but Holder is the only one to connect this practice with classical antiquity. Artusi ([1600] 1968) notably gives the diatonic tetrachord E-F-G-A, and explains the origin of the chromatic tetrachord in the "mobility" of the third step, G, which, when progressively lowered, "thickens" the tetrachord into first the chromatic, then the enharmonic (17).

Theorists' Opinions on the Etymology of *Chromatic*

Perhaps the only point that *all* sixteenth-, seventeenth-, and early eighteenth-century theorists agree on regarding chromaticism is that the term *chromatic* derives from the Greek word for color. Malcolm ([1721] 1970) is the only theorist from this period to actually give the Greek word, telling us that "The *Chromatick* was so called, say some, from *χρόα color*" (516). Unfortunately, theorists disagreed on why the term for color was chosen to signify the intervallic progression or set of pitch-classes that they defined as chromatic. The most common explanation was that the chromatic genus was a middle ground between the diatonic and enharmonic, just as color is a middle ground between black and white. Malcolm, for example, continues by saying that "as Colour is something betwixt black and white, so the *Chrom.* is a *medium* betwixt the other two [genera]" (516). Artusi, who compared diatonic to white and enharmonic to black, with color mediating between them, had articulated this view as early as 1600. "[Thus it is with] the chromatic, a genus lying between the Diatonic and the Enharmonic," he explains, "which tempers the nature of one, which is too coarse, and the other, which is too soft" (1600, 18).[11] Bontempi ([1695] 1976) offers the same reasoning, explaining, "just as what is found between black and white is called color, so this Genus found between the Diatonic and Enharmonic is called Chromatic" (99).[12] He also offers an alternate, intriguing explanation, saying that the

[11] "Vogliono dire, che fra il Diatonico, che si piglia per il color bianco, e'l raro; & fra lo Enarmonico, che è lo spesso; e'l color nero, che sono il due estremi; vi è lo color mezano, & lo spesso, che participa dell'una e l'altra natura; & è ilo Cromatico, Genere mezano fra'l Diatonico, e lo Enarmonico; & questo tempera la natura dell'uno, che ha troppo del crudo; & dell'altro, troppo molle."

[12] "Si chiama chromatico…trahendo l'Etimologia da chroma parola greca, che vuol dir colore; poiche sicome quello che si trova tra il bianco & il nero si chiama colore, cosi questo Genere per trovarsi tra il Genere Diatonico, & il genere Enharmonico si chiama Chroma."

Greek term *Chromata* signified not only color but also ornament, and that the chromatic genus could have been so named "from being the ornament of the diatonic" (99).[13]

Other theorists had different ideas concerning the origin of the term. Bottrigari ([1594] 1962) explained, "this genus … is represented by the epithet Chromatic, which really means nothing else but 'colored.' From the black colored keys, different from the color of all the others, it is rightly named chromatic" (33-34). Artusi ([1600] 1968) responded to this viewpoint by noting that we have no way of knowing whether the keyboard instruments of Timotheus, alleged Greek inventor of the chromatic genus, had black keys for the chromatic tones (17);[14] nevertheless, over a century later, La Fond (1725) still echoes Bottrigari's opinion: "And as for the term *Chromatic*, it is derived from the Greek *Chroma*, which signified a particular color, by which the Semi-notes were distinguished from the whole Notes" (87).[15] Mersenne ([1627] 2003) skirted the issue altogether, stating only that "this genus has taken its name from the Greek word *chroma*, that is to say, color, which is one part of beauty" (81).[16] While this explanation provides little insight into the reason for the application of the term, its poetic simplicity is appealing. Finally, Parran (1635) summarized the opinions of nearly all the other theorists: first, he says that the chromatic signified

[13] "…che meritamente veng a chiamato Chromatico, per esser egli l'ornamento del Diatonico, trahendone l"Etimologia da Chromata, che appresso i Greci contiene non solo il significato de' colori : ma quello degli ornamenti ancora."

[14] "Non sarà adunque vero, che sia detto Cromatico perche nel Clavicembalo, ò nell'Organo si suonimo gl'intervalli del Cromatico sopra gli tasti neri."

[15] Banchieri ([1614] 1968), on the other hand, hypothesized that the "colors" referred to by the term were not the black keys on the keyboard, but rather the *crome*, or eighth notes, frequently used in chromatic music. "The celebrated Cipriano de Rore applied this term 'Chromatic' to his great quantity of madrigals," he explains, "and because they were [written] in black notes, it is believed that this word 'Chromatic' is applied to them due to the quantity of *crome* which occurred in them" (404). This was, in fact, the meaning that Rore intended when he titled his publications *madrigali cromatici*, but it is a sense of the word unrelated to the one with which the rest of this section is concerned.

[16] "[C]e genre a pris son nom du mot grec *chroma*, c'est à dire couleur, qui fait une partie de beauté."

"[that which is] colored, giving color, embellishing, and sweetening with its living colors the diatonic" (37);[17] later, he continues by saying that "the Chromatic is between the Diatonic and the Enharmonic, [as] color is between white and black" (38).[18]

Theorists' Opinions on the Affect of the Chromatic Genus

From its inception, the chromatic genus was associated with a softer, more effeminate character than the diatonic (recall Artusi's statement that the chromatic mediated between the diatonic, which was too coarse, and the enharmonic, which was too soft). Vincenzo Galilei (1581), following Boethius, traces this association all the way back to the ancient Greeks:

> The lyricist Timotheus used the chromatic frequently among the Spartans, with the result that they, lovers of a severe music, chased him outside their boundaries. This is not surprising, since Timotheus's motherland was the Greek island of Milo, whose men…were exceedingly lascivious and effeminate, and, from what I hear, they are still like that today (253).[19]

In fact, this conception of the affect of the chromatic genus was one of the few points of agreement between Vicentino and Zarlino. Early in his discussion of the chromatic genus, Vicentino ([1558] 1996) emphasizes that "the diatonic steps produce a harsh sound, whereas the chromatic restore a gentle sound to the ear" (186), although later on, he characterizes his first example of a chromatic motet as "cheerful," and says that "a composer may write any sort of chromatic music he

[17] "…comme qui diroit colorée, donnant couleur, emellisant, & adoucissant par ses vives couleurs la Diatonique."
[18] "Le Chromatic est entre la Diatonique, & Enharmonique, ce que la couleur est entre le blanc, & le noir."
[19] Galilei goes on to disprove the notion that Timotheus was the inventor of the chromatic genus, a story repeated by many authors including Boethius and Zarlino.

wishes … for there are many kinds of chromatic music—sad, cheerful, harsh, gentle, and tempered, depending on the mixture of the genera" (195). Zarlino ([1558] 1968) echoes Vicentino's first characterization, and notes the effect that the chromatic genus had on the ancients' conception of the diatonic: "[T]he ancients considered the diatonic a more severe and natural genus than the other two for no other reason than because they observed how the chromatic steps multiplied the melodic resources and rendered the melody more seductive" (282). In other words, after hearing the softening effect of chromatic music, the ancients considered the diatonic harsher in retrospect. He continues, "Standing alone on its proper steps, the diatonic was more virile and fierce … the chromatic was called lascivious, soft, and effeminate because of the effect of mingling its steps with the diatonic" (282). Both authors mention mixing the genera; this is a crucial issue for late-sixteenth-century theorists, as we shall see below.

Mersenne ([1627] 2003), as before, has a more allusive interpretation of the chromatic genus relative to the diatonic and enharmonic. He makes an analogy between the genera and the Holy Trinity, equating the diatonic with the Father on one hand and the enharmonic with the Holy Spirit on the other. The chromatic he equates with the Son, "to whom we attribute beauty, equality, and wisdom" (81).[20] He perhaps stretches the analogy a bit too far when he claims that "the Diatonic comes from no other genus, because it is the first; but the Chromatic proceeds from the Diatonic in such a way as to produce together the Enharmonic; the Father proceeds from no one, and produces the Son; and the Father and Son produce the Holy Spirit,

[20] "Le genre *Chromatiq* representera le Fils, à qui on attribuë la beauté, l'égalité, et la sagesse."

which produces no one else, as the Enharmonic genus produces no other genus."[21] This conception shares with the others the idea of the chromatic genus as a mediator between two end points, whether black and white or creator and created. Bontempi ([1695] 1976) is the only author to discuss the affect of the chromatic genus without comparing it to one of the others, saying that the chromatic has a character of "conjecture" (*conghiettura*) (49), a sense of being unreal.

Many theorists mention the disuse of either the chromatic or enharmonic genus, or both, often pointing to the difficulty of performing them (especially the enharmonic) accurately. Girolamo Mei points this out in his letter to Vincenzo Galilei, noting frankly that "all these divisions [that is, the chromatic and enharmonic] and their employment must have been discontinued and abandoned for no other reason, it is logical to believe, than the altogether uncommon and not at all crude facility they required" (1572, 64). Galilei (1581), probably building on Mei's idea, also notes that the other genera do not produce good counterpoint very well by themselves, "principally because the chords that modern practicing contrapuntists use between the different parts of their compositions are their principal foundation, and these chords are not found as often among the steps of the other two genres as in the diatonic" (258). He later elaborates on this point by explaining that the scales that make up the chromatic and enharmonic genera do not produce enough perfect fifths to create viable counterpoint, and their use was therefore discontinued. Parran ([1639] 1972), like many other theorists (as we shall see later), says that the chromatic is

[21] "[Le] *Diatoniq* … ne vient de nul autre genre, puis qu'il est le premier; mais le *Chromatiq* procede tellement du *Diatoniq* qu'ils produisent toust deux ensemble le genre *Enharmoniq*; le Pere ne procede d'aucun, et produit le Fils; et le Pere et le Fils produisent le Sainct Esprit, qui ne produit point d'autre personne, comme le genre *Enharmoniq* ne produit point d'autre genre."

usable when mixed with the diatonic, but that "the pure chromatic is not in any way singable," and that to sing the enharmonic is "impossible" because "the ear cannot judge its intervals"[22] (37). Zacconi ([1622] 1967) also notes the impracticality of the enharmonic genus in particular, because "the voice does not have the possibility to divide the semitone, as does the speculative [theorist], who can put it into practice with the pen" (34).[23] Finally, William Holder, while recognizing that the other genera can be mixed with the diatonic, actually recommends that they not be used alone, for reasons as much aesthetic as practical: "[I]f the Ring of Bells were disposed by *Chromatic*, or *Enharmonic* degrees, constituting the Diatessarons? How absurd and uncouth it would appear! The practice of those kinds, therefore, and in such a manner, seems to be (as has been said) a Violence upon Nature and only for Curiosity" (1694, 149).

Theoretical Conceptions of the Chromatic Genus

Most theorists agreed that the origin of the chromatic genus was in the melodic progression of two semitones and a minor third. The issue that most strongly divided them was whether the chromatic genus consisted primarily of the use of this intervallic succession, or consisted of the distinct set of pitch-classes arising from it. Based on this division, most conceptions of the chromatic genus in the writings of theorists from this period can be classified into two broad categories. Each category defines the chromatic genus by how it differs from the diatonic genus, but they

[22] "[L]a pure Chromatique n'est en aucune façon chantable … L'Enharmonique [est] impossible … veu que l'oreille ne peut juger de ses intervalles."
[23] "Poiche la voce non hà possibilita di divider il Semitono, come lo divide lo Speculativo, e con la penna lo mettre in Prattica."

disagree about which aspect of the difference is the crucial factor in defining the chromatic:

1. *The "relative" conception*: The chromatic genus consists of the use of a melodic succession of intervals not found in the diatonic genus.[24]
2. *The "absolute" conception*: The chromatic genus consists of the use of certain pitch-classes not found in the diatonic genus.

The labels for these two conceptions are my own, and are intended to reflect the essential difference between them. The first considers primarily the linear succession of intervals in a given voice; that is to say, the position of tones *relative* to one another. Since the melodic progression of two consecutive semitones could not be created using only the diatonic tetrachord, it follows that any composition using such a progression must be something other than diatonic. The second conception, on the other hand, reflects the fact that the raised and lowered tones required to create a progression of two consecutive semitones gradually came to be seen as tones in their own right—in other words, they became reified.[25] Chromaticism, in this conception, consists of the use of these *absolute* tones; that is to say, the tones themselves, regardless of their position relative to other tones. Other conceptions of the chromatic genus exist but are exceptional; by far the majority of theorists from this period adhere to one of the two given above.

[24] Namely, the progression of two consecutvie semitones, which was not possible to create using only the whole- and half-steps of the diatonic tetrachord.

[25] It cannot be a coincidence that Bottrigari, who explained *chromatic* as deriving from the black keys on the keyboard, adhered to this conception of chromaticism. The reification of the chromatic tones was almost certainly related to the ascendancy of keyboard instruments.

Both the relative and the absolute conceptions rely on a definition of the diatonic genus as a foil for the chromatic. Fortunately, there is little disagreement among theorists as to what is meant by *diatonic*:

1. The diatonic genus fills in the interval of a perfect fourth with two whole tones and a semitone.
2. The diatonic genus uses only the tones of *musica recta*; that is, the "white notes" from C to C, plus B-flat.

These two ideas complement one another, since most diatonic melodies restrict themselves to the melodic successions found in the diatonic tetrachord, and use primarily the tones of *musica recta*.[26] Nevertheless, the first conception more often serves as a counterpart to the relative conception of chromaticism, and the second conception of the diatonic as a counterpart to the absolute conception. These conceptions of chromaticism were not part of any evolutionary process; they existed alongside one another as long as theorists discussed the chromatic as a separate compositional genus. Both conceptions survived in some form in tonal theory: modern theorists, speaking of the "chromatic" scale, generally mean a scale that proceeds completely by semitone; the fact that such a scale requires several notes with accidentals is the effect, rather than the cause, of the linear succession of its intervals. On the other hand, when we speak of "chromaticism," we mean, as the

[26] One important exception to this statement would be a melody transposed to begin on a riased or lowered tone; this would naturally use many tones outside the gamut without necessarily using melodic successions other than those found in the diatonic tetrachord. In fact, Simpson ([1667] 1970) complains about the "little dissonances," i.e., notes that are out of tune, that arise when starting a melody on a chromatically altered tone, and says "your best way to avoid them is to set your music in the usual and most natural keys of the scale" (56).

absolute theorists did, the use of a set of pitch-classes that lie outside of an established diatonic collection.

The "Relative" Conception

The relative conception of chromaticism is represented first and most clearly by the work of Vicentino, for whom each genus was unquestionably a sequence of intervals, rather than any specific group of pitch-classes. Several aspects of his work indicate that this conception lay at the heart of his theory. Not only does he explain each genus in terms of "steps," rather than tones or pitches, but he states that "chromatic means nothing more than the transformation of one sequence into another" (1555, 187), which indicates that the sequence of intervals, rather than the pitches involved, was of primary importance to him. But the most compelling evidence comes from Vicentino's musical examples. Recall his three species of chromatic fourth in example 3. Each species of chromatic fourth contains a major and minor semitone and a minor third. Because Vicentino starts his chromatic fourths on the same notes (A, B, and C) on which he started his diatonic fourths, the species of fourth contain between them all three different forms of the note D (not including D-diesis). Now, none of Vicentino's chromatic octaves contains these three tones in a row; they all use E-flat instead of D-sharp. In any case, the existence of three forms of D in the same scale would create a progression of two minor semitones, which is contrary to the nature of the chromatic genus as he describes it. This suggests that his conception of the chromatic genus admitted of any conceivable pitch-classes, so long as the melodic progressions giving rise to them consisted of major and minor

semitones and minor thirds. His later examples of the chromatic modes bear this out: we can find among them all of the ten possible spellings of the "black-key" pitches except A-sharp.

Lusitano, despite his well-known debate with Vicentino on the applicability of the chromatic genus, actually seems to have shared with him the relative conception of it. He says "[the] Chromatic proceeds … by minor semitone, and major [semitone], and minor third" (1561, 22).[27] Galilei (1581) also shared this conception, at least implicitly, since he never mentions the chromatic genus or the chromatic tetrachord in any other context than as a melodic progression. Slightly later, in Germany, Joachim Burmeister would write, "A melodic genus is one whose character it is to have a tetrachord … containing a certain movement of small intervals within the diatessaron. From this a certain characteristic way of performance is achieved." The chromatic genus, he explains, "is that whose tetrachord proceeds by minor semitone, major semitone, semiditone, or the reverse" (1599, 199). Most of the later theorists adhered to the absolute conception of the chromatic genus, but even in the late seventeenth and early eighteenth centuries, certain authors explain the genus purely in terms of a linear succession of intervals. Printz (1679), in an exhaustive treatise that proceeds by describing the derivation and usage of each interval, pauses at the interval of a fourth to explain how it is used to create the "*genera modulandi*" (58). However, Printz is only concerned with showing the division of each genus according to whole-number ratios; thus, he defines the chromatic genus as the progression semitone, semitone, and minor third, but only deals with how each of these intervals may be derived. Most of his discussion is devoted to the diatonic tetrachord; he never even gives a musical

[27] "Cromatico, che procede … per semitono minore, & maggiore, & terza minore aggiunta."

example of the chromatic or enharmonic. Finally, Malcolm ([1721] 1970) still uses the relative conception, explaining that the genera are "the various Ways of subdividing the consonant *Intervals* (which are the chief Principles of *Melody*) into their *concinnous*[28] Parts" (512).

One difficult point that the "relative" theorists had to contend with was the status of the minor third: since they defined the genus by the progression of its intervals, did the minor third always have to be used as a discrete step? And if so, did any music that used minor thirds automatically move into the chromatic genus? Vicentino was the only theorist who would have answered yes to both questions. In his example of a "completely chromatic composition" (195), he notes apologetically that he has "kept only two big steps from the enharmonic genus[29] in the soprano … These may be corrected with a flat; however, I have left them in because of the above-mentioned intensity" (195). We can deduce from this statement that in the enharmonic genus, the major third counted as a step, and that its use in his otherwise chromatic composition signaled the use of a different genus. Therefore, he certainly would have felt the same way about the minor third in relation to the chromatic genus. Lusitano ([1561] 1989) shares with Vicentino the idea that the minor third in this genus is incomposite; that is, it must be used as a step, "as *re*, *fa*, and not as *re*, *mi*, *fa*" (22).[30] In fact, this point was the springboard for the disagreement between the two men: as we have seen, Vicentino insisted that the steps of the chromatic genus could be used entirely by themselves (hence his example of a completely chromatic

[28] Archaic word meaning harmonious or pleasant.
[29] That is, two major thirds.
[30] "… terza minore aggiunta, come, re, fa, & non come re, mi, fa." As Lusitano points out, the idea of the minor third in the chromatic genus being incomposite goes back to Boethius.

composition, which, with only the two noted exceptions, uses exclusively semitones and minor thirds melodically), and that the use of a minor third automatically signaled a move into the chromatic; Lusitano felt that one could not compose a viable piece of music using only semitones and minor thirds, and that even if it were possible, Vicentino's examples failed to do so. Artusi ([1598] 1969) is the only other author to mention the point of the minor third as an incomposite interval in the chromatic genus, although he does so simply by way of description (the chromatic tetrachord proceeds "by major semitone, and minor, and by incomposite minor third" [7]),[31] without judging whether its use as such is valid or not.[32] In any case, as we shall see, Zarlino ([1558] 1968) very effectively points out the absurdity of considering the minor third as incomposite.

The later "relative" theorists, as well as some of those who do not clearly fall into either camp, focus on the use of consecutive semitones as signaling the presence of the chromatic genus, and disregard the status of the minor third even if they mention it as necessary to create the chromatic tetrachord. In fact, even Vicentino seems to have viewed the semitones as defining the genus more clearly than the minor third could; his examples of the species of chromatic fifth contain only one minor third and *four* consecutive semitones. (Of course, his only other choice would have been to use a whole step, which, by his own definition, belonged only to the diatonic genus.) Burmeister ([1606] 1993), having just defined the genus as "that whose tetrachord proceeds by minor semitone, major semitone, semiditone, or the reverse" (72), gives as an example the alto voice from the opening of Lasso's

[31] "… per un semituono maggiore, & per un minore, & per una Terza minore incomposta."
[32] One can assume, however, that Artusi would agree with Lusitano, since he devotes much energy to railing against Vicentino (see, for example, p. 13).

Concupiscendo concupiscit, which fills in the space from F-sharp to A with three semitones. This suggests that he, too, considered the progression of consecutive semitones more important than the minor third in defining the genus. Artusi ([1600] 1968) is more decisive than Artusi ([1598] 1969); he says that the idea of the "minor third, which the Ancients considered to be incomposite, and an interval particular to this genus, is not true" (18),[33] and notes that the diatessaron can be completely filled in with semitones, giving a musical example. Likewise, Zacconi ([1622] 1967) gives as an example of the chromatic genus a tetrachord that is filled in by one whole step and three semitones. By the middle of the seventeenth century, any mention of the minor third as having the capability to define the genus has disappeared, and theorists were expanding the progression of consecutive semitones to the entire octave. Nivers ([1667] 1961) defines the genera as "types of melodies," with the chromatic being the one that "progresses by major and minor semitones" (17). His "chromatic octave" is the same as our modern chromatic scale, with twelve semitones. Simpson ([1667] 1970) also notes, "music which moves much in semitones or half notes is commonly called chromatic music. And from hence it is that an octave is divided into 12 semitones" (51).[34] Clearly, by the mid-seventeenth century, even those who considered the chromatic genus to be defined by a melodic progression rather than by a different group of pitch-classes considered the use of consecutive semitones more important than the use of minor thirds in defining the genus.[35] In fact, it is interesting

[33] "[I]l Trihemituono, che gli Antichi dicevano essere incomposto, & particolare intervallo di questo genera; non sarà vero"

[34] Both Simpson and Galilei, who both recommend the division of the octave into 12 equal semitones, were fretted-instrument performers, which must have had some bearing on their conception of the construction of scales.

[35] Doni (1640), as noted above, defines the chromatic genus as containing an incomposite semiditone, and would thus seem to contradict this last statement. However, the purpose of his discourse was to

to note that these two mid-seventeenth-century authors do not even define the chromatic as a genus anymore, but as a scale that progresses by semitone. Already, the conception of the chromatic scale was changing, from the sixteenth-century scale made up of tetrachordal progressions of semitones and minor thirds to something closer to the modern chromatic scale.

Rameau, whose emphasis on harmony would lead one to expect a completely chordal description of the chromatic genus, actually adheres more to the relative than to the absolute conception of chromaticism. In the *Génération Harmonique* of 1737, his explanation of the origins of "this new genus of Harmony" (Hayes 1968, 174), as he calls it, centers on the successions of chords that can produce it. But the genus itself seems to reside exclusively in the use of the chromatic semitone. In speaking of the chromatic genus, he notes that it is "formed from the *interval* [emphasis mine] which is recognized as the difference between the major third and the minor third" (174); that is to say, the minor semitone is the difference between A-C-sharp and A-C. He begins his discussion of the genus by explaining how to produce the interval:

> Take a fundamental sound at the interval of a third from another; this third may be either major or minor, and either above or below the first sound. Imagine, with the new sound, a constantly perceptible harmony drawn from the harmonic proportion … you will find, at all times, among some of the harmonic sounds of these fundamental sounds, a new semi-tone, hitherto unknown (171).

He continues by saying that "this semitone … [is] called *Minor*, or *Chromatic*" (172). He explains that its primary use is to change modes. By this, he seems to mean that the chromatic semitone most often involves a raised rather than a lowered pitch, and that this raised pitch functions as a temporary leading tone. The

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explain the conception of the *ancients* and how badly understood it was by his contemporaries ("Quanto sia grande la diversità tra I Modi antichi, & i moderni" (8).

remainder of his discussion focuses on the means of tuning this semitone and the difficulty that musicians have in producing it. Thus, in the *Génération*, the chromatic genus lies in the presence of the chromatic semitone, even though the semitone is generated by the harmonic progression of root motion by thirds. But it is important to note that this conception stems from the more rigidly harmony-centered view of his later works. In the *Traité* (1722), he says, "Chromaticism occurs in melody when a melodic line proceeds by semitones, ascending or descending. This produces a marvelous effect in harmony" (Rameau [1722] 1971, 304). In his earlier writing, not only does the chromatic semitone define the genus, but it is responsible for creating chromatic harmony. The early Rameau, just like Vicentino, credits the interval, not the harmonic succession, with producing the change of genus; the different pitches and harmonies produced thereby are an effect, rather than a cause, of the presence of this interval.[36] This is the essence of the relative conception of chromaticism.

The "Absolute" Conception

If the relative conception of the chromatic genus in the sixteenth century was most clearly defined by the work of Vicentino, then the absolute conception is most clearly represented by that of Zarlino. Example 4 presents Zarlino's examples of the diatonic, chromatic, and enharmonic genera, which he gives as scales rather than as tetrachords.[37]

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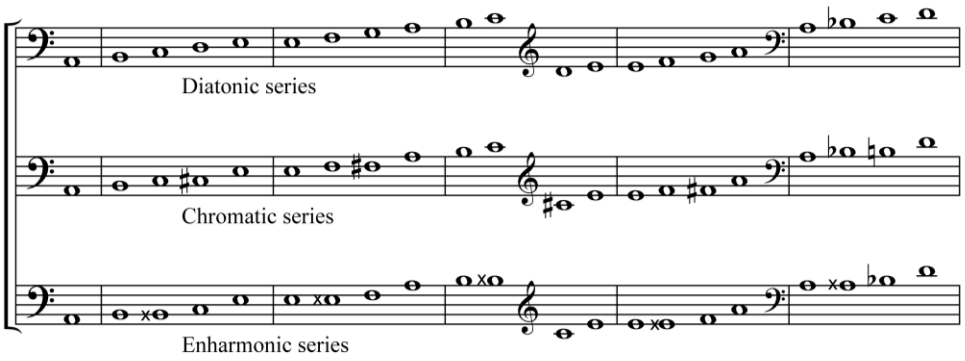
[36] Verba (1973) comes to the same conclusion. She notes that "the most important point to notice is that Rameau describes the chromatic melody as producing a result in harmony and not vice versa" (83).

[37] Zarlino uses the "x" symbol to represent the "enharmonic step or interval" (269), in the same way that Vicentino uses the dot to represent the minor enharmonic diesis. The last tetrachord in each of his scales is the synemmenon tetrachord, a substitute possibility for the third tetrachord that would proceed



Example 4. Zarlino's three genera.

To be sure, Zarlino does rely in part on Vicentino's relative conception of the chromatic genus;[38] he presents the three scales in order that the reader might compare their different intervallic progressions. Given that he presents the genera as scales, and given his general conservatism as a theorist, which would lead him to focus more on melodic than on harmonic successions, one can probably assume that, if asked, Zarlino would have said that the genera were primarily melodic progressions. But, unlike Vicentino, Zarlino focuses much of his discussion on the new pitch-classes produced by these progressions. He is not as firm as some of the other theorists discussed below in the absolute conception of the genus, but his writings most clearly illuminate both the conception itself and the main arguments in favor of it.

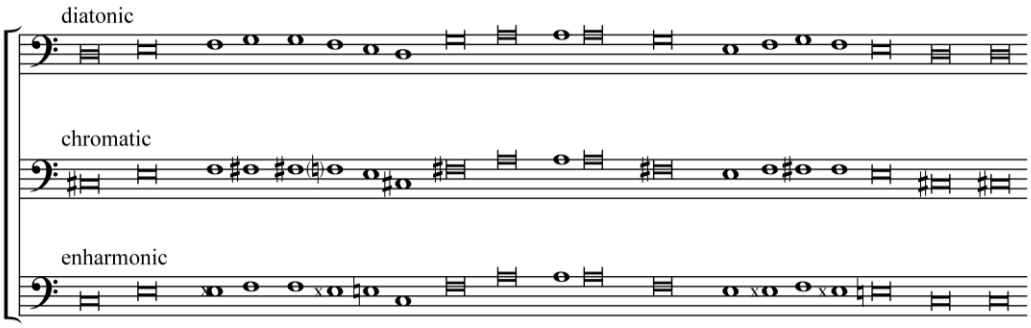
Several aspects of Zarlino's text and examples indicate that the new set of pitch classes arising from the use of a different intervallic succession were as important to his conception of the genus as the intervallic succession itself. First, he

conjunctly from the last note of the second (and would therefore create a whole step between itself and the fourth tetrachord).

[38] Vicentino, too, occasionally displays a conception of chromaticism closer to Zarlino's: he sometimes uses "chromatic" as a synonym for "notated with accidentals."

says that "we will be able to recognize the characteristic steps of the chromatic and distinguish them from those peculiar to the other genera, for the former are all marked with a #, whereas the common steps are not" (1558, 268). Here, he makes a distinction between the "common steps," which are tones common to all three genera, and the "characteristic steps," which are only in the genus in question. F-sharp and C-sharp, he is saying, are the only characteristic steps of the chromatic genus, because they are the ones not found in either of the other two genera. Incidentally, Zarlino uses "step" (*chorde* [sic], literally, "string") to mean a discrete tone—as in "scale step"—rather than a linear interval; otherwise it would not make sense for him to speak of a "step" being marked with a sharp sign.[39]

Zarlino's most interesting example deals with a tenor that he "transposes" from the diatonic genus to the chromatic and enharmonic genera in order to show that a chromatic or enharmonic tenor would be impossible as the basis for a polyphonic composition. Example 5a presents the tenor in question.



Example 5a. Zarlino's example of a single tenor in all three genera.

[39] In translating *chorde* as "step," I am following the translation of Guy Marco and Claude Palisca.

The top system gives the original, diatonic form of the chant, the middle system gives Zarlino's chromatic form,[40] and the bottom system gives his enharmonic form. Now, from Vicentino's examples, we can infer that had *he* intended to write this tenor in the chromatic genus, he would have started on D but substituted semitones where the original had whole tones, and minor thirds where the original had semitones. But Zarlino's procedure instead appears to consist of substituting the pitches that are only found in the chromatic genus for those that were only found in the diatonic genus, that is, substituting the characteristic steps of the new genus for the characteristic steps of the old genus. The notes D and G appear in the diatonic scale but not in the chromatic; therefore, for every D in the original, we find C-sharp in the chromatic version, and for every G in the original, we find F-sharp in the chromatic version. The problem with such a chromatic tenor, Zarlino says, is that "unless we depart from the chromatic steps contained in the second series shown above and use some of the steps peculiar to the other genera, we cannot have the perfect harmonic accompaniment required for a perfect composition" (270-1). In other words, the chromatic genus by itself does not contain the *pitch-classes* required to create viable counterpoint using this tenor (Galilei would later make the same point). To give but one example, one would need to add D, a note peculiar to the diatonic genus, between the final E and C-sharp of the chromatic tenor to create even the possibility of a cadence as Zarlino formulates it.[41]

[40] Marco and Palisca translate Zarlino's term for transforming this tenor as "transpose": "If we wish to transpose this tenor into chromatic steps…" (270). However, Zarlino's actual term is *ridurre*, to "reduce" ("Ma se lo vorremo ridurre nelle chorde Chromatiche…"), which has a somewhat different meaning. In any case, one should not confuse Marco and Palisca's use of "transpose" with the modern sense of the term.

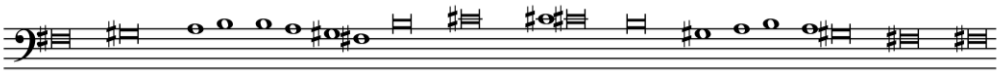
[41] One could also add a D-sharp, but this tone does not exist in any of Zarlino's genera.

However, there is another way of analyzing Zarlino's method of transposition: using a technique more in line with the relative than the absolute conception of chromaticism, Zarlino substitutes not the pitch classes that are specific to the new genus, but rather the equivalent number of scale steps. Thus, he calculates the number of scale steps contained in each interval of his diatonic tenor, resulting in a string of intervals that begins 1, 1, 1, 0, -1, -1, -1, 3, etc. He then maps this interval string onto his chromatic scale, resulting in the chromatic tenor of the second system.[42] Now, this procedure of mapping intervals actually produces the same result as substituting notes from one genus for those of the other. Whether he followed this more "relative" procedure or the more "absolute" one outlined in the previous paragraph, he would end up with the same "transposition." The third system, which gives his transposition of the tenor into the enharmonic genus, clarifies matters a bit. Specifically, the third tone of the tenor provides clarification: in the chromatic transposition, the third tone is still F, since it appears in the both the chromatic and diatonic scales. This is in contrast with the fourth tone, which has changed from G, a tone that only appears in the diatonic scale, to F-sharp, a tone that only appears in the chromatic. In the enharmonic transposition, then, one would still expect the third tone to be F: it is an available tone in Zarlino's enharmonic scale. Instead, he has substituted E-diesis for F, since it is one scale step above the previous tone, E. Likewise, the fourth tone of the tenor has now become F, since it is a step above E-diesis. This strongly suggests that Zarlino conceived of his transpositions as a mapping of intervals, which in turn

[42] I am greatly indebted to Prof. William Rothstein, who suggested this approach to Zarlino's example.

suggests that the progression of intervals was important to his conception of the genera.[43]

This is not the end of the story. A strong argument can still be made that Zarlino was substituting for the original diatonic tones the tones that appear in the equivalent position in the chromatic and enharmonic scales. The "absolute" explanation would provide a simple explanation for the fact that his chromatic tenor begins on C-sharp and his enharmonic on C, while the diatonic began on D: as with the other tones, he simply substituted C-sharp and C for the original diatonic D. On the other hand, the more "relative" explanation presented in the previous paragraph could also account for the different beginnings: in all the three tenors, only the tones E, A, and B remain fixed, presumably because, by Greek definition, those tones are required to tune the octaves fifths, fourths and whole tones that delimit the tetrachords of the genera. The chromatic and enharmonic tenors, like the diatonic, therefore start a single step below E—on C-sharp and C respectively. In any case, his conception was by no means exclusively "absolute," otherwise, he could simply have transposed the tenor (in the modern sense) up by a major third to produce the tenor shown in example 5b.



Example 5b. The same tenor, transposed up a major third.

[43] This model also explains the whole step from F-sharp to E, eight tones from the end of the chromatic tenor, which by the strictest definition should only appear in the diatonic genus: just as the original progressed two scale steps, from G to E, the chromatic version progresses two scale steps from F-sharp to E.

According to the strictest absolute conception of chromaticism, this tenor should now be chromatic, since it uses F-sharp, C-sharp, and G-sharp. Zarlino's conception is clearly subtler than that. We will never know for sure how closely Zarlino's conception of the genera adhered to either the relative or the absolute; this example shows that he had elements of both conceptions.

Later on in his discussion, however, Zarlino all but explicitly states that he considers the genera as different sets of tones, rather than different melodic progressions. Discussing the possibility of combining the genera, he notes that "by combining [the chromatic and enharmonic] steps with the diatonic steps we can use the perfect harmonies and at the same time obtain with the steps of these genera many imperfect consonances, major or minor, at many points in the diatonic scale where they are not ordinarily available" (278). For example, a C-sharp can create a major sixth above E, which is not possible using only the tones of Zarlino's diatonic genus. This statement makes much more sense in the context of an absolute conception of the genus than in a relative conception. "With the steps of these genera," he continues, "we can moreover transpose modes into higher or lower registers. Such transpositions are very necessary to chapel organists, who must at times move a mode from one register to another according to the voices available" (278). Here he is using "transpose" in the sense in which we use it today, and explaining that one often needs the black keys, which are exclusive to the chromatic genus, in order to transpose a melody. Again, this assertion makes much more sense in light of an absolute conception of the chromatic genus.

Perhaps most tellingly, Zarlino continues his discussion of using the chromatic notes to transpose by stating, "although these steps are used on such occasions, it does not follow that they are other than diatonically treated" (278-9). This indicates that he feels one can use the chromatic pitches within the melodic progressions of the diatonic genus, as he suggests again later:

> If at times we come across a piece entirely free of these signs [the natural, sharp, and flat signs], we may say truthfully that its progressions are exclusively diatonic. But of a piece that includes such signs as *b* and #, we would say that its progressions are chromatic mixed with diatonic … The mode is in any case transposed upward or downward *out of its natural steps in the diatonic genus* [emphasis mine], and the composition is then said to be sung in *musica ficta* (279).

From the preceding, we can infer two important aspects of Zarlino's conception. First, he considers tones marked with sharp and flat signs to be the defining feature of the chromatic genus, since in their absence the music is "exclusively diatonic." Second, he considers pitches created by *musica ficta* to be chromatic as well, since they come into being when music is transposed out of the diatonic genus. Both of these viewpoints can proceed only from the absolute conception of chromaticism.

Incidentally, Zarlino also disposes of the idea that the minor third automatically defines the chromatic genus. The minor and major thirds, he says, are found in the diatonic genus and are freely used as composite intervals:

> I say that the passage from one genus to another cannot be said to take place when composite intervals that are elements in another genus are used. But when the simple proper intervals peculiar to one genus and not found as simple or composite in another are introduced, this can be understood as a change of genus. It is not valid to say … : In this piece the intervals of ditone and semiditone are found in succession; therefore it is chromatic or enharmonic. However it is valid to say: This piece proceeds by small

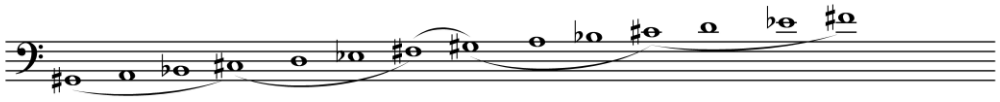
> semitone; therefore it is chromatic, or: This piece proceeds by diesis, therefore it is enharmonic. (274)

This paragraph may seem to adhere more to the relative than to the absolute conception of chromaticism; however, it is actually in keeping with the rest of Zarlino's assertions. After all, a melody that proceeds by small semitone will naturally produce a tone marked with a sharp or flat sign; Zarlino simply considers the latter at least as important as the former in defining the genus. Finally, he points out that music must by necessity use intervals larger than those found only in the defining tetrachord of its genus. It would not make any sense in the diatonic genus, for example, to proceed only by whole tones and major semitones: "This would be analogous to having to proceed in speaking from whatever letter of the alphabet one began through the rest of the alphabet in that order, omitting none. How could we express ideas that way?" (275).

Zarlino had the most detailed and complex conception of any of the "absolute" theorists in the sixteenth century, but he was by no means the only one. Bottrigari ([1594] 1962) shows in two ways that he, too, adhered to the absolute conception. First, he says that the "black-key" notes are definitely not a part of the diatonic genus: "Modern composers and players believe that the raised tones are of the diatonic genus; however, they are not … and it has therefore no black key except the b fa." Instead, he says, "the raised tones *are of the chromatic genus* [emphasis mine]," except G-sharp, "which has been brought in as the major tenth with E la mi and for the minor [tenth] with b mi, and because it can serve for the fifth with raised C fa ut [C-sharp]; in sum, the raised G sol re ut is not, nor can it be, in any way part of the chromatic genus because it never had in its system this string … only the

natural, unless one then proceeds by *musica finta*"[44] (30). Bottrigari is careful to emphasize that his chromatic scale, which is the same as Zarlino's without the initial low A (see example 4), does not produce G-sharp.

His adherence to the absolute conception of the chromatic genus is therefore stricter than Zarlino's; he defines it not as the use of any of the "black keys" but only those produced by his chromatic scale. Later, he demonstrates how G-sharp and other chromatic tones not present in his original chromatic scale can be produced by transposing it down by minor third. As an example of such a transposition, he gives the scale presented in example 6.



Example 6. Bottrigari's transposed chromatic scale.

This scale directly contradicts his description of the chromatic tetrachord (see p. 15 above): it does not contain a single notated chromatic semitone.[45] Each tetrachord instead comprises two major semitones and an augmented second. In addition to his original chromatic pitches F-sharp and C-sharp, his transposed scale produces two more *ficta* chromatic pitches, G-sharp and E-flat, which are, for him, somehow even less "real" than the others.[46] From this example, it is clear that a strict adherence to the melodic progression mattered little to Bottrigari; his chromatic genus was useful because of the new pitches it produced.

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[44] I.e., *musica ficta*

[45] This lack of notated chromatic semitones is all the more surprising since Bottrigari is careful to give the different whole-number ratios for the diatonic and chromatic semitones. The proportions that he gives for the chromatic tetrachord (see p. 15 above) are no longer valid for this transposed version of the chromatic scale.

[46] Recall that B-flat was already a diatonic pitch.

Morley ([1597] 1973) also obliquely reveals an absolute conception of the chromatic genus, when he says, "All of the chromatica may be expressed upon our common virginal except this [he gives the step G-A-flat]. For if you think that the sharp in G sol re ut would serve that turn, by experiment you shall find that it is more than half a quarter-note too low." This statement does not explicitly deal with the chromatic genus; Morley is saying that G-A-flat is not on the keyboard and that, for reasons of intonation, G-G# cannot substitute for it. But what is telling is his use of the term "chromatica" to describe the *diatonic* semitone G-A-flat. Even if, for Morley, the chromatic genus resided in the semitone, it was not exclusively in the chromatic semitone: the genus comprised any semitone that produced a black-key pitch, and therefore implicitly resided somewhat in the black-key pitches themselves. Burmeister, although he defines the chromatic genus strictly in the relative sense, also recognized that certain characteristic pitches arose from use of the chromatic tetrachord. In his tables of triads, he provides an example of triads whose roots are "taken from the chromatic genus of melody" (1606, 63), and shows triads built on E-flat, A-flat, C-sharp, F-sharp, and G-sharp. Doni (1640), like Zarlino, discusses the utility of the chromatic genus for transposition. It is possible, he says, with "the two chromatic steps [*corde*] F#, C# … to hear the same sonata one tone higher than its natural one" (10).[47] This statement, like many of Zarlino's, makes sense only in the context of an absolute conception. Finally, Werckmeister ([1707] 1970) gives an example of the scales of the "Chromatic system" (*Chromatische Systema*); they are the C-sharp major scale and the D-flat dorian scale. These scales obviously only use

[47] "Si può ben anche con l'aiuto delle due corde Cromatiche #F, #C … sentire l'istessa sonata un Tuono più acuta del suo naturale."

whole steps and half steps; what made them chromatic for Werckmeister was that each note had a sharp or a flat affixed to it.

Other Conceptions

Certain theorists, whether they use a conception approaching the relative or the absolute, had a completely different idea of what the chromatic genus comprised. Mersenne ([1627] 2003) uses a conception similar to the absolute, but his scales are unlike those of any of the other theorists under consideration. Example 7 presents his table of the diatonic, chromatic, and enharmonic scales. The table divides into three sections, diatonic, chromatic, and enharmonic, as labeled at the top. Within each section, the letter names of the notes that make up the scale are in the leftmost column. The unusual symbol in the middle of the scale (next to number 96 in the diatonic column) is Mersenne's symbol for B-natural; he also uses the lowercase "b" as a flat symbol and the double-x as a sharp. The second column gives the whole-number ratios that produce each tone, as well as the interval between the tones, and the third column for the chromatic and enharmonic genera gives simplified versions of the same ratios "in order to appease those who like little numbers" (256).[48]

[48] "…afin de soulager ceux qui aiment les petits nombres."

TABLE DES TROIS GENRES

Diatonic		*Chromatic*			*Enharmonic*		
e	71	e	1440	144	e	28800	288
			demy-min.				
		b	1500	150	b	30000	300
	ton min.		demy-ton			Diese	
			majeur		X	3720	372
						demy ton mineur	
d	80	d	1600	160	d	32000	320
	comma						
d	81	d	1620	162	d	32400	324
	ton min		de. ton maj.			demy ton mineur	
					b	33750	337 1/2
						Diese	
		X	1728	172 4/3	X	34560	342 7/8
			demy ton mi.				
c	90	c	1800	180	c	36000	360
						Diese	
	demy-ton				X	36864	368 16/25
	majeur					demy ton mineur	
甘	96	甘	1920	192	甘	38400	384
	ton majeur		demit. min.				
		b	2000	200	b	40000	400
			comma				
		b	2025	203 1/8	b	45000	Diese 450
			demy-ton		Diese X	comma mineur	
			majeur		X	40960	Diese 409 3/5
						comma	
						41472	414 18/25
						demy ton mineur	
a	108	a	2160	216	a	43200	432
	ton min.					demy ton mineur	
					b	45000	450
			demi-ton ma.			Diese	
		X	2304	230 2/5	X	46080	460 4/5
			demi ton mi.				
G	120	G	2400	240	G	48000	480
			demy-ton			demy ton mineur	
			majeur		b	50000	Diese 500
						comma	
	ton majeur				b	50625	Diese 506 1/4
					Diese X	comma mineur	
		X	2560	256	Diese X	51200	512
			comma	259 1/3			
		X	2592			51840	518 2/5
			demit. min				
F	135	F	2700	270	F	54000	540
	demy-ton					Diese	
	majeur				X	55296	522 24/45
						Demy ton min.	
E	144		2880	288	E	57600	576

Example 7. Mersenne's table of the diatonic, chromatic, and enharmonic genera.

Several aspects of Mersenne's conception are unusual. First, his diatonic scale (he mentions nothing about tetrachords) consists of eight notes to the octave, which is E-E with two forms of the note D, "otherwise one would not be able to find the minor Third from [b-natural] to d, and if it was found there, as it must be, it would not be found at all from d to f" (256).[49] His conception approaches the absolute conception when he speaks of the chromatic genus adding notes to the diatonic, but unlike anyone else, he describes it as adding "seven tones … because it [the chromatic genus] has sixteen tones in its octave." The added tones, as shown in the table, are two forms of F-sharp (one a minor semitone higher than F and the other a comma higher than that), G-sharp, two forms of B-flat (one a minor semitone lower than B and the other a comma lower than that), C-sharp, and E-flat. Mersenne is also the only author I encountered to speak of the *minor comma* (it appears twice in the enharmonic column), which, he explains, is "the interval that remains from the Diesis, after the comma has been removed" (256).[50] The enharmonic genus adds nine new tones to the chromatic genus, for a complete enharmonic scale of 25 tones, all of which he carefully derives according to ratios. He is the first theorist to speak of the enharmonic scale as containing all of the tones of the other two genera, plus the new enharmonic tones. Later, his compatriot Sauveur would echo this idea, creating a *Systême composée* that filled in the tetrachord with all the steps of each genus (1707, 30). Like Mersenne, whom he credits, Sauveur is primarily concerned with the acoustical derivation of the intervals that produce the genera; he also provides a

[49] " … autrefois on ne pourroit pas trouver la Tierce mineure de b à d, si elle s'y trouvoit, comme elle doit, elle ne se renceontreroit point de d à f."
[50] "…j'appelle l'intervale qui reste de la Diese, apres que le Comma en a esté osté, *Comma mineur*."

lengthy ethnomusicological discourse on different types of scales from around the world.

While many different authors weighed in on the affect created by the chromatic genus, two authors insist that the affect should be one of its defining features. Zarlino ([1558] 1968) says that "the change from one genus to another is also accompanied by a change in melodic style," not just by the use of certain intervals. If two compositions use the same style and the same affect, he reasons, they are going to sound as though they use the same genus. "Therefore," he says, "I say that there cannot be a difference in genus between compositions that do not sound different in melodic idiom … Conversely, a difference of genus may be assumed when a notable divergence in melodic style is heard, with rhythm and words suitably accommodated to it" (277). Banchieri ([1614] 1968) declines to discuss anything about the origin or structure of the chromatic genus; he refers the interested reader to Vicentino, Lusitano, and Artusi. Instead, he explains that

> Among modern singers (almost universally) the Fourth Tone, Plagal, [in its] natural [position], or the First Tone [taken] one step higher [by use of] accidentals, with cadences which are unusual or avoided, with dissonances and descending leaps of a sixth made minor by accidentals, or ascending [leaps of a sixth] made major by accidentals, and likewise with natural and accidental tones in succession one after the other, and other harsh and rough excesses—through a misuse converted into common usage—these have come to be called the chromatic style (403).

Banchieri is the only author I have examined who associates the chromatic genus with a specific mode. But even more remarkable are his use of the term "chromatic style" and his thoughtful enumeration of the various types of "harsh and rough excesses" therein. His formulation serves as an important reminder to any

theorist trying to describe a certain compositional phenomenon not to overlook stylistic features in favor of purely structural ones.[51]

Mixing of the Genera

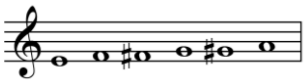
One question to which many authors devoted considerable energy was whether the genera could be mixed. This question probably arose in reaction to the observation of two compositional phenomena: first, the most common "chromatic" progression, especially from the early seventeenth century onward, was what modern musicians call the chromatic fourth or chromatic tetrachord (that is, filling in the diatessaron with five semitones); this progression, however, did not fit with the theorists' formulations of the chromatic genus. Second, from the middle of the sixteenth century, composers were inserting the progression of two consecutive semitones, and consequently the "black-key" pitches, into works that were otherwise completely diatonic. Theorists accounted for these phenomena as mixtures of the genera, and were of varying opinions as to whether such mixtures were appropriate.

The first issue, especially for the musicians associated with the Florentine Camerata, was whether the genera had been mixed in classical antiquity; presumably, if they had been, it would lend some credibility to mixing the genera in their own music. Mei ([1572] 1968) writes to Galilei that the ancient Greeks performed the chromatic and enharmonic genera by themselves, since the chromatic and enharmonic genera only work "in plainchant and not in counterpoint" (68), and in any case, ancient Greek music was exclusively monophonic. Galilei (1581) in turn says that only Ptolemy mixed the genera, but, he says, "Ptolemy's mixtures have nothing in the

[51] For more on this topic, see the discussion of Monteverdi's *Zeffiro, torna* in chapter 4.

world to do with today's mixtures" (265): each tetrachord in Ptolemy's scale was from a different genus. He concludes that it is a "very great error to believe that the ancients used the shades of the genres only in mixtures." Rather, "the opposite is true, that they used each of them simply and in pure form" (266). Nevertheless, as we have seen, Galilei feels that in modern practice the genera must be mixed, because the chromatic and enharmonic genera by themselves do not contain enough of the perfect consonances required for a viable composition.

A few theorists recommend against mixing the genera, including Vicentino, who does not disapprove of mixing them but feels that it is not necessary, an attitude we can infer from his attempt to present a "completely chromatic" composition. Morley ([1597] 1973) is more disparaging of the practice, saying "likewise, by that which is said, it appears that this point which our organists use



is not right chromaticum but a bastard point patched up of half chromatic and half diatonic" (103). Artusi ([1600] 1968) warns against the effects of using the genera simultaneously; he observes that music that has several different characters, tempi, and contrasts of register and dynamics will be confusing to the listener. "Play and sing diatonically," he suggests, "and touch on certain things from the other genera, not mixing them too much, so that the senses can discern and recognize them" (14).[52] Doni (1640), as before (see footnote 35), discusses the mixture of genera in the context of the great difference between the ancients and the moderns. He does not

[52] "Sonavano e Cantavano Diatonicamente; & se bene toccavano qualche cosa di altro genere, non era talmente mista, che il senso non la potesse discernere, e conoscere."

mind the mixing of genera, but feels that pieces that mix the chromatic with the diatonic should not be called chromatic. He says that "today we do not find true chromatic compositions (nor true enharmonic ones) … only those that use mixture; like the highly artificial Madrigal of the Prince [i.e., Gesualdo] *Resta di darmi noia* & Arianna's lament of Monteverdi" (16).[53] Werckmeister ([1697] 1970) is the most vehemently opposed to mixing the genera, for reasons of tuning. He says, "the Syntonic [i.e., diatonic] scale was not created in order to be mixed with the other scales, like the chromatic and enharmonic," and that doing so creates "a pile of semitones." "No," he continues, "this was tried long ago and found to be vile, as one can read in Zarlino's supplement."[54]

Many theorists accept without judgment the mixing of the genera. Simpson ([1667] 1970) observes that the chromatic genus is "so frequently mixed with the diatonic scale that the b flat and # sharp signs which formerly belonged to B only have now got the names of the chromatic signs by their frequent application to notes in all places of the scale" (51). Holder ([1694] 1967) and Printz (1696) also mention the mixture of the genera more as a simple fact than as a prescription or proscription. Holder speaks of the "intermixing [of] the *Chromatic* and other *Hemitones*, as they are usually placed in the Keys of an Organ" (155), and also provides a method of tuning the 12-note chromatic scale, which he calls the "*Hemitonic*" scale in a clever way of distinguishing it from the chromatic scale given by Vicentino, Zarlino, and

[53] "[H]oggi non si trovano compositioni Cromatiche vere (non che Enarmoniche) … che ne hanno qualche mistura; come quell'artifiosissimo Madrigale del Principe *Resta di darmi noia* & il lamento d'Arianna del Monteverdi." It is not clear whether Doni uses "artificial" in a positive or negative sense.
[54] "So ist die Scala Syntona auch nicht deswegen erfunden / daß / wann sie mit der andern Scalis / als Chromatica / und Enharmonica würde zusammen gesetzt, man einen hauffen Subsemitonia wolte zusammen bringen / nein / dieses ist auch schon langt versuchet/ und verworffen/ wie in des Zarlini Supplementis zu lesen."

other earlier theorists. Printz mentions several different ways of mixing the genera, which he names, including the genus "diatonico-chromaticum," which consists of all the white notes from B to A plus F-sharp and C-sharp, the genus "syntono-chromaticum," which uses the same letter names but is tuned differently, and the genus "diatonico-chromatico-enharmonicum," which adds to the diatonico-chromaticum the notes B and E raised by a diesis.

Finally, several authors approve of and even recommend mixing the genera. As we have seen, Zarlino is one of these; he says, "the genus used as a whole does not have a good effect, but in its parts it does" (1558, 279). Bottrigari ([1594] 1962) agrees, crediting a certain Didymus with "broadening" the diatonic genus "to enable one to have the consonance of the semiditone and of the ditone and of the major hexachord and the minor, as they exist in the syntonic diatonic in their true forms" (34).[55] Later Italian theorists feel that the mixing of the genera is an absolute necessity. Zacconi ([1622] 1967) says that all composition would be "[very] little pleasant" (*poco grate*), without the chromatic genus, which makes it "sweet and gentle" (*soavissime*) and "very pleasant" (*gratissime*) (34). Bontempi ([1695] 1976) agrees, quoting a certain Vanneo,[56] who asserts that "without the major semitone, peculiar to the chromatic genus, one cannot form any counterpoint" (106).[57] All of

[55] Bottrigari seems to be saying something similar to what Zarlino and others said; that the mixture of the chromatic and diatonic genera allows for major and minor thirds to be built on more tones than are possible using the diatonic genus alone.

[56] The "Vanneo" in question is most likely Stefano Vanneo, author of *Recanetum de musica aurea* (1533).

[57] "[S]enza l'hemituono maggiore, peculiare del Genere Chromatico, non si puo dar forma ai Contrapunti." This seems confusing: Bontempi/Vanneo is the only author to claim that the *major* semitone is peculiar to the chromatic genus. However, theorists' labels for the two types of semitone had always been inconsistent. The diatonic semitone, for example, was minor in Pythagorean tuning, but major in just intonation. My thanks to Ruth DeFord for her help in deciphering Bontempi's difficult passage.

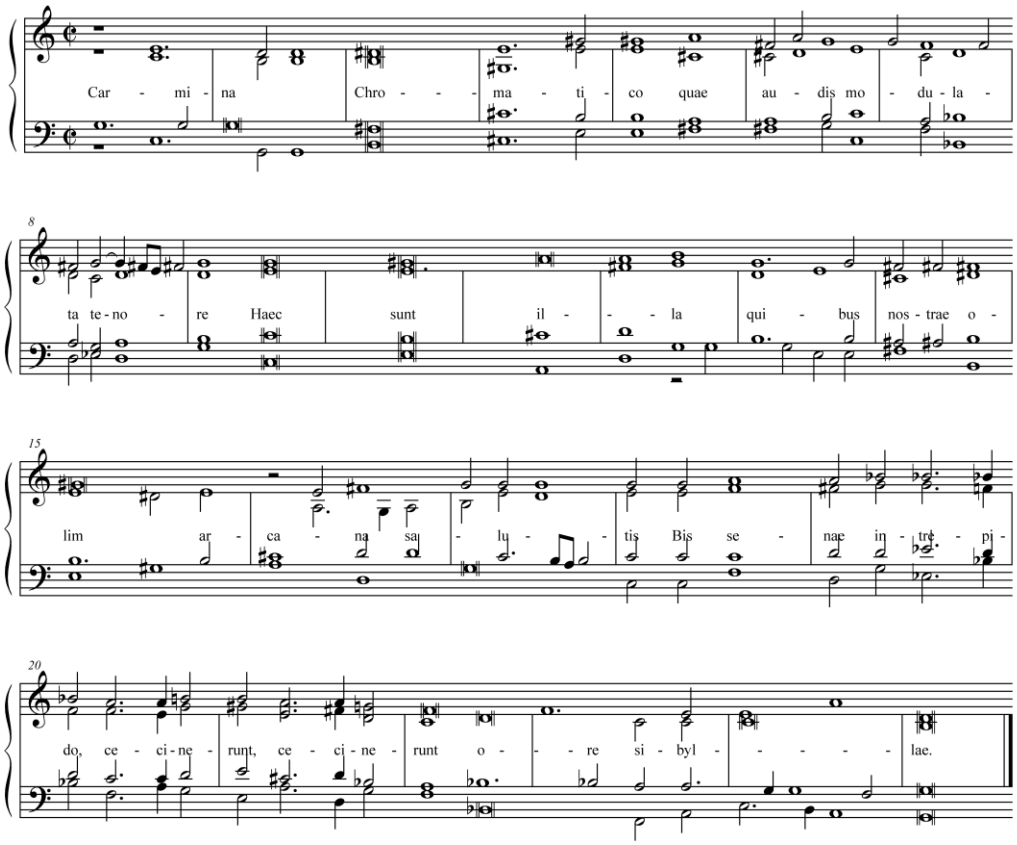
these authors seem to value the mixing of the genera as a compositional resource, an opinion that would be shared by Rameau ([1737] 1966), who is very enthusiastic about it. He notes that "the Enharmonic genus can be mixed with the Diatonic and the Chromatic" (154),[58] and that he has had a chance to use the "Diatonic Enharmonic" genus in the second *Trio des Parques* from *Hippolyte et Aricie*, although he had to change the original version for performance since the singers could not manage it, and "that which can have the most beauty in the most perfect execution becomes insupportable when this execution is lacking" (154).[59] He hopes to have occasion to use the "Chromatic Enharmonic," at least, he says, in a symphony, but one must have very sweet and patient (*dociles*) musicians for this.

The concept of mixing the genera may seem to be quite simple and not lead to any great theoretical revelations. But the fact that so many authors feel it necessary to discuss the issue points to the fact that composers were using chromaticism in ways that theorists could not explain using only their formulations of the chromatic genus, and that an expanded conception of chromaticism was necessary to account for all of the music that composers conceived of or labeled as chromatic.

[58] "Ce genre Enharmonique peut se mêler avec le Diatonique, & le Chromatique"
[59] "[C]e qui peut être de la plus grande beauté dans la plus parfaite exécution, devennant insupportable quand cette exécution manque."

Chapter Two: A Survey of Modern Theories of Early Chromaticism

Theories of chromaticism from the twentieth and twenty-first centuries can also be divided into two categories. Borrowing terminology from Thomas Christensen, we can label these the *presentist* and the *historicist* positions. Christensen defines these types of musicologists as follows: The "presentist…interprets music from the past using contemporary analytical tools and modes of classification" (1993, 11), whereas the "historicist rejects every form of presentism in historical inquiry, whether it be the introduction of contemporary standards of rationality or the superimposition of structuralist models and idealist historical forces" (19). In the context of chromaticism from this period, the presentist attempts to understand chromatic repertoire using concepts and tools from major/minor tonality, or even from atonality, and the historicist uses only those concepts available to theorists contemporaneous with the music under discussion (or earlier theorists). Each approach has its advantages, as we shall see. I will discuss the most significant theorists from each school of thought, first summarizing the approach of each one, then offering my own critique of his or her method. Since nearly all of the presentist analyses of Renaissance chromaticism, and most of the historicist analyses, focus on a single part of a single work, the Prologue from Orlando di Lasso's *Prophetiae Sibyllarum*, I present the Prologue in its entirety as example 8. I will begin by discussing presentist analyses, then move on to historicism.



Example 8. Orlando di Lasso, Prologue from *Prophetiae Sibyllarum* (1560a).

The Presentist Approach

Anyone studying chromaticism must do so in the context of diatonicism, using the latter as a framework for understanding the former.[60] The presentist, studying pre-tonal chromaticism, uses major/minor tonality as the model of diatonicism, and bases his or her conception of chromaticism on this model, using tools borrowed from the analysis of tonal music in his or her analyses of earlier music.

Edward Lowinsky perhaps argues the case for presentism the most eloquently:

[60] In this dissertation, I have limited my theoretical survey to theories of chromaticism, whether from earlier centuries or our own. The only discussion of theories of early diatonicism in the present work is that of Dahlhaus and Chafe on tonal systems; see the beginning of chapter 4.

> I have never heard that art historians insist that analysis of sixteenth-century paintings be done in contemporaneous terminology. And what would Shakespeare scholars say if they were told that any psychological analysis of the Bard's characters must be done in terms of sixteenth-century psychology? This whole idea seems confined to musicology alone. It is time we join our confreres in neighboring fields and enjoy the expanded horizons and the illumination that centuries of thought and experience have opened to our understanding of the music of the past (1989, 605).

Many presentist analyses contain appealing features. Most theorists would find nothing wrong in principle with applying modern terminology to music for which it was not designed, when such terminology is used simply for the purpose of descriptive labeling. In the repertoire at hand, a sonority containing only the pitch classes C, E, and G could be labeled a "C-major triad" simply for the sake of convenience, although the label comes from tonal rather than pre-tonal music. Likewise, the invention of *new* theoretical constructs to describe earlier music is rarely invalid, so long as those constructs are drawn from the music under consideration. (Klaus K. Hübler's analysis of Lasso's Prologue, which I will discuss in chapter 4, does exactly that.) These new constructs are inappropriate only when they are taken from another repertoire with which the music under consideration has little in common; presentism itself is inappropriate only when it applies anachronistic concepts to a given piece of music, then uses those concepts to draw pseudo-objective conclusions about that piece.

Lowinsky's own analyses present a fresh approach to the repertoire, with a liberal use of modern concepts and terminology. In his discussion of Lasso's Prologue, he says the following:

> In the first nine bars of the prologue to the prophecies Lasso uses all twelve tones; he builds triads on ten different degrees, six of which result in

> harmonies foreign to the mode—if we take the mode as Mixolydian since the piece ends on G. Lasso strays as far as B-flat major and C minor in one direction, and B major in the other. This phrase, although beginning on a C major and ending on a G major chord, has no stable frame of tonal reference. Through the excessive modulation within so small a space we lose all orientation (1961, 39).

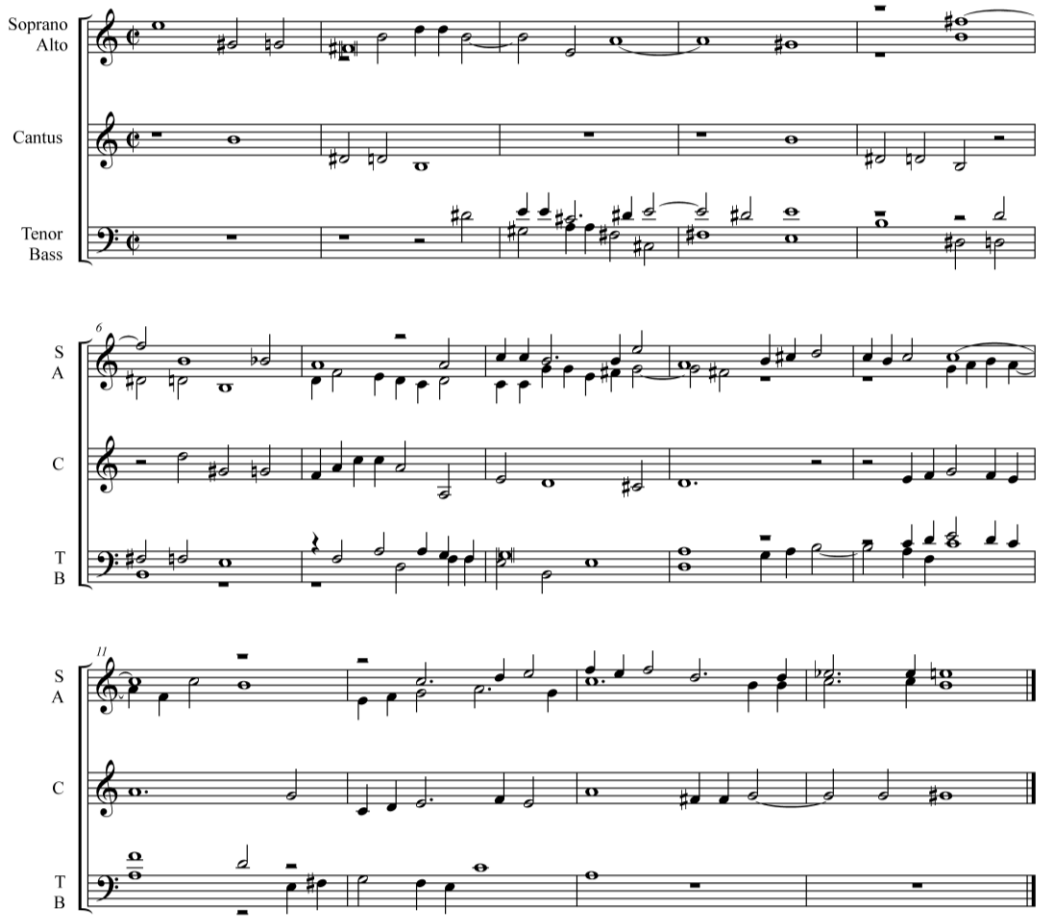
This paragraph is a characteristic example of a presentist approach. Lowinsky begins by mentioning that Lasso uses "all twelve tones"; however, as we have seen, sixteenth-century musicians were not in agreement that as many or as few as twelve tones existed, or even that the number of available tones was fixed. Next, Lowinsky's phrase "harmonies foreign to the mode" and his statement that the mode is Mixolydian "since the *piece* ends on G" indicate that he conceives of "mode" as equivalent to "key," as comprising not just a scale but also a set of harmonies built on tones from that scale. This conception of mode does not correspond to the way mode was conceived in Lasso's day.[61] Had he used a single voice to determine the mode—say, by claiming that the mode was Mixolydian since the bass, or better yet the tenor, ended on G—his reading might have been consistent with how a sixteenth-century theorist would have determined the mode of the piece. But even so, not all sixteenth-century theorists even agreed on how, if at all, the concept of mode was applicable to polyphonic music. Lowinsky's use of the term "modulation" is also inappropriate, since pre-tonal music does not modulate in the same sense that tonal music does, and even if it did, the changes of harmony in the first nine bars of the Prologue are hardly modulations in the tonal sense. Finally, his statement that the piece "has no stable frame of tonal reference" indicates that he approaches this repertoire in the same way

[61] See the discussion of mode and tonal system in chapter 4. The topic of mode is far too vast to be dealt with completely in the present work; however, Powers (1992) and (1998) provide excellent discussions of both contemporary and historical issues surrounding modes.

as he would approach a piece of tonal music, by looking for aspects of the music that contribute to an overall sense of tonal unity. It is not clear that this is the most appropriate approach to sixteenth-century music, whether chromatic or diatonic.

Lowinsky describes Lasso's technique as "triadic atonality" (39), and essentially claims that it is impossible to analyze: "The abruptness of ending, the lack of an orderly cadential confirmation, the lack of reference between the two extremes of modulation … all deprive the ending of any feeling of finality and leave the tonality intentionally acentric" (42). This is, from a theorist's point of view, the most problematic aspect of his approach to the Prologue. First, his phrase "triadic *atonality*" implies that he would consider non-chromatic Renaissance music to be in some way tonal, an idea held by some theorists that has also been heavily revised in recent years. But more importantly, Lowinsky does not present an analysis, in the traditional sense, at all. If Lasso's work contains a structure deeper than the surface would suggest—as I believe it does—then Lowinsky's statements do not in any way help the reader to arrive at that structure.

In his discussion of Gesualdo's madrigal *Languisce al fin* (1611e), the first 14 bars of which are presented as example 9, Lowinsky shows a more dangerous side of presentism. He claims that Gesualdo uses a "harmonic art based on the widespread elimination of the cadence as an organizing principle … not a single authentic cadence appears in the work." (1961, 43). This statement is true if one adheres to twentieth-century definitions of authentic cadence, a term which did not even exist in the sixteenth century. But Lowinsky's claim is hardly true given the standard definition of "cadence" given by Zarlino and others.

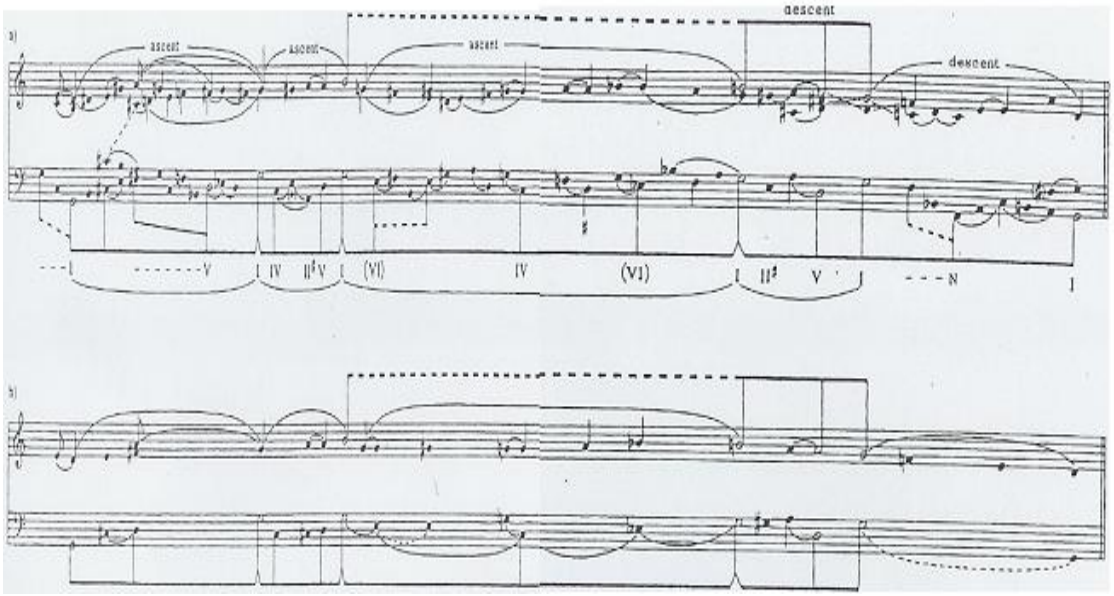


Example 9. Gesualdo, *Languisce al fin* (1611e), mm. 1-14.

In the sixteenth century, and much of the seventeenth, a cadence comprised any motion from an imperfect to a perfect consonance, where one voice moved by semitone. Using this conception, there are two perfect cadences in the first 14 bars alone: example 9 contains perfect cadences in m. 4 between tenor and bass and in mm. 8-9 between tenor and bass. If we include other types of cadences, then m. 9 also contains what Zarlino would call an evaded cadence: the alto suspension to F-sharp sets up the expectation of a cadence to G, which is evaded by the rests in all parts but

soprano and bass.[62] Lowinsky's reading therefore illustrates some of the dangers inherent in presentist analyses: it makes an incorrect judgment about the structure of the work based on an anachronistic theoretical concept, and, in doing so, misrepresents the music, potentially leading the modern reader to a faulty hearing of the work.

In a strikingly different theoretical vein, William Mitchell (1970) published a Schenkerian voice-leading graph of the Lasso prologue (example 10), attempting to show a tonal center around G to which all other sonorities were subordinate.



Example 10. William Mitchell, graph of the Prologue.

Mitchell's graph is rigorously constructed and internally consistent, and its main deficiency lies not in its variety of presentism per se (for there may be pre-tonal works whose structure can be revealed through Schenkerian techniques), but instead

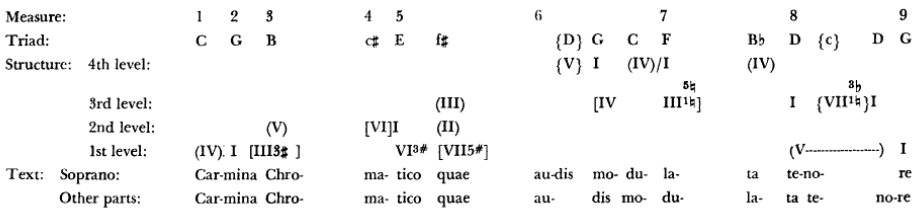
[62] For a further discussion of evaded cadences, see chapter 4, pp. 126 ff.

in its misreading of the musical surface. Mitchell's analysis is problematic for two reasons. The first is its de-emphasis of certain aspects of the surface that Lasso took care to emphasize. For example, Mitchell treats the B-major sonority in m. 3 as passing: the soprano D-sharp is a chromatic passing tone between D and E, and the bass B is presumably the upper third of the previous G-major sonority. As such, this sonority receives the least possible amount of structural weight in Mitchell's graph. But this reading contradicts the way Lasso articulates the sonority. It is the longest sonority so far (and the longest that there will be until m. 10), and it appears at the beginning of the word "Chromatico," arguably the most significant word in the entire Prologue. While Mitchell's reading corresponds neatly to Schenkerian principles, it ignores certain aspects of the music (most notably the text-music relationship) that might have been much more significant to Lasso himself. To be sure, these are common complaints about Schenkerian analysis, even in tonal music, and they do not invalidate Schenkerian methodology. But they are more problematic in pre-tonal music, where the applicability of that methodology is already questionable.

The second problem with Mitchell's graph is the converse of the first problem: when Lasso's music does not conform neatly to prolongational principles, Mitchell ascribes structural significance to certain events that Lasso did not articulate in any way. Two notable examples are the G sonorities at the end of mm. 20 and 21. The first of these sonorities, in Mitchell's graph, is the end of a tonic prolongation stretching back to m. 8. and the beginning of the upper-voice descent from 3 to 1. He has therefore given it the greatest possible structural weight. However, this sonority appears on the weakest beat of the measure, and in the middle of a word (albeit on the

accented syllable of that word, "cec*ine*runt"). While it is voiced the same way as the chord from m. 8, it is not articulated by Lasso in any other way that would connect it to the earlier chord. The second of these sonorities is an even more striking example: in Mitchell's graph, it is the main structural tonic chord of the movement, and the goal of the upper-voice descent. This chord comes in the middle of a phrase and on a weak beat. It is not even remotely part of a cadence, and moreover, Mitchell ignores the fact that it is a G-*minor* sonority. It is difficult, therefore, to justify the structural weight that Mitchell ascribes to it. The only justification for the significance that Mitchell attaches to the chord is that it is the only possible location for a final tonic chord with the tonic scale degree in the structural top voice. I should point out again that this sort of misreading would be a problem even if the piece in question were tonal.

Karol Berger (1976), after a detailed discussion of several of the theorists presented in chapter 1, presents a critique of both of the foregoing analyses of the Prologue. He then gives his own analysis of mm. 1-9, presented here as example 11.



Example 11. Karol Berger, analysis of Prologue.

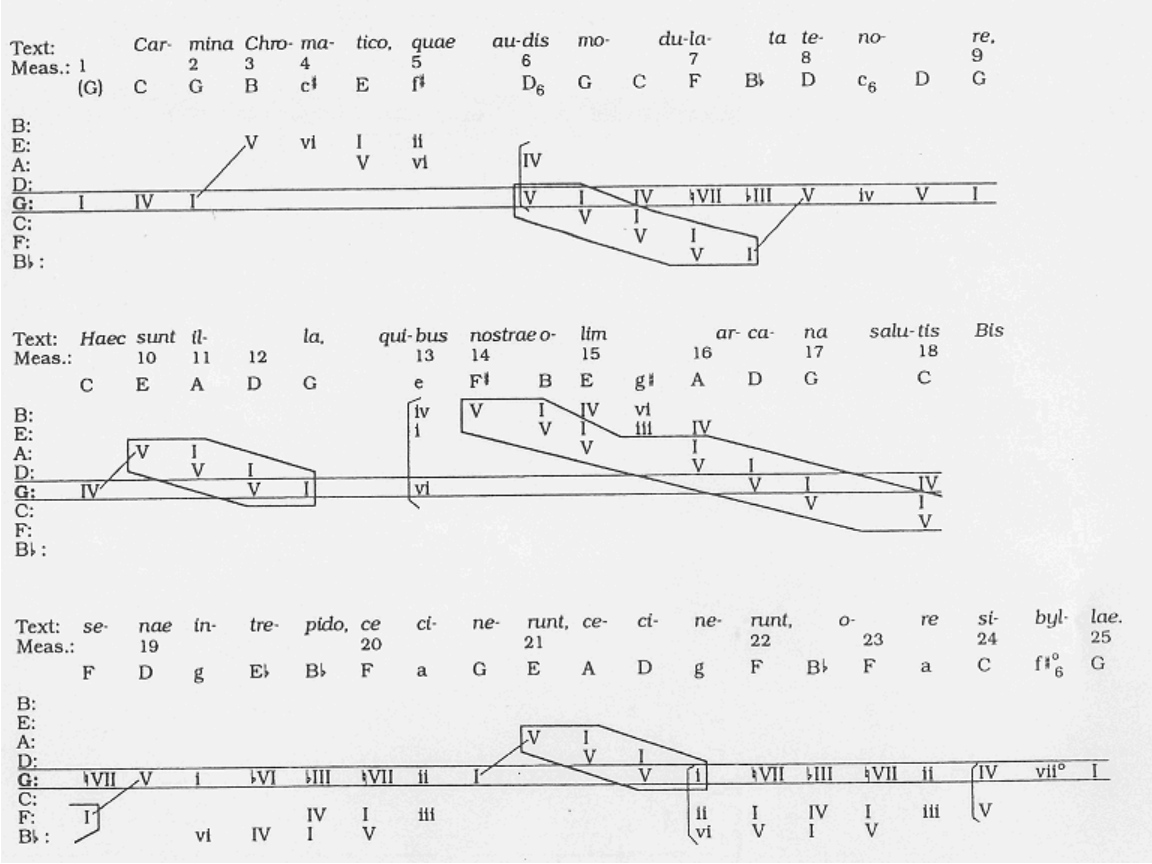
Berger attempts to distinguish among the relative structural importance of triads in the prologue, and thus to build a hierarchy of these triads. His structural

levels become less significant (that is, more foreground) as one moves up the chart, and the hierarchy of Roman numerals in the chart is delineated by his use of brackets: Roman numerals in square brackets exist at a deeper level than those in parentheses, which in turn exist at a deeper level than those in braces. Roman numerals without any sort of brackets exist at the deepest level. Thus, the B major chord labeled "3" in the analysis can be explained as "III3#" in the overall tonality of G major, as shown on the first level, but its more surface function is as V in the local key of E major, as shown on the second level. Berger therefore uses parentheses to show the B-major as subordinate to the E-major sonority.

