

TONALITY AND TONAL STRUCTURES
IN THE MUSIC OF TOMÁS LUIS DE VICTORIA:
A CASE STUDY FOR ANALYZING TONAL PHENOMENOLOGY
IN RENAISSANCE POLYPHONY

Devin Chaloux

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Doctoral Committee

Kyle Adams, Ph.D., Research Director

Frank Samarotto, Ph.D.

Julian Hook, Ph.D.

Giovanni Zanovello, Ph.D.

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To my wife Sarah Chaloux and my two wonderful children, Henry Isaac and Elise Joy.

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Devin Chaloux

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This dissertation develops a methodology for understanding tonality and tonal structures in Renaissance polyphony by exploring the ways that the modern-day analyst and listener experience tonal phenomena in this music through a historically-informed lens. Regarded as one of the most important composers of the late-sixteenth century, Tomás Luis de Victoria (c. 1548–1611) and his compositions offer an excellent laboratory for the investigation of tonal practices in Renaissance polyphony as his repertoire solely consists of sacred vocal polyphony, providing a consistent compositional style and removing the need for any stylistic considerations of secular or instrumental music.

Chapter 1 provides a succinct summary of two important theoretical concepts in musical space in early music: hexachords and modes. Though both hexachordal theory and modal analysis were revived in the twentieth century, I articulate their limitations as individual theoretical concepts. Chapter 2 synthesizes Richmond Browne’s rare-intervals hypothesis for position finding and pattern matching with the diatonic set with Steven Rings’s Tonal GIS formed from his tonal qualia to develop a new tonal quale (*littera, vox, scale degree*) to describe one’s apperceptions of tonal phenomena in Renaissance polyphony. This tonal quale is born out of concepts from both hexachordal and modal theory.

Chapter 3 proposes an alternative lexicon for large-scale and global tonalities in Renaissance polyphony, eschewing the eight (or twelve) modes in favor of a variation of Cristle Collins Judd’s *Ut, Re, Mi* tonalities. Through the synthesis of historical writings on expected

cadences within the modal system and analysis of representative compositions, guidelines on possible tonal structures in the *Ut, Re, Mi* tonalities are formed.

Chapter 4 explores how compositional schemata (recurring polyphonic musical patterns) can further help the modern-day analyst and listener identify scale-degree function within the *Ut, Re, Mi* tonalities through a detailed analysis of Victoria's Responsories from his *Officium Hebdomadae Sanctae* (1585). Finally, Chapter 5 demonstrates how tonal qualia can allow the analyst and listener to talk about their perceptions of tonal phenomena at the foreground level to understand large-scale tonal shifts as well as local-level musical peculiarities. This final chapter reveals the analytical potential of this methodology to describe tonal phenomena and our apperceptions thereof across background, middleground, and foreground levels in Renaissance polyphony.

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Introduction

The concept of musical space has a long and rich history in Western Europe. Ever since the invention of the monochord, musicians have been able to describe music using some type of spatial metaphor. We can briefly define musical space as the dimension in which music operates. It can be a physical space, such as the literal divisions of the monochord to produce separate tones or a trombonist playing a note in last position (the farthest that a trombonist needs to extend his arm). However, musical space can also be abstract. For example, Western musicians often discuss pitches as operating on a vertical axis, correlating height with pitch frequency. Likewise, time is often measured on the horizontal axis; as notated pitches move rightward, musical time moves forward. More complex abstractions of musical space might use mathematical geometries to represent different kinds of musical structures, such as a Möbius strip for “two-note chord space” or chicken-wire torus for the *Tonnetz*.¹ Many different musical parameters can be used to create a musical space, allowing for a variety of musical spaces. These spaces are highly contextual. For example, a theory of diatonic musical space would very likely be ineffective in understanding microtonal compositions.

This dissertation grapples with the limitations in current methodologies to discuss tonal space in Western music of the mid- to late-sixteenth century, using the sacred music of Tomás Luis de Victoria (1548?–1611) as a case study. In particular, it will scrutinize two historical theories that offer insights into musical space and tonal structures within this music: the hexachordal and modal systems. While both hexachords and modes offer value to the modern-day analyst, neither theory is adequate on its own to describe tonality or tonal structures within

1. Dmitri Tymoczko, *A Geometry of Music: Harmony and Counterpoint in the Extended Common Practice* (New York: Oxford University Press, 2011).

this music. Modern day interpretations and reimaginings of these theoretical systems still leave much to be desired, often falling short in describing the minutiae of tonal phenomena or more complicated tonal structures such as the shifting of tonal space. More importantly, the bending of these historical theoretical systems for modern-day analysis often lack the incorporation of the modern-day listener's experience and perception of tonality within this music.

Throughout the next several chapters, I will articulate the reasons why the hexachordal and modal systems provide an incomplete picture of tonal structure from the modern analyst's perspective. My proposed system will move beyond the limitations of the modal and hexachordal systems to allow the modern-day analyst, listener, and performer to discuss their own perceptions and experiences of tonality within this music.

While the scope of this theory is broad, in that it can be applied to a vast repertoire of early Western music, this dissertation limits its investigation of tonality and tonal structures to the music of Tomás Luis de Victoria (1548?–1611). His music offers an excellent laboratory for the investigation of tonal practices in the Renaissance. Often compared to those of other high Renaissance masters, such as Giovanni Pierluigi da Palestrina, Orlando di Lasso, and William Byrd, Victoria's compositions embody most of the characteristic traits of late Renaissance polyphony. However, his entire *oeuvre* includes only sacred vocal polyphony, unlike the repertoires of his contemporaries. This eliminates any stylistic considerations of secular or instrumental music that may add further nuance to the proposed theory, while retaining the ability to investigate shifts in Victoria's compositional style over time.

Chapter 1 will begin with a succinct historical summary of the hexachordal and modal systems. Both of these theoretical systems were revived in the twentieth century, and in the case of modal theory, sparked a flurry of scholarship on tonal structures in early music. However,

despite these modern renaissances of hexachordal and modal analysis, it became evident that these individual theories had substantial limitations in their ability to discuss tonality and tonal structures in early music.

Chapter 2 starts by critically rethinking what we mean by the terms “tonality” and “tonic” with regards to Western music prior to 1600. Since the majority of this music is founded on the diatonic collection, I draw on Richmond Browne’s influential work on the rare-intervals hypothesis in aiding position finding and pattern matching within the diatonic set.² Then, drawing on Steven Rings’s Tonal GIS formed by his tonal quale (scale degree, pitch class), I propose a new, and more appropriate, tonal quale (*littera, vox*, scale degree) to describe one’s apperceptions of tonal phenomena in Western music prior to 1600. This newly proposed tonal quale is born out of the most useful concepts from the hexachordal and modal theoretical systems. It borrows solmization from the hexachordal system to identify where diatonic half steps occur through the identification of the interval *mi-fa* and scale steps from modal theory to measure the number of diatonic steps a note is from the tonic.

One of the greatest limitations in the application of modal theory to polyphony is the disagreement among Renaissance theorists on what musical parameters determine mode in polyphony. Chapter 3 proposes an alternate lexicon of large-scale and global tonalities in Renaissance polyphony based on Cristle Collins Judd’s *Ut, Re, Mi* tonalities. After defining the possible tonalities, the chapter defines predictable tonal structures based on the synthesis of historical writings on expected cadential pitches within the modal system when mapped onto the *Ut, Re, Mi* tonalities. Divergences from established global tonalities and differences in expected tonal structures in the *Ut* tonality are also explored.

2. Richmond Browne, “Tonal Implications of the Diatonic Set,” *In Theory Only* 5, no. 6–7 (July–August, 1981).

Chapter 4 begins to investigate more localized tonal phenomena within a global tonality through Browne's concept of pattern matching. First, the chapter briefly observes how literal and non-literal imitation can affect whether an analyst and listener experience a tonal shift from one tonality to another. The second part of Chapter 4 explores the concept of compositional schemata, which are recurring polyphonic musical patterns, through a comprehensive analysis of these schemata in Victoria's Responsories from his *Officium Hebdomadae Sanctae* (1585). These recurring patterns can inform scale-degree patterns and help the analyst and listener identify the global tonality and position finding within tonal space.

Lastly, Chapter 5 demonstrates how tonal qualia can allow the analyst and listener to talk about their perceptions of tonal phenomena at the foreground level to understand large-scale tonal shifts as well as local-level musical peculiarities. The tonal quale defined in Chapter 2 can articulate the perceptual shifts in tonal space that happen acoustically and cognitively, allowing the analyst and listener to intimately talk about how their experience of the tonal phenomena within Renaissance polyphony shape their understanding of the music. This chapter reveals the analytical potential of this methodology to describe tonal phenomena and our apperceptions thereof across all compositional levels—background, middleground, and foreground—in Renaissance polyphony.

Chapter 1: Hexachords, Modes, and Musical Space in Renaissance Music

For a Renaissance music theorist, both the hexachordal and modal systems were important to discussing concepts of musical space. However, both of these theories achieved different purposes as hexachordal system and solmization were best used to describe and learn musical intervals while the modal system was used primarily as a classification tool that was informed by other musical parameters such as range, cadences, and melodic patterns.

This chapter succinctly explores the history of these complex theoretical systems while also investigating how twentieth- and twenty-first-century music scholars applied these theories in their own analyses. These theories have limitations in their effectiveness in describing tonal space in Renaissance music on their own. In consequence, this chapter closes by reconciling these two theories of musical space and offers a new, albeit divergent, path forward in analyzing tonality and tonal space within Renaissance polyphony.

The Hexachordal System and Solmization

Guido d'Arezzo, a tenth-century music theorist and pedagogue, arguably is one of the most consequential figures in Western music history. In his *Prologus in antiphonarium* and *Epistola de ignoto cantu* (also known as the *Epistola ad Michaelem*), Guido developed his crowning achievement, a musical staff system that used both lines and spaces to notate music more accurately.¹ At least one *littera* (a pitch's letter name) was added to one of the lines as a reference so the singer would be able to discern the other pitches notated on the staff.² Since

1. Guido d'Arezzo, *Prologus in antiphonarium* (c. 1030), *Epistola de ignoto cantu* (*Epistola ad Michaelem*), (c. 1032), ed. and trans. by Dolores Pesce, *Guido D'Arezzo's Regule ritmice, Prologus in antiphonarium, and Epistola ad Michaelem: A Critical Text and Translation with an Introduction, Annotations, Indices, and New Manuscript Inventories* (Ottawa: The Institute of Mediaeval Music, 1999).

2. David E. Cohen, "Notes, Scales, and Modes in the Earlier Middle Ages," in the *Cambridge History of Western Music Theory*, ed. Thomas Christensen (New York: Cambridge University Press, 2002), 345.

Guido adopted Pseudo-Odo's A–G letter system, his musical staff system solidified the visual development of octave equivalence and diatonic musical space.³

In addition to his musical staff system, Guido also developed pedagogical tools to help singers read new melodies. In his *Epistola ad Michahelem*, Guido includes the hymn “Ut queant laxis” and draws attention to the first syllable (also known as a *vox*) of the first six phrases of the hymn, each which occurs on a different pitch, increasing stepwise diatonically from C to A (see Example 1.1). The six syllables—*ut, re, mi, fa, sol, la*—then could be used to identify the pattern of tones and semitones between C and A, specifically the pattern T–T–S–T–T where the only semitone occurs between *mi* and *fa*.⁴ By learning this pattern, singers would be able to contextualize the intervals between different syllables and thus could accurately perform their music.⁵ As the syllables were assigned to *litterae*, it was not necessary for singers to know the final, nor the mode (which Guido referred to as affinities) to use the solmization syllables to figure out the intervallic patterns found within a hymn.⁶

3. Stefano Mengozzi, *The Renaissance Reform of Medieval Music Theory: Guido of Arezzo between Myth and History* (New York: Cambridge University Press, 2010), 7.

4. Cohen, “Notes, Scales, and Modes,” 342.

5. Mengozzi, “The Renaissance Reform of Medieval Music Theory,” 1.

6. Anna Busse Berger, *Medieval Music and the Art of Memory* (Berkeley: University of California Press, 2005), 86–90.

Example 1.1. Opening of “Ut queant laxis” (*Liber Usualis*, p. 1504) with boxes outlining each of the six notes associated with the six solmization syllables.

Hymn.
2.
U

T qué-ant láxis re-soná-re fíbris Mí- ra gestó-
rum fámu-li tu-ó-rum, Sól-ve pollú-ti lábi-i re-á-tum,
Sáncte Jo-ánnes. 2. Núnti-us célso véni-ens Olýmpo,

The image shows a musical score on three staves. The first staff begins with a treble clef, a key signature of one flat (B-flat), and a common time signature. The melody is written in square neumes. Six specific notes are highlighted with red rectangular boxes: the first note (C4), the second note (D4), the fifth note (G4), the eighth note (C5), the eleventh note (F5), and the fourteenth note (C5). Below the staves, the Latin text is written in a Gothic-style font, with hyphens indicating syllable placement under the notes.

Despite there being no existing evidence that Guido developed this pattern of syllables into a more robust system of solmization, including the notorious Guidonian Hand, many theorists during the Medieval and Renaissance eras credited Guido with the subsequent developments and uses that arose out of the use of solmization syllables.⁷ While the six syllables were only applied to the six letters C–D–E–F–G–a in “Ut queant laxis,”⁸ they could also be applied to other *littera* in the Guidonian gamut as described in Guido’s *Micrologus*, indicating the semitones between B–C and A–B \flat with the interval *mi–fa*.⁹

7. Grove Music Online, s.v. “Solmization,” by Andrew Hughes and Edith Gerson-Kiwi, accessed May 17, 2020, doi:10.1093/gmo/9781561592630.article.26154; Grove Music Online, s.v. “Guido of Arezzo [Aretinus],” by Claude V. Palisca, rev. by Dolores Pesce, accessed December 28, 2021, doi:10.1093/gmo/9781561592630.article.11968; Cohen, “Notes, Scales, and Modes,” 344.

8. Note: the lower-case a corresponds with the *littera* that Guido used in his gamut to indicate the *acutae* range.

9. Grove Music Online, s.v. “Solmization.” Hughes and Gerson-Kiwi note that the application of the solmization syllables to indicate the B–C semitone likely came from *Liber argumentorum*, a commentary on Guido’s *Micrologus*. The application to the A–B \flat likely followed shortly thereafter.

Figure 1.1. The Guidonian gamut.

	ee							<i>la</i>
	dd							<i>sol</i>
<i>superacutae</i>	cc							<i>sol</i>
	bb/b̄							<i>fa</i>
	aa						<i>la</i>	<i>mi</i>
	g						<i>sol</i>	<i>re</i>
	f						<i>fa</i>	<i>ut</i>
	e							<i>la</i>
<i>acutae</i>	d							<i>mi</i>
	c				<i>la</i>		<i>sol</i>	<i>re</i>
	b/b̄				<i>sol</i>		<i>fa</i>	<i>ut</i>
	a				<i>fa</i>		<i>mi</i>	<i>re</i>
	G				<i>sol</i>		<i>re</i>	<i>ut</i>
	F				<i>fa</i>		<i>ut</i>	
	E	<i>la</i>			<i>mi</i>			
<i>graves</i>	D	<i>sol</i>			<i>re</i>			
	C	<i>fa</i>			<i>ut</i>			
	B	<i>mi</i>						
	A	<i>re</i>						
	Γ	<i>ut</i>						

To help them memorize the gamut, singers would use the Guidonian hand, a tool that attached the combination of a *littera* with a *vox* at each joint and fingertip on the human hand.¹¹ This mnemonic system helped singers navigate Guido’s new musical staff system, allowing them to read heightened neumes more accurately, and eventually allowed for chant to be more accurately recorded in print form.¹² The abundant appearances of the Guidonian hand in musical treatises up through the Renaissance demonstrate its wide acceptance as a pedagogical tool to learn how to read music, helping singers accurately identify intervals, including the semitone between *mi* and *fa*.

11. Mariamichela Russo, “Hexachordal Theory in the Late Thirteenth Century: Volume I” (PhD diss., Michigan State University, 1997), 6.

12. Claude V. Palisca, ed., *Hucbald, Guido, and John on Music: Three Medieval Treatises*, trans. Warren Babb (New Haven, CT: Yale University Press, 1978), 51.

Since each hexachord includes six *litterae* over the span of a major sixth, singers would need to change hexachords if they wished to use a *littera* that did not exist in that hexachord. For example, take the opening of the popular hymn “Pange lingua” (see Example 1.3). Since the span of this opening phrase is larger than a major sixth, two hexachords will be needed to solmize the entire phrase, even though all of the pitches in the phrase fall within a natural hexachord. Thus, in order to smoothly transition from one hexachord to another, the singer would mutate hexachords, replacing a *vox* in one hexachord with a *vox* in another hexachord.¹³ Here, there are two options where a singer can mutate between the natural and hard hexachords, mutating G *sol* to G *ut* or mutating A *la* to A *re*.

Example 1.3. “Pange lingua,” opening phrase (*Liber Usualis*, p. 957).