Berger's analysis has several weaknesses. The first lies in his presentist approach: like Mitchell, he attempts to analyze the piece within an overall tonality of G major, and to understand the chromaticism as either integrating into this tonality or existing outside of it. But again, since major and minor keys provide at best a fragile model for understanding the structure of early music, Berger is using an anachronistic concept to determine a work's structure, as Lowinsky did with *Languisce al fin*. Furthermore, like Mitchell, Berger uses his theoretical model confusingly. It is not clear what each level of the analysis actually represents: examining levels 1-3, one would conclude that each level is a key area: G major (1^{st} level), E major (2^{nd} level), and D major (3^{rd} level). But the topmost level has two different sonorities labeled "I," which seem to have equal status. On this level, Berger shows the progression I-(IV) happening twice, first in G, then in F. These key areas have equal structural weight in D major, as they are both shown in square brackets on level 3. This leads to the progression IV-natural-III-I in D major, an odd progression in the repertoire to which

Roman numerals are normally applied. Indeed, the main problem with Berger's chart is that his Roman numerals often do not make sense. Roman numerals are intended to show functional relationships between various sonorities based on scale degree. However, many of Berger's Roman numerals are given without explanation as to their structural function. For another example, Berger's chart gives the progression V-VI-I on level 2 without any explanatory note; this progression would certainly warrant some explication in the repertoire to which Roman numerals are applicable. And, while most theorists accept the idea that musicians can perceive a chord as having multiple functions simultaneously, the claim made by Berger's chart that one perceives the F-sharp sonority between "5" and "6" as III in D, II in E, and VII5# in G at the same time seems difficult to accept..

William Eastman Lake (1991), like Berger, presents critiques of the existing analyses of the Prologue and provides his own. His analysis is presented as example 12. In his own words, "chords [in the analysis] are assigned diatonic functions within several keys in preference to chromatic functions within a single key" (15). Lake's chart shows the "home key" (his term) of G major in the middle, with other key areas arranged above and below it according to fifth-relationships. Lasso's chromaticism, according to Lake, consists of "interspersing diatonic passages with circle-of-fifth progressions" (13); like Berger, therefore, he shows various segments of the Prologue as diatonic progressions within different key areas, interspersed with chains of V-I progressions (boxed in the example) that represent descending-fifth motions.



Example 12. William Eastman Lake, analysis of the Prologue.

His analysis has the attractive feature of highlighting the surprising amount of diatonicism underlying this densely chromatic work (an analysis consonant with my own approach; see chapters 3-4), but his use of Roman numerals and his reading of G major as a "home key" are inappropriate for the reasons outlined above in the discussion of Berger's work. Lake also uses inappropriate terminology from tonal music: he says at one point that "a brief circle-of-fifths progression from D to Bb is used to prolong the dominant" in mm. 6-7 (15). However, Lake does not present concrete evidence from the music that the progression represents a prolongation, nor does he support his statement with either Schenkerian symbols or terminology. But

the term “dominant” is the most problematic presentist term in Lake’s statement, since the sonority built on the fifth scale step did not necessarily have the same structural function in pre-tonal music that it would in tonal music.

John Clough (1957) displays perhaps the most evenhanded use of presentism. His goal is to determine the objective characteristics that distinguish Baroque chromaticism from Renaissance chromaticism. The former, he finds, always consists of the creation, by chromatic alteration, of a lower leading tone (LLT). He then notes that “Baroque chromaticisms always function in two ways: (1) By resolving an LLT in the first chord, or (2) by providing in the second chord a potential LLT whose tone of resolution could serve as the root of a hypothetical third chord mutually diatonic with the first chord” (7-9). These two possible types of progression, he claims, separate Baroque chromaticism from Renaissance chromaticism. A progression such as the opening of Gesualdo’s madrigal *Moro, lasso, al mio duolo*, which moves from C-sharp major to A minor, would never have been found in the Baroque, since it does not fulfill either of Clough’s two criteria. He then goes on to discuss the analytical application of his criteria: “By such analysis it is possible to judge quickly and accurately whether a given late Renaissance chromaticism is forward-looking and directed toward the coming era of tonal music, or is destined to lie discarded as being incompatible with the strong tonality of the baroque” (12). It would be difficult to independently verify Clough’s findings; nevertheless, his concept could be quite useful to the analyst wishing to understand the stylistic differences between Renaissance and Baroque chromaticism. Clough has created a new theoretical model, drawn from the music itself, that neither attempts to integrate earlier chromaticism

into major/minor tonality nor restricts the modern analyst to concepts available to earlier theorists. He therefore presents a reading that, while presentist in its approach, does not lead the reader to misinformed conclusions about the music.

Presentism, insofar as it consists of the analytical use of tools that were developed after a given piece was composed, should not automatically be dismissed. Many of the analytical techniques discussed above can provide valuable insights into the structure of earlier music, even if they sometimes do so only by providing one with an impetus to disprove them. Furthermore, as I mentioned at the beginning of this section and again in conjunction with Clough's work, the invention of new analytical tools to describe a single analyst's hearing of a piece is rarely problematic. Rather, presentism crosses the boundaries of validity only in two circumstances: first, as with Lowinsky's reading of *Languisce al fin*, when it guides the reader to conclusions about the music that are explicitly contradicted by contemporaneous music theory, or (as thankfully none of our analysts has done) when it makes value judgments about a piece based on whether that piece fulfills certain external criteria drawn from an unrelated repertoire.

The Historicist Approach

Historicism in the analysis of early music developed partly because of the increasing amount of knowledge of early music theory, and partly as a reaction to presentism. In the latter capacity, historicist analysts believe that the best inroads to understanding early music come not from using the techniques of analyzing tonal music, but from the concepts available to theorists of the time. In the context of the

repertoire at hand, the historicist approach is to analyze earlier chromatic works against the backdrop of the theories of Vicentino, Zarlino, and other theorists discussed in chapter 1. There has not yet been a wealth of literature that takes the historicist perspective on this repertoire: only three authors have taken on sixteenth- and seventeenth-century chromaticism from the viewpoint of contemporaneous theorists. Historicism in its best form makes connections between earlier music and earlier music theory, even if those connections were not explicitly discussed by composers and theorists of the time. It is therefore often able to illuminate theoretical ideas and analytical techniques that theorists and composers of the time may have taken for granted, but with which the same theorists might have concurred.

Roland Jackson (1971) uses precisely this type of historicist analysis. Examining certain of Frescobaldi's more experimental chromatic works (such as those found in the *Fiori musicali*), he finds that he can explain many of Frescobaldi's unusual subjects through the concept of *inganno* as it was understood in the early seventeenth century. "In the words of Giovanni Maria Artusi," he says, "this occurs 'whenever one theme is succeeded by another that does not use the same intervals yet retains the same names of hexachord syllables'" (260). Jackson reasons that if we expand this definition of *inganno* to include the substitution for one tone of another with the same hexachordal syllable, we can explain many of Frescobaldi's chromatic subjects. As one example of many, Jackson presents an excerpt from Frescobaldi's *Fantasia Ottava*, where the middle voice begins with a motive D-C-C-sharp-D. The initial D would be solmized as *re*, and can therefore be seen as an *inganno* substitute for A (also *re*): the entire motive is therefore a modification of Vicentino's chromatic

tetrachord, A-C-C-sharp-D. Jackson explains how many of Frescobaldi's motives can be understood in this way, even ones much more adventurous than this. This type of historicist reading is quite attractive in that it may provide valuable insight into how Frescobaldi conceived of his own chromatic passages. Even if he did not explicitly identify them as *inganni*, the fact remains that the concept was contemporaneous with his work, rather than being drawn from a later repertoire. Jackson's analyses could therefore open up fresh possibilities for the modern theorist or listener, who might learn to hear the music in a new way that is closer to how an earlier musician might have heard it. On the other hand, one could argue that this very quality is the main weakness of Jackson's analysis: it does little to account for why a modern listener perceives the music as chromatic. Also, since his goal is to examine a specific characteristic in the music of a specific composer, Jackson does not aim to develop a larger theory of Frescobaldi's chromaticism, or to explain which musical characteristics Frescobaldi's work has in common with Lasso's Prologue, characteristics which would cause both of them to fall into the chromatic genus.

James Haar (1977), on the other hand, examines the characteristics that were shared by all chromatic works, at least of the sixteenth century, and does so by revisiting the writings of sixteenth-century theorists. He asks, "What is chromatic music in the sixteenth century?" And, unlike any of the presentist analysts, he stresses that "intentionally chromatic music contains melodies using the small or chromatic semitone … in addition to the large or diatonic semitone." "Chromaticism for the sixteenth century," he says, "thus meant a kind of *melodic* writing [emphasis mine]" (392). Obviously, I do not completely agree with this characterization, as my lengthy

discussion of the absolute conception of chromaticism shows. But no theorist of the sixteenth century would have disagreed that chromatic music contained melodies using the chromatic semitone; the two conceptions differed only in whether or not the theorist saw the chromatic semitone as the defining characteristic of the genus. Haar therefore stresses the viewpoint of the majority of sixteenth-century theorists without necessarily passing judgment on later writings. His article, "False Relations and Chromaticism in Sixteenth-Century Music," does not, nor does it aim to, provide an analytical model for sixteenth-century chromaticism; the remainder of his discussion of chromaticism is largely devoted to enumerating the progressions that earlier composers used to produce the chromatic semitone. Nevertheless, while his viewpoint does not constitute a theory in and of itself, it provides useful insight into how sixteenth-century authors theorized about chromaticism.

Margaret Bent has been the most dedicated of the historicists, maintaining a respectful attitude towards her presentist colleagues while insisting that the best way to understand earlier music is through contemporaneous music theory. She points out that modern theorists do not automatically classify music as chromatic simply because it uses many sharps and flats, and insists that they not do so for early music either. "The terms 'diatonic' and 'chromatic' are used by medieval theorists only with reference to melodic entities, the tetrachords of the Greek *genera*," she says. "The diatonic semitone mi-fa (e.g., E-F) is distinguished from the chromatic (e.g., F-F#), which is the characteristic and determining interval of the chromatic *genus*" (2002, 128). On one point, at least, Bent's position is unimpeachable: she notes that "the distinction between the two semitone types was functional: it was independent of the

tuning system in which they were realized" (128). This is undoubtedly true. As we have seen, even those theorists who divided the two semitones of the chromatic tetrachord unequally did not necessarily agree on how they were tuned; Bent notes that the sizes of the chromatic and diatonic semitones were reversed in Pythagorean and mean-tone tuning. (I would add, as a reminder, that Galilei and a few others insisted on equal division of the whole tone.) But her brand of historicism becomes more difficult to support when she claims that "early theorists do not find it necessary to classify music as other than diatonic simply because it happens to require the use of keyboard black notes" (128). This may be true for some theorists and at some times—after all, in the two paragraphs in question, she moves from unnamed "medieval theorists" to Zarlino—but it directly contradicts Bottrigari's statement that the chromatic genus is so named specifically because it requires the use of the black keys (see chapter 1, page 20 of this dissertation). Bent displays the most perilous form of historicism when she claims that "for Zarlino, only melodic progressions that sound chromatic because they use the chromatic semitone qualified as chromatic" (129), because she seems to choose only those aspects of Zarlino's writings that suit her current point. Remove the "only" from her statement and it is true; but, as I have demonstrated earlier, Zarlino's view of chromaticism was much more nuanced and hinged less on the use of the chromatic semitone than she would suggest. Furthermore, when she claims that "the famous prologue to Lasso's *Sibylline Prophecies* contains only four truly chromatic progressions" (129), one must challenge her use of the word "truly": even if this were true for all sixteenth-century theorists (and I do not believe it is), it does not follow that their viewpoints are the

only “true” ones. Many other progressions in the Prologue may sound chromatic to the modern listener (as they certainly must have to Lowinsky, Mitchell, and others), whose hearing is not invalidated by its potential conflict with sixteenth-century theory, so long as he or she recognizes this conflict. Bent’s statements illustrate the two times when historicism is most dangerous: when it handpicks only those statements from previous theorists that support the author’s point; and when it implies that *only* a hearing determined by a knowledge of early music theory can be valid for early music.

Conclusion: The Need for a New Theory

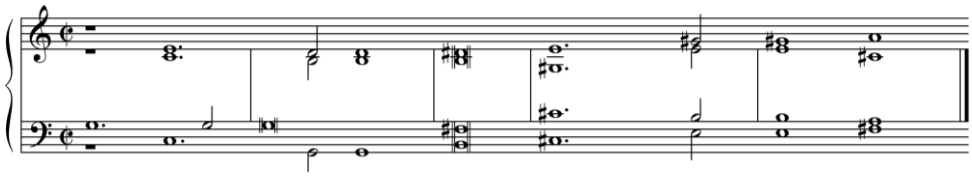
Put simply, a new theory of chromaticism is necessary because existing theories cannot account for all of the intentionally chromatic music from this period. In part one, I have presented three different views of pre-tonal chromaticism:

1. The relative conception, shared by many of the early theorists and emphasized by modern historicists: chromaticism consisted of the use of the chromatic semitone.
2. The absolute conception, shared by others of the early theorists: chromaticism consisted of the use of certain characteristic pitch-classes, even if they were used without the chromatic semitone.
3. The presentist conception: early chromaticism is no different from chromaticism in a major or minor key.

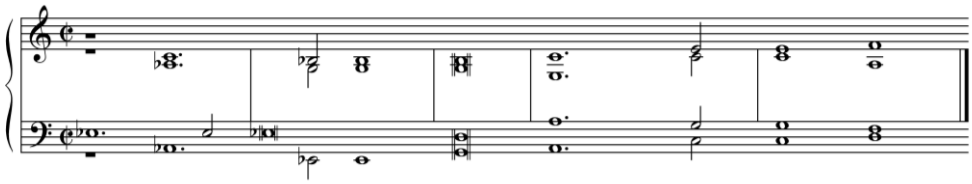
Since I have already responded to each of the presentists, the remainder of this chapter will discuss what I believe are deficiencies in the relative and the absolute conceptions. The discussion of the relative conception will be more complex, so I will begin by discussing the absolute conception.

It is difficult to argue with the statement that chromatic music consists of the use of specific pitch-classes that cannot be produced by the whole- and half-steps of the traditional gamut. In fact, it is impossible to imagine chromatic music that does not use such pitch-classes. However, the assertion that these pitch-classes in and of themselves give rise to chromatic music is problematic. As Bent correctly points out, accidentals in early music are not an *automatic* indicator of chromaticism any more than they are in tonal music, although, as we have seen, certain theorists (notably

Bottrigari) would disagree. One can easily imagine the opening of the Bach Prelude in C-sharp Major (WTC I) written without key signature; the notes would be difficult to read for all the sharps. But this renotation would not make the music any less diatonic. Likewise, using the equal temperament suggested by Galilei, a sixteenth-century musician could easily have transposed a simple chant melody so that it used many black keys on the keyboard—recall that this was precisely, in Zarlino's view, one of the main practical advantages of the "chromatic steps"—without rendering the melody chromatic. The absolute conception seems to have arisen out of a keyboard-centric view of music, one in which the diatonic scale was equivalent to the white keys; and, because chromatic music required the black keys, their use automatically entailed the use of chromaticism. For vocal music, however, the absolute conception misses the mark even more than it does for keyboard music. Consider the two versions of the opening of Lasso's Prologue, presented as examples 13a and 13b.



Example 13a. First five bars of the Prologue.

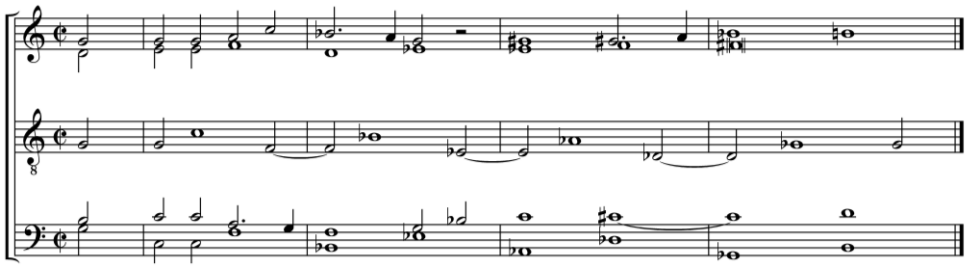


Example 13b. Transposition of the first five bars.

Example 13a shows the original opening, in which, on paper, a theorist adhering to the absolute conception would see the first three sonorities as diatonic and the next four as chromatic. The same theorist, when presented with example 13b, would probably take the opposite view, interpreting the opening sonorities as chromatic in relation to the next four diatonic ones. However, in both cases, the second group of sonorities will be *perceived* as chromatic, whether or not it was made up exclusively of "white notes." We will return to this example in chapter 3; suffice it to say for now that the chromatic moment in this passage—the change from measure 2 to measure 3—exists independently of which sonority contains "black notes."

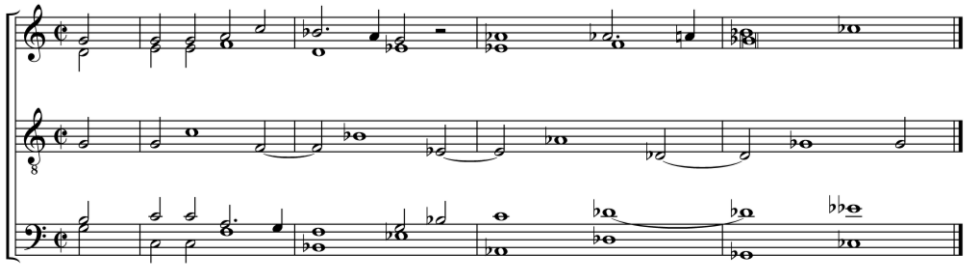
The relative conception likewise has its weaknesses, which stem from the difficulty in defining exactly what constitutes a chromatic semitone. On the one hand, composers often wrote music intended as chromatic and using many notated chromatic semitones, which, upon further examination, turn out to be diatonic semitones. On the other hand, composers often wrote deliberately chromatic music that does not use a chromatic semitone at all. I will explain these points in detail.

Not every notated chromatic semitone is truly chromatic. Example 14a presents a passage from Marenzio's *O voi che sospirate a miglior note* (1581a).



Example 14a. Marenzio, *O voi che sospirate a miglior note* (1581a).

This madrigal is clearly intended to be chromatic; earlier on, Marenzio very conspicuously uses Vicentino's chromatic tetrachord, and the passage in question is a dense jumble of chromatic and enharmonic notation. Fétis noted, however, that the apparent enharmonics in this passage are simply notational.[63] I would add that the passage contains only one *true* chromatic semitone, since, if Marenzio's notational system admitted of double sharps or double flats, the passage could be written as a simple chain of descending fifths, as in example 14b, which is exactly how it is perceived, at least by a modern listener.

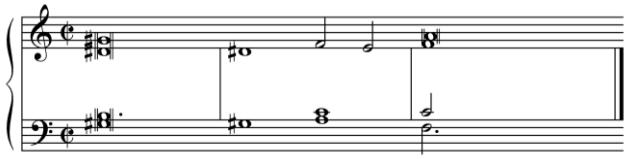


Example 14b. Enharmonic respelling of example 14a.

Since the root of each successive harmony lies a perfect fifth below the root of the previous one, each pair of harmonies is diatonic. Therefore, none of the notated semitones are true chromatic semitones and there is no direct chromaticism.[64] Conversely, a composer can write chromatic music without using a single chromatic

[63] "Les prétendues enharmonies de ce fragment ne répresent donc qu'une progression d'accords parfaites … dont on doit faire disparaître les signes d'alteration inutiles" (1853, 165).
[64] Haar (1977) described motion around the circle of fifths as one of "several distinct harmonic progressions by means of which sixteenth-century composers achieved a coloristic result without recourse to melodic chromaticism" (393).

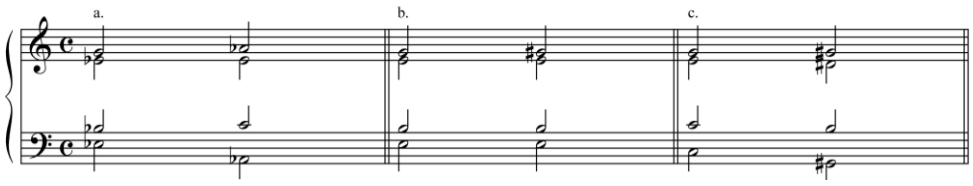
semitone. Example 15 presents a passage from the *Sibylla Cimmeria* of Orlando di Lasso's *Prophetiae Sibyllarum.*



Example 15. Lasso, *Sibylla Cimmeria*.

We know that this work was intended to be chromatic: the text of the Prologue, which Lasso himself wrote, tells us that these are "Carmina chromatico" or "chromatic songs." But this passage, bizarre as it is, does not contain a single chromatic semitone. There are therefore two problems with the relative conception: first, not every chromatic semitone signals the presence of chromaticism; second, chromatic music can exist without making use of the chromatic semitone at all.

This problem exists in large part because the binary distinction between diatonic and chromatic semitones is insufficient to account for all of the types of semitones used in this repertoire. Example 16 presents three progressions with the same semitone in the top voice.



Example 16. The three types of semitone.

In example 16a, the semitone is clearly diatonic. Even if the soprano were notated as G-G#, the two tones would still be perceived as different scale steps and would therefore have different letter names, since they express a leading tone-tonic relationship. This explains why a chromatic circle-of-fifths progression such as the one in example 14 will never contain a true chromatic semitone.[65] Example 16b presents the opposite side of the coin. Here the soprano semitone is clearly chromatic, since the soprano voice remains the third of a chord whose root is E and therefore retains its "G-ness." Again, even if the top voice were notated as G-A-flat, it would still be perceived as a chromatic semitone.[66] Example 16c, however, is a different case. This semitone is neither diatonic nor chromatic, but ambiguous. Out of context, it does not matter whether the two sonorities are notated as shown, or as C major and A-flat minor, or for that matter as B-sharp major and A-flat minor. The harmonic progression does not clarify whether the top semitone represents the chromatic alteration of a single scale step, or the motion from one scale step to another. If the two harmonies were notated as C major and A-flat minor, the soprano would become a diatonic semitone, G-A-flat, but the alto and tenor voices would become chromatic semitones, E-E-flat and C-C-flat, respectively. Ambiguous semitones therefore only

[65] Christensen (1993) notes that Rameau used a similar distinction between diatonic and chromatic semitones to jusitfy the primacy of the fundamental bass. Christensen summarizes a lengthy passage from the *Génération harmonique*: "His reasoning is as follows. If you take a chromatic semitone such as C-C# and compare it on an equally tempered keyboard to the diatonic semitone B#-C#, you will not notice any difference. But as soon as a bass is added to each progression (in this case, C-A and G#-C#), we notice an immediate difference between the semitones. This difference, Rameau tells us, may not acoustically be present in the melody itself, but we will nonetheless sense a dramatic contrast between them on account of their different fundamental basses" (202-3). Rameau does not describe anything analogous to an ambiguous semitone.

[66] Ironically, this means that the only true chromatic semitone in the Marenzio example was the one he notated as a *diatonic* semitone, G-sharp to A-natural (in the soprano voice of the third measure of the example). The listener is most likely to perceive the G-sharp as A-flat, a perfect fifth above the bass D-flat, and the A-natural as a chromatic alteration of it. The continued upward motion to B-flat confirms that the A-natural and B-flat are acting as different scale steps. The semitone in question therefore represents the alteration of the fifth over a stationary bass and is in fact a chromatic semitone.

appear when at least one interval in a progression is augmented or diminished. But with no context, it is unclear which notation of any of these semitones would correspond to the listener's perception. Furthermore, both the diatonic and chromatic semitones in examples 16a and 16b are identifiable as such only because the context in which they appear is so clearly diatonic. Paradoxically, it seems that a true chromatic semitone—that is, one immediately identifiable as chromatic—can only be born out of a diatonic context. My assertion is that much of the direct chromaticism from this period uses ambiguous semitones, whether they are notated as chromatic or diatonic, and that even these ambiguous semitones are not the cause of chromaticism, but rather a by-product of it. The relative conception of chromaticism, considering chromaticism as no more than the use of the chromatic semitone, therefore presents an incomplete picture of much of the music from this period that was conceived as chromatic.

I have presented in part one an overview of theories of chromaticism from the late sixteenth to the early eighteenth century. Earlier theories divided into two categories: the relative conception, in which chromaticism consisted of the use of certain characteristic melodic progressions, most often the chromatic semitone; and the absolute conception, in which chromaticism consisted of the use of certain pitch-classes not found in the traditional gamut. I have also demonstrated the shortcomings of each: the relative conception is inadequate in that notated chromatic semitones do not always correspond to true chromatic semitones, which themselves do not always form the basis for chromatic progressions; the absolute conception is inadequate both because a sonority may sound quite chromatic without using any of the black keys on

the keyboard and because a progression that uses many black keys might be functionally diatonic. The two modern approaches to early chromaticism likewise have their drawbacks. The presentists, by approaching pre-tonal chromaticism just as they would chromaticism in major/minor tonality, often misrepresent the music by interpreting it with inappropriate analytical models. The historicists, in their emphasis of the relative conception of chromaticism, miss the mark for the same reason the earlier relative theorists did—namely, because not all notated chromatic semitones are truly chromatic—and additionally risk presenting an interpretation that does not, and perhaps cannot, resonate with a modern listener's experience of the music. A new theory is therefore necessary, one that takes into account the ideas of earlier theorists while accounting for the different ways in which modern listeners might perceive the music. James Haar himself recognized that the modern listener might perceive chromaticism quite differently from the sixteenth-century listener:

> There appears to have been no regularly used term for music full of sharps and flats, but without direct melodic chromaticism. Pieces to which this description applies may nonetheless sound quite chromatic, at least in the sense of being harmonically colorful, to our ears (1977, 393).

It is this phenomenon to which the current theory addresses itself.

Part Two: A New Theory of Chromaticism from the Late Sixteenth to the Early Eighteenth Century

Chapter Three: An Overview of the Theory

Introduction

Theories of chromaticism from the sixteenth, seventeenth, and eighteenth centuries, whether they subscribed to what I have called the relative conception or the absolute conception of chromaticism, do not account for all of the chromatic music from that period. Surveying the music of this time reveals many passages that composers clearly conceived of as chromatic, but whose chromaticism seems to come from techniques other than those proposed by any of the theorists we have examined so far. This chapter will therefore propose a new theory that provides a framework for a more comprehensive understanding of this repertoire.

Purposes of this Theory

This theory has two purposes, the practical and the philosophical. The practical purpose is to provide a new model for categorizing and hierarchically arranging tones outside the governing tonal system.[67] All of the previous attempts to understand chromaticism that I have examined share the goal of explaining these tones: either they arise from the use of a distinct class of melodic progression, or they are tones in their own right, or they are no different from chromatic tones in a major or minor key. This theory, on the other hand, asserts that not all tones outside the system exist for the same reason or at the same level of structure, and that the

[67] See the definition of "tonal system" below.

different levels of these tones can be separated from one another according to their structural function.

The philosophical purpose of the theory is to attempt to bridge the gap between the presentist and historicist views of chromaticism, as discussed in chapter 2. Christensen (1993) suggests that these two positions might be reconciled by recognizing the "double hermeneutic identity" of a text, accepting its status as "a historical document written by an individual living within a unique culture" while still accepting "the accumulated meanings and changes accrued to it over time … [and] the differing circumstances in which we are reading the text" (30). He suggests, "instead of seeing these as two opposing poles that we must choose between, we recognize them as codeterminant" (30).

Christensen's method of reconciling presentism and historicism has much to offer in understanding chromatic repertoire from this period. On one hand, I will approach the music from a presentist point of view by attempting to describe a modern listener's perception of chromatic music. I will not try to divine the composer's conception of chromatic music or to describe the sixteenth- or seventeenth-century listener's perception of it: both of these exercises are probably futile, and one cannot ignore the centuries of music and the musical experiences that inform modern listeners by restricting one's model to those concepts available to theorists of the time. On the other hand, I will take a historicist point of view by approaching the music as much as possible on its own terms, without using the Procrustean bed of major/minor tonality. Since it is generally accepted that sixteenth- and a great deal of seventeenth-century music does not adhere to the principles of

tonal music, I will attempt to provide an accurate model for this repertoire by using principles derived from the music itself. The philosophical purpose of this theory is thus to converge the presentist and historicist positions by using both the concepts available to earlier theorists and appropriate concepts from modern theorists to describe as accurately as possible the objective phenomena that, to a modern listener, distinguish this repertoire from other types of sixteenth- and seventeenth-century music.

Nature of the Theory & Preliminary Definitions

This theory has two components: a theoretical model for classifying different types of chromaticism, and an analytical method that uses that model to separate different types of chromatic tones according to their structural functions.

Definitions

This theory uses the following terms:

1. *Hexachord*: A hexachord is a group of six tones in which each successive pair of tones is separated by a whole step except the third and fourth, which are separated by semitone.[68] For example, the G hexachord would be G-A-B-C-D-E.

[68] I do not distinguish between major and minor semitones or whole tones. All semitones are considered the same size, for reasons described in the discussion of tuning (see chapter 2, p. 69-70); all whole tones consist of two semitones.

2. *Tonal System*: A tonal system is a group of pitch classes drawn from the tones of a hexachord and the major and minor triads[69] that can be built using only those tones and the tone a perfect fifth above the third hexachordal step. It is therefore equivalent to the unordered collection of pitches in the modern diatonic scale, but without any hierarchical relationship between those pitches, that is, it is pc-set 7-35. The tonal system is named for the number of accidentals it requires; for example, the one-sharp system would consist of the hexachord G-A-B-C-D-E and the triads G-B-D, A-C-E, B-D-F#, C-E-G, D-F#-A, and E-G-B. When a passage[70] of music uses only tones from a single tonal system, that system is said to *govern* the passage.
3. *Diatonic*: Diatonic will refer to a tone within the governing tonal system, or to a sonority containing only such tones.
4. *Chromatic*: Chromatic will refer to a tone outside the governing tonal system, or to a sonority containing any such tones.
5. *Chromatic alteration*: A chromatic alteration is the raising or lowering of a given tone by semitone using an accidental (that is, without changing its letter name).
6. *Musical grammar*: Musical grammar will mean the set of principles that govern the sonorities and successions of sonorities that are fundamental requirements in a given repertoire. In tonal music, for example, an

[69] For the sake of convenience, I use the terms "major," "minor," and "triad" here in their modern sense.
[70] "Passage" refers to any span of music that the listener may perceive as one unit; for example, a line of text or a single musical phrase.

authentic cadence in the home key is a grammatical requirement. A grammatically incorrect sonority or progression is one that is prohibited in a given repertoire regardless of context.

7. *Musical syntax*: Musical syntax will mean the set of principles that govern the sonorities and successions of sonorities that are required in a specific context of a given musical repertoire. For example, a G-minor chord is not prohibited in the key of C minor, but is syntactically incorrect if it progresses to a C-minor chord as part of the final authentic cadence.
8. *Essential chromaticism*: Essential chromaticism is the use of chromatic alterations to correct a grammatically incorrect sonority. For example, what we call a root-position diminished triad would have been grammatically incorrect in *prima prattica* music; therefore, any diminished fifths or tritones in such a triad would require essential chromatic alterations to become perfect fifths or fourths.
9. *Non-essential chromaticism*: Non-essential chromaticism is the use of either of the following two types of chromatic alterations:
    a. Type A chromatic tones are chromatically altered tones that serve to correct sonorities that are not grammatically but rather syntactically incorrect. The analyses presented herein will focus on two types of Type A alterations: those that correct sonorities that violate what one might call the principles of *harmonic* syntax, and those that violate principles of *melodic* syntax. For example, a minor sixth is not incorrect by itself, but becomes so if it

progresses to an octave at a cadence, according to sixteenth-century principles of harmonic syntax given by Zarlino and others. A Type A non-essential alteration would change this minor sixth to a major sixth. Alternatively, a composer might insert a Type A alteration to preserve strict imitation of a certain motive, that is, to conform to principles of melodic syntax.

b. Type B chromatic tones are chromatically altered tones that serve only expressive purposes. They may exist for affective or text-painting reasons, but do not correct any grammatically or syntactically incorrect sonority.

The Theoretical Model: A Continuum of Chromaticism

Figure 1 presents a continuum containing various categories of chromaticism.

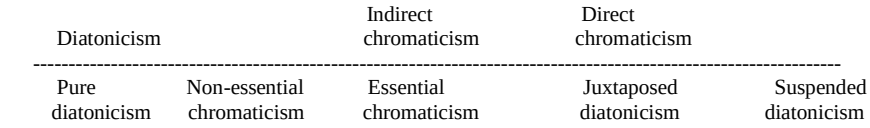


Figure 1. A continuum of chromaticism

The top of the continuum is divided into three large categories:

1. *Diatonicism* refers to passages governed by a single tonal system.
2. *Indirect chromaticism* refers to passages in which any two successive sonorities belong to a single system, but the passage containing them does not.

3. *Direct chromaticism* refers to passages containing two successive sonorities that do not belong to the same system.

Underneath the continuum are several smaller-scale chromatic techniques, which become more chromatic as one moves from left to right:

4. *Pure diatonicism* refers to any passage that uses only diatonic sonorities.
5. *Non-essential chromaticism* has already been defined; note, however, that non-essential chromaticism appears under the general category of diatonicism. This is because the non-essential chromatic tones are alterations of diatonic tones and can be removed (see below under "The Analytical Method: Diatonic Reduction") to reveal a passage of pure diatonicism, as defined above.
6. *Essential chromaticism* has also already been defined (note that it is the first type of indirect chromaticism along the continuum). Essential chromatic tones will nearly always signal a move into a tonal system in which they are diatonic.[71] Unlike true diatonic tones, however, they are chromatic in relation to the system that came before.
7. *Juxtaposed diatonicism* consists of the placement alongside one another of two incompatible tonal systems; it is the first type of direct chromaticism.
8. *Suspended diatonicism* consists of any situation in which it is impossible to determine the governing tonal system for a passage. It usually occurs because the accretion of semitones makes it impossible to distinguish diatonic from chromatic semitones and therefore impossible to arrive at a diatonic basis for the passage.

[71] For an exception to this principle, see example 30

The continuum requires some further clarification. The points at either end are what Carl Dahlhaus, following Max Weber, refers to as ideal types;[72] that is, they are categories that exist in principle but may have no occurrences in actual music. They represent the logical extremes of the techniques used in the categories closest to them. Pure diatonicism, for example, rarely exists for long spans of time, despite the fact that a single Renaissance work may be notated without accidentals from beginning to end. If one includes unnotated *musica ficta* as a given feature of the musical surface, then every Renaissance work contains some chromatic tones. Likewise, although many musical examples verge on suspended diatonicism, it does not exist in practice. Every passage I have examined, no matter how densely chromatic, has features that give it some diatonic context.

Finally, the figure is not a continuous line in which every chromatic work has a position relative to every other and one can plot precisely the relative degree of chromaticism of any work. The categories and techniques of chromaticism represented on it can coexist at different times during the same work, or even during a single passage. The continuum is not the most accurate possible graphic representation of the categories it contains, since, for example, non-essential chromaticism can exist within juxtaposed diatonicism. But it is an analytical tool that may be applied to a piece of music in order to locate the various chromatic techniques within; it is not a measuring stick that one approaches with the goal of positioning an entire work at a single point along its length.

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[72] Weber, as quoted in Gossett (1989), describes an "ideal type" as follows: "An ideal type is formed … by the synthesis of a great many diffuse, discrete, more or less present and occasionally absent concrete individual phenomena, which are arranged according to those one-sidedly emphasized viewpoints into a unified analytical construct. In its conceptual purity, this mental construct cannot be found empirically anywhere in reality."

The Analytical Method: Diatonic Reduction

Diatonic reduction is a method of distinguishing among various levels of chromaticism in a given passage. It consists of the removal of non-essential chromatic alterations to reveal the diatonic system(s) underlying a given passage. A typical reduction has four components:

1. The top system reproduces the score.
2. Underneath the top system, and aligned with it, Stage 1 of the reduction copies the score without any Type B alterations. I have taken out these alterations first because they are the furthest removed from the underlying voice leading; they exist for expressive purposes rather than for reasons of musical syntax or grammar. Stage 1 therefore contains diatonic tones, essential chromatic tones, and Type A chromatic alterations.
3. Underneath the second system, and aligned with the others, Stage 2 reproduces Stage 1 without any Type A alterations. Stage 2 therefore contains only diatonic tones and essential chromatic tones.
4. Underneath the third system, a single staff tracks the tonal system(s) governing the passage by notating each new tonal system underneath the point in Stage 2 at which it appears. The tonal systems are shown as key signatures. For example, a signature of F-sharp would represent the one-sharp system. There are two exceptions: passages containing suspended diatonicism are given no signature at all, and passages in the natural system are given a signature of B-natural to distinguish them from

suspended diatonicism.[73] Changes of system brought about by indirect chromaticism are represented with dotted bar lines, followed by whatever accidental has been added (or a natural sign in the position where an accidental has been removed). Any accidentals before the dotted barline are assumed to still be in effect after it. Changes of system brought about by direct chromaticism are represented by double barlines, followed by the signature of the new system.

There are two guiding principles of diatonic reduction:

5. The *principle of preferred diatonicism* states that the governing tonal system of a passage will always be the one in which the greatest possible number of sonorities are diatonic. Preference will be given to a tonal system in which the first sonority of a passage is diatonic; however, as we shall see, many passages begin with chromatic sonorities.
6. The *principle of greater simplicity* asserts that the stages of the reduction must become successively more diatonic. The reduction may not create chromaticism that was not present before.

I will discuss the relevance of these two principles in detail shortly.

The diatonic reduction can be used in conjunction with the continuum of Figure 1 to better understand the types of chromaticism at play in a given passage. By reading the single staff at the bottom of a reduction, an analyst can quickly determine whether a given passage is diatonic or uses indirect or direct chromaticism. If a given point on the lowest staff has no barline (which will be the majority of the staff) and is

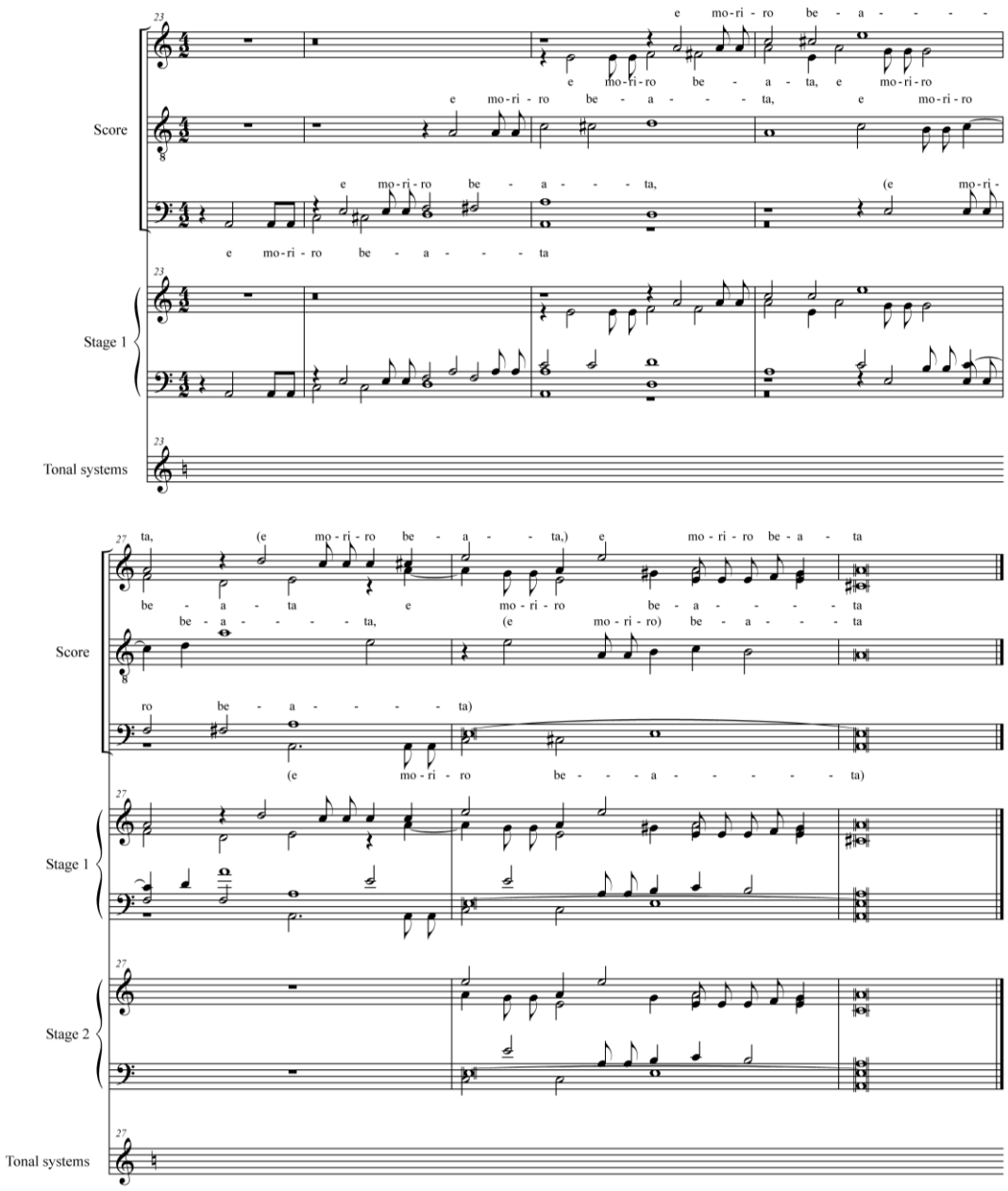
[73] I chose B-natural somewhat arbitrarily, mainly because of its position in the middle of the staff and because of the special significance of the B-natural/B-flat relationship in early music.

preceded by a key signature, the passage above it is diatonic in the tonal system represented by the signature, and any chromatic tones appearing in the score at that point are non-essential alterations. They will have been removed in either Stage 1 or Stage 2 of the reduction. Rightward motions on the continuum are represented by barlines in the reduction. Dotted barlines signal the use of indirect chromaticism, double barlines followed by a key signature signify juxtaposed diatonicism, and double barlines not followed by a key signature signify suspended diatonicism.

Finally, there are many cases where either Stage 1 or Stage 2 of the reduction may be omitted entirely, since many chromatic passages do not contain one or the other type of non-essential alteration. Some passages contain only essential chromatic tones and therefore omit both Stages 1 and 2 of the reduction. In all cases, the lowest system of music in the diatonic reduction will contain only tones that are diatonic in the tonal system shown on the bottom staff.

Sample diatonic reductions: Non-essential chromaticism

Example 17 presents a diatonic reduction of measures 23-29 from Luzzasco Luzzaschi's madrigal *Lungi da te* (1595e).



Example 17. Diatonic reduction of Luzzaschi, *Lungi da te* (1595e).

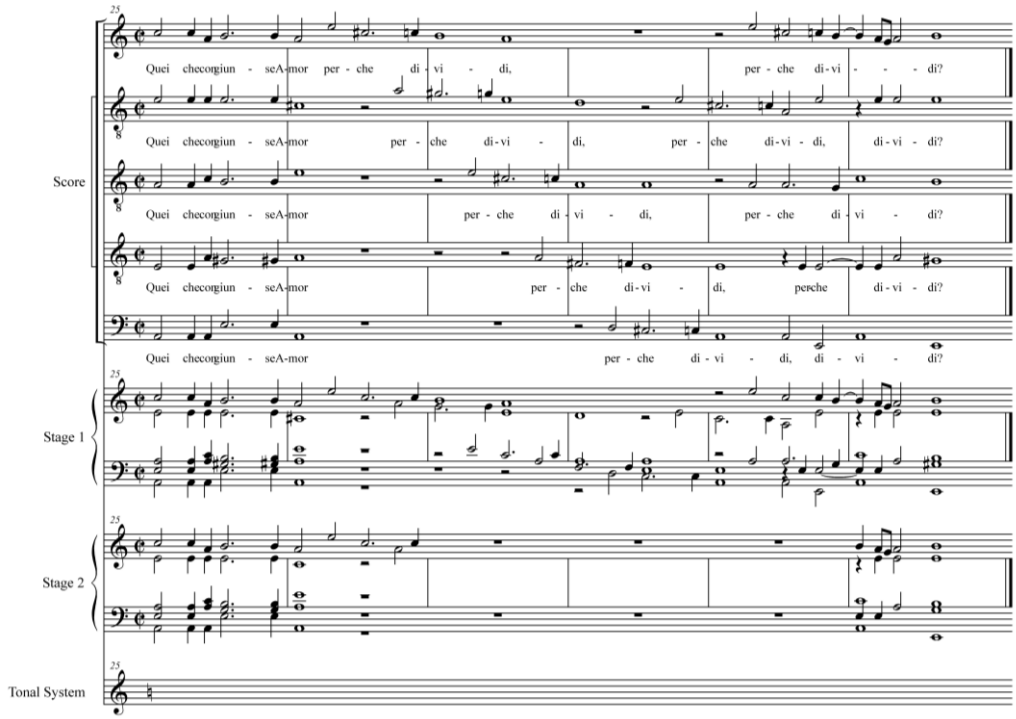
All of the semitones in the passage are chromatic, since they involve alteration of the third above a stationary bass. They are therefore Type B non-essential alterations: they do not serve to correct any potential errors in part writing. They have been removed to create the Stage 1 reduction in the second system. Notice

that two penultimate G-sharps in the cantus remain, since they are type A alterations: both serve as leading tones to the following A, and the A between them is only a decoration. The third system removes these alterations as well. The single staff underneath the entire example has only a B-natural, indicating that the entire passage is in the natural system.

One could argue that the distinction between type A and B alterations is false. Almost every non-essential alteration creates directed motion; after all, nearly all such alterations involve raising a pitch, which automatically creates directed motion to the following sonority, or at least the expectation of it. In example 17, all of the chromatic alterations in the original create directed motion to the following sonority, and it may seem arbitrary to single out the final alteration as more significant. However, raising the penultimate tone at the final cadence is a syntactical requirement, and Luzzaschi's notating the alteration was more a reflection of contemporary performance practice than an expressive chromatic gesture. By contrast, the other chromatic alterations in the passage can be removed without creating any violations of musical syntax. They do not belong to the fundamental voice leading because, motivic considerations aside, the listener has no reason to expect them. Rather, the continual raising of pitches by semitone and the successively higher statements of the chromatic tetrachord (beginning in the bass and ending in the cantus) are probably intended to portray the rising of the soul to heaven during the "blessed death" described in the text.

The diatonic version of a tone does not always have to appear before its corresponding chromatic version; frequently, a non-essential alteration will appear

before the tone that is altered. Example 18 presents a reduction of mm. 25-30 from another of Luzzaschi's madrigals, *Se parti i' moro* (1595f).

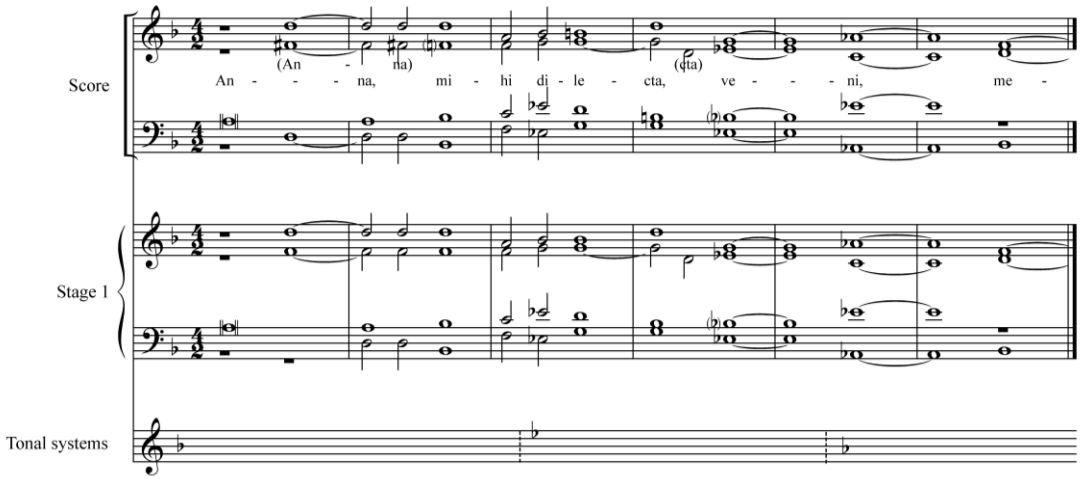


Example 18. Reduction of Luzzaschi, *Se parti i' moro* (1595f).

In a situation that is almost the exact reverse of example 1, we find a series of descending statements of the chromatic tetrachord. As indicated on the lowest staff, this passage is governed completely by the natural system, which means that in each statement of the chromatic tetrachord, the chromatic tone precedes the diatonic tone. Stage 1 of the reduction shows that nearly all of the chromatic alterations are Type B; only the G-sharp in m. 25, which provides directed motion to a cadence, and the Picardy thirds in mm. 26 and 30 are Type A alterations.

Sample diatonic reduction: Essential chromaticism

Example 19 presents a reduction of the first six measures of Orlando di Lasso's madrigal *Anna, mihi dilecta* (1579).



Example 19. Reduction of Lasso, *Anna, mihi dilecta* (1579).

This excerpt contains examples of essential chromaticism. The E-flats in the bass and tenor of m. 3 are essential chromatic pitches, necessary to avoid a diminished fifth against the soprano B-flat. In m. 5, the A-flat in the bass is also an essential chromatic pitch, since it avoids a melodic diminished fifth from the previous bass E-flat.

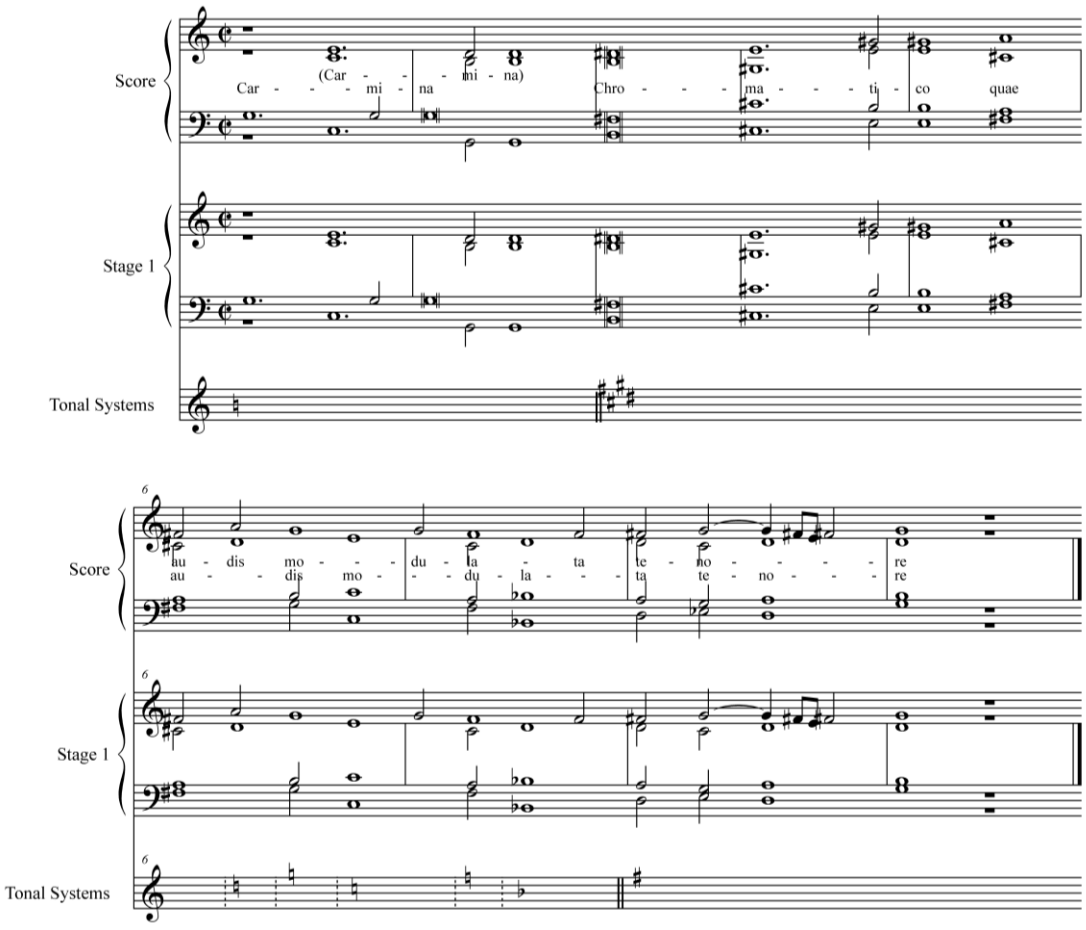
The first stage of the reduction shows that the F-sharp in m. 1 and the B-natural in mm. 3 and 4 are the only non-essential chromatic pitches. It may seem counter-intuitive to call the F-sharp of the opening sonority chromatic. After all, since there is not yet any diatonic context, how is the listener to know that the chord "should" contain an F-natural? Is it not more reasonable to say that the piece begins in a system that contains the D-major sonority, and that the following B-flat-major

sonority is the chromatic one? No—the principle of preferred diatonicism leads to the reduction given in example 19. After the opening sonority, subsequent events make it clear that the F-sharp was chromatic. More of the tones in the first four measures belong to the one-flat system than to any system that would contain the D-major sonority; also, this is a case in which we can claim with near certainty to know what Lasso intended, since he wrote the one-flat signature. Had he conceived the opening sonority as diatonic, he could have notated the piece a whole step lower with no signature, making the opening chord a "diatonic" C-major sonority, and the following one an A-flat-major sonority, which would certainly appear chromatic.

Unlike examples 17 and 18, however, *Anna* cannot be explained in terms of a single governing tonal system, since the A-flat in m. 5 is incompatible with the A-natural of the opening sonority. This passage therefore contains indirect chromaticism: since the A-flat-major sonority and the opening sonority cannot belong to the same tonal system, there must be a change somewhere. But one cannot point to a single moment as signaling the change, because any two adjacent sonorities in Stage 1 (that is, after the removal of Type B alterations) are diatonic relative to one another. One can only say that the passage begins in the one-flat system and ends in the three-flat system. The fourth staff in the reduction tracks these changes in tonal system with dotted barlines followed by the new flats. These signatures are not intended to be equivalent to modern key signatures; they represent only the flats used in the tonal system, which I notate in the traditional positions for clarity. The dotted barlines indicate that the descending-fifth motions in Stage 1 of the reduction bring about changes of tonal system without any direct chromaticism.

Sample diatonic reduction: Juxtaposed diatonicism

Example 20 presents a diatonic reduction of the first nine bars of the celebrated prologue to Orlando di Lasso's *Prophetiae Sibyllarum* (1560a). The *Prophetiae* will be analyzed in detail in chapter 6, but this short excerpt provides a very clear example of juxtaposed diatonicism.

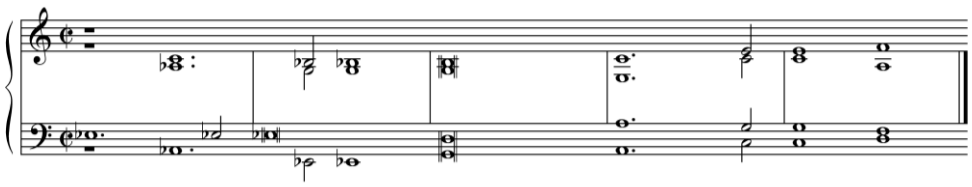


Example 20. Reduction of Lasso, Prologue from *Prophetiae Sibyllarum*, mm. 1-9.

The piece begins in the natural system, which Lasso juxtaposes against the four-sharp system (the system based on the E hexachord) in measure 3. This system remains in effect until the second chord of measure 6, whose D-natural signals a change to the three-sharp system. The following series of root motions down by fifth carries a change of system with each chord change until the arrival of the one-flat system, which is juxtaposed against the one-sharp system on the downbeat of m. 8. Stage 2 has been omitted from the reduction, because the passage contains no Type A alterations to remove. Even though the two final F-sharps in the cantus serve to create directed motion to the following G, they are diatonic tones rather than chromatic alterations, since the one-sharp system governs this progression. In fact, the only non-essential alteration in the entire passage is the Type B alteration of E-natural to E-flat in the bass of m. 8.

Example 20 also demonstrates the application of the principles of *preferred diatonicism* and *greater simplicity*. The B-major sonority in measure 3 ushers in a new, four-sharp system according to the principle of preferred diatonicism. Without this principle, one is forced to somehow integrate the next four sonorities into the natural system as chromatic alterations of underlying diatonic sonorities. However, while Lasso's triads on B, C#, E, and F# are chromatic in relation to the G harmony that came immediately before, they are certainly not chromatic in relation to one another. In fact, if the entire passage were transposed as in example 21, the *opening* would appear chromatic while the measures in question would appear diatonic.[74]

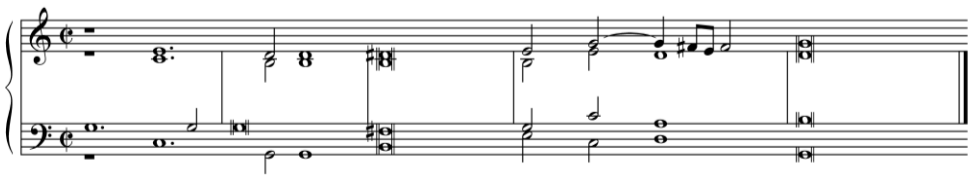
[74] Recall that this example demonstrated one of the main weaknesses of the absolute conception of chromaticism in chapter 2.



Example 21. Transposition of the first five bars of the Prologue.

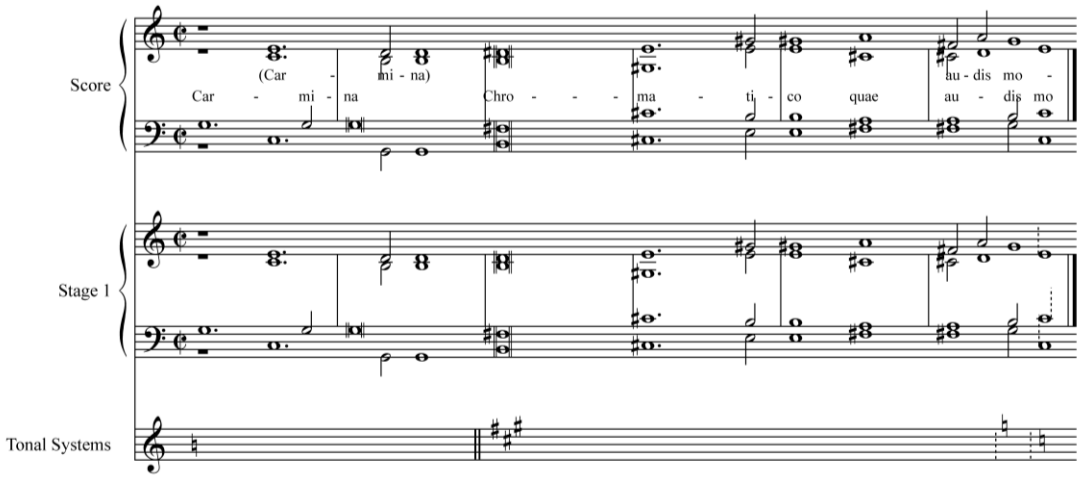
This suggests that Lasso's chromaticism is not layered onto a single diatonic background, but rather stems from the side-by-side placement of two incompatible diatonic passages. The advantage of reading juxtaposed diatonicism in this and other such examples is that it highlights the fact that many sonorities belong to the same diatonic system, without attempting to create a functional hierarchy between them, as Karol Berger did in example 11.

Note especially that juxtaposed diatonicism involves the placement of two incompatible tonal systems alongside one another, not just two incompatible sonorities. If the prologue continued as in example 22, the soprano D-sharp would simply be a Type B non-essential alteration, and would be removable to reveal an underlying one-sharp system.



Example 22. Prologue with alternate continuation.

Instead, juxtaposed diatonicism is created by the continuation of a system in which the D-sharp and its corresponding B-major triad become diatonic. One could still argue that the D-sharp is a Type B alteration of an underlying B-minor triad, leading to the diatonic reduction presented in example 23 (I have presented only the first six measures, since the remainder of the reduction would be the same).

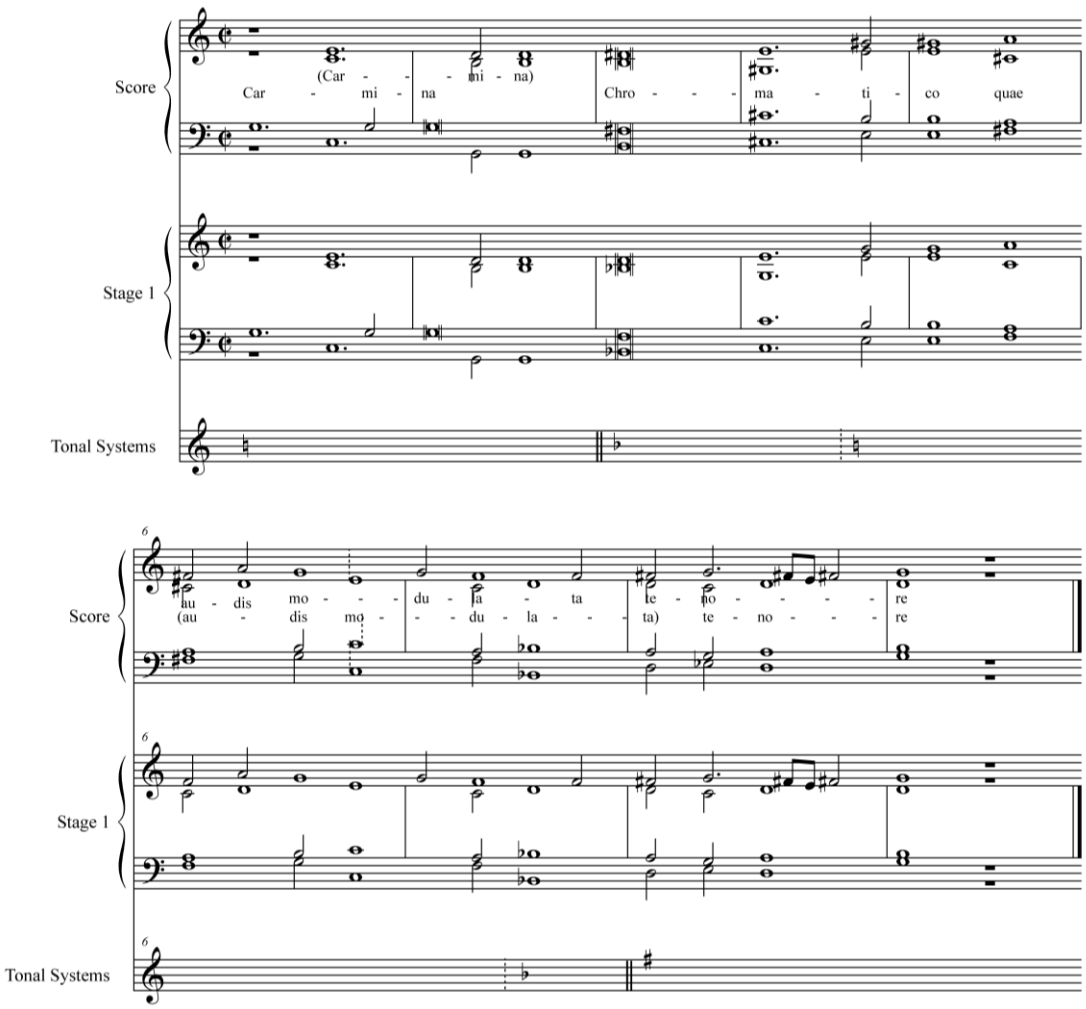


Example 23. Alternate reduction, first six bars of Prologue.

Here, the relevant juxtaposition occurs in measure 3 between the one-sharp and three-sharp systems. But this reading ignores the very moment that gives the passage its chromatic sound, namely, the change from the G-major to the B-major harmony. (Recall that the principle of preferred diatonicism gives preference to a tonal system in which the first sonority of a group is diatonic.) Example 20 is therefore a much simpler interpretation, and one which corresponds more closely to the listener's experience of the music.

The principle of preferred diatonicism also accounts for the analysis of mm. 8-9 in example 20. There are at least two other plausible ways of analyzing these two bars. One could interpret them as returning to the natural system. In this case, the F-sharp in the penultimate sonority would be interpreted as a Type A alteration providing directed motion to G, which would syntactically compel the two previous F's to also be raised to F-sharp. Alternatively, one could continue the circle-of-fifths motion and read the introduction of E-flat as a move into the two-flat system, which would remain through the end of the phrase. This would make the first F-sharp in m. 8 a Type B alteration, and the E-natural and F-sharps at the end of the measure Type A alterations. The B-natural in m. 9 would also be a Picardy-third Type A alteration. The principle of preferred diatonicism favors the analysis given in example 20 because it interprets the greatest possible number of sonorities as diatonic, and, like the progression from m. 2 to m. 3, highlights more forcefully the moment that gives the measures their chromatic sound. (Note, therefore, that Stage 2 of the reduction is not necessary.) Although the F-sharp at the end of m. 8 provides directed motion to the following G, it is a diatonic tone rather than a chromatic alteration.

However, there could be still another possible diatonic reduction for the passage, but the principle of greater simplicity explains why it would not be preferable. Consider example 24, which presents yet another version of the reduction, in which I have interpreted nearly all of the chromatic alterations as Type B and have searched for the simplest possible diatonic basis for the passage by attempting to eliminate even essential chromatic tones where possible.



Example 24. Second alternate reduction of the Prologue.

In measure 3, one cannot remove all of the chromatic tones, since the resulting dissonance between the bass B and tenor F would have been grammatically incorrect. Lasso has corrected this dissonance by changing the tenor to F#. However, this change means that the tenor C in the following sonority must also be changed to C#, which necessitates complementary changes in the alto and bass. Had Lasso altered the original bass and alto of m. 3 to B-flat, no other local changes would have been necessary. The only other essential chromatic tones in the passage would then be

the bass and tenor B-flats in m. 7 (the final F-sharps in the soprano remain since they are diatonic in the one-sharp system).

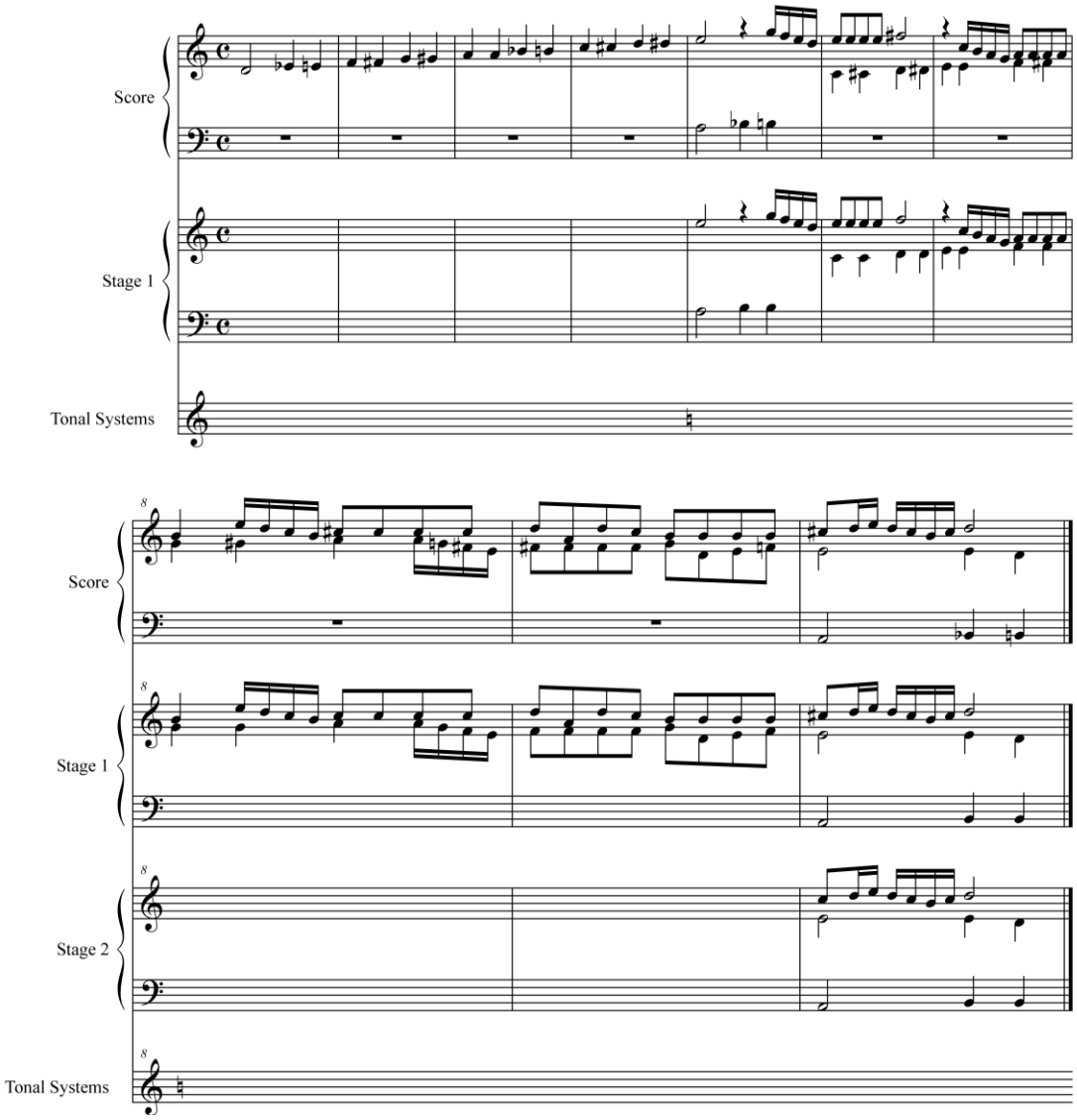
While this reduction could serve as the basis for the passage, it creates as many problems as it solves. For instance, the B-major chord in m. 3 has been "reduced" to a B-flat-major chord for the reasons outlined above. However, the progression now sounds at least as jarring as the original. The B-flat, which corrected the original diminished fifth between the bass and tenor, has created a much harsher outline of a tritone in the bass between B-flat and E, as well as parallel major thirds between the bass and soprano in mm. 3-4. Furthermore, the B-flat-major and B-major chords are so remote from one another that it seems counter-intuitive to call one the diatonic basis for the other. This reduction has erred in assuming that the presence of accidentals automatically signals the presence of chromaticism, an assumption that is no more true for pre-tonal music than it is for tonal music. The harmonies in mm. 4-6 may be chromatic in relation to the harmonies in mm. 1-2, but they are *diatonic* in relation to each other; it is the system to which they belong that is chromatic. Again, the reduction given in example 20 adheres to the principle of greater simplicity, which rejects the reduction given in example 24 because it adds the B-flat-major chord, a chromatic element that did not exist before.

One final point about example 20: the presence of only four pitch-classes in mm. 1-2 means that those measures could be interpreted in either the natural or the one-sharp system. I have interpreted them in the natural system in accordance with the absence of F-sharp in the gamut. While this situation does not arise often enough

to warrant its inclusion as a principle, the reductions will always show a preference for interpreting tones belonging to the gamut of *musica recta* as diatonic.

Sample diatonic reduction: Suspended diatonicism

Example 25 presents a reduction of the first ten measures of the *Fantasie ex D* by Claudio de Monteforte (1689-1700b), which provides a clear example of the type of compositional circumstances that approach suspended diatonicism.



Example 25. Reduction of Monteforte, *Fantasie ex D* (1689-1700b), m. 1-10.

Stages 1 and 2 of the reduction have been omitted for the first four measures. This is because the nature of suspended diatonicism is a lack of an audible distinction between diatonic and chromatic tones; it is impossible in such circumstances to distinguish among different types of chromatic tones. Instead, the single staff below the score carries no signature at all until measure 6, when the analysis proceeds as usual.

In the first four bars, only the tones D and A can be perceived as diatonic, and this is only because they each have twice the value of the other tones. The D, of course, begins the piece, and the A is the first important metrical point of arrival. It is safe to assume, therefore, that the listener would perceive these tones as diatonic, or at least more stable than the others. But two diatonic tones do not make a tonal system. True, the listener will most likely perceive the D as a final and the A as its fifth, but that does not necessarily determine the status of the other tones. In particular, it is still uncertain whether F-natural or F-sharp is diatonic.[75] By measure 5, however, the diatonic context becomes much clearer: E-natural is another point of arrival and thus diatonic for the same reasons as D and A, and the four sixteenth notes at the end of the bar establish G-natural and F-natural as diatonic tones as well. Only the tone B is left undecided, and, here, the principle of preferred diatonicism, which would take the B-flat as diatonic since it appears first, is superseded by motivic considerations. Since E-natural has become so clearly established as diatonic on the

[75] Although the F-natural falls on a downbeat and might therefore be more easily perceived as diatonic, I submit that the meter does not become clear until at least measure 3, so that for the listener the metrical status of both F-natural and F-sharp remains ambiguous. Nothing in the first two bars indicates that the piece is not in triple meter, with the E-natural falling on the second downbeat.

downbeat of m. 5, the listener becomes aware that the E-flat at the beginning of the subject was a chromatic tone, in accordance with which the parallel B-flat in m. 5 is also chromatic. This analysis turns out to be consistent with the rest of the passage; in measure 7, where either B-flat or B-natural would satisfy the grammatical and syntactical requirements of the passage—where, in fact, it might have made more sense to use B-flat in order to provide directed motion to the third beat—the composer opts for B-natural. Since we assumed the four sixteenth notes at the end of measure 5 to be diatonic, a consistent analysis would also assume the four sixteenths in measure 7 to be diatonic.[76] B-natural does in fact turn out to be the dominant form of B throughout the piece; Monteforte uses it consistently instead of B-flat whenever either tone would be satisfactory. Its use establishes the natural system as the governing tonal system for the piece. Even though all of the diatonic tones appear in measure 5, the signature does not appear until the beginning of bar 6, because the diatonic tones mentioned above cannot be perceived as diatonic until they have sounded.

This example brings to light a recurring issue with pieces having a D final, namely, the constant ambiguity between B-flat and B-natural as diatonic tones. Such pieces will contain frequent shifts between the natural and one-flat system, since both forms of B are often used freely as diatonic tones. This issue will be explored further in example 30.

[76] One could make a similar argument for B-natural as a chromatic tone, since the corresponding tone two bars earlier, F-sharp, was a chromatic alteration; besides, the B-natural on the downbeat of measure 8 would make sense as a Type A alteration to avoid a tritone leap in the upper voice. But the imitation in mm.5-6 and mm.7-8 is not exact, and I would still argue that the use of B-natural in m. 6 where B-flat might have made more sense establishes the B-natural as diatonic.

Chapter Four: A Detailed Discussion of the Theory

The appropriateness of tonal systems as a model for diatonicism

We can only understand chromaticism in pre-tonal music with a clear model of its counterpart, diatonicism. Neither the concept of *mode* nor that of *key* provides such a model. As recent scholars have amply demonstrated, *mode* is not a pre-tonal substitute for *key*. As used by early theorists, it describes a melodic phenomenon rather than a governing collection of pitch-classes.[77] On the other hand, *key* describes a much more specific phenomenon, a complex network of harmonic relationships based on scale-degree function. Neither of these terms is suitable to describe the complete collection of pitches that the listener perceives as belonging together without necessarily existing in any kind of functional relationship to one another.

Instead, to describe this collection, I have adopted Carl Dahlhaus' model of tonal systems. Eric Chafe (1992), in his study of Monteverdi, defines tonal system as "the aggregate of pitches (excluding accidentals) that may occur" (23). More specifically, it is a set of pitches that the listener would perceive as belonging together at any given point in a piece, usually based on some previously established context. It is like a key in that it describes the unordered pitch-class content of all the voices in a polyphonic texture—not just the ordered set of pitches in a particular voice—and yet differs from a key in that no one pitch necessarily serves as a tonal center to which all the others are subordinate. The tonal system is independent of the final of the piece; the lowest tone of the hexachord on which the system is based will not necessarily be

[77] For a thorough discussion of the difference between modes and keys, and of the modern misunderstanding of mode, see Powers (1992) and (1998).

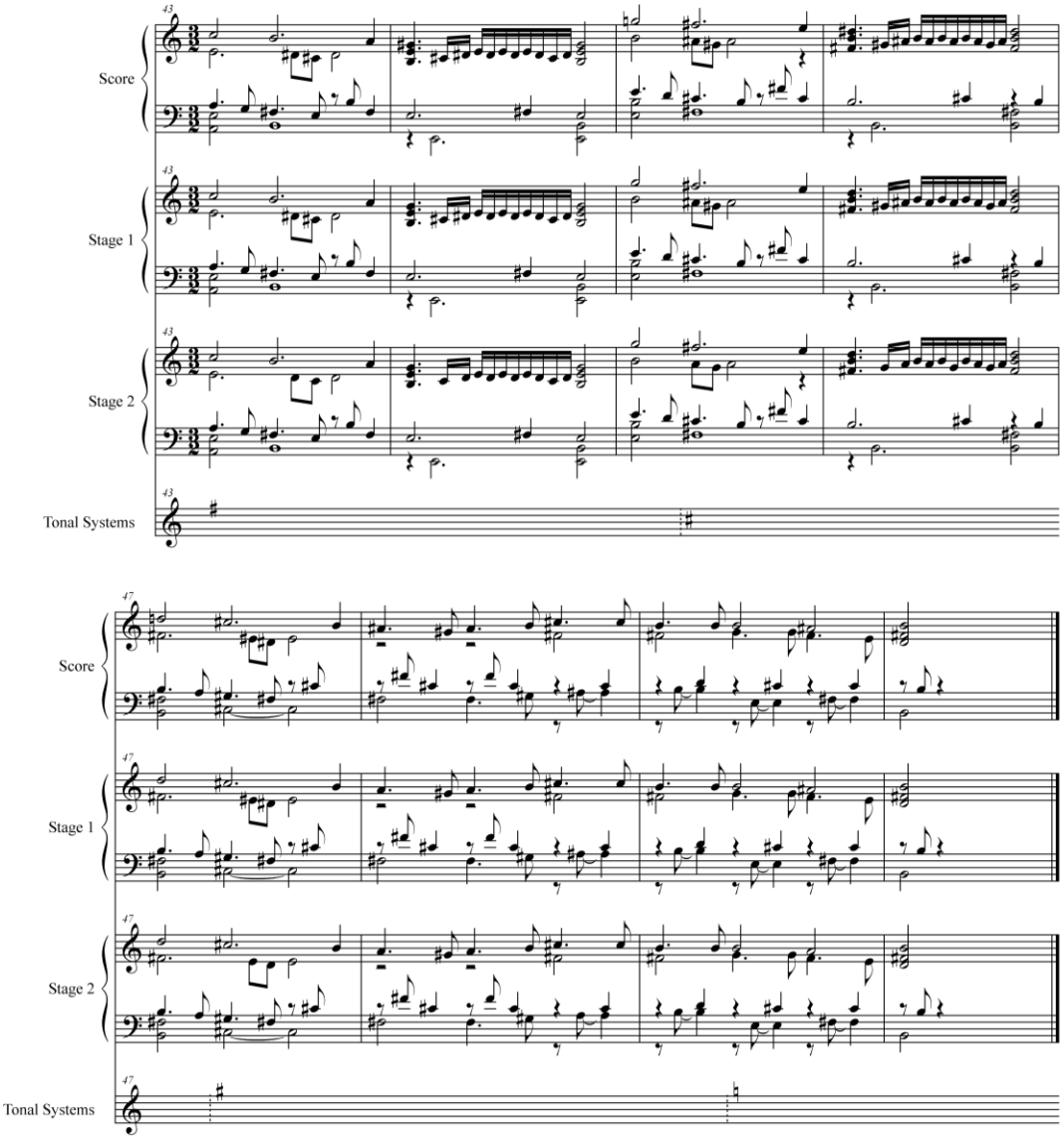
the final. Rather, the final can be any of the tones of the hexachord. The natural system can therefore govern music with a final on C, D, E, F, G, or A.