Natural: <i>mi</i>					Hard: <i>ut</i>				
	<i>mi</i>	<i>fa</i>	<i>mi</i>	<i>re</i>	<i>ut</i>	<i>ut</i>	<i>re</i>	<i>fa</i>	<i>fa</i>
					<i>sol</i>	<i>sol</i>	<i>la</i>		

Pan - ge lin - gua glo - ri - o - si

As singers became more comfortable with mutation and memorizing the intervallic patterns, it was possible that they would not need to mutate if there were leaps that extended beyond the initial range of the hexachord if the leap landed on a note within that hexachord (like the Cs at the end of *gloriosi*). The decision to mutate would arise from the context of future pitches in the chant. In this case, the second phrase of the “Pange lingua” includes B \sharp , which is not part of the natural hexachord, but is *mi* in the hard hexachord (see Example 1.4). Thus, it would be reasonable for the singer to mutate to the hard hexachord at some point between the two phrases—and the most logical place to mutate would be either on the G or A of *gloriosi*.

13. Anne Smith, *The Performance of 16th-Century Music: Learning from the Theorists* (New York: Oxford University Press, 2011): 20–54. Smith’s chapter on solmization includes a comprehensive exploration of the guidelines for solmization and mutation as informed by a number of theoretical treatises on this subject.

Example 1.4. “Pange lingua,” second phrase.

Hard: *fa sol fa fa mi re fa mi re ut*

Cor - po - ris my - ste - ri - um, _____

Gaston Allaire’s Twentieth-Century Revival of Hexachordal Theory

While hexachordal theory was always understood as an historically important development in conceptions of musical space in Western music, it was not until Gaston Allaire’s *The Theory of Hexachords, Solmization and the Modal System: A Practical Application* that a musical scholar attempted to present hexachordal theory in a way to allow for the practical application of this theory by modern analysts.¹⁴ Allaire’s book is divided into two parts. The first part presents the summaries of the theories on hexachords, solmization, and the modal system. The second part advances his own ideas on how these theories can help clarify markings of *musica ficta* in manuscripts or to allow modern analysts to add editorial *ficta* of their own. It is this second part of Allaire’s work that can be viewed as an attempt to rein in the rather rampant, inconsistent, and frequently problematic suggestions for *ficta* in the twentieth-century editions of Medieval and Renaissance music.

However, the musicological community struggled with and ultimately rebuffed Allaire’s book for several reasons. For example, in his review, Andrew Hughes found the text is difficult to understand as many ideas were potentially lost in translation (Allaire’s mother tongue was French and not English).¹⁵ Alejandro Enrique Planchart found the work to be “confusing and

14. Gaston Allaire, *The Theory of Hexachords, Solmization and the Modal System* (n.p.: American Institute of Musicology, 1972).

15. Andrew Hughes, review of *The Theory of Hexachords, Solmization and the Modal System*, by Gaston Allaire, *Journal of the American Musicological Society* 27, no. 1 (Spring 1974), 133.

ultimately unconvincing” in part to Allaire’s “curiously cavalier attitude...toward the very historical sources that he seeks to elucidate.”¹⁶ Despite the resistance to this work from the scholarly community, it still generated intrigue in the application of hexachordal theory and solmization to early Western music as a theoretical tool for modern analysis. For example, Planchart wrote in his review

To sum up, Mr. Allaire has a number of very intriguing ideas concerning the theory of hexachords and its applications in medieval and Renaissance music. It is quite possible that some of these ideas are correct and could be very useful if they were presented clearly and with accurate documentation.¹⁷

A review from Jacques Chailley notes that the second part was too similar to the first but he hopes that Allaire presents these ideas in a more simplified article.¹⁸

Over the next three decades, Allaire would continue his work on applying hexachordal theory to Renaissance compositions, further refining his ideas on how hexachordal theory could explain changes in *ficta*.¹⁹ Much of his work centered around his theory of “modulations” in Renaissance polyphony

when there is a passage from a modal octave to a different one; from an arithmetically divided octave to a harmonically divided one and vice versa in the octaves G-g and C-c

16. Alejandro Enrique Planchart, review of *The Theory of Hexachords, Solmization and the Modal System*, by Gaston Allaire, *Journal of Music Theory* 18, no. 1 (Spring 1974), 213–214.

17. Planchart, 221.

18. Jacques Chailley, review of *The Theory of Hexachords, Solmization and the Modal System*, by Gaston Allaire, *Revue de musicologie* 62, no. 2 (1976), 305.

19. Gaston Allaire, “Debunking the Myth of Musica Ficta,” *Tijdschrift van de Koninklijke Vereniging voor Nederlandse Muziekgeschiedenis* 45, no. 2 (1995): 110–126; “Performance Practice Idiosyncrasies of the Modes of the Fa–Fa and Ut–Sol Fifth Species in Pre-1600 Polyphony.” *Revue belge de Musicologie / Belgisch Tijdschrift voor Muziekwetenschap* 51 (1997): 63–80; “Rediscovering Modulation in the Secular and Sacred Works of Palestrina.” *Recercare* 6 (1994): 5–39; “A Sample of Hexachordal Modal Analysis for Vocal and Instrumental Polyphony of the Renaissance.” *Musica Disciplina* 48 (1994): 259–282; “Some Overlooked Modulations in the Works of Josquin Des Pres?” *Revue belge de Musicologie / Belgisch Tijdschrift voor Muziekwetenschap* 46 (1992): 33–51.

of the natural scale, as well as unsigned modal and hexachordal octaves notated at different pitch levels on the flat and sharp sides of the system.²⁰

Allaire's theory of modulations, by itself, has not had widescale adoption among music analysts of early Western music. However, his ideas presented in *The Theory of Hexachords, Solmization and the Modal System* and subsequent publications were among the first to incorporate hexachordal theory as a tool for modern analysis of early Western music—especially with regards to decisions on *musica ficta*—and paved the way for future scholars to incorporate hexachordal theory in their own work.²¹ I find Allaire's ideas on how to apply hexachordal theory to analyze Renaissance compositions provocative and underdeveloped.

In this dissertation, I use hexachordal theory as an integral part of understanding musical space in Renaissance music, including perceptual shifts in that musical space. Like Allaire, I find that hexachordal theory provides important historical context in understanding these tonal shifts (or “modulations” as Allaire called them).

Limitations of Hexachords

The hexachordal system, through solmization guided by the mnemonic tool of the Guidonian hand along with the practice of mutation, was a powerful tool in helping singers quickly learn intervallic patterns and relationships, especially in relation to the *mi-fa* half step. However, despite its usefulness as a practical tool to learn intervals, hexachordal theory has

20. Gaston Allaire, “The Forgotten Art of Modulation in Renaissance Polyphony,” *Revue belge de Musicologie* 57 (2003): 5n2.

21. Peter Urquhart, “Canon, Partial Signatures, and ‘Musica Ficta’ in Works by Josquin DesPrez and his Contemporaries” (PhD diss., Harvard University, 1988). As one example, Peter Urquhart cites Allaire as one of the few scholars to present a new viewpoint on *musica ficta* in his dissertation (2n5). While Urquhart ultimately states that he was unable to put “Allaire’s book to any use at all” (144n45) in his dissertation, he represents one analyst who challenged the idea of editors “correcting” cross-relations in Franco-Flemish music, using hexachords and solmization as a major part of his argument, and thus severely underplays how Allaire’s work helped lay the groundwork for this type of scholarship.

several limitations as a theory of tonal functions within musical space. First and foremost, Medieval chant theory only recognized four modal finals: D, E, F, and G. While these four finals were not entirely synonymous with tonal center at the time, as music practices developed into the late-Medieval/early-Renaissance period, the final of a work often was the tonal center.²² These four pitches can be solmized by any of the six solmization syllables, depending on what hexachord is being used.

In addition, hexachordal theory was designed for chant. As such, it was not as problematic that hexachords only spanned a major sixth, as many chant fragments do not extend beyond that range. If a chant extended one note beyond the major sixth, the convention of *fa-super-la* allowed for a brief extension to the hexachord where the pitch above *la* would be solmized with *fa* (i.e., a semitone higher, whether notated with a *B-fa* or not).²³ Single-voice ranges in polyphonic music, however, are much larger, almost always extending beyond a major sixth and often beyond an octave. Thus, to use hexachords in this music, it requires the singer to frequently mutate between hexachords, by substituting one solmization syllable in one hexachord for a different solmization syllable in a different hexachord. (For example, if a singer was singing a descending passage, C *ut* in the natural hexachord could mutate to C *fa* in the hard hexachord, allowing for the singer to continue descending beyond C.)

22. Calvin M. Bower, "The Transmission of Ancient Music Theory into the Middle Ages," in the *Cambridge History of Western Music Theory*, ed. Thomas Christensen (New York: Cambridge University Press, 2002), 153–56. The terms *protus*, *deuterus*, *tritus*, and *tetrardus*, which correlate with the four pitch-classes of the basic tetrachord (D, E, F, and G) in *Musica enchiridis*, were used to organize chants into the four primary *tones*. The disambiguation of *tones* in Medieval (and Renaissance) music theory is a complicated matter, often being used to describe many different musical parameters, including both final and tonal center. I take a conservative approach here as the assumption that the final and tonal center were the same thing is problematic.

23. Anne Smith, *The Performance of 16th-Century Music*, 35.

Modes

Modes up to the Sixteenth Century

The term “mode” in music has numerous definitions spanning the entire history of Western music.²⁴ In particular, this dissertation will focus on the definition of mode as it relates to Renaissance music theory. However, it is important to understand some basic facts about the usage of mode prior to the fifteenth century. Mode was primarily used as a classification system of Gregorian chant. By the eleventh century with Pseudo-Odo’s *Dialogus de musica*, mode was not only a classification system based on the final of a work, but also evoked a hierarchy within the pitch content of the work: “every beginning ought to concord with its final in one of the before-mentioned six consonances. No sound may begin a melody, except it be the final itself or be consonant with it in some one of these six consonances.”²⁵

Most chants up to this point would end on one of four pitch-classes (D, E, F, and G). Each one of these finals had two modes, depending on the range of the chant. For example, Mode 1—later known as the Dorian mode—would span the octave D to d, while its plagal counterpart (Mode 2 or Hypodorian) would span the octave A to a, but still have a final of D. These modes form the eight-mode system. Heinrich Glarean expanded this eight-mode system to twelve modes, adding finals on C (Ionian) and A (Aeolian) and including their plagal counterparts as well.

24. Grove Music Online, s.v. “Mode,” by Harold S. Powers, Frans Wiering, James Porter, James Cowdery, Richard Widdess, Ruth Davis, Marc Perlman, Stephen Jones, and Allan Marett, accessed November 11, 2021, doi:10.1093/gmo/9781561592630.article.43718. This article is an extensive examination of the application of the term “mode” across Western music history.

25. Pseudo-Odo [pseud.], *Dialogus de musica*, in *Source Readings in Music History*, trans. by Oliver Strunk (New York, W.W. Norton, 1950), 113. Note: Strunk misattributed *Dialogus* to Ono of Cluny.

While there is brief mention of modes in polyphonic works in the Berkeley Manuscript,²⁶ a compilation of musical writings from the late fourteenth-century, Johannes Tinctoris was the first theorist to develop a theory of polyphonic modality across several treatises, most importantly in the *Liber de natura et proprietate tonorum* (1476).²⁷ Tinctoris notes that the modern modes are different from the classical modes (such as those defined by Boethius) because modern modes are constructed from the species of the fourth and fifth.²⁸ For classifying the mode of a polyphonic work, Tinctoris gave preference to the tenor voice “for the reason that it is the principal part of every composition as the foundation of the whole relationship.”²⁹ Tinctoris’s synthesis of previous theories of mode were an important first step toward the development of a polyphonic modal theory.³⁰

Pietro Aron further developed a theory of polyphonic modality in his *Trattato della natura et cognition di tutti gli tuoni di canto figurato* (1525) by defining different criteria to determine the mode of a polyphonic work.³¹ These criteria include the final, species of the fifth and fourth, and ambitus for determining the mode.³² However, Aron also identified other criteria

26. Oliver B. Ellsworth, *The Berkeley Manuscript: A New Critical Text and Translation* (Lincoln: University of Nebraska Press, 1984), 84–85.

27. Johannes Tinctoris, *De natura et proprietate tonorum*, trans. by Albert Seay (Colorado Springs: Colorado College Music Press, 1976).

28. Tinctoris, *De natura et proprietate tonorum*.

29. Johannes Tinctoris, *De natura et proprietate tonorum*, (1476), chap. 24, quoted in Frans Wiering, *The Languages of the Modes*, 62.

30. Wiering, *The Languages of the Modes*, 63.

31. Pietro Aron, *Trattato della natura et cognition di tutti gli tuoni di canto figurato* (1525), partially trans. by Oliver Strunk, *Source Readings in Music History* (New York, W.W. Norton, 1950), 205–218.

32. Harold Powers, “Is Mode Real? Pietro Aron, the Octenary System, and Polyphony,” *Basler Jahrbuch für historische Musikpraxis* 16 (1992); Cristle Collins Judd, “Renaissance Modal Theory” in the *Cambridge History of Western Music Theory*, ed. Thomas Christensen (New York: Cambridge University Press, 2002), 376–77.

in cases where modal classification proved a challenge, including the confinal (fifth above the final) and psalm-tone endings (*differentiae*). As Cristle Collins Judd notes, Aron's use of *differentiae* as a "specific pitch that may function as an alternative to the final and in addition to the cofinal as the place of termination" contrasts with the fact that psalm-tone endings are rather melodic formulas and not a single pitch.³³ Aron's misuse of psalm-tone endings proved problematic to his audience.³⁴

The most consequential development in the theory of monophonic modes in the sixteenth century came from Heinrich Glarean's *Dodecachordon* (1547) when he expanded the eight-mode system into a twelve-mode system, accounting for all of the octave species with the exception of B–b.³⁵ Glarean also resurrected the Greek modal nomenclature (such as Dorian, Phrygian, and Lydian) that had been dropped earlier in the Medieval era. In adding modes with a final of C (Ionian) and A (Aeolian), Glarean expanded modal theory to describe current musical practice, claiming that Ionian was the most common mode in use.³⁶

Of the treatises to discuss polyphonic modality in the sixteenth century, Gioseffo Zarlino's *Istitutioni Harmoniche* (1558) may have been the most contemporary and influential during the life of Tomás Luis de Victoria. The fourth book of this treatise is largely lifted from Glarean's *Dodecachordon*.³⁷ However, unlike Glarean, Zarlino also discusses the application of

33. Cristle Collins Judd, "Renaissance Modal Theory," 377. Judd uses the term "cofinal" instead of "confinal." The two terms are synonymous with each other to stand for the fifth above the final.

34. Judd, 377.

35. Heinrich Glarean, *Dodecachordon*, (Basle: 1547), trans. Clement A. Miller (n.p., American Institute of Musicology, 1965).

36. Glarean, 153.

37. Gioseffo Zarlino, *On the Modes: Part Four of Le Istitutioni Harmoniche*, ed. Claude Palisca, trans. Vered Cohen (New Haven, CT: Yale University Press, 1983), x, 37.

these twelve modes in polyphony and expands the theory of polyphonic modality in two distinct ways. First, Zarlino emphasized the importance of cadences in determining the mode of a polyphonic work. While Aron also identified “orderly” and “discordant” cadences in his work, there was not much logic as to what cadences fell into their respective category.³⁸ Zarlino, on the other hand, proposed that cadences on the final, third, and confinal of the authentic mode were the “regular” cadence points for both the authentic and plagal modes. Any other cadences were considered irregular.³⁹

This uniform theory, however, conflicted with some prior theories of mode, especially with the Phrygian modes (Modes 3 and 4) by describing cadences on A as irregular. In practice, Mode 3 and 4 works often featured cadences on their respective reciting tones, C, and A. However, for Zarlino, cadences to E, A, and C belonged to Modes 9 and 10, the Aeolian modes, and not Modes 3 and 4. Zarlino however noted that Mode 3 is frequently mixed with Mode 9 and likewise that Mode 4 is frequently mixed with Mode 10 in order to soften the hardness from cadences made to B \natural .⁴⁰

In his other major development of polyphonic modality, Zarlino described several modes by their ethos. He loosely based his characterization of the modal ethos on the Ancient Greek terms ascribed to the original eight modes. However, as Claude Palisca notes, Zarlino often would hedge or completely leave out some details from the Grecian evocations of modal ethos.⁴¹

38. Claude Palisca, introduction to *On the Modes: Part Four of Le Istitutioni Harmoniche* (New Haven, CT: Yale University Press, 1983), xiii–xiv.

39. Zarlino, *On the Modes: Part Four of Le Istitutioni Harmoniche*, 55.

40. Zarlino, *On the Modes: Part Four of Le Istitutioni Harmoniche*, 63–64.

41. Claude Palisca, introduction to *On the Modes: Part Four of Le Istitutioni Harmoniche*, xv.

For example, while Zarlino suggests the Phrygian mode (Mode 3) moves the listener to tears, he “avoided any reference to the ancient Phrygian’s capacity to incite men to battle.”⁴²

Historical Issues of Applying Mode to Polyphony

This brief exploration of polyphonic modality from some of the early important theorists on this subject raises a few issues with the application of modal theory to polyphonic works. First and foremost, modal theory was developed as a classification system for plainchant. How could one arbitrate which voice was the most important voice to determine the modal classification? Different voices in polyphonic works would have different ranges, so which one should take preference? Tinctoris made the claim that the tenor should be the voice used for modal classification, a thoughtful answer at a time when many polyphonic works with a *cantus firmus* would find that melody in the tenor. But by the sixteenth century, other voices could contain the *cantus firmus*. (I will explore several such pieces by Victoria in this dissertation where the *cantus firmus* is in the cantus voice.)