I have defined tonal system in much the same way Dahlhaus did. Chafe, on the other hand, expands his systems to include three hexachords and their corresponding triads. Chafe's natural system consists of hexachords built on F, C, and G; his one-flat system consists of hexachords on B-flat, F, and C (Chafe uses only these two systems since Monteverdi's music uses only these two signatures). Each of his systems therefore has eight tones: the six tones of the lowest hexachord, the third tone of the middle hexachord, and the third tone of the top hexachord. I have retained Dahlhaus' single-hexachord model, but mine differs from his in two respects. First, I allow for the existence, in theory, of hexachords built on any tone. Any collection of tones that the listener perceives as diatonic can be described in terms of a tonal system. Allowing systems to be built on tones other than B-flat, F, C, and G enables us to accurately describe all of the different diatonic progressions in a given passage. Second, Dahlhaus allows naturally occurring minor triads to be altered to major triads without changing the system (for example, to create a leading tone where one would not naturally occur). I prefer to treat such alterations on a case-by-case basis since I believe that not all of them exist for the same reason or at the same level of structure.

Essential and Non-Essential Chromaticism

I have introduced earlier the broad categories of essential and non-essential chromatic tones. Let us now examine an additional factor that can create essential

chromaticism, and some unusual cases in which it may be difficult to distinguish essential from non-essential chromatic tones.



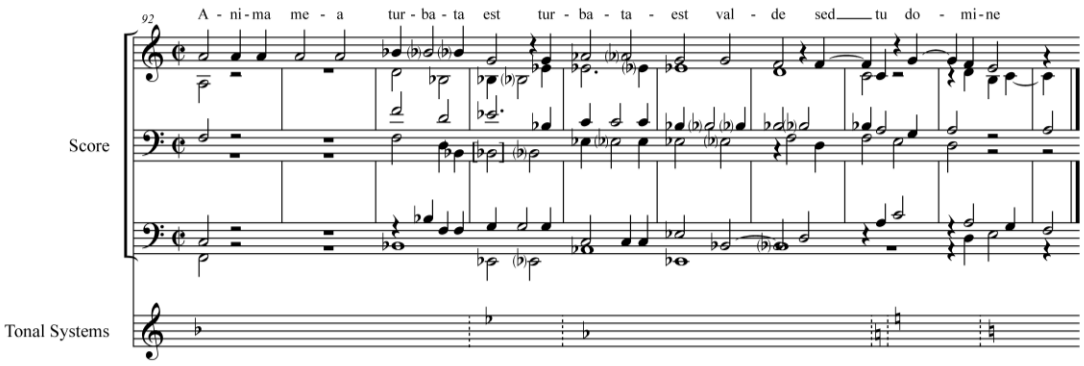
Example 26. Reduction of Bull, *Chromatic Galliard* (1609a), mm. 43-50.

Motion by ascending fifth.

Although it is much less common, essential chromatic tones can be created by motion up by fifth instead of down by fifth. Example 26 presents mm. 43-50 from

John Bull's *Chromatic Galliard* (1609a). Here, a single progression is repeated twice, each time a fifth higher than before. As the reduction shows, these motions up a fifth each carry a change of system through indirect chromaticism, culminating in the three-sharp system in m. 47, whose G-sharp is replaced by G-natural in m. 49 to end the phrase in the two-sharp system.

Vicentino used this motion in several of his works. In *Anima mea* (1572a), mm. 92-101 of which are presented as example 27, he uses the technique quite beautifully to balance a previous descent by fifth.



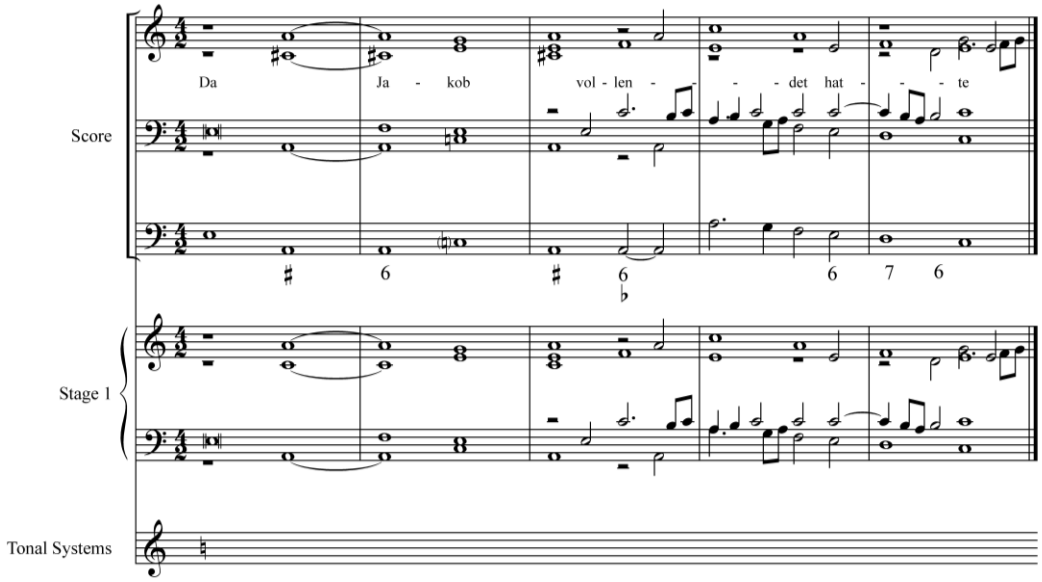
Example 27. Reduction of Vicentino, *Anima mea* (1572a), mm. 92-101.

As the reduction shows, the passage begins in the one-flat system, which changes to the three-flat system through a series of descending-fifth motions, only to cancel the newly added accidentals in the subsequent measures. Although the chord progression in mm. 97-8 mirrors the progression from mm. 94-5, the systems do not change accordingly because the sonorities in mm. 97-8 still belong to the three-flat system, which has not yet been contradicted. Only with the reappearance of A-natural do the tonal systems begin to change again. Also, because the passage contains no

non-essential chromatic alterations, both Stages 1 and 2 of the reduction have been omitted, leaving only the single staff to track the changes of tonal system.

Chromatic tones in the opening sonority

In example 19, we saw a case where, notwithstanding the preference of principle of preferred diatonicism, the opening sonority of a piece contained a chromatic tone. There are many such cases, including ones where it is quite difficult to distinguish chromatic from diatonic tones. Example 28 presents a reduction of the opening 5 bars of Johann Schein's *Da Jakob vollendet hatte* (1623a).

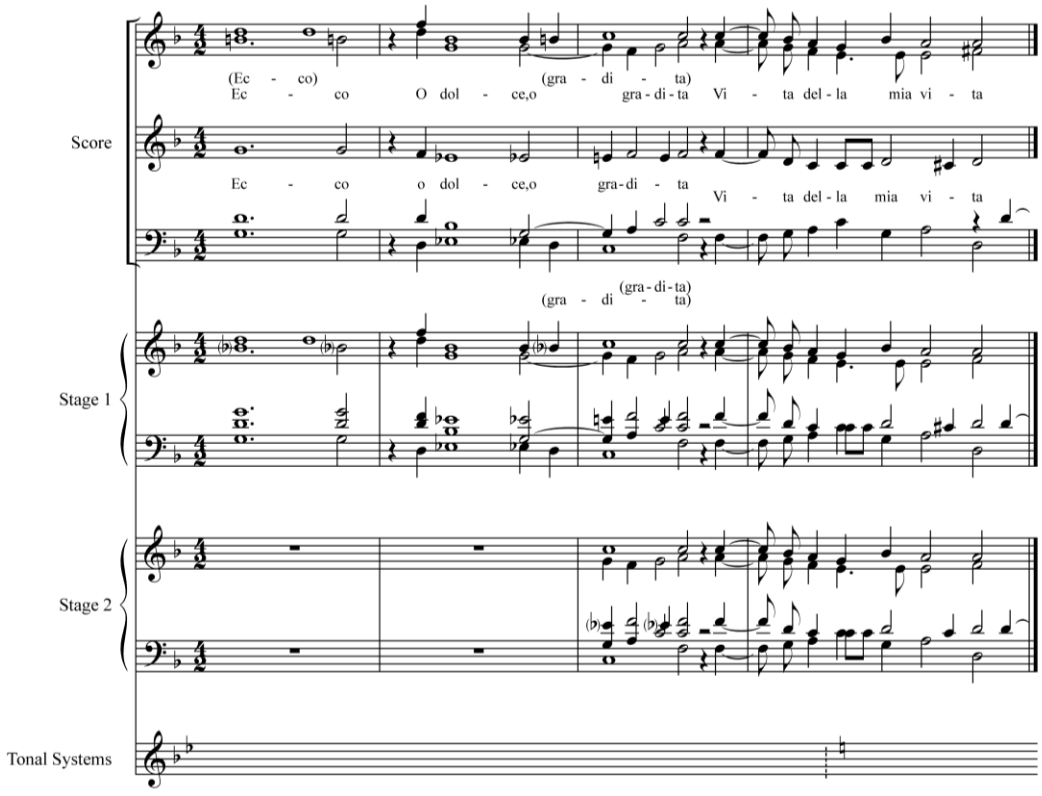


Example 28. Reduction of Schein, *Da Jakob vollendet hatte* (1623a), mm. 1-5.

Here, the principle of preferred diatonicism would show preference for a reading in which the A-major sonority was diatonic and the tenor F-natural was a chromatic tone. But this reading makes the C-major sonority very problematic—it

seems unnecessarily complicated to claim that there is a change of tonal system for one sonority, followed by a return to the original system, followed by a further juxtaposition at the F-major sonority in m. 3, especially when the cadence in m. 5 clearly establishes the natural system. Instead, as the reduction shows, the C-sharp is a Type B alteration within a passage governed by the natural system. Stage 2 is not necessary in this reduction.

Example 29 is a reduction of the first four measures of Pomponio Nenna's motet *Ecco, ò dolce, ò gradita* (1607c).



Example 29. Reduction of Nenna, *Ecco, ò dolce, ò gradita* (1607c), mm. 1-4.

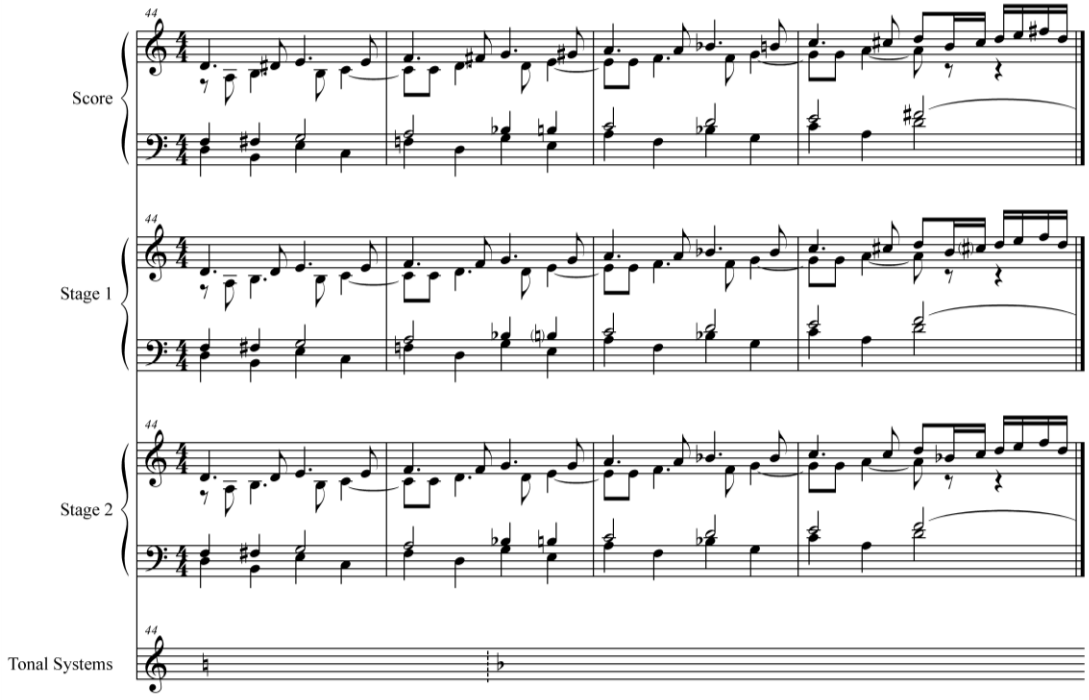
Again, the B-natural of the opening sonority is soon revealed as a chromatic tone rather than a diatonic tone: The soprano leap in m. 2 insures for the listener that B-flat is at least an essential chromatic tone,[78] if not a diatonic tone, and the persistence of B-flat throughout the measure defines the B-natural at the end of the bar as a chromatic alteration. Despite the one-flat signature in the music, I consider mm. 1-3 to be in the two-flat system, since the E-flat in the bass and alto arise as essential chromatic tones, against the background of which the alto E-natural in m. 3 becomes a Type A alteration. The one-flat system that governs most of the piece is not firmly established until the cadence at the end of m. 4.

Essential chromatic tones with characteristics of non-essential chromatic tones.

Occasionally, a chromatic tone that is non-essential in origin may also serve to correct an unallowable dissonance. Example 30 presents a reduction of mm. 44-7 from Heinrich Scheidemann's *Praeambulum* from the *Anders von Düben Tablature* (Early 17th Century (m)).

This piece is in the natural system with a final on D, and therefore contains many B-flats, as one might expect. Nevertheless, B-natural is the primary form of B throughout the piece. The measures in question contain a chromaticized variant of an ascending 5-6 sequence, one that creates some significant analytical problems.

[78]At this point in music history, with the introduction of the *seconda prattica*, the distinction between essential and non-essential pitches starts to blur; Nenna does use a vertical diminished fifth between the soprano and alto in m.4. However, this diminished fifth is between two upper voices, both of which are consonant with the bass, and is not nearly as harsh as a leap of a diminished fifth in the soprano of m. 2 would be. Such a leap would be especially inappropriate given the words "ò dolce."



Example 30. Reduction of Scheidemann, *Praembulum* (Early 17th Century (m)).

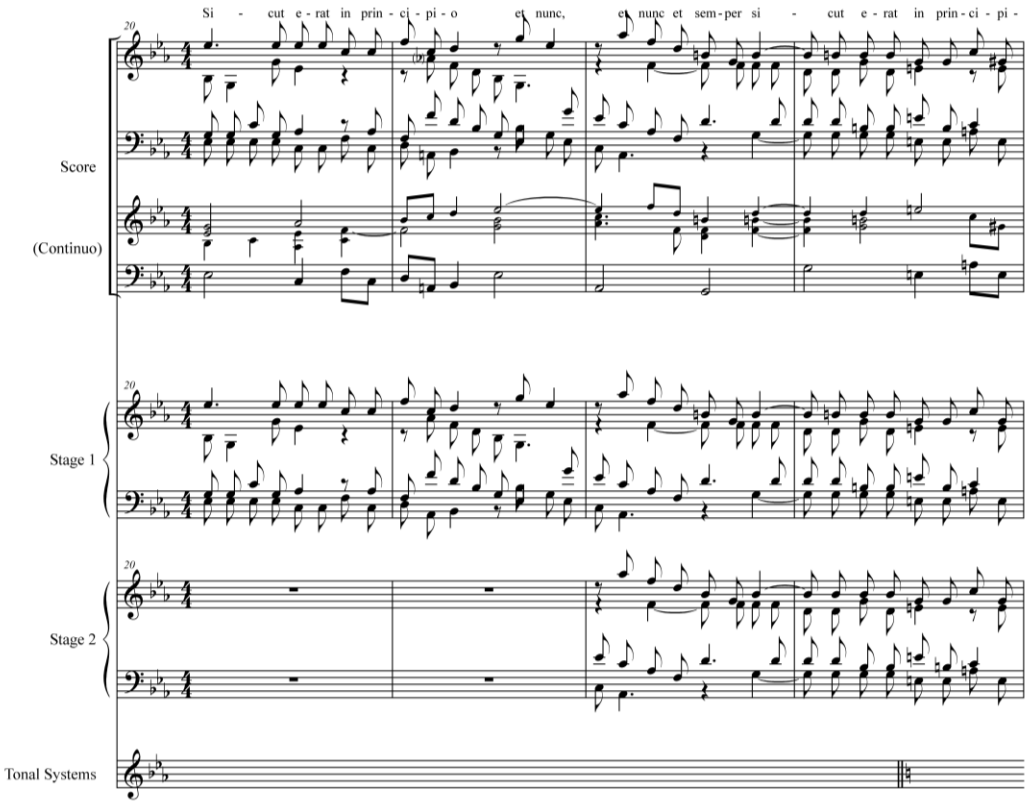
For example, consider the F-sharp in the left hand of m. 44. Is this tone essential or non-essential? Given the context, it is clearly an alteration of a diatonic F-natural and is perceived as such if one follows only the voice-leading of the various parts. However, it is a non-essential alteration that has the added effect of correcting what would otherwise have been a diminished triad, a sonority that composers still did not generally use in root position and that certainly would not have had a place in this sequence. Now, if we read the F-sharp as an essential chromatic tone, it should signal at least a temporary change of tonal system, according to the principles of diatonic reduction outlined earlier. But the B-minor sonority containing the F-sharp is so fleeting, and the non-essential nature of the F-sharp so clearly defined by the motion F-F-sharp-G in the tenor voice, that I feel it most accurately represents the

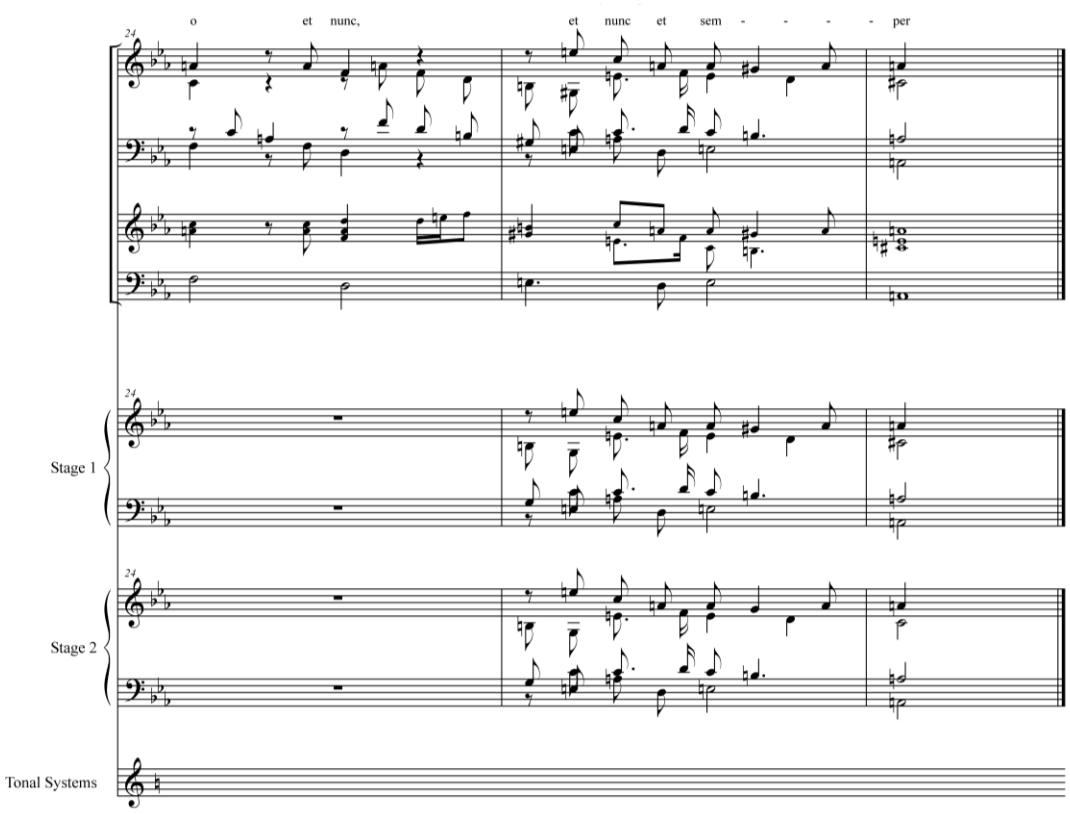
listener's perception of the music to say that while the F-sharp is an essential chromatic pitch, it is one of the rare essential chromatic pitches that does not signal a change of tonal system. Therefore, the fourth staff of this reduction shows the first measure being governed by the natural system.

As I have shown in the reduction, however, the music does change to the one-flat system beginning with the G-minor sonority in m. 45. This sonority serves as the goal of directed motion rather than a sonority that provides such motion. An analysis consistent with what has come before would read the tones of this sonority as diatonic. Just as in the previous tenor progression F-F-sharp-G the F-sharp was a chromatic alteration, so, in this tenor progression B-flat-B-natural-C, the B-natural is read as a chromatic alteration, albeit an essential chromatic alteration that does not signal a change of system, like the F-sharp discussed above. The corresponding change to the one-flat system also accounts for the B-flat-major sonority in the following bar. The final chromatic tone in the passage, C-sharp, remains in Stage 1 of the reduction because it is syntactically required at the cadence. True, the listener has no reason to expect the cadence to end when it does, and the C-sharp could be reduced to C-natural in Stage 1 as the other temporary leading tones were. However, the subsequent music makes it clear that the motion to the D-minor sonority was cadential, and therefore that the C-sharp is a syntactical requirement. Like example 25, this piece illustrates the frequent ambiguity between the natural and one-flat systems in pieces with a D final: B-flat and B-natural will each be diatonic at various times, depending on whether a particular voice moves upwards or downwards, and most such pieces will shift frequently between the two systems.

Non-essential chromatic tones becoming diatonic tones

Example 31, measures 20-26 from Henry Purcell's *Gloria Patri* (Late 17th century (c)), illustrates how a chromatic tone that was originally non-essential can become diatonic.





Example 31. Reduction of Purcell, *Gloria Patri* (Late 17th Century (c)), mm. 20-6.

The passage begins in the three-flat system that governs most of the piece, as indicated by Purcell's signature. Within this system, the soprano B-natural in m. 22 is a Type A alteration that, along with the alto F, creates expectation of directed motion to a C-minor sonority. (It is a Type A rather than a Type B alteration since coming to rest on a minor seventh chord would have been grammatically incorrect in this repertoire.) Nothing from m. 22 resolves as expected: the F, a chordal seventh, leaps to D and then G before resolving, and when it does resolve, it moves to E-natural instead of E-flat.[79] Moreover, the B-natural remains in the chord instead of resolving

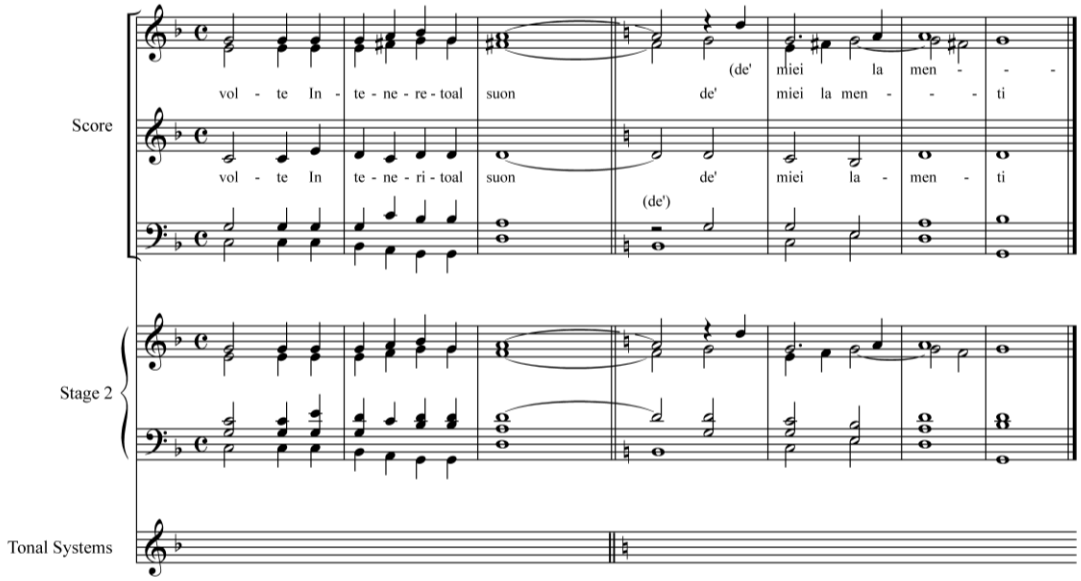
[79] I consider the motion to E in m. 23 a resolution of the F from m. 22, albeit a highly decorated one.

to C.[80] The harmonies that follow are diatonic in relation to the E-minor sonority, creating the juxtaposition of the three-flat and natural systems shown in the reduction. The B-natural has therefore changed from a non-essential chromatic pitch into a diatonic pitch. The reduction appears to violate the principle of greater simplicity by introducing a cross-relation B-flat to E-natural in m. 23 that was not present before, but the reduction is intended to track the listener's expectations and perceptions, according to which B-flat would still be the expected diatonic tone in the three-flat system of m. 22, and would only be supplanted by B-natural with the E-minor sonority in m. 23.

Juxtaposed Diatonicism

Juxtaposed diatonicism is perhaps the most difficult type of chromaticism to identify, since its use is often independent of the chromatic semitone, and since its identification can rely on subjective judgment. Unlike examples of essential and non-essential chromaticism, it has little or no basis in sixteenth- or seventeenth-century music theory. Example 32, from Monteverdi's madrigal *Ch'io t'ami* (1605), presents one of the few cases I have found that contains concrete evidence of a composer's thinking in terms of changes in the tonal system: Monteverdi writes a change in signature from the one-flat to the natural system.

[80] None of the voice parts in m.23 contains a literal carryover of B-natural from one sonority to the next. However, I have included the editorial realization of the figured bass by Anthony Lewis and Nigel Fortune, which shows that the retention of B-natural is part of the underlying voice- leading. The claim that B-natural "remains" in the chord is not invalidated by the fact that this voice-leading is not literally expressed by any one part.



Example 32. Reduction of Monteverdi, *Ch'io t'ami* (1605).

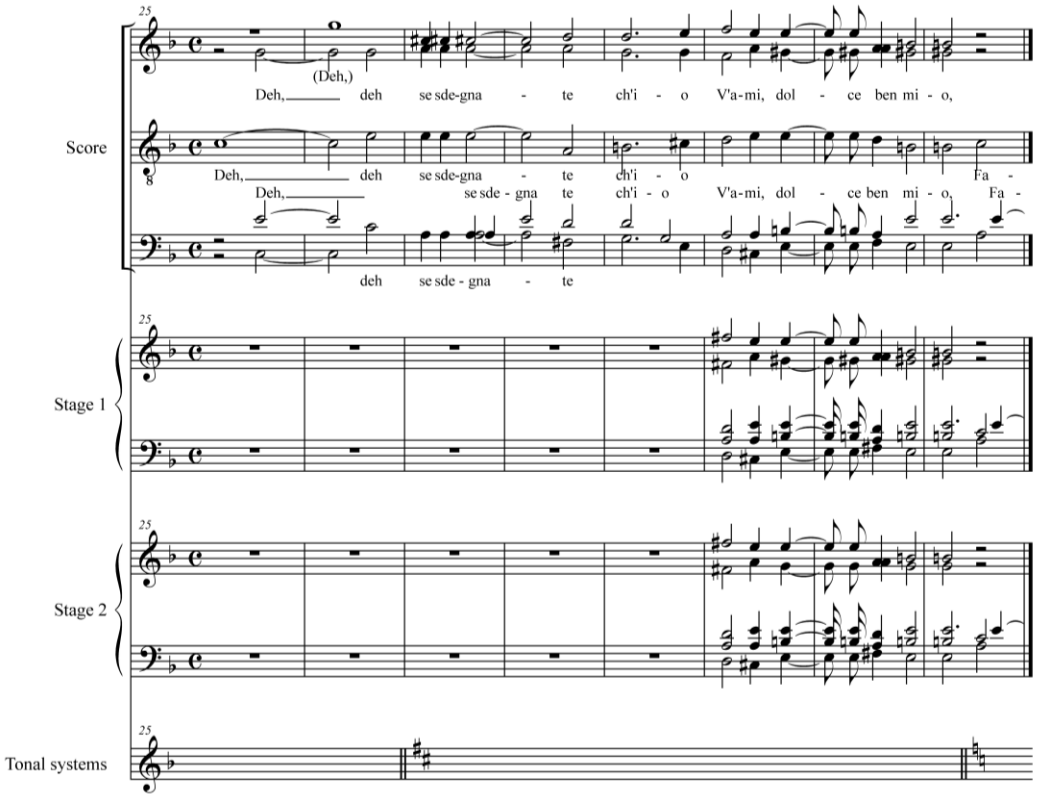
While this type of signature change is not unusual for Monteverdi, it is extremely rare in the works of other composers from this period. In other cases, it can be quite difficult to separate juxtaposed diatonicism from other compositional phenomena. This section will therefore examine some additional factors that distinguish it from these other phenomena.

Distinguishing juxtaposed diatonicism from non-essential chromaticism in circle-of-fifth progressions.

The different ways of analyzing chromatic circle-of-fifth progressions bear heavily on the concept of juxtaposed diatonicism, because most examples of it are either preceded or followed by such progressions. Often, a juxtaposition is followed by a descending circle-of-fifths progression that returns to the original system. In fact, Hübler (1976), in his analysis of the *Prophetiae Sibyllarum*, explained Lasso's

chromaticism in just this way, as consisting of a *Sprung*, or leap to a distant harmony, followed by motion around the circle of fifths. (While Lasso does use this technique, it is not the only type of chromaticism at play in the *Prophetiae*, as we shall see.) Alternatively, a descending circle-of-fifths progression that has "gone too far" and left the original system is followed by a juxtaposition to bring the original system back. Two examples will illustrate how this theory accounts for such progressions.

Example 33a presents a reduction of mm. 25-32 from Marco da Gagliano's madrigal *Come potró mai fare* (1602).



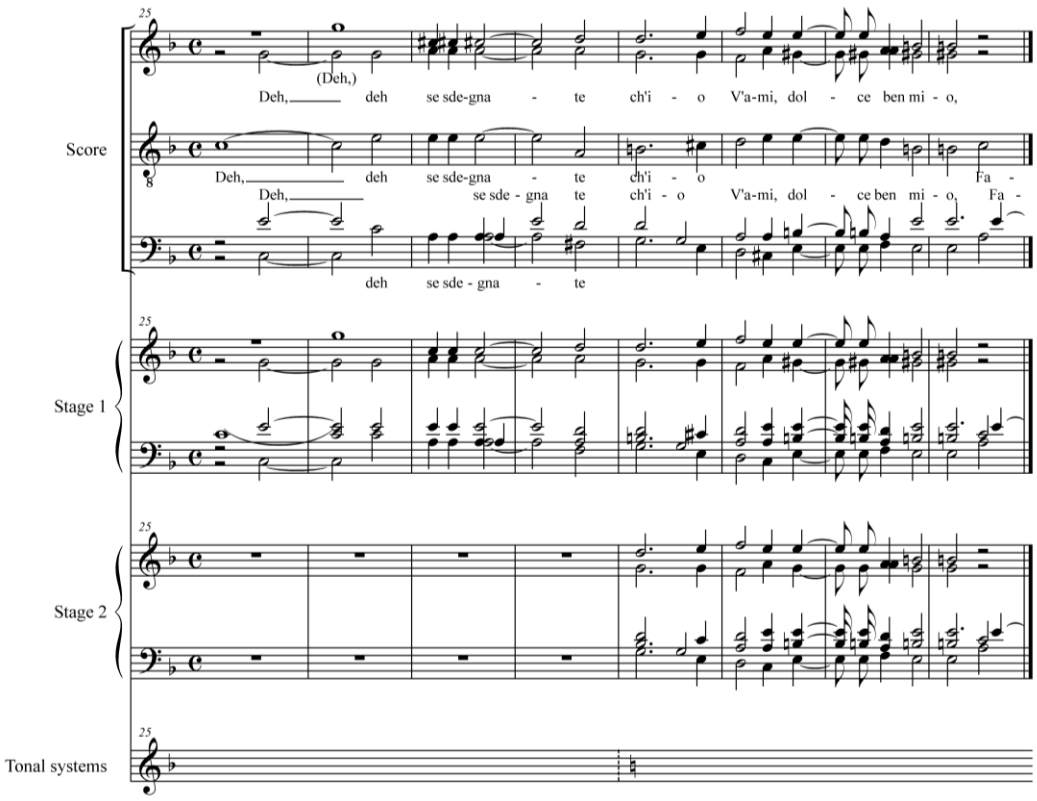
Example 33a. Reduction of Gagliano, *Come potró mai fare* (1602), mm. 25-32.

At first glance, this excerpt would seem to be an ordinary example of juxtaposed diatonicism: the one-flat system that governed the previous passage, and hence governs mm. 25−6 as well, is juxtaposed against the two-sharp system in m. 27, which remains in effect until the cadence, albeit with some additional Type A and Type B alterations along the way. The F-naturals that appear in the soprano and alto voices of m. 30 and the bass of m. 31 are Type B alterations in this reading, and have been changed to F-sharps in Stage 1 of the reduction, in accordance with the governing tonal system. The alto G-sharps at the end of the phrase are Picardy-third Type A alterations and have been removed in Stage 2. The music continues in the natural system starting in the second half of m. 32.

However, I contend that this passage is not, in fact, an example of juxtaposed diatonicism, but instead, is a product of non-essential alterations. Example 33b presents a different reduction, in which there is no juxtaposition, only a change from the one-flat to the natural system via indirect chromaticism.

Here, the C-sharp in measure 27 is a Type B alteration that creates directed motion to D (it is not a Type A alteration since it is not syntactically required to do so), and the F-sharp in measure 28 a Type B alteration that creates directed motion to G. The B-natural and C-sharp in m. 29 are Type A alterations leading to the D-minor sonority on the downbeat of m. 30, but the tonal system is shown changing from the one-flat to the natural system upon the arrival of the B-natural in m. 29, since the passage never contains another B-flat.[81]

[81] In fact, the passage as presented in the example contains no B-flats at all. However, they have been present in the music thus far, and by the beginning of the example are firmly established as diatonic tones.



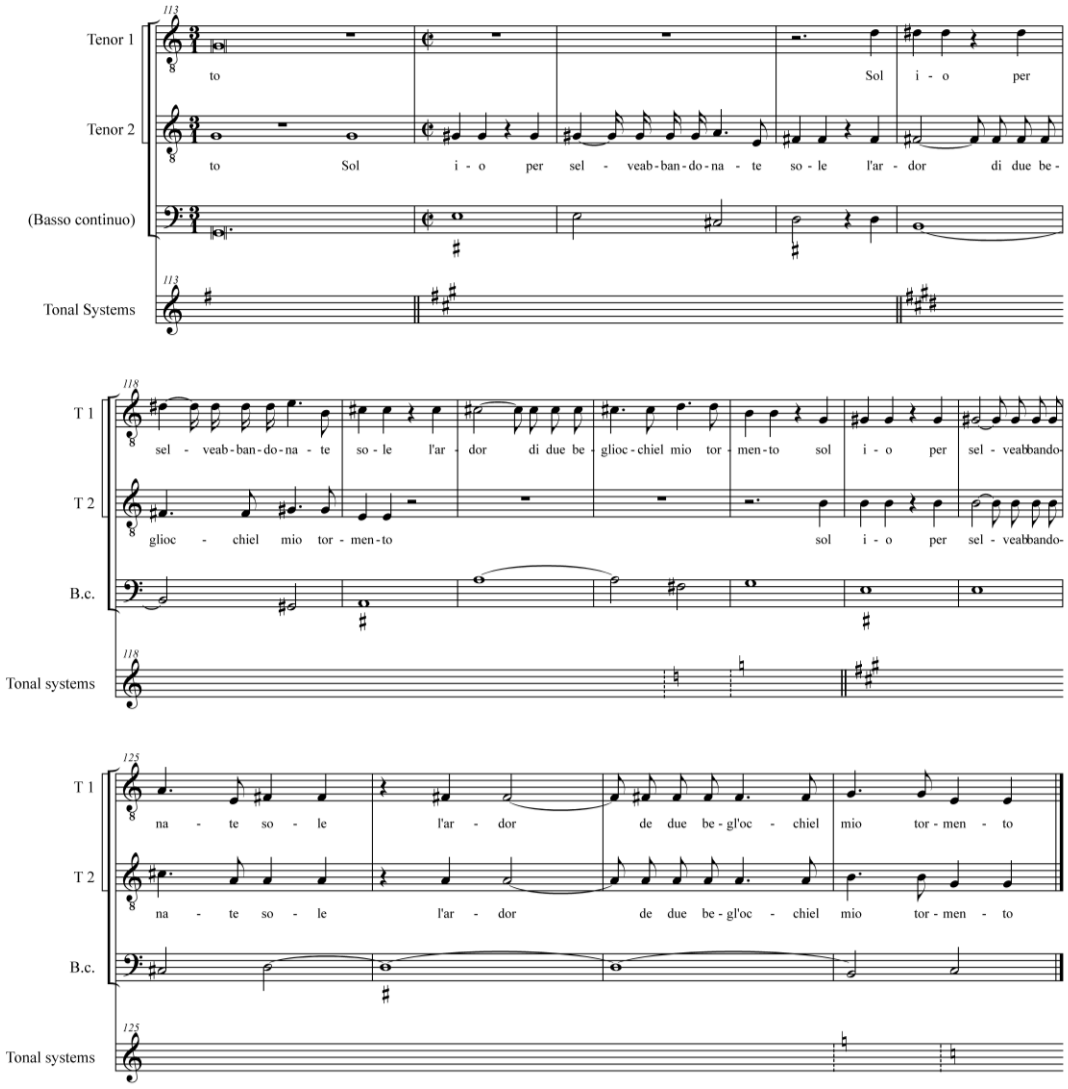
Example 33b. Correct reduction of Gagliano, *Come potró mai fare* (1602), mm. 25-32.

As was the case in example 31, the B-natural in m. 29 begins as a non-essential alteration and becomes diatonic. This reading is also consistent with the principle of preferred diatonicism: the natural system encompasses more of the sonorities from m. 29 to m. 32 than any other tonal system. Within the new natural system, the Picardy third G-sharp in m.31 is a Type A alteration, as it was in example 33a. This second reduction is preferable to the first because of the larger context. The previous passage, although in the one-flat system rather than the natural system, centered on a D-minor sonority, which returns in measure 30. This D-minor has been heard several times as a diatonic sonority, so that at its return in m. 30, it will more

likely be perceived as diatonic, even in a different system, than as a chromatic alteration of a "diatonic" D-major sonority. Given this context, the D-major sonority in m. 28 becomes a chromatic alteration of an expected D-minor sonority, and the A-major sonority in m. 27 a chromatically altered sonority that provides directed motion to it.

To explain it another way: the status of the A-major sonority in the third measure of the example is at first unclear. It could either continue with a series of sonorities in relation to which it is diatonic, or be revealed as a sonority altered by non-essential chromaticism; instead, it does both. Because of the nature of circle-of-fifth progressions, the two following sonorities are diatonic, *and* they are chromatically altered in relation to the one-flat system (the fact that this system does not return does not change the reading). In principle, any descending circle-of-fifth progression could be understood either as beginning in a new system and moving back towards the original system via indirect chromaticism, or as a series of chromatic alterations within the original system, each of which provides directed motion to the next sonority (the interpretations represented by examples 33a and 33b respectively). The only way to choose between these interpretations in a given passage is by examining the larger context. In the example, Gagliano quickly moves back to a sonority that was diatonic in the original system, but would not have been diatonic in the hypothetical two-sharp system, namely, the D-minor on the downbeat of m. 30. This aural reminder of the original system serves to contextualize the F-sharp in m. 28 and the C-sharp in m. 27 as chromatic alterations, even if the one-flat system does not return.

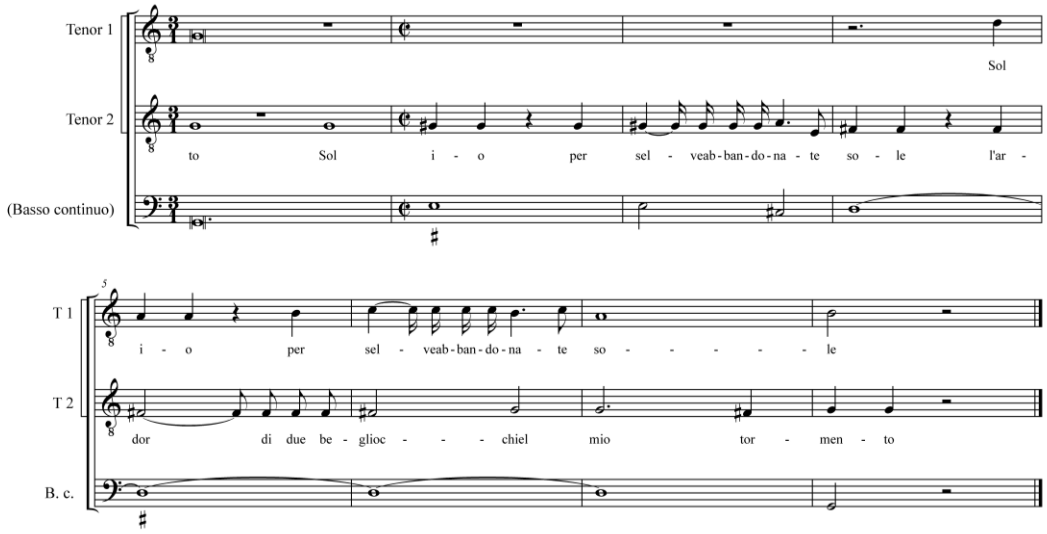
As a counterexample, consider mm. 113-28 from Claudio Monteverdi's well-known canzonetta *Zeffiro, torna* (1632), presented as example 34.



Example 34. Reduction of Monteverdi, *Zeffiro, torna* (1632), mm. 116-28.

This passage begins with exactly the same succession of harmonies as the Gagliano excerpt, transposed up a fifth. Nevertheless, the reduction shows this succession as a true instance of juxtaposed diatonicism, rather than a series of

chromatic alterations. Again, the difference lies in the context. The fourth measure of the excerpt does indeed return to a sonority belonging to the one-sharp system that has governed the rest of the piece so far, but, after m. 113, there is never a sonority that belongs exclusively to the one-sharp system. If the passage proceeded as in example 35, the E-major and A-major sonorities would be perceived in retrospect as chromatic alterations.



Example 35. Alternate version of *Zeffiro, torna.*

Not only does Monteverdi not return to the one-sharp system, but he introduces a second juxtaposition to the four-sharp system. This time, the succeeding circle-of-fifths progression does indeed return to the one-sharp system, but Monteverdi spends enough time in the new system that measure 117 is perceived in retrospect as motion to a new tonal system rather than as a series of chromatic alterations.

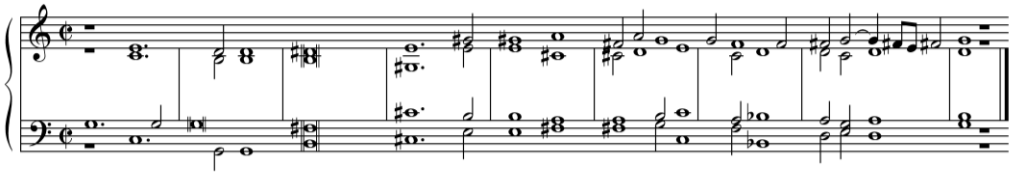
In the introduction to this section, I introduced Klaus K. Hübler's concept of a *Sprung* to a distant harmony followed by motion around the circle of fifths, which he used to describe the chromaticism at work in Lasso's *Prophetiae Sibyllarum*. Example 34 would seem an ideal place to apply this concept; one might wonder whether it is appropriate to describe Monteverdi's chromaticism in terms of *Sprünge*. I would respond that the idea of a *Sprung* would accurately describe the juxtapositions of distant harmonies in mm. 113-14, 116-17, and 122-23 of this example, but that Hübler's concept does not provide a complete picture of a passage such as this one. In particular, it does not address the issue of the relationship of the *Sprünge* to the underlying tonal systems. *Sprünge*, like single chromatic tones, do not always exist for the same reason or serve the same purpose.

This theory must allow for a certain amount of subjectivity in determining whether chromatic juxtapositions will be perceived as non-essential chromaticism or a move to an entirely new system; there are additional factors in example 34 that reinforce the sense of juxtaposed diatonicism: the change of meter and the change from a dance-like character to a recitative. Nevertheless, from the preceding examples we can induce some criteria that serve to separate examples of juxtaposed diatonicism from other types of chromaticism. First, the listener is much less likely to perceive a change in system if, following a potential juxtaposition (or *Sprung*), the composer introduces a sonority that was diatonic in the original system, but would not be in the new one (like the D-minor sonority in m. 30 of example 33). Such a sonority will probably not sound chromatic in a new system, but will serve as a reminder of the original tonal system, against which previous chromatic events will stand out as non-

essential alterations. Second, the likelihood that the listener will perceive a change to a different system increases with the number and duration of sonorities that belong to that system and not the previous one. This is why example 20, which juxtaposed the natural system with four sonorities belonging only to the four-sharp system, is an example of juxtaposed diatonicism; example 33, which only presented two sonorities in the two-sharp system before moving on to the natural system, is not.

Distinguishing juxtaposed diatonicism from variations of other compositional techniques

In his volume on counterpoint, Zarlino ([1558] 1968) defines an "evaded cadence" as "when the voices give the impression of leading to a perfect cadence, and turn instead in a different direction"(152). In light of his description, many examples of early chromaticism could be understood as conceptually expanded forms of evaded cadences.[82] Example 36 again presents the beginning of the prologue to Lasso's *Prophetiae Sibyllarum*.



Example 36. First nine bars of Prologue from *Prophetiae Sibyllarum*.

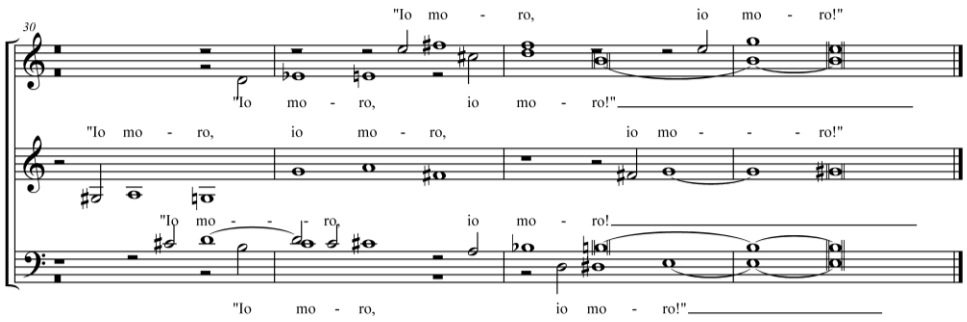
[82] Other authors have implied that cadences could, in principle, be evaded through the introduction of a chromatic sonority. Fuller (1992) discusses this technique in fourteenth- and fifteenth-century music, where a given sonority sets up the expectation of directed motion to the following sonority (based on the norms of *contrapunctus* voice leading), which the following sonority either confirms or denies. Presumably, one way of denying the expected directed motion could be with a chromatic sonority. The idea of evading a cadence chromatically is also consistent with one of Bernahrd Meier's tyes of evaded cadence, as presented in Fromson (1991): "Meier's fourth category includes any strict perfect cadence or *clausula perfecta* where an unexpected pitch or rest is introduced in a structural voice on the third sonority [i.e., the final sonority of the cadence]"(199).

As I mentioned earlier, most chromatic alterations involve raising a pitch, which creates the expectation of directed motion to a specific sonority. Thus, the D-sharp in measure 3, along with the tenor F-sharp, creates the expectation of motion outward to an octave E, probably as part of an E-minor sonority belonging to the previously established natural system. This expected cadence is evaded through the tenor leap up to C-sharp, and the purpose of the C-sharp-minor sonority in measure 4 is therefore consonant support for the dyad C-sharp/E in the soprano and tenor voices. The same could be said about the following two sonorities: The E-major sonority creates the expectation of directed motion to a diatonic A-minor sonority, which is then evaded through the motion to F-sharp minor. Such a reading would view all of the chromatic sonorities as either creating directed motion or as evading such a motion.

This analysis has many attractive features, the greatest being its use of sixteenth-century principles to understand sixteenth-century music. It is true that, just as with a deceptive cadence in tonal music, the motion from B major to C-sharp minor in the example gives a sense of unfulfilled expectations. But this is not a completely satisfactory explanation. Lasso's intention may indeed have been to evade cadences through chromatic, rather than diatonic progressions; there is no way to know. Even so, such an explanation would account for the cause, rather than the effect, of Lasso's chromaticism. The net effect of these evaded cadences is to introduce an entirely new tonal system. The idea that Lasso's chromaticism consists of a series of chromatically evaded cadences is therefore not incompatible with the

idea of juxtaposed diatonincism; the two ideas simply examine different aspects of the same phenomenon. This theory does not attempt to arrive at either the sixteenth-century composer's nor the sixteenth-century listener's perception of chromaticism—if so, the evaded-cadence explanation would probably be the strongest. Juxtaposed diatonicism, on the other hand, is intended to provide a framework for understanding our own perception of an entire set of sonorities as being chromatic in relation to a previous set of sonorities while remaining diatonic among themselves, without introducing the expectations and implications inherent in major/minor tonality.

As a further example, let us examine mm. 30-3 from Gesualdo's madrigal *Mercè grido piangendo* (1611g), presented as example 37a.



Example 37a. Gesualdo, *Mercè grido piangendo* (1611g), mm. 30-3.

Again, one could argue that the chromaticism in the passage comes from a series of evaded cadences, some of which contain Type B alterations. Such an analysis would interpret the passage, like the rest of the madrigal, as being governed by the natural system. The G-sharp that begins the passage is a Type B alteration, carried over from a C-sharp-major chord which itself was a Type B alteration in the previous phrase. The tenor C-sharp, the next chromatic pitch, is a standard Type A

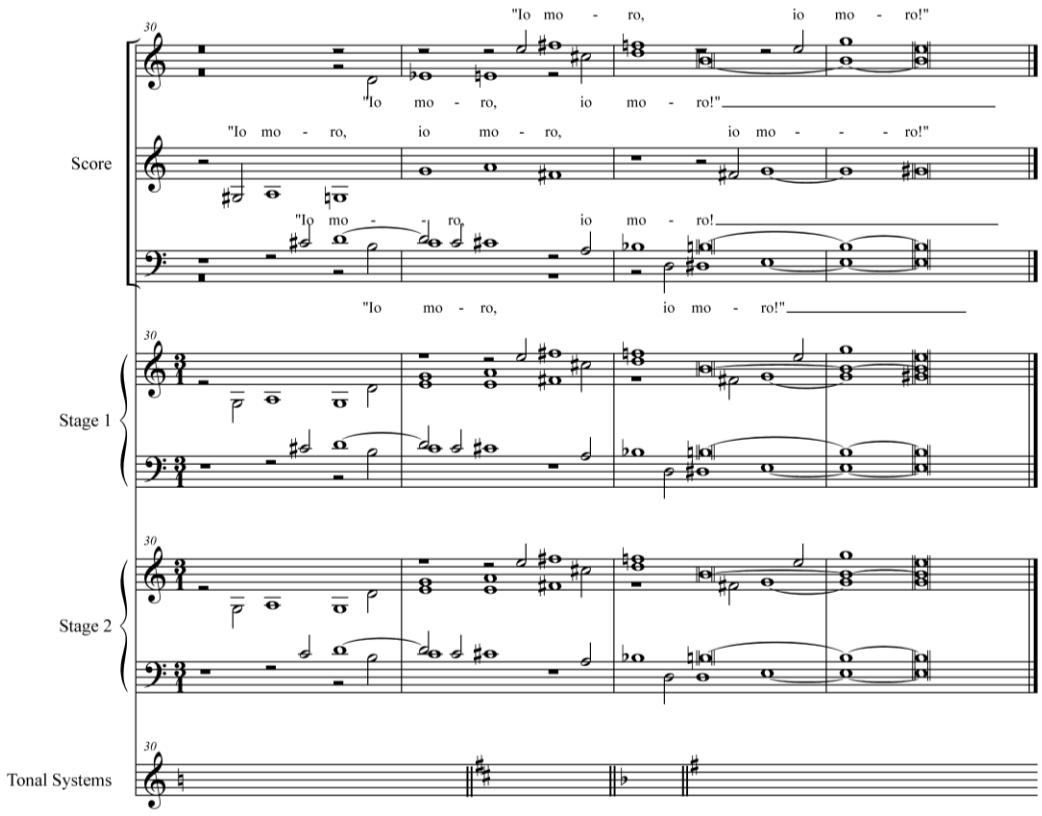
alteration that provides directed motion to the fifth, G-D. The sonority at the end of m. 30 creates the expectation of a motion to C major, which instead becomes C minor through the Type B alteration of E to E-flat. In the following A-major sonority, the only chromatic pitch is the C-sharp, which creates the expectation of motion to either an octave D between soprano and bass or a unison D between alto and bass, presumably as part of a D-minor sonority. This is evaded by the soprano motion to F-sharp and the rest in the bass.[83] The next directed motion is created by the major third A-C-sharp at the end of the measure, which is then evaded by the tenor move to B-flat. The following B-flat sonority creates the expectation of soprano and bass motion to an octave E-flat, which is again evaded by the rest in the soprano voice (the bass does move to E-flat, although Gesualdo spells it as D-sharp). Finally (notwithstanding the Picardy third in m. 33) the motion from B major to E minor in m. 32 fulfills the listener's expectations, in a harmonic sense if not an intervallic one.

This reading is internally consistent, and it follows from the principles of sixteenth-century theory. It may seem overly dense and complicated, but then, Gesualdo has written an extraordinarily dense and complicated passage, and this reading may provide valuable insight into how he conceived of his chromatic progressions. But it does not provide the most accurate possible explanation of the aural effect of these progressions. I believe that example 37b, a diatonic reduction of the passage, does provide such an explanation.

An analysis according to the principles of juxtaposed diatonicism shows the densely chromatic sound of the passage as arising from the juxtaposition of several incompatible cadential progressions. The initial G-sharp and C-sharp are explained in

[83] In Zarlino's example of evaded cadences, many cadences are evaded by a rest in one of the voices.

the same way as before. The progression from G major to C minor is a diatonic progression in the natural system, with a Type B alteration of E to E-flat, and is followed by another diatonic progression in the two-sharp system.



Example 37b. Reduction of example 37a.

The two-sharp system is then juxtaposed against a sonority from the one-flat system, which is immediately juxtaposed against the one-sharp system. The chromaticism of this last juxtaposition is heightened by the Type A alteration of D to D-sharp in the bass. (To be sure, this alteration is only Type A in retrospect, once it becomes clear that these last sonorities represent the final cadence of the piece.)

Motivic issues in this passage somewhat contradict the reading given above. After the entrance of the first two voices, it is fair to say that the listener would expect the next voice to enter with an ascending semitone. Since the alto and bass do, in fact, enter with ascending semitones, the sense the alto E-flat being a chromatic alteration is offset by the fact that this E-flat fulfills the listener's motivic expectations. Conversely, when the soprano enters, the previous ascending semitones in all four other voices would lead the listener to expect the motion E-F-natural, making the F-sharp potentially sound more like a chromatic alteration than a diatonic tone. Nevertheless, this theory approaches the music by examining the tonal system, which takes into account the complex of sounds created by all the voices together. It therefore privileges harmonic issues over motivic issues in determining the presence and degree of chromaticism in a given passage.

In some ways, this passage approaches supended diatonicism: both the continually evaded cadences and the repeated juxtapositions destabilize the passage enough to make it difficult to differentiate diatonic from chromatic tones in real time. Indeed, it would not be unreasonable to analyze this passage as an instance of suspended diatonicism that ends only with the one-sharp system at the final cadence (and even that only because it *is* the final cadence). But it is precisely these repeated cadential progressions that give the passage the limited diatonic context that it has, even though they come so close together. The sonorities within each juxtaposition produce enough of a sense of diatonicism to be perceived as new diatonic sonorities, rather than as ambiguous sonorities within an ambiguous system. Furthermore, interpreting the passage as a series of diatonic progressions rather than as a

completely ambiguous set of harmonies has important implications for performance that will be discussed in the Conclusion.

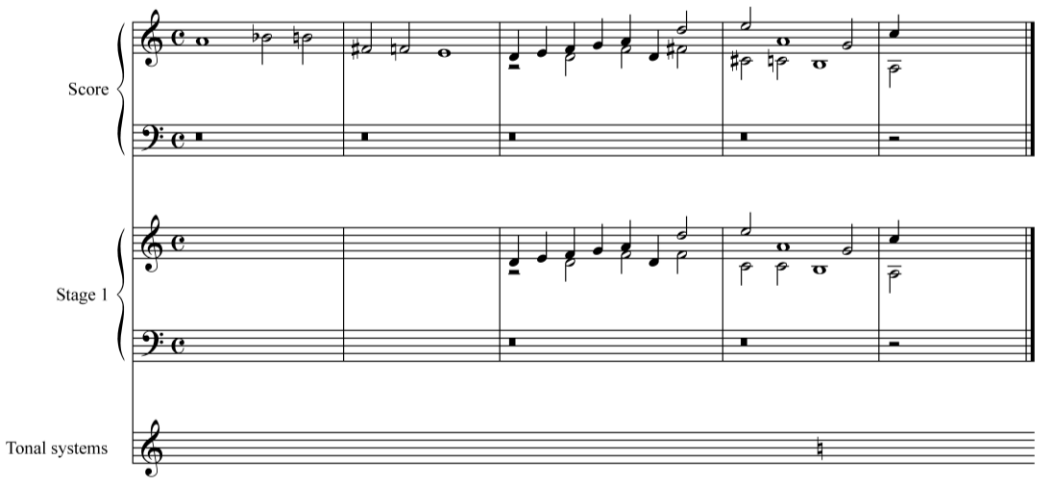
Suspended Diatonicism

Suspended diatonicism is an ideal type. Pre-tonal music always contains diatonic features, although in many instances one is unable to arrive at a definite governing tonal system for a passage. Situations that approach suspended diatonicism are rare; this section will examine a few types of them and the criteria by which one can identify them.

Suspended diatonicism arising from a lack of context

Occasionally, suspended diatonicism arises when there simply have not been enough tones or enough voices sounding to establish a single tonal system (this was the case in example 25), rather than a previously established tonal system being suspended. Example 38 presents another such case, from the opening of Frescobaldi's *Recercar Cromaticho* from the *Fiori musicali* (1635f).

The unusual subject that opens the work is not clearly governed by a single tonal system. In the first two bars, the rhythmic emphasis on A-natural and E-natural makes them stand out as diatonic pitches, and the strong melodic motion down to D-natural establishes it not only as diatonic but as the final. As for the two forms of B and F, either of them could be diatonic in a system that contains D-natural, E-natural, and A-natural, though B-flat and F-sharp could not both be diatonic. The unusual leap from B-natural to F-sharp in the subject emphasizes both of those tones, an emphasis

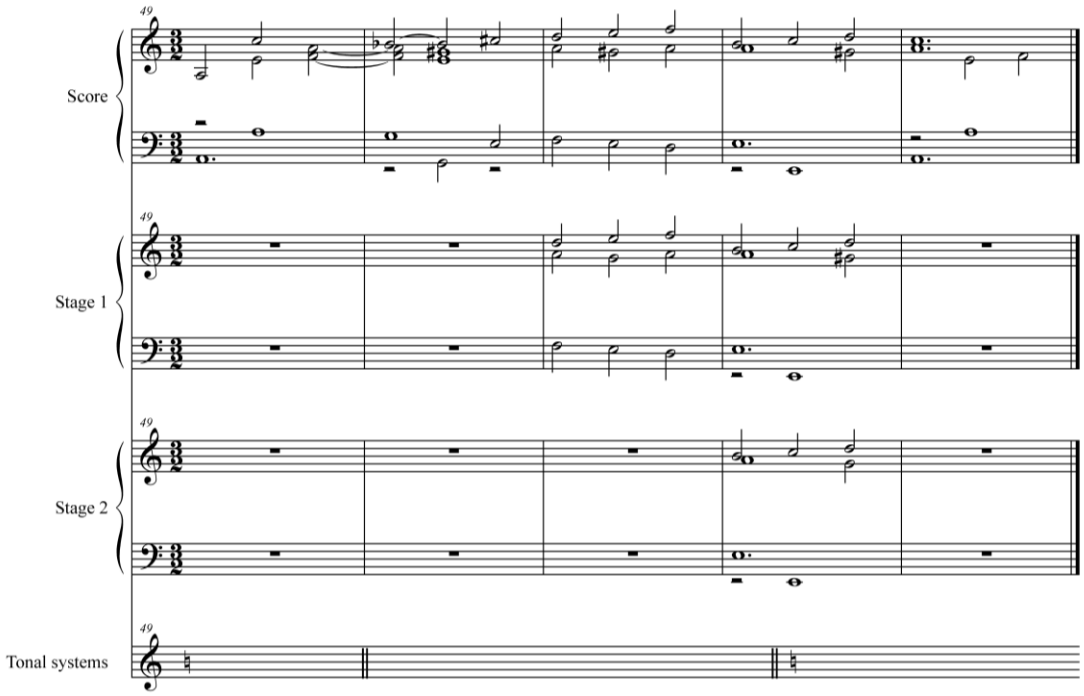


Example 38. Reduction of Frescobaldi, *Recercar cromaticho* from *Fiori musicali*(1635f).

that could lead them to be interpreted as diatonic. This contradicts the principle of preferred diatonicism, which would take the B-flat as diatonic—since it appears first—making both the B-natural and F-sharp chromatic. As the reduction shows, the opening two measures are interpreted as suspended diatonicism because a clear determination of tonal system cannot be made until the third beat of measure 4; here, all the tones of the natural system have sounded and its status as the governing tonal system becomes clear.

Suspended diatonicism arising from simultaneous chromatic tones

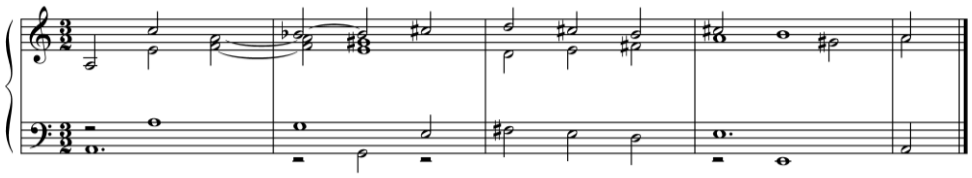
Suspended diatonicism can also be created by the use of several tones simultaneously that cannot belong to the same system. Example 39 presents mm. 49-53 from Bernardo Storace's *Passagagli* [sic] (1664d).



Example 39. Reduction of Storace, *Passagagli* (1664d), mm. 49-53.

This is a very brief moment of suspended diatonicism in an otherwise clear passage. The natural system has governed the piece thus far, and is strengthened with each repetition of the ground bass pattern A-G-F-E, on which this passacaglia is based. Within this system, the sonority on the second beat of m. 50 is seemingly easy to explain. The B-flat and the G-sharp are both Type B alterations. But the striking dissonance of the chord—it contains a diminished third, a diminished fifth, and an augmented octave, as well as a leap of an augmented second to the next chord—makes it extremely difficult for the listener to distinguish chromatic tones from diatonic tones in real time, and therefore creates a situation in which the music could

continue in one of several different tonal systems.[84] For example, the passage could proceed as in example 40, with a change to the three-sharp system.



Example 40. Alternate version of *Passagagli*.

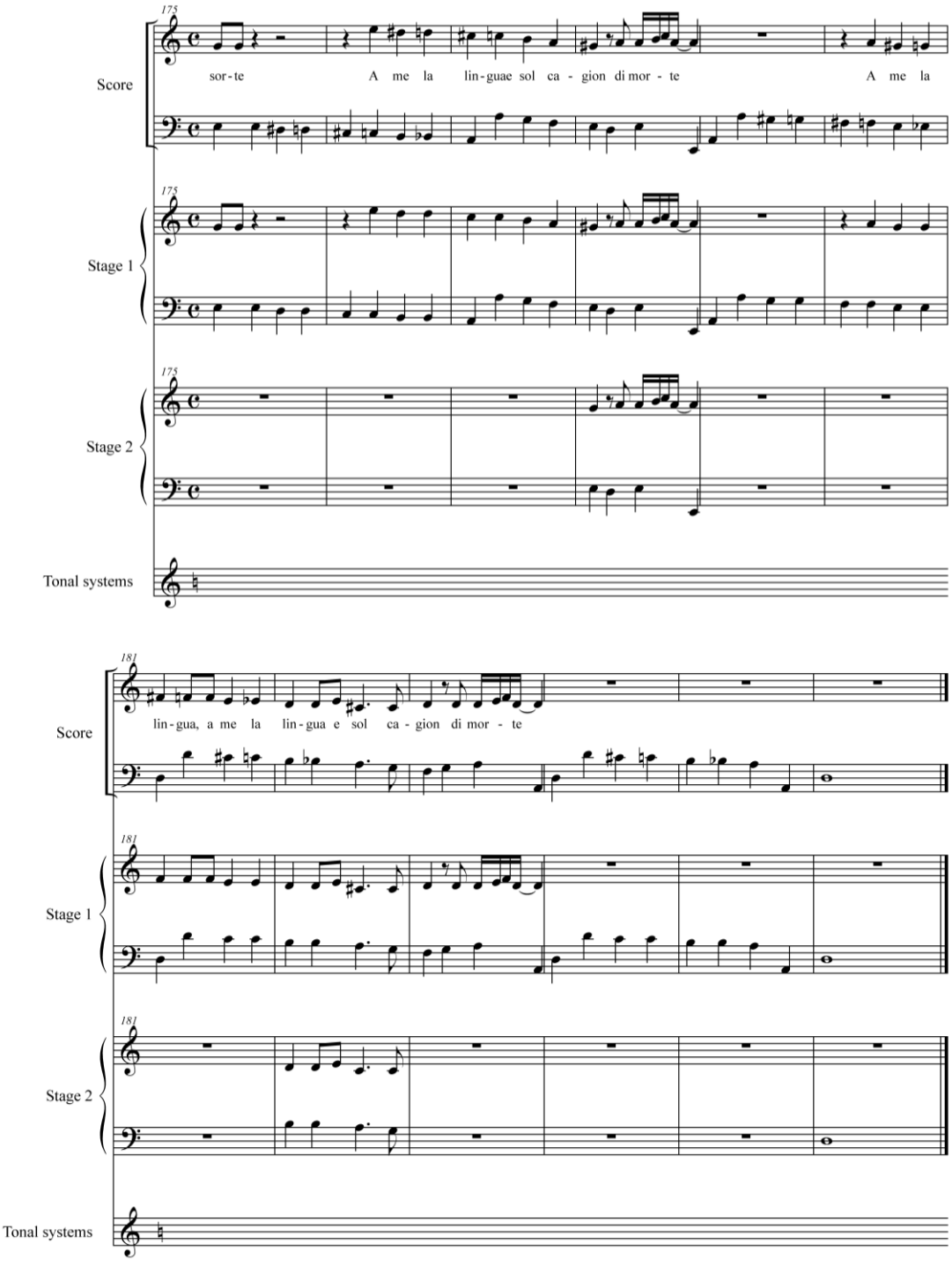
In this case, there would be no single moment of juxtaposition between systems, only a passage in the natural system, followed by an ambiguous sonority—the moment of suspended diatonicism—and a continuation in the three-sharp system. The passage's continuing in the same system in which it began does not change the moment of suspended diatonicism.

Suspended diatonicism arising from consecutive chromatic semitones

The most frequent case of suspended diatonicism occurs when there is a build-up of consecutive semitones in more than one voice, which can blur the distinction between diatonic and chromatic semitones and make the identification of a single tonal system impossible. As with juxtaposed diatonicism, the perception of suspended diatonicism depends largely on context. Example 41, from *Cuore che reprime alla lingua di manifestare il nome della sua cara* by Barbara Strozzi (1654b), is not an

[84] This sonority is analogous to the sonority that Fétis used to illustrate the omnitonic order, a sonority that did not belong clearly to any one key and therefore could in principle resolve to virtually any key.

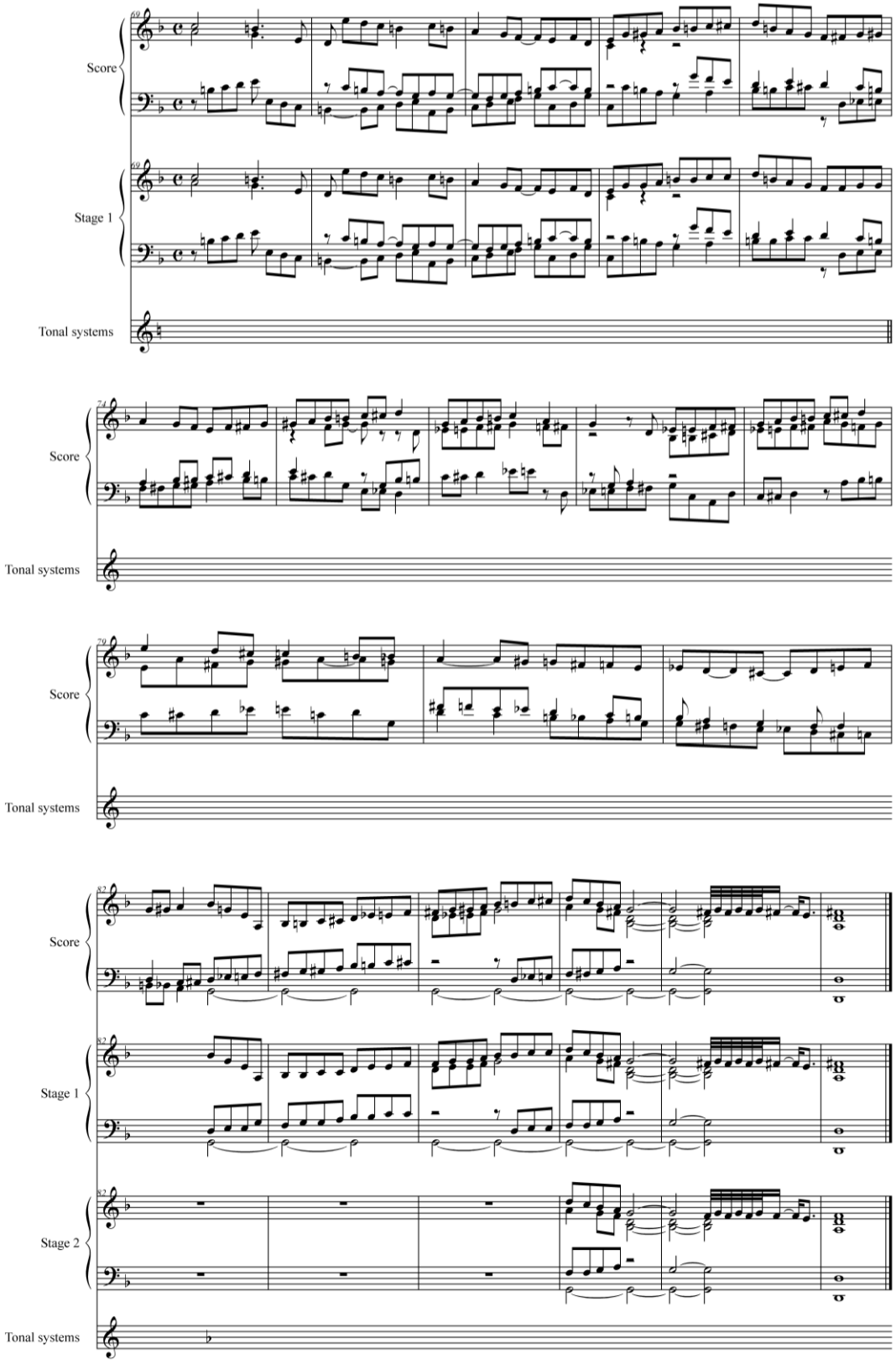
example of suspended diatonicism, although it contains consecutive semitones in both voices.



Example 41. Reduction of Strozzi, *Cuore che reprime alla lingua di manifestare il nome della sua cara* (1654b).

The bass progression in mm. 175-7, which chromatically fills in a perfect fifth, has a clear distinction between diatonic and chromatic tones because the preceding passages have been governed clearly and exclusively by the natural system. The D-sharp, C-sharp, and B-flat are therefore Type B alterations, and having been perceived as Type B alterations in the bass, they will also be perceived as such in the soprano when it begins its own chromatic descent in m. 176. The cadence on A in the natural system in mm.178-9 contextualizes the chromatic tones in the bass of the following bars as Type B alterations, and, having been chromatic in the bass, they are chromatic in the soprano. Although the bass of mm. 179-82 is almost the exact reverse of the opening subject from example 25, it does not represent suspended diatonicism. In the Monteforte, no context had been established against which chromatic alterations would stand out as such, whereas in this example, several cadences have strongly established the natural system. Furthermore, in the measures in question, the bass chromatically fills in an octave (albeit with a change of register), with a durational accent on the fifth step down, which will turn out to be the final of the piece. This gives Strozzi's passage a much stronger diatonic context than Monteforte's, which chromatically filled in the space of a ninth.

A different situation exists in example 42, mm. 69-87 of Michelangelo Rossi's *Toccata VII* (1657a).



Example 42. Reduction of Rossi, *Toccata VII* (1657a), mm. 69-87.

Here, beginning in the sixth measure, the accretion of chromatic semitones in all of the voices and the lack of clear cadences, or even the expectation of them, makes discerning a governing system impossible.[85] This lack of a single discernible tonal system is the primary feature that distinguishes suspended diatonicism from all of the other chromatic phenomena discussed here. For instance, consider again example 20, the first nine bars of Lasso's Prologue. In mm. 6-7, the reduction shows the tonal systems changing with each sonority, beginning in the four-sharp system and ending in the one-flat system. This, too, could therefore be seen as an instance of suspended diatonicism, since the tonal systems change so rapidly and come to rest on a system so far removed from the one in which the passage started. But the crucial difference between Lasso's passage and Rossi's is that in the Prologue, the music could come to rest on any of the sonorities in mm. 5-7, and the governing diatonic system at that point would be clear. In Rossi's passage, on the other hand, if the music were to stop on any of the sonorities from m. 74 to m. 81—even if the sonority were a major or minor triad—there would not be a clear enough context to determine the governing tonal system or the status (diatonic or chromatic) of the chord in question.

To be sure, there are features that make certain tones stand out as more stable, if not diatonic. Most of the chromatic ascents and descents fill in the interval from G-D or from D-A, both of which are significant intervals within either the natural or the one-flat system with a D final. Note, for example, the soprano's ascent in m. 72, the bass' ascent from m. 73 to m.75, and the soprano's ascent beginning in m. 77.

[85] Note that the example does begin in the natural system, in spite of the one-flat signature.

Furthermore, all of the quarter notes and most of the repeated eighth notes in the passage belong to the one-flat system, and many stand out as the goals of chromatic ascents or descents (note especially the soprano A-natural in m. 74 and D-natural in m. 75). Certain progressions may also be interpreted as cadential: the motion from E major to F major (mm. 73-4) can be interpreted as an evaded cadence to A minor, which would certainly have a place in the governing system. The soprano and bass move quite forcefully from an augmented sixth, E-flat-C-sharp,[86] to an octave D in m. 75, although an actual cadence to D minor is evaded by the middle voice's motion to B-flat. Finally, the motion from m. 79 to m. 80 could be seen as a plagal-type cadence to D major, anticipating the final cadence.

Nevertheless, overall the passage remains an example of suspended diatonicism. Of all the potential cadences, including the ones just mentioned, very few fall on strong beats, and most are evaded, which weakens greatly their ability to define a tonal system clearly. There are many situations where the use of several chromatic tones in succession in multiple voices creates ambiguous sonorities and progressions in which it is very difficult to perceive a governing tonal system. One of the most common ways Rossi creates these situations is by having two voices move by consecutive semitone in parallel motion, and therefore maintain the same interval size.[87] The complex of tones created by this type of motion can never belong to a single tonal system, at least not by the third consecutive interval. Nearly all of the

[86] This augmented sixth actually has two conflicting effects: on the one hand, it intensifies motion to the octave D, which could highlight the status of D as a diatonic tone, and on the other hand, it destabilizes any sense of diatonicism by virtue of the fact that E-flat and C-sharp do not belong to any one tonal system.

[87] Strozzi also used this technique in example 41, but the governing tonal systems were clear for the reasons outlined earlier.

music from the middle of m. 73 to m. 80 contains this type of motion between at least two of the voices. On the second half of the third beat of m. 73, the soprano and bass rise in parallel major thirds from D-F-sharp to F-A (the fact that the bass continues moving up by semitone is the main factor that destabilizes the sense of evaded cadence noted earlier on the downbeat of m. 74). Immediately after the downbeat of m. 74, the bass and middle voice begin to move in parallel minor thirds, continuing until the second half of the third beat. At this point comes the most tonally destabilizing event of all—the consecutive augmented triads from the third to the fourth beat of m. 74, which lead to another augmented triad on the downbeat of m. 75. The augmented triad is already an ambiguous sonority; later composers would exploit its ability to resolve in several different ways in order to modulate to distant harmonic regions very quickly. In this context, one augmented triad already cannot belong to a single tonal system, and two of them in a row serve to completely negate any sense of diatonicism. In mm. 76, 77, and 78, the middle voice and soprano move in parallel perfect fourths, creating the sonority C-B-E on the second half of the third beat of m. 77, a sonority difficult to explain by the voice-leading principles of tonal or pre-tonal music. Many more instances of this type of motion occur between mm. 79 and 81.

This passage also contains many successions of sonorities that do not follow any kind of standard voice-leading pattern in either the soprano or the bass (such as a descending-fifth pattern), much less exist in any kind of functional relationship to one another. Consider the succession of chords beginning on beat 3 of m. 77 and continuing to the downbeat of m. 78. This is not a succession of sonorities that creates

a predictable set of expectations. Since it is not sequential, it does not even create the expectation that it will continue in the same fashion. Until the arrival of the bass G in m. 82, it is difficult to distinguish stable from unstable tones, and therefore to differentiate tones belonging to the governing system from chromatic alterations of those tones.

The Historical Transformation of the Categories along the Continuum

As the system of major/minor tonality began to coalesce, the categories of chromaticism along the continuum of Figure 1 began to change into chromatic techniques that fit within major and minor keys. The differences between pre-tonal and tonal music open up many areas for further study, and cannot be dealt with fully here, but those differences merit some discussion. The larger categories of pure diatonicism, indirect chromaticism, and direct chromaticism still pertain to tonal music. Pure diatonicism still exists as an abstract category of music with no chromatic pitches at all. Indirect chromaticism takes the form of such techniques as pivot-chord modulation, in which there is overall chromaticism without a single chromatic moment. Pivot-chord modulation forms a new type of indirect chromaticism, one that arises not from the use of "essential" chromatic tones, but from the deliberate introduction of chromatic tones in order to move to a different key area, and hence a different tonal system (except where relative major/minor pairs are involved). Direct chromaticism comprises such techniques as common-tone modulation. Below is a

table showing, on the left, the smaller-scale categories of chromaticism discussed in chapters 3 and 4, and on the right, their descendants in major/minor tonality.