However, what if the purpose of identifying the mode of polyphonic works was not just an exercise in classification, but also one of music analysis? If the purpose of identifying mode in polyphonic music is to tell us something about the tonal structure of that work, then identifying the mode of a polyphonic work is an act of musical analysis that examines more local events rather than classifying a work on its large-scale tonal structure. While much of music theory up to the Renaissance was prescriptive, there were music theorists who sought to discuss (and theorize) more localized musical moments. For example, Jay Rahn suggests that Marchetto di Padua was performing music analysis on melodies when engaging his theory of commixture, where “a given melody may be considered to be not merely *in* a single mode, but also to pass

42. Claude Palisca, xv.

through, or to be ‘commixed with,’ other modes during its progress” in the *Lucidarium in arte musice plane* (ca. 1317–18).⁴³

Zarlino explicitly draws on this concept of mixing modes in his *Istitutioni Harmoniche*, noting that it was common practice among polyphonic works in a section entitled “What the Composer Should Observe When Composing, and How the Modes Should Be Judged.”⁴⁴ As part of this discussion, Zarlino notes “although we should judge a composition by its final note and not, as some would like, by what precedes it, for everything is rightly judged by its end, nevertheless we must not assume that by this note alone we can recognize the mode on which a composition is based.”⁴⁵ Thus, while the title of the chapter suggests that composers should be comfortable with mixing modes as it is common practice, Zarlino addressed this issue as an act of music analysis to be done by someone other than the composer. He advocated for the listener to carefully listen to the entirety of a composition before judging the mode, with special preference to cadences, as then the listener

shall be able to judge in what mode the composition is written, even if the composition does not end on the proper final of the mode but rather on the median note, or on some other note which has suited the composer’s purpose.⁴⁶

Zarlino’s suggestion to listen for cadences, however, was a subject of major disagreement among theorists. To illustrate the variation on the common cadences in modal polyphony, Table 1.1 illustrates the common cadential structures as observed by several theorists contemporary to

43. Jay Rahn, “Marchetto’s Theory of Commixture and Interruptions,” *Music Theory Spectrum* 9 (Spring 1987): 118–19 (emphasis his). Rahn incorrectly identifies the title of Marchetto’s treatise as the *Lucidarium Cantae Planae*.

44. Gioseffo Zarlino, *On the Modes: Part Four of Le Istitutioni Harmoniche*, ed. Claude Palisca, trans. Vered Cohen (New Haven, CT: Yale University Press, 1983), 89.

45. Zarlino., 89–90.

46. Zarlino, 90–91.

Victoria.⁴⁷ The vast differences in acceptable cadences between these theorists may have been to mitigate the act of identifying modes in polyphonic works with the musical realities that occur within a work. For example, Pietro Pontio's list of passing cadences suggests mode identification as an act of classification, whereas Zarlino's limited list of cadences and discussion about the mixing of modes suggests mode identification as an act of analysis.

47. Table 1.1 appears in Miguel A. Roig-Francolí, "Tonal Structures in the Magnificats, Psalms, and Motets by Tomás Luis de Victoria," in *Estudios: Tomás Luis de Victoria*, ed. Javier Suárez-Pajares and Manuel del Sol, (Madrid: ICCMU, 2013), 145–62 and (with the exception of Bermudo and Vicentino) also in Miguel A. Roig-Francolí, "From Renaissance to Baroque: Tonal Structures in Tomás Luis de Victoria's Masses" *Music Theory Spectrum* 40, no. 1 (Spring 2018): 27–52.

Table 1.1. A list of modal cadences according to several Renaissance theorists contemporary to Victoria.

Mode	1	2	3	4	5	6	7	8
Bermudo (1555) ⁴⁸	Principal: Final, Confinal, Fourth above Final Secondary: Third above Final, Second below Final, Third below Final in Plagal Modes							
Vicentino (1555) ⁴⁹	Final, Confinal							
Zarlino (1558) ⁵⁰	Final, Confinal, Third above Final							
Dressler (1563) ⁵¹	D, <u>A</u> (F, E)	D, F, <u>A</u> (E)	E, <u>B,</u> C (G, A)	E, A (G, C)	F, <u>C</u> (A)	F, A, <u>C</u>	G, <u>D</u> (C)	G, <u>D,</u> C
Santa María (1565) ⁵²	D, <u>A</u>	D, F, (A)	E, C, (G)	E, A	F, <u>C</u>	F, A, (<u>C</u>)	G, <u>D</u>	G, C
Pontio (1588) ⁵³	D, <u>A,</u> F (G, C)	D, <u>A,</u> F (G, C)	E, A, C (G, <u>B</u>)	E, A, C (G, <u>B</u>)	F, <u>C,</u> A (D, G)	F, <u>C,</u> A, B\flat (D, G)	G, <u>D</u> (F, A, C, E)	G, <u>D,</u> C (F, A)
Montanos (1592) ⁵⁴	D, <u>A</u>	D, <u>A,</u> F	E, C, A	E, A, G	F, <u>C</u>	F, <u>C,</u> A	G, <u>D</u>	G, C

Key: **Final**, confinal, *repercussa*, (secondary/passing cadences)

There is also a rich tradition of Renaissance music theorists who use modal classification to analyze the relationship between the modal “affect” and text.⁵⁵ Ellen Beebe notes that there is

48. Juan Bermudo, *Declaración de instrumentos musicales* (Osuna, Spain: Juan de León, 1555; repr. Kassel, Germany: Bärenreiter, 1957), f. 75r.

49. Nicola Vicentino, *L'antica musica ridotta alla moderna prattica* (Rome: 1555; repr. Kassel, Germany: Bärenreiter, 1959), f. 55r.

50. Gioseffo Zarlino, *On the Modes: Part Four of Le Istitutioni Harmoniche*, ed. Claude Palisca, trans. Vered Cohen (New Haven, CT: Yale University Press, 1983), 55.

51. Gallus Dressler, *Praecepta musica poetica* (1563), in Bernhard Engelke (ed.), *Geschichtsblätter für Stadt und Land Magdeburg* 49–50 (1914–15): 213–50.

52. Tomás de Santa María, *Libro llamado Arte de tañer fantasia* (Valladolid, Spain: Fernández de Córdoba, 1565; repr. Franborough, Hants, England: Gregg International Publishers, 1972), vol. I, f. 62r.

53. Pietro Pontio, *Ragionamento di musica* (Parma: 1588), facsimile (Kassel, Germany: Bärenreiter, 1959), 94–120.

54. Francisco de Montanos, *Arte de música teórica y práctica* (Valladolid, Spain: Diego Fernández de Córdoba, 1592).

“remarkable consistency...among theorists regarding the supposed effects of each of the eight modes” even if the modes are not “intrinsically happy or sad.”⁵⁶ Thus, while the text may not prescribe a certain mode that should be used, it certainly excluded the use of some modes for Renaissance composers.⁵⁷ In 1974, Bernhard Meier would revisit this connection between polyphonic modality and textual analysis in his *Die Tonarten der klassischen Vokalpolyphonie* (*The Modes of Classical Polyphony*) that would revive the discussion and debate on how to identify the modes in polyphonic music.⁵⁸

The Twentieth-Century Revival (and Debate) of Polyphonic Modality

From the onset of Meier’s book, he makes several justifications for the reexamination of modes in Renaissance polyphony. First, he notes that the distinction between authentic and plagal modes “no longer retains any significance—or at least any practical significance” among modern historians.⁵⁹ Second, Meier draws a direct connection between the goals of Renaissance theorists (to whom he refers as the “‘fathers’ of music history”) and modern-day analysts in their pursuit of uncovering the “natural laws” of music.⁶⁰ Just as Renaissance music theorists applied the standards and rules of their time to the “rediscovered” music of a past time, Meier argues that

55. Ellen Scott Beebe, “Mode, Structure, and Text Expression in the Motets of Jacobus Clemens non Papa: A Study of Style in Sacred Music” (PhD diss., Yale University, 1976).

56. Beebe, 255.

57. Cristle Collins Judd, “Some Problems of Pre-Baroque Analysis: An Examination of Josquin’s ‘Ave Maria... Virgo Serena,’” *Music Analysis* 4, no. 3 (October, 1985): 202.

58. Bernhard Meier, *The Modes of Classical Polyphony*, trans. Ellen Bebee (New York: Broude Brothers Limited, 1988).

59. Meier, 13.

60. Meier, 14.

he can approach Renaissance music through a modern lens.⁶¹ *The Modes of Classical Polyphony* proposes an alternative narrative where the polyphonic modes are not a precursor to the inevitability of the major-minor tonal system, but rather its own separate system that is equally determined by natural law.⁶²

Meier approaches the analysis of polyphonic modality primarily through a detailed investigation of historical treatises on mode. Meier recognizes that the task of identifying modes in polyphonic works would be a far more difficult task than Renaissance music theorists acknowledged. For example, he states that the modes are the “so-called ‘logical’ coherence of a musical work” and thus it would be “wrong to assume that the end alone determines the mode” noting that there are plenty of examples where the end of the work contradicts its overall musical structure.⁶³ As part of uncovering the “well-established system of musical logic,” Meier goes on to identify several different musical parameters that will help identify the mode of a polyphonic Renaissance composition.⁶⁴

In particular, Meier cites the ambitus, cadential plans, and melodic formulas (which he refers to as *exordia*), as the principle musical parameters to identify the mode. He also places special consideration on the *repercussa* (the reciting tone of the psalms) and the interval created between the final and *repercussa* of a mode. It is important to note that Meier, like some Renaissance music theorists, conflates the eight psalm tones (where the *repercussa* come from) with the eight modes, although he likely purposefully leaned into this conflation as part of the

61. Meier, 14.

62. Meier, 18. Meier cites the music historiographical work of Carl von Winterfield (*Johannes Gabrieli und sein Zeitalter* [1834]) as an important source of inspiration for treating the modes as their own separate system.

63. Meier, 27.

64. Meier, 27.

true “nature” of the modal system that some historical theorists were keen to note. Altogether, Meier’s method of modal identification requires careful and relatively detailed analysis of the work’s musical elements.

Once Meier identifies these musical parameters to aid the analyst in modal identification, he returns to the connection of modal “affect” and text in the second half of his book, entitled “The Modes as a Means of Word Expression.” For Meier, an analyst cannot stop at modal identification as it “would be treating sixteenth-century music merely as a musical *technique*, while in fact it was viewed and treated as a musical *language*.”⁶⁵ Now that the mode had been identified, the analyst would be able to explore how the mode (and the musical parameters that helped the analyst determine the mode) help express the meaning behind the text.

Meier’s *The Modes of Classical Polyphony* rekindled interest in polyphonic modality through the late 1970s and 1980s. However, as Frans Wiering notes, while *The Modes of Classical Polyphony* “enjoyed cult status,” Meier’s methodology was also “applied creatively and somewhat uncritically to works by late-Renaissance and Baroque composers.”⁶⁶ Harold Powers, a leading early music scholar, raised concerns with using mode to describe musical phenomena in Renaissance music in a series of articles.⁶⁷

Drawing on his roots as an ethnomusicologist of Indian music, Powers uses the anthropological concepts of the “emic” and “etic” to argue that a modal system synonymous to the tonal system did not exist. The terms were coined by Kenneth L. Pike, where an “etic

65. Meier, 237 (emphasis his).

66. Frans Wiering, *The Language of the Modes*, ix.

67. Harold Powers, “Tonal Types and Modal Categories in Renaissance Polyphony,” *Journal of the American Musicological Society* 34, no. 3 (Autumn 1981): 428–470; “Modal Representation in Polyphonic Offertories,” *Early Music History* 2 (October, 1982): 43–86; “Is Mode Real? Pietro Aron, the Octenary System, and Polyphony,” 9–53.

approach [to anthropology] would rely on a generalised classification system devised by the researcher in advance for the study of any particular culture in order to compare and classify behavioural data from across the world” whereas the “emic approach would dispense with *a priori* means of classification.⁶⁸ However, Powers more likely borrowed the terms’ meanings from Marvin Harris, who broadly differentiated the terms between “between social scientists who analyse their informants’ interpretations of events (emic) and those who weigh such interpretations against the forces of economy, ecology, and technology (etic).”⁶⁹ In Powers’ descriptions of the terms, something that is “etic” is “objectively observable completely apart from its musical or cultural context” whereas something that is “emic” would require that cultural context for its understanding.⁷⁰

Ultimately, Powers argues that modes are intrinsically tied with sixteenth-century musical culture, citing that modes were “being experimented with by members of the culture, from both humanistic and traditional points of view.”⁷¹ Thus, the modal system could never obtain the scientific, objective quality of the major-minor tonal system. Powers remarks that *The Modes of Classical Polyphony* is a “deep and genuinely emic understanding of sixteenth-century attitudes toward and treatments of modality” but disagrees with Meier that modes are also “pre-compositional entities to be composed out.”⁷² As a result, Powers concludes that Meier is unable

68. The Cambridge Encyclopedia of Anthropology, s.v. “Emic and Etic,” by Till Mostowlansky and Andrea Rota, “Emic and Etic,” accessed December 3, 2021, <http://doi.org/10.29164/20emicetic>.

69. The Cambridge Encyclopedia of Anthropology, s.v. “Emic and Etic.”

70. Powers, “Tonal Types and Modal Categories in Renaissance Polyphony,” 439.

71. Powers, 439.

72. Powers, 441–42.

to distinguish between “mode as musical property and mode as category.”⁷³ Instead, Powers proposes using Siegfried Hermelink’s concept of the “tonal type” that combines the signature with the cleffing and final of a work as an appropriate equivalent to tonality’s key signatures, which Powers viewed as “etic.”⁷⁴

Powers’ argument culminates in his provocative article “Is Mode Real?” Powers states that modality and tonality are not on the same conceptual plane; rather, modes were “first and foremost a theoretical construct, a member of a closed and symmetrical system.”⁷⁵ He examines Aron’s writings on polyphonic modality as a basis for his argument, concluding that “any attempt...to use Aron’s work can only lead to misrepresentations of the compositional tonalities or a misprision of the theoretical method.”⁷⁶ To Powers, there is no way to salvage the concept of mode to be both an etic and emic representation of a tonal system analogous to the tonal systems found in the eighteenth century.

In response to this debate between Meier and Powers, Wiering sought to reclaim mode as a useful tool for analysis. To do so, Wiering defines two ways mode can be viewed: the “external” view and the “internal” view of modes.⁷⁷ For Wiering, the external view of mode closely aligns with Powers’s etic tonal types: the final, the system (*cantus durus* [no signature] or *cantus mollis* [one flat]) and the cleffing of the voices (to determine a high or low range for the

73. Powers, 442.

74. Powers introduces Siegfried Hermelink’s concept of “tonal types” from his *Dispositiones modorum* (1960) in “Tonal Types and Modal Categories in Renaissance Polyphony,” but expands on it greatly in “Is Mode Real?”

75. Powers, “Is Mode Real?,” 14.

76. Powers, 43.

77. The “internal” and “external” view of modes is developed throughout Wiering’s work, including his book based on his dissertation (*The Language of the Modes: Studies in the History of Polyphonic Modality*). A concise summary of Wiering’s argument can be found in Wiering, “Internal and External Views of the Modes,” in *Tonal Structures in Early Music*, ed. Cristle Collins Judd (New York: Garland, 1998): 87–108.

entire work). The internal view of mode contains modal characteristics revealed through music analysis, such as cadences, psalm tones, species of fourth and fifth, and *exordia*. When modern analysts use these characteristics to define what mode a work is “in,” it is often done under the pretense of historical descriptions of modal characteristics of polyphonic works—for example, the typical cadences within a work and the melodic gestures that outline certain intervals common within that mode.

Wiering believes that these two views of mode can remain separate. In particular, he emphasizes that the internal view of modes was an “intellectual abstraction, perhaps even a Platonic ideal,” that never was meant to be realized in a composition.⁷⁸ However, that did not preclude composers from borrowing ideas from this idealized version of mode into their own practice of composition; that is, Wiering suggests that theory, at times, might have informed practice. Since many music theorists were also practicing composers, such as Zarlino, Wiering’s conclusion is significant. While modes are wrapped up in a sticky web of cultural considerations that pushed Powers away from considering it as an “etic” concept, in reality, some composers would have used their understanding of modal characteristics as a prescriptive model for composition.

In his article “Mode *Is* Real: A Re-examination of Polyphonic Modality,” Kyle Adams demonstrates how modern analysts could reclaim modes and their modal characteristics as a modern analytical tool.⁷⁹ Adams identifies three questions that any analyst using modal analysis for polyphonic questions has to answer:

78. Wiering, “Internal and External Views of the Modes,” 104.

79. Kyle Adams, “Mode *Is* Real: A Re-examination of Polyphonic Modality,” *Theoria: Historical Aspects of Music Theory* 19 (2012): 33–63.

1. Since the final and range are characteristics of a single voice, what role do they play in determining the mode of a polyphonic work?
2. Is the authentic/plagal distinction valid for polyphony?
3. Do the modes provide the best model for tonal organization in 16th-century music?⁸⁰

These questions lead Adams to consider what it means to be “in” a mode, as that was Powers’ main argument against modal analysis, especially since there were works that seemed to eschew unambiguous modal classification. Adams states that modern theorists mean one of three things when something is “in” or “based on” a group of tones. It can mean that the group of tones provide “*pitch* content,” “*pitch-class* content,” or “characteristic *features*, including implied melodic gestures, intervals, and so forth, that are present in a piece ‘in’ that group of tones.”⁸¹ Adams notes that Renaissance theorists applied the modal system based on these characteristic features, and that this is the value in continuing with modern modal analysis practices. Moreover, Adams advocates that the goal of modal analysis should not be to eliminate modal ambiguity, but rather enhance it, especially where it becomes a characteristic feature of the work.⁸² Thus, as an analytical tool, albeit an imperfect one, modes provide a system that allows the modern-day analyst to talk about tonal structure in Renaissance polyphony.

In a direct response to Adams, Gregory Barnett, who was a student of Powers’s, continues to caution the use of Renaissance modal theory to conduct modern analyses of early music.⁸³ While Adams argues in favor of modal analysis because Renaissance theorists used modes to discuss characteristic features of a work, Barnett argues that analysts can “misread the

80. Adams, 40–50.

81. Adams, 53 (emphasis his).

82. Adams, 58.

83. Gregory Barnett, “Sixteenth-century Modal Theory and Renaissance Ideologies: A Response to Kyle Adams,” *Theoria: Historical Aspects of Music Theory* 20 (2013): 165–83.

theory in the service of an analytical purpose that was unknown to Renaissance theorists.”⁸⁴

Modes appeal to analysts because they are rich cultural artifacts of musical thinking in the Renaissance. But like Powers, Barnett notes they lack any scientific rigor to be suitable as an analytical tool. As such, Barnett advises against modal analysis because it is impossible to disentangle the various cultural contexts associated with the modes.

Miguel A. Roig-Francolí has published two thorough studies on tonal structures in the music of Tomás Luis de Victoria in recent years.⁸⁵ In these studies, Roig-Francolí grapples with the debate between the emic/etic distinction from Powers and internal/external views of Wiering, noting that the internal and external views of the modes are “far from being mutually exclusive or contradictory.”⁸⁶ He endeavors to reconcile this conflict by combining Hermelink’s and Powers’ tonal types with modes by identifying the possible tonal types that correlate with the eight modes. As shown in Table 1.2, the main tonal type that correlates with a mode appears in boldface. Some tonal types correlate with more than one mode (such as \flat -c1-F in Modes 5 and 6), whereas other tonal types only correlate with one mode. Roig-Francolí also uses a combination of other musical elements to help identify the mode, including internal cadences and other defining melodic elements (especially *exordia*).⁸⁷

84. Barnett, 165.

85. Miguel A. Roig-Francolí, “Tonal Structures in the Magnificats, Psalms, and Motets by Tomás Luis de Victoria,” in *Estudios: Tomás Luis de Victoria*, ed. Javier Suárez-Pajares and Manuel del Sol, (Madrid: ICCMU, 2013), 145–62 and also Miguel A. Roig-Francolí, “From Renaissance to Baroque: Tonal Structures in Tomás Luis de Victoria’s Masses” *Music Theory Spectrum* 40, no. 1 (Spring 2018): 27–52.

86. Roig-Francolí, “From Renaissance to Baroque,” 29.

87. Roig-Francolí, 29–30.

Table 1.2. Correlation between modes and tonal types (as it appears in Roig-Francolí 2018, 28)

Mode 1	$\flat\text{-g}2\text{-G}$ $\flat\text{-g}2\text{-D}$ $\natural\text{-c}1\text{-D} / \natural\text{-c}1\text{-A}$ $\flat\text{-g}2\text{-G}$	Mode 2	$\flat\text{-c}1\text{-G}$ $\flat\text{-c}1\text{-D}$ $\natural\text{-g}2\text{-D}$
Mode 3	$\natural\text{-c}1\text{-E}$ $\natural\text{-g}2\text{-E}$ $\natural\text{-g}2\text{-A}$ $\flat\text{-g}2\text{-A}$	Mode 4	$\natural\text{-c}1\text{-E}$ $\natural\text{-c}1\text{-A}$ $\flat\text{-c}1\text{-A}$
Mode 5	$\flat\text{-g}2\text{-F}$ $\flat\text{-c}1\text{-F}$	Mode 6	$\flat\text{-c}1\text{-F}$ $\natural\text{-g}2\text{-C}$ $\natural\text{-c}1\text{-C}$ $\natural\text{-c}1\text{-F}$
Mode 7	$\natural\text{-g}2\text{-G}$	Mode 8	$\natural\text{-c}1\text{-G}$ $\natural\text{-g}2\text{-G}$

Roig-Francolí’s studies effectively show that a modest number of Victoria’s works can be unambiguously assigned a mode based on this convergence of the internal and external views of the modes. There are other cases where there is ambiguity between authentic and plagal versions of the mode, such as a tonal type suggesting one mode whereas internal cadences suggest another mode (especially between Modes 1/2 and 5/6). In his study of the masses, Roig-Francolí notes that Victoria only wrote one mass in Phrygian (*Missa quarti toni*) but despite the explicit modal label, there is reasonable doubt that the work is in Mode 4.⁸⁸

While Roig-Francolí’s work demonstrates that there is a potentially viable path toward reconciling between the two ideological “camps” of modal analysis, it also highlights the limitations of modes as an analytical tool. In the case of Roig-Francolí’s analyses, he clearly demonstrates that there are similarities in tonal structures among Victoria’s works; and in the case of the masses, there is an observable connection between the mode and tonal structure of the mass with its model.⁸⁹ However, modal analyses largely have been confined to discussions of

88. Roig-Francolí, 35–39.

tonal structure. Even today's proponents of modal analysis shy away from conversations of modal affect, which was at the core of Meier's twentieth-century revival of modal analysis. Though modal analysis can offer many insights to the tonal structure of sixteenth-century music, it is not necessarily an effective tool for all of these works, even among composers where modal analysis can be useful.

Thus, I agree with Barnett that it is impossible to disentangle the various cultural contexts associated with the modes. In many ways, modal analysis is trying to do too much—in that analysts try to meld these different cultural contexts into a single analytical tool—while also doing too little—in that modal analysis often does not help the analyst dig into the fine musical details of a work. Rather, the discussion of these fine musical details often has been left to discussions of hexachords and solmization. Therefore, there needs to be a new path forward for modern Renaissance-music analysts and performers who seek to understand both the tonal structure of a work and its musical idiosyncrasies. In order to do this, we need to reconcile hexachords and modes into a single system.

Reconciling Hexachords and Modes: A Path Forward

In *The Renaissance Reform of Medieval Music Theory*, Stefano Mengozzi suggests that hexachordal system was not as prominent as a theoretical tool as current discourse suggests. For example, he notes that hexachordal “mutations were artificially *made* by solmizing singers, rather than objectively *located* or *embedded* in that notated part.”⁹⁰ The act of mutation is not

89. All twenty of Victoria's masses, except one, have a model. There is debate as to whether *Missa quarti toni* is based on a model, but the consensus is that it likely does not have a model. See *Ibid.*, 37–39.

90. Stefano Mengozzi, *The Renaissance Reform of Medieval Music Theory: Guido of Arezzo between Myth and History* (New York: Cambridge University Press, 2010), 95. (emphasis Mengozzi's)

codified in the music, but rather is an interpretation made by the singer. Observations like this lead Mengozzi to suggest that the hexachordal system arose out of the “heptachordality” of medieval diatonic space in two ways. First, the major sixth emphasizes the prominence of the fifth which has implications on modal theory. Second, the hexachordal system allowed for the six syllables of the solmization system to “indicate the same *classes* of intervals by the same names.”⁹¹ Thus, the hexachordal system was a pedagogical tool to learn about intervals, but its practical application to music was imprecise and up for interpretation; that is, the hexachordal system was a “‘soft’ superstructure overlaid on a ‘hard’ heptachordal layer that had long been in place as the foundation of the diatonic system.”⁹² As Mengozzi aptly notes, even though there are works that are “based on” hexachordal solmization, such as Palestrina’s *Missa Ut re mi fa sol la*, “it would be misleading to suggest by such wording that those references to the Guidonian syllables were the direct result of a hexachordally conceived notion of musical space.”⁹³ Works like the Palestrina mass still operate in a heptachordal musical space that the hexachordal system is mapped onto. On the other hand, theorists attempted to use the modal system as a more-precise analytical tool to discuss the heptachordal space that this music operated in. However, the application of modes likewise was imprecise because of its divergent interpretations of how modes apply to polyphonic music.

The hexachordal and modal systems are not mutually exclusive. In fact, both are integral in defining the tonal structures within early music. While Mengozzi rightly identifies the conflict

91. Mengozzi, 32–33. (emphasis Mengozzi’s)

92. Mengozzi, 111.

93. Mengozzi, 112.

between the hexachordal and modal systems, he does not identify nor propose an alternate practical theoretical tool to mitigate this conflict.

As Powers stated, modes and the modal system are not analogous to keys and the tonal system of the eighteenth century that much of Western music theory is based on. However, aspects of the phenomena that exist in the eighteenth-century tonal system exist in sixteenth-century music. Music that operates in keys and the eighteenth-century tonal system has much tighter restrictions on how certain tonal phenomena drive our expectations of that music, which can lead to rich and interesting analyses of that repertoire. Despite modern analysts acknowledging the shortcomings of modal analysis, the desire to engage deeply with the fine details of sixteenth-century compositions still remains. They know that mode and key are not on the same conceptual and semantic plane, but the reason that modal analysis continues to be an attractive venture for modern analysts is because it offers the closest equivalent to eighteenth-century tonal analysis.

A significant part of the process of a modal analysis is the way that the analysts interpret the theoretical apparatus of modes and modality. Is mode being used as an etic or emic concept? Is the eight or twelve mode system being used? Whose descriptions of modes are informing our modern understanding? These crucial decisions being made by the analyst may not be transparent in their modal analysis, making it difficult for the reader to understand or agree with the presumptions made by the analyst. As demonstrated by Adams and Roig-Francolí, when the parameters of modal analysis are clearly articulated, it can draw attention to interesting observations about a work's tonal structure. However, regardless of some interesting conclusions, modal analysis will never allow analysts to discuss sixteenth-century music with the same level of specificity as one can with eighteenth-century tonal music.

Those analysts who conduct modal analyses appreciate modal theory since it allows analysts to project their own interpretations and experiences of the tonal musical phenomena within a historical construct. For some music analysts, such as Nicholas Cook, the study of music is an act of performance, rather than a scientific, objective pursuit.⁹⁴ He draws on theories from other performing arts, such as theatre studies, to interpret musical scores not as “texts” but rather as “scripts” which can be interpreted through the performance of analysis. Since analysts cannot agree whether modes are even viable to be interpreted through the performance of analysis, this dissertation will eschew using modes and modal analysis as the primary theoretical concept in developing a tonal space for sixteenth century music.

The goal of this dissertation is to provide a theoretical framework that will reconcile the historical hexachordal and modal systems into a single musical space. In order to successfully achieve this goal, it is necessary to disassociate the theoretical concepts that make the modal system an attractive analytical tool from the irreconcilable conflict between the etic and emic views of the modes. The application of the modal system to polyphonic music primarily identifies tonal centers and the music’s characteristic features. However, modern day analysts and performers need not be limited to mode to describe a composition’s tonal center, nor do they need to rely on internal modal characteristics such as *exordia* to describe diatonic melodic patterns.

In the following chapter, I will examine the concept of Steven Rings’s tonal qualia from his *Tonality and Transformation*, which Rings uses primarily to discuss music steeped in the eighteenth- and nineteenth-century tonal system. Qualia, in the broadest sense, are used to

94. Nicholas Cook, “Between Process and Product: Music and/as Performance,” *Music Theory Online* 7, no. 2 (April, 2001). <https://mtosmt.org/issues/mto.01.7.2/mto.01.7.2.cook.html>

describe how one perceives or experiences a quality or property of something.⁹⁵ David Huron notes that qualia “accompany all consciously experienced sensations, including the sensations of sounds.”⁹⁶ Rings’s tonal qualia that form his Tonal GIS are the foundation of several analytical methods that he proposes in his book, all which offer profound insight on the tonal phenomena discussed in his book. Despite its analytical strengths for common practice period music, Rings’s tonal qualia are not as effective in discussing Western music prior to the eighteenth century. However, Rings’s tonal qualia can provide the foundation for melding the historical hexachord and modal systems with modern developments in analyzing and discussing tonal phenomena in sixteenth-century music.

95. For a more detailed exploration of the uses of the term “qualia,” see *Stanford Encyclopedia of Philosophy*, s.v. “Qualia,” by Michael Tye, accessed December 17, 2021, <https://plato.stanford.edu/entries/qualia/>.

96. David Huron, *Sweet Anticipation: Music and the Psychology of Expectation* (Cambridge, MA: MIT Press, 2006), 144

Chapter 2: Tonality and the Tonal Quale in Sixteenth-Century Music

“Tonality” in the Sixteenth Century

In “Is Mode Real?,” Powers grapples with the conflation of modes and modality with keys and tonality. Powers notes that there are few works between 1750 and 1850 where the tonality is unknown, whereas Renaissance works could sometimes have conflicting modal designations.¹ To Powers, this discrepancy was evidence that modality and tonality were not on the same conceptual plane. Yet, Powers clearly states that “16th-century tonalities do exist” albeit unanalogous to the tonalities found in the common practice period.²

This brief exchange in Powers’s influential article highlights the conundrum of evoking “tonality” in early music. While Powers correctly emphasizes the imprecision of modes and modality in “Is Mode Real?,” he does not likewise investigate the vagueness of the terms “tonal” and “tonality,” even invoking the word “tonal” as part of his adoption of Siegfried Hermelink’s “‘tonal type’ to designate tonalities manifested in later 16th-century polyphony.”³ Although Powers was transparent that sixteenth-century tonality was different than eighteenth-century tonality in “Is Mode Real?,” other theorists loosely used traditional concepts of tonality in early music. Edward Lowinsky applied both the terms tonality and atonality to sixteenth-century music in his book.⁴ While Lowinsky defined tonality as a “tonally centered organization [of music]” and atonality as “a tonally acentric organization of music,” he was undeterred in

1. Harold Powers, “Is Mode Real? Pietro Aron, the Octenary System, and Polyphony,” *Basler Jahrbuch für historische Musikpraxis* 16 (1992), 11.

2. Powers, 12.

3. Powers, 12.

4. Edward Lowinsky, *Tonality and Atonality in Sixteenth-Century Music* (Berkeley: University of California Press, 1961).

applying analytical methods and concepts commonly reserved for music in the eighteenth century and beyond, such as evoking the major-minor tonal system, performing Roman numeral analysis, and identifying some sonorities as dominant-seventh and secondary-seventh chords.⁵ In particular, Lowinsky's work continues to influence the debate as to how far back we can apply ideas from common practice tonality to early music repertoire.

As Brian Hyer notes in the beginning of his article on the history of "tonality," the term was first used in a music-theoretical context in 1810.⁶ However since the concept of tonality frequently has been applied to music prior to 1810, the term has long enjoyed its status as an ahistorical way of analyzing music before the nineteenth century. Thus, the issue is not evoking the term "tonality" for sixteenth-century music, but rather specifying the definition and use of the word "tonality" within this music.

In this dissertation, I use the terms "tonal" and "tonality" to describe the musical phenomena in which pitches are "arranged or understood in relation to a referential tonic."⁷ This definition of tonality should not be conflated with other possible meanings of tonality, especially those that use tonality to evoke the major-minor system and the concept of "keyness."⁸ For example, in Hyer's eighth and final definition of tonality, he includes the earlier definition of "musical phenomena around a referential tonic" but then goes on further to qualify that definition "in European music from about 1600 to around 1910" where tonality "has become the principal musical means in Western culture by which to manage expectation and structure desire" and

5. Lowinsky, 15–32. Lowinsky introduces these concepts in the second chapter of his book, but expands on them in further chapters.

6. Brian Hyer, "Tonality" in *The Cambridge History of Western Music Theory*, ed. Thomas Christensen (New York: Cambridge University Press, 2002), 726.

7. Hyer, 728.

8. Hyer, 727–28.

“determines the coordination of harmony with melody, meter with phrasing, texture with register, and thus encompasses—within its historical domain—the whole of music.”⁹ This use of tonality is not just a way to explain musical phenomena related to pitch content. Rather, this use of tonality explains how we understand all musical phenomena in Western common-practice music.

However, it is important to note that the musical phenomena that are associated with tonality in music prior to 1600 may align with some of the ideas from this more-specific usage of tonality in music after 1600. For example, sixteenth-century music often engages with expectation setting and the desire for structure. In addition, pitch centricity and the “feeling” of a tonal home are important in creating many of the kinds of musical phenomena found within early music. However, these musical phenomena are not codified in a way across genres, across composers, and across traditions in the same way that common-practice-period music is.