Category of chromaticism	**Descendant in major/minor tonality**
Type A non-essential chromaticism	Leading tone in the minor mode; chromatically altered tone as part of a modulation
Type B non-essential chromaticism	Modal mixture; chromatically altered tone as part of a secondary dominant
Essential chromaticism	Disappears with the free use of tritones and diminished triads
Juxtaposed diatonicism	Abrupt modulation; juxtaposition of chords within a minor key
Suspended diatonicism	Remains as a compositional technique

Table 1. The descendants of the various types of chromaticism

As the table shows, non-essential chromaticism in eighteenth-century music (and later music) functions in the same way it does in sixteenth- and seventeenth-century music, as modifications of diatonic tones. A valid distinction can still be made between Type A and Type B tones. Type A tones take the form of chromatic tones that are syntactically necessary in tonal music, such as the raised seventh scale degree in minor or the raising of any tone in order to make a secondary dominant chord as part of a modulation. In a standard pivot-chord modulation, ending in a perfect authentic cadence in the new key, the leading tone of the new key is syntactically required. Without it, there would be no modulation. Type B tones become what we call modal mixture (including secondary and double mixtures), that is, tones that are chromatically altered without changing the harmonic function of a given sonority. Alternatively, they may become tones that are chromatically altered to

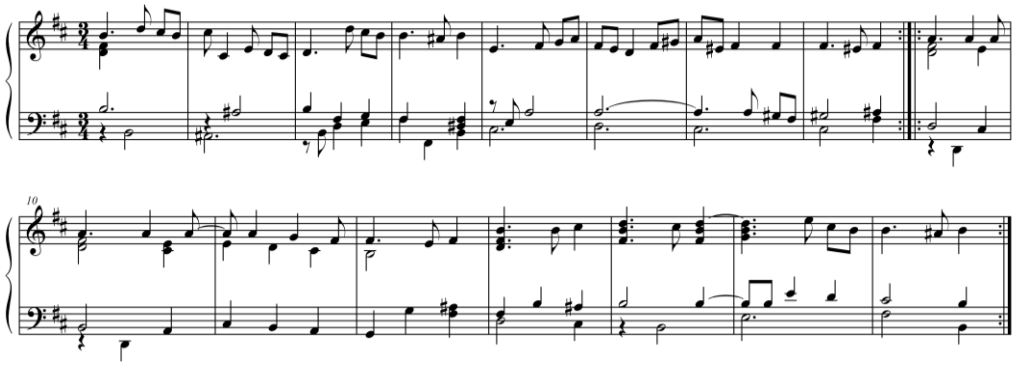
create a temporary secondary dominant that is not part of a modulation. In almost all such cases, the leading tone in the secondary dominant may be omitted. For example, in the progression C major, A major, D minor, the C-sharp in the A major triad is syntactically unnecessary; the progression would still be valid without it. In the cases both of modal mixture and of secondary dominants, some analysts still "reduce" these tones out of the texture by retaining the original Roman numeral of the altered chord—thus writing, for example, I–VI#–II instead of I–V/II–II. Examples of all of these techniques are innumerable and need not be given here.

Essential chromatic tones disappear altogether, because the grammatical requirements that produced them no longer apply. The rules of musical grammar are different in tonal music; they never require the introduction of tones outside the key to correct grammatically incorrect sonorities.[88] Previously unallowable dissonances are no longer corrected by chromatically altering one or more tones, but by resolving one or more tones into the following sonority. Most importantly, the situations in sixteenth- and seventeenth-century music in which tritones and diminished fifths were grammatically incorrect simply did not exist in eighteenth century; in fact, they had begun to fade with the arrival of the *seconda prattica*.

The transformation of juxtaposed diatonicism, on the other hand, deserves some detailed consideration. One way in which this technique lived on is in abrupt modulation, (for example, modulation by common-tone). But this technique did not gain widespread use until the nineteenth century. As early as the seventeenth century, and well into the eighteenth century, juxtaposing two incompatible tonal systems

[88] This is true, of course, only if one considers the raised sixth and seventh scale degrees in minor to be part of the key.

began to be replaced by juxtaposing two incompatible sonorities, one of which contained a non-essential alteration within the governing system. Example 43 illustrates this technique in the Sarrabande [sic] from the *Suite in B Minor* by Benedict Schultheiss (1679-80a).



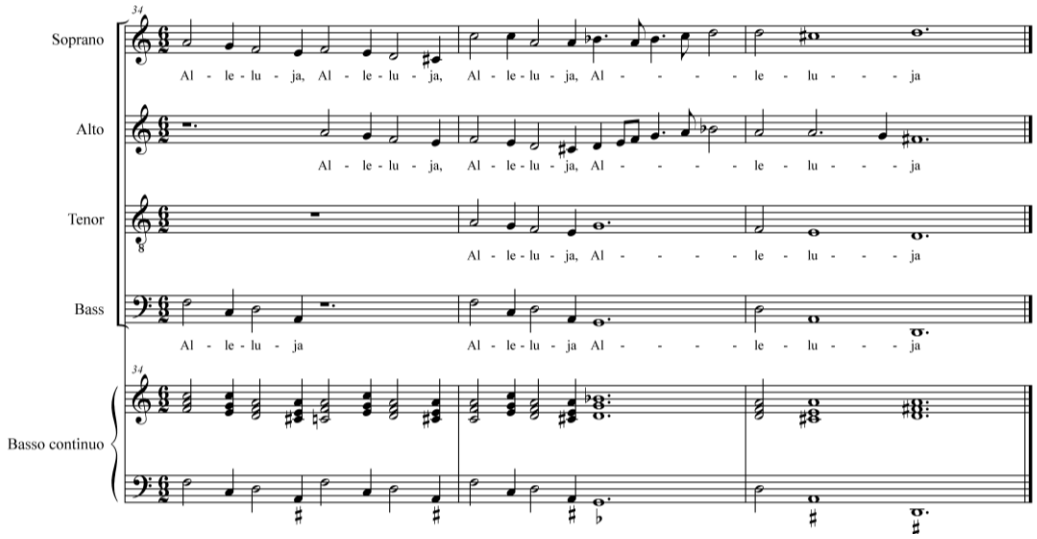
Example 43. Schultheiss, *Sarrabande* (1679-80a).

From m. 8 to m. 9, the composer juxtaposes two sonorities that are chromatic in relation to one another by introducing the D-major sonority immediately after the F-sharp-minor cadence, which is syntactically required to contain the Picardy third A-sharp in order to return to B minor for the repeat of the first half. With the introduction of G-sharp in mm.7-8, we have briefly moved into a three-sharp system, but the motion back to the two-sharp system is accomplished by indirect, rather than direct, chromaticism. Since the A-sharp is a non-essential alteration, the three-sharp system remains in effect, at least theoretically, until it is contradicted by the G-natural in m. 11.[89] The juxtaposition from m. 8 to m. 9 is therefore not between two

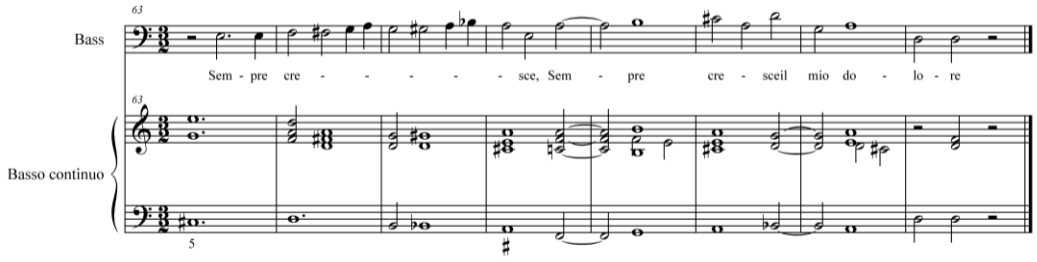
[89] There is some justification for reading m. 9 as a return to the two-sharp system: the repeated emphasis on D major might suggest to the listener that it is a new tonic, and that G-natural is therefore implicitly diatonic.

incompatible tonal systems but only between two incompatible sonorities, one of which contains the raised seventh scale degree and the other its natural form.

Example 43 illustrated the juxtaposition of "V" against "III" in a minor-mode piece. This progression would become the most popular way of juxtaposing two incompatible sonorities; recall that it is contained in the well-known "romanesca" pattern. Examples 44 and 45 each present similar progressions, from mm. 34-6 of Johann Schein's sacred concerto *Christ Lag in Todesbanden* (1618a) and from mm. 63-70 of Giovanni Legrenzi's cantata *Sorgea dal sen di Lete* (1676d)



Example 44. Schein, *Christ Lag in Todesbanden* (1618a), mm. 34-6.

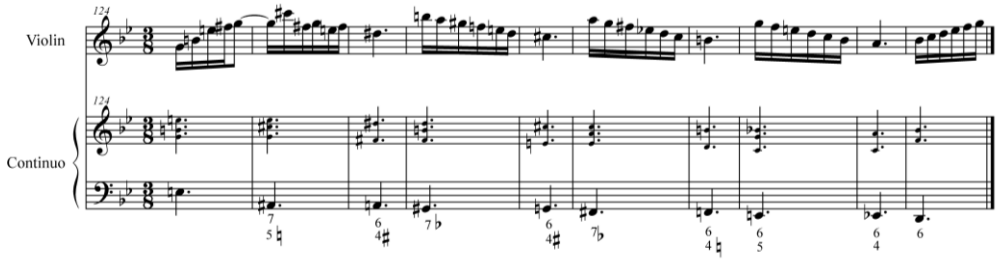


Example 45. Legrenzi, *Sorgea dal sen di Lete* (1676d).

Each example contains motion to a dominant sonority, followed by a progression starting on what a modern musician would instinctively call a III chord. In example 44, Schein also juxtaposes A major against G minor. In a technique reminiscent of juxtaposed diatonicism, each composer has introduced chromaticism by placing two incompatible sonorities side-by-side. The difference between this technique and juxtaposed diatonicism is that here, the first sonority contains a Type A non-essential alteration, which, if removed, reveals that the two harmonies belong to a single tonal system. I do not mean to suggest an evolutionary process whereby juxtaposed diatonicism gradually evolved into these types of progressions, but, just as elements of major/minor tonality began to appear at different times in different places, so did the technique of juxtaposed diatonicism continue to be used more in the works of some composers than others.

Unlike juxtaposed diatonicism, suspended diatonicism remains as a compositional technique into the eighteenth century. Obviously, eighteenth-century tonal music, as with music of the sixteenth and seventeenth centuries, will always have some diatonic features, but it, too, contains situations that approach suspended diatonicism. In these cases, the accretion of chromatic tones or sonorities temporarily suspends the ability to distinguish the major or minor key; the music can therefore come to rest virtually anywhere.

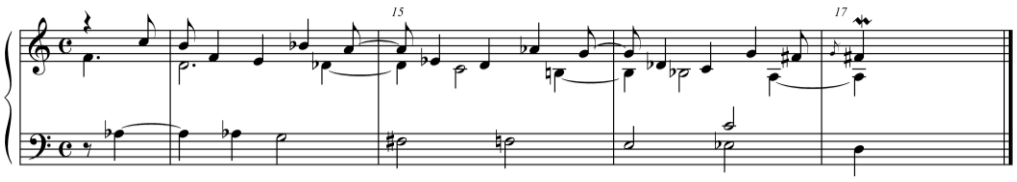
Examples 46 and 47 present cases of suspended diatonicism in eighteenth-century music. Example 46 presents mm. 124-33 from the first movement of Antonio Vivaldi's Concerto in F ("L'estate") RV 315 (1725c).



Example 46. Vivaldi, Concerto in F, RV315 (1725c), mm. 124-33.

The passage begins on an E-minor chord and ends on a B-flat-major chord, two harmonies that are quite distant from one another. In between these two chords is a progression in which the bass descends by semitone through the space of an augmented fifth, from A-sharp to D. I have realized Vivaldi's figured bass literally, as a chain of descending diminished seventh chords alternating with diminished triads. In practice, however, each would probably have been realized as a dominant 4/2 chord having the same root as the triad to which the diminished seventh should resolve. Each one could be seen as an elided resolution of the preceding diminished seventh chord: the seventh and fifth of the chord resolve normally, and only the bass moves down by half-step instead of up. In fact, in terms of root motion, this passage is an elaboration of a chromatic descending-fifth sequence, starting with an implied root of F-sharp in m. 125 and ending with the root B-flat in m. 133. But, as with the Rossi example, the build-up of chromatic lines makes it impossible to discern an underlying tonality for the progression, or even to predict which key will finally resolve it, which allows Vivaldi to undertake the unusual modulation from E minor to B-flat major.

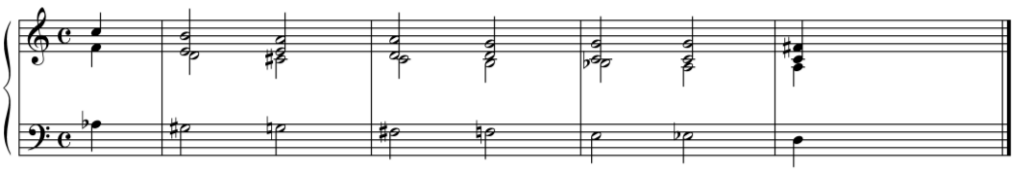
Example 47a is from Johann Sebastian Bach's *Kleines harmonisches Labyrinth*, BWV 591 (Early 18th Century (b)).[90]



Example 47a. J.S. Bach, *Kleines harmonisches Labyrinth* (Early 18th Century (b)), mm. 13-7.

Just as in the previous examples, each of Bach's four voices (counting the top part as two voices) descends by semitone. Unlike the Vivaldi example, Bach complicates matters even further with the series of suspensions, creating a rhythmic displacement that matches the tonal displacement. Even though some of the suspensions create apparent major and minor triads (see the downbeats of mm. 15 and 16), these are de-emphasized by the suspensions themselves, as well as by the fact that the tones making up these "triads" are often non-chord tones. As with the Vivaldi example, Bach has written a descending-fifth sequence, beginning with the root E in m.14 and changing every half note until root C on the downbeat of m.16. To see the sequence clearly, one has to imagine the enharmonic equivalents of some of the upper voices, changing the bass A-flat to G-sharp in m. 14 and the alto D-flat to C-sharp at the end of the same bar. Example 47b presents the chord progression underlying this sequence.

[90] Many scholars consider the attribution of this work to Bach as doubtful. However, the *New Grove Dictionary of Music and Musicians*, 2nd ed. includes it in the main list of Bach's organ works, not in the separate section labeled "doubtful and spurious."



Example 47b. Underlying chord progression of example 47a.

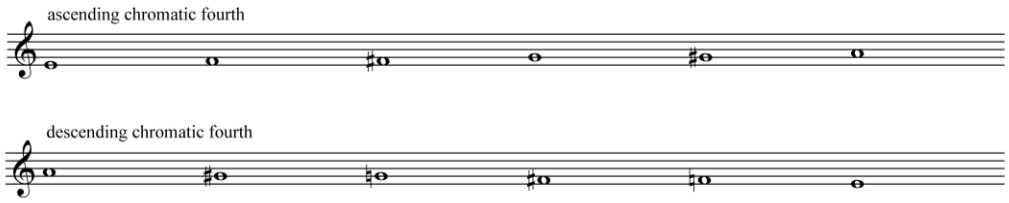
The chord tones of each chord in the sequence do not come together until the second half of every weak beat; thus, the E dominant 6/5 chord is not heard until the second half of beat 2 of m. 14, the A dominant 4/2 not until the second half of the fourth beat of the same measure, and so forth. Even when each chord comes together, it is missing its fifth, which, because of the polyphonic melody in the top voice, has disappeared. Bach's example is therefore even less clear than Vivaldi's because none of the chords appear in rhythmically strong positions, and because each chord only exists as a simultaneity for one-half of a beat. Bach also contributes to the sense of suspended diatonicism by temporarily reversing the role of consonance and dissonance. For example, the major ninths between bass and soprano at the end of mm. 14 and 15 would, out of context, be dissonant in relation to the minor tenths that precede them. But in the context of this chain of dominant chords, the ninths are made up of chord tones, while the upper voice of each tenth is a dissonant suspension. Likewise, mm. 15 and 16 each begin with a perfect fifth between bass and alto (spelled enharmonically as a diminished sixth in m. 15) that is, in this context, less stable than the diminished fifth that follows it, because the latter comprises two chord tones while the alto in the former is a suspension. All of these factors come together to create a situation very close to the suspended diatonicism of the Rossi example. As with the Vivaldi example, Bach is therefore able to accomplish a fairly remote

modulation, from F minor to G minor—since he lands on the dominant of G, the actual progression is from F minor to D major—through this temporary suspension of tonality.

Part Three : Analyses

Chapter Five: The Chromatic Fourth

The chromatic fourth was, by any measure, the most popular type of chromatic progression from the mid-sixteenth to the early eighteenth century, and perhaps even beyond. Example 48 presents both an ascending and a descending chromatic fourth filling in the space from E to A. Normally, the chromatic fourth fills in the space from tonic to dominant; even in pre-tonal music, the chromatic fourth most often fills in the space between the modal final and its fifth. The examples shown therefore represent chromatic-fourth progressions in what modern musicians call the A minor or A major scales.



Example 48. Ascending and Descending Chromatic Fourths

In calling this progression the "chromatic fourth," I am following the terminology of Williams (1997), who eloquently explains why this term is preferable to others:

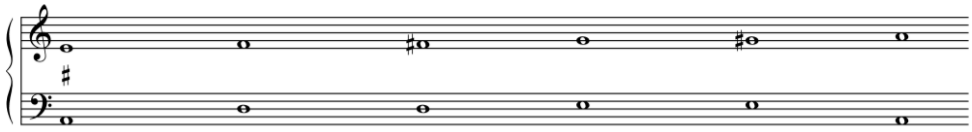
> I am keeping the term 'chromatic fourth' rather than 'chromatic tetrachord' or 'chromatic hexachord' or 'lament bass' … because these have—or should have—other connotations. I reserve 'chromatic tetrachord' for the Greek or pseudo-Greek sequence of four notes over a fourth but incorporating two specific semitones … 'Chromatic hexachord' … is an inappropriate use of a medieval term, as too is any modern atonal theory that borrows it: the point of

> the hexachord was that it was diatonic. 'Lament bass' is too restricted in genre … 'Chromatic fourth' is not ideal, since some of its semitones are diatonic; but it seems the best phrase in the circumstances, preferable to 'a fourth filled in chromatically' … which is no more precise despite its length (4).

I will begin this section with a brief discussion of the categorization of chromatic-fourth progressions according to the theory presented in part two. Next, I will show my procedure for reducing nearly all of the harmonizations that I uncovered to a handful of contrapuntal models.

The Place of the Chromatic Fourth along the Continuum

The chromatic fourth is almost always an example of non-essential chromaticism, and would fall into that category on the continuum presented in chapter 3.[91] As we shall see, nearly all of the harmonizations of the chromatic fourth—and the contrapuntal models I have drawn from them—rely on perceptible chromatic alterations of two of the middle tones. In fact, the expressive effect of the chromatic fourth most often comes from the change in intensity created by these chromatic alterations. Consider example 49, which is one of the standard harmonizations of the ascending chromatic fourth in an upper voice.

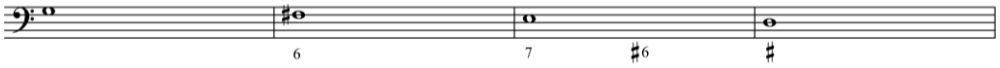


Example 49. A standard harmonization of the ascending chromatic fourth.

[91] Note, however, that Appendix 3, which lists all of the chromatic fourth harmonziations and the pieces in which they may be found, has a separate category entitled "Stretto to the Point of Suspended Diatonicism." These are passages in which so many chromatic fourths are used in stretto that they create suspended diatonicism. Such passages are obviously excluded from the following discussion of non-essential chromaticism in the chromatic fourth.

In this example, since both the F-sharp and the G-sharp are alterations of the third above a stationary bass, they are both true chromatic semitones (recall the distinction between diatonic, chromatic, and ambiguous semitones in chapter 2). Assuming a minor-mode context, the F-sharp will be clearly perceived as a chromatic alteration of F-natural, and G-sharp will be perceived as a chromatic alteration of G-natural. Therefore, both the F-sharp and the G-sharp are non-essential chromatic alterations, and could be removed to form the diatonic fourth E-F-G-A.[92]

In fact, the two raised tones are most often the ones identifiable as chromatic. This is true even in the descending chromatic fourth, where they appear first. The following examples will illustrate why this is so.

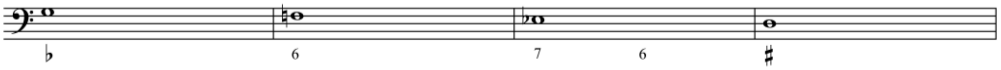


Example 50a.

Example 50a presents the first half of one of the most popular models for keyboard improvisation in the Baroque period (the second half of the pattern in the

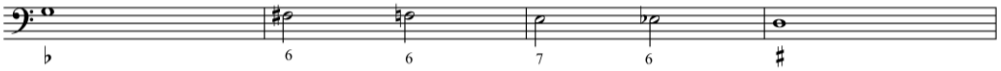
[92] Gauldin (1987) also recognizes that the raised tones in a chromatic fourth can be reduced to a diatonic tetrachord: "All of the prior examples [examples of chromatic fourth harmonizations] may be reduced back to an underlying diatonic basis" (184). He reasons (correctly, in my view) that this is so because the raised tones were not part of the traditional gamut, whereas the other tones in the chromatic fourth were, and that these raised tones would therefore be harmonized as parts of chromatically altered sonorities. Much of Gauldin's article draws conclusions that are very similar to the ones I have presented here; for example, he distinguishes between *structural* and *non-structural* chromaticism in the same way that I have distinguished between *essential* and *non-essential* chromaticism in chapter 3. He also presents contrapuntal models for chromatic fourth harmonizations as I do below, although he does not provide as many models or draw from as large a body of examples as I have. All in all, Gauldin's article is an excellent introduction to the study of chromaticism from this period.

bass would be B-C-D-G). This figured-bass pattern formed the basis for countless compositions, most notably Handel's chaconnes and Bach's Goldberg Variations. Now, transposing this pattern into the parallel minor produces example 50b.



Example 50b.

As one would expect, the F-sharp and E-natural from the original have been replaced by F-natural and E-flat from the descending minor scale. If we then fill in the two whole steps in the bass with semitones while keeping the mode minor, the result is example 50c.



Example 50c.

Thus, we can see that even in the descending chromatic fourth, the two raised tones are the chromatic alterations, even though they appear before their diatonic counterparts. The descending chromatic-fourth harmonization of example 50c is by far the most common one; this harmonization, and a variant of it that uses a 6 in place of the 7 on the fourth tone, form well over three-quarters of the harmonizations that my research uncovered.

To be sure, there are harmonizations—especially those in the major mode—in which sharp-6 and sharp-7 are diatonic, although these are less common.[93] Time and space will not permit me to go through each of the 1,425 harmonizations I uncovered and describe which of the chromatic tones in each one is a non-essential alteration; I leave it to the interested reader to explore this further. With few exceptions, most of which involve suspended diatonicism created by several chromatic fourths in stretto, the chromatic fourth always contains within it two non-essential chromatic alterations.

Since I mentioned major-mode harmonizations in the preceding paragraph, I will take a moment here to address the issue of mode. Although I observed with interest whenever a harmonization was in the major mode, I did not note this in the list of harmonizations. Accidentals in the figured bass indicate whether a specific sonority was major or minor, but there is no indication of whether the major- or minor-mode sonorities are diatonic. Very few major-mode pieces actually used the chromatic fourth, probably because it was traditionally associated with a sorrowful, lamenting character (this is at least true of the descending fourth);[94] nevertheless, it would be fruitful to study the differences between chromatic-fourth harmonizations in the major mode and those in the minor. When I began my research, however, it was unclear where the classification of the chromatic-fourth progressions would lead, and I began by transcribing the harmonizations as collections of pitches out of context.

[93] See the discussion of major-mode harmonizations below. For the sake of convenience, I will usually refer to the tones of the chromatic fourth as though they were the scale-degrees from dominant to tonic, inclusive. Thus, I call the tones of the ascending chromatic fourth scale-degrees 5, flat-6, sharp-6, flat-7, sharp-7, and 1. I use "flat" and "sharp" so that there can be no ambiguity about which form of scale-degrees 6 and 7 I am referring to.

[94] See Rosand (1979) for a discussion of the affect of the chromatic fourth.

Time constraints did not allow me to pursue other methods of analyzing the harmonizations, some of which I will discuss as areas for future study in the concluding chapter of this work. Therefore, a harmonization such as the one given in example 49, which would be perceived quite differently if it occurred in a major-mode piece, is analyzed here without regard for the larger context of which it is a part.

The Classification of Chromatic Fourths

The following section will describe in detail my methods for gathering and analyzing chromatic fourth progressions. Along the way, I will examine some of the more unusual harmonizations that I encountered and explain how I dealt with them. The ultimate goal of my research into the chromatic fourth was to classify all of the harmonizations I uncovered into as small a number of categories as possible.

Collection of chromatic fourths from the literature

As part of the process by which I gathered examples of chromatic music for this dissertation (see the introduction), I transcribed each example of a chromatic fourth that I found, first transposing it to fill in the space between E and A.

Preliminary categorization

I divided these examples according to whether the chromatic fourth was descending or ascending, and whether it appeared in the bass or in an upper voice. I therefore labeled the chromatic fourth harmonizations as follows: ascending, upper-

voice (AUV); ascending, bass (AB); descending, upper-voice (DUV); and descending, bass (DB). The resulting list of harmonizations appears in Appendix 3, followed by the catalogue numbers of the work or works that use the harmonization.[95] The harmonizations themselves appear in Appendix 6. For the upper-voice harmonizations, I noted the accompanying bass line, using figured bass to indicate the harmonies.[96] The chromatic fourth that appears above these figured basses therefore does not necessarily represent the soprano voice of the harmonization; I did not distinguish between chromatic fourths in the topmost voice and those in the inner voices. For the bass harmonizations, I noted only the harmonies, again using figures. I numbered each harmonization ("AUV1, AUV2, etc.") according to the order in which I found it; the numbering therefore does not represent any logical or chronological progression. These lists already represent a classification into larger groups; for example, the few hundred examples of descending chromatic fourths in the bass yielded only 77 distinct harmonizations.

Determination of the fundamental bass.

Having discovered over fourteen hundred chromatic-fourth progressions, I began searching for a way to classify them into larger units, finally deciding on the fundamental bass as the best way to do so.[97] Fundamental-bass analysis has two

[95] I inadvertantly skipped from DUV48 to DUV50 when I first created the list of descending upper-voice harmonizations. DUV49 does not exist.

[96] In general, I did not indicate sharp-6 and sharp-7 in the figures, since they were always present in the melody. Because my research took place over an extended period, my practice in this regard was not always consistent, but the general trend in transcribing the progressions was to include only those tones and intervals not in the chromatic fourth itself.

[97] My great thanks go to William Rothstein for suggesting the fundamental bass as a way of analyzing the progressions. Prior to his suggestion, I had attempted to classify each harmonization according to

particularly attractive features: first, it is an analytical technique contemporaneous with much of the music under consideration, and second, it eliminates the distinction between upper-voice and bass harmonizations. In a fundamental-bass analysis, every harmonization becomes the upper voices above the fundamental bass. By classifying the harmonizations according to their fundamental basses, I was able to group together harmonizations that had compatible pitch-classes[98] in each order position, but had different bass lines. I labeled the fundamental basses according to whether they harmonized a descending (D) or ascending (A) chromatic fourth, and numbered them according to the order in which they were created (thus, "D1," D2," etc.). The complete roster of fundamental basses appears in Appendix 5. After creating the fundamental basses, I was then able to classify them into larger units, as I will explain in section 4.

Before explaining how I determined the fundamental bass classifications, it will be important to take a moment to describe what I mean by "fundamental bass." I have, of course, borrowed the term from Rameau, Kirnberger, and other eighteenth-century authors, but not the exact concept used by any one of them. The fundamental basses presented here represent the lowest possible tones that, when placed underneath the chords in question, create root-position major or minor triads (or seventh or ninth chords, where triads were not possible). To put it another way, the fundamental bass, as I use it here, comprises both the tone that creates the most stable possible sonority when placed underneath the chord in question, and the collection of

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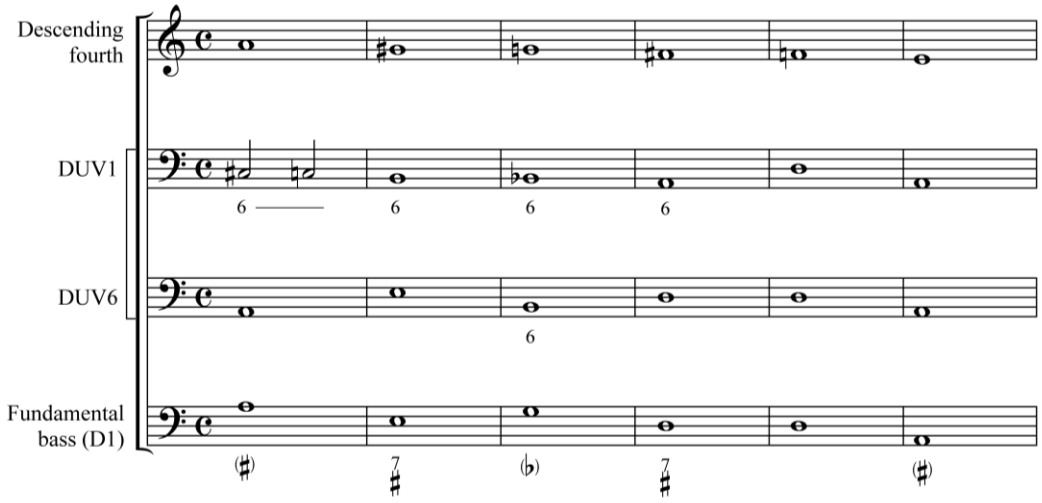
whether it created directed motion to the dominant, to the tonic, or neither. This method did not prove fruitful.

[98] By "compatible pitch-classes," I mean pitch-classes that could in principle sound together as part of a triad, seventh chord, or ninth chord; for example, E and B above the bass tone G.

pitch-classes in that sonority. The main criterion that I used to determine the "stability" of a sonority was whether or not the sonority had a perfect fifth above the bass. My use of the term "fundamental bass" should not be construed to mean that the fundamental basses I arrived at would be the same as those of any theorist from the eighteenth century.

Example 51 illustrates the method by which I determined the fundamental basses.



Example 51. Example of fundamental-bass determination.

The example has four staves: the first shows, for reference, the six tones of the descending upper-voice chromatic fourth. Underneath are two examples of harmonizations of the descending chromatic fourth, DUV1 and DUV6. On the lowest staff is the fundamental bass, D1, which accounts for both of them (and others). The fundamental bass tones, when placed below the sonorities in DUV1 and DUV6, transform each of them into either a root-position triad or seventh chord. For example, the diminished triads appearing in mm. 2 and 4 of DUV 1 can be

understood as the upper voices of dominant-seventh chords. These dominant-seventh chords would have roots E and D respectively, thus linking DUV1 to DUV6, since the latter already has those tones in those measures. (Notice that since the fundamental basses are abstract collections of compatible pitch-classes in the same order positions, rather than harmonic progressions, the sevenths in these dominant-seventh chords need not "resolve" in the way they would if they were actual chordal sevenths.) Likewise, the third measure of both harmonizations can be understood as the upper voices of a G triad. In order to achieve the largest possible groupings, I have made the qualities of the fundamental-bass sonorities variable. Thus, the first, third, and last tones of the fundamental bass D1 have parenthetical accidentals underneath corresponding to possibilities for the upper voices. Both harmonizations DUV1 and DUV6 can both be subsumed under fundamental bass D1.

In creating the fundamental basses, I had to make several kinds of choices about the best fundamental bass for a given type of sonority. I used the following principles to guide the creation of the fundamental basses:

1. Diminished triads were interpreted as dominant seventh chords, with a fundamental bass a major third below the original root. This conforms exactly to Rameau's conception (see Rameau [1722] 1971, 67).
2. Diminished seventh chords were interpreted as dominant ninth chords, with a fundamental bass a major third below the original root.
3. Half-diminished seventh chords were treated on a case-by-case basis, depending on the sonority to which they resolved. If the chord functioned as a leading-tone sonority, that is, if its supposed root provided directed

motion to the root of the following chord, I treated the chord just like a diminished seventh chord, with a fundamental bass tone a major third below the root. Alternatively, if the root of the chord in question descended a fifth to the root of the following sonority, the chord was given a fundamental bass corresponding to its root. Both principles 2 and 3 correspond to Kirnberger's conception of the fundamental bass (see Grant (1977), 329).[99]

4. Cadential 6/4 chords were always given the fundamental bass of their corresponding dominant chords; they were treated as double suspensions rather than as second-inversion chords. The same is true of any dissonant formation that eventually resolved to a consonant formation above a stationary bass. This principle matches Kirnberger's formulation of the fundamental bass,[100] but does not always match that of Rameau, whose analysis of the cadential 6/4 was inconsistent.[101]

In keeping with the idea outlined in the previous paragraph, motion from a 6/3 to a 5/3 above a stationary bass was also assigned the fundamental bass tone of the 5/3 sonority. Even though a 6/3 chord is not

[99] My research did not uncover any harmonizations in which a half-diminished seventh chord moved to a 6/3 chord with the bass moving down by semitone, for example, a half-diminished seventh on F# moving to a 6/3 on F. In such a case, I would have assigned the same fundamental bass tone to each chord, namely, a third below the actual root. This is because the F# in the bass of the half-diminished chord would be acting as a chromatically altered tone resolving to its diatonic version (at least, in minor or "Phrygian" settings), and the seventh of the chord would reolve down by step, just as would a ninth resolving to an octave above a stationary bass. Any half-diminished sevnth chords that I did find above sharp-6 in the harmonization resolved over the same tone (for example, to a 6/5 in DB25), and these were more clearly assignable to a given fundamental bass (D44, in the case mentioned above).

[100] See Beach (1979), pp. 166 ff.

[101] See Christensen (1993), pp. 126-8, on the differences between Rameau's conception of the cadential 6/4 from "L'Art de la basse fondamentale" of 1740 to the *Code de musique pratique* of 1760. Rameau analyzed the cadential 6/4 sometimes as a double suspension, and sometimes as a second-inversion triad.

dissonant like a cadential 6/4, it is a less stable sonority than the 5/3 if one uses the criterion of stability given above, and, while one could assign to it a fundamental bass tone a third lower than its actual bass in order to correct its instability, the idea that the sixth "resolves" down to the fifth corresponded much more closely with my own perception of the music.

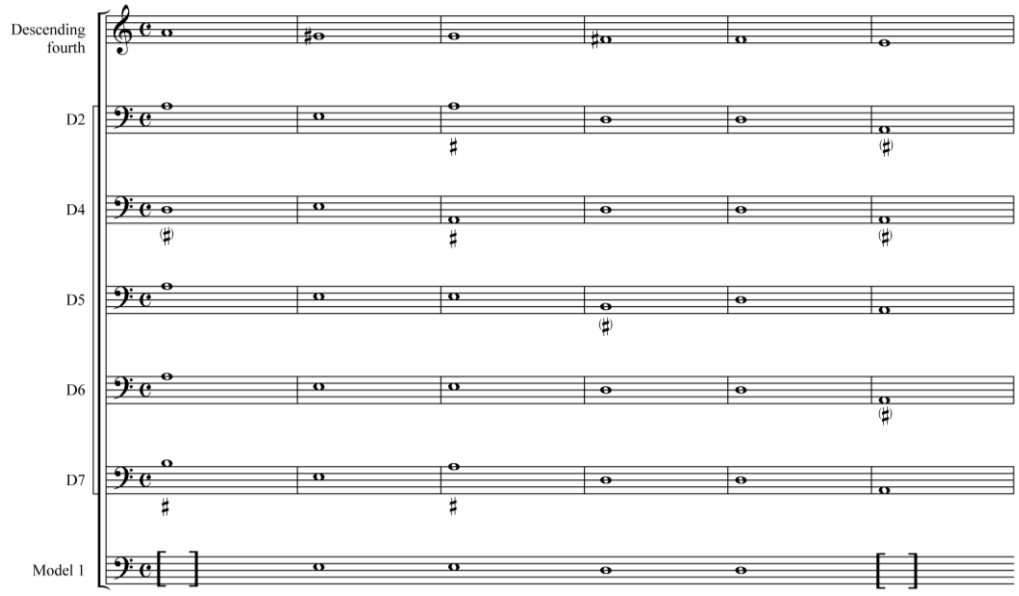
5. Single bass tones with 5-6 motion above were changed to two fundamental bass tones, the second of which was a third lower than the first. This may seem to contradict principle 4, but the difference here is that the motion from a 5/3 to a 6/3 sonority does not involve an unstable sonority moving to a stable one. In fact, 5-6 motion over a stationary bass is arguably motion from a more stable to a less stable sonority, and this difference in stability is corrected by the addition of a new fundamental bass tone below the 6/3 sonority. In any case, these fundamental basses were sometimes later reduced to a more contrapuntal model, as we will see below.

Determination of the contrapuntal models

The final stage of classification involved inducing contrapuntal models from the fundamental basses. I will explain this process first by describing the series of events that led to the determination of the models, then by giving the detailed set of principles that I used to determine them.

By using fundamental-bass analysis, I had been able to classify the chromatic-fourth progressions into considerably larger groups: instead of 163

descending upper-voice and bass chromatic-fourth harmonizations, there were now 79 descending fundamental-bass progressions that accounted for all of them. Still, there were many more categories than desirable for analytical purposes. I therefore began searching for any structural similarities between the fundamental basses that would allow them to be grouped into even fewer categories. Example 52 illustrates how this was done.



Example 52. Example of model determination.

Example 52 presents the descending chromatic fourth on the top staff, for reference, followed by fundamental basses D2, D4, D5, D6, and D7. Model 1, which comprises all of them, appears on the lowest staff. As I reviewed these fundamental basses in search of similarities among them, fundamental bass D6 stood out as being very clearly based on the contrapuntal progression of parallel thirds between the soprano and the bass. I then realized that each of these fundamental basses contained some form of the tones E-E-D-D in order positions 2, 3, 4, and 5, whether or not that

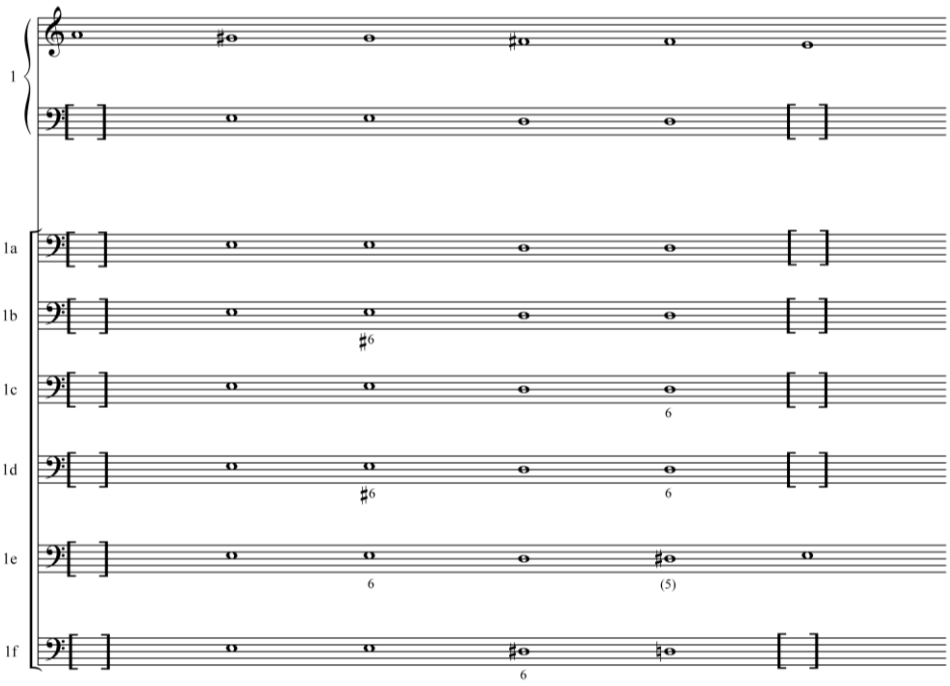
succession of tones appeared in any single voice. This progression of parallel thirds therefore seemed to represent the logical foundation of all five of these fundamental basses. That progression became Model 1. The model is therefore based on a type of pitch-class counterpoint; that is to say, if a fundamental bass contained the tones E-E-D(#)-D in any of its voices in those four order positions, it was grouped under model 1.[102] Since the first and last tones of the fundamental basses were highly variable, to account for all of the possibilities for these tones would render impossible any attempt to classify the fundamental basses into larger categories. They have therefore been omitted from the model entirely and replaced by empty brackets.

The determination of the models involved a great deal of back-and-forth movement between the original harmonizations, the fundamental basses, and the models themselves. Once I had induced a model from a few of the fundamental basses, in the manner described in example 52, I then searched the remainder of the fundamental basses for others that could be reduced to that model. In addition, some of the fundamental basses were less closely related to the model than the original harmonization from which they were drawn; these fundamental basses were therefore ultimately discarded.

Example 53 presents Model 1 and its subcategories 1a-1f. The model itself is an abstract, two-voice contrapuntal framework; the subcategories, which have figured-bass symbols, represent different ways of filling in this framework. The

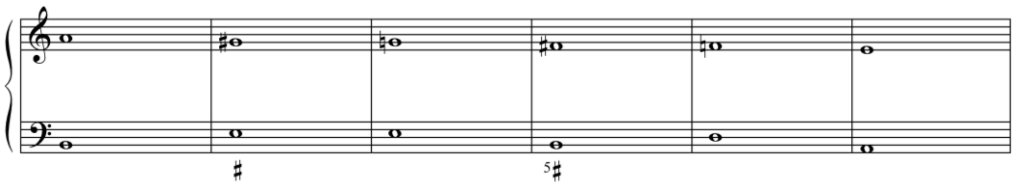
[102] I refer to "a type of pitch-class counterpoint" only because I maintain the distinction between outer-voice parallel thirds (model 1) and parallel sixths (model 5), as well as the distinction between the bass and upper voices, both of which would be inapplicable in pure pitch-class space. However, the models do exist somewhat in pitch-class space: as I explain here, the presence or absence of literal parallel thirds in any one voice is irrelevant.

example will serve to illustrate some of the issues that influenced the classification of the various fundamental basses and chromatic-fourth harmonizations into this model.

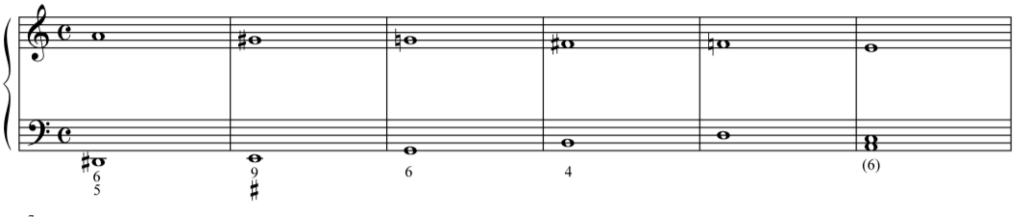


Example 53. Descending model 1 and its subcategories.

1. Some of the fundamental basses corresponded exactly to the model; these became model 1a. For example, see fundamental bass D6 in example 52.
2. Example 54a presents fundamental bass D24, which serves as another illustration of how I determined the models using pitch-class counterpoint. For reference, example 54b presents harmonization DUV27, from which D24 was drawn.



Example 54a. Fundamental bass D24.

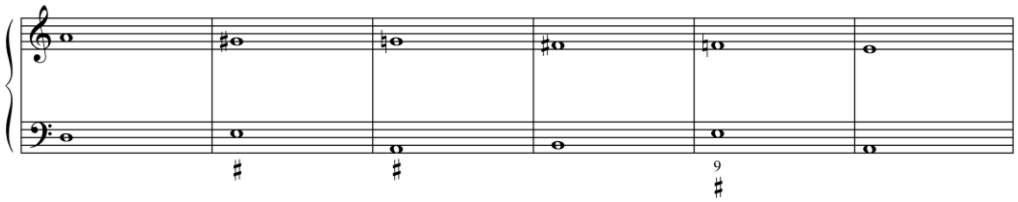


Example 54b. Chromatic fourth harmonization DUV27.

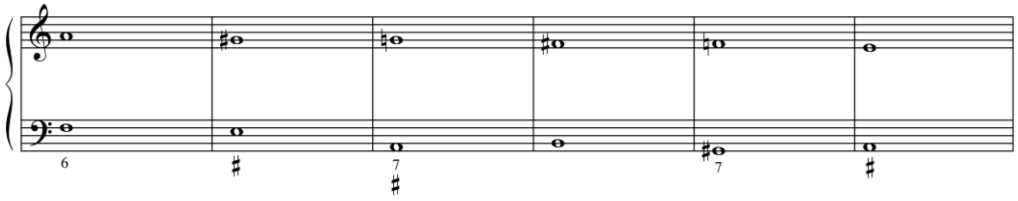
Here, the bass tone D under sharp-6 in the model (example 53) has moved into an inner voice. The fundamental bass tone B therefore represents what a Schenkerian analyst would call a cast-out root;[103] I therefore considered the B to represent the sixth of a 6-5 motion over a stationary bass tone D, with its corresponding fifth, A, belonging to one of the inner voices. Since this 6-5 motion can be further reduced to a single D harmony (see principle 4 on p. 162, fundamental bass D24 is reducible to model 1a.

3. As I mentioned above, there were some cases in which the fundamental bass was less closely related to the contrapuntal model than was the original harmonization from which the fundamental bass was created. Example 55a and 55b present fundamental bass D37 and its corresponding harmonization, DUV53.

[103] For an explanation of this concept, see Schenker ([1935] 1979), 90, where the concept is translated as "addition of a root."



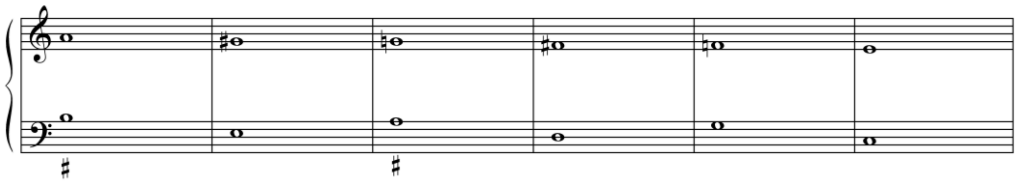
Example 55a. Fundamental bass D37.



Example 55b. Chromatic fourth harmonization DUV53.

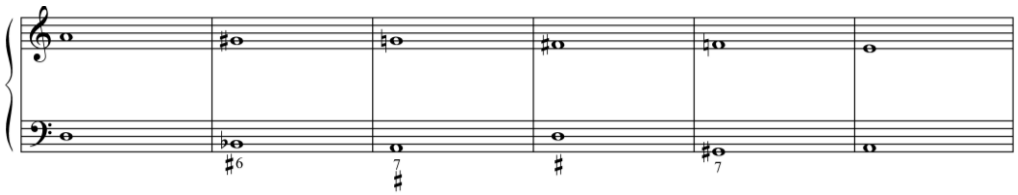
Now, the fundamental bass D37 does not seem very closely related to model 1; it would be hard to justify claiming that the model bass tone D under flat-6 was the logical foundation for the fundamental bass tone E and its corresponding dominant-ninth chord. However, this bass tone E exists only hypothetically. Its placement in the fifth order position came about only as a result of principle 2 given above, by which I analyzed diminished-seventh chords as dominant ninth chords lacking a root. More importantly, the addition of the fundamental-bass tone E does not contribute anything meaningful to the categorization of DUV53 into model 1d: we can trace the progression E-E-D-D through order positions 2, 3, 4, and 5 without the using fundamental bass D37 as an intervening step. Therefore, in some cases I classified a chromatic-fourth harmonization directly into one of the models, without using its corresponding fundamental bass at all.

4. I favored contrapuntal, rather than harmonic, progressions as the bases for classifying the fundamental basses and progressions into the various models. Thus, while fundamental bass D33 (example 56) presents a complete descending-fifth progression, it is still reducible to model 1d since the progression of parallel thirds can be traced through the correct order positions.



Example 56. Fundamental bass D33.

5. Augmented sixth chords were analyzed on a case-by-case basis, but many were analyzed as modified diatonic sonorities. For example, in harmonization DUV 63, given as example 57, the second bass tone, B-flat, can be understood as a modification of a diatonic B-natural; the appropriate fundamental bass tone would therefore be E. DUV 63 is therefore reducible to model 1d.



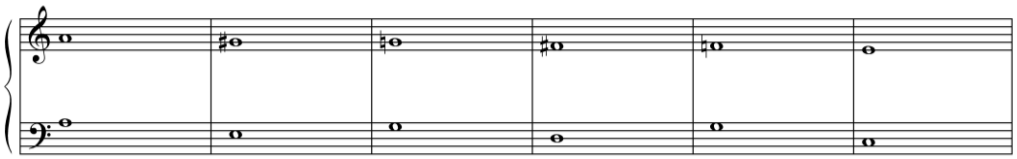
Example 57. Chromatic fourth harmonization DUV63.

Since the past three quite different examples have all been reduced to the same model subcategory (that is, 1d), this would be a good time to discuss the assigning of fundamental basses to different subcategories. This was done for different reasons, depending on the model in question. The most significant distinction among the fundamental basses grouped under model 1, after the fact that they were based on parallel thirds between the outer parts, was which sonority, if any, provided directed motion to the next. Accordingly, examples 55-57, in which the sonorities under flat-7 and flat-6 both act as dominants, were all grouped into model 1d, while harmonizations in which only one of these sonorities provided directed motion were classified into either 1b or 1c. In model 2, on the other hand (see below), the subcategories were determined by which type of plagal progression harmonized each successive pair of tones.

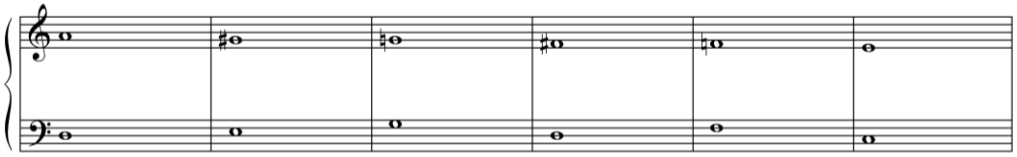
6. Model 1e is based exclusively on three descending bass harmonizations in which the D-sharp is a clear modification of a diatonic D-natural. In such cases, the D-sharp always provides directed motion to E. This is why E has been included as the final bass tone for model 1e.

The other models, being less common, do not require such detailed discussions. Model 2 is drawn from any harmonization that uses what a modern musician would call plagal progressions. I therefore felt it important to show the entire series of progressions, including both possibilities for the last two tones, rather than using brackets for the first and last tones, even though they are as variable as

they were for model 1. Most of the fundamental basses categorized under model 2 do not have the same bass tones as the model itself, but are modifications of them. Example 58a presents fundamental bass D9, which I felt was a modification of model 2a to create directed motion to the final C sonority; example 58b presents fundamental bass D22, which varies model 2a by substituting D for A at the beginning.



Example 58a. Fundamental bass D9.

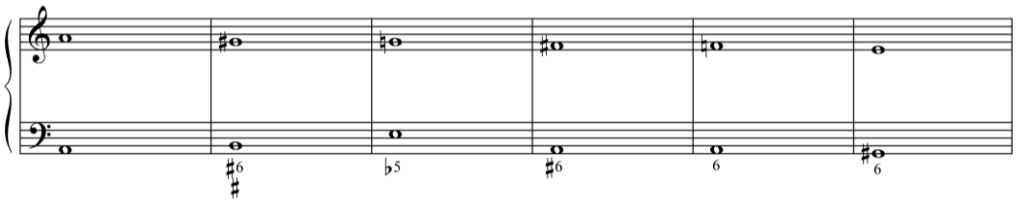


Example 58b. Fundamental bass D22.

Model 3 represents any chromatic-fourth progressions that contain contrapuntal motion in the upper voices to an A "dominant" sonority. That is, all of the fundamental basses or progressions grouped into model 3 harmonize sharp-6-6-5 with a cadential 6/4 chord, or some variant of it, moving to a major 5/3 over A that functions as a dominant.

Model 4 is close to model 1, but the use of F-sharp rather than D as the fourth bass tone was significant enough, and happened often enough, to warrant a separate model.

Model 5, which consists of parallel sixths between the bass and upper voice, contains some of the most potentially controversial classifications. Almost all of the harmonizations classified therein could also belong to one of the other models, and many of the analyses that led to a model-5 classification directly contradict the principles for classification that I outlined above. Nevertheless, there are sound reasons for classifying certain of the descending harmonizations into this model. Example 59 presents harmonization DUV48.

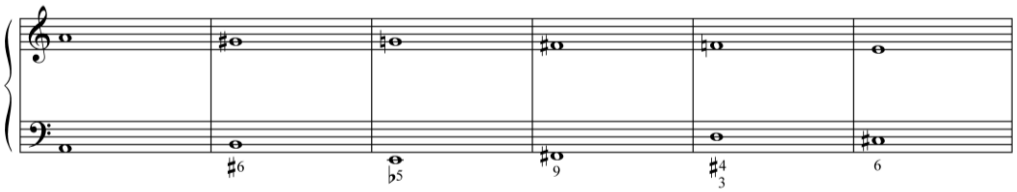


Example 59. Chromatic fourth harmonization DUV48.

The fundamental bass for this harmonization, according to the set of principles presented earlier, has almost nothing in common with model 5: it should be A-G-sharp-C-D-F-E. Nevertheless, I feel it is based not on this hypothetical set of bass tones but on the contrapuntal progression of parallel sixths between the outer parts. Four out of the six actual bass tones are a sixth below the tones of the chromatic fourth, and although the third bass tone is E, the sonority above it contains a B-flat. This B-flat, if placed in the bass, would complete the series of descending sixths, albeit with a chromatic alteration of one of the model tones. I felt that the contrapuntal framework of parallel sixths was more likely the logical underpinning of

this harmonization than the fundamental bass mentioned above would have been; therefore, this harmonization was reduced to model 5.

Harmonization DUV52, presented as example 60, is a much knottier problem.



Example 60. Chromatic fourth harmonization DUV52.[104]

One could make a case for classifying this harmonization as model 4. The second fundamental bass tone would be E, followed by the actual third bass tone E. Likewise, the fourth and fifth bass tones could be left as they are, corresponding exactly to the bass tones of the model. Unfortunately, this analysis mixes the fundamental bass tones with the actual bass tones, using only whichever ones are convenient. I avoided this technique wherever possible: I chose either the tones from the fundamental bass or those from the actual harmonization, not an arbitrary mixture of them to suit my analytical needs. More importantly, DUV52 contains within it the possibility for the inner-voice progression B-B-flat-A-G-sharp in order positions 2-5, forming parallel major sixths with the soprano in pitch if not in spelling. Again, the contrapuntal framework of parallel sixths, even though it is unrealized by any single

[104] The figure "9" in the fourth measure is accurate. Although this seems unusual, remember that the chromatic fourth does not necessarily represent the soprano voice. In the actual music, the ninth in question is in the top voice.

voice, overrode both the real and fundamental basses, each of which seemed too disjointed to serve as the foundation for the harmonization.

There are only two ascending chromatic-fourth models presented in Appendix 4, and they correspond to the retrogrades of descending models 2 and 1 respectively. Ascending model 1 is the reverse of the plagal progression of descending model 2; it contains any harmonization in which scale degrees 5, sharp-6, and sharp-7 provide directed motion to 6, 7, and 8 respectively. In other words, model 2 contains any progressions in which 5, sharp-6, and sharp-7 of the melody are part of what a modern musician would call dominant sonorities. Model 1 also has several subcategories, depending on whether the E and F-sharp are the third or fifth of their corresponding dominant chords. Like descending model 1, ascending model 2 is based on parallel thirds between the bass and the chromatic fourth; also like descending model 1, it has various subcategories based on different modifications of the bass tones and the presence or absence of 6/3 sonorities.

Using the Appendices

Appendices 3, 4, 5, and 6 represent the ultimate result of my work on the chromatic fourth, and I invite the reader to study them at length in order to fully understand my procedure for classifying the progressions. I have referred to them a few times already throughout this section, but their purpose can be summarized as follows: Appendix 4 gives each of the models, followed by a list of the fundamental basses based on that model (or the harmonizations that are based on it without needing a corresponding fundamental bass). In appendix 5, one can locate the

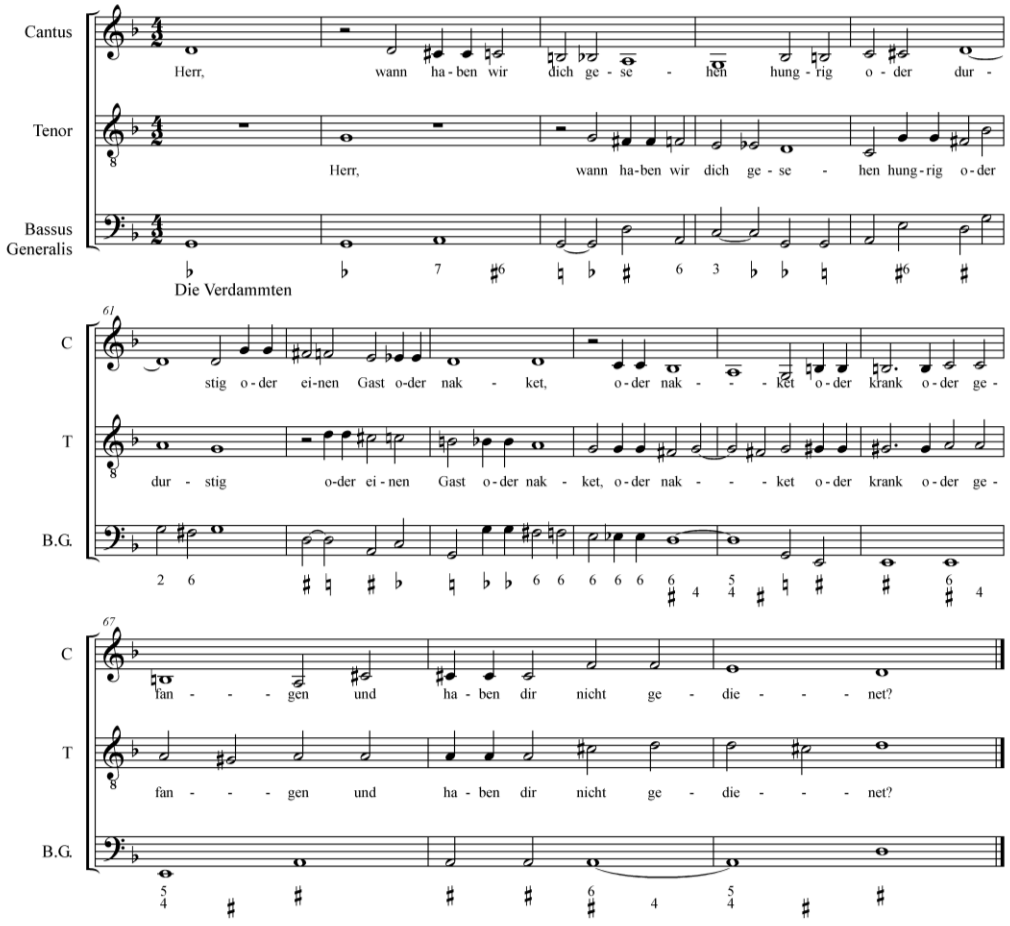
corresponding fundamental basses, which are followed by the chromatic-fourth harmonizations based on them. The harmonizations themselves can be found in appendix 6. The numbers of the harmonizations have been listed in appendix 3, followed by the catalogue number of the piece or pieces which use them. Those pieces, like all the others, can be found in appendix 1.

The greatest benefit of these appendices will be for those readers who are curious about different ways of harmonizing the chromatic fourth, and the ways in which the different models play themselves out in actual music. Readers who are interested in exploring all of the different possibilities for harmonizing, say, the ascending chromatic fourth in the bass may play through the harmonizations in Appendix 6, and use Appendix 3 to locate the actual musical examples that use any harmonizations that may pique their interest. Alternatively, if a theorist is interested in learning how composers elaborate upon Model 4 (the bass notes E-E-F-sharp-D under the middle four tones of the descending chromatic fourth), for example, that theorist might follow these steps:

1. In Appendix 4, find the list of fundamental basses/harmonizations that use Model 4, located directly underneath the model. These are D15, D25, D29, D35, and D60.
2. Use Appendix 5 to find those five fundamental basses and the descending chromatic-fourth harmonizations based on them.
3. Find (and possibly play through) the corresponding harmonizations in Appendix 6.

4. For each harmonization, use Appendix 3 to find the catalogue numbers of the piece(s) in which it is used.

It is also possible, if slightly more cumbersome, to begin with a piece of music and locate the models into which I have classified its various chromatic-fourth progressions. Example 61, from Samuel Scheidt's *Kommt her, ihr Gesegneten*, will illustrate how this can be done.



Example 61. Samuel Scheidt, *Kommt her, ihr Gesegneten* (1634c), mm. 56-69.

This excerpt contains five chromatic fourths; in the cantus in mm. 57-8 and 61-3, in the alto in mm. 58-9 and 62-3, and in the bass in mm. 63-4. One can use the

appendices in reverse to find the models into which these harmonizations are classified, according to the following steps:

1. Find the catalogue number of the piece, using Appendix 2 to locate the numbers for all pieces by Scheidt, then using Appendix 1 to find this specific piece, which is 1634c.
2. Use appendix 3 to find the numbers of the harmonizations used in the piece. Since all of the harmonizations in this piece are descending, the cantus and tenor chromatic fourths will be found in the "Descending, Upper Voice" list of harmonizations, and the bass chromatic fourth in the "Descending, Bass" list. The numbers are, in the order in which the harmonizations appear: DUV5, DUV6, DUV7, DUV8, and DB4. One can compare Scheidt's music with the A-minor versions of these harmonizations in Appendix 6.
3. Use appendix 5 to find the fundamental basses drawn from these harmonizations by looking at the lists underneath the musical examples. The fundamental basses are D1 (DUV6 & 8), D2 (DUV7), D4 (DUV5), D5 (DUV7), D6 (DUV8), and D44 (DB4). Note that since DUV7 and DUV8 contain alternate bass tones (in order positions 1 and 4 & 5, respectively), each one has two corresponding fundamental basses. Comparing the harmonizations with Scheidt's music will reveal that fundamental bass D5 accounts for the instance of DUV7, and D1 accounts for the instance of DUV8. The

fundamental basses for this excerpt are therefore D1, D4, D5, and D44.

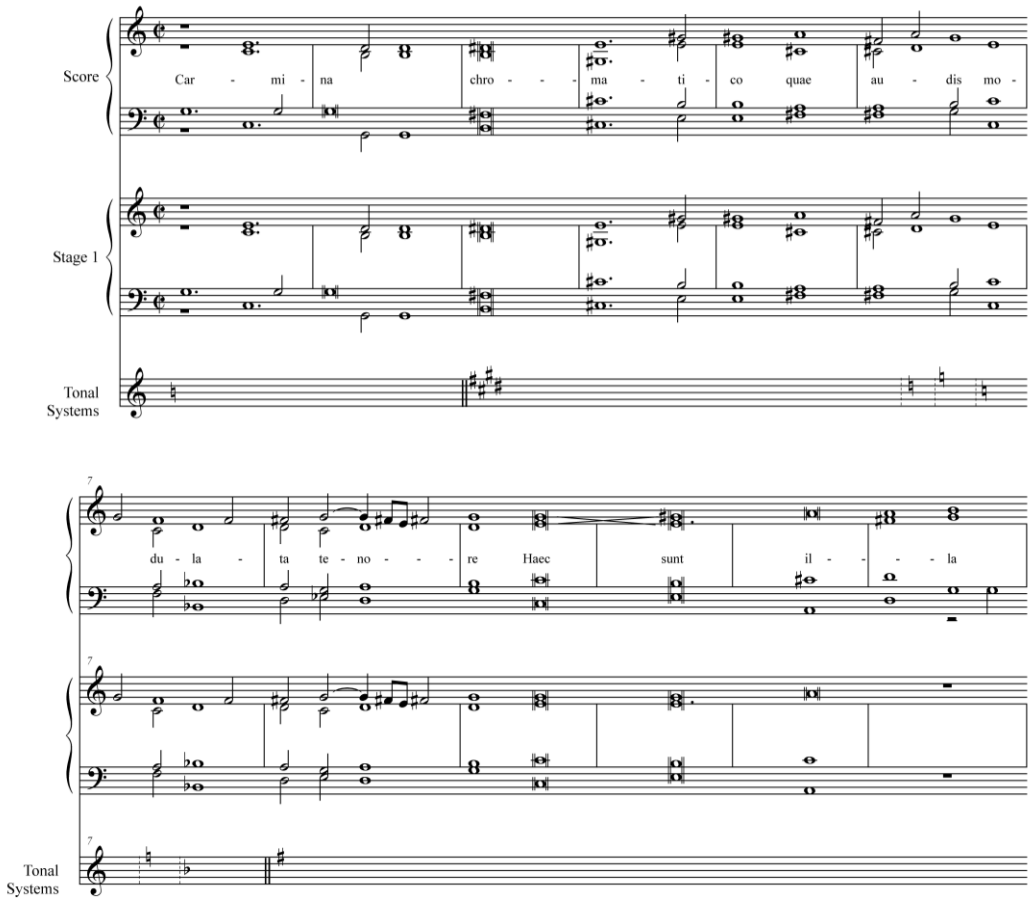
4. Use appendix 4 to locate these fundamental basses on the lists of "fundamental basses/harmonizations based on this model" that appear below each musical example. This reveals that the two soprano statements and the bass statement are all classified into Model 1 (1b, 1f, and 1a, respectively), and also reveals that the two alto statements are based on the same contrapuntal model, 2b, which may not be immediately apparent from the music.

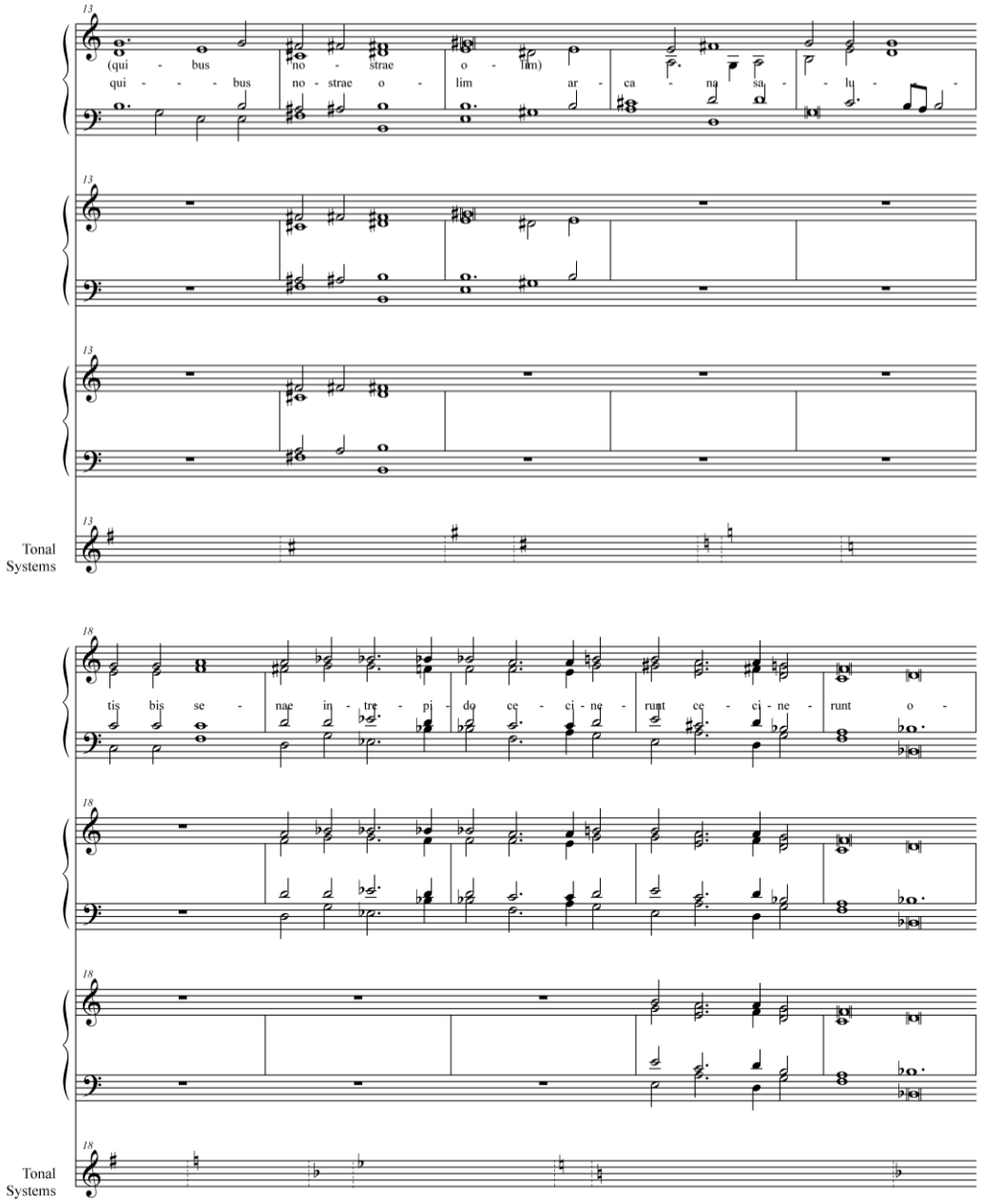
I do not expect that every analyst, confronted with these models and this set of chromatic-fourth harmonizations, would use the same classifications that I have. Many of the harmonizations and their fundamental basses did not lead to unambiguous classifications. Rather, my attempts to classify the various chromatic-fourth progressions into the models are much like sixteenth-century attempts to classify polyphonic works according to the modal system: although composers and theorists argued about which mode was the most appropriate for a given work, and even about how many modes existed, their disagreements did not invalidate the concept of mode altogether. The models I have presented are, I believe, valid classifications of the chromatic-fourth harmonizations that I found in the literature. Debate about whether a certain chromatic fourth is truly reducible to a given model can only lead to greater theoretical insights, especially about the relationship of harmony and counterpoint in this repertoire.

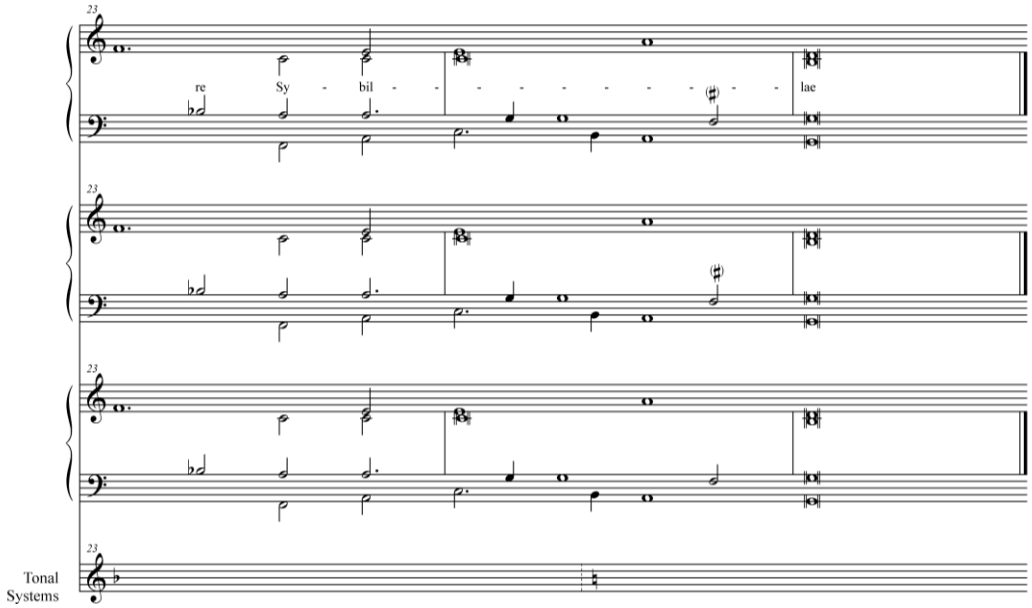
Chapter Six: Complete Works and Passages

I. Orlando di Lasso, *Prologue* from *Prophetiae Sibyllarum* (1560a)

It seems only fitting to begin this chapter of analyses with the Prologue from Lasso's *Prophetiae Sibyllarum*: it has sparked the interest of more analysts than perhaps any other pre-tonal work, and it has already acted as a kind of *leitmotif* in this dissertation. Furthermore, it illustrates very clearly many of the categories of chromaticism proposed by my theory, and, not unimportantly, it was the piece that served as the springboard for this dissertation. Example 62 presents a complete diatonic reduction of the Prologue.




13
(qui - bus no - strae o - lim)
qui - - - - bus no - strae o - lim ar - ca - na sa - - lu - -
13
13
13
Tonal Systems
18
tis bis se - nae in - tre - pi - do ce - ci - ne - runt ce - ci - ne - runt o -
18
18
18
Tonal Systems



Example 62. Reduction of Lasso, Prologue from *Prophetiae Sibyllarum* (1560a).

I will begin with an overview of the analysis, after which I will discuss some questionable passages in detail.

Here is the text to the Prologue:

Carmina chromatico quae audis modulata tenore,
Haec sunt illa quibus nostrae olim arcana salutis
Bis senae intrepido cecinerunt ore Sibyllae.

Polyphonic songs which you hear with a chromatic tenor,
These are they, in which our twice-six sibyls once
Sang with fearless mouth the secrets of salvation.[105]

Lasso's music essentially follows the form of the text, with the major cadential points in the music coming at the end of each line of poetry. Thus, the Prologue divides into three sections: mm. 1-9, 9-18, and 18-25. Since I have presented a detailed analysis of the first nine bars in detail in chapter 3, I will merely summarize those measures here. Measures 1 and 2 begin in the natural system; recall

[105] The translation is from Bergquist (1979, 532-533).

that this system was chosen over the one-sharp system because it uses only notes from the gamut of musica recta. The natural system is juxtaposed against the four-sharp system in measure 3, as shown by the double barline followed by four sharps on the lowest staff. This system remains in effect until the D-major sonority in m. 6, which begins a series of descending-fifth motions, each carrying a change of system through indirect chromaticism, as represented by the dotted barlines followed by accidentals on the lowest staff. At the downbeat of m. 8, the one-flat system, which was the goal of the descending-fifth motions, is juxtaposed against the one-sharp system, within which the bass E-flat is a Type B non-essential alteration (and has therefore been removed in Stage 1). The one-sharp system remains in effect through the end of m. 13, with the soprano G-sharp in m. 9 and tenor C-sharp in m. 10 serving as Type B alterations within the system. Stage 2 of the reduction has not been necessary up to this point, as there have been no syntactically required chromatic alterations.

Measure 14 begins a gradual move in the sharp direction followed by an even longer return to the natural system, and a further descent into the two-flat system, all accomplished via indirect, rather than direct, chromaticism. The C-sharp on the downbeat of m. 14 ushers in the two-sharp system via indirect chromaticism, and the soprano G-sharp and alto D-sharp in m. 15 represent changes to the three- and four-sharp systems, respectively. These motions are again shown by the dotted barlines on the lowest system, followed by the added sharps. Note that the A-sharp and D-sharp in m. 14, not being syntactically required, have been removed in Stage 2. I will discuss these pitches in more detail shortly. Measure 16 begins a gradual process of

removing these added sharps, again via descending-fifth progressions. Through a series of these progressions, Lasso arrives at the two-flat system in m. 19, with a Type-B alteration of F-natural to F-sharp in the alto on the downbeat of that bar. The two-flat system continues until it is contradicted by the essential alteration of E-flat to E-natural in the alto of m. 20. B-flat also changes to B-natural on the last beat of the same bar, only to return to B-flat again via an essential alteration in the tenor on the second half of m. 22. Finally, with the arrival of the bass B-natural in m. 24, we return to the natural system in which we began.

Several aspects of this analysis may be controversial, and I will discuss each of them in turn, beginning, after the first nine bars. The first such place is the progression from the C-major sonority in m. 9 to the E-major sonority in m. 10. This progression would seem exactly analogous to the progression from G-major to B-major in mm. 2-3; however, I have analyzed the earlier progression as a juxtaposition and this one as a series of non-essential alterations. This is for several reasons, many of which I presented in chapter 4, pp. 118-26 ("Distinguishing juxtaposed diatonicism from non-essential chromaticism in circle-of-fifth progressions"), in conjunction with the examples from *Come potrò mai fare* by Gagliano and *Zeffiro, torna* by Monteverdi. The juxtaposition from m. 2 to m. 3 is followed by several sonorities that are diatonic only in the new system. The move back to the original system does not happen until several other sonorities have sounded, and even then the natural system only appears on the way to the one-flat system, as part of a larger circle-of-fifths progression. In contrast, the G-major sonority that ended the first phrase in m. 9 returns in m. 12. There are only four intervening sonorities, and only two of those are

chromatic in relation to the governing one-sharp system. Furthermore, the G-major chord in m. 12 is the end of a self-contained unit of text that Lasso sets apart rhythmically ("Haec sunt illa"), and therefore the end of a phrase. This makes mm. 9-12 sound like a complete unit that begins and ends with a sonority from the governing one-sharp system. Perhaps most tellingly, the direct chromatic semitone that Lasso used so brazenly in the earlier progression has been avoided in this progression through the chromaticized voice-exchange between the soprano and alto: none of the singers therefore has to perform a chromatic semitone. All of these factors contribute to making the soprano G-sharp in m. 10 and the alto C-sharp in m. 11 non-essential alterations, instead of making a juxtaposition between the one-sharp and three-sharp systems from m. 9 to m. 10.

The knottiest passage in this movement is from m. 14 to m. 16, which I have analyzed as a gradual move in the sharp direction via indirect chromaticism. Again, an alternative reading presents itself: if we view the progression from m. 13 to m. 14 as a juxtaposition of the one-sharp and five-sharp systems, the entire passage from m. 14 to 19 becomes a long descent down the circle of fifths from the five-sharp to the two-flat system. Instead, I view m. 14 as only the introduction of the two-sharp system, after which the three- and four-sharp systems enter in m. 15. First, the A-sharp in the tenor m. 14 is a syntactically unnecessary Type B alteration, while the C-sharp in the alto is grammatically essential to avoid a diminished fifth against the bass. One could view the A-sharp as providing directed motion to B as part of a cadence, but Lasso's setting of the text insures that there is no one definitive cadence in these two bars: the tenor and soprano could easily have had the same rhythm as the

bass and alto, insuring that the progression from F-sharp major to B-major would at least be the end of a word, if not of a line of text. Instead, both of these voices begin a new word ("olim") on the B-major sonority. In all likelihood, neither of these voices would breathe until after the sounding of the E-major sonority, which would make that, rather than the B-major sonority, a proper phrase ending. The tenor A-sharp, therefore, is analogous to the soprano G-sharp that we have just examined in m. 10; it is a non-essential alteration. For the same reason, I view the alto D-sharp in m. 14 as another non-essential alteration. It is not syntactically required because, for the alto, the motion from B major to E major is not cadential, since the latter sonority begins a new word rather than completing a previous one.[106]

It may be surprising, then, that I choose to read the G-sharp in the soprano of m. 15 as an essential alteration rather than another in a series of non-essential alterations. True, it begins as a syntactically unnecessary Type B alteration, but the bass motion from E to G-sharp renders it grammatically necessary to avoid a diminished octave between the soprano and bass. A hair-splitting analysis could, in principle, show a change from G-natural to G-sharp only at the exact moment that the bass changes, but this would contradict the principle of greater simplicity by introducing chromaticism where there was none before. The bass motion to G-sharp also requires an essential alteration of D-natural to D-sharp in the alto in order to avoid a vertical diminished fifth, after which the return to the natural system is accomplished via indirect chromaticism in another descending-fifth progression. As I mentioned earlier, this descending-fifth progression continues all the way to the two-

[106] For the same reason, (that is, the phrase overlap between the soprano and alto parts), I do not view the alto D-sharp as syntactically necessary to avoid the parallel major thirds between soprano and alto that would otherwise occur.

flat system, ushered in by the bass E-flat in m. 19, which is grammatically necessary to avoid a diminished fifth against the soprano.