Thus, rather than attempt to revise an existing theoretical system to replicate common-practice ideals of tonality onto music before 1600, this dissertation creates a new theoretical system that centers the analyst’s or listener’s perceptions of the musical phenomena that form tonality within this music; and where appropriate, the analyst or listener can use this theoretical system to discuss how these phenomena engage with some of the other parameters that are often associated with tonality in common-practice music, such as expectation setting. This new theoretical system is modeled after Steven Rings’s Tonal GIS developed in his book *Tonality and Transformation*.¹⁰ In his Tonal GIS, Rings incorporates the phenomenological concept of the tonal quale in common-practice music, developing a theoretical tonal space useful for describing

9. Hyer, 728.

10. Steven Rings, *Tonality and Transformation* (New York: Oxford University Press, 2011).

the tonal phenomena found in that music. To justify the alteration of this tool developed for common-practice music as the foundation for a tool used in early music, I will draw on Richmond Browne's rare-intervals hypothesis, which will lay the groundwork for developing a quale for early music that still uses the diatonic set as the primary generator of its musical content. These two theories allow for the formation of new tonal qualia that more accurately engage with the tonal phenomena found in early music, and which rely on and encourage the "performance of analysis" by allowing listeners to use the tonal space to describe their own apperceptions of the music.

Establishing the Tonic in Early Music

In many cases, an experienced musician is likely to identify what the tonal center of a work is based on what they hear. But what makes a pitch class assume the "feeling" of a tonal home, where there is some central pitch class that acts as the anchor for the music around it? Steven Rings points out that, on its own, statistical prevalence of one pitch class over another is not enough to instill "tonicness" into a pitch class.¹¹ There are other musical phenomena needed to provide the listener with that "feeling" of a tonal home. To succinctly capture these other musical phenomena, Rings defines a tonic as

- (a) a focal pitch class
- (b) with respect to which all remaining pitch classes in some musical passage are hierarchically arranged and perceived
- (c) even in its acoustic absence¹²

11. Steven Rings, "Tonic" in *The Oxford Handbook of Critical Concepts in Music Theory*, ed. Alexander Rehding and Steven Rings (New York, Oxford University Press, 2019), 107–8. Rings uses the foil of the opening of Witold Lutosławski's Cello Concerto (1969–70) to demonstrate that, despite the statistical prevalence of D in the opening of the work, assigning D as the "tonic" is problematic on both phenomenological and stylistic grounds.

12. Rings, "Tonic," 109.

Rings's definition highlights several important considerations with regards to Western music prior to 1600. There needs to be a hierarchical arrangement of pitches where, even in its absence, the tonic remains at the top of its hierarchy. That is, "to be a tonic is to *matter* somehow to non-tonic pitches."¹³ While a tonic is often the most statistically-prevalent pitch class in a work, it is confirmed by the prevalence and arrangement of the other non-tonic pitch classes that reinforce the tonic.¹⁴

One of the central ways that tonal music creates this hierarchy is through tonal motion, where the tonic is the goal of that tonal motion.¹⁵ Tonal motion has been a characteristic of Western music well before the seventeenth-century. For example, Sarah Fuller coined the term "directed progression" in her work on the fourteenth-century *Ars nova* style to describe the motion between two adjacent sonorities where the first sonority was "imperfect in nature and unstable in quality" that moves to the second sonority that was "perfect in nature and stable in quality."¹⁶ Fuller's work demonstrates that Western art music had already begun to codify hierarchies among pitch classes that would in turn create tendencies and resolutions through the motion from weak sonorities to strong sonorities. The goal of tonal motion, however, is not the only way to establish the tonic in this music. Since most Western music prior to 1600 still operates within the diatonic set, the weak harmonies in the directed progressions can also establish the tonic, even in the tonic's absence. Richmond Browne's rare-intervals hypothesis

13. Rings, 107. (emphasis his)

14. Rings, 113. Rings cites the work of Carol Krumhansl and David Temperely in this section, who were concerned about tonal music operating in the major-minor system.

15. Rings, 112.

16. Sarah Fuller, "Tendencies and Resolutions: The Directed Progression in *Ars Nova* Music," *Journal of Music Theory* 36, no. 2 (Autumn 1992), 231.

proposes a credible solution in how listeners are able to determine the tonic—and thus where they are within the diatonic set—through position finding and pattern matching.

Richmond Browne's Rare-Intervals Hypothesis and Position Finding

In 1981, Richmond Browne asked a simple question: what are people doing “when they act tonally”?¹⁷ That is, how does one learn about tonality and understand where they are within tonal space? Browne suggested that humans learn about tonality without instruction at an early age and mentally understand the complex processes of tonality so that one can “act tonally” in a completely effortless cognitive activity.¹⁸ In order to “act tonally,” Browne identified that listeners participate in position finding and pattern matching, two activities aided by the properties of the diatonic set.¹⁹

One of the most distinctive properties of the diatonic set is that its interval-class vector <254361> contains a unique number for each interval class.²⁰ Each interval class occurs at least once. Browne notes two important outcomes from this property. First, there is no interval that is foreign to the diatonic set, which means that a listener cannot easily determine when a composer is no longer using the diatonic collection. Second, no transposition of the diatonic collection contains a whole set of new tones.²¹ There is always some degree of overlap between transpositions of the diatonic set. The two most common intervals are ic2 (the major

17. Richmond Browne, “Tonal Implications of the Diatonic Set,” *In Theory Only* 5, no. 6–7 (July–August, 1981): 3.

18. Browne, “Tonal Implications,” 3–4.

19. Browne, 4–5.

20. Joseph N. Straus, *Introduction to Post-Tonal Theory*, 3rd ed. (Upper Saddle River, NJ: Pearson Prentice Hall, 2005), 14.

21. Browne, “Tonal Implications,” 6.

second/minor seventh) and ic5 (perfect fourth/perfect fifth). However, Browne posited that it is the rarest intervals, ic6 (the tritone) and ic1 (the minor second/major seventh) that help listeners find their position within tonal music. By locating instances of these rare intervals, the listener can make a more accurate determination of where they are within the diatonic set. Furthermore, Browne notes that the inclusion of a new rare interval “has great valence as a finder of (new) position, as the impartor of (new) function.”²² Once a new pitch outside of the current diatonic set is introduced, it creates a new set of rare intervals. This observation by Browne became known as the rare-intervals hypothesis.

Shortly after Browne developed his rare-intervals hypothesis, several music cognition experts tested the hypothesis against the standing contemporary theories of tonal hierarchy. Carol Krumhansl and Edward Kessler developed a tonal hierarchy theory based on cognitive experiments where listeners rated the relative stability of probe tones after a sequence of pitches or chords.²³ However, David Butler found that Browne’s rare-intervals hypothesis better informs the location of a tonal center than Krumhansl and Kessler’s theory of tonal hierarchy.²⁴ Butler notes that “neither the tonal hierarchy theory, nor the probe tone technique used to substantiate it, is sufficiently sensitive to the perceptual activity of identifying, confirming, and revising one’s cognitive awareness of pitch relationships from one musical moment to the next.”²⁵ Rather, it is

22. Browne, 8.

23. Carol L. Krumhansl and Edward J. Kessler, “Tracing the Dynamic Changes in Perceived Tonal Organization in a Spatial Representation of Musical Keys,” *Psychological Review* 89, no. 4 (1982): 334–368. <http://dx.doi.org/10.1037/0033-295X.89.4.334>

24. David Butler, “Describing the Perception of Tonality in Music: A Critique of the Tonal Hierarchy Theory and a Proposal for a Theory of Intervallic Rivalry,” *Music Perception* 6, no. 3 (Spring 1989): 219–42.

25. Butler, “Describing the Perception of Tonality in Music,” 233.

the “critical intervallic relationships” of tendency tones that develop our understanding of tonal space.²⁶

Position Finding in Early Music

While Browne’s assertions can be problematic as they assume the listener’s acculturation to Western diatonic music, his concepts of position finding and pattern matching are useful in developing a theory of tonal space within Western music before 1600.²⁷ Regardless of whether composers were composing “in” modes, modal theory demonstrates that the diatonic collection was the underpinning of the vast majority of musical compositions in early music. In addition, outlining the rarest interval—the tritone/diminished fifth—was generally avoided in melodic composition, requiring careful compositional treatment in the rare chance it was used.

On the other hand, the second rarest interval class, ic1, is much more common in melodic composition in early music in the form of the minor second.²⁸ In a hexachord, the minor second is found between the *voces mi* and *fa*. In *cantus durus* (no signature), the *mi–fa* half step is found between the pitches E and F in the natural hexachord, A and B \flat in the soft hexachord, and B and C in the hard hexachord (see Example 2.1a). Of the three hexachords in *cantus mollis* (one flat), only the soft hexachord introduces a new *mi–fa* half step between D and E \flat (see Example 2.1b). Thus, there are only four naturally occurring *mi–fa* half steps as a result of hexachordal solmization.²⁹

26. Butler, 233.

27. The term “early music” in this dissertation is shorthand for “early Western music” as the repertoire and theories discussed apply only to Western musical concepts.

28. The major seventh is essentially nonexistent in melodic composition of early music.

29. Some music during this time had signatures beyond *cantus durus* and *cantus mollis*. However, these are by far the two most common signatures as well as the only two signatures that Victoria used.

Example 2.1. The natural appearance of the *mi–fa* half step in all three hexachords in (a) *cantus durus* and (b) *cantus mollis*.

The image displays two musical staves, (a) and (b), each divided into three sections labeled 'Natural', 'Soft', and 'Hard'. Each section contains a sequence of six notes: *ut*, *re*, *mi*, *fa*, *sol*, and *la*. In the 'Natural' section, the notes are on the lines G, A, B, C, D, E. In the 'Soft' section, the notes are on the lines F, G, A, B, C, D. In the 'Hard' section, the notes are on the lines G, A, B, C, D, E. The *mi* and *fa* notes are connected by a slur, and a half-step interval is indicated between them. In the 'Soft' section, the *fa* note is lowered by a half step (Bb) to create the *mi–fa* half step. The label '(a)' is centered below the first staff, and '(b)' is centered below the second staff.

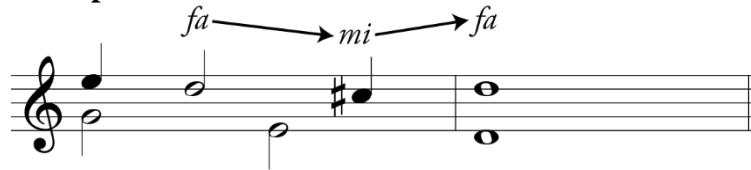
Harmonically, a diminished fifth or augmented fourth may appear when a *mi* from one hexachord overlaps a *fa* from the other hexachord, historically referred to as *mi–contra–fa*. For example, if one voice has *mi* in the natural hexachord (E) and another voice has *fa* in the soft hexachord, this creates the diminished fifth E–B \flat . To avoid the occurrence of this *mi–contra–fa*, one of two things would occur. Margaret Bent notes that most singers would be able to avoid this *mi–contra–fa* by ear and correct the error through the inclusion of *musica ficta*.³⁰ In these instances, the inclusion of an accidental to correct the *mi–contra–fa* is not indicated by the composer in the score, but rather is an expectation of the performers. Many modern-day editions of early music add in these instances of *musica ficta* editorially. However, in some cases, composers may indicate an accidental in the score. Notably in Victoria’s music, it is quite rare to need to editorially add in *musica ficta* to rectify *mi–contra–fa*. In most instances, Victoria has already included the accidental where needed.

The appearance of the *mi–fa* half-step interval however is not limited to the three hexachords and the harmonic *mi–contra–fa*. Perhaps more important for the purpose of position finding, the *mi–fa* interval can be found at any cadence. Cadences in early music were commonly

30. Margaret Bent, *Counterpoint, Composition, and Musica Ficta* (New York: Routledge, 2002), 109–10.

formed by a major sixth expanding to an octave. One voice would move by half step (the *mi-fa* interval) while the other voice would move by whole step in the opposite direction (see Example 2.2).

Example 2.2. A *clausula vera* on D.



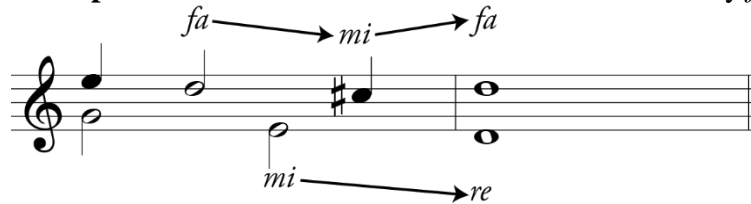
In this example, the *mi-fa* half step would signal an arrival around the pitch D. However, in the three hexachords, D is never solmized by *fa*; rather, in *cantus durus* it is solmized by *re* in the natural hexachord, *la* in the soft hexachord, and *sol* in the hard hexachord, while in *cantus mollis* it is solmized by *la* in the natural hexachord, *mi* in the soft hexachord, and *re* in the hard hexachord. Thus, there is an ontological difference between the solmization found in hexachords and the appearance of rare intervals within a melodic composition used for position finding. While four diatonic *mi-fa* half steps originate through hexachordal solmization of *cantus durus* and *cantus mollis*, they are insufficient by themselves in position finding. Rather, it is the directed *mi-fa* from the formation of a cadence that is central to position finding in early music, thus highlighting Fuller’s findings on how directed progressions aid in tonal orientation in her case study on *Ars nova* compositions.³¹

Herein lies the main ontological difference between the use of solmization in early music versus the modern-day usage of solmization for common practice period tonal music. In early music, there can be different hierarchical levels of solmization. We can think of the *clausula vera* Example 2.2 as having two levels of solmization: one hyperlocal level where D–C#–D is

31. Fuller, “Tendencies and Resolutions,” 252.

solmized *fa-mi-fa*, and one large-scale level where the overall movement from E to D is solmized *mi-re* (see Example 2.3).

Example 2.3. A *D clausula vera* where D is solmized by *fa* and *re*.



Thus, solmization by itself is not a sufficient tool for the analysis of tonal space in early music. As demonstrated by the importance of *mi-fa* in the appearance of the two rarest diatonic intervals, the minor second and augmented fourth/diminished fifth, solmization can be used to aid position finding within the tonal space. However, there are two different levels where solmization aids position finding: one where the solmization acts at defining the tonality at a global or large-scale level and another used solely for cadences that reinforce that global/large-scale tonality. Since cadences arise from motion between scale-degrees $\hat{7}-\hat{1}$ and $\hat{2}-\hat{1}$ through the use of cadential formulae, scale degrees can be a particularly useful tool for defining tonal space within early music. The concept of scale degrees is anachronistic to this music, as its development is associated with the rise of the thorough-bass practice in the seventeenth century.³² However, in conjunction with the contemporaneous practice of solmization, scale degrees can help clarify these different hierarchical levels of solmization.

The following section takes the combination of solmization and scale degrees to form new tonal qualia for early music. Drawing on Steven Rings's theory of the tonal quale in *Tonality and Transformation*, I provide an updated definition to describe what a listener experiences when listening to early music. First, Rings's tonal quale is introduced. Then, I

32. Gregory Barnett, "Tonal Organization in Seventeenth-century Music Theory" in *The Cambridge History of Western Music Theory*, ed. Thomas Christensen (New York: Cambridge University Press, 2002), 407–55.

discuss why the concept of the scale degree is insufficient in and of itself for early music. Lastly, I propose an alternative to Rings’s tonal quale which captures the same descriptive power as his tonal quale in common practice tonal music for early music.

Proposing A New Tonal Quale for Early Music

Rings’s Tonal Quale

Although the main goal of Steven Rings’s second chapter in *Tonality and Transformation* is the creation of his tonal generalized interval system (GIS), he begins the chapter with a brief exploration of experiential phenomena (or what he calls “apperceptions.”)³³ As with any experiential phenomena, such as a human’s perception of color, each individual may differ in how they perceive the phenomena. Rings’s illustrates this phenomenon with his Figure 2.1 (reproduced in Example 2.4).

Example 2.4. Reproduction of Steven Rings’s Figure 2.1 from *Tonality and Transformation*.

Moderato

Over time, musicians have come up with many terms to describe the aural phenomenon of the A in the third measure. Some of the common vocabulary used to describe this A include $\hat{7}$, *ti* in moveable-*do* solfège, or the leading tone. Regardless of one’s musical training or

33. Steven Rings, *Tonality and Transformation* (New York: Oxford University Press, 2011), 18. Rings uses the word “apperception” to replace David Lewin’s use of “intuition.” Rings argues that Lewin’s intuitions not only “reflect the influence...of broad cultural and historical conditioning, but also...theoretical concepts and other discursive constructions.” As a result, he uses “apperception” to describe how perceptions can be influenced both by “past experience” and “present reflection.”

vocabulary, however, Rings hypothesizes that any listener “enculturated within Western musical traditions” would share this experiential phenomenon, which he terms the quale.³⁴ These enculturated listeners would recognize this pitch’s instability and its necessity to resolve to $B\flat$ — $\hat{1}$, *do*, the tonic—in order to achieve stability.

Rings defines the tonal quale as the ordered pair of (scale degree, pitch class) which can become a tool to describe a listener’s apperception of any note in common-practice tonal music. The idea behind developing a tonal quale is that listeners or analysts could use this quale to describe their individual apperceptions, whether or not others perceive the pitch in the same way. It develops a common language to help others understand their individual hearing. For example, the tonal quale of ($\hat{7}$, 9) is very likely the same among many different listeners experiencing the note A in Example 2.4. However, it is entirely possible that listeners could have different apperceptions—and thus different tonal qualia—of how notes function in a tonally ambiguous passage. Rings’s tonal quale, the ordered pair (scale degree, pitch class), acts as a way to describe these apperceptions.

What Is a Scale Degree?: A Need for a New Tonal Quale

However, when trying to apply Rings’s tonal quale to earlier tonal repertoires, the scale degree becomes problematic. A scale degree in common-practice music encapsulates a musical function with two pieces of information. First, the scale degree determines the location within a scale intervallically. (For example, assuming a major scale, one diatonic step below $\hat{4}$ is always a half step away whereas one diatonic step below $\hat{5}$ is always a whole step.) Second, the scale degree determines the location within a scale as a measurement of diatonic steps from the tonic.

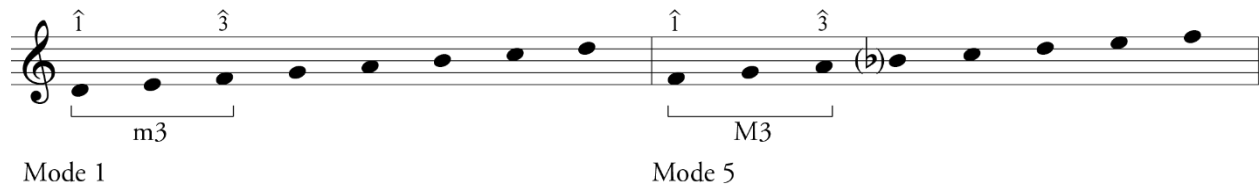
34. Rings, *Tonality and Transformation*, 41.

Rings's tonal quale is a succinct way to describe a listener's apperceptions to common-practice-period music, where the concept of how each scale degree should act is codified in the musical and theoretical literature. While common-practice music uses different scales (major and minor) in its music, the major scale is understood as the generator of musical information for Rings. For example, when using a minor scale, a third above the tonic is referred to a $\flat\hat{3}$, not $\hat{3}$, even if the work is in a minor key. Thus, the scale degree can contain quite a bit of information regardless of the mode (major or minor) of the work by including information about the note's relative stability, its distance from the tonic, and its expected behavior of resolution (if needed).

Earlier tonal repertoires however do not have this same codification of how pitches relate to one another. Depending on where the tonic is in early music, the pattern of where the half steps fall within the diatonic collection can change. For example, a work with the final of D would find a half step E–F between $\hat{2}$ and $\hat{3}$, whereas a work with the final of E would find that half step between $\hat{1}$ and $\hat{2}$.

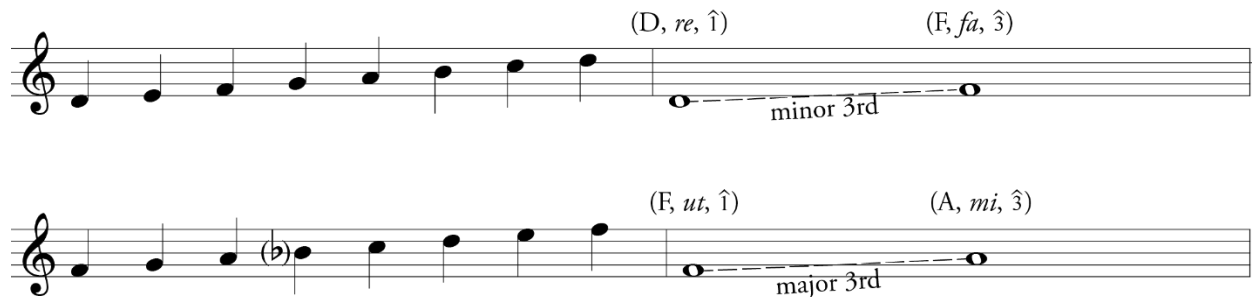
In order to achieve the same explanatory power of Rings's tonal quale in early music, the information encoded in the common-practice-period scale degree needs to be separated. This can be easily achieved by retaining the scale degree as a measurement of diatonic steps from the tonic. The D in a Mode 1 (Dorian) work would be called $\hat{1}$ while the F in a Mode 5 (Lydian) work would be called $\hat{1}$. $\hat{3}$ would be F in a Mode 1 work and would be A in a Mode 5 work. Note that no inflection is needed despite the third between $\hat{1}$ and $\hat{3}$ being minor in Mode 1 and major in Mode 5 (see Example 2.5).

Example 2.5. Demonstrating the use of the same scale degree despite different sized thirds in Modes 1 and 5.



To identify the difference in the sequence of intervals, a third element of solmization can be added to the ordered pair (scale degree, pitch class), creating the ordered triple (*littera* [pitch name], *vox* [solmization syllable], scale degree).³⁵ Solmization can be used to identify where the diatonic half steps occur through the identification of the interval *mi-fa*. Example 2.6 shows how this ordered triple can distinguish the difference between the opening third in Modes 1 and 5.

Example 2.6. The opening thirds of Modes 1 and 5 using the ordered triple (*littera*, *vox*, scale degree)



Forming an Early Music Tonal Space

With Rings's tonal quale, he formed a tonal generalized interval system (GIS) that maps the eighty-four possible combinations of the seven scale degrees and twelve pitch classes (see Figure 2.1).³⁶ Rings walks through the process that lets him keep his tonal space limited to seven

35. I opt to flip Rings's quale of (scale degree, pitch class) to lead with the *littera* and then separate out the scale-degree functions into the combination of *vox* and scale degree. *Littera* is the actual name for the pitch (for example, A, C# or Bb). *Vox* is the solmization syllable applied to the *littera*. The importance of using *littera* versus pitch-class will be discussed later in this chapter.

36. Rings, *Tonality and Transformation*, 45.

scale degrees when forming his Tonal GIS. In Chapter 2.7 where Rings discusses what it means to “hear in a key,” he forms the ordered triple (acc_n, sd_n, pc) where scale-degree n is the scale degree in some key and accidental n is the number of accidentals that need to be added (either flats or sharps) to reflect the chromatic inflection necessary for the pitch class to be represented by that scale degree in the defined key. Rings goes on to describe the ordered-triple notation as “potentially unwieldy in networks and other graphic contexts” and thus combines acc_n with sd_n so that the ordered triple example $(\#, \hat{1}, 4)$ in E-flat major can be simplified to $(\#\hat{1}, 4)$.³⁷ Rings goes on to conclude that in the context of an entire “key septuple” (which Rings uses major and minor keys as his primary examples), the scale degrees yield “*specific* (rather than merely generic) intervallic relationships to a tonic, as well as to other scale degrees).³⁸ Thus Rings does not need to differentiate between inflections of a scale degree in his Tonal GIS (such as $b\hat{3}$ or $\#\hat{4}$), as these inflections of scale degrees can be shown by the interval between pitch classes in the tonal GIS as defined. For example, Figure 2.2 depicts a C major scale in Rings’s Tonal GIS. The half step between E–F is clearly shown by the step between pitch-classes 4 and 5 between $\hat{3}$ and $\hat{4}$. (It is harder to see the half step between B–C as it occurs between $\hat{7}$ and $\hat{1}$). Figure 2.3 shows what a C harmonic minor scale would look like in the tonal GIS. Now the half steps are between D–E \flat , G–A \flat , and B–C. Even though $\hat{3}$ and $\hat{6}$ in harmonic minor are flattened, there is no need to distinguish this inflection as part of the Tonal GIS because it is shown inherently by the steps marked within the Tonal GIS.

37. Rings, *Tonality and Transformation*, 72.

38. Rings, 75 (emphasis his).

Figure 2.1. A recreation of Rings's Tonal GIS.

	$\hat{1}$	$\hat{2}$	$\hat{3}$	$\hat{4}$	$\hat{5}$	$\hat{6}$	$\hat{7}$
e							
t							
9							
8							
7							
6							
5							
4							
3							
2							
1							
0							

Figure 2.2. A depiction of a C major scale in Rings's Tonal GIS.

	$\hat{1}$	$\hat{2}$	$\hat{3}$	$\hat{4}$	$\hat{5}$	$\hat{6}$	$\hat{7}$
e							
t							
9							
8							
7							
6							
5							
4							
3							
2							
1							
0							

Figure 2.3. A depiction of a C harmonic minor scale in Rings’s Tonal GIS.

	1̂	2̂	3̂	4̂	5̂	6̂	7̂
e							
t							
9							
8							
7							
6							
5							
4							
3							
2							
1							
0							

However, Rings’s Tonal GIS becomes quite problematic for the mapping of tonal qualia and scales found within early music for several reasons. Most importantly, not all pitch classes were of equal status. While the chromatic scale had largely been fleshed out and several composers were experimenting with its possibilities, most early music was still using a limited set of pitches. Take for example the note that we call C#. Whether or not C# would be considered a *littera* at this point would be dependent on the theorist. C# would primarily be known as *ficta* early on in theoretical discussions of *musica ficta*. However, as noted in the anonymous *Tertius liber musicae* (1464), the “false step” of C# could be solmized as *mi* of a hexachord built on A. By the fifteenth century, a gamut of sixteen notes was standard, with some expanding to a seventeenth note (A#). This expansion of the gamut would allow C# to even be solmized by *la*, *sol*, and *re* if the hexachords were built on steps extracted from false steps. As Karol Berger remarks, this radical change in the conception of the gamut and solmization occurred when

theorists began to shift from conceiving the gamut in terms of the Guidonian hand, but rather in terms of a keyboard.³⁹

Thus, using Rings's Tonal GIS without modification suggests possible tonalities in early music that are not evident in the musical literature, but also absent in discussions found in contemporaneous theoretical treatises. By adding a third element to the tonal quale (*littera, vox, scale degree*), it would naturally create a three-dimensional space that looks like the Tonal GIS with the Z-axis containing the six possible *voces* (*ut, re, mi, fa, sol, la*). This inelegant solution would expand the possible combinations of tonal qualia from Rings's 84 qualia to a massive total of 504, which only exacerbates the problem of including options that are neither musically evident nor theoretically relevant.⁴⁰ Culling this larger space to only show tonal qualia that are likely to be found in early music does not accomplish anything worthwhile either, as the strength of Rings's Tonal GIS is in its well-formedness according to mathematical group theory.

One possible solution is to continue to use Rings's two-dimensional space but adding a layer of *voces* on top of the x-axis of scale degrees. These *voces* can rotate based on where the half-step is located in relation to $\hat{1}$ (see Figure 2.4). The black boxes above the scale degree signify where there is no solmization syllable that would correspond with a scale degree. What results from this solution is something that closely aligns with Cristle Collins Judd's "*Ut, Re, Mi*" tonalities.⁴¹ The strength of this solution shows how the different rotations of the diatonic collection create separate musical spaces that have their own musical idioms. However, it would

39. Karol Berger, *Musica Ficta: Theories of Accidental Inflections in Vocal Polyphony from Marchetto da Padova to Gioseffo Zarlino* (New York: Cambridge University Press, 1987): 12–55. Berger is the one to cite the anonymous *Tertius liber musicae* as an early example of the expansion of the gamut to include C#.

40. There are 504 possible qualia if you take the twelve pitch classes multiplied by the seven possible scale degrees multiplied by the six possible solmization syllables.

41. Cristle Collins Judd, "Modal Types and *Ut, Re, Mi* Tonalities," *Journal of the American Musicological Society* 45 (Autumn 1992): 428–67.

be difficult to map the shift from a D tonal center to an F tonal center—a very common occurrence in early music—in this two-dimensional space. However, I propose a solution on how to capture these transformations of musical space later in this dissertation in Chapter 5.

Figure 2.4. One way to distinguish between a work with a D tonal center (a), an E tonal center (b), and an F tonal center (c)

(a)

<i>re</i>	<i>mi</i>	<i>fa</i>	<i>sol</i>	<i>la</i>		<i>ut</i>
1̂	2̂	3̂	4̂	5̂	6̂	7̂

(b)

<i>mi</i>	<i>fa</i>	<i>sol</i>	<i>la</i>		<i>ut</i>	<i>re</i>
1̂	2̂	3̂	4̂	5̂	6̂	7̂

(c)

<i>ut</i>	<i>re</i>	<i>mi</i>	<i>fa</i>	<i>sol</i>	<i>la</i>	
1̂	2̂	3̂	4̂	5̂	6̂	7̂

What is clear is that no useful well-formed group can be created, as the whole tonal space created by the ordered-triple tonal qualia includes a plurality of tonal qualia that are not observable in early music repertoire. This might be ammunition for those who suggest that early music is therefore “pre-tonal”—as if this repertoire was still premature and underdeveloped to its ultimate evolution of the common practice period. For example, Lowinsky writes that “in his [Josquin’s] pursuit of harmonic logic he came as close to using the dominant seventh chord as sixteenth-century practice allowed—and it should be added that, fifty years after Josquin, Palestrina felt he could not go so far,” suggesting that Josquin’s music foreshadowed the eventual discovery of tonality in his usage of what appears to be a dominant seventh chord.⁴² It is possible that the early formations of tonal processes were becoming codified within this

42. Edward Lowinsky, *Tonality and Atonality in Sixteenth-Century Music* (Berkeley: University of California Press, 1961), 21.

repertoire. Yet, the music fails to conform into the operations of tonal space, as defined by Rings's Tonal GIS.

Attempts at assimilating early music's tonal phenomena and transformations to Rings's Tonal GIS advances forward this problematic conception of early music as the prototype to tonality. On the other hand, developing a well-formed mathematical group with the tripartite tonal quale necessary to describe one's apperceptions in this music creates a contextually-useless tool for music analysis. Thus, perhaps early music does not need this well-formed tonal space as an analytical tool. Rather, it may be better to describe the tonal phenomena as they occur in defined tonalities within this larger, theoretical tonal space. Composers can move between these different defined tonalities fluidly within one composition or they could stay within one tonality across a piece. How that would be determined is based on how the listener or analyst experiences and understands the music. The next three of chapters in the dissertation will help develop a framework for how listeners can conceptualize different tonalities using our newly-defined tonal quale and how listeners can identify which tonality they are in.

Chapter 3: Defining Global Tonalities in the Music of Tomás Luis de Victoria

With the expansion of Rings’s tonal quale to the ordered triple (*littera, vox, scale degree*), now we can define the tonalities that exist within Victoria’s music and that of his contemporaries. Since I evoke “tonality” as a term to describe the musical phenomena in which pitches are “arranged or understood in relation to a referential tonic,” the first step in determining the possible tonalities is defining the possible referential tonics.¹ To accomplish this task, the present chapter revisits Cristle Collins Judd’s *Ut, Re, Mi* tonalities and their corresponding “modal types” to define the possible tonalities within Victoria’s works. The distinction between tonalities and modal types allows the analyst to separate tonality from the tonal functions (Judd’s “modal types”) within a work. Once the tonalities are defined, this chapter will explore the relationship of cadential structures to the tonality or tonalities within a work. Four analytical vignettes will demonstrate how the tonality of a work can indicate likely cadential plans (and thus, the overarching tonality) of a work’s polyphonic setting.

Revisiting Judd’s “*Ut, Re, Mi* Tonalities”

During a surge of scholarship on tonal structures and tonal coherence in early music in the 1980s and 1990s, many analysts attempted to reconcile the concept of modality with tonality. In one of her first articles on this topic, Cristle Collins Judd noted that “conventional assumptions about a modal / tonal dichotomy and a succession from ‘modal’ to ‘tonal’ will not withstand close scrutiny.”² Much of Judd’s scholarship after this initial article aimed to find new

1. Brian Hyer, “Tonality” in *The Cambridge History of Western Music Theory*, ed. Thomas Christensen (New York: Cambridge University Press, 2002), 727.

2. Cristle Collins Judd, “Modal Types and ‘*Ut, Re, Mi*’ Tonalities: Tonal Coherence in Sacred Vocal Polyphony from about 1500,” *Journal of the American Musicological Society* 45, no. 3 (Autumn 1992): 428–29.

ways to engage with tonal coherence in early music. Through her exploration of Josquin's motets, Judd highlights several motets that entirely eschew modal classification based on Pietro Aron's "rules" for determining polyphonic modality.³ For Judd, the specific elements in Aron's *Trattato* ignored other important elements within a polyphonic work, such as "hexachordal position and pitch of the final; melodic characteristics, particularly in the superius, that correspond with modal markers; contrapuntal procedures; and the registral conventions of a vocal ensemble" which Judd notes would help resolve "the incongruities evident in modal classification."⁴

Judd proposes an alternate system comprised of three tonalities based on the first three *voces* of the hexachord: *Ut*, *Re*, and *Mi* tonalities.⁵ She cites two passages from Glarean's *Dodecachordon* as historical justification for this system, the latter passage noting that "others [many learned men] also proclaim that three [modes], *ut*, *re*, *mi*, are sufficient, just as ordinary players use them."⁶ She claims that there are different possible "modal types" within these three tonalities which are used to identify differences in register or melodic-contrapuntal paradigms. For example, an *Ut* tonality can have a final of C, F, or G. Commonly these finals are associated with Modes 5/6 (Lydian/Hypolydian) and 7/8 (Mixolydian/Hypomixolydian) which have different modal characteristics—such as the melodic patterns, contrapuntal procedures, and

3. Cristle Collins Judd, "Aspects of Tonal Coherence in the Motets of Josquin" (PhD diss., University of London, King's College, 1993) provides a detailed review of Judd's theories of tonal coherence in Josquin.