In measure 20, the one-flat system returns with the advent of an essential E-natural in the alto. I have also analyzed the B-natural in the soprano at the end of this measure as essential, despite the fact that it is neither syntactically nor grammatically necessary. Rather, in a situation analogous to the example from Purcell's *Gloria Patri* in chapter 4, the B-natural begins as a non-essential alteration but becomes essential when the bass moves from G-natural to E-natural. Thus, instead of violating the principle of greater simplicity by introducing a chromatic progression, B-flat to B-natural in the soprano of the reduction, I have analyzed a change of system with the introduction of the first B-natural. The following three sonorities are exactly parallel to the progression from m. 10 to m. 12 discussed earlier; they have therefore been analyzed the same way. Note, however, that B-flat has remained in the tenor at the end of m. 21 in Stage 1 of the reduction. This is because it is syntactically necessary to avoid parallel major thirds between the bass and tenor from m. 21 to m.22. B-flat once again becomes an essential tone in the second half of m. 22, to avoid a melodic diminished fifth in the bass. The natural system returns in m. 24 to end the movement, even though in the strictest sense, neither the bass B-natural in m. 24 nor the alto B-natural in m. 25 are grammatical requirements. The final B-natural, however, is at least a syntactical requirement, given that a piece of music was expected to end with what a modern musician would call a major triad. In any case, the principle of greater simplicity prefers a reading in which the greatest possible number of sonorities are diatonic, and if the final two measures remained in the one-flat system, both B-

naturals would become chromatic tones. Additionally, reading the final few sonorities as returning to the natural system is a nod to long-range hearing: although I do not presume to speak for sixteenth-century musicians, modern musicians certainly expect to hear music begin and end with the same type of sonority. Given that Lasso's Prologue does so, it seems extraordinarily counter-intuitive to claim that one would hear the final sonority as chromatic.

II. Cipriano de Rore, *Calami sonum ferentes* (1555b)

Calami sonum ferentes is a bizarre chromatic work set for the unusual combination of four bass voices (which are, nevertheless, amusingly labeled "cantus," "altus," "tenor," and "bassus"). Lowinsky (1989) accurately described it as "the most celebrated and the most hotly debated work of Cipriano de Rore" (595); his own view was that the work was designed as an *anti*-chromatic manifesto, whose unusual timbre and dense chromaticism would discourage other composers from experimenting in the chromatic genus. Whether or not this is true, the piece certainly did not have that effect on Lasso, who published it alongside his own chromatic experiment *Alma nemes* in his *Quatoirsieme livre a quatre parties*, since Rore never published the work himself. Indeed, this is a striking work, even for the modern listener.

The text, which I have included only in the Cantus for reasons of clarity, is as follows:

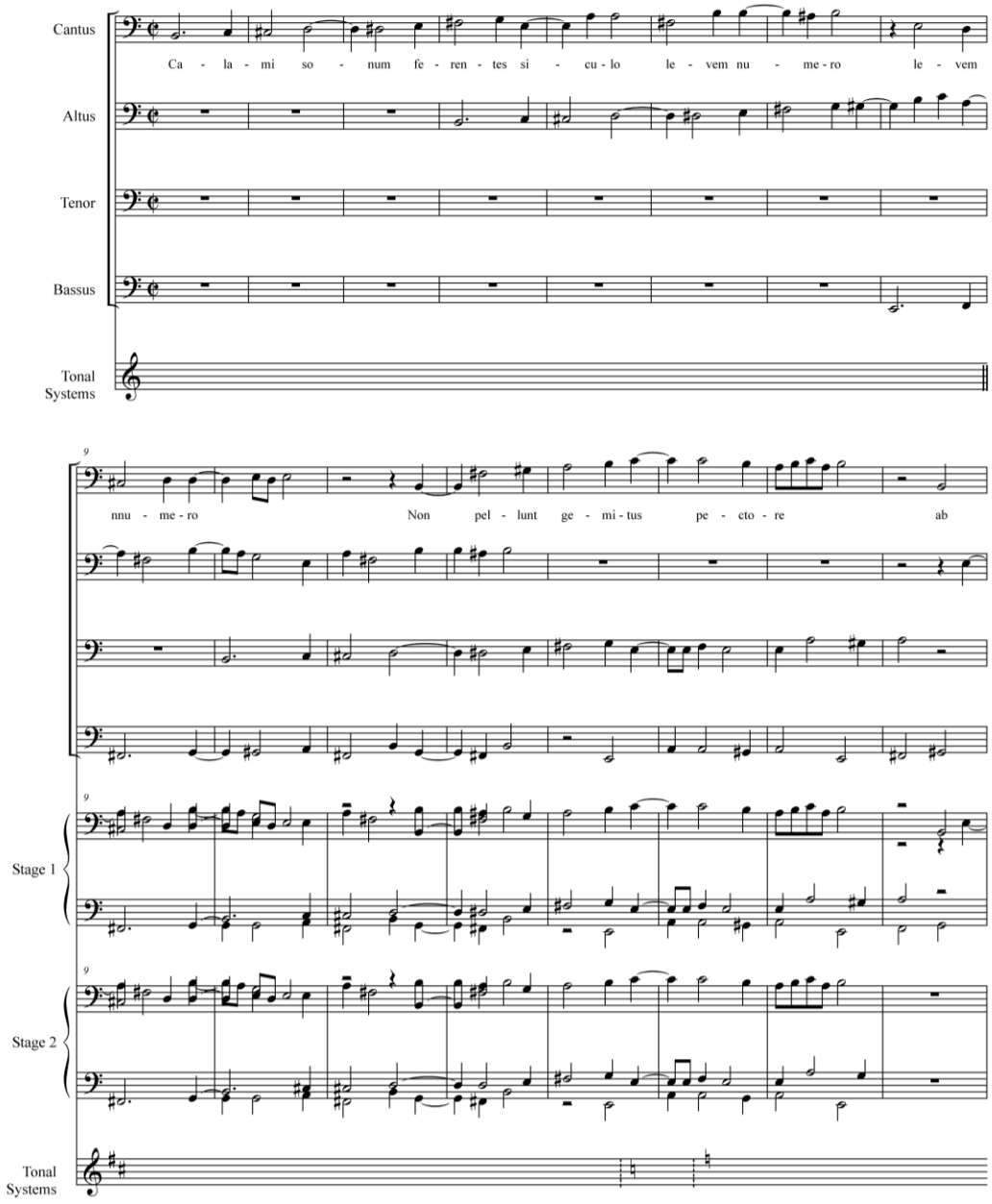
Calami sonum ferentes siculo levem numero
Non pellunt gemitus pectore ab imo nimium graves,
Nec constrepente sunt ab Aufido revulsi
Musa, quae nemus incolis Sirmionis amoenum,
Reddita qua lenis Lesbia dura fuit,
Me adi recessu principis mei tristem.
Musa, deliciae tui Catulli,
Dulce tristibus his tuum iunge carmen avenis.

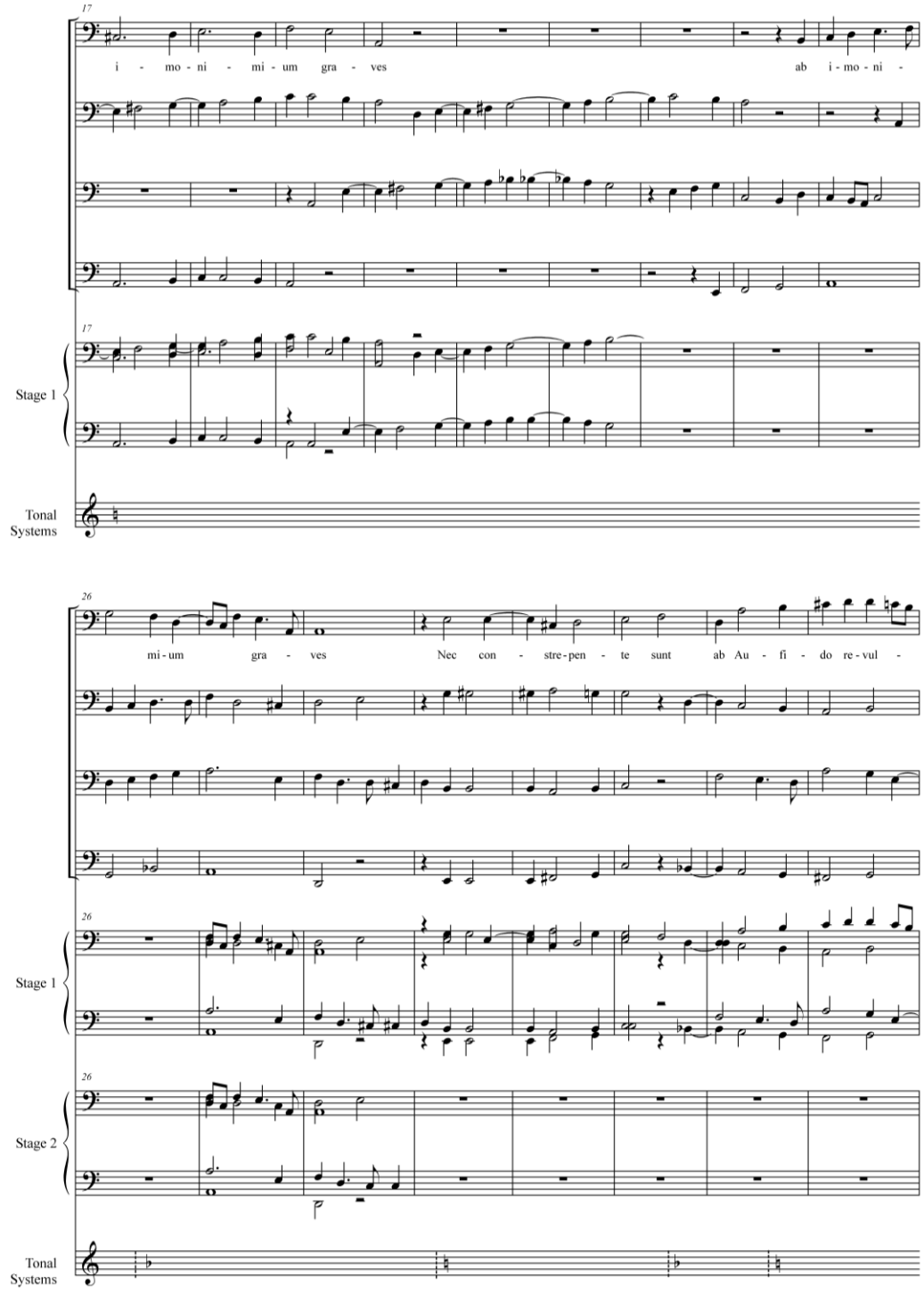
The reed pipes bringing forth a sound in light Sicilian meter
do not dispel the much too heavy sighs from the depth of my breast,
nor have they been taken away by the murmuring Aufidus.
Muse, who dwell'st in the lovely fields of Sirmio
where hard-hearted Lesbia became gentle,
come to me, who deplore the absence of my "*princeps.*"
Muse, joy of thy Catullus,
mingle your sweet song with the sad sound of the pipes.[107]

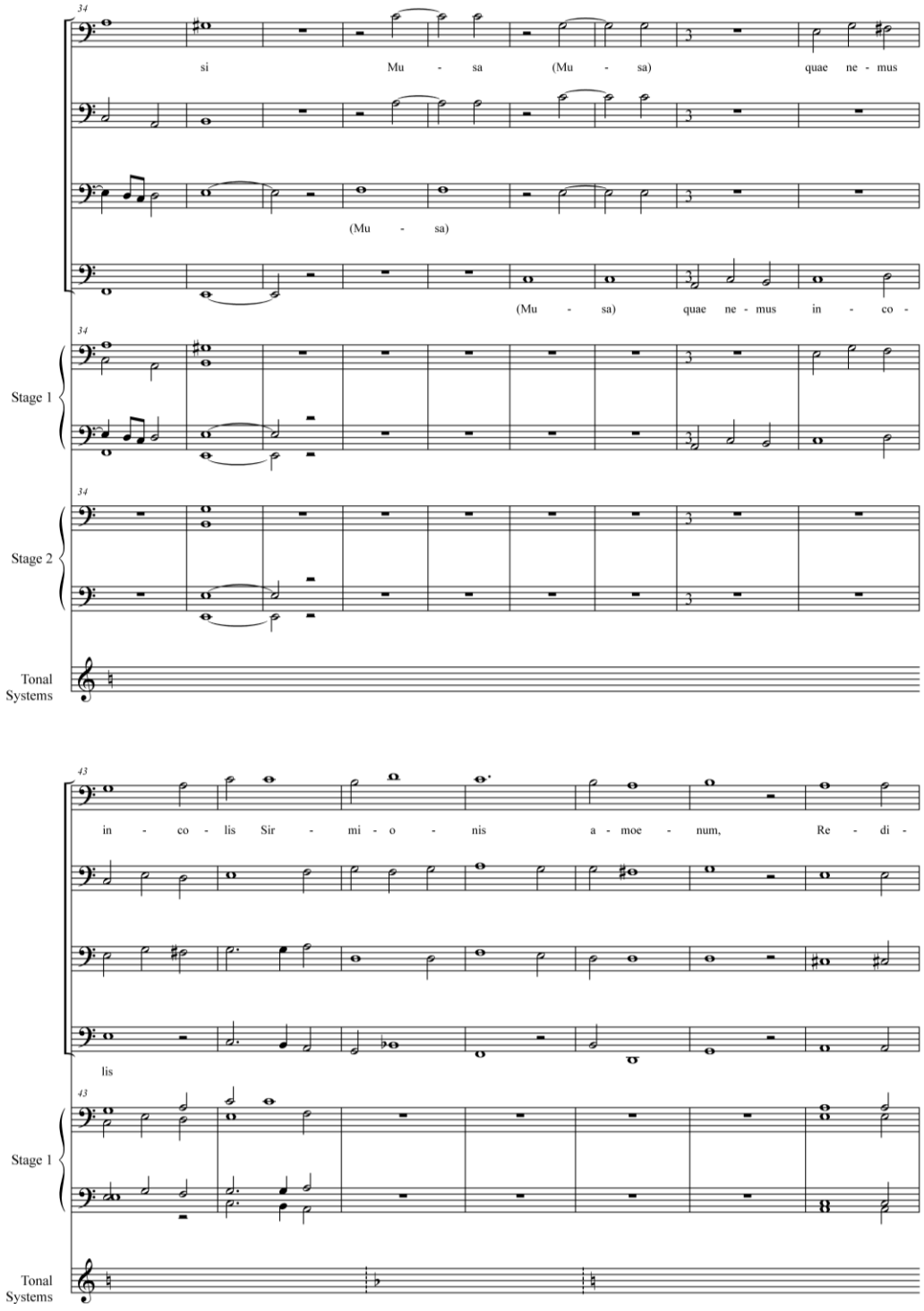
[107] I have reproduced the translation from Lowinsky (1989, 600), who copied it from Bernhard Meier. I have, however, replaced the first line of Meier's translation (which read, "The reeds [i.e., the pipes of reed] producing a light sound as in Sicilian melodies") with Lowinsky's more accurate version.

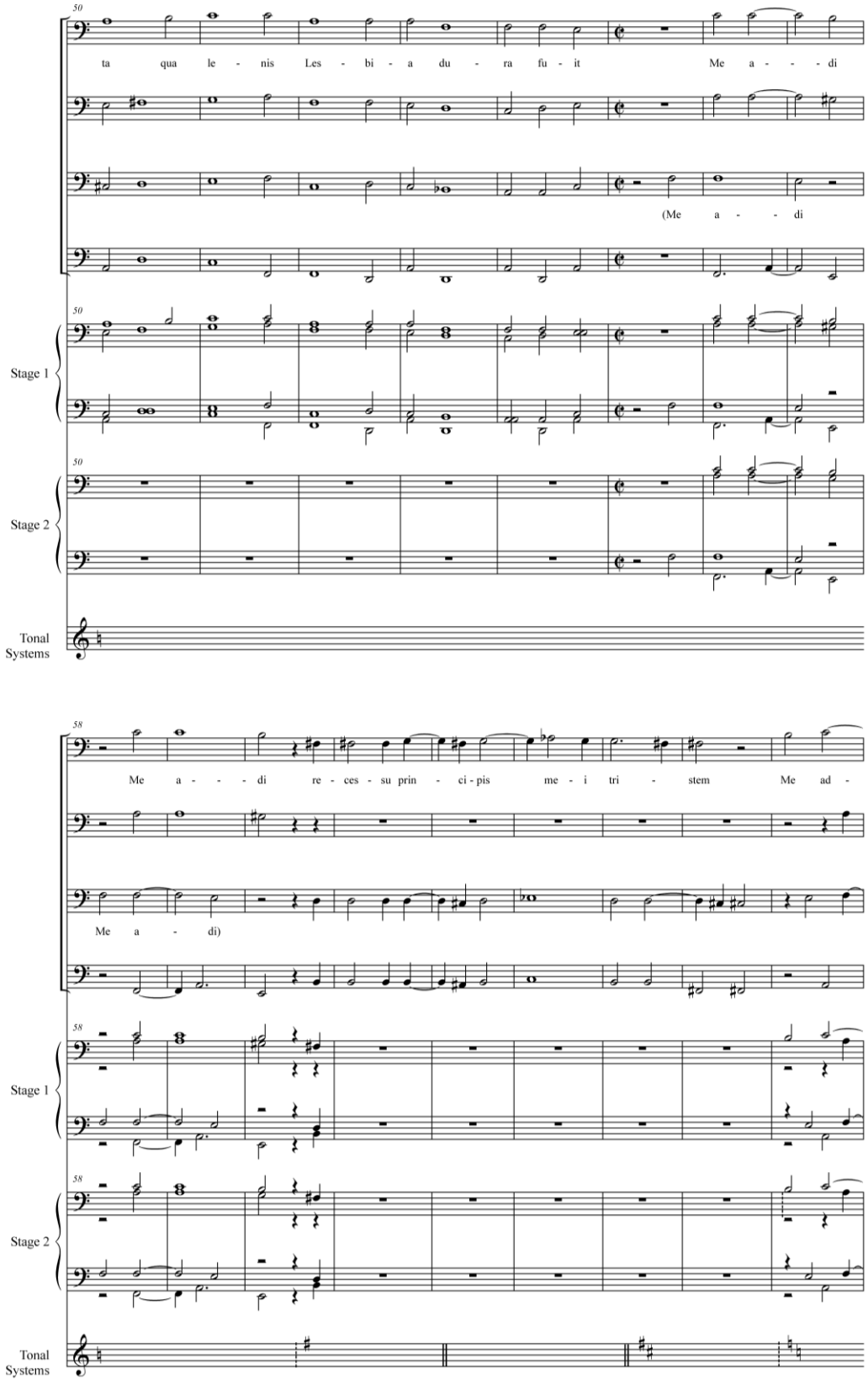
The form of Rore's madrigal, like that of Lasso's Prologue, is largely shaped by the text. There are three large sections: Measures 1-35 correspond to the first three lines of text, mm. 37-73 to the next three lines, and mm. 74-107 to the last two lines. To be sure, however, there are smaller formal divisions within each section. Each of the first two sections can be divided into two subsections, with a division before the third line of text. The first section has a powerful cadence in m. 28, which sets off mm. 29-35, the third line of the poem, as its own small section. In the second section, after the two drawn-out exhortations to the Muse in mm. 37-40, Rore begins a triple-meter section containing the next two lines of text. As with the first section, he then sets off the last of the three lines by returning to the original meter in m. 55 and repeating the words "Me adi." Finally, although Rore divided each of the three-line sections into two subsections, he divides the last, two-line section into three. After once again imploring the Muse in mm. 74-6, he sets the next line of text twice in a single phrase (ending in m. 83), then sets the last line of text twice in two phrases (mm. 83-95 and 95-107), with the second statement being a varied repetition of the first.

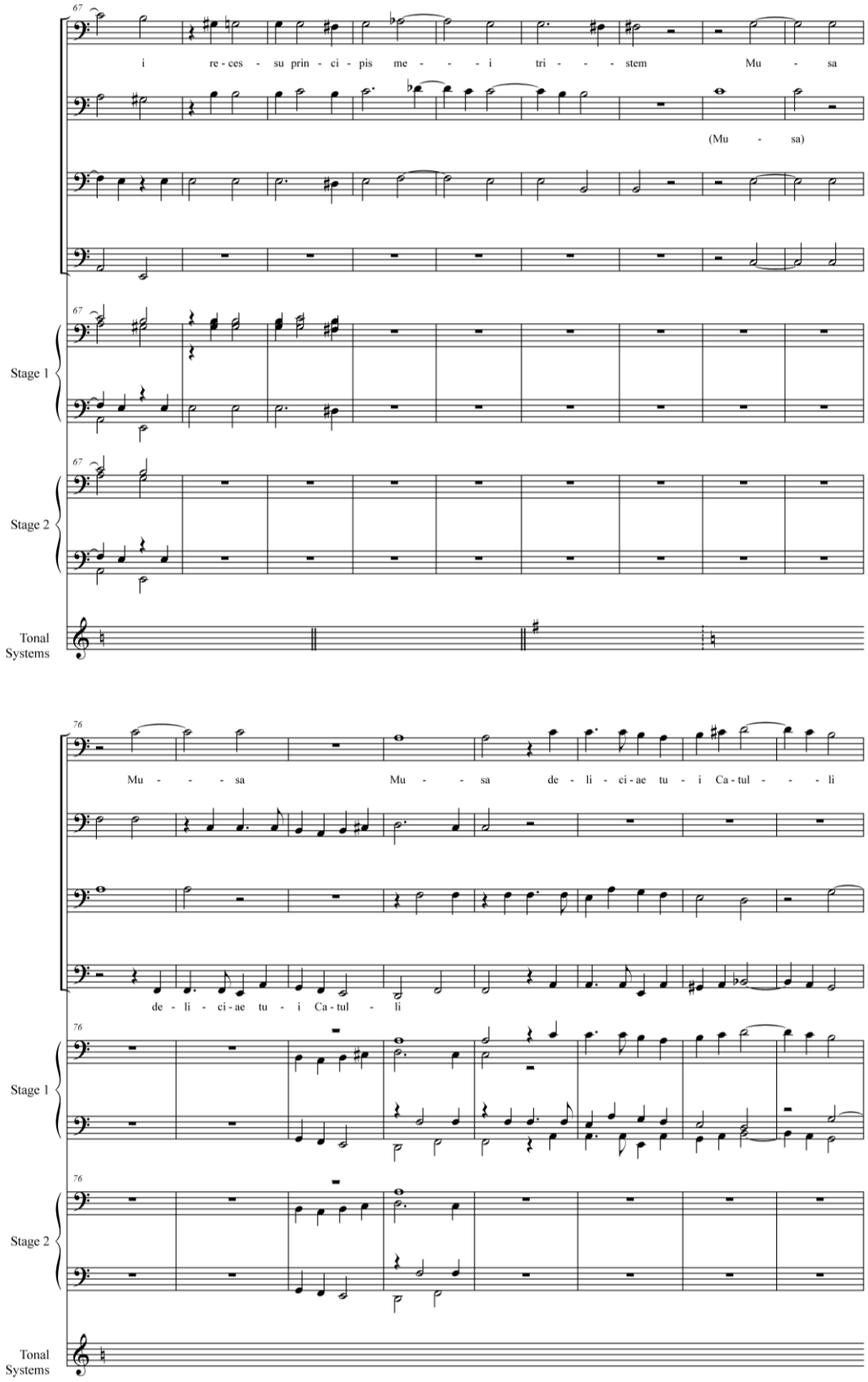
Example 63 presents a diatonic reduction of the madrigal in its entirety.

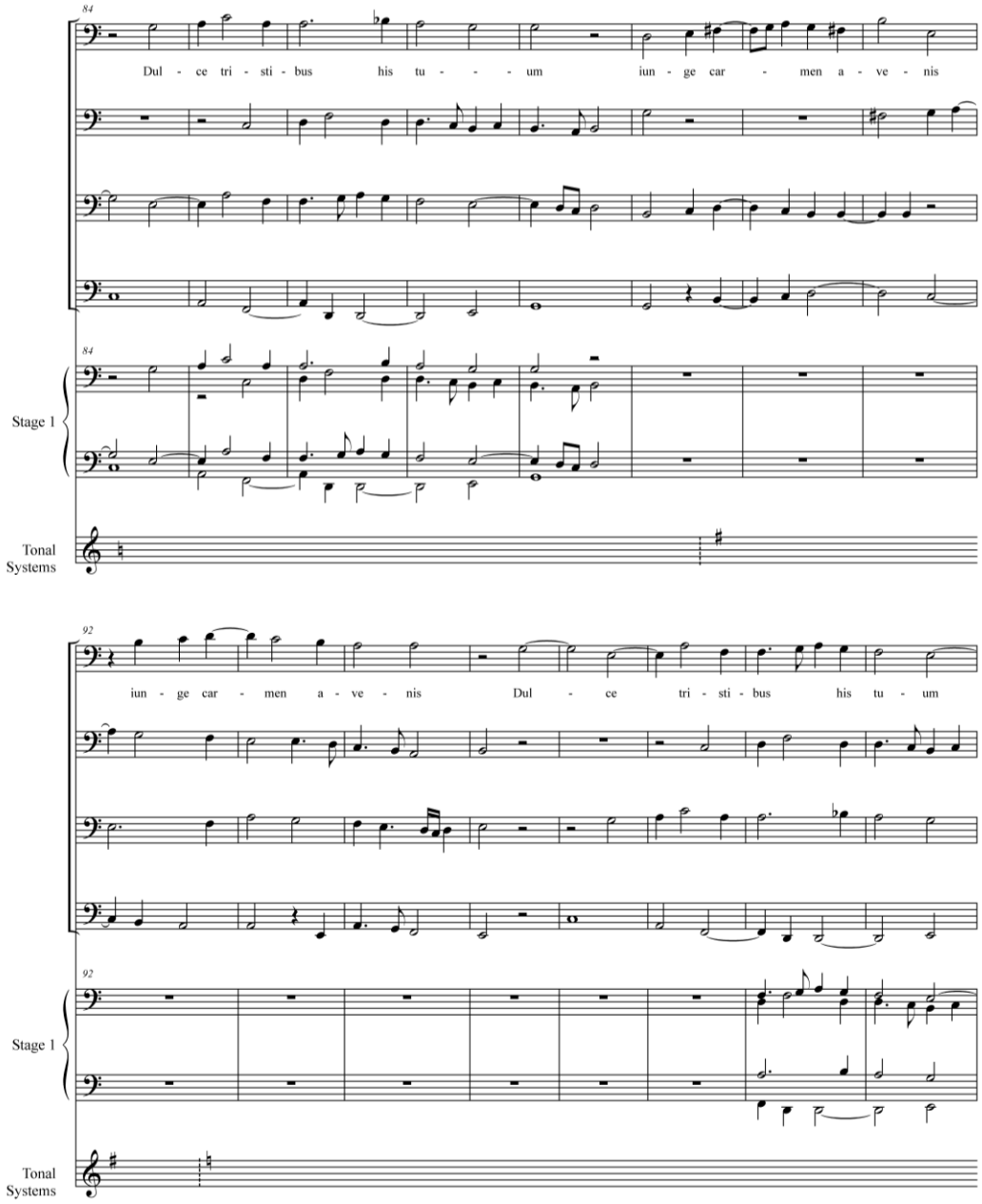

Cantus
Ca - la - mi so - num fe - ren - tes si - cu - lo le - vem nu - me - ro le - vem
Altus
Tenor
Bassus
Tonal Systems
nnu - me - ro Non pel - lunt ge - mi - tus pe - cto - re ab
Stage 1
Stage 2
Tonal Systems


17
i - mo - ni - mi - um gra - ves
ab i - mo - ni -
17
Stage 1
Tonal Systems
26
mi - um gra - ves
Nec con - stre - pen - te sunt
ab Au - fi - do re - vul -
26
Stage 1
26
Stage 2
Tonal Systems


34
si Mu - sa (Mu - sa) quae ne - mus
(Mu - sa)
(Mu - sa) quae ne - mus in - co -
Stage 1
Stage 2
Tonal Systems
43
in - co - lis Sir - mi - o - nis a - moe - num, Re - di -
lis


50
ta qua le - nis Les - bi - a du - ra fu - it Me a - - - di
(Me a - - di
Stage 1
Stage 2
Tonal Systems
58
Me a - - - di re - ces - su prin - ci - pis me - i tri - stem Me ad -
Me a - di)


67
i re - ces - su prin - ci - pis me - - - i tri - - - stem Mu - sa
(Mu - sa)
Stage 1
Stage 2
Tonal Systems
76
Mu - - - sa Mu - sa de - li - ci - ae tu - i Ca - tul - - - li
de - li - ci - ae tu - i Ca - tul - li


84
Dul - ce tri - sti - bus his tu - - - um iun - ge car - men a - ve - nis
84
Stage 1
Tonal Systems
92
iun - ge car - men a - ve - nis Dul - ce tri - sti - bus his tu - um
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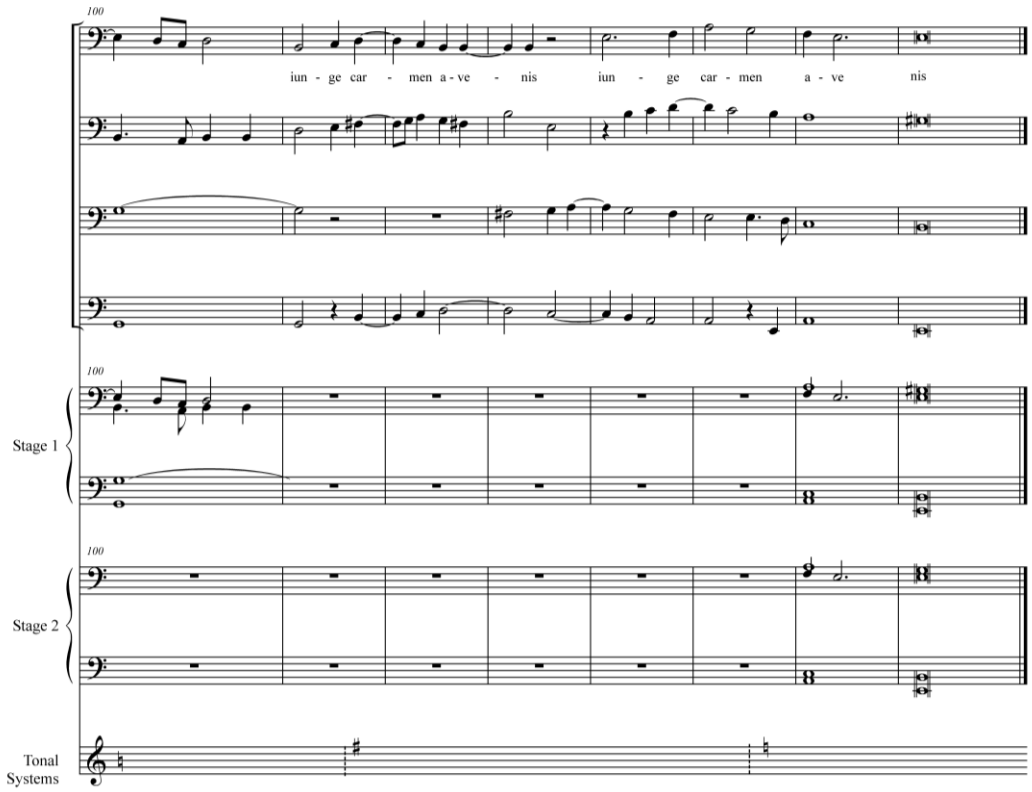
Stage 1
Tonal Systems



Example 63. Reduction of Rore, *Calami sonum ferentes* (1555b).

I will present a detailed discussion of the analysis, but point the reader in advance to its two most noteworthy features: the three instances of suspended diatonicism in mm. 1-8, 62-4, and 69-71, a rare phenomenon in any repertoire; and the analytical technique of using perfect fifths to determine the governing tonal system (a technique which, as we shall see, is not always valid). The bulk of my discussion will focus on the first section of the madrigal; it is by far the most complicated.

Note that the reduction begins without tonal system until m. 9: we begin with an instance of suspended diatonicism. To be sure, there are factors that provide diatonic orientation right from the beginning. First of all, the opening six tones form a

standard ascending chromatic fourth. Despite all of the consecutive semitones, one could therefore ascribe diatonic status to at least the first and last tones, B and E.[108] However, two factors serve to destabilize this already unstable melodic succession. First, the tones of the chromatic fourth have no perceptible metrical organization, which means that there are no metrical clues as to which tones might be diatonic or chromatic.[109] Furthermore, the upper boundary of the chromatic fourth, E, does not sound like the end of a phrase or even of a motive, since Rore sets it as the first, unaccented syllable of a word and with a short note value. This chromatic fourth, then, rather than giving any clues about the status of its tones, gives the listener a greater sense of instability through its lack of metrical organization and through the perception that it continues to wander upward (to F-sharp and G) after it should have reached its goal.

Nevertheless, beginning in m. 4, Rore begins to create a perceptible distinction between diatonic and chromatic tones, because the second entrance of the motive is harmonized as what a modern theorist might call a chromaticized ascending 5-6 sequence. When such a sequence occurs in tonal music, the 5/3 sonorities are normally diatonic and the chords of the sixth are normally chromatic. But even if we ignore the norms of tonal music, the perfect fifth (often created through essential chromaticism) was one of the key features that helped us to determine tonal systems in chapters 3 and 4. If we therefore assume that the perfect fifths in this passage are composed of diatonic tones, we can begin to determine the system based on which of the tones in mm. 4-8 form these fifths. Beginning in m. 4, we find the perfect fifths B-

[108] See chapter 5 for a discussion of the typical distribution of diatonic and chromatic tones within the chromatic fourth.
[109] See Gauldin (1987) for the typical metrical organization of the chromatic fourth.

F-sharp, D-A, and E-B. Thus, when the third voice enters, the status of C and G are still unclear; note how Rore avoids a perfect fifth on either C or C-sharp in mm. 4-5, which would have determined the status of both C and G. Intuitively, it would seem that C-natural, and by implication G-natural, are the diatonic tones, since the C-sharp in m. 5 provides directed motion to D, and since one could hear the G-natural in the cantus of m. 4 as still implicitly present when the alto moves to C. If the alto then came to rest on G-natural in m. 8, rather than continuing on to G-sharp, the G-natural would most likely stand out as a diatonic tone (since it would be the goal of the ascent in the alto). The matter would then firmly be decided in favor of the one-sharp system.

But the events of m. 9 present a different picture. Here, we find perfect the perfect fifths F-sharp-C-sharp and G-D, which point to the two-sharp system. This means that in retrospect, the alto C-sharp in m. 5 would be diatonic, which seems counter-intuitive until one considers two facts. First, in mm. 1-2, Rore durationally emphasizes C-sharp and de-emphasizes C-natural; second, mm. 16-8 present what could arguably be called a diatonic version of the opening motive in the cantus. This motive has the tones B-C-sharp-D-E, which are precisely the ones that should be diatonic according to our reading of the opening.[110] In any case, the collection of perfect fifths presented up to and including m. 9 place the music in the two-sharp system. Note that the system itself does not appear in the reduction until the end of

[110] True, the C-sharp in this motive is a Type B alteration of a diatonic C-natural in the governing natural system. But this does not alter the significance of the fact that the first time this ascending-fourth motive appears without being completely filled in by semitone, it is with C-sharp rather than C-natural. I submit that the listener would therefore retroactively ascribe diatonic status to the C-sharp of the opening chromatic fourth.

measure 9, with the arrival of the final perfect fifth, and that because of this, there can be no removal of chromatic tones until that point.

As the reduction shows, the two-sharp system continues up to m. 13. Note that the tenor C-natural in m. 10 is therefore a Type A chromatic alteration: it is syntactically necessary to maintain the imitation (recall that this was one of the two main varieties of Type A alteration outlined in chapter 3, page 84). The same is true of the tenor D-sharp in m. 12. The alto A-sharp in the same bar is also a Type A alteration. Because of the forceful ascending-fourth motion in the bass from F-sharp to B, the second and third sonorities of that measure form a kind of distorted cadence on B; within this cadence, A-sharp is a syntactically necessary leading tone. The cantus G-sharp at the end of the bar, on the other hand, is a Type B alteration. While it does provide directed motion to the following A, there is no syntactical expectation that it will do so.

The two-sharp system changes to the one-sharp system in m. 13 according to the principle of greater simplicity: in m. 14, the tenor F-natural and C-natural effect a change to the natural system, and must both be diatonic. Therefore, while the cantus C-natural in m. 13 could be "reduced" to a C-sharp as was done previously, to do so would create a chromatic semitone between that C-sharp and the following C-natural. This would violate the principle of greater simplicity by introducing chromaticism that was not present before. Beginning in m. 14, with the newly-established natural system, the bass and alto G-sharps are Type A alterations, syntactically necessary as leading tones to A. I view the bass F-sharp and G-sharp in mm. 16-7 as Type B

alterations, albeit ones that have the effect of creating directed motion to A.[111] Although these two tones form a third cadence to A, and can therefore be viewed as necessary in that capacity, there is no definite syntactical or grammatical reason that F-sharp or G-sharp needs to be present. I therefore reduce them out, based purely on my own hearing of the tones as Type B alterations. According to this reading, I also read the C-sharp and F-sharp in m. 17 as Type B alterations, as well as the F-sharp in m. 20, since they are all imitations of the same rising motive.[112]

Following the striking entrance of the bass B-flat in m. 26, the reduction contains two points that seem to fly in the face of the analytical practice I have established thus far. The reduction shows the following measures alternating between the natural and one-flat systems. In mm. 29-30, the alto G-sharps, the cantus C-sharp, and the bass F-sharp have all been analyzed as Type B alterations within the governing natural system. However, the bass F-sharp and cantus C-sharp form a perfect fifth, which, up to this point, has been one of the key factors in determining tonal systems. One would therefore expect a move to the two-sharp system at this

[111] I realize that the reduction, which changes these tones to F-natural and G-natural, creates the progression of parallel major thirds between bass and tenor. One could therefore argue for a reading in which these tones were at least Type A alterations, if not outright diatonic tones, according to the prohibition against this progression. However, I would point out that successive major thirds have occurred twice already in these first fifteen bars—between alto and cantus in m. 7 and between alto and bass in m. 12—and that the progression does not seem to have been one of the "harsh and rough excesses," to use Banchieri's words, that Rore avoided. In any case, these parallel major thirds move by semitone, rather than by whole tone, and therefore do not create the cross-relation that was the point of this prohibition.

[112] Another, altogether different reading would also be possible. There are enough sharps in mm. 16-21 that one could make a case for a return at least to the one-sharp system, if not the two-sharp system. Within these systems, the relationship of diatonic and chromatic tones would be reversed: the C-naturals and F-naturals in mm. 18-19 would be Type B alterations. This reading would have the attractive feature of consistency with my reading of the opening: The cantus C-sharp in m. 17 would be a diatonic tone, in keeping with my proposed reading of the tones B-C-sharp-D-E as the "diatonic" version of the opening chromatic fourth. But, pursuing the idea of perfect fifths that helped determine the two-sharp system at the opening, we can find the perfect fifth C/G on the downbeat of m. 18, and the perfect fifth F/C on the downbeat of m. 19, which confirm the status of C-natural and F-natural as diatonic tones and the natural system as the governing tonal system.

point, as well as in m. 33, which has an identical progression with the voices rearranged. But this perfect fifth is more a coincidence of voice leading than a structural attribute of the tonal system. Previously, almost all of the perfect fifths I used to determine the tonal system were the *goals* of directed motion (for example, the fifths D/A and E/B in mm. 5-6), whereas this fifth is made up of two tones that provide directed motion—the C-sharp to the following D, and the F-sharp to the following G. The fact that these two tones sound simultaneously, creating a perfect fifth, is happenstance, which makes this fifth different from the perfect fifth D/G that follows it in the same voices. The former serves to provide directed motion, while the latter is its goal.[113]

The second section is more straightforward than the first. With the exception of m. 45, where Rore introduces the essential chromatic tone B-flat, forming a startling cross-relation with the previous cantus B-natural, it is governed entirely by the natural system. Notice that the F-sharps in the cantus of m. 42 and the tenor of m. 43 have been analyzed as Type B alterations. These tones could reasonably be labeled Type A alterations to maintain strict imitation of the bass motive in m. 41, but even without them, the relationship of steps and skips in the motive would be preserved, as it is in the alto of m. 43. In fact, the F-sharps in question are Type B alterations masquerading as Type A alterations: in both cases, the major third D-F-sharp could be seen as providing directed motion to the fifth C-G, even though this fifth in each

[113] This may not quite be the end of the story. One could still reasonably claim that the analysis is inconsistent, since the identical intervallic progression happens in m. 9, where I read the F-sharp and C-sharp as diatonic tones as well as the G and D. In the earlier case, however, there was no pre-existing context—the tonal system was in the process of coalescing from suspended diatonicism, and any perfect fifth would stand out as more stable, and therefore diatonic. Here, since F-natural and C-natural have been diatonic tones for sixteen measures, there is more of an expectation that they will continue to be.

case appears in a different voice pair. In an earlier repertoire, altering a minor third to major when it progressed to a perfect fifth was, in fact, a syntactical requirement. Rore probably added these F-sharps to reproduce the sound of earlier music, much as his Latin text and use of an ancient Greek genus of composition invoke images of the ancient world. Also noteworthy is the tenor B-flat in m. 53, which I have analyzed as a Type B alteration. Although it forms a perfect fifth with the cantus F, this fifth constitutes the upper voices of a 6/3 sonority, within which a perfect fifth is not a syntactical requirement, as it would be in a 5/3 sonority. One can easily imagine the sonority at the end of m. 53 written with B-natural, although it would likely progress somewhere else.

In the two statements of the phrase "recessu principis mei tristem," we have the two other instances of suspended diatonicism. These arise not from a lack of musical context, as was the case at the opening, but rather from an accretion of semitones caused by the parallel motion by semitone in major 6/3 sonorities. In mm. 62-4, for example, Rore uses the tones A-sharp, A-flat, C-sharp, and C-natural, which cannot all belong to a single tonal system. With the arrival of the A-flat major sonority in m. 63, it is no longer possible to distinguish, in real time, which tones are diatonic and which are chromatic modifications. One has the sense that the music could alight anywhere, that the parallel 6/3 chords could continue upward or downward, a situation analogous to parallel diminished seventh chords in tonal music. The features described in the last two sentences are the defining characteristics of suspended diatonicism. The fact that, in each phrase, the music comes to rest on a

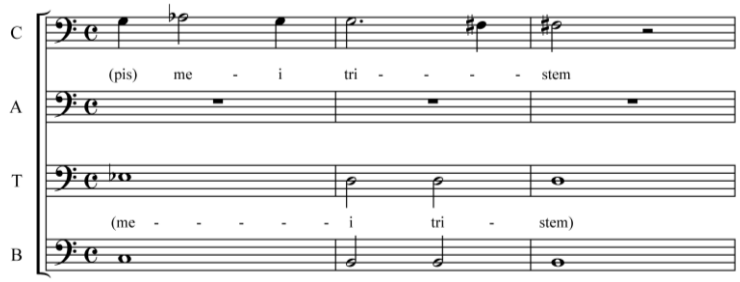
system closely related to the one in which it began is irrelevant, because the music does not give the expectation of ending in any particular way.

The third section of the madrigal is the least remarkable. It remains mostly in the natural system from beginning to end, with no further uses of suspended diatonicism. In m. 89, there is a brief move to the one-sharp system, which has been analyzed according to the principles already given, and need not be explained here. The repetition of the text beginning "Dulce tristibus," which starts in m. 96, has virtually the same music as the first statement, with only some rearranging of the voice parts, and need not be analyzed again.

One compositional device that Rore uses motivically throughout the entire work deserves mention here. This device consists of guiding the listener to expect a certain type of ending, whether it be the ending of a melodic line, a phrase, or even an entire section, then turning in a different direction, so that the music continues to a different harmony, a different cadence, or a different section. The first instance of this occurs right at the opening, when the cantus, which "should" finish its ascent of a chromatic fourth at E, continues up through F-sharp to G. The alto voice follows suit by pushing the ascent even further, to G-sharp (recall that this was the one feature that led me to continue a reading of suspended diatonicism at the opening, rather than reading G-natural as diatonic). In m. 16, when the listener has been led to expect the first definite cadence of the work, on A, Rore evades this cadence with the bass motion to F-sharp. Likewise, on a larger scale, when the first major cadence does occur, on D in m. 28—notice that the stability of this cadence, too, is offset by the "late" resolution of the tenor and alto voices into m. 29—Rore denies the expectation

of conclusion of a large formal unit by continuing into the next line of text. The true final cadence of the first section does not come until m. 35.

The other sections, too, contain instances of this compositional device. In mm. 45-6, a definitive cadence on F is denied by the continuation of the alto and tenor voices, which eventually lead to a cadence on G, with an accompanying change of tonal system. In the two sections containing the brief instances of suspended diatonicism (mm. 60-5 and 68-73), Rore again sets up the expectation of a certain cadence, which he evades. Consider that in mm. 63-5, the phrase could have ended as in example 64, with the cantus part forming a kind of atypical cadential suspension into the final sonority.



Example 64. Alternate version of mm. 63-5.

In fact, this would have made a great deal of sense: the phrase would thus end on the same sonority with which it began. Instead, Rore continues to a cadence on F-sharp. The same is true, *mutatis mutandis*, in mm. 72-3. One could even view mm. 95-107 as the final use of this device. Had the cantus simply moved to G-sharp on the downbeat of m. 95, the music could have ended there. Instead, Rore continues by repeating the text and music again, with minor modifications.

This technique of constantly evading the expected endings of lines, phrases, and sections serves to create a kind of formal instability analogous to the tonal instability of the opening. Like the tonal instability, it too becomes less frequent as the piece goes on. Both senses of instability serve an expressive purpose: they illustrate dramatically the unsettled feelings of the narrator, who becomes more and more stable only as he contemplates the "sweet song" of the Muse.

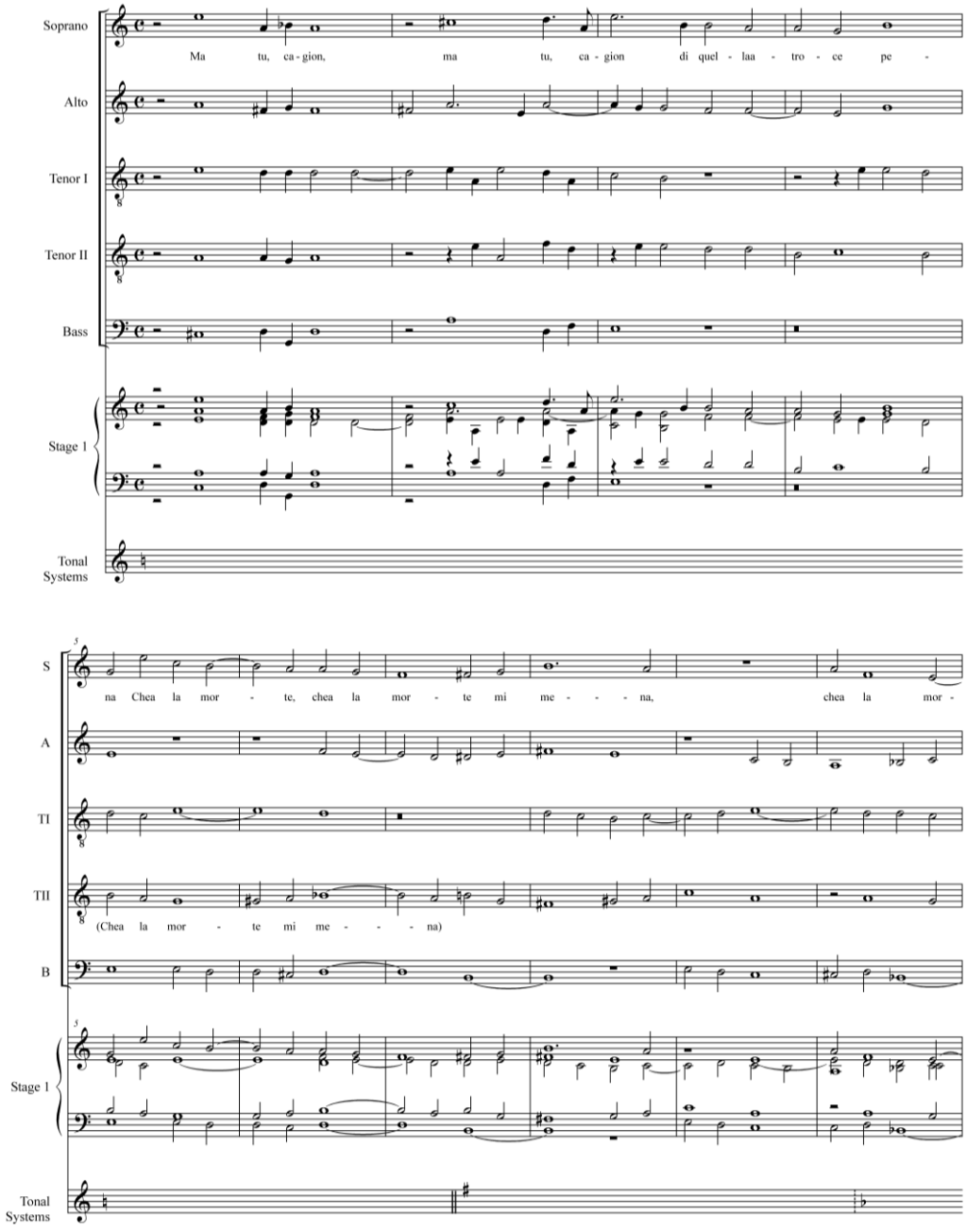
III. Carlo Gesualdo, *Ma tu, cagion* (1611f)

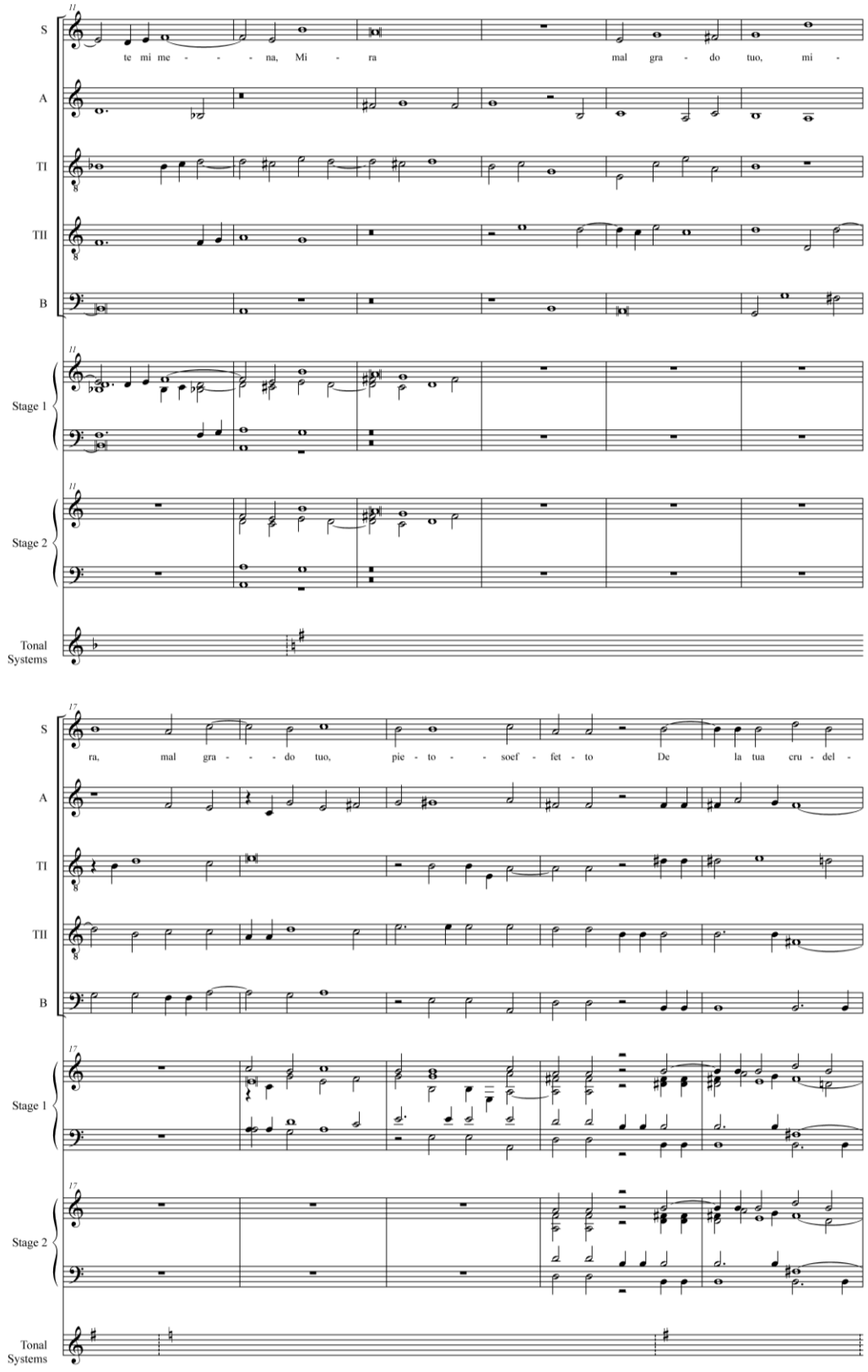
No discourse on Renaissance and Baroque chromaticism would be complete without addressing the work of Gesualdo. Most musicians, if asked for the name of an early chromatic composer, would probably mention his first. His startling use of dissonances and juxtapositions of distantly related sonorities have long captivated composers, theorists, and performers alike, who in turn have ascribed all sorts of characteristics to Gesualdo the man and the composer. In fact, music historians have used the events of his professional and personal life, from his supposed development of the "mannerist" style (a term that has come into disfavor in recent years) to his murder of his wife and child, to depict an image of Gesualdo that is refracted through whatever lens the current age views the world: thus, the nineteenth century viewed him as an exemplar of the visionary, mad genius, a figure not unlike one of Lasso's Sibyls.

Recent scholars have taken a more moderate view of Gesualdo. Although he may have indeed been mad, murdering his family and living out his life in relative isolation, it does not necessarily follow that his music reflects his state of mind. All the musicians at the Ferrarese court, following the lead of their patron, Duke Alfonso, were interested in pushing the boundaries of musical expression; Gesualdo, using these musicians as his model, wrote music not far removed from Vicentino's or Luzzaschi's. Nevertheless, both the man and his music have taken firm hold of musicians' imaginations, and he is still renowned for his bold musical language. *Ma tu, cagion* is a characteristic example of this language, and certainly caught the

attention of another musician prior to this dissertation: this was one of the three madrigals that Stravinsky orchestrated for brass in his *Monumentum pro Gesualdo*.

Example 65 presents a diatonic reduction of the madrigal.




11
S
te mi me - - - - na, Mi - ra
mal gra - do tuo, mi -
A
TI
TII
B
Stage 1
Stage 2
Tonal Systems
17
S
ra, mal gra - - - do tuo, pie - to - - soef - fet - to De la tua cru - del -
A
TI
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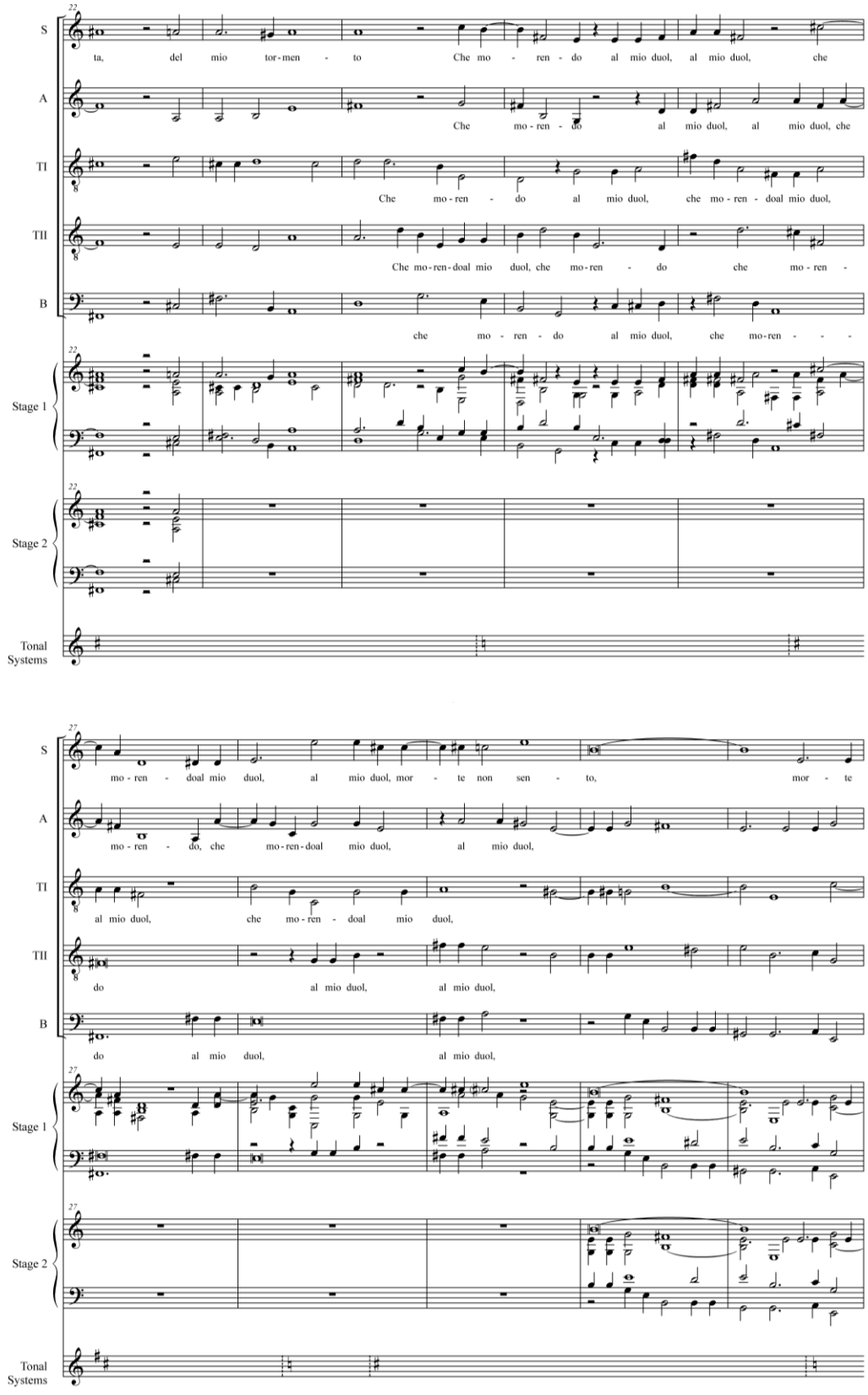
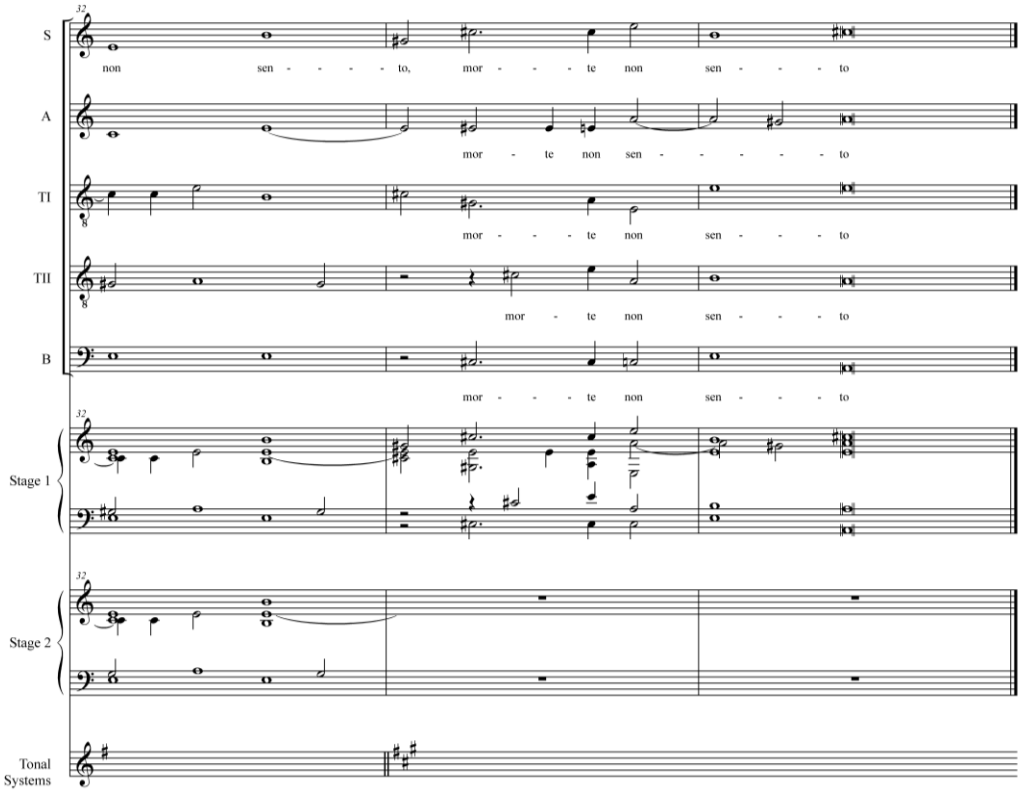
B
Stage 1
Stage 2
Tonal Systems


22
S
ta, del mio tor-men - to Che mo - ren - do al mio duol, al mio duol, che
A
Che mo - ren - do al mio duol, al mio duol, che
TI
Che mo-ren - do al mio duol, che mo - ren - doal mio duol,
TII
Che mo-ren-doal mio duol, che mo-ren - do che mo - ren -
B
che mo - ren - do al mio duol, che mo-ren - - -
Stage 1
Stage 2
Tonal Systems
27
S
mo - ren - doal mio duol, al mio duol, mor - te non sen - to, mor - te
A
mo - ren - do, che mo-ren-doal mio duol, al mio duol,
TI
al mio duol, che mo - ren - doal mio duol,
TII
do al mio duol, al mio duol,
B
do al mio duol, al mio duol,
Stage 1
Stage 2
Tonal Systems



Example 65. Reduction of Gesualdo, *Ma tu, cagion* (1611f)

The discussion that follows will focus both on the application of my method to Gesualdo's work, and the changes in that method necessitated by the differences in style between Gesualdo and the composers of the high Renaissance. First, here is the text. As in *Calami sonum ferentes*, example 65 includes only the soprano text for most of the madrigal, although in two sections I have included all the text, for reasons discussed below:

Ma tu, cagion di quella atroce pena
Che a la morte mi mena,
Mira, mal grado tuo, pietoso effeto
De la tua crudeltà, del mio tormento
Che morendo al mio duol, morte non sento

But you, the reason for this atrocious burden
That brings me to death,
Look, in spite of yourself, [at the] pitiful effect
Of your cruelty, of my torment
That, dying from this suffering, I do not feel death.[114]

Although I have elsewhere focused more on a moment-to-moment, rather than large-scale, hearing, I have chosen several times in this analysis to respect long-range hearing more than in previous examples. Thus, I have analyzed the first seven bars as belonging to the natural, rather than the one- or two-sharp systems, despite the fact that the madrigal begins with an A-major and a D-major sonority, and the natural forms of the tones C and F do not begin to appear until the end of the second bar. I have done this for several reasons. First, the B-flat in the soprano voice of the first measure introduces some ambiguity as to the tonal system, even though it is a Type B alteration whether we are in the natural, one-sharp, or two-sharp systems. Any tone can, in principle, be a diatonic tone: when the B-flat sounds, it therefore introduces, even for a fleeting moment, the possibility that it is diatonic in a new system, and therefore that F-sharp and C-sharp are chromatic alterations (since they could not be diatonic in any system in which B-flat was diatonic). More importantly, however, the principle of preferred diatonicism favors a reading in which F-natural and C-natural are diatonic, since that will produce a system in which the greatest possible number of sonorities in the first few bars are diatonic. But the most important reason that I have read the opening as governed by the natural system comes from the broader context. Although this madrigal is a free-standing, self-contained work, and is listed as a separate work in Gesualdo's original edition and in all subsequent editions, it is in fact labeled "Seconda Parte" in relation to the madrigal *Poichè l'avida sete*, which

[114] I am grateful to Mario Mazzoli for his translation of the text.

precedes it. This "Prima Parte" madrigal is almost entirely in the natural system, with very few chromatic alterations, and the last four bars, which have presumably just sounded before the beginning of *Ma tu, cagion*, are completely diatonic in the natural system. Therefore, the natural system still governs the opening few sonorities of the Seconda Parte, which contain chromatic alterations within the system, rather than ushering in a new one.[115] The reduction therefore shows the F-sharps and C-sharps of the first two bars, as well as the soprano B-flat, as Type B chromatic alterations. The raised tones do serve to create directed motion, but they are not required to do so.

Measures 6 and 7 are an excellent illustration of the effect on the changes in style in the early seventeenth century on the analysis of chromatic works. Notice that the B-flat in the second tenor part in m. 6 is a Type B chromatic alteration, even though it creates a perfect fifth with the alto F-natural. In Stage 1 of the reduction, the existing perfect fifth has been reduced to a diminished fifth, despite the fact that the alto voice enters this interval without preparation. Conversely, the F-sharp in the soprano voice of m. 7 is read as causing a change to the one-sharp system, which implies that it would be unacceptable to reduce this perfect fifth to a diminished fifth. This reading, while it may seem self-contradictory, is actually the best way to make sense out of the two measures. The critical difference between these two fifths lies in their placement in the texture. The fifth B-flat-F in m. 6 is between two upper voices. As mentioned above, I have read the B-flat as a Type B alteration, and therefore have

[115] One could use the ending of the Prima Parte to argue exactly the opposite point: since the first part ends with four measures that are completely diatonic in the natural system, the opening of *Ma tu, cagion* is all the more striking with its F-sharps and C-sharps—not to mention that the first word is "but," which could serve as textual support for a reading in which a new tonal system contradicts the pre-existing one. However, the natural system returns soon enough that I hear the sonorities of m.2 ff. more as a return of a previous diatonic collection. The foregoing argument would be much stronger if the music did not return to the natural system.

reduced this interval to a diminished fifth. Gesualdo freely uses diminished fifths between upper voices, especially if they are both consonant with the bass. This is not unusual: by Gesualdo's time, composers had been using diminished fifths in this situation for quite a while. But Gesualdo differs from his predecessors in that he does not shy away from approaching this interval without preparation. The chord on beat three of m. 6 in Stage 1 of the reduction would not be out of place in one of the composer's other madrigals. In fact, in either this chord or Gesualdo's original, the soprano A forms the most poignant dissonance, and this A would be dissonant no matter which form of B the second tenor sang. I have therefore read the B-flat as a Type B alteration, one which changes the interval between second tenor and soprano to an even more dissonant major seventh, probably to lend further support to the text "Che a la morte mi mena" (which brings me to death).[116]

Measure 7 is a different story altogether. There, if one were to reduce the soprano F-sharp to an F-natural, the result would be a root-position diminished triad, which Gesualdo and his contemporaries still avoid. The soprano would form a diminished fifth both with the bass and the second tenor, and it would be impossible for Gesualdo to create the expectation of directed motion to E as part of the evaded cadence in the next bar, since, with F-natural instead of F-sharp, he would no longer be able to raise D-natural to D-sharp. The soprano F-sharp therefore represents an actual change of tonal system through indirect chromaticism, rather than a chromatic alteration within the governing system.

[116] Admittedly, a B-natural in the second tenor part of mm. 6-7 would sound very unusual, even for Gesualdo. But this does not change the fact that the B-flat in the original is neither a syntactical nor a grammatical requirement, and can therefore be reduced out of the texture.

The analysis of measures 10 and 12, like that of the opening, contains features that refer more to long-range hearing than to moment-by-moment perception. In m. 10, I have read a change to the one-flat system before the second beat, which is not strictly speaking necessary. On beat two, the soprano F-natural contradicts the F-sharp from the governing one-sharp system, but all this requires is a move to the natural system. The one-flat system does not definitively arrive until beat 3. Likewise, in measure 12, beat three contains a change from B-flat to B-natural, but on the most local level, this only signifies a move to the natural system. The one-sharp system does not arrive until the downbeat of the next bar, with the alto F-sharp. Again, my analysis of both of these measures is done in deference to a larger-scale hearing of the passage. In m. 10, it is clear that some change of tonal system takes place on the second beat, and the introduction of B-flat happens so soon after that it makes more sense to include B-flat as part of the new system immediately. In fact, from the third beat of m. 10, the pitch B-flat is literally present until the downbeat of m. 12. On the third beat of m. 12, the introduction of B-natural again signals a change of system, and F-sharp is introduced so soon after that it seems only logical to include it as part of the new system at the first moment that the one-flat system changes, much as I read a change to the one-flat system on the second beat of m. 10.

The passage following m. 12 is not, however, quite as straightforward as it seems. All of the F-sharps in mm. 13, 15, and 16 belong to sonorities that provide directed motion to G; in fact, each one is part of a cadential suspension figure. It may seem more logical, then, to call each of the F-sharps a Type A alteration, and to analyze the passage as a whole as being governed by the natural system. This reading

would also conform slightly better to the principle of preferred diatonicism, since the natural system would therefore remain in effect all the way to the middle of m. 20. However, the passage from m. 12 to m. 17 does not contain a single F-natural, which, even if there were only one, would highlight the F-sharps as chromatic alterations. Instead, F-sharp is the only form of F that is present in the passage, and it occurs often enough that the bass F-natural on the third beat of m. 17 stands out as a tone that does not belong to the governing system, rather than as the diatonic version of all the previous F-sharps. These measures therefore present a case in which long- and short-range hearings can lead to different analytical conclusions. A longer-range hearing might read all of the F-sharps as alterations of F-naturals, while the analysis I have presented here reads them as diatonic tones in a new, if temporary, system. Ultimately, the issue does not require resolution in favor of one reading or the other: there is not a single "right answer." Rather, I would name as an advantage of this analytical method the fact that it can accommodate either of these readings, and is flexible enough to account for the different ways in which different analysts will perceive a given passage.

I should digress for a moment here and address a potentially confusing aspect of my method. In the analysis of Lasso's prologue, I often read changes of tonal system that lasted for only a few sonorities, or sometimes for just one. (See, for example, the analysis of the first nine bars presented in chapter 3.) In *Ma tu, cagion*, on the other hand, I have avoided this technique: in m. 10, where I might have analyzed a change to the natural system on beat 2, followed by a change to the one-flat system on beat 3, I instead chose the reading that I have discussed above, which

pays more respect to a longer-range hearing. This seeming inconsistency can be explained by appealing to subsequent events. In a downward spiral of fifths such as Lasso uses in mm. 6-7 of his prologue, there is no telling where the progression will come to rest. Indeed, in the prologue, when the music does come to rest, it is not even in a system that contains the last sonority of the circle-of-fifths motion. On the other hand, the tones that define the new system in mm. 10 and 12 of the Gesualdo example enter after only one or two intervening sonorities, and, more importantly, the newly established tonal system continues through several more sonorities. This means especially that on repeated hearings, the listener is more likely to hear a single change of tonal system at these two points in Gesualdo's madrigal than to hear two rapid changes.

Conversely, I read a change to the one-sharp system at the end of m. 20, with the arrival of F-sharp, and a change to the two-sharp system at the downbeat of m. 22 with the arrival of C-sharp. If this C-sharp had appeared much earlier, the situation here would have been analogous to that of mm. 10 and 12, but since there is no form of C that appears until m. 22, there is no reason to change to the two-sharp system any earlier (for example, in m. 20). Within these changes of system are the Type A chromatic alterations of D-natural to D-sharp, to provide directed motion to E, and A-natural to A-sharp as a Picardy third. As the reduction shows, the next section alternates several times between the one- and two-sharp systems: The one-sharp system returns with the arrival of C-natural in m. 24, only to change to the two-sharp system again in m. 26.[117] My reading of this change when the second tenor sings a C-

[117] There is some justification for reading the soprano C-natural in m. 24 as a chromatic alteration within the two-sharp system, since that pitch is neither syntactically nor gramatically necessary until

sharp halfway through m. 26, rather than on the downbeat of m. 27 when C-sharp becomes grammatically necessary, is out of respect for motivic considerations (and is also the reason that I have included the text for all of the voices in this section): each voice that sings "Che morendo," beginning with the first tenor in m. 24, descends first either by semitone or third, and then by perfect fourth or perfect fifth. The second tenor C-sharp in m. 26 is therefore grammatically necessary to maintain the imitation of this descending motive, in which a diminished fifth would certainly be out of place, even though it would not involve the bass.

For the same motivic reasons, I have read a change to the one-sharp system with the arrival of the alto C-natural in m. 28 and a return to the two-sharp system with the soprano C-sharp at the end of the same bar. The alto C-natural enters as part of the same descending motive discussed above. The soprano C-sharp, on the other hand, is part of a falling minor-third motive that has appeared several times with the text "al mio duol," beginning with the soprano in m. 26. True, there are many other different settings of these three words than there are of the words "Che morendo," but each time "al mio duol" is set to a descending third, it is a minor third. In any case, C-sharp becomes grammatically necessary as a perfect fifth against the bass F-sharp only one beat later. Because C-sharp has been reintroduced so strongly, first as the continuation of a motive and second as a grammatically necessary perfect fifth, I read the soprano C-natural on the second beat of m. 29 as a Type B alteration, rather than another move back to the one-sharp system. One could, in fact, read a change to the three-sharp system at this point, with the arrival of G-sharp, but it is soon contradicted

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m. 25, when it enters in the bass as a perfect fifth with the tenor G-natural. In my opinion, either of these readings is perfectly valid, and my change to the one-sharp system in m. 24 comes only from my own subjective hearing of the passage

by G-natural in m. 30, and the fact that it follows an A-minor sonority makes the G-sharp sound like a chromatic alteration that will create directed motion back to A. The two-sharp system therefore governs the passage from m. 29 to the end of m. 31, when it is replaced by the one-sharp system with the arrival of the tenor C-natural. This, in turn, is replaced by a startling move to the three-sharp system for the last two bars, which will be discussed below.

First, however, one other aspect of the reduction deserves mention. Beginning in mm. 28-9, Gesualdo sets the words "morte non sento" four times to the motive of a descending chromatic semitone, followed by an ascending leap: in the soprano of m. 29, the first tenor of m. 30, and the alto and bass of m. 33.[118] In the reduction, each of these chromatic semitones has disappeared from the texture. Now, my reduction of these four motives may seem to point to an inconsistency in my analytical method. In the soprano and bass statements of the motive, I have read the first tone as diatonic and the second as chromatic, while in the tenor and alto statements I have read the second tone as diatonic and the first as chromatic. This seems especially incongruous in m. 33, where the alto and bass motives sound nearly simultaneously and the chromatic/diatonic relationship within each motive is reversed. My earlier emphasis on motivic unity (see the discussion of "Che morendo" above) would lead one to expect each of these four motives to be analyzed the same way. However, I would point to the fact that each motive has been reduced to a single repeated diatonic tone, and that each chromatic tone has been read as a Type B alteration. Earlier, the

[118] He also sets the words to an approximate retrograde of this motive in the second tenor of mm. 31-32, using an ascending rather an a descending chromatic semitone. But this semitone exists for a different reason than the others: the G-sharp is syntactically required to provide directed motion to A in the following bar.

statements of “che morendo” and “al mio duol” were the only motives that contained chromatic alterations of any kind; there were no other chromatic events in the texture that might change the tonal systems. In mm. 29-34, on the other hand, the four motives in question are part of a larger context that brings much to bear on the determination of the governing tonal system. For example, the G-naturals in the alto and bass of m. 30 both contributed to my reading of the first tenor G-natural, rather than G-sharp, as a diatonic tone. If these two tones in the first tenor were the only forms of G in the measure, the reading may have been quite different. On the other hand, the bass and second tenor F-sharps in m. 29 led me to a reading of the soprano C-sharp, rather than C-natural, as the diatonic tone in that statement of the motive, as I explained earlier. Thus, the larger context in this passage takes precedence over a consistent reading of each of these four chromatic motives.

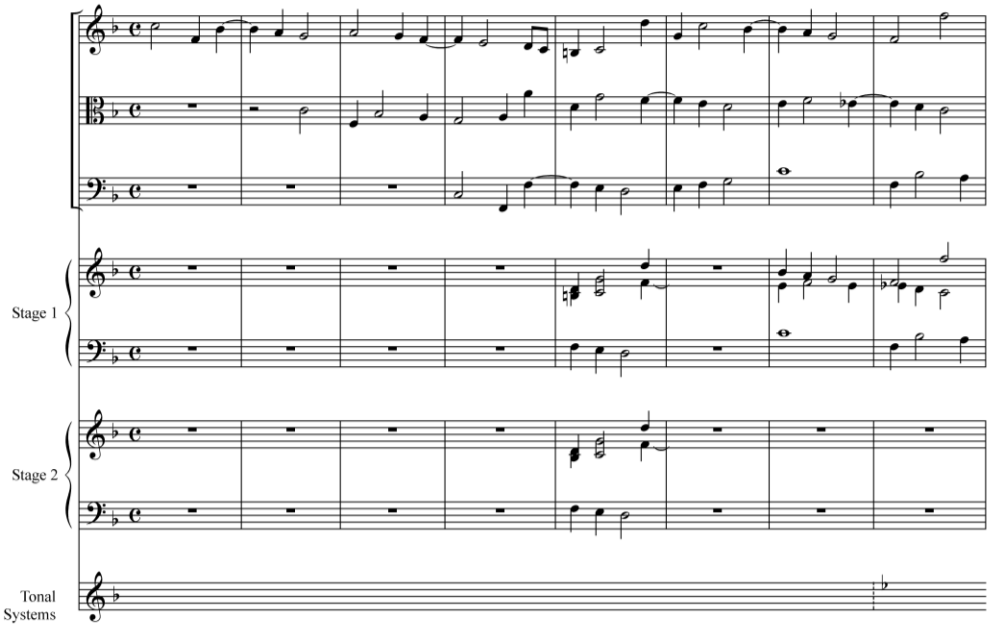
The fact that I have analyzed the chromatic tone in each motive as a Type B alteration highlights the purpose of the motive. As I explained in chapter 3, Type B alterations exist for expressive or coloristic, rather than structural, reasons. Through his use of the chromatic semitone, which in each case changes the quality of the sonority of which it is a part, Gesualdo highlights the word “non,” to emphasize for the listener that the narrator does *not* feel the death that is a result of his love. Again, the removal of these semitones in the reduction shows the analyst that Gesualdo did not need to include them for any syntactical or grammatical reason, but that they serve only to heighten the intensity of the text.