4. Cristle Collins Judd, "Aspects of Tonal Coherence in the Motets of Josquin," 437.

5. In this dissertation, I will use capital letters for the three classes of tonalities (*Ut*, *Re*, *Mi*) to distinguish them from their *voces*. Specific tonalities, such as F-*ut*, however will not capitalize the class of tonality.

6. Cristle Collins Judd, "Aspects of Tonal Coherence in the Motets of Josquin," 437. Judd cites the following quotes from Glarean's *Dodecachordon* to support the premise of three tonalities. "The same men teach in this way concerning the ending of songs in all modes: Every song ends either on *re* or on *mi* or on *ut*." "[Many learned men of this day] are acquainted with only eight modes, and others also proclaim that three, *ut*, *re*, *mi*, are sufficient, just as ordinary players use them."

registral conventions. Thus, modal types can be used to distinguish the differences between an *Ut* tonality with the final of F and an *Ut* tonality with the final of G.

Despite these different modal types within a tonality, each of these modal types shares the same hexachordal positioning of the final. Considering the tonal quale of (*littera, vox, scale-degree*), Judd's system helps reduce the possibility of *voces* assigned $\hat{1}$. Since the third *fa-sol-la* is isomorphic with the third *ut-re-mi*, any pitch that is the same as the final, but solmized with the *voces fa, sol, or la* can be understood as articulating $\hat{1}$ in its respective *Ut, Re, or Mi* tonality. Example 3.1 is the opening of the Introit from Victoria's *Missa pro defunctis à 4* (1583). The F in the tenor would be solmized as *ut* as the melodic phrase is ascending to C (*ut-re-mi-ut-sol-sol*) whereas the F in the bassus would be solmized as *fa* as the melodic phrase descends to C (*fa-mi-mi-fa-mi-re-ut-sol*).

Example 3.1. *Missa pro defunctis à 4*, Introit, mm. 1–5 with tonal quale.

The musical score for Example 3.1 consists of four parts: Cantus, Altus, Tenor, and Bassus. The lyrics are: "do - na e - is, Do". Above the notes, tonal quales are indicated: (F, ut, $\hat{1}$), (G, re, $\hat{2}$), (A, mi, $\hat{3}$) for the Cantus; (E, fa, $\hat{1}$), (E, mi, $\hat{7}$), (F, fa, $\hat{1}$), (C, ut, $\hat{5}$) for the Altus; (F, ut, $\hat{1}$), (G, re, $\hat{2}$), (A, mi, $\hat{3}$), (F, ut, $\hat{1}$), (C, sol, $\hat{5}$) for the Tenor; and (F, fa, $\hat{1}$), (E, mi, $\hat{7}$), (F, fa, $\hat{1}$), (D, re, $\hat{6}$), (C, ut, $\hat{5}$), (F, fa, $\hat{1}$) for the Bassus. A boxed 'F' is located at the bottom right of the score.

The strength of Judd's proposed system is that it aligns all the possible finals with one of three possible *voces*. Thus, the analyst can recognize the similarity in intervallic relationships between pitches in a *cantus mollis* work with a final of F and a *cantus durus* work with a final of

C or G. At the same time, it avoids overly restrictive requirements on register, melodic-contrapuntal patterns, and other elements that often complicate modal classification in modally-ambiguous works. Rather, these requirements are used to define the different modal types within a single tonality.

These *Ut, Re, Mi* tonalities emphasize certain elements of a composition that may or may not align with the historical understanding of a work. By elevating the similarities of intervallic relationships to a referential tonic with these tonalities, the analyst diminishes other historically important musical context within a work, such as the ranges of the different voice parts. However, through *Ut, Re, Mi* tonalities, the analyst can explore new aspects of tonal structures and tonal coherence that otherwise would be lost in a purely historical or historicist-based analysis of these works. Modal analyses are often rife with ambiguities and attempts to explain these ambiguities away because they do not conform to the historical understanding of how modes work.

The *Ut, Re, Mi* Tonalities in the Works of Victoria

Renaissance theorists, such as Glarean and Zarlino, recognized six possible finals for polyphonic compositions as part of their expansion to the twelve modes: C, D, E, F, G, and A.⁷ This was an expansion from previous theorists who used the four finals from the church tones (D, E, F, G) as the basis of their eight-mode system. The expansion to include C and A as finals reflects the recognition, by sixteenth-century theorists, of the validity of C and A as finals equal to the other four.

7. Gioseffo Zarlino, *On the Modes: Part Four of Le Istitutioni Harmoniche*, 1558, edited by Claude V. Palisca, trans. Vered Choen, (New Haven, CT: Yale University Press, 1983), 45; Heinrich Glarean, *Dodecachordon* (1547), trans. Clement A. Miller (n.p., American Institute of Musicology, 1965), 109.

These six finals can be mapped on the natural hexachord with a *cantus durus* signature. As such, the final C is assigned the *vox ut*, D is assigned *re*, and E is assigned *mi*. The finals of F, G, and A however are treated differently. The natural hexachord with a *cantus mollis* signature starts with the third F–G–A; thus, the final F can be assigned to *ut*, G to *re*, and A to *mi*. By the mid-sixteenth century, most works with a final of F used the *cantus mollis* signature. However, works with a final of G used the *cantus durus* and *cantus mollis* signatures. With a *cantus mollis* signature, the final of G is a transposition of the D-*re* tonality. However, with the *cantus durus* signature, G is assigned *ut*, as it appears in the hard hexachord. Likewise, an A final can also be assigned to *re*. Table 3.1 lists the tonalities associated with the finals C through A that could occur within Victoria’s repertoire.

Table 3.1. The tonic, *vox*, and associated signature for tonalities with the finals C through A in Victoria’s repertoire.

Tonic	Vox	Signature	Tonality
C	<i>ut</i>	<i>cantus durus</i>	C- <i>ut</i>
D	<i>re</i>	<i>cantus durus</i>	D- <i>re</i>
E	<i>mi</i>	<i>cantus durus</i>	E- <i>mi</i>
F	<i>ut</i>	<i>cantus mollis</i>	F- <i>ut</i>
G	<i>re</i>	<i>cantus mollis</i>	G- <i>re</i>
G	<i>ut</i>	<i>cantus durus</i>	G- <i>ut</i>
A	<i>mi</i>	<i>cantus mollis</i>	A- <i>mi</i>
A	<i>re</i>	<i>cantus durus</i>	A- <i>re</i>

Tonality, Cadences, and Tonal Hierarchy

The eight tonalities listed in Table 3.1 correspond with the six different finals found in Victoria’s repertoire. However, cadences frequently occur on pitches besides the final within a total work. Cadences can appear on any of the notes considered *musica recta*. However, in Victoria’s music, cadences to B[♯] are nonexistent. While a Phrygian cadence to B would fall within the useable gamut in Victoria’s time, he opted to avoid cadences to this note. The

following section will look at the relationship of the different cadences that occur within a tonality and how it articulates the tonal hierarchy found within this music.

When identifying expected cadences for each of the modes, Renaissance theorists have either taken a prescriptive or descriptive approach.⁸ Miguel A. Roig-Francolí highlighted seven contemporary theorists and their descriptions of expected cadences in Modes 1 through 8 in his work on tonal structures in the music of Victoria (see Table 1.1).⁹ Of those seven theorists, Bermudo (1555), Vicentino (1555) and Zarlino (1558) are the prescriptivists. I have opted to exclude the description of cadences from Juan Bermudo (1555) whose list of primary and secondary cadences significantly differs from the other six by including the fourth above the final as a primary cadence in all eight modes. Vicentino states that cadences should occur on the final and confinal of the mode, while Zarlino adds the third above the final.¹⁰ As a demonstration of Zarlino's prescriptivist views, he argues that Modes 3 and 4 should cadence on E, G, and B to justify the existence of Modes 9 and 10 (the Aeolian modes with a final on A) in the twelve-mode system.¹¹ However, Zarlino remarks that Modes 3 and 4 are often mixed with Modes 9 and 10 respectively to temper the harshness of these modes.¹²

8. Frans Wiering, *The Language of the Modes: Studies in the History of Polyphonic Modality* (New York: Routledge, 2001), 22–24.

9. Miguel A. Roig-Francolí, "Tonal Structures in the Magnificats, Psalms, and Motets by Tomás Luis de Victoria," in *Estudios: Tomás Luis de Victoria*, ed. Javier Suárez-Pajares and Manuel del Sol, (Madrid: ICCMU, 2013), 145–62 and also Miguel A. Roig-Francolí, "From Renaissance to Baroque: Tonal Structures in Tomás Luis de Victoria's Masses" *Music Theory Spectrum* 40, no. 1 (Spring 2018): 27–52.

11. Gioseffo Zarlino, *On the Modes: Part Four of Le Istitutioni Harmoniche*, trans. Claude Palisca (New Haven, CT: Yale University Press, 1983), 61–67.

12. Gioseffo Zarlino, *On the Modes*, 63–64. "If the third mode were not mixed with the ninth mode, and were heard by itself, its harmony would be somewhat hard, but because it is tempered by the diapente of the ninth mode and by the cadence made on a, which is very much in use in it, some have been of the opinion that the third mode moves one to weeping."

None of these theorists were more explicit in their descriptions of expected cadences than Pietro Pontio in his *Ragionamento di musica* (1588).¹³ Pontio creates four possible categories for cadences:

1. Proper, principal, and final cadences (*proprie, principali et terminate*)
2. Almost principal cadences (*quasi principale*)
3. Passing cadences (*per transito*)
4. Inimical, possible, and rare cadences (*inimico, si può fare, quasi mai*)

With these categories, Pontio seeks to explain the different possible cadences in a mode, including incredibly abnormal possibilities such as cadences to E and B in Modes 1, 2, and 5 and cadences to F in Mode 3. Notably, Roig-Francolí does not include any of the cadences listed in the Pontio's fourth category in his table of expected cadences as they are perhaps too descriptive and suggest mixture with other modes.

Whether theorists subscribed to a prescriptive or descriptive summary of expected cadences with the modes, it is clear that there is a hierarchy within these expected cadences. If we remove the passing cadences explicitly mentioned by Pontio and Santa Maria and combine the expected cadences by their respective *Ut*, *Re*, and *Mi* tonality, we can see several trends on what cadences are often considered acceptable within that tonality (see Table 3.2). While Vicentino has the fewest number of number of cadences on the list, all of his cadences are confirmed by all other theorists with the exception of a B cadence in the E-*mi* tonality. Through this near universal agreement with other theorists, Vicentino highlights the primary cadences within a tonality.

13. Pietro Pontio, *Ragionamento di Musica* (1588): 100–21, cited in Frans Wiering, *The Language of the Modes: Studies in the History of Polyphonic Modality* (New York: Routledge, 2001), 24.

Table 3.2. Expected cadences from Table 1.1, but by *Ut*, *Re*, *Mi* tonality instead of mode.

Tonality	<i>D-re</i>	<i>E-mi</i>	<i>F-ut</i>	<i>G-ut</i>
Vicentino (1555)	D, A	E, B	F, C	G, D
Zarlino (1558)	D, F, A	E, G, B	F, A, C	G, B, D
Dressler (1563)	D, F, A	E, A, B, C	F, A, C	G, C, D
Santa Maria (1565)	D, F, A	E, A, C	F, A, C	G, C, D
Pontio (1588)	D, F, A	E, A, C	F, A, B \flat , C	G, C, D
Montanos (1592)	D, F, A	E, G, A, C	F, A, C	G, C, D

However, the similarities between theorists's expected cadences within the *Ut*, *Re*, and *Mi* tonality do not end there (see Table 3.3). In the case of *D-re* and *F-ut*, the final, third above the final, and the confinal are almost universally considered the expected cadences. Things become less clear with the *E-mi* tonality and *G-ut* tonality. On the face of it, the *E-mi* tonality includes the final, and both recitation tones from Modes 3 and 4 (C and A respectively). However, we can rearrange these cadences to align with the expected cadences of the *D-re* and *F-ut* tonalities if the cadences were centered on A instead of E. As will be discussed later in this chapter, Victoria's compositions with the final of E may arguably not have the *tonic* of E. That is, unlike with the other tonalities, the tonic may not align with the final of the composition. In particular, this correlation of expected cadences with *D-re* and *F-ut* tonalities if the tonic of an *E*-final piece were A lends to *E-mi*'s questionable status as a tonality in Victoria's work.

Table 3.3. Summary of expected cadences from Table 3.2. Cadences without a plurality of theorists agreeing are shown in parentheses.

Tonality	<i>D-re</i>	<i>E-mi</i>	<i>F-ut</i>	<i>G-ut</i>
Expected Cadences	D, F, A	E, A, C (G, B)	F, A, C (B \flat)	G, C, D (B)

Furthermore, *G-ut* seems to conflict with the expected cadences of *F-ut*, if we are to generalize that all *Ut* tonalities have similar expectations. Judd's article does not offer much clarity on this matter, as only three of Josquin's motets would classify as Mode 8 according to

Aaron, while none classify as Mode 7.¹⁴ Thus, most examples of an *Ut* tonality have the final of F. Judd does include one example of a sample modal type with the outline of G to C, derived from the motet *Stetit autem*, which is questionably attributable to Josquin. She explicitly notes though that a modal type is “neither a synonym for, nor a compositional representative of, ‘mode.’ A modal type defines tonal coherence and frequently, but not necessarily, corresponds to features commonly called modal indicators.”¹⁵ *Stetit autem* features more cadences on C than G, although the final cadence in both sections of the motet ends on G. Any cadences to D act as secondary cadences to G. As shown by the quantitative pitch data provided by the Josquin Research Project at Stanford University, the most common notes in the superius, altus, tenor, and bassus voices are respectively G, C, G, and C.¹⁶ This might be simply explained by the fact that C is the *repercussa* of Mode 8. However, the emphasis on C might lead one to question whether the tonic is C, despite the final of G.

Since cadences are exceptionally rare to B \sharp in many compositions prior to 1600, this would explain why theorists had trouble characterizing expected cadences in Modes 7 and 8, otherwise known as *G-ut*. In some cases, they may have been trying to articulate expected cadences in *C-ut*, which was not a viable tonality within the eight-mode system but nonetheless existed by the sixteenth century, highlighting the expected cadences C and G (as with *Stetit autem*). Moreover, these theorists may have also been describing works in *G-ut* recognizing that cadences to B were essentially nonexistent and thus composers who composed in a *G-ut* tonality would only include cadences on the final and confinal (G and D, respectively).

14. Cristle Collins Judd, “Modal Types and ‘*Ut, Re, Mi*’ Tonality,” 433.

15. Cristle Collins Judd, “Modal Types and ‘*Ut, Re, Mi*’ Tonality,” 439–41.

16. “Josquin, *Stetit autem* Salomon (Jos1414),” The Josquin Research Project, accessed January 2, 2021, <https://josquin.stanford.edu/work/?id=Jos1414>.

What the refined list of expected cadences shown in Table 3.3 gives the analyst is a general idea of what the primary cadences are within the *Ut*, *Re*, and *Mi* tonalities. We can generalize that cadences to the final and confinal (with the exception of *Mi* tonalities) are central to defining that tonality. Less certain is the status of the expected cadences on the third above the final in *Ut* and *Re* tonalities. While these cadences on the third above the final should be considered typical, the overlap between these cadences and other tonalities suggest that they are less crucial to defining that tonality. For example, cadences to F (third above D) and A (third above F) might be indicative of either *D-re* or *F-ut* tonalities.

The remainder of this chapter will explore several of the possible tonalities in Victoria's music in four analytical vignettes. The first vignette explores the cadences and tonal structure in *Vexilla regis (more hispano)*, the final hymn of the *Officium Hebdomadae Sanctae* (Office for the Holy Week) of 1585, to be performed during Vespers on Holy Saturday. This example demonstrates how composers could use the pitch content of the *cantus firmus* to determine an overarching tonal plan for the polyphonic settings of the verse. The second vignette will take a similar analytical approach to the opening Introit from Victoria's *Missa pro defunctis à 4* (1583), which characterizes cadences and tonal structures found in *F-ut* works. The third vignette will investigate the *E-mi/A-re* tonality conundrum, focusing on what musical phenomena may help promote a reading of a Phrygian composition as a *Mi* tonality versus a *Re* tonality. The final vignette will explore Victoria's use of the *G-ut* tonality in his *Missa O quam gloriosum* (1583) to compare the expected cadences from the theories of his contemporaries to determine if *G-ut* operates differently than expectations in other *Ut*-based tonalities.

Vignette – Cadences and Tonal Structure in *Vexilla regis (more hispano)*

The hymn *Vexilla regis (more hispano)* is the final hymn and composition in Victoria's *Officium Hebdomadae Sanctae* of 1585, to be performed during Vespers on Holy Saturday. The term *more hispano* refers to the liturgical hymn melodies found in the *Intonarium Toletanum* (1515), which is based on the Mozarabic and Visigothic chant traditions.¹⁷ The *Intonarium Toletanum* was a collection of the Office hymn melodies for the Toledo Cathedral.¹⁸ Thus, these alternate melodies for liturgical hymns were occasionally used by composers of Spanish descent, including one of Victoria's contemporaries, Francisco Guerrero.

The polyphonic setting of *Vexilla regis (more hispano)* is an interesting case study for examining the tonality and tonal structure of a work as the plainchant appears seven times throughout the work (three times as plainchant and four times as a *cantus firmus* in a polyphonic setting). Table 3.4 details the vocal structure of *Vexilla regis (more hispano)*.