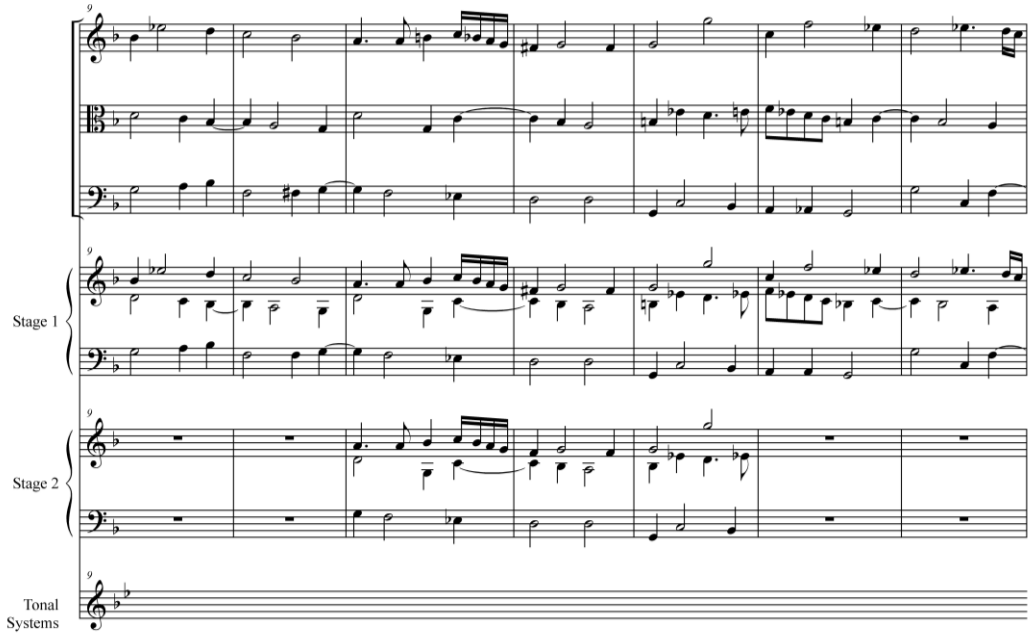
This heightened intensity is also served by the remarkable change to the three-sharp system in the last two bars. Given the expectation of a cadence on A minor

created by the cadential figure in m. 32, one could conceivably read no change of system at all in these bars, but rather read both the C-sharps and the G-sharps as chromatic alterations. However, this contradicts the principle of preferred diatonicism, which prefers a reading in which more of the sonorities in these bars are diatonic. In any case, a sudden change of system or juxtaposition is not unusual for Gesualdo at the endings of his madrigals, and is certainly in keeping with the text at the end of this madrigal: in the last two bars, all the voices unite in the phrase "morte non sento," in the only nearly homophonic passage of the madrigal since the opening. Gesualdo highlights the fact that his narrator does not feel death not only through this strong declamation of the last three words, but by the tonality as well. The sudden change in tonal system in the sharp direction to a system that has not yet appeared in the madrigal gives the end of the madrigal an otherworldly, major-mode sound (at least to this listener) that denies the lamenting, minor-mode quality of the rest of the work—just as the narrator, although he is poisoned by love, denies the death that will soon overtake him.

IV. Henry Purcell, *Fantazia 2 à 3* (1680a)

Purcell's viol fantasias contain some of the composer's most extreme experiments in chromaticism. In fact, Holman (1994) postulates that the pieces were written as compositional exercises, pointing to the fact that the viol consort had been a defunct medium for quite some time when Purcell wrote these pieces. Furthermore, Purcell had studied, by copying, the music of "Monteverdi, Marenzio, and other Italian composers" (76), which may have inspired him to attempt some intense chromatic experiments of his own. Like the other viol fantasias, number 2 alternates sections of different tempi. Purcell begins with an imitative section in a moderate tempo, followed by a "brisk" section, and ending with a slower, densely chromatic *stile antico* section. Since the middle section is largely diatonic and presents no analytical challenges, example 66 presents a diatonic reduction of the first and last sections of the fantasia.

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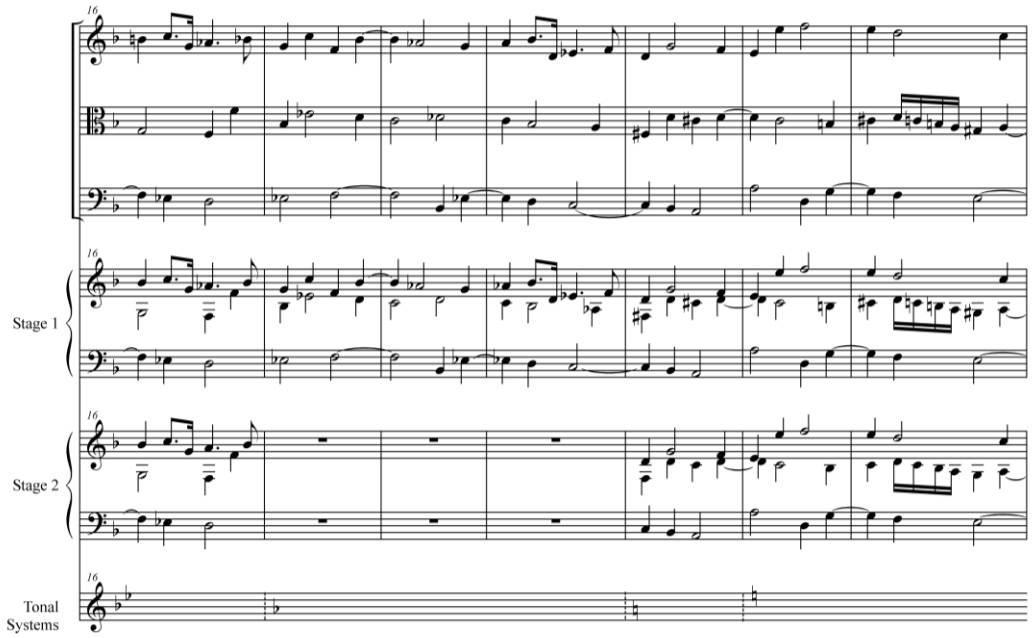
Stage 1
Stage 2
Tonal Systems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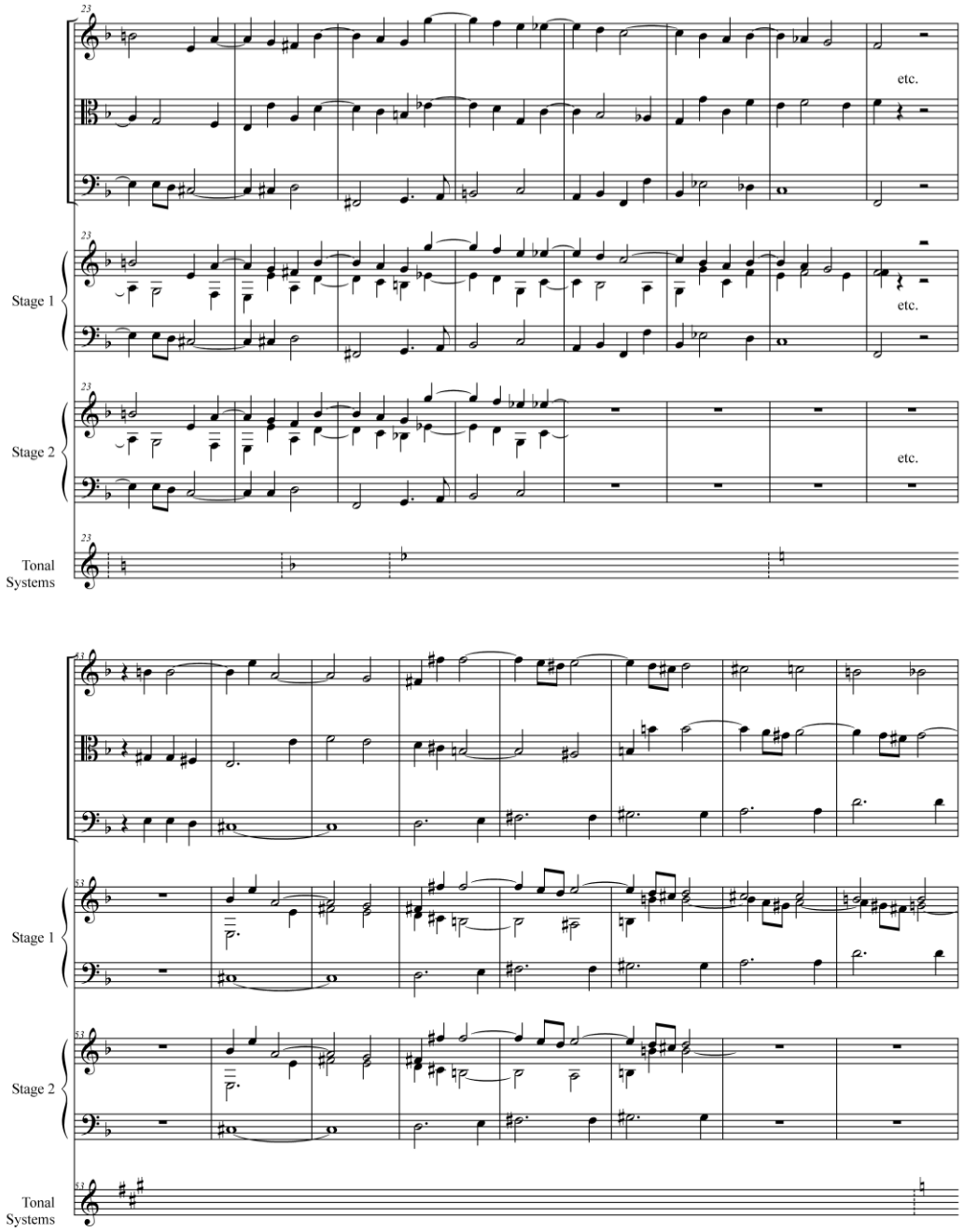
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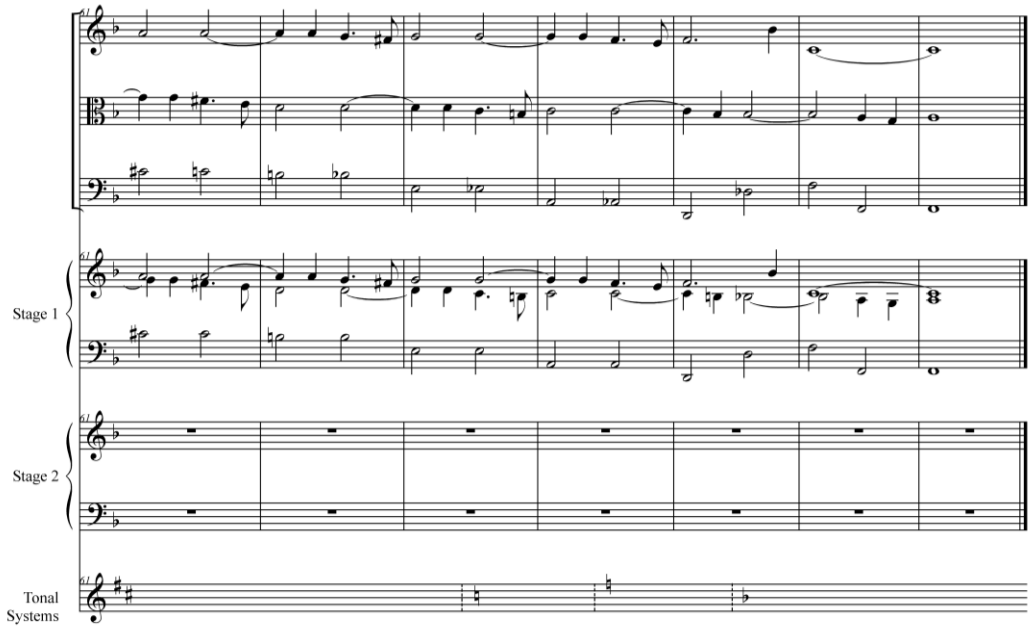


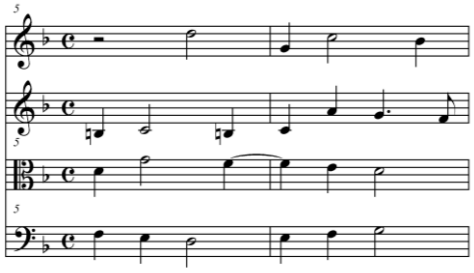
Example 66. Reduction of Purcell, *Fantazia 2 à 3* (1680a).

Before beginning the analysis proper, I would point the reader to two techniques that will feature prominently in the following discussions. The first is Purcell's technique of changing tonal systems smoothly. He tends to introduce a chromatic tone as a non-essential alteration first, after which the tone will become diatonic, changing the tonal system along the way. This forms his main method of changing systems in the first section of the piece. The second is my own analytical technique, which attempts to analyze Purcell's chromaticism in light of changes in style that had occurred by the late seventeenth century. Since Purcell's music can arguably be called tonal (although the viol fantasias are less so than some of his other works), and since it at least has more in common with tonal music than Lasso's or Rore's music does, it cannot be analyzed according to exactly the same method. My

analysis will focus on two of the most important stylistic changes that had taken place by the late seventeenth century:

1. Composers now use tritones and diminished fifths freely, even between outer voices. To be sure, these intervals had already been used with considerable freedom by Monteverdi and other composers of the *secunda prattica*, but generally only when the composer wanted to highlight a particularly poignant part of the text. Purcell and his contemporaries, on the other hand, use these intervals routinely, and in a tonal way, to define the tonality of a given passage. Several places in my analysis will use the tonic implied by a given tritone or diminished fifth to determine the governing tonal system.
2. By the late seventeenth century, a cadence no longer emphasizes only a certain pitch, but also implies the diatonic status of the major or minor scale of which that pitch is the tonic. My analysis will therefore use cadential figures to determine a new tonal system, *even if the new pitch required to usher in that system has not yet sounded*.

The first few bars are diatonic in the one-flat system, with the exception of the Type A alteration of B-flat to B-natural in m. 5. This is a Type A rather than a Type B alteration because of the quasi-cadence on C in the next bar. One can imagine, if this were a four-part fantasia, the entrance of the fourth voice at the end of m. 5, which would look something like example 67.



Example 67. Recomposition of mm. 5-6.

In this case, both B-naturals would certainly be Type A alterations, syntactically necessary to act as leading tones to C in the cadential suspension figure. The fact that Purcell is required to evade the expected resolution of this suspension by leaping to the entrance of the phantom fourth voice does not change the status of the B-natural.[119]

In m. 7, we find the first instance of the second chromatic technique described above. The alto E-flat, which is introduced as a Type B alteration,[120] becomes a diatonic tone when Purcell clarifies its function as introducing a cadence to B-flat in the next bar. Note that, in the reduction, the tonal system therefore changes to the two-flat system on the downbeat of m. 8. This system is confirmed by the soprano E-flat in the subject in m. 9. Now, according to the strictest interpretation of the principles laid out in chapter 3, neither of these E-flats needs to be a diatonic tone, since neither one is necessary to correct what would otherwise have been an unallowable dissonance. But my reading of them as such is a nod to the changes in

[119] In fact, the entrance of a false fourth part is almost certainly the effect that Purcell was trying to achieve here, much as Corelli introduces a false *comes* at the opening of the imitative movements of his Op. 5 violin sonatas.

[120] This E-flat, like many of the other chromatic tones in this piece, is a standard example of what Zarlino called an "evaded" cadence (see chapter 4, pp. 126 ff.). Resolving a cadential suspension by whole step instead of by half step is one of the ways that Zarlino demonstrates how a cadence might be evaded.

stylistic expectations during the seventeenth century. When the E-flat enters in m. 7, it is the resolution of what should have been a cadential suspension to F, and as such it is the chromatic alteration of an expected E-natural. But the suspension of the E-flat over F on the downbeat and the bass suspension in the same bar imply a cadence on B-flat, which, by this time in the seventeenth century, would have led the listener to perceive E-flat as a diatonic tone (and certainly leads the modern listener to this perception).[121] The evasion of the actual cadence by the move to G in the bass does not alter this reading. Again, the diatonic status of E-flat is confirmed by its entrance in the soprano of m. 9. This entrance solidifies E-flat as a diatonic tone in another way as well: although there is no longer any prohibition against tritones and diminished fifths—and therefore, as I mentioned above, the E-flat cannot properly be called an essential chromatic tone—Purcell has always maintained the quality of the two perfect melodic intervals in the entrances of the subject, and there is no reason to expect that he will not continue to do so. It is reasonable to say that at this point, a soprano leap to E-natural would stand out as a chromatic alteration.

The music remains in the two-flat system until measure 16, with certain Type A and Type B alterations along the way, as noted in the reduction. The gradual introduction of A-flat before the "official" change to the three-flat system in m. 17 parallels the earlier introduction of E-flat before the two-flat system. A-flat is first introduced as a standard Type B alteration in the bass of m. 14. The system, however,

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[121] Another reason that the seventeenth-century listener would have expected a cadence on B-flat is that the alto motion E-flat-D-C in m. 8 would call to mind the cadential figure $\begin{matrix}7\text{-}6\text{-}5\text{--} \\ 3\text{-}4\text{-}4\text{-}3\end{matrix}$, which, by this point, had been used so much at cadences that it was almost a cliché. References to this figure in theoretical treatises, and uses of it in actual music, go back to the early seventeenth century (see Arnold ([1931] 1965) for examples of both). This figure, or an obvious modification of it, appears numerous times in this Fantasia: see mm. 12, 19, 20 (in the latter two, one must imagine bass tones of F and D respectively), and 29, to name a few.

has not changed: note the presence of A-natural in the alto of m. 15. The next introduction of A-flat, however, has been analyzed as a Type A alteration, because in retrospect, it is responsible for creating directed motion to E-flat on the downbeat of m. 17. That is to say, it is unclear, when the soprano A-flat first sounds, what its function will be.[122] This function is clarified by the E-flat cadence on the downbeat of m. 17, which makes the A-flat a Type A alteration (syntactically necessary for the cadence).[123] When Purcell continues to use A-flats, it becomes clear that the music changed to the three-flat system with the arrival of this E-flat cadence. Again, this reading is a nod to changing styles: at this point, as I explained in point number two above, tones that were the goals of cadential motion started to take on the status of "tonic," as they do in tonal music, with the implication that certain pitch-classes (i.e., those of the major or minor scale) were diatonic. In sixteenth-century music, where this was not the case, I would have analyzed a change to the three-flat system only with the arrival of the soprano A-flat in m. 18 (since it forms a perfect fifth with the alto D-flat) if I analyzed a change of system at all.[124]

Up to this point in the piece, I have used cadences and cadential suspension figures as a way of identifying tonal systems. This technique will prove even more useful from m. 19 to the end. By looking at the "tonic" implied by each cadence, one can make determinations about the tonal system, and therefore about which tones are diatonic and which are chromatic alterations. Having avoided a change to the two-flat

[122] For example, if the bass continued down to D-flat on the fourth beat of the measure, the music could turn in quite a different direction.
[123] A-flat is not gramatically necessary, because Purcell could have made a cadence to E-flat without any form of the pitch-class A. It is, however, syntactically necessary, since if the note A sounds, it must be as A-flat.
[124] I have read the abovementioned alto D-flat as a Type B alteration. Even though it could be seen as implying a move to the four-flat system, the implications of such a move are too weak to lead to such a reading.

system by using A-flat in the soprano of m. 18, Purcell introduces A-natural in the soprano of m. 19, which is a chromatic alteration of the A-flat that one would expect in the governing three-flat system, and which creates a weak cadence to B-flat. With the second appearance of A-natural in the alto of the same bar, Purcell for the second time implies a cadence to B-flat major. This cadence is evaded by the cadential motion to a G-minor sonority on the first two beats of the next bar. However, since both the expected cadence on B-flat major and the actual cadence on G minor would imply a two-flat system, I read the change to that system on the downbeat of m. 20: since this is the point at which it becomes clear that Purcell has moved to the two-flat system, it is also the point at which it becomes clear that the A on the last beat of m. 19 is a diatonic tone rather than a chromatic alteration. Similarly, the Type-A alteration of C to C-sharp in the same bar implies a cadence to a D-minor sonority, and therefore a move to the one-flat system. This system is confirmed by the arrival of E-natural on the downbeat of m. 21. Again, in an earlier repertoire, the presence of the perfect fifth A-E on the downbeat would change the tonal system by itself, but since Purcell freely uses diminished fifths between the outer voices (for example, on beat 3 of m. 16), it cannot be assumed that this perfect fifth automatically implies a change of system. Rather, it is the combination of the perfect fifth and the expectation of a cadence on a D-minor sonority that serves to confirm the change to the one-flat system.

Purcell uses an almost identical procedure to move to the natural system in m. 23. In fact, the music from the third beat of m. 22 to the downbeat of m. 23 is almost an exact transposition up a fifth of the music from the third beat of m. 20 to the

downbeat of m. 21. The later measures, therefore, need not be explained in detail. Note that, within the one-flat system of mm. 21-2, the C-sharp in the alto of m. 22 is a Type A alteration, which makes the B-natural before it syntactically necessary, and therefore also a Type A alteration.

The following measures contain two more changes of system in the flat direction, as follows: The C-sharp in the bass of m. 23 is a Type A alteration to provide directed motion to D. Because of the F-natural in the alto of this bar, I have analyzed m. 24 as a cadence to D minor with a Picardy third, rather than as a cadence to D major. The reduction therefore shows a change to the one-flat system in the middle of m. 24. This motion to the one-flat system is, of course, confirmed by the soprano leap up to B-flat at the end of the bar. In the next bar, the F-sharp in the bass is again a cadential Type A alteration, and again, when the cadence on G is confirmed, the reduction shows a move to the two-flat system. The alto leap of a diminished fourth from the Picardy third B-natural to E-flat is analogous to the soprano leap in the previous bar; it confirms the two-flat system. Given my reading of mm. 24 and 25, one might therefore expect a move to the three-flat system with the cadence on C in m. 26, since that cadence is so similar to the cadences in the previous two measures. However, even though Purcell still uses the Picardy third E-natural in the soprano (note that here the "white note" is actually the chromatic alteration), there is no A-flat to confirm the three-flat system, as B-flat and E-flat previously confirmed the one-flat and two-flat systems respectively. Instead, Purcell's use of A-natural in the bass of the next bar confirms that we are still in the two-flat system.[125] As the

[125] One could make an equally compelling case that A-flat becomes a diatonic tone, and that the A-naturals in these bars are Type A alterations. In such a reading, the passage would end in either the

reduction shows, the A-flat and D-flat in the following bars are Type B alterations, as is the soprano A-flat in m. 29, after the cadence to F in the one-flat system.

The final section comprises a long move from the three-sharp system back to the one-flat system via indirect chromaticism, with many Type B alterations along the way. There are many ways that one could interpret the first few bars. The opening E-major sonority does not guarantee that G-sharp is a diatonic sonority; it could be a chromatic alteration within the one-flat system that ended the previous section. Even in m. 55, when G-sharp, F-sharp, and C-sharp have all sounded, the alto F-natural still introduces some ambiguity: An analysis that focused on long-range hearing could read the F-natural as diatonic and all of the raised notes in the passage as chromatic alterations. However, my reading of the passage conforms to the principle of preferred diatonicism outlined in chapter 3, according to which the three-sharp system renders the greatest possible number of sonorities in the next few bars diatonic.

Within this three-sharp system, the F-natural in m. 55 is a Type B alteration. The D-sharp and A-sharp in m. 57 could be seen as implying a move to the five-sharp system, with some justification, given that my analysis of the first section relied heavily on real or implied "tonics" to determine the system. If the analysis relied solely on that technique, the implied motion to B-natural (and even the actual motion to G-sharp) as "tonic" would imply a five-sharp system. But the D-natural in m. 58 and the A-natural in m. 59 serve to define the status of their raised versions in m. 58

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three-flat or the four-flat tonal system, depending on one's reading of the D-flat in m. 28. I prefer the reading shown here for the same reasons I gave at the end of the Lasso analysis in section 1: At the end of the seventeenth century, the listener has even more reason to expect a passage to end in the same system in which it began, and it does not seem unreasonable to say that most listeners will hear the final F of this passage as a return to the opening tonic, rather than as the chromatically altered tonic of a new system.

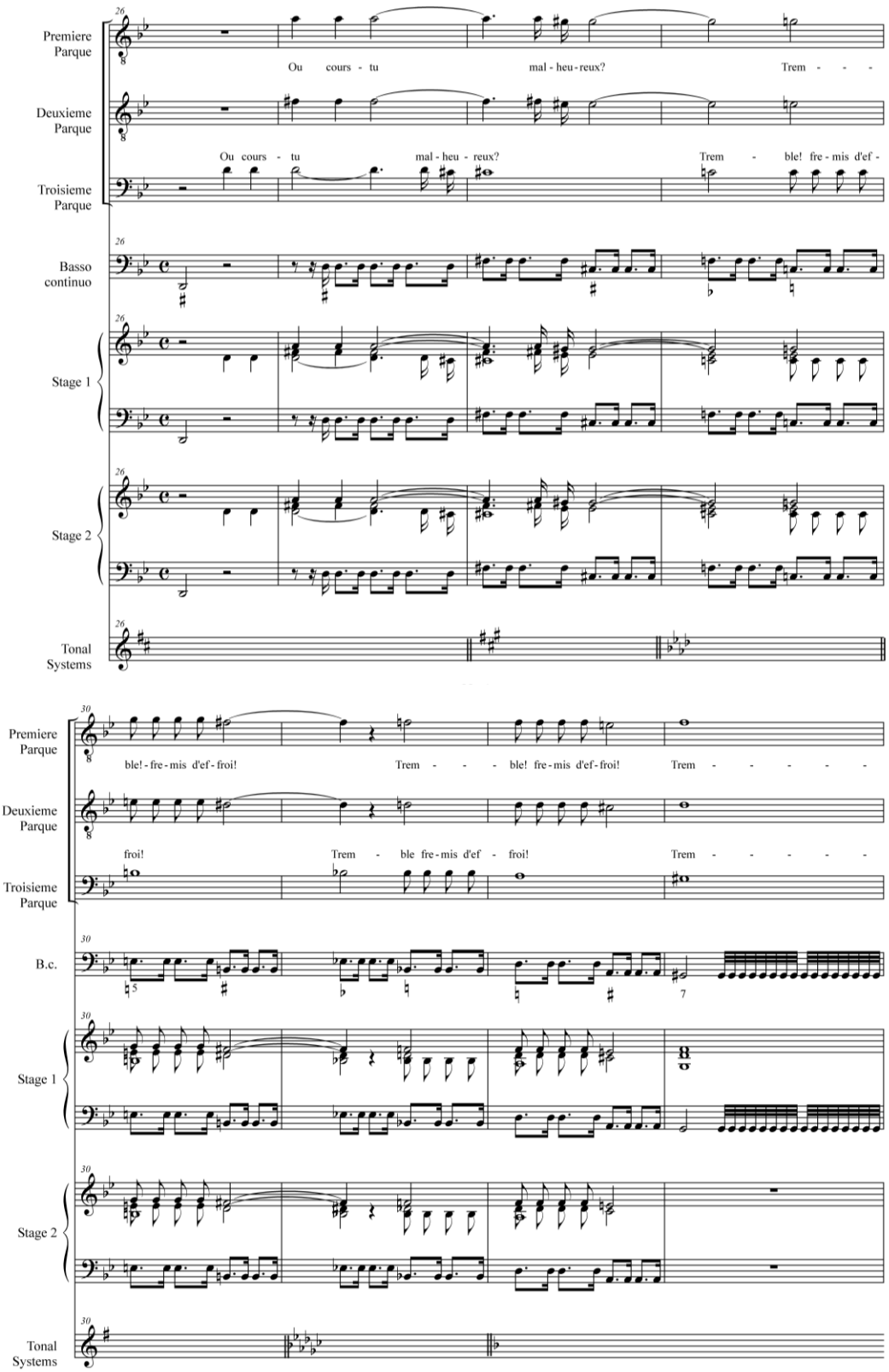
as chromatic alterations, and therefore to confirm that the passage is governed by the three-sharp system. This system is not contradicted until the arrival of G-natural in m. 60, which, although it is locally dissonant, is the resolution of a suspension and therefore has the stability of a diatonic tone.[126] B-flat, which appears at the moment of change to the two-sharp system, is still identifiable as a chromatic alteration of the B-natural that came immediately before. Since the other voices remain stationary, it is analogous to the chromatic alteration of the third above a stationary bass, which was a typical example of a true chromatic semitone (see chapter 2, pp. 76-8). The same is true of the third beats of mm. 61-5: in each case, the bass moves down a semitone while at least one of the other voices remains stationary, making the bass tone in question stand out as a chromatic alteration. Note that the bass C-natural in m. 61, although it creates directed motion to G, is still a Type B alteration, since it is not syntactically required to do so. The tonal systems change to one-sharp, natural, and one-flat with the arrival of C-natural in m. 63, F-natural in m. 64, and B-flat in m. 65. Again, these tones are not essential chromatic tones, and therefore do not carry a change of system for the same reasons that they would have in sixteenth-century music. But, like the G-natural in m. 60, they are the resolutions of dissonant suspensions, which gives them an increased sense of stability, and more importantly, their continued use in the succeeding measures firmly establishes them as diatonic tones rather than chromatic alterations.

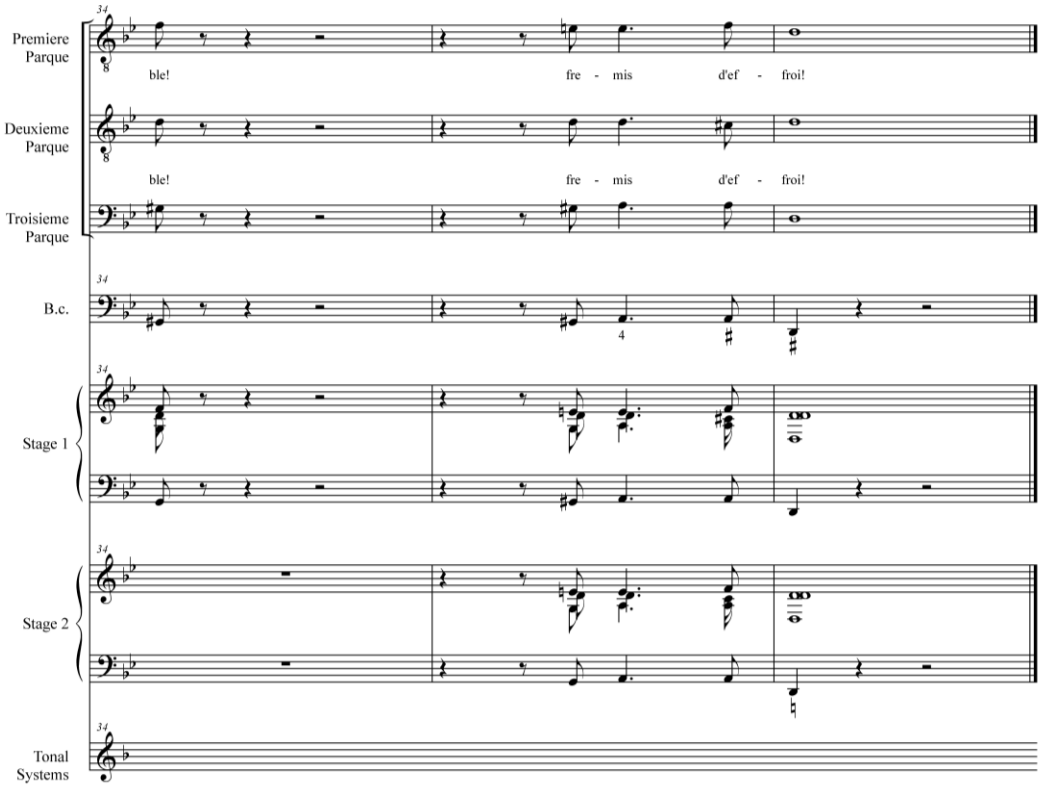
[126] In fact, since the G-natural is a perfect fourth above the bass, it is arguable less dissonant than the expected G-sharp, which would be an augmented fourth. Note that the first G-natural in the bar is still a Type B alteration, since it is an anticipation of the resolution and not the resolution itself. The same is true of the first B-flat in m. 65.

V. Jean-Philippe Rameau, *Trio des Parques* from *Hippolyte et Aricie* (1733c), Act II, scene 5, mm. 26-36.

The second *Trio des Parques*, like many of the other examples presented in this dissertation, is one of its composer's most celebrated and most often-discussed works. Surprisingly, though, nearly the entire work is diatonic. Like Schubert, Chopin, and Brahms, Rameau seems to have understood the dramatic possibilities of inserting a densely chromatic passage into an otherwise diatonic work. This passage was in many ways the most difficult one in this entire dissertation to analyze, but was also in many ways the most fruitful. The following discussion will have roughly four parts. First, I will argue for the applicability of my own method to an essentially tonal work such as this one. Then, I will describe how Rameau might have analyzed the passage, based on his own writings about it. The remainder of the section will discuss two competing ways of looking at the passage according to my own theory. To avoid being overly repetitive in the musical examples, example 68 presents both the score to the measures in question and the first possible diatonic reduction of them, although this reduction will not be discussed for several pages. For simplicity and clarity, I have included only the three voice parts and the basso continuo (without realization).

This trio takes place at the end of King Thésée's journey to the underworld, after Neptune has granted him safe return to the world of the living. The three Fates (*Parques*) warn him that although he will be leaving the underworld, the earth will be just as much of a hell for him when he returns. This turns out to be true, as he returns to find his son trying to prevent his wife's suicide.


Premiere Parque
Deuxieme Parque
Troisieme Parque
Basso continuo
Stage 1
Stage 2
Tonal Systems
Ou cours - tu
mal - heu - reux?
Trem - - -
Ou cours - tu
mal - heu - reux?
Trem - ble! fre - mis d'ef -
ble! - fre - mis d'ef - froi!
Trem - - - ble! fre - mis d'ef - froi!
Trem - - - - -
froi!
Trem - ble fre - mis d'ef - froi!
Trem - - - - -
B.c.



Example 68. Reduction of Rameau, *Trio des Parques* from *Hippolyte et Aricie* (1733c).

Here is the text to the excerpt:

Où cours-tu, malheureux?
Tremble, frémis d'effroi!

Where are you running, unhappy one?
Tremble, shivering with terror!

Rameau's Trio immediately presents two challenges to the new method of analysis I have outlined in this dissertation. The first is that, as almost any theorist would agree, the piece is tonal; that is, it conforms to the norms of eighteenth-century tonality, as codified by Rameau himself, among others. At the opening—that is, before the passage in question—the orchestral introduction consists of a long tonic prolongation that leads to a perfect authentic cadence in the tonic, G minor. The first

phrase of the chorus likewise starts and ends in G minor; the second phrase then leads to a half cadence with nothing more chromatic than a diminished-seventh chord. Even the bizarre section presented in the example takes place within a prolonged dominant: A voice-leading analysis could trace a descending fourth-progression in the bass from D in m. 27 to A in m. 32, which, after being prolonged by the neighbor tone G-sharp in mm. 33-5, moves back to D in m. 36. Likewise, one could trace an upper-voice descent from A in m. 27 down to D in m. 36; the parallel fifths between this voice and the bass are broken up on the surface by the downbeat sonorities in mm. 28-32. This prolonged dominant then returns to the tonic, G minor, to end the first section. The second section features a prominent move to B-flat major before returning again to the home key. All of these are features one would expect within a minor-mode tonal work, and the chromatic sonorities, like the various diminished-seventh chords and the striking Neapolitan chord before the final cadence, are used according to the norms of major/minor tonality. Leading tones, suspensions, and chordal sevenths all resolve in the ways that one would expect in the music of Rameau's contemporaries and successors.[127] Why, then, is a new method of analyzing this music necessary?

I would respond in several ways. A tracking of tonal systems highlights a feature of the music quite different from an analysis according to key and Roman numeral: it shows the collection of pitches that are diatonic at any given time. As I explained in chapter 4, a tonal system is like a major or minor scale in that it is a group of tones that the listener perceives as diatonic, but it is unlike a scale in that it

[127] These statements are not meant to diminish the deep expressivity and startling originality of Rameau's work; rather, I point out these features only to highlight the differences in harmonic language between Rameau's work and the sixteenth-century repertoire upon which much of this theory was based.

none of its tones serves as a tonal center to which all the others are subordinate. Thus, while the tracking of tonal systems that I present in the various diatonic reductions in this dissertation would be powerless to show that Rameau's Trio modulates from G minor to B-flat major, it would show that this modulation is a very different type of chromaticism from what happens in the example. The diatonic reduction also distinguishes between the more surface chromaticism of the altered tones in a diminished-seventh or Neapolitan chord and the deeper-level chromaticism caused by a shift in the diatonic collection. Except during the passage in question, a reduction of Rameau's entire Trio would have the same, two-flat key signature on the lowest system throughout, and would show various altered tones as either Type B or Type A alterations. Just as with the sixteenth- and seventeenth-century examples, then, it would reveal a hierarchy of chromaticism, distinguishing among different levels of significance of the chromatic events. An analysis need not be necessary to be fruitful: this method focuses on a single aspect of the music, its chromaticism, and explores the relationship of chromatic sonorities to one another independent of the overall tonal structure of the work.

The second charge against this new method would unfortunately come from Rameau himself: properly speaking, this excerpt does not belong anywhere in a work that explores chromatic music, since, according to its composer, it is not chromatic at all. This passage belongs to the enharmonic genus. Rameau explicitly connects it to the enharmonic in his *Génération harmonique*,[128] and its modulations depend on what modern musicians still call enharmonic relationships. The only way to answer this charge is through a presentist appeal to changing terminology. Whether one uses the

[128] See chapter 1 of this dissertation, page 52.

definition of "chromatic" in relation to major/minor tonality (that is, tones outside the key), or the one I have presented here (tones outside the tonal system), this is a chromatic passage. A modern musician would not identify this as an "enharmonic passage" because that term, with its implication of the enharmonic as a separate genus, does not exist anymore.[129] Given that the earlier ternary division of musical genera has become a binary one (diatonic or chromatic), this passage falls into the chromatic category in modern parlance.

However, even if we accept this passage as "chromatic" rather than "enharmonic," it will still be valuable to understand how Rameau would have analyzed it. A modern musician would say that each bar from m. 28 to m. 32 contains a half-cadence. Rameau did not use this term, but rather called the progression an "irregular" cadence. In the *Traité*, he understands the irregular cadence as being no different from what we would call a plagal cadence, saying:

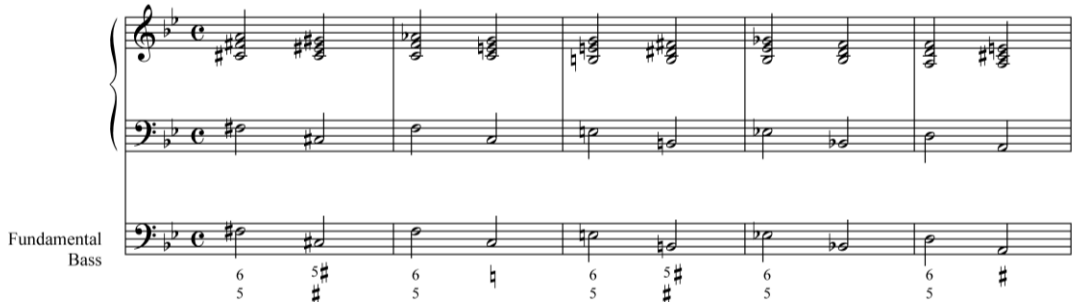
> Whereas the perfect cadence ends with a progression from the dominant to the tonic note, the cadence we are discussing here ends … with a progression from the tonic note to its dominant, or from the fourth note to the tonic. It is therefore called irregular. (Rameau [1722] 1971, 73).[130]

Since Rameau holds to the view that a cadence must comprise a dissonant sonority resolving to a consonant sonority (see pp. 61-2), he must explain the first chord of the irregular cadence as a dissonant formation. He does so by positing the addition, to the first chord, of "a sixth which is consonant but forms a dissonance with respect to the fifth of the bass" (75). The resulting chord, which a modern musician would call a 6/5 chord, Rameau calls the "chord of the large sixth." In his view,

[129] The term "enharmonic passage" was, however, in currency in the 1730's. Michel Corrette's *Carillon* (late 1730's) has a long, wildly modulating passage labeled just that.
[130] Christensen (1993) notes that this term was already used by Masson to describe the same phenomenon, and that other French authors use the term "imperfect cadence" to describe it.

therefore, every irregular cadence—that is, every cadence in which the bass ascends by fifth or descends by fourth—begins implicitly with a chord of the large sixth. He goes on to say, "if we wish the note which begins this cadence to pass for a tonic and that which ends it to pass for a dominant, it is enough to use the major third of the last note" (75).

From these definitions, we can deduce the fundamental bass that Rameau would have ascribed to mm. 28-32. Example 69 presents this fundamental bass underneath a reduction of the progression from these bars.



Example 69. Fundamental-bass analysis of mm. 28-32.[131]

Christensen (1993) points out that Rameau's way of analyzing this type of progression, which makes the first chord of each irregular cadence fundamentally dissonant, reverses the relationship that he so carefully established between tonic and dominant, "in which the tonic was equated with absolute consonance and repose, and the dominant with dissonance and motion" (118). It is therefore important for the modern analyst to realize that Rameau would have heard each measure in exactly the

[131] One could object to this fundamental-bass analysis on the basis of Rameau's insistence that the fundamental bass only progress by consonant intervals; that is, fifths, fourths, and thirds. This would mean that the two diminished fourths in the fundamental bass of the example (C-sharp-F and B-E-flat) would be unallowable. However, Rameau himself uses diminished fifths in his fundamental basses, which implies that the number, not the quality, of the interval, was most important.

opposite way that we would today. Whereas modern musicians would treat the first chord of each bar as the stable sonority, Rameau would treat it as the unstable one. He does say that the tonic may bear either the major or the minor third, and his use of the 6/5 sonority on that tone raises an interesting question: would the addition of the "large sixth" to each of the downbeat chords have any effect on the governing diatonic collection? For example, the first chord in the passage, as it stands, is an F-sharp minor chord. The large sixth that would be added to make this a 6/5 sonority would be D-sharp. This seems confusing, since D-sharp is not part of the F-sharp minor scale as we know it. However, in the *Traité*, Rameau still considered the Dorian scale to be the "natural" form of minor, in which case D-sharp would be perfectly diatonic within the F-sharp minor collection.

But the addition of this large sixth does pose problems for my own analytical method of determining the governing tonal system. The reduction of example 68 shows a change to the three-sharp system on the downbeat of m. 28, but an implied D-sharp would mean that that bar should be in the four-sharp system, and indeed that each of the following tonal systems should have either one more sharp or one fewer flat than shown. Again, to resolve this discrepancy, I would appeal to differences in hearing between Rameau and myself (and, I believe, most modern listeners). The modern listener would assign tonic status to the first sonority of each bar, and the diatonic collection implied by a minor tonic sonority is different in our day from what it was in Rameau's. In fact, in his later writings, Rameau uses the A-minor scale as the standard form of minor, and his minor diatonic collection therefore corresponds

exactly to ours. The modern listener therefore has no reason to hear an implied D-sharp on the downbeat of m. 28, a D-natural on the downbeat of m. 29, and so forth.

On, then, to the diatonic reduction. Since the D-major chord in m. 26, which has already sounded for a full measure, follows its own dominant (albeit in first inversion), I have analyzed a change to the two-sharp system, which is therefore already in effect at the beginning of the excerpt. Since m. 28 begins the sequence of half-cadences that continues for the next several measures, I have read a change to the three-sharp system at the beginning of this bar, in a nod to retrospective hearing: the listener will naturally perceive m. 28 as a half-cadence, and will therefore perceive F-sharp as the tonic of a governing diatonic collection. Within the three-sharp system, E-sharp is a Type A alteration, syntactically necessary as the leading tone in a minor-mode half cadence. As we have seen, this E-sharp is syntactically necessary whether one follows Rameau's conception of the irregular cadence, or the modern conception of a half cadence. The following series of measures looks very similar to m. 28, except that each begins with a juxtaposition between the previous tonal system and a new one in which the downbeat sonority is the tonic. Thus, m. 29 contains a juxtaposition between the three-sharp and the four-flat system, m. 30 between the four-flat and the one-sharp system, m. 31 between the one-sharp and the six-flat system,[132] and m. 32 between the six-flat and the one-flat system. This system ends the passage, with certain Type A and Type B alterations along the way as shown in

[132] The decision to read m. 31 in the six-flat, rather than the six-sharp system, was essentially arbitrary and reflected only a personal preference for the bass over the upper voices. Thus, since the bass is written in flats, I read the tonal system as six-flat.

the reduction.[133] Note the natural sign under the final bass note in Stage 2 of the reduction, which reduces out the original F-sharp in the basso continuo. This F-sharp on the downbeat of m. 36 is a Type A alteration, but not because it is a Picardy third: as the principles of musical syntax changed in the eighteenth century, composers no longer shied away from ending phrases, or even entire works, with minor triads (this piece being one example). I read the F-sharp as a Type A alteration only because it will function as a leading tone back to G minor in the next bar.

This reading of each new measure as a juxtaposition might in fact have been agreeable to Rameau, who goes to great lengths to point out how the "common tone" in the middle voice going from each bar to the next is actually a quarter-tone off from the previous tone. As he explains in the *Génération harmonique*, the enharmonic progression comes from the juxtaposition of two sonorities whose roots lie a diminished fourth apart, and the root of one sonority will always be a quarter-tone higher than the third of the other.[134] Thus, for Rameau, the E-sharp in the middle voice on the downbeat of m. 29 would not be a perfect octave above the bass F-natural; it would be a quarter tone lower than the F-natural two octaves above the bass. He says, in connection with this very passage:

> [The ear] feels in this lack of relation (*rapport*) the harshness which [the enharmonic genus] causes; we are struck by the quarter-tone without realizing it; we are revolted by it because it is unnatural and because our ear cannot appreciate it. (Quoted in Christensen 1993, 207)

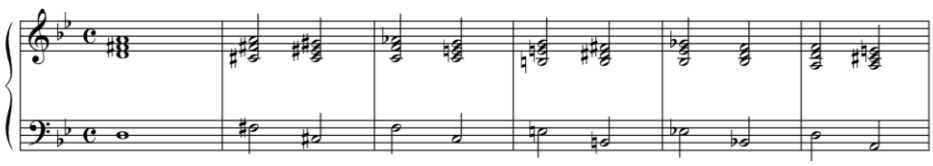
[133] Note that B-natural, which should be part of the diminished-seventh chord in m. 33, does not appear either in the original passage or in the reduction, since I have not provided a realization of the basso continuo. If this B-natural were present, it would be a Type A alteration (syntactically required to construct the diminished-seventh chord) within the governing one-flat system.

[134] Rameau's derivation of the enharmonic progression deserves a little more clarification. He derives the progression from the quintuple geometric progression. For example, he starts with a B-flat major triad. Five fifths up from B-flat is D; five more fifths up is F-sharp (in each case, including the bottom tone as "1"). A-sharp, the third of the triad built on F-sharp, will be a quarter-tone lower than the root of the original B-flat chord.

Thus, while Rameau may have found the very idea of calling this passage "chromatic" anathema to his way of thinking, he may very well have agreed with the assertion that with each successive measure from 29 to 32, the ear is struck by a completely new and different diatonic collection.

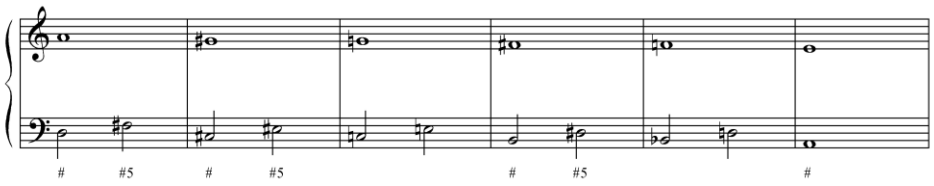
The weakness of the diatonic reduction presented in example 68 is that it ignores what one assumes was the whole point of this passage—that, through the use of enharmonic equivalence, one can change systems quite dramatically without any direct chromaticism. If one treats enharmonic tones as equivalent, then every successive pair of sonorities in the passage is diatonic. For example, if one acknowledges the enharmonic equivalence of G-sharp and A-flat, then the C-sharp-major sonority in the second half of m. 28 can be read as D-flat major, which is diatonic in relation to the following F-minor sonority. In fact, if one examines only the top voice of the excerpt, ignoring enharmonic respellings, then an aspect of the soprano voice that was not immediately apparent suddenly comes into sharp focus: the soprano line from mm. 27-32 is a textbok descending chromatic fourth. This means that the bars in question can be analyzed using he same method presented in chapter 5, as the following examples will show.

Example 70 presents a simple four-voice reduction of mm. 27-32.



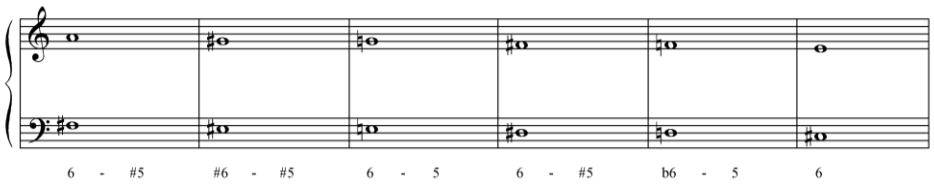
Example 70a. Four-voice reduction of mm. 27-32.

Following the procedure by which I reduced the chromatic-fourth examples discussed in chapter 5, example 70b presents the same passage with two changes: the tones of the chromatic fourth are presented as whole notes, one per bar, and the harmonies are represented by figured bass.



Example 70b.

Each successive measure can now be reduced to a 6-5 motion above a stationary bass, as shown by example 70c.

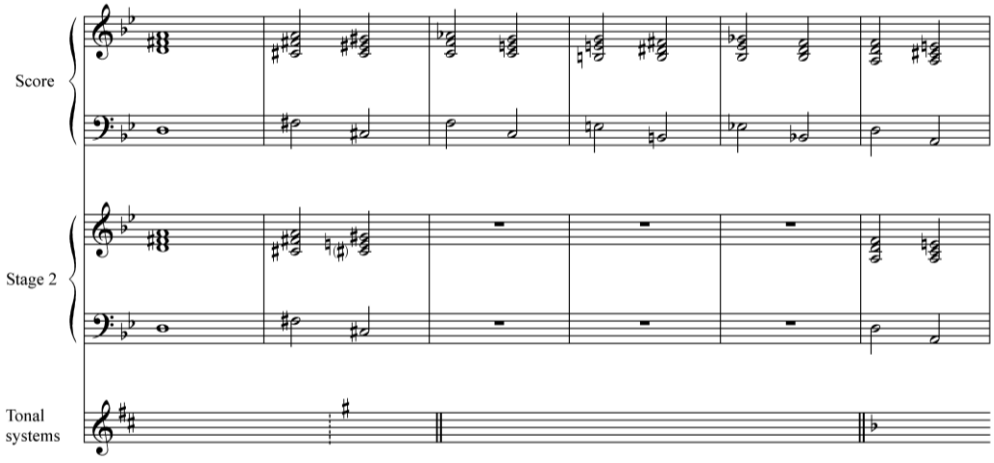


Example 70c.

At this point, the foundation for Rameau's passage becomes clear: it is a descending chromatic-fourth progression based on parallel thirds between the outer voices, just like Model 1 presented in Appendix 4 and discussed at length on pp. 164ff. These thirds differ in one significant way from any of the Model-1 progressions, however, in that they are all minor, since the bass, like the soprano, descends exclusively by semitone. According to chapter 4,[135] then, this passage is an example of suspended diatonicism. The accretion of semitones, creating a series of parallel intervals of the same size and quality in the structural outer voices, makes

[135] See especially p.140-1.

discerning the governing tonal system in real time impractical, if not impossible. A diatonic reduction according to this reading would therefore look like example 71.



Example 71. Alternate reading according to suspended diatonicism.

(For simplicity's sake, the staff marked "score" in the example is actually the four-voice reduction from example 70.) Here, the two-sharp system that begins the passage changes to the three-sharp system via indirect chromaticism, since the ear can presumably follow the change of system brought about by the addition of G-sharp. However, starting in the third measure (m. 29 of the original), the lowest staff shows only a double barline, followed by no system at all—recall that this was the method used to indicate suspended diatonicism in chapters 3 and 4. Just as in the examples from those chapters, it is not possible to distinguish a governing tonal system until the music comes to rest in m. 32.

In this section, I have presented three different readings of the passage: Rameau's own reading, in which the passage belongs to the enharmonic genus and the main issue is one of intonation rather than of tonal systems, and two of my own readings, one according to juxtaposed diatonicism and one according to suspended

diatonicism.[136] I believe it is not a weakness, but rather a strength of the present theory that it allows for both of the latter two readings, and provides a method for graphically representing each. The method of diatonic reduction is flexible enough to account for many different hearings of a given passage, without forcing an analyst to choose only one.

[136] There is even a fourth reading that would be possible, according to the theory presented here. If one ignores enharmonic respelling, and reads every one of the temporary leading tones (on the second half of each bar, starting in m. 28) as a chromatic alteration that becomes a diatonic tone—as I did in the Purcell examples both here and in chapter 4—one can read the passage as a series of changes of system through indirect chromaticism. These changes would be repesented by dotted barlines on the lowest staff, as in the other examples of indirect chromaticism.

Conclusion

The present work, while providing a generalized picture of pre-tonal chromaticism and a new framework for understanding it, is only a first step toward developing a comprehensive theory of this repertoire. This dissertation as a whole presents many areas for further research, expansion, and improvement. This final chapter will be largely devoted to exploring some of those areas in detail, and will conclude with a general summary of the work and its intended impact.

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Areas for Further Study

Limitations of the current theory

The theoretical model presented in chapter 3 has several areas for improvement that deserve mention here. The first is the use of the hexachord as the basis for the tonal system. This practice, which I adopted from Dahlhaus, loses its relevance once I have defined my conception of the tonal system, since one only has to understand the pitch content of the tonal systems, not their origins. Although I begin the chapter 3 definitions with the hexachord, since that was the starting point for my theory, subsequent definitions render it obsolete: it never comes into play as an analytical tool. My final conception of tonal system comprises the pitches of what

modern musicians call the major scale and the triads that can be built on the first six of its tones; as I have made clear throughout this work, the most significant difference between tonal systems and major and minor keys is the lack of a functional hierarchy of tones or sonorities in the former. Therefore, it would seem that a more concise definition of tonal system is possible, one that is not based on the hexachord, but that defines the tonal system purely by its collection of pitch-classes, omitting the theoretical origin of this collection.

In addition, my conception of tonal systems[137] might be reworked in such a way as to provide greater flexibility. The tonal system need not always comprise what present-day theorists call pc-set 7-35; there are plenty of works in which alternate forms of the same tone can be diatonic nearly simultaneously. This is especially true in sixteenth- and seventeenth-century pieces with a D final. As we saw in examples 25 and 30, in such pieces, B-flat and B-natural often seem to co-exist as diatonic tones. Although they will never sound simultaneously, they are used with equal frequency, B-flat most often in descending scalar passages or as an upper neighbor to A, B-natural in ascending scalar passages or as a lower neighbor to C. Indeed, for all of the Middle Ages and much of the Renaissance, B-flat and B-natural were not even viewed as different tones, but rather as alternate pathways between A and C. In my analyses, however, the rigidity of my formulation of tonal systems led to frequent changes of system in pieces centered on D: B-flat always signaled a change to the one-flat system, and B-natural a change to the natural system. These frequent changes of system, which probably do not correspond to most listeners' perceptions of the

[137] Recall the definition of tonal systems given in chapter 3, p. 83, and the discussion thereof on pp. 106 ff.

music (since both forms of B sound perfectly diatonic in their respective contexts), would not be necessary with a theoretical model flexible enough to accommodate different tonal systems for different types of pieces.

This leads to the third, and most significant, area for further development of the theory itself. I have presented here a single analytical model that attempts to account for all of the chromatic music written in a period for which scholars disagree on the best way to model diatonic music. As of this writing, there is no universally accepted model for diatonicism in pre-tonal music: it seems unlikely, then, that a single theory or analytical method could fully account for chromaticism in early music either. As Harold Powers has carefully and thoroughly demonstrated, the twentieth-century concept of "modal" music as a foil for "tonal" music is invalid, since modes are not the same kind of construct as major and minor keys.[138] The work of Dahlhaus and Chafe on tonal systems has gone a long way toward presenting a more accurate picture of diatonicism in early music, but undoubtedly future research will shed even more light on this controversial subject. As scholars continue to develop more accurate ways to model diatonicism in earlier music, particularly that of the sixteenth and early seventeenth centuries, this theory will also need to be expanded and modified to more accurately describe the relationship of chromatic events to an underlying diatonic framework.

Another area in which a great amount of additional research is possible is in the study of the chromatic fourth. As I noted in chapter 5, my classifications of chromatic-fourth progressions ignore the larger context of which they are a part; notably absent, therefore, is any discussion of the differences between harmonizations

[138] See Powers (1992).

in the major mode and those in the minor, or the difference between either of those and harmonizations that are not in major *or* minor. This issue is highly relevant to the untangling of diatonic from chromatic tones. Again, because my original task was to collect and transcribe as many examples as possible of chromatic-fourth progressions, I focused only on the harmonization itself rather than the major or minor context (or lack thereof) of which it was a part. This technique was made possible by the use of figured bass, which allows one to transcribe harmonies as a set of pitch-classes without regard for the overall key or tonal system. A great deal of important work could be done on the differences in harmonizations in the two modes, especially since the relationship of diatonic and chromatic tones in the chromatic fourth would likely be reversed. One might find that harmonizations in the major mode have a much different underlying diatonic framework than those in minor. Another possible avenue for exploration in this regard is the relationship of chord function to chromatic fourth classification. Many of the harmonizations have one or more sonorities that function as dominants; that is, they provide directed motion to the following sonority. A sonority that is the goal of directed motion will almost certainly sound more stable, and hence more likely to be diatonic, than the sonority that provides the directed motion. An analysis along these lines could also greatly improve the understanding of the relationship between diatonic and chromatic tones in these progressions.

One final point is worth mentioning. Like many theorists and historians, I have not focused extensively on the middle Baroque: the extended analyses in chapter 6 jump abruptly from Gesualdo in 1611 to Purcell in 1680. Where are Schein and Scheidt, Frescobaldi and Froberger, Buxtehude and Lully? I should point out, first,

that part two does contain brief analyses of works from the mid-seventeenth century. However, there were not works from this period that presented analytical challenges that were not more clearly demonstrated by other works, and that the pieces that were presented in chapter 6 posed both the most obvious such challenges and the greatest variety of them. While my theory is equally valid for works of the mid-seventeenth century, the inclusion of such works simply for the sake of historical comprehensiveness did not bring to light enough new theoretical issues to be worthwhile either for myself or for the reader.

The impact of the development of major/minor tonality on this theory

The historical segment that I have chosen as the focus for this dissertation was arguably the most dynamic period in music history. Most musicians would probably agree that musical style and musical structure changed more between 1550 and 1700 than during any other time in history (except, perhaps, around the turn of the twentieth century). They would, therefore, probably also find it counter-intuitive to assert that chromaticism changed so little throughout this period that a single theoretical model and analytical method could present a comprehensive picture of it. The music of Lasso has very little in common with the music of Rameau; how, then, can one theory account for both of them?

Of course, the single most important musical development during this period was the development of major/minor tonality. The latest works presented in this dissertation are unquestionably tonal (for example, the Bach B-minor Fugue from WTC I), and there are plenty of accepted analytical models available for them. In

chapter 6, I addressed the issue of why my method is still valid for such pieces (see pp. 236-7), but the fact remains that the change from pre-tonal to tonal music undoubtedly affected chromaticism in subtler, more intricate ways than are, or can be, dealt with here. Like diatonicism in pre-tonal music, as discussed in the previous section, the change from pre-tonal to tonal music is at best incompletely understood. Nevertheless, a fascinating and useful study could be made of the difference between the structural function of chromaticism in tonal and pre-tonal music, using traditional music theories as models for the former and the theory presented here as a model for the latter. I have explored some of these differences in table 1 of chapter 4, which compared my own categories of chromatic techniques to their descendants in major/minor tonality. Further study would no doubt lead to welcome changes and refinements in the present theory, changes that would probably also address the third limitation of this theory presented in the previous section. These in turn could expand my theory so that it might better address the tremendous changes in tonality throughout the sixteenth, seventeenth, and eighteenth centuries.

Implications for performance

In this dissertation, I have not addressed the impact of this theory on musical performance. I do not believe, as some do, that applicability to performance should be a litmus test for the validity of a theory: speculative theory has a rightful place alongside practical theory, and a musical analysis can be beautiful in and of itself without necessarily having concrete performance implications. Nevertheless, I do

believe there are at least two important implications of this theory to musical performance, as I will briefly explain below.

The first such issue involves my work on the chromatic fourth. A perusal of appendices 3-6 will reveal that many seemingly unrelated harmonizations of the chromatic fourth can be reduced to the same contrapuntal model. This observation could prove extremely helpful to a performer interpreting a work based on the chromatic fourth. A performer who recognized that, say, all but one of the chromatic-fourth harmonizations in a piece were based on the same model could interpret each of those harmonizations in a similar way. This would help to connect these harmonizations in the mind of the listener, and provide for greater coherence in the performance. Additionally, the performer would most likely want to emphasize the one harmonization that differed from all the others either dynamically or durationally in order to highlight this unique moment in the music.

The second performance application has much broader ramifications. The most significant aspect of the analytical method I have presented here is its ability to create a hierarchy of chromatic events. In chapter 2, I pointed out that the greatest weakness of all previous theories of chromaticism, from whatever century, was their treatment of all chromatic events as existing for the same reason and having equal significance. This assertion is no more true for pre-tonal music than it is for tonal music. Rather, as the reductions I have presented show, certain chromatic events exist only as surface modifications of diatonic tones, while others represent deeper-level shifts in the underlying diatonic collection. This separation of chromatic phenomena according to structural significance could prove invaluable for performers of this

repertoire by allowing them to make informed decisions about which chromatic sonorities to highlight in performance and which to de-emphasize. For example, a performer might want to linger on a chromatic sonority that represents a juxtaposition between two distantly related diatonic collections. Alternatively, the performer might decide not to linger on a chromatic sonority that at first seems startling, but proves to have no structural significance. To give another example, the concept of juxtaposed diatonicism can help a performer highlight various diatonic passages in a densely chromatic work, and this in turn can make the performance more coherent for the listener. Whatever the specific performance choices might be, performers now have objective criteria for separating chromatic sonorities according to their structural significance. The interpretive decisions they make based on those criteria will ultimately be personal ones.

Summary

In this work, I have tried to emphasize repeatedly what I feel is the most important contribution of my theory: its ability to provide analysts with a theoretical model for distinguishing different levels of chromaticism in early music, and an analytical method that allows them to remove those phenomena that are less significant in order to arrive at the underlying diatonic framework. I feel I have also made two important musicological contributions. First, in chapter 1, I have presented an original survey of theories of chromaticism from the sixteenth, seventeenth, and eighteenth centuries, and I have framed the discussion in terms of two different categories of theorists, which had not been done previously. Second, as I mentioned

at the beginning of this chapter, appendices 1 and 2 present an extensive catalogue of chromatic works from this period, which should be a useful resource for future scholars of this repertoire.

The development of a valid method for the theory and analysis of pre-tonal music is a controversial subject, and one that is far from being resolved to the complete satisfaction of anyone. Undoubtedly, early music, whether diatonic or chromatic, is too complex and varied to be dealt with comprehensively in a single dissertation. But it is my hope that this dissertation has provided a tool with which future theorists can approach at least one aspect of this repertoire. One thing is certain: The creativity and invention of composers in this period can provide theorists with endless material for study and analysis, and can insure that the study of chromaticism in the sixteenth, seventeenth, and eighteenth centuries will be fruitful and enriching well beyond the twenty-first.

Appendices

Appendix 1: Chronological List of Chromatic Works[139]

Each work is followed by the bibliographic abbreviation for the series or collection in which it can be found. These can be found in Appendix 7, along with the appropriate citations. Where no abbreviation is given, the work was found by itself and appears as a single citation in Appendix 7. Works not appearing in boldface are those that either contain or are based on the chromatic fourth and do not use any of the other types of chromaticism discussed in this dissertation.

1555a. Lasso, Orlando di. *Alma Nemes*. RRMR 115.

1555b. Rore, Cipriano de. *Calami sonum ferentes.* RRMR 115.

1555c. Rore, Cipriano de. *Gloria* from *Missa Praeter rerum seriem.* ROO 7.

1557. Rore, Cipriano de. *Se ben il duol.* ROO 4.

1560a. Lasso, Orlando di. *Prophetiae Sibyllarum.*

1560b. Rossetti, Stefano. *Quel foco è morto*. RRMR 26.

1563. Wert, Giaches de. *Novo amor, nove fiamme, e nova legge.* WCW 3.

1564a. Caimo, Gioseppe. *È ben ragion.* RRMR 84/5.

1564b. Caimo, Gioseppe. *E se tu, riva, udisti.* RRMR 84/5.

1564c. Caimo, Gioseppe. *Gel' ha madonna il core.* RRMR 84/5.

1564d. Caimo, Gioseppe. *Piangete, valli.* RRMR 84/5.

1564e. Lasso, Orlando di. *Timor et tremor.* RRMR 132.

1565a. Lasso, Orlando di. *Concupiscendo concupiscit.* RRMR 109.

1565b. Rore, Cipriano de. *Da le belle contrade d'oriente.* ROO 5.

1565c. Rore, Cipriano de. *Quest'affannato mio doglioso core.* ROO 5.

1572a. Vicentino, Nicola. *Anima mea.* VCW.

1572b. Vicentino, Nicola. *Laura che il verde lauro.* VCW.

1572c. Vicentino, Nicola. *O messaggi del cor.* VCW.

1572d. Vicentino, Nicola. *Poi ch'el mio largo pianto.* VCW.

1572e. Vicentino, Nicola. *Pioggia di lagrimar.* VCW.

1572f. Vicentino, Nicola. *Quando per mio destin.* VCW.

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[139] My reasons for labeling these works "chromatic" (to the exclusion of some others) can be found in the Introduction, especially p. 7.

1572g. Vicentino, Nicola. *Treccie di fila.* VCW.

1572h. Vicentino, Nicola. *Voi fra tanti altri.* VCW.

1577. Malvezzi, Cristoforo. *Ricercar senza unisoni del Duodecimo Tuono.* RRMR 27.

1579. Lasso, Orlando di. *Anna, mihi dilecta.* RRMR 124.

1581a. Marenzio, Luca. *O voi che sospirate a miglior note.* MCF 1.

1581b. Wert, Giaches de. *Amen, Amen dico vobis.* WCW 13.

1582a. Marenzio, Luca. *Madonna, poi ch'uccider.* MCF 2.

1582b. Marenzio, Luca. *O dolce anima mia.* MCF 2.

1582c. Marenzio, Luca. *Ohimè, se tanto amate.* MCF 2.

1585. Marenzio, Luca. *Con dolce sguardo – Di lagrime indi.* MCW 5.

1590a. Monteverdi, Claudio. *E dicea l'una sospirando.* TOCM 2.

1590b. Monteverdi, Claudio. *Ti spontò l'ali amor.* TOCM 3.

1592a. Monteverdi, Claudio. *Là tra'l sangue.* TOCM 3.

1592b. Monteverdi, Claudio. *Ond'ei di morte*. TOCM 3.

1594a. Gesualdo, Carlo. *Amor, pace non chero.* GSW 1.

1594b. Montella, Giovan Domenico. *Non fù pietade, Amore.*. RRMR 129

1594c. Montella, Giovan Domenico. *Se i lumi vostri*. RRMR 129.

1595a. Fontanelli, Alfonso. *Cor mio, che, fai, che pensi?* RRMR 119.

1595b. Fontanelli, Alfonso. *Moro, e de la mia morte*. RRMR 119.

1595c. Gesualdo, Carlo.*O mal nati messaggi.* GSW 3.

1595d. Luzzaschi, Luzzascho. *Ahi, cruda sorte mia.* RRMR 136.

1595e. Luzzaschi, Luzzascho. *Lungi da te*. RRMR 136.

1595f. Luzzaschi, Luzzascho. *Se parti i' moro.* RRMR 136.

1595g. Marenzio, Luca. *Se quel dolor.* MCW 6.

1595h. Wert, Giaches de. *Cruda Amarilli.* WCW 12.

1596a. Gesualdo, Carlo.*Ecco, morirò dunque!*. GSW 4.

1596b. Gesualdo, Carlo. *Io tacerò.* GSW 4.

1596c. Gesualdo, Carlo. *Moro, moro e mentre sospiro.* GSW 4.

1596d. Gesualdo, Carlo. *Or, che in gioia credea viver contento.* GSW 4.

1596e. Gesualdo, Carlo. *Sparge la morte al mio Signor nel viso.* GSW 4.

1596f. Luzzaschi, Luzzasco. *Itene, mie querele.* RRMR 136.

1596g. Luzzaschi, Luzzasco. *Se vi duol il mio duolo.* RRMR 136.

1598. Marenzio, Luca. *O occhi del mio core; Anima bella.* MCF 5.

1599a. Marenzio, Luca. *Dura legge d'amor; E so come in un punto.* MCF 5.

1599b. Marenzio, Luca. *Solo e pensoso; Sì ch'io mi cred'homai.* MCF 5.

Late 16th Century. Dowland, John. *Forlorn Hope Fancye.*

Early 17th Century (a). Erbach, Christian. *Ricercar quarti toni alla cromatica.* CEKM 36/1.

Early 17th Century (b). Frescobaldi, Girolamo. *Ricercare* from the *Anders von Düben Tablature*. CEKM 28.

Early 17th Century (c). Frescobaldi, Girolamo. *Ricercare cromatico*. CEKM 30/1.

Early 17th Century (d). Frescobaldi, Girolamo. *Toccata*. CEKM 30/1.

Early 17th Century (e). Frescobaldi, Girolamo. *Toccata per organo*. CEKM 30/1.

Early 17th Century (f). Gesualdo, Carlo. *Gagliarda*. RRMB 25.

Early 17th Century (g). Lawes, William. *How hath Jehovah's wrath.* RRMB 122.

Early 17th Century (h). Lawes, William. *Judah in exile wanders.* RRMB 122.

Early 17th Century (i). Lawes, William. *Oh, Sing unto the Lord a New Song.* RRMB 122.

Early 17th Century (j). Lawes, William. *She weepeth sore in the night.* RRMB 122.

Early 17th Century (k). Pasquini, Ercole. *Durezze*. CEKM 12.

Early 17th Century (l). Philips, Peter. *Pavan ["Dolorosa"]* from the *Anders von Düben Tablature*. CEKM 28.

Early 17th Century (m). Scheidemann, Heinrich. *Praeambulum* from the *Anders von Düben Tablature*. CEKM 28.

Early 17th Century (n). Sweelinck, Jan Pieterszoon. *Ricercar.* SWW 9.

Early 17th Century (o). Tomkins, Thomas. *Pavan* from the *Anders von Düben Tablature*. CEKM 28.

1600a. Fillimarino, Fabrizio. *Canzon Cromatica.* CEKM 24.

1600b. Peri, Jacopo. *Miserabil beltate* from *Euridice*. RRMB 36/7.

1601. O.D. [?]. *Allein zu dir Herr Jesu Christ mein Hoffnung* from *The Tablature of Celle*. CEKM 17.

1602. Gagliano, Marco da. *Come potrò mai fare.* RRMB 124.

1603a. Gesualdo, Carlo. *Deus refugium et virtus.* GSW 8.

1603b. Gesualdo, Carlo. *Discedite a me omnes.* GSW 8.

1603c. Gesualdo, Carlo. *O vos omnes.* GSW 8.

1603d. Monteverdi, Claudio. *Piagne e sospira.* TOCM 4.

1604. Luzzaschi, Luzzasco. *Gioite voi col canto.* RRMR 136.

1605. Monteverdi, Claudio. *Ch'io t'ami.* TOCM 5.

1606a. Cima, Giovanni Paolo. *Essempio 1-12* (examples of a piece transposed through all chromatic steps). CEKM 20.

1606b. Danyel, John. *Can Doleful notes?*

1607a. Aichinger, Gregor. *Gloria Patri* from *Magnificat primi toni.* RRMB 13.

1607b. Bianciardi, Francesco. *Fantasia terza.* CEKM 41.

1607c. Nenna, Pomponio. *Ecco, ò dolce, ò gradita.* RRMR 136.

1609a. Bull, John. *Chromatic Galliard.* FITZ.

1609b. Bull, John. *Chromatic Pavan.* FITZ.

1609c. Bull, John. *Fantasia.* FITZ.

1609d. Bull, John. *Ut, re, mi, fa, sol, la.* FITZ.

1609e. Monteverdi, Claudio. "Possente spirto" from *L'Orfeo*. TOCM 11.

1609f. Philips, Peter. *Pauana Doloroso. Treg[ian]*. FITZ.

1609g. Tomkins, Thomas. *Pavana.* FITZ.

1609-11. Praetorius, Hieronymus. *Alio modo Fuga* from *Organ Magnificats, Magnificat quarti toni.* CEKM 4.

1611a. Byrd, William. *Come woeful Orpheus.*

1611b. Gesualdo, Carlo.*Dolcissima mia vita.* GSW 5.

1611c. Gesualdo, Carlo. *Gioite voi col canto.* GSW 5.

1611d. Gesualdo, Carlo. *Itene, o miei sospiri.* GSW 5.

1611e. Gesualdo, Carlo. *Languisce al fin.* GSW 5.

1611f. Gesualdo, Carlo.*Ma tu, cagion.* GSW 5.

1611g. Gesualdo, Carlo. *Mercè grido piangendo.* GSW 5.

1611h. Gesualdo, Carlo. *Occhi del mio cor vita.* GSW 5.

1611i. Gesualdo, Carlo. *S'io non miro non moro.* GSW 5.

1611j. Gesualdo, Carlo. *Tu m'uccidi, o crudele.* GSW 5.

1611k. Gesualdo, Carlo. *Ancide sol la morte.* GSW 6.

1611l. Gesualdo, Carlo. *Ardita Zanzaretta Morde colei.* GSW 6.

1611m Gesualdo, Carlo. *Ardo per te, mio bene.* GSW 6.

1611n. Gesualdo, Carlo. *Beltà, poi che t'assenti.* GSW 6.

1611o. Gesualdo, Carlo. *Càndido e verde fiori.* GSW 6.

1611p. Gesualdo, Carlo. *Già piansi nel dolore.* GSW 6.

1611q. Gesualdo, Carlo.*"Io parto" e non più dissi.* GSW 6.

1611r. Gesualdo, Carlo. *Io pur respiro.* GSW 6.

1611s. Gesualdo, Carlo. *Mille volte il dì.* GSW 6.

1611t. Gesualdo, Carlo. *Moro, lasso, al mio duolo.* GSW 6.

1611u. Gesualdo, Carlo. *Resta di darmi noia.* GSW 6.

1611v. Gesualdo, Carlo. *Se la mia morte brami.* GSW 6.

1611w. Gesualdo, Carlo. *Tu piangi, o Filli mia.* GSW 6.

1611x. Gesualdo, Carlo. *Caligaverunt oculi mei.*. GSW 7.

1611y. Gesualdo, Carlo. *Ecce quomodo moritur justus.* GSW 7.

1611z. Gesualdo, Carlo. *Ecce videmus eum.* GSW 7.

1611aa. Gesualdo, Carlo. *Eram quasi agnus innocens.* GSW 7.

1611bb. Gesualdo, Carlo. *In monte Oliveti.* GSW 7.

1611cc. Gesualdo, Carlo. *Omnes amici mei.* GSW 7.

1611dd. Gesualdo, Carlo. *O vos omnes.* GSW 7.

1611ee. Gesualdo, Carlo. *Posuerunt me.* GSW 7.

1611ff. Gesualdo, Carlo. *Sicut ovis ad occisionem.* GSW 7.

1611gg. Gesualdo, Carlo. *Tradiderunt me.* GSW 7.

1611hh. Gesualdo, Carlo. *Tristis est anima mea.* GSW 7.

1611ii. Gesualdo, Carlo. *Vinea mea electa.* GSW 7.

1614a. Caccini, Giulio. *Amor l'ali m'impenna.* RRMB 28.

1614b. Caccini, Giulio. *Dite o del foco mio.* RRMB 28.

1615a. Frescobaldi, Girolamo. *Partite sopra la Romanesca*. CEKM 30/3.

1615b. Gabrieli, Giovanni. *Timor et Tremor.*

1617. Fornaci, Giacomo. *Ardi è gela è tua voglia.* RRMR 81.

1618a. Schein, Johann Hermann. *Christ lag in Todesbanden.* SNW 4.

1618b. Schein, Johann Hermann. *Erbarm dich mein, o Herre Gott.* SNW 4.

1618c. Valentini, Giovanni. *Domine, deduc me.* RRMB 75.

1619a. Peri, Jacopo. *Uccidimi, dolore.* RRMB 50.

1619b. Praetorius, Jacob II. *Forti animo esto*. RRMB 73.

1619c. Sweelinck, Jan Pieterszoon. *De profundis.* SWW 6.

1620a. Anonymous. *Fantasia cromatica* from *München, Bayerische Staatsbibliothek Ms. Mus. 1581*. CEKM 40/3

1620b. Anonymous. *Fantasia gramatica* from *München, Bayerische Staatsbibliothek Ms. Mus. 1581*. CEKM 40/3

1620c. Anonymous. *Ricercar cromatica* from *München, Bayerische Staatsbibliothek Ms. Mus. 1581*. CEKM 40/3.

1620d. Banchieri, Adriano. *Ricercar [cromatico] tertii toni* from *München, Bayerische Staatsbibliothek Ms. Mus. 1581*. CEKM 40/3.

1620e. Scheidt, Samuel. *Lessum hunc.* STW 4.

1620f. Schütz, Heinrich. *Veni, Sancte Spiritus.* SCW 32.

1620g. Sweelinck, Jan Pieterszoon. *Capriccio. J. P.* SWW 1.

1620h. Sweelinck, Jan Pieterszoon. *Fantasia.* SWW 1.

1620i. Sweelinck, Jan Pieterszoon. *Fantasia Chromatica.* SWW 1.

1621a. Scheidt, Samuel. *Paduan à 4 voc.* STW 2-3.

1621b. Sweelinck, Jan Pieterszoon. *Fantasia op de Fuga van M: Jan Pieterss. faecit Doctor Bull. 1621. 15. Decemb.* SWW 1.

1622. Scheidt, Samuel. *Magnificat XII Vocum cum Symphonia in 5. Versu.* STW 15.

1623a. Schein, Johann Hermann. *Da Jakob vollendet hatte.* SNW 1.

1623b. Schein, Johann Hermann. *Die mit Tränen säen.* SNW 1.

1624a. Erbach, Christian. *Ricercar secundi toni.* CEKM 36/1.

1624b. Frescobaldi, Girolamo. *Capriccio sopra ut, re, mi, fa, sol, la.* FOC 4.

1624c. Frescobaldi, Girolamo. *Capriccio II sopra la, sol, fa, mi, re, ut.* FOC 4.

1624d. Frescobaldi, Girolamo. *Capriccio VII cromatico con ligature al contrario.* FOC 4.

1624e. Frescobaldi, Girolamo. *Capriccio IX di durezze.* FOC 4.

1624f. Monteverdi, Claudio. *La mia turca*. TOCM 9.

1624g. Monteverdi, Claudio. *Salve o Regina.* TOCM 16.

1624h. Scheidt, Samuel. *Fantasia à 4 voc. super Io son ferito lasso.* STW 6.

1624i. Scheidt, Samuel. *Fantasia super ut, re, mi, fa, sol, la.* STW 6.

1624j. Scheidt, Samuel. *Magnificat IV. Toni.* STW 6.

1624k. Scheidt, Samuel. *Psalmus: Da Jesus an dem Kreuzen stund.* STW 6.

1625a. Monteverdi, Claudio.*O quam pulchra.* TOCM 16.

1625b. Schütz, Heinrich. *Domine, ne in furore tuo arguas me.* SCW 9.

1625c. Schütz, Heinrich. *O bone, o dulcis, o benigne Jesu.* SCW 8.

1625d. Tomkins, Thomas. *Blessed is he whose unrighteousness is forgiven.* RRMR 4.

1626a. Cavaccio, Giovanni. *Ricercar Primo à 4.* CEKM 43.

1626b. Cavaccio, Giovanni. *Ricercar Terzo à 4.* CEKM 43.

1626c. Schein, Johann Hermann. *Fürwahr, er trug unsere Krankheit.* SNW 5.

1626d. Schein, Johann Hermann. *Vater unser, der du bist in Himmel.* SNW 5.

1626e. Schein, Johann Hermann. *Warum betrübst du dich, mein Herz.* SNW 5.

1626f. Titelouze, Jehan. *Magnificat.*

1627a. Frescobaldi, Girolamo. *Toccata ottava di durezze e legature.* FOC 3.

1627b. Frescobaldi, Girolamo. *Toccata quarta per l'organo da sonarsi all'Elevazione.* FOC 3.

1627c. Frescobaldi, Girolamo. *Toccata terza per l'organo da sonarsi all'Elevazione.* FOC 3.

1627d. Hilton, John. *Leave Off, Sad Phiomel*. RRMR 137.

1627e. Steigelder, Johann Ulrich. *Coral im Discant. 4 Vocum*. CEKM 13/1.

1628a. Frescobaldi, Girolamo. *Canzona I canto solo, detta la Bonvisia.* FOC 8/1.

1628b. Frescobaldi, Girolamo. *Canzona XX a due, canto e basso, detta la Liparella.* FOC 8/1.

1628c. Frescobaldi, Girolamo. *Canzona XXII a due, canto e basso, detta la Nicolina.* FOC 8/1.

1629. Schütz, Heinrich. *Invenerunt me custodes civitates.* SCW 14.

1630a. Hasse, Nicolaus. *Komm Heiliger Geist Herre Gott.* CEKM 10/1.

1630b. Tunden, Franz. *Dass wir sollen per Fugam* from *Christ Lag in Todesbanden.* CEKM 10/2.

1630/70. Strunck, Delphin. *Toccata ad manuale duplex*. CEKM 23.

1631a. Scheidt, Samuel. *Psalm 137: An Wasserflüssen Babylon.* STW 8.

1631b. Scheidt, Samuel. *Warum betrübst du dich, mein Herz*. STW 8.

1632. Monteverdi, Claudio. *Zeffiro, torna.* TOCM 9.

1634a. Scheidt, Samuel. *Allein zu dir, Herr Jesu Christ.* STW 9.

1634b. Scheidt, Samuel. *Da Jesus an dem Kreuze stund.* STW 9.

1634c. Scheidt, Samuel. *Kommt her, ihr Gesegneten.* STW 9.

1634d. Scheidt, Samuel. *Mag ich Unglück nicht widerstahn.* STW 9.

1635a. Frescobaldi, Girolamo. *Canzona terza a due canti.* FOC 8/2.

1635b. Frescobaldi, Girolamo. *Christe* from *Fiori musicali.* FOKW 5.

1635c. Frescobaldi, Girolamo. *Kyrie della Madonna* from *Fiori musicali.* FOKW 5.

1635d. Frescobaldi, Girolamo. *Recercar dopo il Credo* (p. 16) from *Fiori musicali.* FOKW 5.

1635e. Frescobaldi, Girolamo. *Recercar dopo il Credo* (p. 54) from *Fiori musicali.* FOKW 5.

1635f. Frescobaldi, Girolamo. *Recercar Chromatico post il Credo* from *Fiori musicali.* FOKW 5.

1635g. Frescobaldi, Girolamo. *Toccata cromatica per l'Elevatione* from *Fiori musicali.* FOKW 5.

1635h. Scheidt, Samuel. *Ein Kindlein so löbelich.* STW 10.

1636a. Franck, Melchior. *Sihe, umb Trost war mir* from *Paradisus Musicus*. RRMB 106.

1636b. Schütz, Heinrich. *Musikalische Exequien.* SCW 4.

1636/39a. Schütz, Heinrich. *O hilf, Christe, Gottes Sohn.* SCW 10.

1636/39b. Schütz, Heinrich. *O misericordissime Jesu.* SCW 10.

1636/39c. Schütz, Heinrich. *O süßer, o freundlicher.* SCW 10.

1636/39d. Schütz, Heinrich. *Quemadmodum desiderat.* SCW 12.

1636/39e. Schütz, Heinrich. *Wann unser Augen schlafen ein.* SCW 11.

1637. Frescobaldi, Girolamo. *Capriccio del soggetto sritto sopra l'aria di ruggiero.* FOC 2.

1638a. Monteverdi, Claudio. *Cosi sol d'una chiava fonte.* TOCM 8.

1638b. Monteverdi, Claudio. *Mentre vaga Angioletta.* TOCM 8.

1638c. Monteverdi, Claudio. *Tu Cui tessuta* from *Altri canti d'Amor.* TOCM 8.

1638d. Schütz, Heinrich. *Auf dich, Herr, traue ich.* SCW 27.

1640a. Monteverdi, Claudio. *Crucifixus* from *Selva morale e spirituale.* TOCM 15/1.

1640b. Monteverdi, Claudio. *Et misericordia ejus* from *Magnificat primo.* TOCM 15/2.

1640c. Monteverdi, Claudio. *O dulcis virgo* from *Salve Regina con dentro un Ecco voce solo risposta d'ecco et due violini.* TOCM 15/2.

1640d. Monteverdi, Claudio.*Salve Regina a 3 voci.* TOCM 15/2.

1640e. Scheidt, Samuel. *Ach Gott, tu dich erbarmen.* STW 12.

1640f. Scheidt, Samuel. *Ach Gott, vom Himmel sich darein.* STW 12.

1640g. Schop, Johann. *Paduana à 5.* RRMB 125.

1641/75. Salvatore, Giovanni. *Canzone Francese Terza, del Primo Tuono Finto.* CEKM 3.

1641a. Monteverdi, Claudio. *Di misera Regina* from *Il ritorno d'Ulisse in patria,* act II, scene 1. TOCM 12.

1641b. Monteverdi, Claudio. *Torna il tranquillo al mara* from *Il ritorno d'Ulisse in patria,* act II scene 2/3. TOCM 12.

1641c. Salvatore, Giovanni. *Durezze [e] Ligature*. CEKM 3.

1641d. Salvatore, Giovanni. *Ricercare Quarto del Quarto Tono trasportato con 4 Fughe, e Cantofermo*. CEKM 3.

1641e. Salvatore, Giovanni. *Toccata Seconda del Nono Tuono Naturale*. CEKM 3.

1641f. Salvatore, Giovanni. *Verso per la Gloria,* Verso Quinto. CEKM 3.

1641g. Salvatore, Giovanni. *Versi sopra la Messa, che si canta nelle Domeniche del'Anno*, Kyrie. CEKM 3.

1642a. Cozzolani, Chiara Margarita. *O Maria, tu dulcis.* RRMB 87.

1642b. Cozzolani, Chiara Margarita. *O mi domine.* RRMB 87.

1642c. Cozzolani, Chiara Margarita. *O quam suavis est, Domine.* RRMB 87.

1642d. Cozzolani, Chiara Margarita. *Obstupescite, gentes.* RRMB 87.

1642e. Monteverdi, Claudio. "Solitudine amate" from *L'Incoronazione di Poppea.* TOCM 13.

1642f. Monteverdi, Claudio. "Non morir Seneca" from *L'Incoronazione di Poppea.* TOCM 13.

1643. Cavalli, Francesco. "Piangete'occhi dolenti" from *Egisto*.

1644a. Lawes, William. *Music, the master of thy art is dead.* RRMB 121.

1644b. Lawes, William. *The cats.* RRMB 121.

1644c. Lawes, William. *[Three-part setting in A minor (1)][Fragment]*. RRMB 121.

1645a. Cavalli, Francesco. *La Doriclea,* atto terzo, scena prima. RRMB 132.

1645b. Frecobaldi,. Girolamo. *Recercar quarto, sopra mi, re, fa, mi.* FOKW 2.

1645c. Scheidt, Samuel. *V. Die V. Symphonia aus dem C.* STW 13.

1645d. Scheidt, Samuel. *XVII. Die VII. Symphonia aus dem D.* STW 13.

1645e. Scheidt, Samuel. *XXII. Die II. Symphonia aus dem E.* STW 13.

1645f. Scheidt, Samuel. *XXIV. Die IV. Symphonia aus dem E.* STW 13.

1645g. Scheidt, Samuel. *LVI. Die VI. Symphonia aus dem G dur*. STW 13.

1645h. Scheidt, Samuel. *LVII. Die VII. Symphonia aus dem G dur.* STW 13.

1645i. Scheidt, Samuel. *LXI. Die I. Symphonia aus dem A.* STW 13.

1645j. Scheidt, Samuel. *LXII. Die II. Symphonia aus dem A.* STW 13.

1647. Schütz, Heinrich. *Die so ihr den Herren fürchtet.* SCW 17.

1649a. Froberger, Johann Jakob. *Canzona II.* FCW 1.

1649b. Froberger, Johann Jakob. *Fantasia I.* FCW 1.

1649c. Froberger Johann Jakob. *Suite VI. Auff die Maÿerin.* FCW 2.

1649d. Froberger, Johann Jakob. *Toccata II.* FCW 1.

1651. Monteverdi, Claudio. *Ardo a doi Tenori.* TOCM 9.

1652. Anonymous, *Toccata per l'elevatione* from the *Chigi Mansucript Q.IV.29.* CEKM 32/2.

1654a. Strozzi, Barbara. *Con male nuove, non si può cantare.* RRMB 83.

1654b. Strozzi, Barbara. *Cuore che reprime alle lingua di manifestare il nome della sua cara*. RRMB 83.

1656a. Anonymous. *Ly still my deare* and *Cloris sight* from *Elizabeth Rogers' Virginal Book*. CEKM 19.

1656b. Froberger, Johann Jakob. *Capriccio VI.* FCW 1.

1656c. Froberger, Johann Jakob. *Capriccio VIII.* FCW 1.

1656d. Froberger, Johann Jakob. *Capriccio XVI.* FCW 1.

1656e. Froberger, Johann Jakob. *Toccata XX*. FCW 1.

1657a. Rossi, Michelangelo. *Toccata Prima*. CEKM 15.

1657b. Rossi, Michelangelo. *Toccata Settima*. CEKM 15.

1658. Lully, Jean-Baptiste. *Ritornelle* of the *Récit Italien* from *Ballet d'Alcidiane.* LCW,B2.

1663a. Knüpfer, Sebastian. *Ich sehne mich (Canzonetta).* RRMB 97.

1663b. Legrenzi, Giovanni. *La Boiarda.*

1663c. Weckmann, Matthias. *Ach, Herr* from *Wie liegt die Stadt so wüste*. RRMB 46.

1663d. Weckmann, Matthias. *Sinfonia* from *Weine nicht.* RRMB 46.

1664a. Lully, Jean-Baptiste. *Bourée* from *Le Mariage Forcé*. LCW,CB1.

1664b. Lully, Jean-Baptiste. *Ritournelle* and "*Domine, labia mea aperies*" from *Miserere Mei Deus.* LCW,M1.

1664c. Storace, Bernardo. *Aria sopra la spagnoletta.* CEKM 7.

1664d. Storace, Bernardo. *Passagagli*. CEKM 7.

1664e. Storace, Bernardo. *Passagagli (10).* CEKM 7.

1664f. Storace, Bernardo. *Passagagli (11).* CEKM 7.

1664g. Storace, Bernardo. *Passagagli (13).* CEKM 7.

1664h. Storace, Bernardo. *Recercar.* CEKM 7.

1665. Lully, Jean-Baptiste. *La Princesse d'Elide.* LCW,CB2.

1667. Jenkins, John. *[unidentified]*. RRMB 67-8.

1668-83. Buxtehude, Dietrich. *Praeludium*, BuxWV 148. BXOW 3.

1669. Battifieri, Luigi. *Ricercaro settimo.* CEKM 42.

1670's. Anonymous. *Ground* from *Oxford, Christ Church, Mus. MS 1177*. RRMB 81.

1670. Lully, Jean-Baptiste. *Le Bourgeois Gentilhomme*, pp. 57, 69, 132, and 181. LCW,CB3.

1672. Charpentier, Marc-Antoine. "La, la, la, la bonjour" from music for *La Comtesse d'Escarbagnos* and *Le Mariage Forcé*. RRMB 63.

1673a. Le Camus, Sébastian. *Ah! Fuyons ce dangereux séjour.* RRMB 89.

1673b. Le Camus, Sébastian. *Amour, cruel Amour.* RRMB 89.

1673c. Le Camus, Sébastian. *De toutes les beautés.* RRMB 89.

1673d. Le Camus, Sébastian. *Il n'est rien dans la vie.* RRMB 89.

1673e. Le Camus, Sébastian. *On n'entend rien dans ce bocage.* RRMB 89.

1673f. Le Camus, Sébastian. *Que vous flattez mes rêveries!* RRMB 89.

1674a. Leonarda, Isabella. *Kyrie* from *Messa concertata, Op. 4, no. 1.* RRMB 59.

1674b. Lully, Jean-Baptiste. *Alceste,* Act III, scene V. LCW,O2.

1676a. Legrenzi, Giovanni. *Havete il torto a fè,* Adagio. RRMB 14.

1676b. Legrenzi, Giovanni. *Cessa d'esser Amante*. RRMB 14.

1676c. Legrenzi, Giovanni. *Pene, non mi lasciate*. RRMB 14.

1676d. Legrenzi, Giovanni. *Sorgea dal sen di Lete*. RRMB 14.

1676e. Legrenzi, Giovanni. *Tanta fede, e dove va?* RRMB 15.

1676f. Legrenzi, Giovanni. *Uscite pianti*. RRMB 15.

1676g. Legrenzi, Giovanni. *Mi nudrite di speranza*. RRMB 15.

1677-82a. Purcell, Henry. *Blessed is He whose Unrighteousness is Forgiven.* WHP 13.

1677-82b. Purcell, Henry. *In the Midst of Life.* WHP 13.

1677-82c. Purcell, Henry. *Man that is Born of a Woman.* WHP 13.

1679-80a. Schultheiss, Benedict. *Suite in b minor*, Gigue. CEKM 21.

1679-80b. Schultheiss, Benedict. *Suite in g minor*, Gigue. CEKM 21.

1680a. Purcell, Henry. *Fantazia 2.* WHP 31.

1680b. Purcell, Henry. *Fantazia 5.* WHP 31.

1680c. Purcell, Henry. *Fantazia 6.* WHP 31.

1680d. Purcell, Henry. *Fantazia on One Note.* WHP 31.

1680e. Purcell, Henry. *Pavan of Four Parts.* WHP 31.

1680-82a. Purcell, Henry. *Lord, How Long wilt Thou be Angry?* WHP 29.

1680-82b. Purcell, Henry. *O Lord, God of Hosts.* WHP 29.

1680-83a. Purcell, Henry. *Sonata IV.* WHP 7.

1680-83b. Purcell, Henry. *Sonata VIII.* WHP 7.

1680-84. Ulich, Johann. *Fuga in E on "Erbarm dich mein o Herre Gott."* RRMB 40.

1680-87a. Buxtehude, Dietrich. *Dein edles Herz.* BXW 9.

1680-87b. Buxtehude, Dietrich. *Fallax mundus.* BXW 1.

1680-87c. Buxtehude, Dietrich. *Ich halte es dafür.* BXW 3.

1680-87d. Buxtehude, Dietrich. *Ich suchte des nachts.* BXW 3.

1680-87e. Buxtehude, Dietrich. *Jesu dulcis memoria.* BXW 3.

1680-87f**.** Buxtehude, Dietrich. *Nimm von uns, Herr, du treuer Gott.* BXW 9.

1681. Purcell, Henry. *Swifter Isis, Swifter Flow.* WHP 15.

1682. Purcell, Henry. *O Praise the Lord, All Ye Heathen.* WHP 32.

1682-5. Purcell, Henry. *O Praise God in his Holiness.* WHP 14.

1683a. Purcell, Henry. *Hear my Prayer, O God.* WHP 28.

1683b. Purcell, Henry. *Sonata III.* WHP 5.

1683c. Purcell, Henry. *Sonata V.* WHP 5.

1683d. Purcell, Henry. *Sonata VII.* WHP 5.

1683e. Purcell, Henry. *Sonata IX.* WHP 5.

1683f. Purcell, Henry. *Sonata XII.* WHP 5.

1684a. Lully, Jean-Baptiste. *Amadis,* act II, scene 3; act II, scene 5; act III, scene 1; act III, scene 4. LCW,O3.

1684b. Purcell, Henry. *Welcome for All the Pleasures,* mm.101-59. WHP 10.

1684c. Purcell, Henry. *Welcome for All the Pleasures,* mm. 264-7. WHP 10.

1687a**.** Strozzi, Gregorio. *Capriccio primo con partite sopra ut re mi fa sol la.* CEKM 11.

1687b. Strozzi, Gregorio. *Gagliarda terza, e per concerto de viole.* CEKM 11.

1687c. Strozzi, Gregorio. *Romanesca con partite, tenori, e ritornelli.* CEKM 11.

1687d. Strozzi, Gregorio. *Toccata de Passacagli, e ciascheduno può sonarsi à solo.* CEKM 11.

1687e. Strozzi, Gregorio. *Toccata quarta per l'elevatione.* CEKM 11.

1687f. Strozzi, Gregorio.*Toccata terza.* CEKM 11.

1688. Purcell, Henry. *Blessed is He that Considereth.* WHP 28.

1689a. Purcell, Henry. *When I am Laid in Earth* from *Dido and Aeneas*. WHP 3.

1689b. Telemann, Georg-Philip. *Aria (no. 15)* from *Don Quichotte auf der Hochzeit des Camachos.* RRMB 64/5.

1689-1700a. Anonymous. *Sonata ex E. g.* from the *Mylau Tablaturbuch*. CEKM 39.

1689-1700b. Monteforte, Claudii de. *Fantasie ex D* from the *Mylau Tablaturbuch.* CEKM 39.

1689-1700c. Pestel, Gottfried. *Praeludium ex A* from the *Mylau Tablaturbuch*. CEKM 39.

Late 1680's. Buxtehude, Dietrich. *Praeludium in e.* BXW 15_A.

1690's. Buxtehude, Dietrich. *Ciaccona in e.* BXW 15_A.

1690a. Couperin, François. *Benedictus. Cromhorne en Taille.* COC 6.

1690b. Couperin, François. *Offertoire sur les grands jeux.* COC 6.

1690c. Purcell, Henry. *First Music* from *The Gordian Knot Unty'd.* WHP 20.

1690-1. Marc-Antoine Charpentier. *Litanie de la Vierge,* "Sancta Maria." RRMB 72.

1692a. Purcell, Henry. *In Vain the Am'rous Flute.* WHP 8.

1692b. Purcell, Henry. *Love's Goddess Sure was Blind.* WHP 24.

1692-3. Purcell, Henry. *Next, Winter Comes Slowly* from *The Fairy Queen.* WHP 12.

1694a. Buxtehude, Dietrich. *Sonata II in G,* Allegro. BXW 14.

1694b. Buxtehude, Dietrich. *Sonata III in a,* Largo and Adagio. BXW 14.

1694c. Jacquet de la Guerre, Elisabeth-Claude. *Air* from *Cephale et Procris*. RRMB 88.

1698**.** Torelli, Giuseppe. *Concerto, Op. 6,* Allegro. RRMB 115.

Late 17th Century (a). Buxtehude, Dietrich. *Nun freut euch lieben Christen gmein.* BXOW 5.

Late 17th Century (b). Gibbons, Christopher. *A Voluntary for ye Double Organ*. CEKM 18.

Late 17th Century (c). Purcell, Henry. *Gloria Patri.* WHP 32.

Late 17th Century (d). Purcell, Henry. *O, I'm Sick of Life.* WHP 30.

Late 17th Century (e). Purcell, Henry. *Pavan in A Minor.* WHP 31.

Late 17th Century (f). Purcell, Henry. *Thy Word is a Lantern.* WHP 32.

Late 17th Century (g). Purcell, Henry. *We Reap All the Pleasures.* WHP 27.

Late 17th/early 18th Century (a). Pasquini, Bernardo. *Partite diversia di Follia.* CEKM 5/4.

Late 17th/early 18th Century (b). Pasquini, Bernardo. *Ricercare.* CEKM 5/7.

Late 17th/early 18th Century (c). Pasquini, Bernardo. *Ricercare con fuga in più modi.* CEKM 5/1.

Late 17th/early 18th Century (d). Pasquini, Bernardo. *Toccata.* CEKM 5/7.

Early 18th Century (a). Bach, Johann Sebastian. *Das alte Jahr vergangen ist*, BWV 614. NBA IV/i.

Early 18th Century (b). Bach, Johann Sebastian. *Kleines harmonisches Labyrinth.* NBA IV/xi.

Early 18th Century (c). Bach, Johann Sebastian. *Herzliebster Jesu*, BWV 1093. NBA IV/ix.

Early 18th Century (d). Gasparini, Francesco. *Cantata Enarmonica "Andate o miei sospiri*."

Early 18th Century (e). Vivaldi, Antonio. *Amor, hai vinto (Largo).* RRMB 32.

Early 18th Century (f). Vivaldi, Antonio. *Cessate, omai cessate (Adagio).* RRMB 32.

Early 18th Century (g). Vivaldi, Antonio. *Lungi del vago volto.* RRMB 32.

Early 18th Century (h). Vivaldi, Antonio. *Perfidissimo cor!* RRMB 32.

Early 18th Century (i). Vivaldi, Antonio. *Sorge vermiglio in ciel (Largo).* RRMB 32.

1700. Gilles, Jean. *Offertoire* from *Requiem (Messe des morts).* RRMB 47.

1701. Weldon, John. *O ravishing delight* from *The Judgment of Paris*. RRMB 94.

1702a. Albinoni, Tomaso. *Adagio* from *Lontananza crudel*. RRMB 31.

1702b. Steffani, Agostino. *Quanto care al cor voi siete.* RRMB 53.

1702c. Steffani, Agostino. *Ravvediti, mio core, II.* RRMB 53.

1703. Haym, Nicola Francesco. *Sonata in D major, Op. 1 no. 8,* Adagio. RRMB 116.

1704. Haym, Nicola Francesco. *Sonata in C major, Op. 2,* Adagio. RRMB 116.

Before 1705. Bach, Johann Sebastian. *Capriccio in Bb*, BWV 992. NBA V/x.

1705a. Lotti, Antonio. *Amor, che spera*. RRMB 44/5.

1705b. Lotti, Antonio. *Moralità d'una perla*. RRMB 44/5.

1705c. Lotti, Antonio. *Scherzo d'amore*. RRMB 44/5.

1705d. Vivaldi, Antonio. *Sonata in D,* RV 62, III.

1705e. Vivaldi, Antonio. *Sonata in E,* RV 66, V.

1705f. Vivaldi, Antonio. *Sonata in e,* RV 67, I.

1705g. Vivaldi, Antonio. *Sonata in A,* RV 75, III.

1707. Handel, George Frederic. "Se la belezza perde vaghezza" from *Il trionfo del Tempo e del Disinganno*, HWV 46a. HG 24.

1708. Bach, Johann Sebastian. *Versus V* from Cantata no. 4, "Christ Lag in Todesbanden," BWV 4. NBA I/ix.

1710's or 20's (a). Greene, Maurice. *Grave* from *Voluntary no. 4 in G minor.* RRMB 19.

1710's or 20's (b). Greene, Maurice. *Largo* from *Voluntary no. 10 in D minor.* RRMB 19.

1711a. Vivaldi, Antonio. *Conceto in D,* RV 230, III.

1711b. Vivaldi, Antonio. *Concerto in E,* RV 265, III.

1711c. Vivaldi, Antonio. *Concerto in G,* RV 310, III.

1711d. Vivaldi, Antonio. *Concerto in e,* RV 356, II.

1711e. Vivaldi, Antonio. *Concerto in D,* RV 549, II.

1711f. Vivaldi, Antonio. *Concerto in e,* RV 550, I.

1711g. Vivaldi, Antonio. *Concerto in d,* RV 565, III.

1711h. Vivaldi, Antonio. *Concerto in F,* RV 567, I, II, III.

1711i. Vivaldi, Antonio. *Concerto in g,* RV 578, II, IV.

1711j. Vivaldi, Antonio. *Concerto in b,* RV 580, I, II, III.

1712a. Bach, Johann Sebastian. *Toccata in f#,* BWV 910. NBA IV/ix.

1712b. Piani, Antonio Giovanni. *Sonata II,* Giga. RRMB 20.

1712c. Vivaldi, Antonio. *Sonata in d,* RV 14, I.

1712d. Vivaldi, Antonio. *Sonata in G,* RV 23, II.

1713. Handel, George Frederic. "When thou hadst overcome" from *Utrecht Te Deum,"* HWV 279. HHA iii/3.

1713-15. Rameau, Jean-Philippe. *In convertendo.* RCW 4.

1714. Bach, Johann Sebastian. *Cantata "Weinen, Klagen, Sorgen, Zagen*," BWV 12, I (also used in "Crucifixus" from *B minor Mass*, BWV 232). NBA I/xi

1716a. Clérambault, Louis-Nicolas. *Non, les Dieux* from *La Muse et L'Opéra*. RRMB 27.

1716b. Vivaldi, Antonio. *Concerto in C*, RV 185, I.

1716c. Vivaldi, Antonio. *Concerto in c*, RV 196, I.

1716d. Vivaldi, Antonio. *Concerto in d*, RV 249, II.

1716e. Vivaldi, Antonio. *Concerto in g*, RV 316a, III.

1716f. Vivaldi, Antonio. *Concerto in a*, RV 357, I, II, III.

1716-17a. Couperin, François. *Passacaille.* COC 3.

1716-17b. Couperin, François. *Quatrième Acte: Les Invalides, ou gens estrpoiés au service de la grande Mxnxstrxndxsx.* COC 3.

1716-17c. Vivaldi, Antonio. *Sonata II, RV 12*, Gavotta. RRMB 26.

1716-17d. Vivaldi, Antonio. *Sonata VII, RV 6*, Andante. RRMB 26.

1717a. Marais, Marin. *Le Labyrinthe* from *Suite d'un gôut étranger.*

1717b. Vivaldi, Antonio. *Concerto in e*, RV 275, I.

1717c. Vivaldi, Antonio. *Concerto in Bb*, RV 364, II.

1719a. Heincihen, Johann David. *Diana su l'Elba*, no. 7 (Aria). RRMB 103.

1719b. Heinichen, Johann David. *La Gara degli Dei*, Allegro. RRMB 102.

1719c. Vivaldi, Antonio. *Concerto in g*, RV 319, I.

1720a. Somis, Giovanni Battista. *Sonata V, Op. 3*, Allegro assai. RRMB 93.

1720b. Somis, Giovanni Battista. *Sonata XII, Op. 3*, Adagio. RRMB 93.

1720c. Vivaldi, Antonio. *Concerto in C*, RV 188, II.

1720d. Vivaldi, Antonio. *Concerto in F*, RV 285a, I.

1720e. Vivaldi, Antonio. *Concerto in F*, RV 294a, I.

1720f. Vivaldi, Antonio. *Concerto in G*, RV 299, I.

1722a. Bach, Johann Sebastian. *Fughetta in b* from *The Well-Tempered Clavier*, vol. 1. NBA V/vi.1.

1722b. Couperin, François. *La Muse-Plantine.* COC 4.

1723a. Bach, Johann Sebastian. *Chorale* from Cantata no. 40, "Dazu ist erschienen der Sohn Gottes," BWV 40. NBA I/iii.

1723b. Bach, Johann Sebastian. *Chorale* from Cantata no. 105, "Herr, gehe nicht ins Gericht," BWV 105. NBA I/xix.

1723c. Bach, Johann Sebastian. *Chromatische Fantasie und Fuge d-Moll,* BWV 903. NBA V/ix.2.

1723d. Bach, Johann Sebastian. *Sinfonia in f,* BWV 795. NBA V/iii.

1723e. Leclair, Jean-Marie. *Sonata IX, Op. 1,* Adagio. RRMB 76.

1724. Bach, Johann Sebastian. *Cantata "Jesu, der du meine Seele,"* BWV 78, I. NBA I/xxi.

1725a. Vivaldi, Antonio. *Concerto in C,* RV 180, I.

1725b. Vivaldi, Antonio. *Concerto in E "Spring,"* RV 269, I.

1725c. Vivaldi, Antonio. *Concerto in F "Summer,"* RV 315, I.

1725d. Vivaldi, Antonio. *Concerto in g,* RV 332, I.

1725e. Vivaldi, Antonio. *Concerto in d,* RV 454, I.

1725-31. Quantz, Johann Joachim. *Sonata in E minor for Flute, Violin (Flute), and Basso Continuo,* QV 2:22 (2:Anh. 14), Adagio. RRMB 111.

1726a. Couperin, François. *La Françoise,* Gayement. COC 9.

1726b. Couperin, François. *La Françoise,* Gayement (p. 26). COC 9.

1726c. Couperin, François. *La Françoise,* Gravement. COC 9.

1726d. Couperin, François. *La Piemontoise,* Gravement. COC 9.

1726e. Couperin, François. *L'Espagnole,* Legerement. COC 9.

1726f. Couperin, François. *L'Espagnole* (p.83). COC 9.

1726g. Couperin, François. *L'Impériale,* Chaconne. COC 9.

1727a. Vivaldi, Antonio. *Concerto in d,* RV 238, I.

1727b. Vivaldi, Antonio. *Concerto in g,* RV 334, II.

1727c. Vivaldi, Antonio. *Concerto in Bb,* RV 530, I.

1728a. Heinichen, Johann David. *Un poco allegro, mà cantabile* from *Der General-Bass in der Composition.* CIR.

1728b. Leclair, Jean-Marie. *Sonata I, Op. 2,* Adagio. RRMB 58.

1728c. Leclair, Jean-Marie. *Sonata I, Op. 2,* Allegro. RRMB 58.

1728d. Leclair, Jean-Marie. *Sonata III, Op. 2,* Allegro. RRMB 58.

1728e. Leclair, Jean-Marie. *Sonata VIII, Op. 2,* Allegro. RRMB 58.

1728f. Montéclair, Michel Pignolet de. *Sur un arbisseau.* RRMB 29.

1728g. Rameau, Jean-Philippe. *Air plaintif* from *Le berger fidèle.* RCW 3.

1728h. Rameau, Jean-Philippe. *L'Enharmonique.* RCW 1.

1728 or 1734a. Tartini, Giuseppe (trancribed by Leonard Frischmuth). *Concerto in D*, Allegro. RRMB 69.

1728 or 1734b. Tartini, Giuseppe (trancribed by Leonard Frischmuth). *Concerto in F*, Allegro. RRMB 69.

1728 or 1734c. Tartini, Giuseppe (trancribed by Leonard Frischmuth). *Concerto V in C Major*, Allegro moderato. RRMB 69.

1729a. Challeri, Fortunato. *Sonata no. 8 in F Major*, Andante. RRMB 101.

1729b. Vivaldi, Antonio. *Concerto in F,* RV 104, IV.

1729c. Vivaldi, Antonio. *Concerto in D,* RV 124, II.

1729d. Vivaldi, Antonio. *Concerto in c,* RV 202, I.

Before 1730 (a). Bach, Johann Sebastian. *Cantata "Weichet nur, betrübte Schatten,"* BWV 202, I. NBA I/xl.

Before 1730 (b). Handel, George Frederic. *Prelude in f,* HWV 568. HHA iv/17.

1730a. Couperin, François. *La Couperin.* COC 5.

1730b. Couperin, François. *L'Epineuse.* COC 5.

1730c. Couperin, François. *La Petite Pince-sans-rire.* COC 5.

1730d. Handel, George Frederic. *Suite #8 in f,* HWV 433, I. HHA iv/1.

1731. Marcello, Benedetto. *Recitativo/Aria (nos. 9/10)* from *Il pianto e il riso delle quattro stagioni*. RRMB 118.

1733a. Handel, George Frederic. "Doleful tidings" from *Deborah,* HWV 51. HG 29.

1733b. Handel, George Frederic. "Hark ! hark, hark! His thunders round me roll" from *Athalia*, HWV 52. HG 5.

1733c. Rameau, Jean-Philippe. *Trio des Parques* from *Hippolyte et Aricie*. RCW 6.

1734a. Leclair, Jean-Marie. *Sonata XII, Op. 5.* RRMB 5.

1734b. Telemann, Georg-Philip. *Solo 2* from *Douze solos à violon ou traversière*, Allegro. RRMB 71.

1735a. Handel, George Frederic. *Fugue #6 in c* from *Six fugues*. HHA iv/6.

1735b. Vivaldi, Antonio. *Concerto in C,* RV 189, I.

1736a. Telemann, Georg-Philip. *Straf mich nicht in deinem Zorn.* RRMB 2.

1736b. Vivaldi, Antonio. *Concerto in D,* RV 513, II.

1737. Rameau, Jean-Philippe. *Castor et Pollux,* Act I, Scene I. RCW 8.

1738a. Handel, George Frederic. Music preceding "Mourn, Israel," from *Saul*, HWV 54. HHA i/13.

1738b. Handel, George Frederic. "They loathed to drink from the river" from *Israel in Egypt*, HWV 54. HHA i/14.

1738c. Leclair, Jean-Marie. *Sonata VIII, Op. 9,* Andante ma non troppo. RRMB 11.

1738d. Leclair, Jean-Marie. *Sonata XII, Op. 9,* Largo un poco andante. RRMB 11.

1739a. Rameau, Jean-Philippe. *Duo* from *Dardanus*. RCW 10.

1739b. Sorge, Georg Andreas. *Toccata per omnem circulum*. CIR.

1739c. Vivaldi, Antonio. *Sonata in F,* RV 41, I.

1739d. Vivaldi, Antonio. *Sonata in Bb,* RV 46, I, II.

Late 1730's. Corrette, Michel. *Carillon.* RRMB 18.

Before 1741 (a). Vivaldi, Antonio. *Concerto in a*, RV 355, II.

Before 1741 (b). Vivaldi, Antonio. *Concerto in d "Madrigalesco*," RV 129.

Antonio Vivaldi: The following works by Vivaldi remain undated; rather than labeling all of them "Before 1741," I have chosen simply to list them here as "V1," "V2," and so forth. All of these are pieces that contain a chromatic fourth; I have included other chromatic works (as well as dateable works) above.

- V1: Sonata in c, RV 5, I.
- V2: Sonata in c, RV 6, I, II, III.
- V3: Sonata in D, RV 10, I.
- V4: Sonata in d, RV 12, IV.
- V5: Sonata in F, RV 19, III.
- V6: Sonata in g, RV 28, I.
- V7: Sonata in d, RV 49, II.
- V8: Sonata in F, RV 52, I.
- V9: Sonata in c, RV 53, II.
- V10: Sonata in G, RV 71, I.
- V11: Concerto in D, RV 84, III.
- V12: Concerto in D, RV 95, III.
- V13: Concerto in F, RV 100, I.
- V14: Sonata in g, RV 103, I, II.
- V15: Concerto in g, RV 107, I.
- V16: Concerto in C, RV 112, II.
- V17: Concerto in C, RV 113, I.
- V18: Concerto in C, RV 114, II.
- V19: Concerto in c, RV 118, I.

- V20: Concerto in c, RV 119, I.
- V21: Concerto in C, RV 120, I.
- V22: Concerto in F, RV 137, I, II.
- V23: Concerto in F, RV 138, III.
- V24: Concerto in g, RV 155, I.
- V25: Concerto in g, RV 156, I.
- V26: Concerto in g, RV 157, I.
- V27: Concerto in Bb, RV 166, III.
- V28: Sonata in b, RV 169, II.
- V29: Concerto in C, RV 172, II.
- V30: Concerto in C, RV 186, I.
- V31: Concerto in D, RV 205, II, III.
- V32: Concerto in D, RV 209, III.
- V33: Concerto in D, RV 215, III.
- V34: Concerto in D, RV 223, II.
- V35: Concerto in d, RV 240, I.
- V36: Concerto in F, RV 228, I.
- V37: Concerto in d, RV 241, I.
- V38: Concerto in Eb, RV 251, I.
- V39: Concerto in Eb, RV 256, II.
- V40: Concerto in F, RV 270, I.
- V41: Concerto in e, RV 273, III.
- V42: Concerto in F, RV 285, II.
- V43: Concerto in F, RV 292, IV.
- V44: Concerto in G, RV 302, I.
- V45: Concerto in g, RV 325, I.
- V46: Concerto in A, RV 349, III.
- V47: Concerto in A, RV 353, I.
- V48: Concerto in a, RV 355, III.
- V49: Concerto in Bb, RV 367, III.
- V50: Concerto in Bb, RV 370, II.
- V51: Concerto in C, RV 400, II, III.
- V52: Concerto in d, RV 407, II.
- V53: Concerto in a, RV 420, I.
- V54: Concerto in c, RV 441, III.
- V55: Concerto in F, RV 442, I.
- V56: Concerto in C, RV 451, III.
- V57: Concerto in C, RV 452, II.
- V58: Concerto in D, RV 453, II.
- V59: Concerto in g, RV 495, III.
- V60: Concerto in Bb, RV 503, I.
- V61: Concerto in a, RV 523, III.
- V62: Concerto in Bb, RV 527, I.
- V63: Concerto in d, RV 535, III.
- V64: Concerto in d, RV 541, III.
- V65: Concerto in d, RV 566, III.

- V66: Concerto in F, RV 571, I.
- V67: Concerto in G, RV 575, I.
- V68: Concerto in D, RV 582, III.

Appendix 2: List of Chromatic Works by Composer

Aichinger, Gregor: 1607a.

Albinoni, Tomaso: 1702a.

Anonymous: 1620a-c, 1652, 1656a, 1670's, 1689-1700a.

Bach, Johann Sebastian: Early 18th Century(a-c), Before 1705, 1708, 1712a, 1714, 1722a, 1723a-d, 1724, Before 1730(a).

Banchieri, Adriano: 1620d.

Battifieri, Luigi: 1669.

Bianciardi, Francesco: 1607b.

Bull, John: 1609a-d.

Buxtehude, Dietrich: 1668-83, 1680-87a-f, Late 1680's, 1690's, 1694a-b, Late 17th Century (a).

Byrd, William: 1611a.

Caccini, Giulio: 1614a-b.

Caimo, Gioseppe: 1564a-d.

Cavaccio, Giovanni: 1626a-b.

Cavalli, Francesco: 1643, 1645a.

Challeri, Fortunato: 1729a.

Charpentier, Marc-Antoine: 1672, 1690-1.

Cima, Giovanni Paolo: 1606a.

Clérambault, Louis-Nicolas: 1716a.

Corrette, Michel: Late 1730's.

Couperin, François: 1690a-b, 1716-17(a-b), 1722b, 1726a-g, 1730a-c.

Cozzolani, Chiara Margarita: 1642a-d.

Danyel, John: 1606b.

Dowland, John: Late 16th Century.

Erbach, Christian: Early 17th Century (a), 1624a.

Fillimarino, Fabrizio: 1600a.

Fontanelli, Alfonso: 1595a-b.

Fornaci, Giacomo: 1617.

Appendix 3: Chromatic Fourth Pieces

In this appendix, I have listed each chromatic-fourth harmonization, followed by the piece(s) in which I found it, given according to the numbering system from Appendix 1. Parenthetical numbers after a piece indicate the number of times the harmonization appears in that piece. At the end of the appendix, I have listed some of the more rare treatments of the chromatic fourth, treatments which do not fit into any of the four main categories. One such group is labeled "chromatic fourth pieces with additional issues": while time and space do not permit me to list each of those issues, I leave it to the interested reader to discover them.

AUV: Ascending, Upper Voice
AB: Ascending, Bass
DUV: Descending, Upper Voice
DB: Descending, Bass

Ascending, Upper Voice

AUV1: 1598, Early 17th Century(l)(4), 1609f, 1617, 1626e, 1629, 1682-5, 1705b, V38, V49.

AUV2: Early 17th Century(a).

AUV3: Early 17th Century(a)(3), Early 17th Century(l), 1609c, 1620b(4), 1620c, 1620e, 1620g(2), 1624a(6), 1624h, 1624i, 1626c, 1626e, 1626f, 1640b, 1645e, 1649d, 1656c, 1664h, late 1680's, 1716b, 1724(2), Before 1741(b).

AUV4: Early 17th Century(a)(2), Early 17th Century(l)(5), 1609f, 1620g, 1624a, 1624h(2), 1624i, 1630a, 1635a, 1636/39a, 1640b, 1640d, 1702b(2).

AUV5: Early 17th Century(a)(2), 1620b, 1624a.

AUV6: Early 17th Century(a).

AUV7: Early 17th Century(a), 1603d, 1630a.

AUV8: Early 17th Century(a), 1609b, 1641b(2), 1645e, 1649d.

AUV9: Early 17th Century(a), 1645e, late 1680's.

AUV10: 1626d(3).

AUV11: 1626d.

AUV12: 1626e.

AUV13: 1626e, Late 17th Century(f).

AUV14: 1626e, 1630a(2).

AUV15: 1600a, 1603d, 1606b, 1620e(2), 1624h(5), 1626e, 1636a, 1636/39a, 1640b, 1640e, 1663d(4), 1716b.

AUV16: 1609c, 1629.

AUV17: 1629, 1624h, 1664h(2).

AUV18: 1630b.

AUV19: 1634b.

AUV20: 1609f(2), 1615a, 1620b(2), 1624a, 1624h(4), 1624i,1636a(2), 1656c, 1656e, late 1680's, Early 18th Century (a), 1705b.

AUV21: 1600a(3), 1609c, 1620b.

AUV22: 1620c, 1663d.

AUV23: 1620d, 1705c.

AUV24: 1620g, 1664h.

AUV25: 1623b, 1624h, 1626f, 1702b(2), 1705c.

AUV26: 1645e(2), 1656e.

AUV27: 1656c.

AUV28: 1663d, Late 17th Century(g), 1729a(2 vcs. only)(2), 1735b.

AUV29: 1664h(3).

AUV30: 1680-82a.

AUV31: 1680-83a.

AUV32: 1680-83a.

AUV33: 1680-83a.

AUV34: 1687b.

AUV35: 1687c.

AUV36: Early 18th Century(f).

AUV37: 1705b.

AUV38: 1705b.

AUV39: 1705c.

AUV40: 1729a(2 vcs. only)(2).

AUV41: V28(2).

AUV42: V28.

AUV43: V37(3).

AUV44: 1711i(see under chromatic sixth), Before 1741(b).

AUV45: 1711j.

AUV46: 1711j.

AUV47: 1729d.

AUV48: 1729d.

AUV49: 1603d.

AUV50: Before 1741(b)(3).

AUV51: Before 1741(b).

AUV52: Before 1741(b).

AUV53: 1609c.

AUV54: 1609c.

AUV55: 1609c.

AUV56: 1733a.

AUV57: 1606b.

<u>Ascending, Bass</u>

AB1: Early 17th Century(a), Early 17th Century(l), 1609c, 1609f(2), 1617(2), 1620c(2), 1620d(2), 1620g(5), 1623b(4), 1624a(4), 1624h(5), 1626f(2), 1630a(6), 1634b, 1638a(2), 1640b, 1640f, 1640g, 1649d(5), 1651, 1656c, 1656e(2), 1658, 1663b, 1664a, 1664h(2), 1670, 1673f, 1680-87a, 1684a, 1684b, late 1680's(3), Early 18th Century (c)(3), 1700, 1705b(2), 1705e, 1711c, 1711h(4), 1711i(3), 1712d(2), 1716c(3), 1716f (see under chromatic sixth), 1717b, 1720e, 1720f, 1723a, 1725b, 1728f, 1729d, 1730a(2), V2, V5, V8, V10, V13, V15, V17, V20, V23, V30, V36, V37(3), V41, V43, V44, V45, V51, V54, V62, V68.

AB2: Early 17th Century(a), 1609c, 1620c, 1620e, 1620f, 1620g, 1624h.

AB3: Early 17th Century(a)(3), 1606b, 1620c, 1624h, 1625d(2), 1640c, 1640e, Before 1741(b).

AB4: Early 17th Century(a).

AB5: Early 17th Century(a), 1609b, 1620e, 1624h(2), 1624i,

1630b(2), 1635h, 1645e, 1649d, Before 1741(b).

AB6: 1606b, Early 17th Century(g)(2), 1628a, Before 1741(b).

AB7: Early 17th Century (l), 1627b, 1636a, 1656c, 1664h(2), 1684a, 1684b, 1689-1700c.

AB8: 1620c, 1620g, 1624h, 1627b, 1656c, 1664b, 1664h(2), 1670, 1674b, 1680-82a, 1705b(2), 1713/15, 1730d.

AB9: 1628a.

AB10: 1628a.

AB11: 1620g, 1624a, 1624h(2), 1624i, 1628a, 1640b, 1640c, 1640d(3), 1640f, 1642e, 1645e, 1664h, 1673a, 1689b, 1711b, 1727a(4), 1738d(3).

AB12: 1630a.

AB13: 1631b, Early 18th Century(e)(2).

AB14: 1600a.

AB15: 1620b(5).

AB16: 1620d, V33, V60.

AB17: 1620g(2).

AB18: 1620g.

AB19: 1609c, 1624h, 1624i.

AB20: 1664h.

AB21: 1680e, 1680-87a.

AB22: 1680-83a, 1680-87c, 1705b.

AB23: 1680-87d.

AB24: 1683b.

AB25: 1690c.

AB26: 1690-1.

AB27: 1705b, 1716/17a(4).

AB28: 1705c.

AB29: 1723e.

AB30: 1737.

AB31: 1638a.

AB32: 1727c, 1733b.

AB33: 1711a(3).

AB34: 1711j.

AB35: 1711j.

AB36: 1670

AB37: 1640d

AB38: 1640d

AB39: Before 1741(b)(2)

AB40: 1716d.

<u>Descending, Upper Voice</u>

DUV1: 1624h, 1628b, 1634a, 1649d.

DUV2: 1631b, 1663a(2), 1713/15.

DUV3: 1631b.

DUV4: 1634a, 1645i, 1656c.

DUV5: 1592b, 1634b, 1634c, 1624a(3), 1640, 1656e, 1664h, 1728/34b.

DUV6: 1620e, 1620i, 1634b, 1634c, 1656b.

DUV7: 1620g, 1624a, 1624h, 1634b, 1634c, 1640e.

DUV8: Late 16th Century, Early 17th Century(o)(2), 1620e(2), 1620h, 1624a(2), 1634c, 1636/39e, 1640d(2), 1645e.

DUV9: 1609b, 1609g, 1615a, 1620c, 1624a(2), 1624c, 1624f, 1635a, 1640a, 1645f, 1656b, 1656c(2), 1664h, V39.

DUV10: 1624c, 1635a.

DUV11: 1592a, 1621a, 1635a, 1656b, 1664h, 1724.

DUV12: Early 17th Century(o), 1609g(2), 1620h, 1645e(2).

DUV13: Early 17th Century(o)(2), 1609g .

DUV14: Early 17th Century(o), 1609c, 1663a(2), 1664h.

DUV15: 1600a(2), 1624a, 1664h.

DUV16: 1620c.

DUV17: 1620g(2), 1620i(2), 1624a(2), 1649d(3), 1656b(2), 1656e, 1689-1700a, 1692a.

DUV18: 1620h.

DUV19: 1609c, 1620e, 1626a, 1645d, 1645e(2), 1645f.

DUV20: Late 16th Century, 1620i(5), 1624a, 1624h.

DUV21: 1620i.

DUV22: 1620i.

DUV23: 1620i, 1624h.

DUV24: 1620i(3), 1621a, 1624a, 1624h, Early 18th Century (c).

DUV25: 1624a(3), 1656b.

DUV26: 1624a.

DUV27: Late 16th Century, 1624a(2).

DUV28: 1624a, 1624h(2), 1645i, 1713/15.

DUV29: 1624h, 1656b(2), 1656c.

DUV30: 1624h(2), 1704.

DUV31: 1624h(2).

DUV32: 1624h(2).

DUV33: 1624i, 1656c.

DUV34: 1609g(2), 1626a.

DUV35: 1636/39d.

DUV36: 1656b.

DUV37: 1656b.

DUV38: 1656c, 1689-1700a.

DUV39: 1656c, 1702c(2).

DUV40: 1664h.

DUV41: 1664h, 1704.

DUV42: 1627(3).

DUV43: 1680-83a.

DUV44: 1606b, 1683d, 1689-1700a, 1713/15.

DUV45: 1687c.

DUV46: 1606b, late 1680's(5), 1716/17a, 1723d.

DUV47: late 1680's.

DUV48: late 1680's.

DUV50: late 1680's.

DUV51: 1690's(2).

DUV52: Late 17th Century(b).

DUV53: Late 17th Century(b).

DUV54: Late 17th/Early 18th Century(e).

DUV55: Late 17th/Early 18th Century(h)(6).

DUV55: 1702c.

DUV56: 1713/15, 1728/34b(2).

DUV57: 1726a.

DUV58: 1728d, 1735a.

DUV59: 1728/34a, 1728/34c(8).

DUV60: 1592a, 1609g.

DUV61: 1729b(2), 1736b, V14(8).

DUV62: V21, V42.

DUV63: V35(9).

DUV64: Early 18th Century (a), 1705d.

DUV65: 1705d.

DUV66: 1739d.

DUV67: 1723d.

DUV68: 1723d(2).

DUV69: 1723d.

DUV70: Before 1730 (b).

DUV71: 1735a.

DUV72: 1738b.

DUV73: 1640d.

DUV74: 1640d.

DUV75: 1596d.

DUV76: 1724(4).

DUV77: 1724.

DUV78: 1712a(2).

DUV79: 1712a(2).

DUV80: 1712a.

DUV81: 1712a.

DUV82: 1712a.

DUV83: 1609g.

DUV84: Late 16th Century.

DUV85: Late 16th Century.

DUV86: 1733b(2).

Descending, Bass

DB1: Early 17th Century(h), 1620i(4), 1621a, 1624h(5), 1636b(2), 1636/39e(3), 1645i(2), 1716f(2).

DB2: Early 17th Century(h), 1644a.

DB3: Early 17th Century(h).

DB4: 1592a, Late 16th Century(2), 1600a, 1609c(4), 1620c, 1620e, 1620g(2), 1620i(3), 1624a(2), 1624c, 1624h(4), 1624i(2), 1628b, 1631b, 1634a, 1634b, 1634c, 1635a(2), 1636/39e, 1638b, 1640a, 1640d(2), 1640f(2), 1649d(2), 1656b, 1656c(3), 1656e, 1664f(2), 1664h, 1670(2), 1680-87e(2), 1684a, Early 18th Century(e)(4), Early 18th Century(i), 1702a, 1713/15(2), 1724(9), 1734b, V1, V2(3), V14(6), V16, V18, V22, V25(7), V34(3), V43, V57(3), V58, V61.

DB5: Late 16th Century(2), Early 17th Century(o)(4), 1606b, 1609b, 1609g(5), 1620a, 1620i(2), 1621a, 1624a(5), 1624c(2), 1624i, 1626a, 1628b, 1636/39e, 1641/75, 1644a, 1645d, 1645e(2), 1656b, 1656c(6), 1656e(2), 1664e, 1664f, 1664h(3), 1665, 1667, 1670, 1673d, 1680-83a, 1680-87b, 1681, 1683c, 1683d(2), 1684a, 1684b(9), 1689-1700a, 1689-1700c, late 1680's(3), 1690b, 1694a(4), late 17th Century(a), Late 17th Century(b), Late 17th Century(g), 1703 (missing sharp-6), 1713, 1713/15, 1716a, 1716f, 1716/17d(3), 1726c, 1726d, 1734c(3), 1739c, V2(5), V16(2), V29(5), V49, V51(2).

DB6: 1630a.

DB7: 1631b, 1624h.

DB8: Early 17h Century(o).

DB9: Early 17th Century(o), 1624h, 1640a, 1645a, 1663a(2), 1713/15.

DB10: 1624a, 1656e, 1673c, 1690c.

DB11: 1592b, 1609b, 1624h, 1624i, 1656b(2), 1656c, 1664b, 1673e(2), 1680-83a, 1688, 1689-1700a, late 1680's, 1690b, 1694c, Late 17th Century(a)(2), Early 18th Century (a), 1705a(2), 1705c, 1705f(2), 1705g, 1708, 1711d, 1711e, 1711f(3), 1711g(2), 1711h, 1711i, 1712b, 1712c(2), 1716e(2), 1716f, 1716/17a, 1716/17c(2), 1717c, 1712a(5), 1720b, 1720c, 1720d, 1720e, 1722b(8), 1724(3), 1725a(3), 1726e, 1726g, 1727b(8), 1730a(2), 1734a, 1734c(2), 1737, 1738b, 1738c, 1738d, 1739d(3), V4, V6, V7, V15, V16(3), V18, V24, V26(18), V27(2), V29, V31(2), V32, V34, V48, V50, V57(2), V63, V64, V66(2), V67(2).

DB12: 1645a.

DB13: 1664f.

DB14:1664f, 1724, 1734c(2).

DB15:1609c, 1664f.

DB16:1664h.

DB17: 1664h(2).

DB18: 1664h(2).

DB19:1673b(3).

DB20: 1680-83a, V9.

DB21:1682.

DB22: 1683a.

DB23: 1683f.

DB24: 1684b(9).

DB25: 1684c, 1720a, 1730b, 1738b.

DB26: 1687c.

DB27: 1689a(2), V3.

DB28: 1689a(3).

DB30: 1689a, 1723d, 1730c(2), 1730d.

DB31: 1684a, 1684b, 1689a.

DB32: 1689a.

DB33: 1592a, 1684a, 1689-1700a, 1692a, 1707, 1723d(2), 1736b(2).

DB34: 1690c.

DB35: 1690c.

DB36: 1692a.

DB37: 1692b.

DB38: Late 17th Century(d).

DB39: Early 18th Century(e)(2).

DB40: 1702a(5), 1714.

DB41: 1713/15.

DB42: 1726d, 1739a.

DB43: 1726d.

DB44: 1728b(6), V22(see under octave).

DB45: 1711g, 1719c, 1728c, 1728d, V16(2), V18(2).

DB46: 1734c.

DB47: 1737.

DB48: 1737.

DB49: V28.

DB50: 1725d.

DB51: V26(2).

DB52: V53.

DB53: V56(3).

DB54: 1735b.

DB55: 1716f.

DB56: V18.

DB57: 1723b.

DB58: Before 1705.

DB59: Early 18th Century (a)(2).

DB60: 1730d.

DB61: Before 1730 (b).

DB62: 1738b.

DB63: 1609e.

DB64: 1640d.

DB65: 1625a.

DB66: 1714(2).

DB67: 1714(2).

DB68: 1714.

DB69: 1714(2).

DB70: 1714.

DB71: 1714.

DB72: 1714.

DB73: 1714.

DB74: 1724(2).

DB75: 1724.

DB76: 1724.

DB77: 1738a.

Other Treatments of the Chromatic Fourth

Unaccompanied: V46(2), V29(2).

Parallel 3rds, ascending: Early 17th Century(a)(2), 1609c, 1620b(2), 1624h, 1624i(2), 1642f (4), 1656e.

Parallel 6ths, ascending: Early 17th Century(a)(2), 1606b, 1620b(2), 1624a, 1630b(2).

Parallel 3rds, descending: 1609c, 1620g, 1624a(3), 1628b(2), 1634a(2), 1640a, 1641/75, 1649d, 1737.

Parallel 6ths, descending: Late 16th Century, 1620i(2), 1624a(2), 1664h.

Combined 3rds/6ths: 1626a, V39.

Ascending tetrachord over I pedal: 1642f.

Ascending tetrachord over V pedal: 1687b, late 1680's, V11(4), V40(8), V55(6), V65(2).

Descending tetrachord over V pedal: 1606b(2), 1644b, 1645d, 1649d(2), 1656e(2), 1680d, 1722b, 1724, 1725e(3), 1729c(3), 1731, 1733b, 1736b, 1737(3), 1738b, V12, V19(6), V28, V59(2).

Descending tetrachord over I pedal: 1656c, 1712a, 1725e(4), 1730d, 1733a.

Changing voices: 1600a, 1620b(4), 1620c(2), 1620d, 1620i, 1624a(6), 1624h(3), 1624i, 1626a, 1634a, 1636/39d, 1640b, 1640d, 1656c, 1664h, late 1680's, Late 17th Century(a), Early 18th Century (a)(3), 1713/15, 1733b, 1737.

Stretto: 1592a, Late 16th Century(2), Early 17th Century(o), 1609c, 1620d, 1620e(2), 1620h(3), 1620i(several), 1624h(several), 1624i, 1656c, 1663b(several), 1664h, 1729c, 1731, 1737.

Stretto to the point of suspended diatonicism: 1624h, 1692-3, 1694b.

Chromatic Fourth Pieces with Additional Issues: 1606b, 1620a, 1620c (mm.48-51), 1620i, 1624c, 1625d, 1626a (NCT's), 1643, 1644a, 1645f, 1656d, 1663d (remote accidentals), 1664f, 1680e, 1680-87f, late 1680's (see last statement), 1692a (text painting), late 17th/Early 18th Century(e), 1716d, 1731, Before 1741(b).

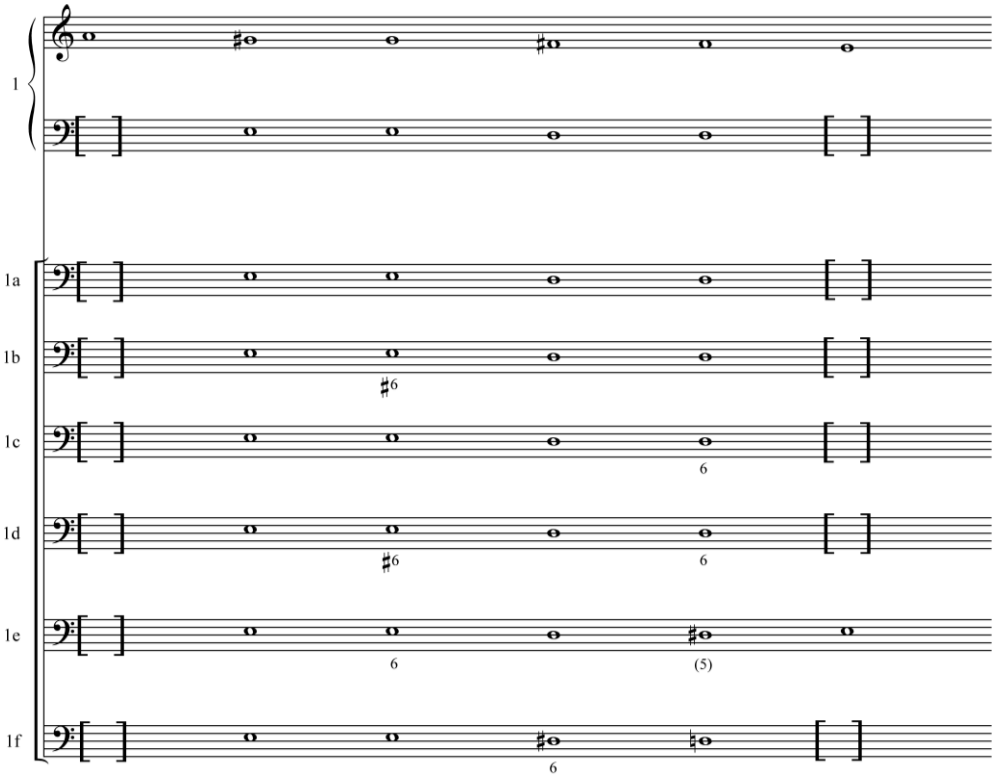
Chromatic Fifth Pieces: 1624b, 1624c, 1624i, 1638b, 1645d, 1656b, 1680e(2), 1705d.

Chromatic Sixth Pieces: 1687a, 1711i (based on AUV44)(2), 1716f (based on AB1).

Chromatic Seventh/Octave Pieces: 1698, V22(based on DB44).

Appendix 4: Models for Chromatic Fourth Harmonizations

Descending Models



Fundamental basses/harmonizations based on this model:

1a: D6, D8, D20, D24, D43, D44, D49, D59, D64, D69; DUV41, 72; DB19, 71, 72

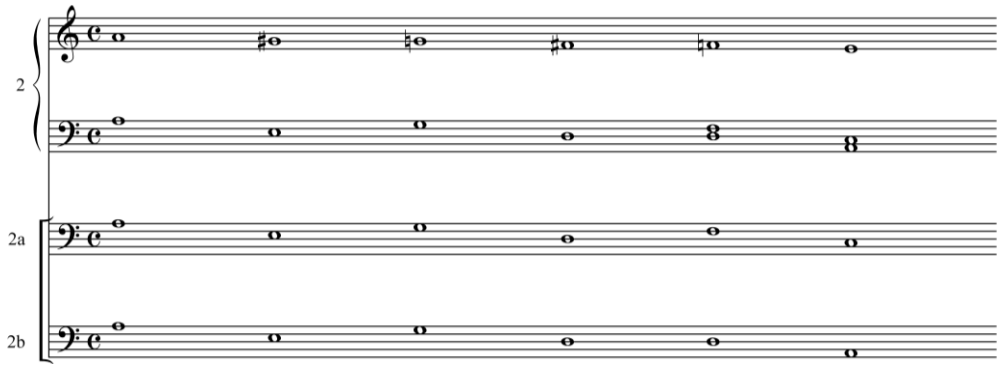
1b: D2, D4, D7, D34, D39, D46, D47, D48, D53, D67, D72, D75, D77; DUV23; DB75

1c: D23, D27; D45

1d: D12, D19, D30, D32, D33, D36, D38, D40, D41, D51, D52, D54, D55, D56, D61, D63, D65, D70, D71, D74; DUV53, 63

1e: DB17, 49, 60

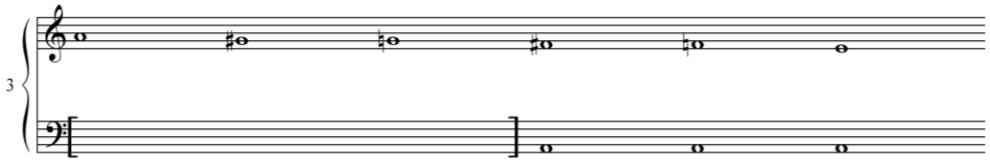
1f: D5, D13, D14, D28; DUV74, 75; DB61, 64



Fundamental basses/harmonizations based on this model:

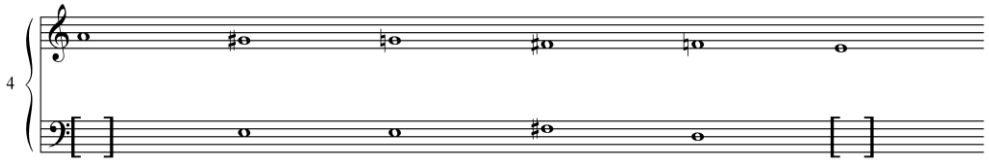
2a: D20, D22, D50

2b: D1, D10, D16, D17, D42



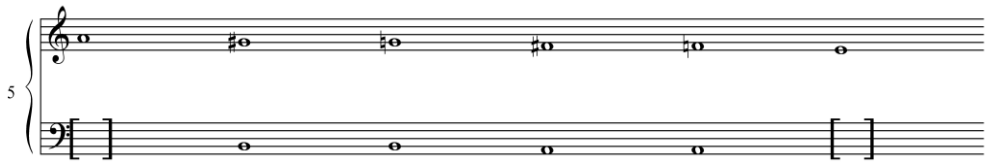
Fundamental basses/harmonizations based on this model:

D3, D10, D11, D18, D26, D78



Fundamental basses/harmonizations based on this model:

D15, D25, D29, D35, D60



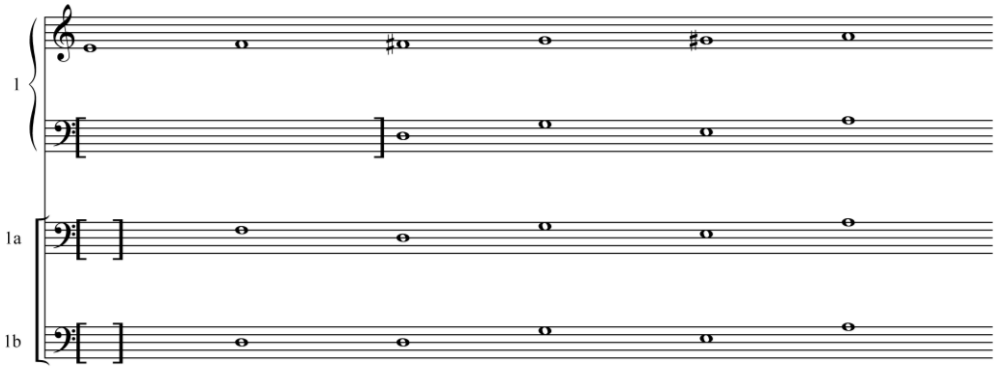
Fundamental basses/harmonizations based on this model:

DUV1, 36, 48, 52, 54, 73; DB37

Descending harmonizations not classifiable into one of the preceding models:

D57, D58; DUV42, 45, 85; DB6, 19, 21

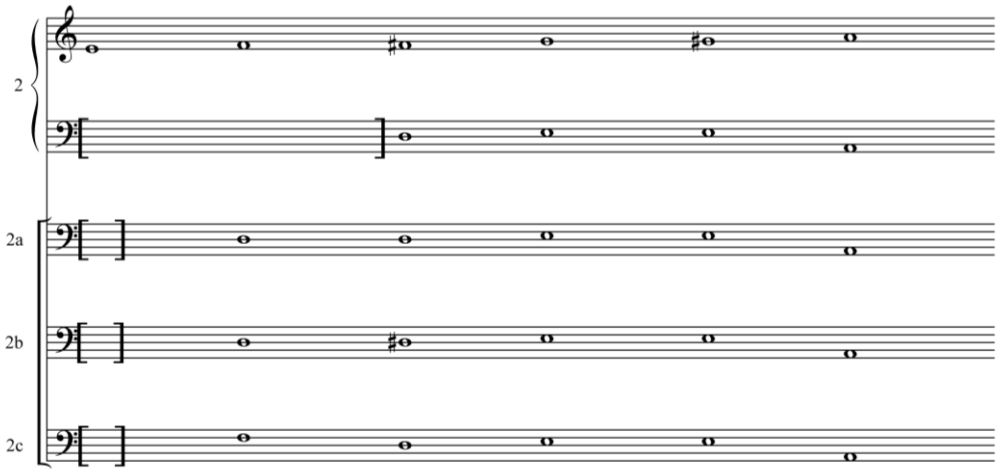
Ascending Models



Fundamental basses/harmonizations based on this model:

1a: A1, A12, A13, A20, A24, A33, A34, A37, A38

1b: A2, A3, A7, A18, A28, A36, A40



Fundamental basses/harmonizations based on this model:

2a: A4, A6, A7, A16, A17, A21, A22, A29, A30, A39

2b: A14, A15, A23, A25, A26, A27, A31, A32

2c: A6, A9, A10, A35

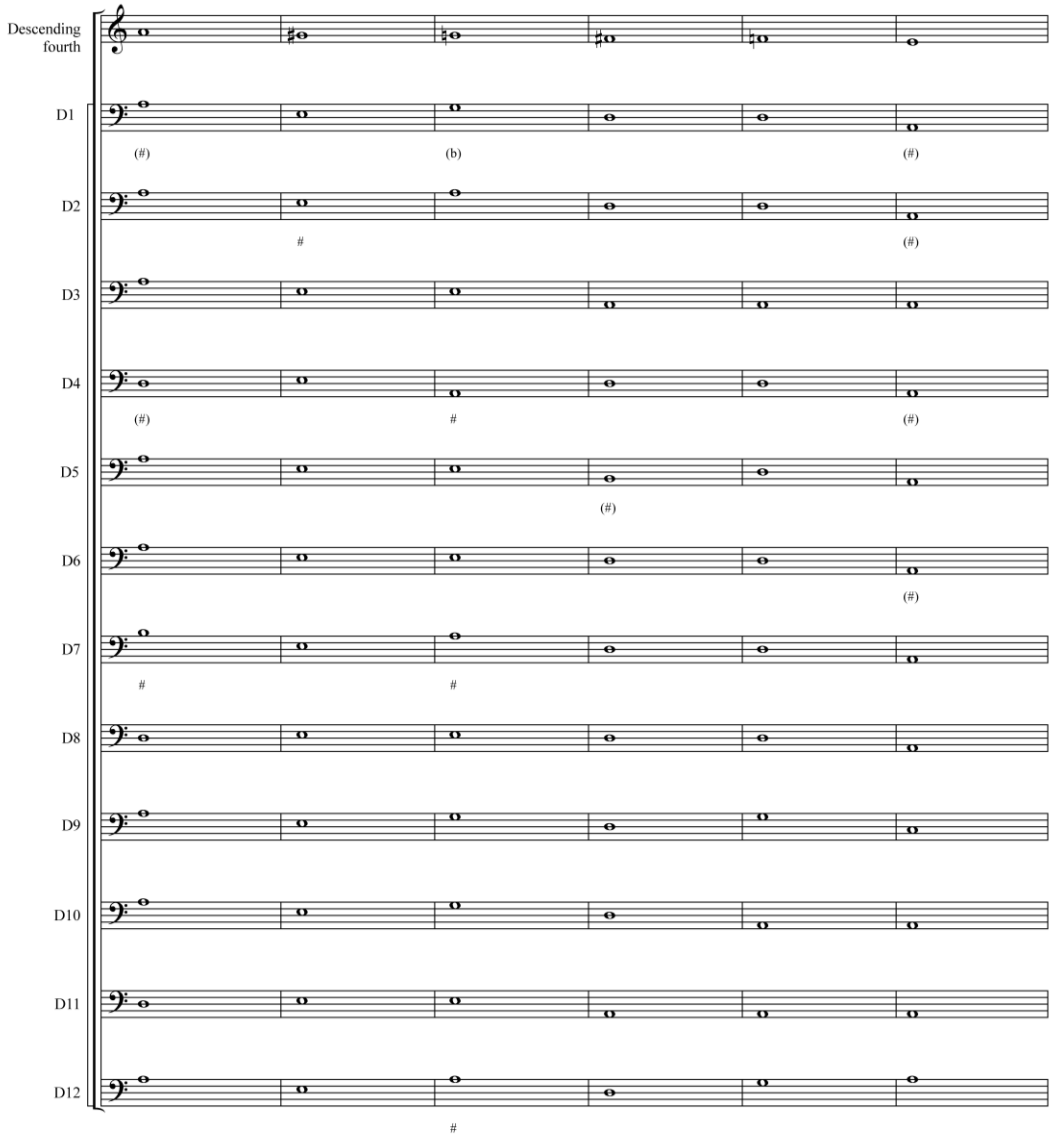
Ascending harmonizations not classifiable into one of the preceding models:

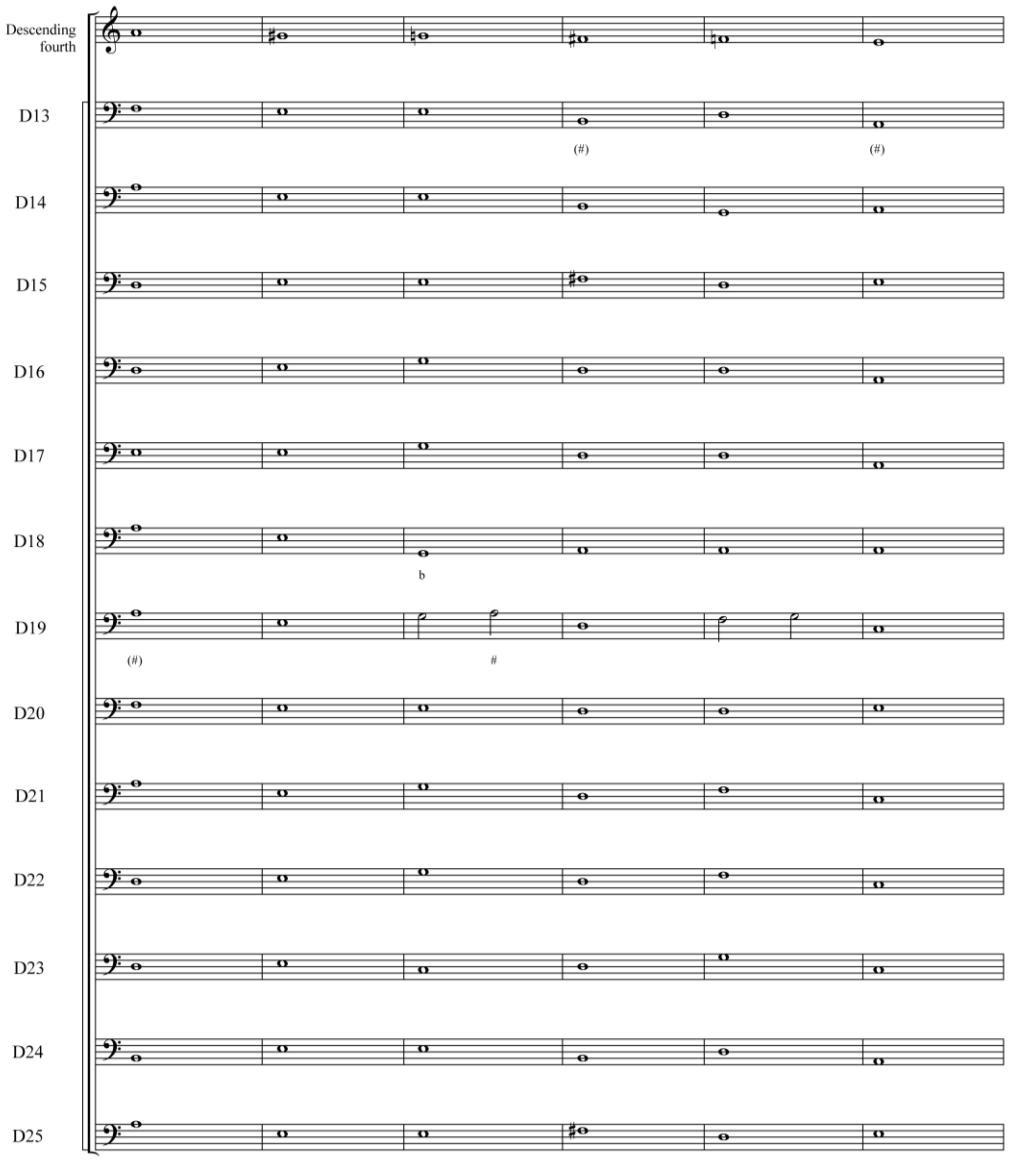
AUV53, AB 40

Appendix 5: Fundamental-Bass Analyses of Chromatic Fourth Harmonizations

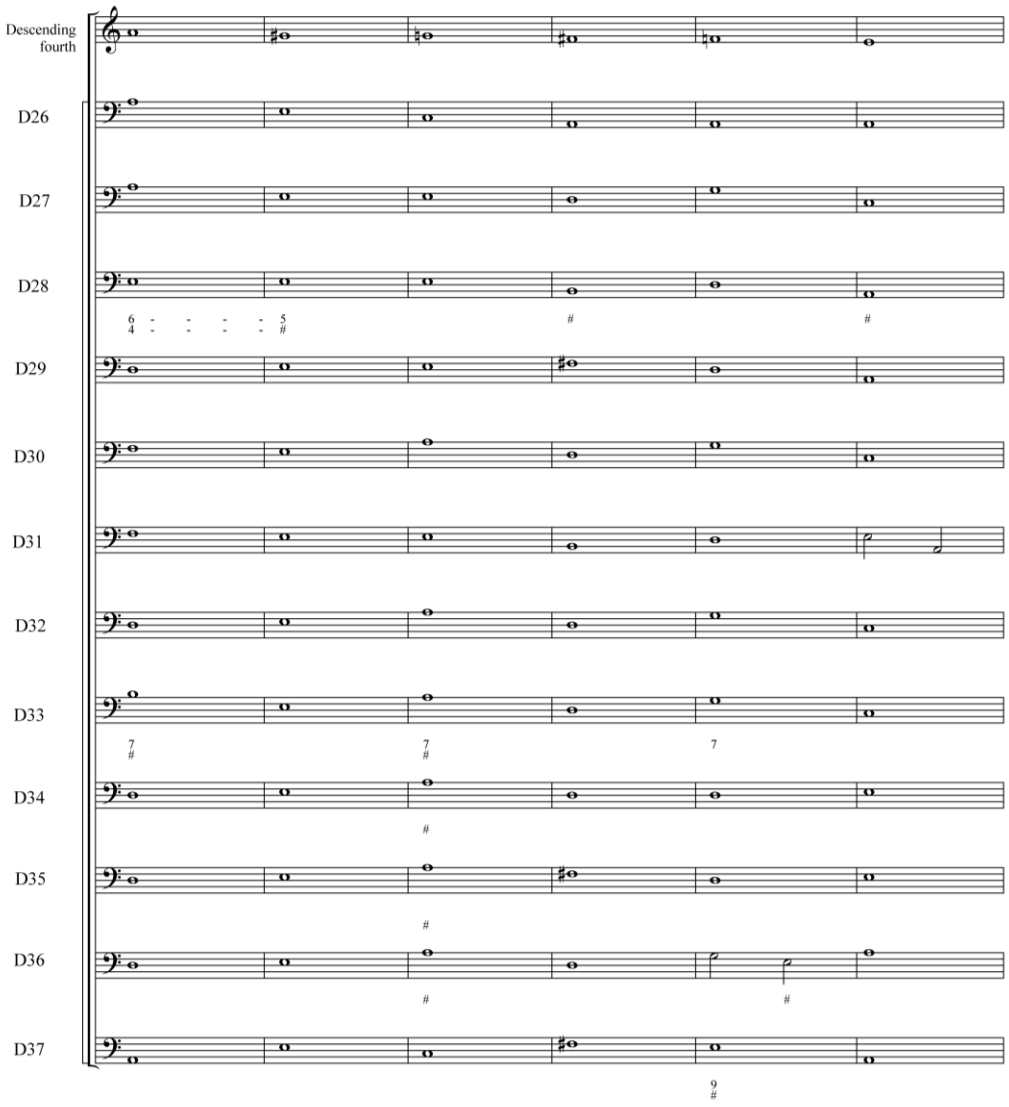
The following pages present the fundamental basses that I created from the original chromatic-fourth harmonizations presented in appendix 6, as I explained in chapter 5. For the sake of transparency, the fundamental basses that were ultimately not used are still presented here; the list that follows each set of fundamental basses notes which ones were discarded. Since some of the harmonizations in appendix 6 contain alternate possibilities for a single tone of the chromatic fourth, occasionally a single chromatic-fourth harmonization is represented by several fundamental basses.

Descending fundamental basses

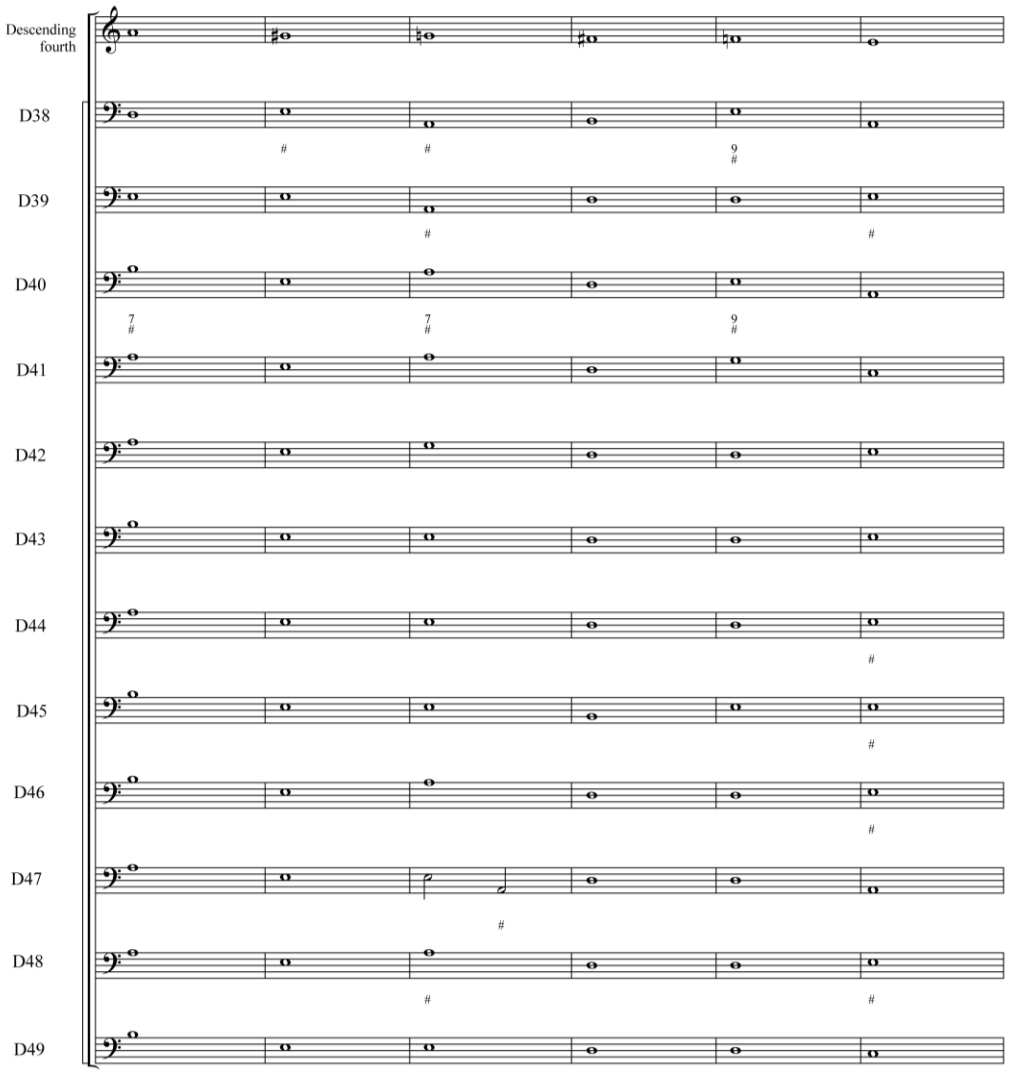




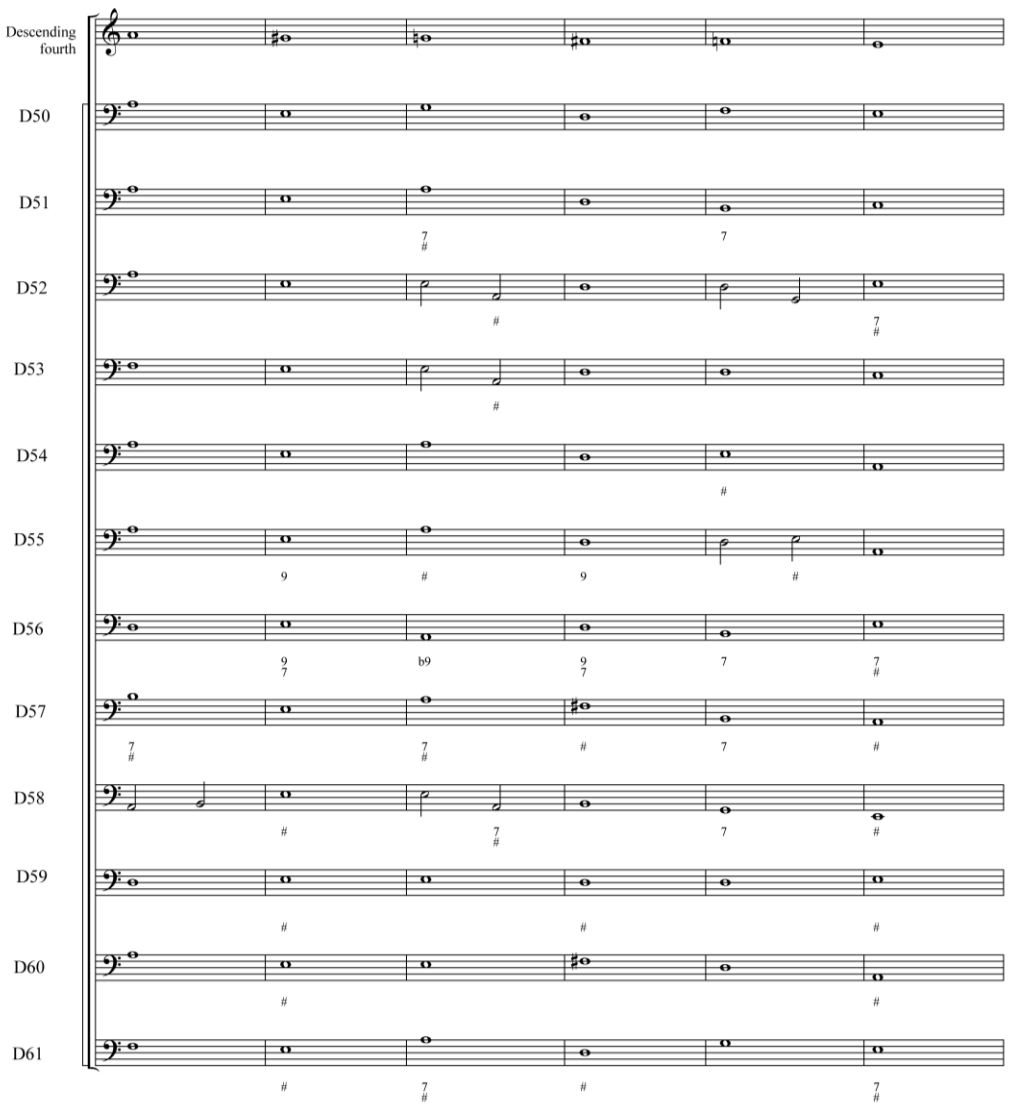
Descending fundamental basses, continued.



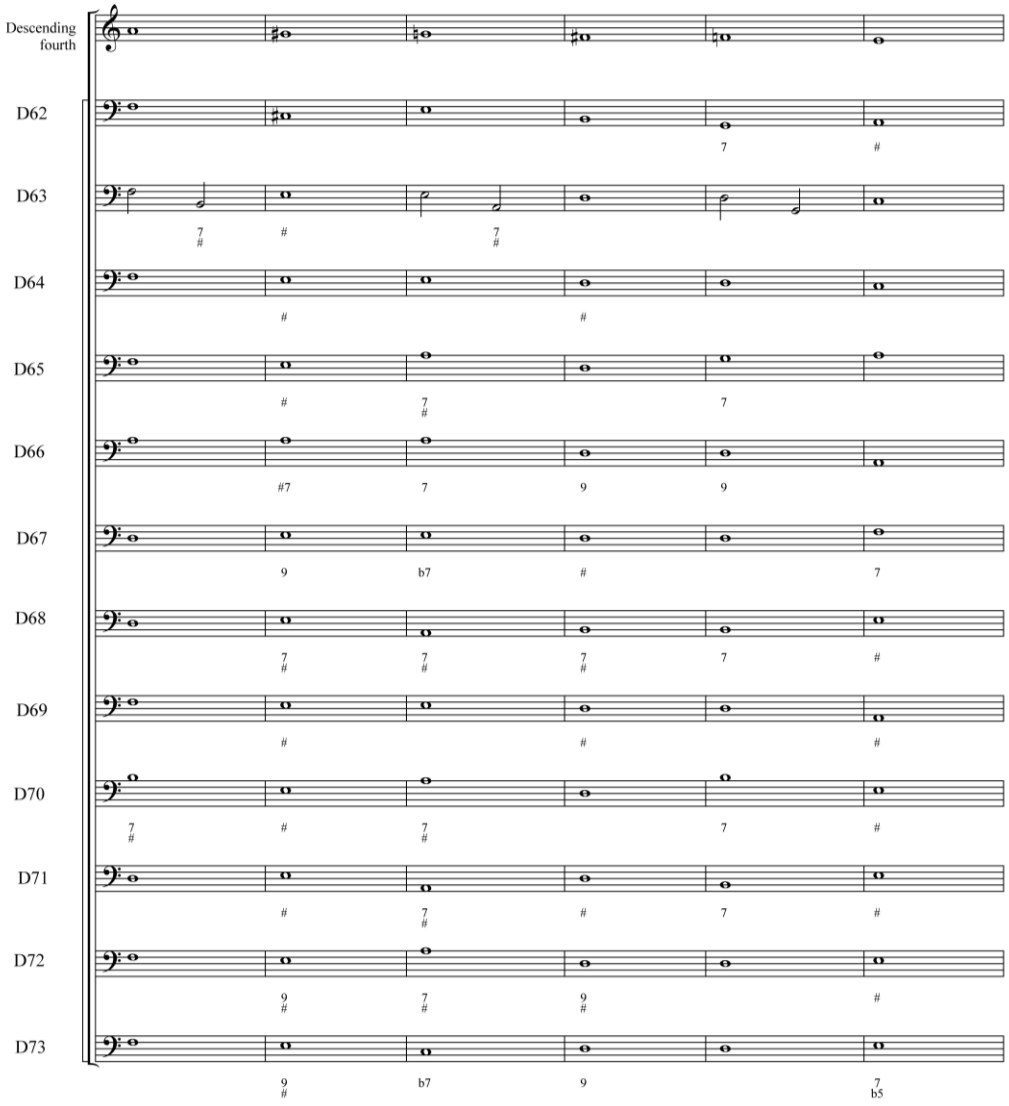
Descending fundamental basses, continued.



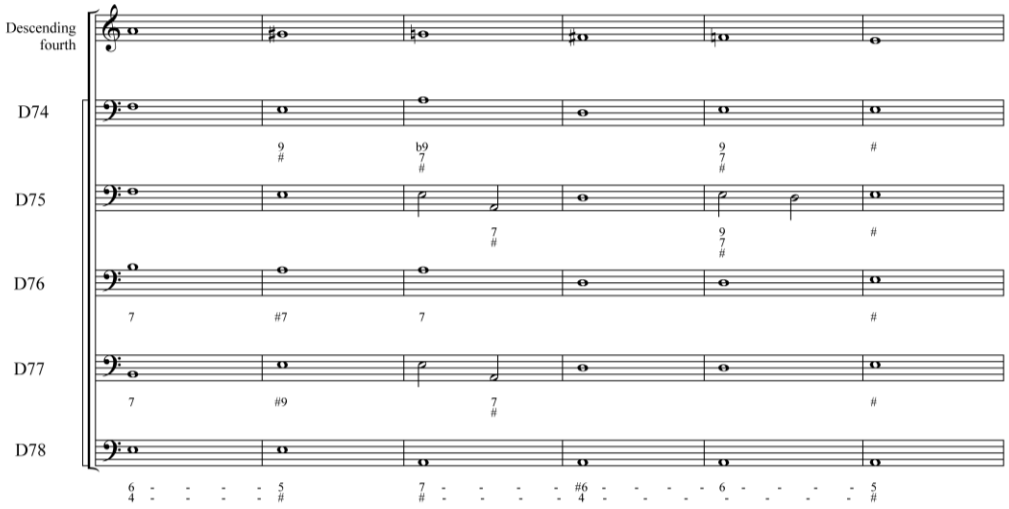
Descending fundamental basses, continued.



Descending fundamental basses, continued.



Descending fundamental basses, continued.



List of corresponding harmonizations

D1: DUV1, 6, 8; DB48

D2: DUV2, 3, 7, 46

D3: DUV4, 11, 86

D4: DUV5, 9, 25, 80, 81

D5: DUV7, 12

D6: DUV8, 78, 84; DB12, 77

D7: DUV9

D8: DUV9

D9: DUV10

D10: DUV1, 83

D11: DUV11, 28

D12: DUV17, 38

D13: DUV12, 27

D14: DUV14

D15: DUV13

D16: DUV15, 37

D17: DUV18

D18: DUV19

D19: DUV20, 21

D20: DUV22, 72; DB11, 65, 66

D21: DUV24

D22: DUV24

D23: DUV26

D24: DUV27

D25: DUV29, 30

D26: DUV31

D27: DUV33

D28: DUV34

D29: DUV39

D30: DUV40

D31 (discarded): DUV41

D32: DUV43, 71

D33: DUV44, 62; DB45

D34: DUV47, 67; DB23

D35: DUV50

D36: DUV51

D37 (discarded): DUV52

D38: DUV53

D39: DUV55

D40: DUV56, 57, 59, 65

D41: DUV58; DB54, 58

D42: DUV60; DB2, 9

D43: DB3

D44: DB4, 5, 7, 8, 10, 11, 15, 16, 22, 25, 26, 28, 29, 30, 35, 36, 39, 42, 43

D45: DB13

D46: DUV69

D47: DB24

D48: DB27, 30, 32, 33, 41, 51, 57

D49: DB31

D50: DB34

D51: DB40

D52: DB44

D53: DB46

D54: DUV61

D55: DUV64

D56: DUV66

D57: DUV68

D58: DUV76

D59: DUV77; DB68

D60: DUV79

D61: DUV82

D62 (discarded): DUV85

D63: DB50

D64: DB52

D65: DB55

D66 (discarded): DB56

D67: DB59

D68: DB61

D69: DB62

D70: DB67

D71: DB69

D72: DB70

D73: DB71

D74: DB72

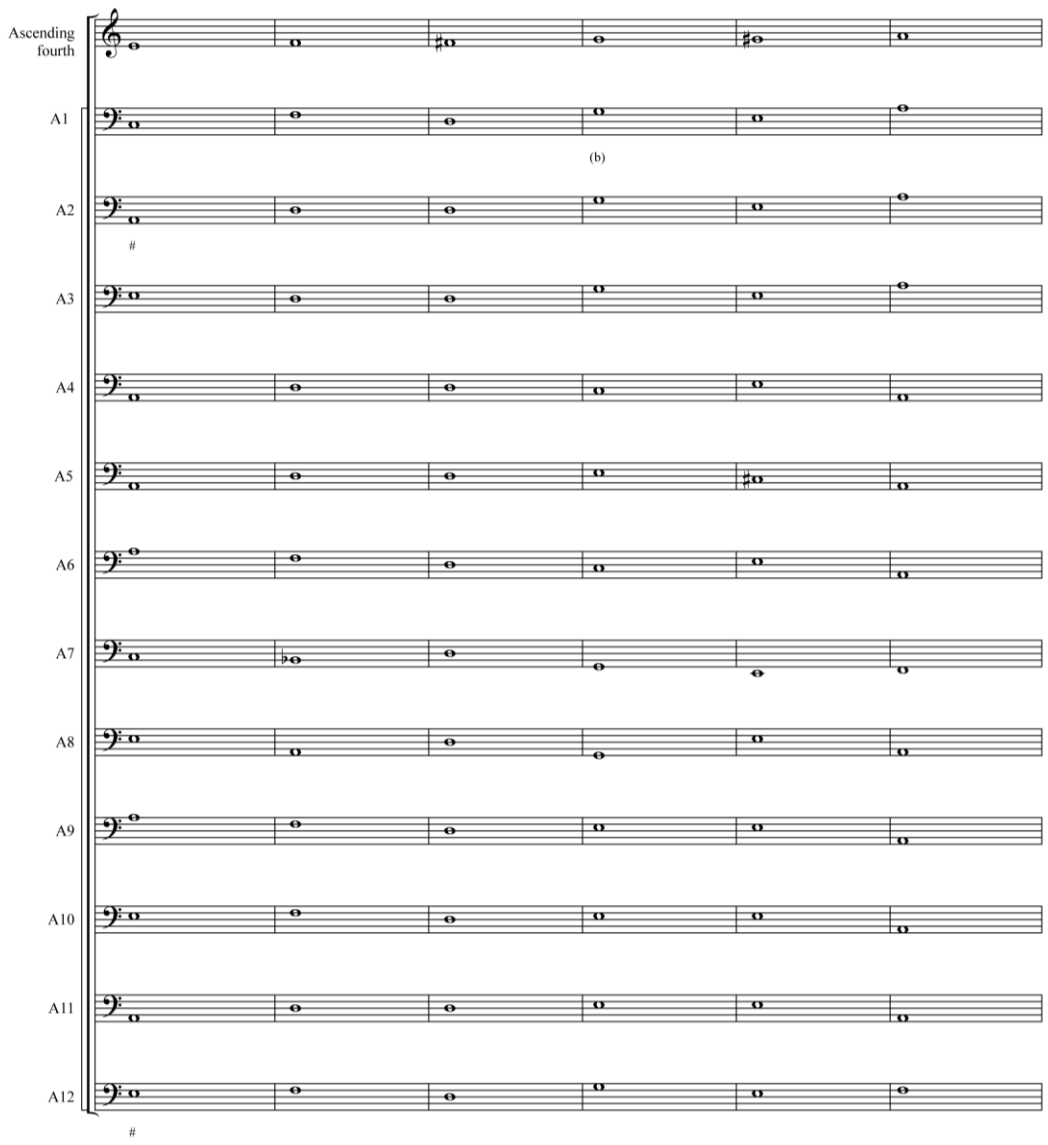
D75: DB74

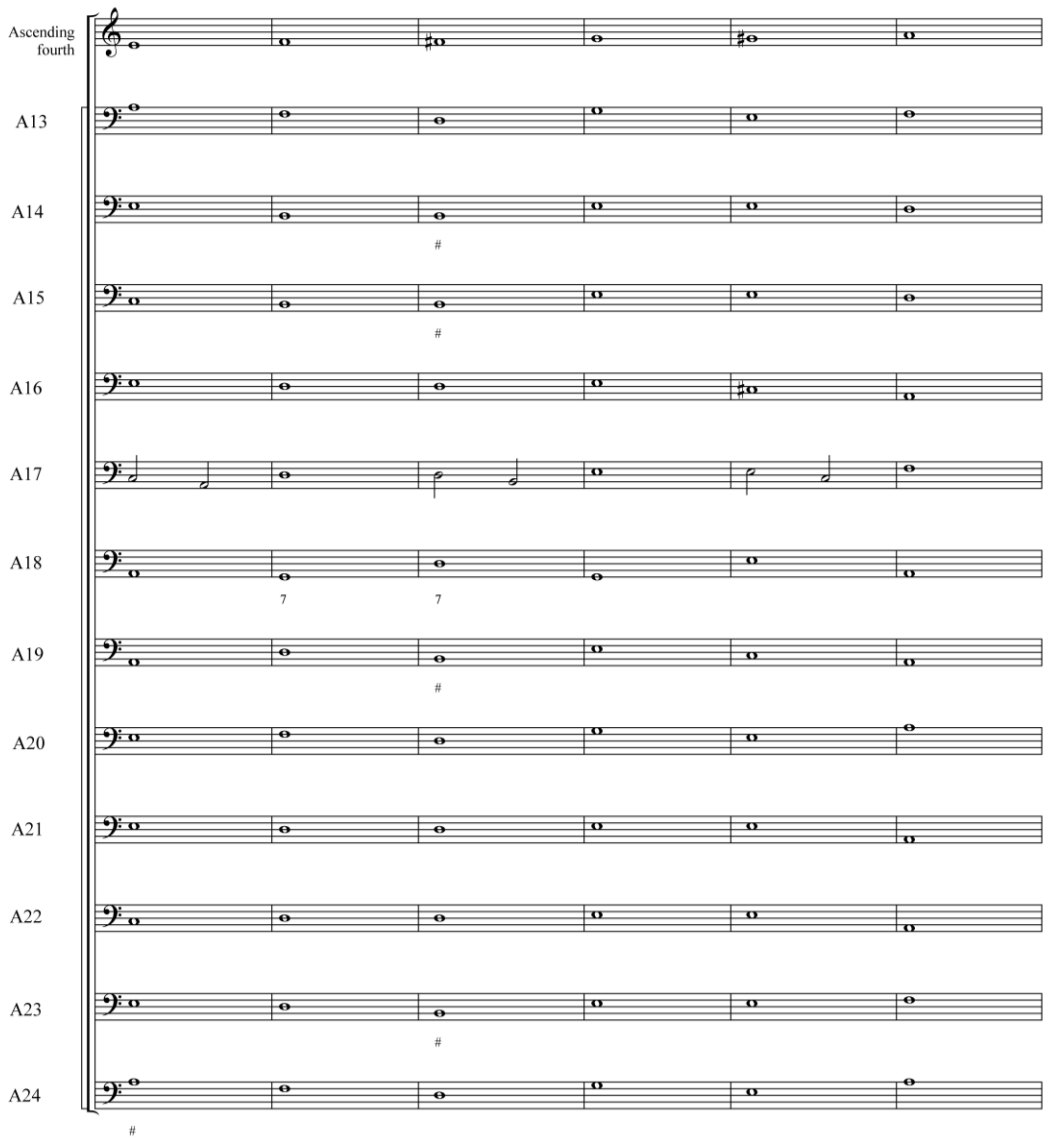
D76: DB75

D77: DB76

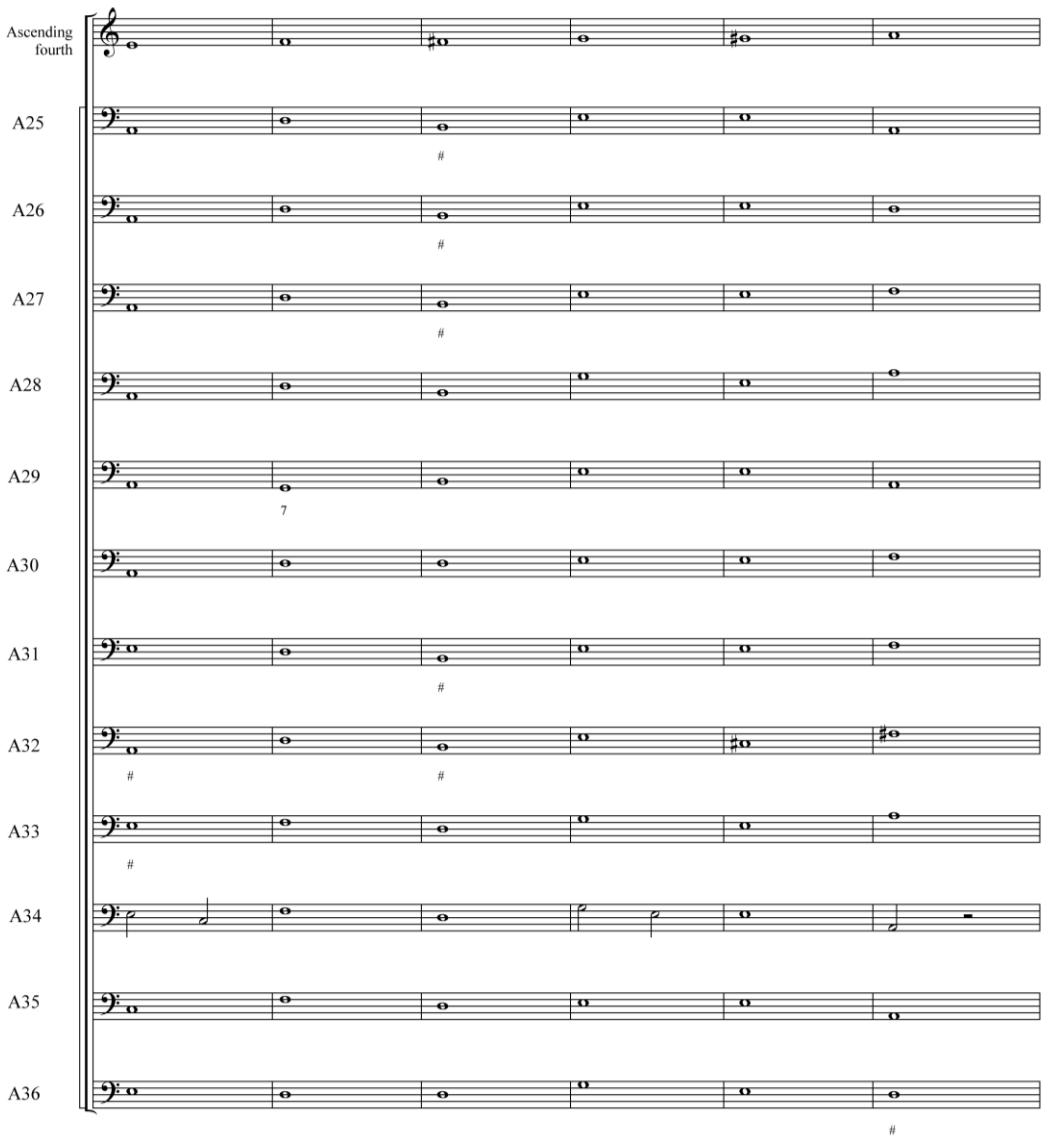
D78: DUV35

Ascending fundamental basses

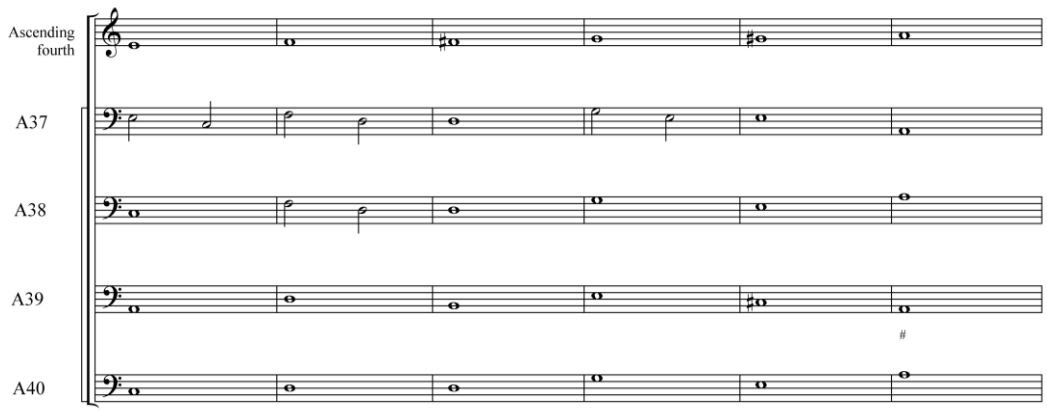




Ascending fundamental basses, continued.



Ascending fundamental basses, continued.



List of corresponding harmonizations

A1: AUV1, 8, 12, 25, 44, 46, 48; AB1, 15, 23, 24, 27, 28, 29, 31, 33, 34

A2: AUV2, 3, 19, 28, 40, 45, 47, 50, 52, 57; AB14, 39

A3: AUV3, 11, 41, 42, 43; AB7, 8, 11, 12, 13, 21, 25

A4: AUV4, 21

A5: AUV4

A6: AUV5

A7: AUV7

A8 (discarded): AUV6, 38, 51

A9: AUV9

A10: AUV9, 34; AB2, 19

A11: AUV10, 30, 33

A12: AUV23, 29

A13: AUV24

A14: AUV26

A15: AUV26

A16: AUV27

A17: AUV32

A18: AUV35

A19 (discarded): AUV37

A20: AB3, 22, 30

A21: AUV55; AB5, 18, 20

A22: AB6, 16

A23: AUV13

A24: AUV14

A25: AUV15, 16, 36,37

A26: AUV15

A27: AUV15

A28: AUV17

A29: AUV18

A30: AUV20

A31: AUV20

A32: AUV22

A33: AUV6, 23, 38, 51, 54; AB37

A34: AB9

A35: AB10, 35

A36: AB13

A37: AB17

A38: AB26

A39: AUV49

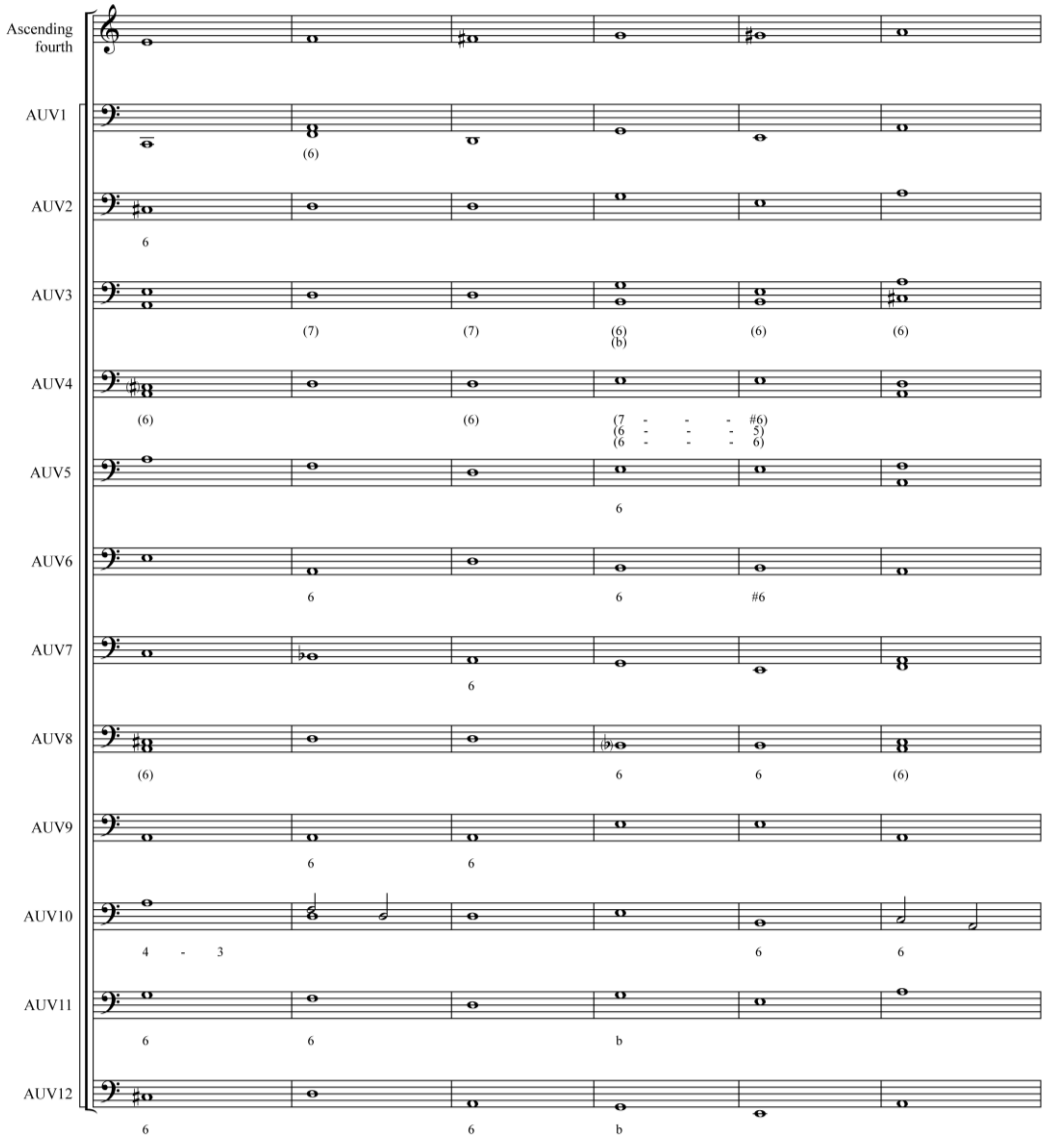
A40: AB 32, 36

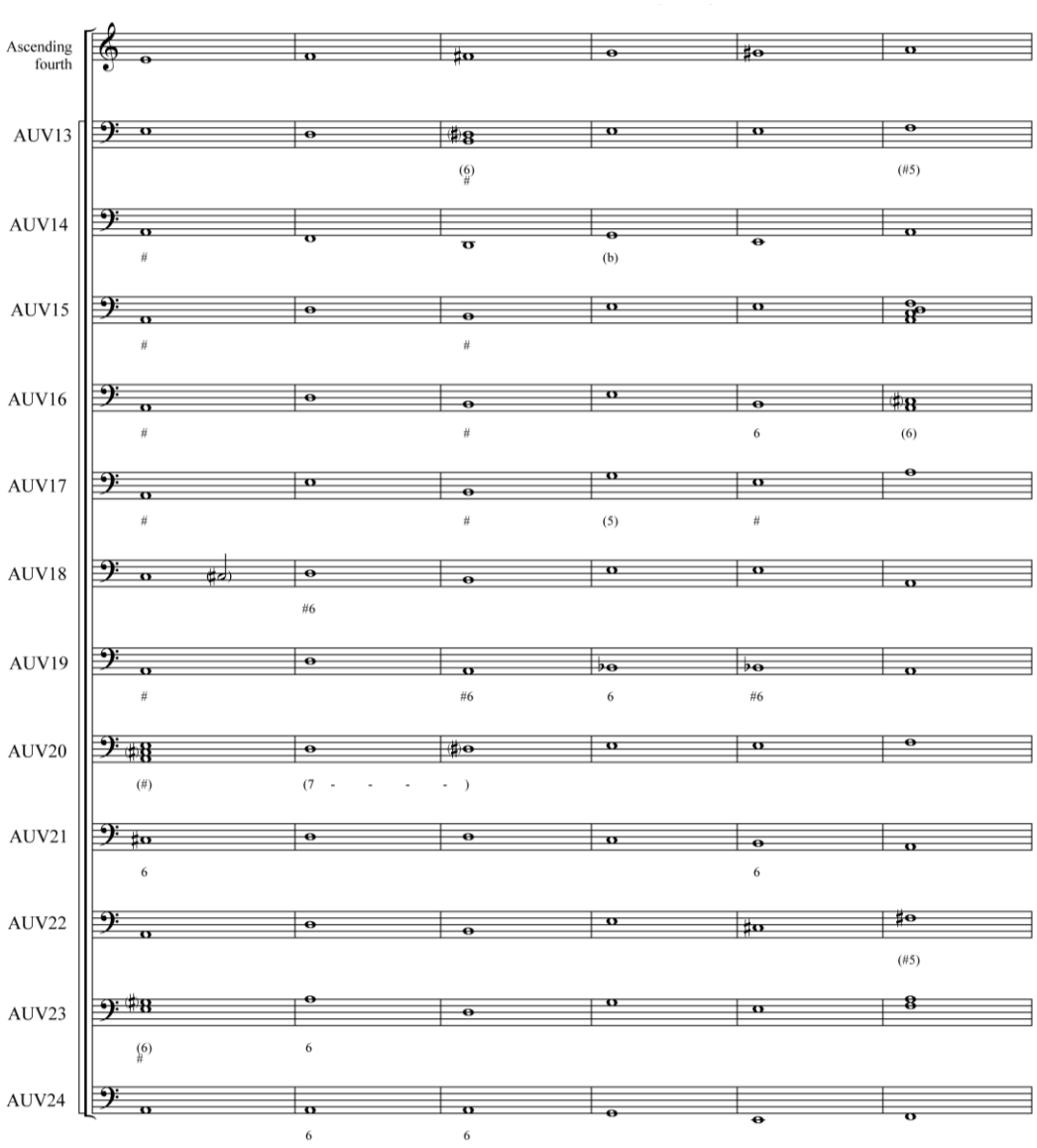
Appendix 6: Chromatic Fourth Harmonizations

The following pages present all of the chromatic fourth harmonizations that my research uncovered. Upper-voice harmonizations are given with the chromatic fourth on the top line, with the harmonizations shown as figured basses beneath. Note that this does not mean that the chromatic fourth in the original harmonization was necessarily in the topmost voice. Where two or more bass notes are given in the same bar, they should be considered alternate possibilities that did not each warrant a separate harmonization. Likewise, parenthetical figures, tones, and accidentals represent additional possibilities.

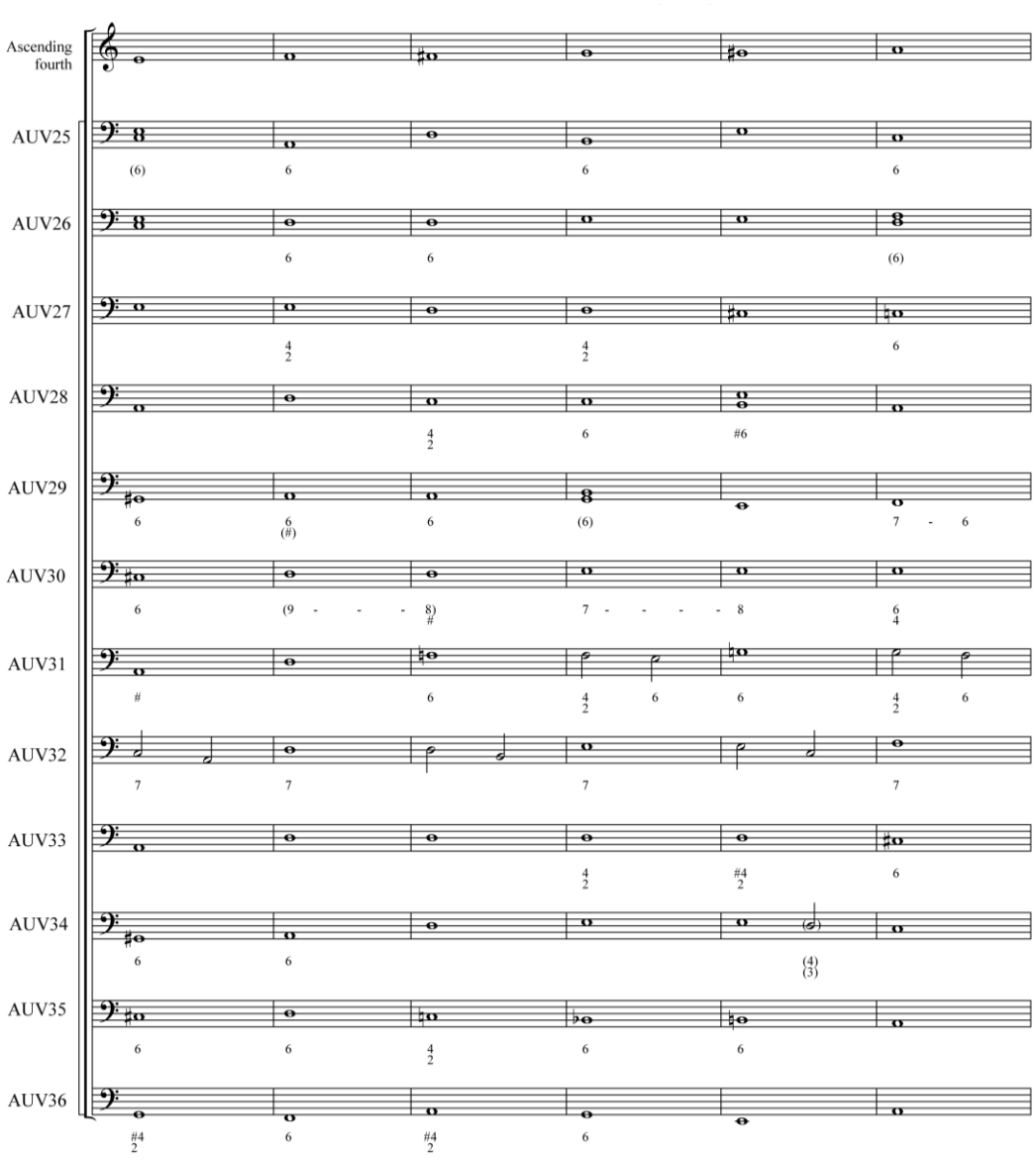
The tones of the chromatic fourth are not generally indicated in the figures. A tone should be assumed to be natural unless the figures indicate otherwise. The reader should refer to Appendix 3 for the work or works that use each harmonization.

Ascending upper-voice harmonizations

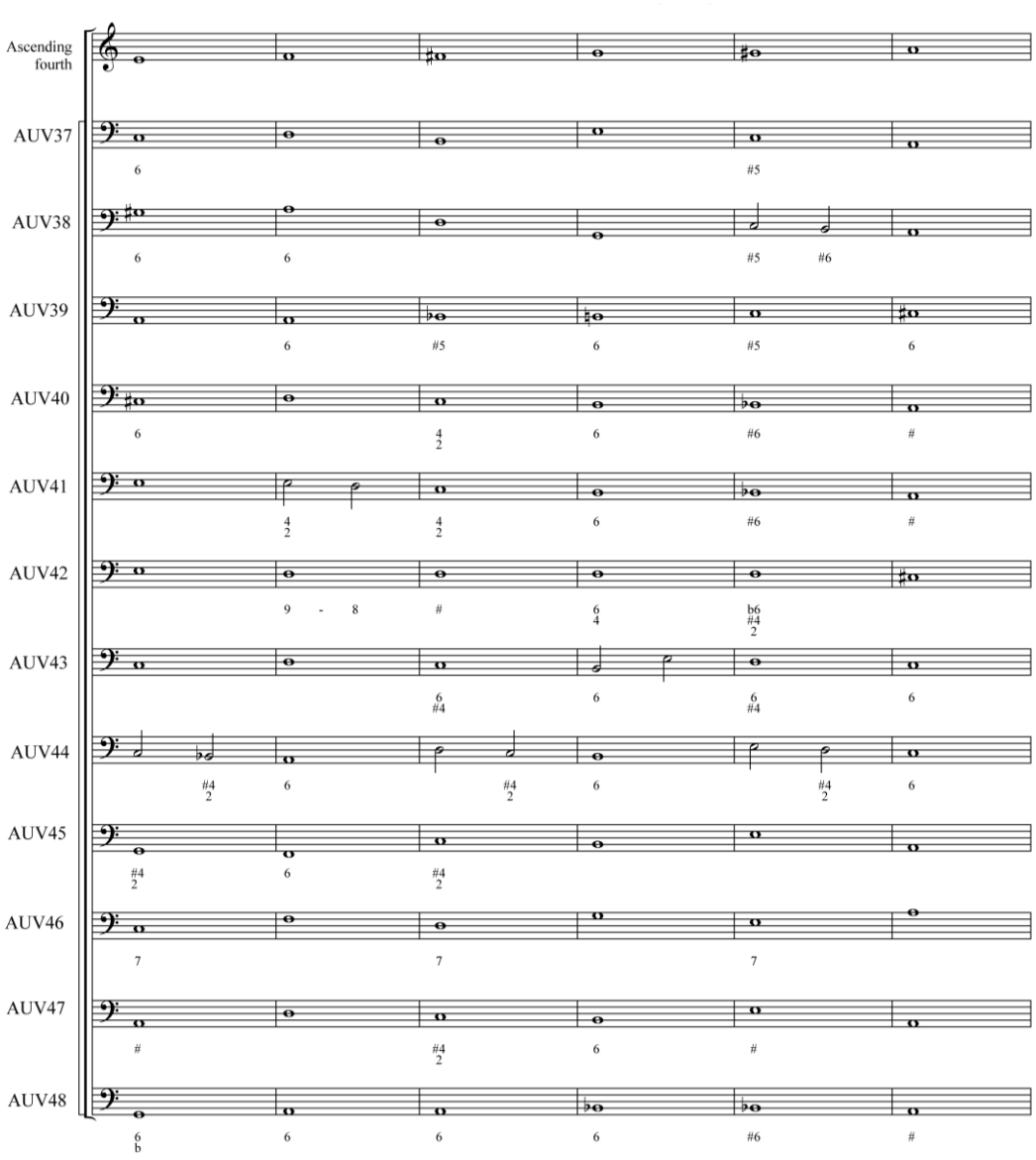




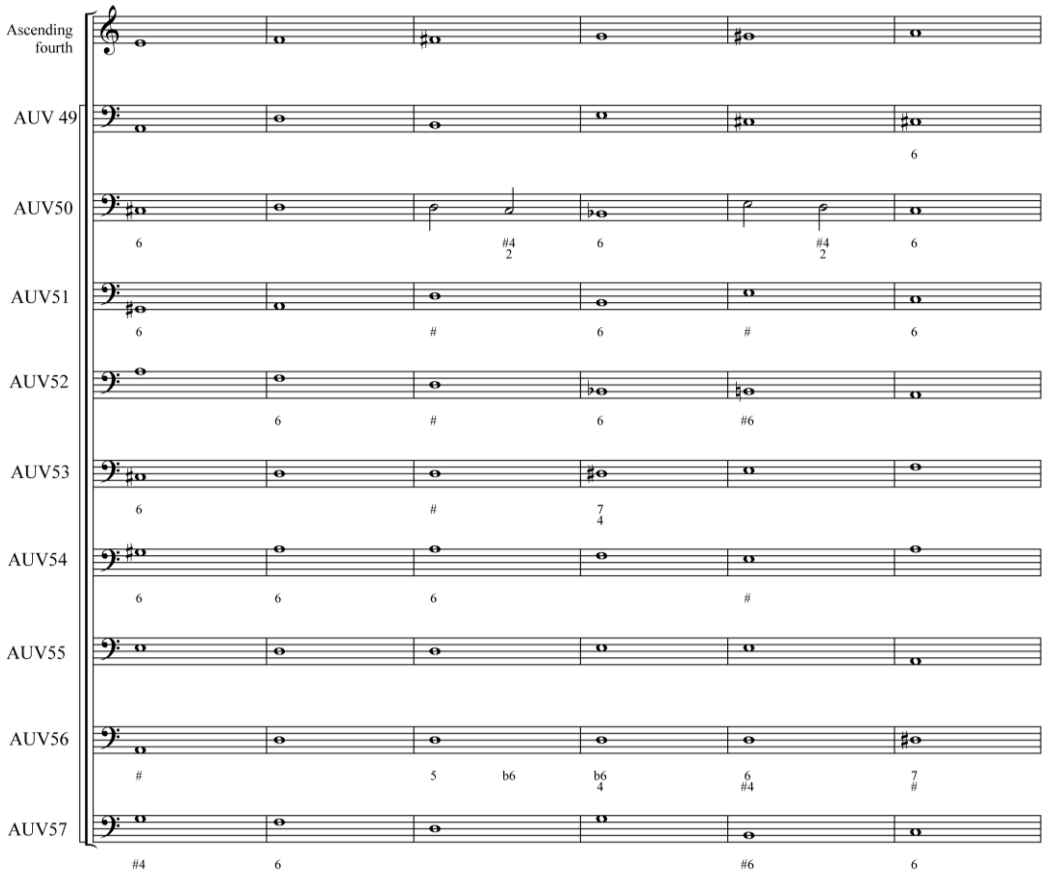
Ascending upper-voice harmonizations, continued.



Ascending upper-voice harmonizations, continued.



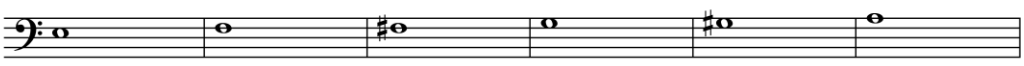
Ascending upper-voice harmonizations, continued.



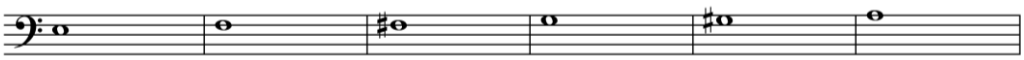
Ascending upper-voice harmonizations, continued.

Ascending bass harmonizations

28	6	5 #5	6	5 #5	6	5
27	X	5	7	5	7	5
26	6	5 6	6 5	5	6	5
25	# #6	9 7	7 6	7	7	4 3 see DUV 51
24	x	8 *b*7	6 5	8 7	6 5	5
23	6	7 *b*7	*b*7 6 5	4 3	6 5	5
22	5	5	5	5	7	5
21	5	7	6	5	7	5
20	5	6	6	6 5	6 5	5
19	5	5	5	6	6	5
18	5	7	6	6	6	5
17	5 - 6	5 - 6	6	5 - 6	6	5
16	6	6	(#)6	6	(#)6	6
15	6/5	5	6 5	5 (*b* ----------	5 !)	5 (#)
14	X	6 7 4 5	6 5 4 3	5	6	5
13	#	6	6	5	6/7	#6/5
12	5/x	6	5	5	6	#
11	(#)	6	6 (5)	5	6 (5)	(#)
10	6	5	6	6	6	#
9	5 - 6	5	6	5 - 6	6	#
8	#	7	6 (5)	5	6 (5)	5
7	#	7/(7-)6	6	5	5	5
6	(5) - 6	6	6	6	6	5
5	5/x	6	6	6	6	5
4	5	5	6	5	6	6
3	5	5	6	5	6	5
2	#	5	6	6	6	5
1	6/5 (-6)	5 (*b*)	6 (5)	5 (*b* ----------	6 (5) ---!)	5 (#)

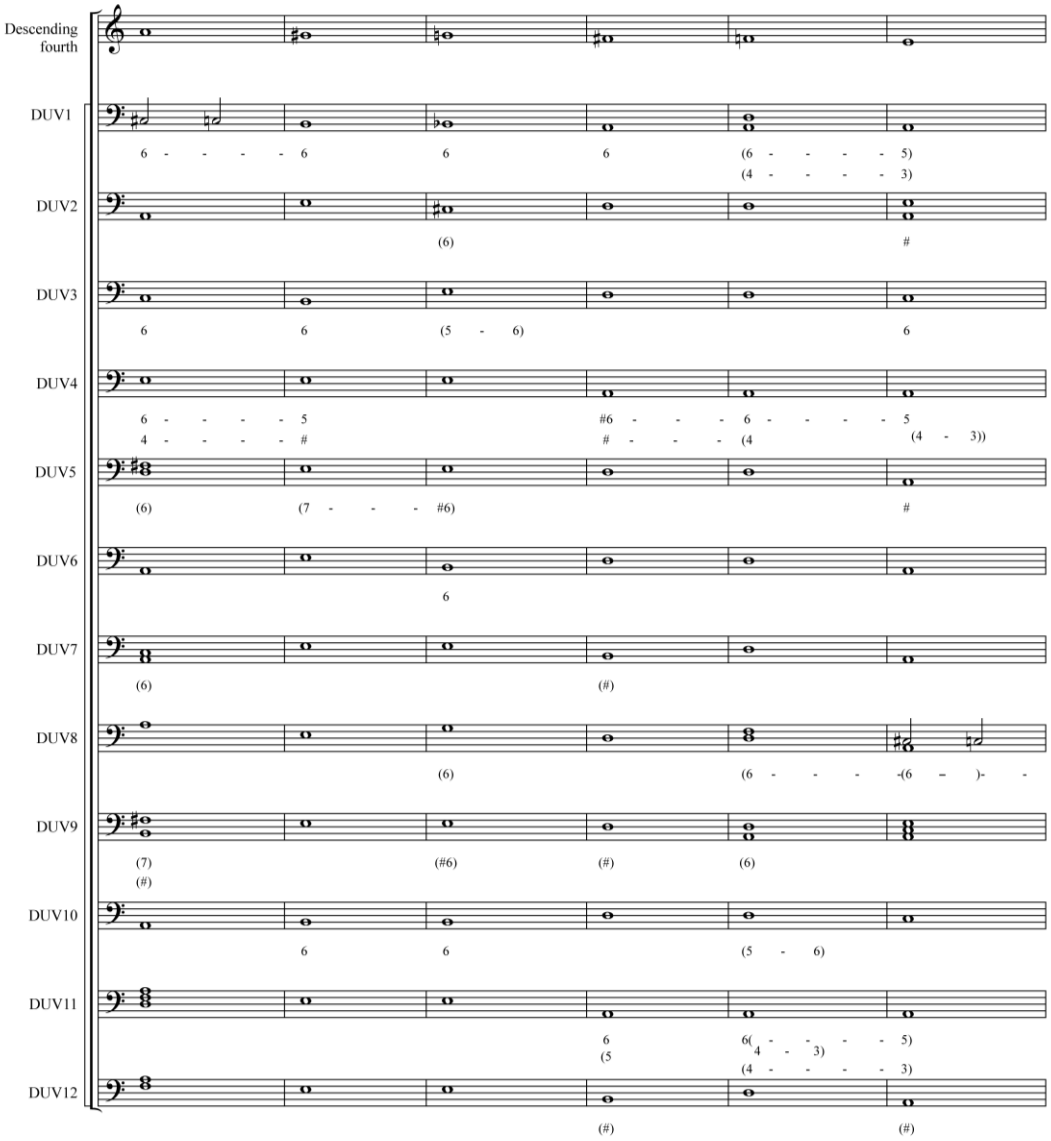


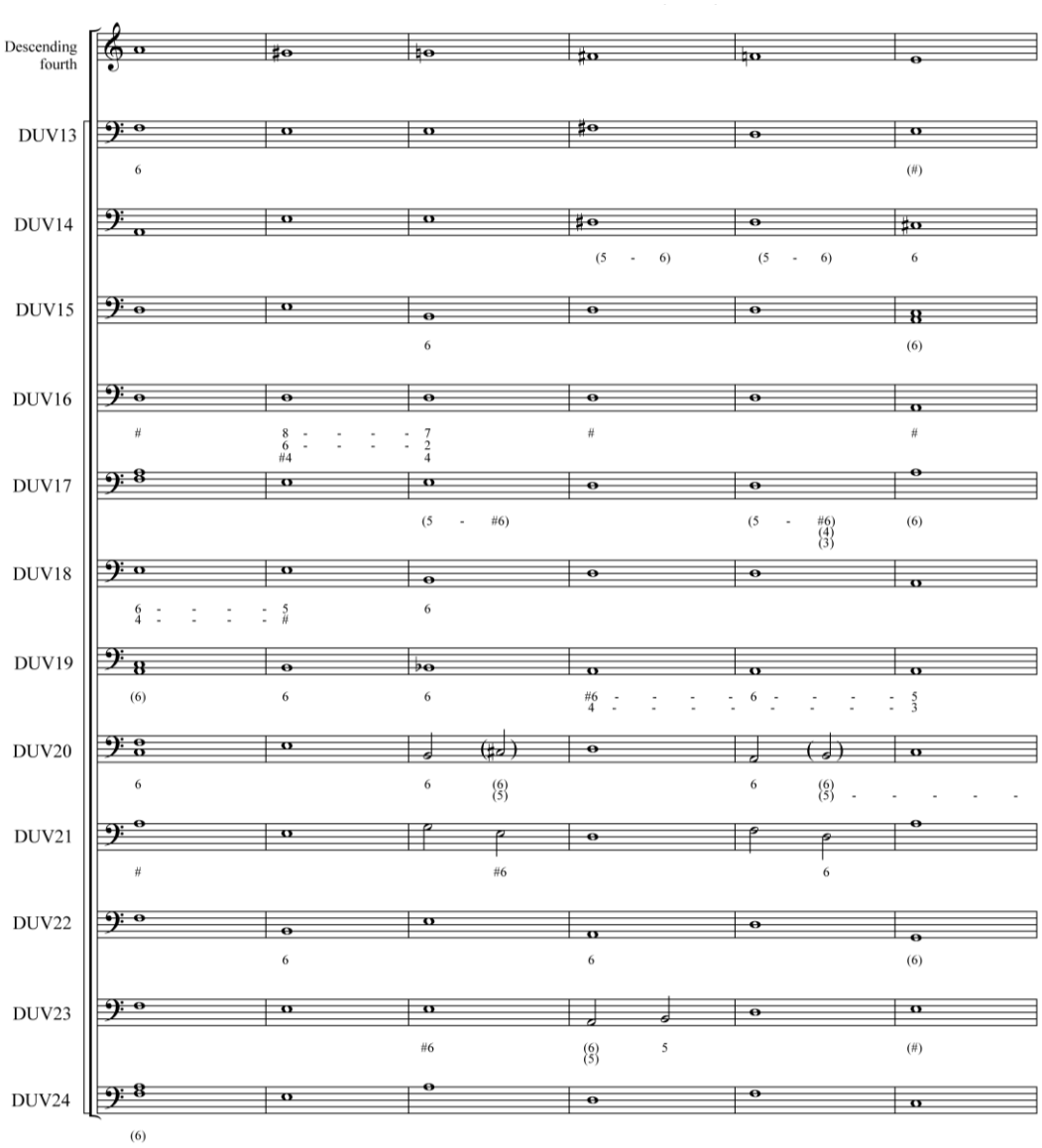
40	#	*b*6 *b*5 (enh.) *b*	#5	*b*7 *b*5 *b*	6 5	♮
39	#6	6	6 5	5	6 5	#
38	6	6	#6	6	6	5
37	5	5	6	5	7	#
36	5	7 6	6	5	5 6	5
35	6	7	6	6 5	6 5	(9)- 8 #
34	6	5 6	6 5	5 6	6 5	5
33	6 *b*5	4 3	6 5	4 3	6 5	4 3
32	6	6	6	5	6	5
31	6	5	6	5	7	5
30	7 #	5	6 5	5 4	6 3	4 3
29	6	7	6 5	7	6 5	5



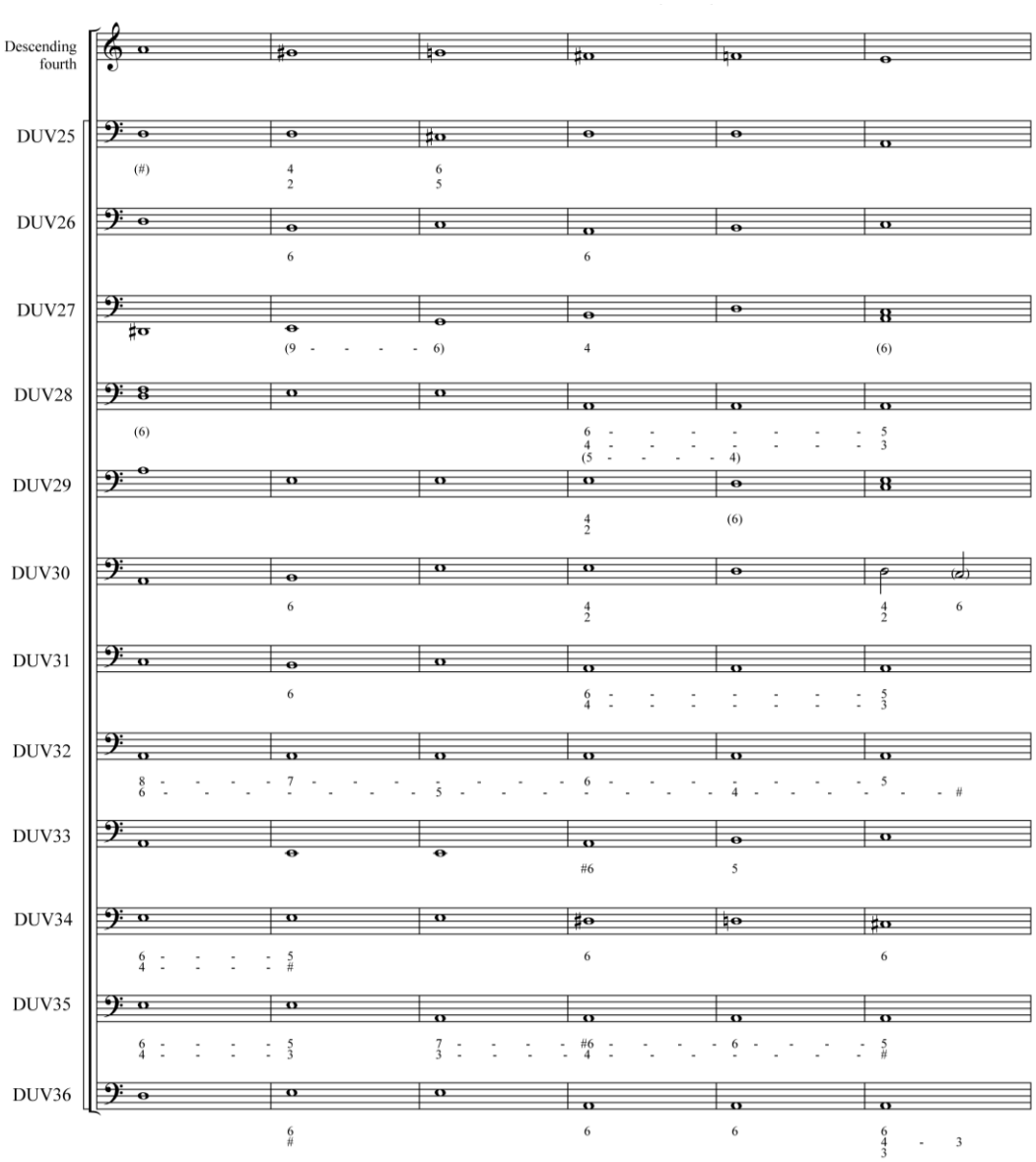
Ascending bass harmonizations, continued.

Descending upper-voice harmonizations

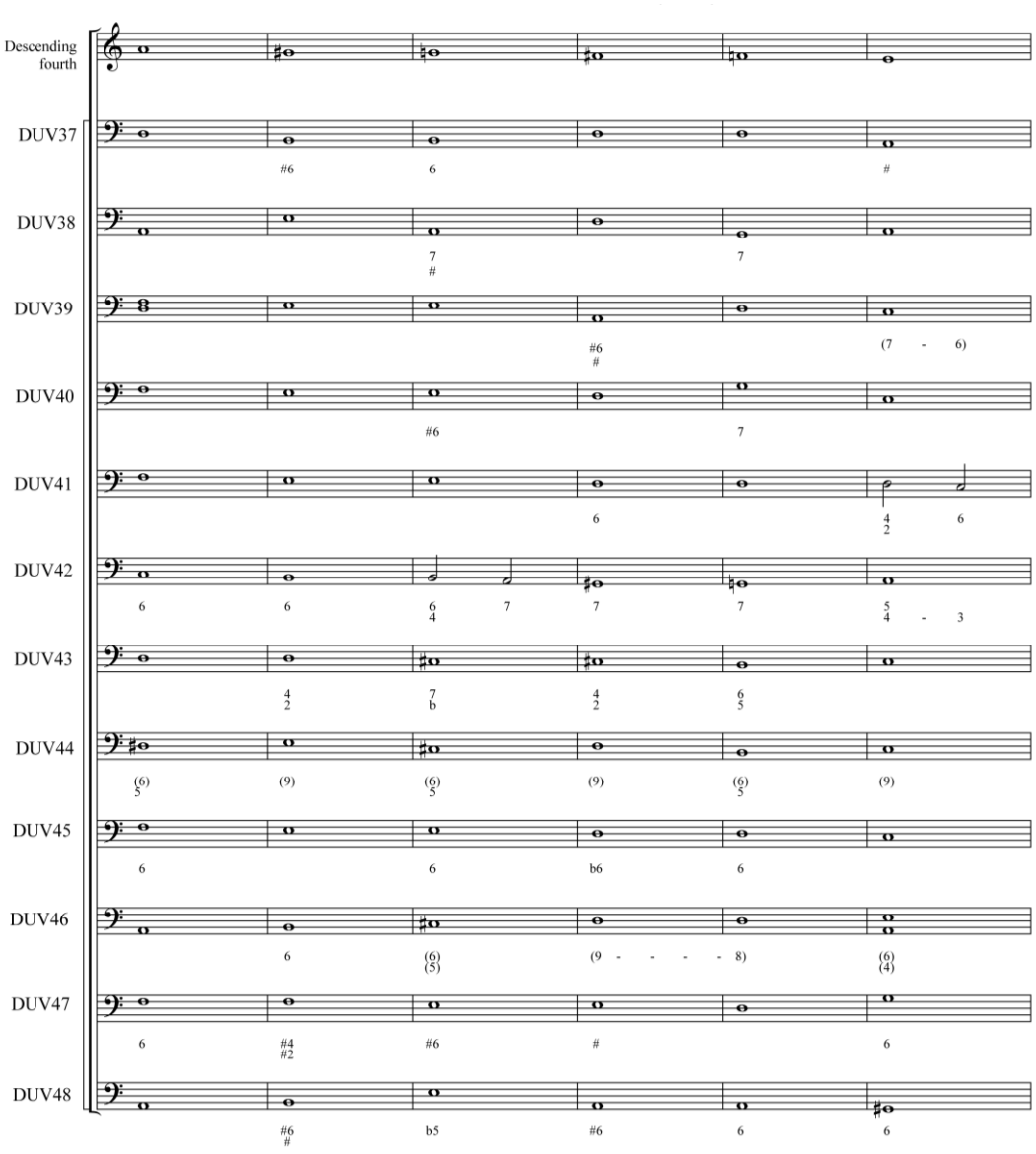




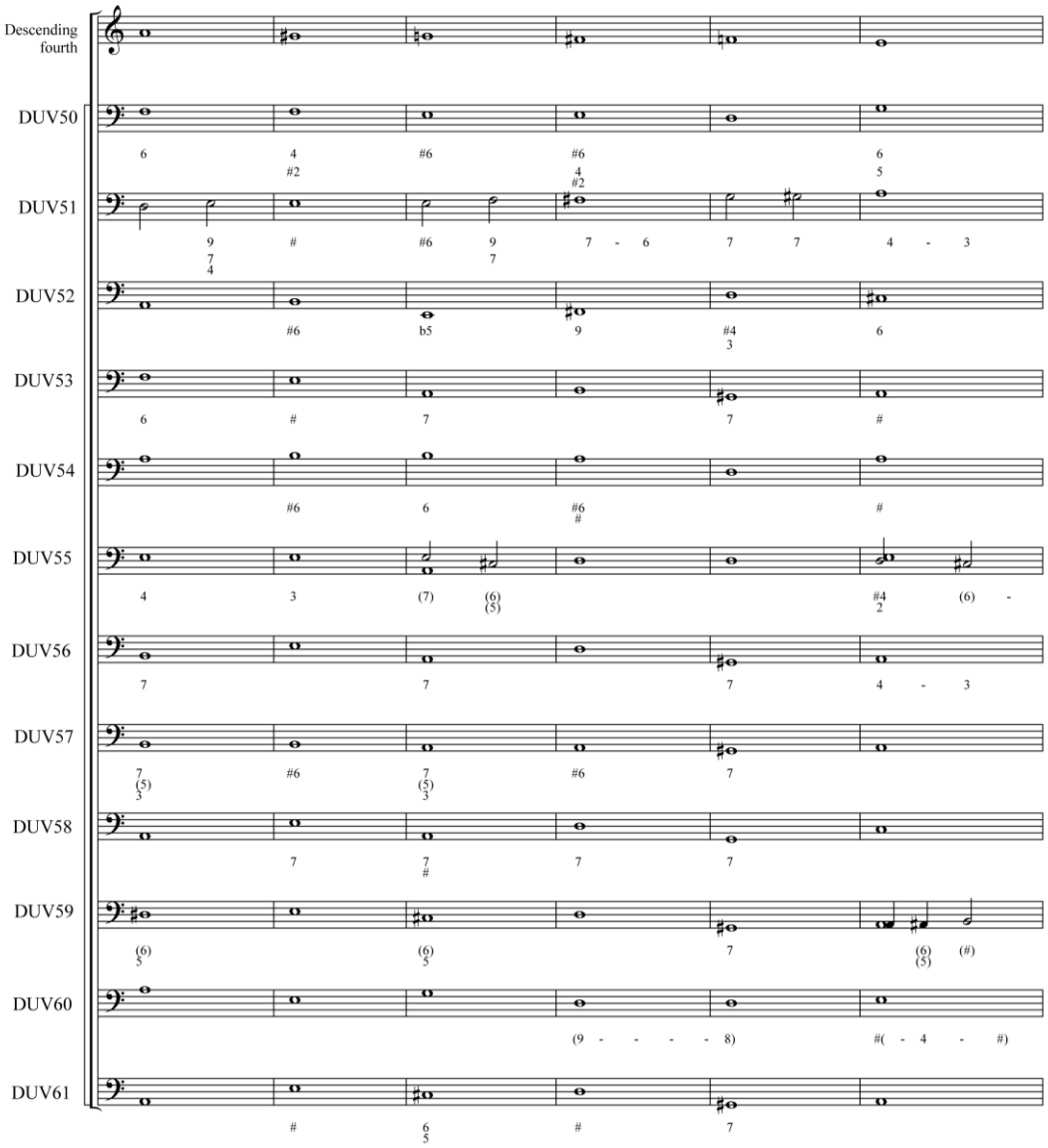
Descending upper-voice harmonizations, continued.



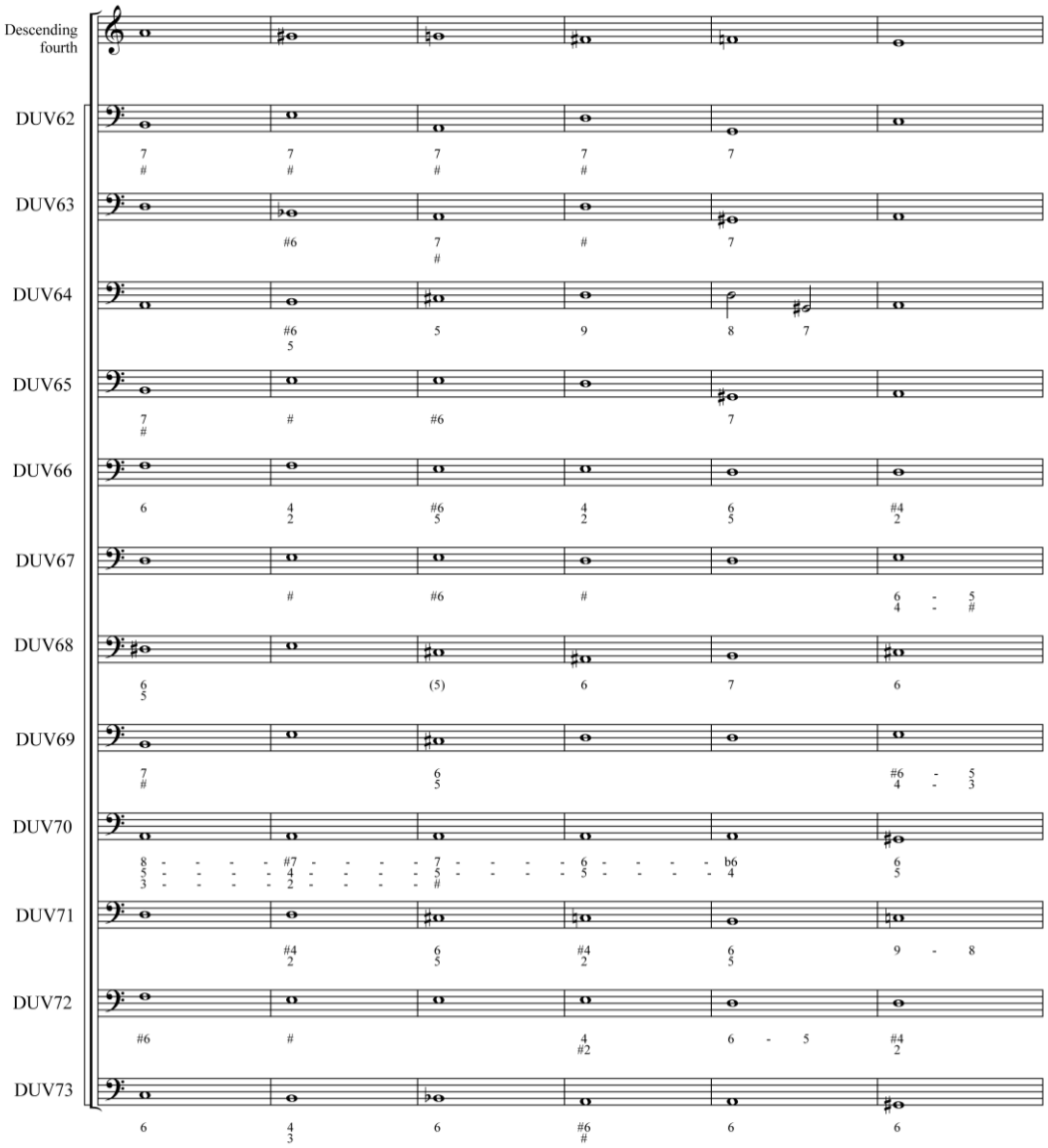
Descending upper-voice harmonizations, continued.



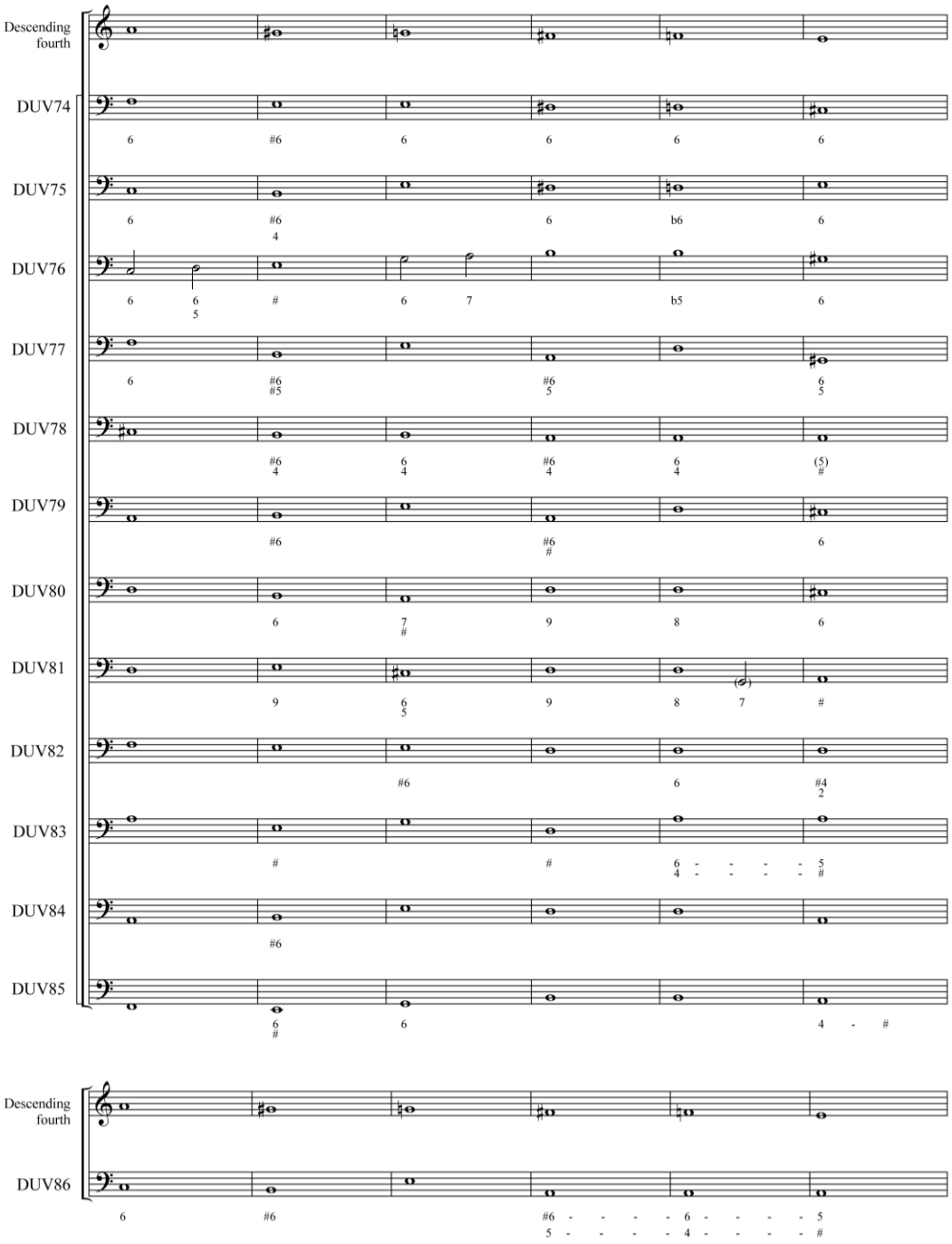
Descending upper-voice harmonizations, continued.



Descending upper-voice harmonizations, continued.



Descending upper-voice harmonizations, continued.



Descending upper-voice harmonizations, continued.

Descending bass harmonizations

28	6	7 6	6	7 - 6 5 - (#)4 3 - (#)2	6	#
27	5	7 - 6 5 _____	#4 2	6	6	#
26	#	6	6	7 - 6 4 -	6 #6 3	#
25	5	7 6 (5 _____)	6	7 6 (5 _____)	6	6 5 4 3
24	5	6	6 (#4) 5 (2)	7	6 5	6 4
23	6 4	6 5	#4 2	7 5	6 4	(7 6) 5
22	5	6 4	6 5	7	6	#
21	5	6	7 8	5	#8 5	#
20	5	4	3	4	3	6
19	6	7	4 2	X	7 6	4 - #
18	5	5	5	#6	#6	5
17	5 6	7	6 3 - 4	6	#6!	5 4 - 3
16	5 6	6 4	6 3 - 4	7	6	5 4 - 3
15	5	6	6	5	5	6 - 5 4 - 3
14	#4 2	6	6 #4 (2)	6	6	5 4 - #
13	#4 3	6	6	4 3	4 #2	5 4 - #
12	#	7	6	6	6	#6
11	6/5	7/5	6	7	6	(7 6)
10	5	6 4 (-3)	6	6 (4 - 3)	6 (4 - 3)	6 5 4 3
9	5	6	5 (*b*)	6	6	(#)
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6	5	6	6	*b*8	#8	5
5	5/6	6 (4)	6	7	6	(6) - 5 (4) - 3
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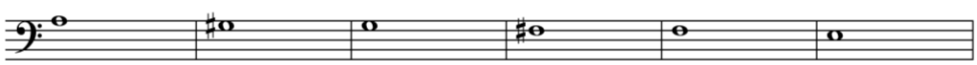

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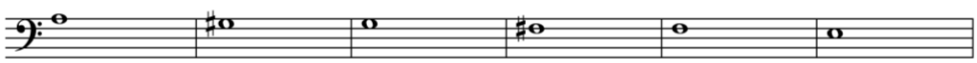

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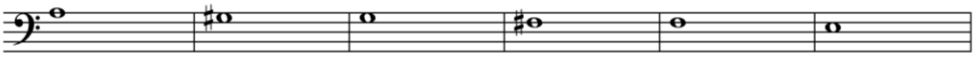

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