Table 3.4. The vocal structure of *Vexilla regis (more hispano)*.

Verse	Composition Style	<i>Cantus firmus</i> Voice
1	Monophonic	
2	Polyphonic (four voices – C, A, T, B)	Tenor
3	Monophonic	
4	Polyphonic (three voices – C, A, T)	Cantus
5	Monophonic	
6	Polyphonic (four voices – C, A, T, B)	Cantus
7	Polyphonic (six voices – C1, C2, A1, A2, T, B)	Cantus 2

The plainchant, as shown in Example 3.2, has a final of D, indicating a *D-re* tonality. There are four phrases that follow an A–B–C–A pattern. The A phrases end on D, the B phrase ends on A, and the C phrase ends on F. These outline the three pitch-classes that we can expect

17. I am indebted to Ferran Escrivà-Llorca for helping me identify the source of this chant.

18. Bruno Turner, *Toledo Hymns: The Melodies of the Office Hymns of the Intonarium Toletanum of 1515*, (2011), 3, <http://plainsong.org.uk/wp-content/uploads/2016/05/Bruno-Turner-Toledo-hymns.pdf>.

cadences on in a *D-re* composition. While the range of the chant (C–d) suggests a Mode 1 chant, the melodic pattern at the beginning of the C phrase resembles one of the *exordia* for Mode 2.¹⁹ In addition, the phrase ending on F in Phrase C strongly suggests that any polyphonic setting would include a cadence to F, a secondary cadence in Mode 1, but an expected cadence in Mode 2. These modal characteristics demonstrate the ambiguity that often accompanies mode identification and modal analysis. On the other hand, the identification of the referential tonic, D, is unambiguous.

Example 3.2. *Vexilla regis (more hispano)* plainchant.

The stepwise nature of the chant offers the composer many opportunities to write cadences at any point in the plainchant, as any descending step could initiate a *clausula vera*. Nevertheless, cadences only occur on four pitch-classes in Victoria’s polyphonic settings: D, F, A, and C (see Table 3.5). At first glance, the frequency of cadences on D and F aligns with the expectation of a composition in *D-re*, as suggested by the *cantus firmus*. However, the number of

19. Bernhard Meier, *The Modes of Classical Polyphony*, trans. Ellen Bebee (New York: Broude Brothers Limited, 1988), 216. The beginning of the phrase A–C–D–A is similar to Meier’s second initial model for Mode 2.

cadences on A, comparatively to F, seems small. Furthermore, the several cadences on C fall outside the expectations of a *D-re* tonality.

Table 3.5. The frequency of cadences in *Vexilla regis* (*more hispano*).

D	17
A	6, (including, 4 Phrygian, 1 deceptive, 1 half*) ²⁰
F	17, (including 1 plagal, 1 deceptive)
C	3 (including 1 deceptive)

The layout of the cadences against the plainchant is shown in Example 3.3. Curly brackets indicate where the *cantus firmus* has been truncated. There are several notable observations one can see from Table 3.5. First, the pitch found in the plainchant is not always the pitch-class of the cadence at that time. For example, there are two cadences that occur during the fourth note of the plainchant, F. In verse 4, the cadence is on D while in verse 7, the cadence is on F. Second, only the ends of both A phrases have unanimous agreement on the cadential pitch in all four polyphonic verses of the hymn, further confirming a *D-re* tonality.

20. The half cadence on A can be argued as both a cadence and not a cadence. Several recorded performances take a rhetorical pause and breath after *ave* as all voices end at the same time. While Victoria does not indicate punctuation in the manuscript, the text often has a punctuation mark after *ave*. Photographs of the manuscript at the Monasterio de las Descalzas Reales, Biblioteca del Palacio Real, Madrid can be found at the following website: <https://www.uma.es/victoria/1585a/1585a.html>.

Example 3.3. Layout of the cadences in the four polyphonic verses against the *Vexilla regis* (*more hispano*) plainchant

The musical score is organized into three systems, each with a Plainchant line and four Verse lines (Verse 2, Verse 4, Verse 6, Verse 7).

- System 1 (labeled 'A'):** The Plainchant line is a single melodic line. Verse 6 includes a bracketed section labeled "Half*".
- System 2 (labeled 'B' and 'C'):** The Plainchant line is split into two sections, B and C. Verse 2 has "Phry." markings above the first and second notes. Verse 4 has "Phry." markings above the first and second notes. Verse 6 has "Dec." markings above the first, second, and third notes. Verse 7 has a "Dec." marking above the second note.
- System 3 (labeled 'A'):** The Plainchant line is a single melodic line. Verse 4 has a "Dec." marking above the second note. Verse 6 has a "Plagal" marking above the second note. Verse 7 is marked with a large bracket.

Six of the cadences to F are immediately followed by bass movement to D in Verse 2 and 4. This is indicated by a slur from F to D with the D in parentheses in Example 3.3. With any cadence, one might consider the possibility of reorienting to a new tonality. For example, any cadence to F may have the potential to shift one's hearing toward an F-*ut* tonality, because at that moment in time, the quale would be either (F, *ut*, $\hat{1}$) or (F, *fa*, $\hat{1}$) at the local level. However, by immediately following the cadence to F with a D sonority, the listener is quickly reoriented back to the global tonality of D-*re*. Example 3.4 through Example 3.6 present three of these cadences.

Example 3.4. *Vexilla regis (more hispano)*, mm. 5–7.

5

Cantus
in - - - su - per quo vul - ne

Altus
8
(in) - - - su - per, quo vul - ne - ra - tus

Tenor
8
tus in - - -

Bassus
in - - - su - per, quo vul - ne - ra - tus

[F] → D

Example 3.5. *Vexilla regis (more hispano)*, mm. 26–28.

26

Cantus
la - va - ret cri - mi - ne ma

Altus
cri - mi - ne

Tenor
cri - mi - ne

Bassus
cri - mi - ne

F → **D**

Example 3.6. *Vexilla regis (more hispano)*, mm. 57–59.

57

Cantus
(pur) - pu - ra

Altus
pur - pu - ra e

Tenor
re - gis pur - pu - ra, pur

F → **D**

Five of six of these cadences appear similarly to Example 3.4 and Example 3.6 where the voices shifting the tonality back to *D-re* occur at the beginning of a new phrase. Analysts could interpret this as a completed phrase in a local *F-ut* tonality elided with the beginning of a new phrase in a *D-re* tonality. Alternatively, analysts could view these *F* cadences as weakened or undermined by the global tonality *D-re* since the voices in the *F* cadence that do not move to *D* remain held while the new phrase begins.

Unlike the other five examples of this motion from F to D, Example 3.5 demonstrates an example where the bassus continues the end of its phrase with an ornamentation from F to D. It is the only moving voice at this moment. The duration of the F is remarkably short, further undermining the strength of the cadence to F by quickly moving on from the idiosyncratic $\hat{6}-\hat{1}$ motion in the bass. This cadence finishes the line of text *ut nos lavaret crimine* referring to the washing away of the sins of humankind. The bassus's melodic line literally represents the "washing away" of these sins by eroding the cadence to F. This phrase also underscores the mixed feelings of redemption from one's sins with the acknowledgment of Jesus's sacrifice at the cross, which is confirmed by the final line of the verse, *manavit unda et sanguine*.

The final shift from an F cadence to a D sonority occurs toward the end of the fourth verse, beginning the first of four iterations of the final line of the verse, *tam sancta membra tangere* (see Example 3.7). Notably at the end of the second iteration of this line, there is a deceptive cadence to F where neither the cantus nor tenor completes the *clausula vera* to F. Rather the cantus steps up to A and the tenor leaps down to D, forming a D_3^5 sonority instead of an F sonority. I find this section interesting as Victoria avoids a cadence to F when F appears in the *cantus firmus* in measure 71, opting rather to cadence on D. Then, when a *clausula vera* begins in measure 73, the cadence to F fails to materialize with deceptive motion in the cantus and tenor.

In Example 3.4 through Example 3.7, I label these shifts $F \rightarrow D$ because while the cadence confirms a local F-*ut* tonality, there is a sudden shift in tonality following the cadence. As seen in measure 77 of Example 3.7, there is a similar quick shift from a cadence on D to a G_3^5 sonority. However, I do not indicate this shift as $D \rightarrow G$ because the tonality of this section is still in D-*re*. The tonic status of the cantus's (D, *re*, $\hat{1}$) is never in doubt in measures 77–80. The G sonority is

part of the plagal motion commonly found in the *supplementa* of Victoria's compositions that confirms the tonic at the end of a major section or at the end of the composition.

Example 3.7. *Vexilla regis (more hispano)*, mm. 66–80.

66

Cantus
sti - pi - te tam san -

Altus
(sti) - pi - te tam san - cta mem - bra tan - - - ge -

Tenor
sti - pi - te tam san - cta mem - bra tan - - - - ge -

71

C
cta mem - bra tan - - - -

A
re, tam san - cta mem - bra tan - ge - re, tam san - cta mem - bra tan -

T
re tam san - cta mem - bra tan - ge - re tam san - cta mem - bra

76

C
ge - re.

A
- - ge - re tam san - cta mem - bra tan - ge - re.

T
tan - ge - re, tam san - cta mem - bra tan - ge - re.

F → **D**

F_{dec}

D

The polyphonic settings of Verse 2 and 4 both find ways to weaken the cadences to F to emphasize the global D-*re* tonality. However, there are several sections of *Vexilla regis (more hispano)* that have extended passages in a local F-*ut* tonality. For example, as seen in Example 3.3, the B section of Verse 7 only features cadences to F. From measures 128 to 146, F assumes the role of tonic, confirmed with four successful *clausulae verae* to F and a deceptive resolution of a *clausula vera* on A (see Example 3.8). Phenomenologically, it would be difficult to retain D as the tonic during this section, with the emphasis of the E–F half step reinforcing a listener’s diatonic position finding toward F combined with the lack of the C#–D half step that appeared frequently in the prior verses. Thus, this passage is one of several in *Vexilla regis (more hispano)* that shifts to a different tonality, one that is hierarchically below the global tonality of D-*re*.

While there is an opportunity to reorient the listener to the global tonality of D-*re* during the preparation of the Phrygian *clausula vera* on A in measure 141, the bassus leaps down to F, denying a shift back to the global tonality of D-*re*. It is noteworthy that Victoria returns to a similar voicing of this prepared Phrygian *clausula vera* on A when the tonality shifts back to D-*re* (see Example 3.9). Rather than have the bassus leap up (or down) to D in measure 148 to strengthen the *clausula vera* on D between the two altus voices, it steps up to B \flat , mirroring the voicing of the previous Phrygian *clausula vera* on A in measure 141. Thus, a full cadence is not achieved until the following measure. Modern day listeners and analysts who participate in retrospective reinterpretations of musical moments will thus understand the kinetic potential of the prepared Phrygian *clausula vera* in measure 141 of shifting the listener back to D-*re* tonality, but fails to do so until it returns later in measure 148, when the final line of Verse 7 is introduced and the global tonality of D-*re* is confirmed.²¹

21. Janet Schmalfeldt, *In the Process of Becoming: Analytic and Philosophical Perspectives on Form in Early Nineteenth-Century Music* (New York: Oxford University Press, 2011).

Example 3.8. *Vexilla regis (more hispano)*, mm. 128–46.

128

Cantus I
 (o) - mnis spi - ri - tus col - lau - det

Cantus II
 col - lau - det o -

Altus I
 o - mnis sp - ri tus, col - lau - det o - mnis spi - ri - tus

Altus II
 o - mnis spi - ri - tus, col - lau - det o - mnis spi -

Tenor
 col - lau - det o - mnis spi - ri - tus, o - mnis

Bassus
 col - lau - det o - mnis spi -

[F]

133

C I
 o - mnis spi - ri - tus: quos

C II
 mnis spi - ri - tus:

A I
 col - lau - det o - mnis spi - ri - tus: quos per cru -

A II
 ri - tus, col - lau - det o - mnis spi - ri - tus:

T
 spi - ri - tus col - lau - det o - mnis spi - ri - tus: quos per

B
 ri - tus, col - lau - det o - mnis spi - ri - tus:

[F] [F]

138

C I
per cru - cis my - ste - - - - - ri -

C II
— quos — per cru -

A I
cis my - ste - ri - um —

A II
— quos — per cru - cis my - ste - ri - um

T
cru - cis my - ste - ri - um my - ste - ri -

B
quos per cru - cis — my - ste - - - - - ri -

142

C I
um quos per cru - cis my - ste - - - - - ri - um

C II
cis my - ste - - - - - ri - um

A I
— quos per cru - cis my - ste - ri - um sal

A II
quos per cru - cis my - ste - ri - um sal - vas re

T
um, quos per cru - cis my - ste - - - - - ri - um, sal - vas

B
um, quos — per cru - cis my - ste - ri - um, sal - vas

A_{dec}

F

Example 3.9. *Vexilla regis (more hispano)*, mm. 147–49.

147

Cantus I
sal - vas re - ge per sæ

Cantus II
sal

Altus I
vas re - ge per sæ - - - - cu - la

Altus II
ge per sæ - - - - cu - la sal

Tenor
(vas) re - ge per sæ - cu - la sal

Bassus
re - ge per sæ - - - - cu - la,

(D) D

Commixture and the Mixing of Tonalities

As evidenced in this analysis of *Vexilla regis (more hispano)*, the tonic seesaws back and forth between D-re and F-ut. However, the global tonality of the work is D-re as it frames both ends of the composition and is the predominant tonality for the majority of *Vexilla regis (more hispano)*. (As this chapter will demonstrate later in its analysis of *Missa O quam gloriosum*, the initial tonality of a work at the foreground level may not necessarily have to be the global tonality). Local tonalities are the tonalities that differ from the global tonality, as is the case with the F-ut sections in this analysis. Some of these F-ut sections are short lived, such as those sections that end after a cadence to F confirms the new local tonic. Other local tonalities can be much longer, as is the case with the setting of the B and C phrases in Verse 7 (see Example 3.8). Conversely, there can be even smaller references to a local tonality with an internal directed

progression that momentarily emphasizes a pitch, such as the B's in the cantus in measures 135 and 144 (see Example 3.8), that form a directed progression to C. One could interpret these Cs as the quale (C, *fa*, $\hat{1}$), however, this directed progression occurs within the much more established F-*ut* tonality.

As noted in Chapter 1, the idea of “commixture” or the mixing of modes appeared as early as the early-fourteenth century with Marchetto’s *Lucidarium in arte musice plane* (ca. 1317–18) and was further developed to apply to polyphonic modality as observed in Glarean’s *Dodecachordon* and Zarlino’s *Le Istitutioni Harmoniche*. Thus, the concept of mixing modes had been well theorized by the time Victoria wrote his compositions. Given that modes can be mixed, the mixing of tonalities is certainly possible within this repertoire. When considering the expected possible cadences within a D-*re* tonality (D, F, and A), it is not surprising that extended passages in a local F-*ut* tonality might occur, as there is overlap with several of F-*ut*’s expected cadences (F, A, and C). Since there is significant overlap in expected cadences between D-*re* and F-*ut*, there is always potential for localized tonics on F to exist within any D-*re* global tonality (and vice versa).

Now that we can consider the potential for local F-*ut* tonalities exist within a D-*re* work, cadences to C then can be explained as emphasizing this local tonic on F. In Example 3.10. *Vexilla regis (more hispano)*, mm. 90–93. and Example 3.11. *Vexilla regis (more hispano)*, mm. 111–14., the cadences to C prepare a confirmation of a local F-*ut* tonality. Notably, the *cantus firmus* in Example 3.10. *Vexilla regis (more hispano)*, mm. 90–93. leaps from C to F after a completed *clausula vera* to C between the tenor and cantus voices. While leaps of a fourth or fifth between $\hat{5}$ and $\hat{1}$ most often occur in the lowest voice, Victoria may have seen the potential that this leap in the plainchant provides as a way to emphasize F in both Example 3.10. *Vexilla*

regis (more hispano), mm. 90–93. and Example 3.11. *Vexilla regis (more hispano)*, mm. 111–14.. While the confirmation of the F-*ut* local tonality aligns with the A in the plainchant, the outline of C–F–(G)–A outlines the pitches of an F $\frac{5}{3}$ sonority and affords the composer of many ways to write counterpoint that underlines an F-*ut* tonality.

Unlike the earlier extended passages in an F-*ut* tonality, what follows these examples is a quick shift to D-*re*. This demonstrates that localized tonics do not need lengthy passages and multiple cadences to confirm their status as a localized tonic. Much as common-practice music has tonicizations, which are foreground references to a new key, Victoria’s music can likewise have the appearance of tonics below the hierarchical level of local tonalities. These may be short passages like those seen in Example 3.10 and Example 3.11, or even extended to the fleeting tonics on F as seen with the quick shift from F to D in Example 3.4 to Example 3.7.

Example 3.10. *Vexilla regis (more hispano)*, mm. 90–93.

The musical score for Example 3.10 consists of four staves, each representing a different vocal part: Cantus, Altus, Tenor, and Bassus. The Cantus staff begins at measure 90 and contains the lyrics "hoc pas - si - o - nis". The Altus staff contains the lyrics "(tem) - po - re, hoc pas - si - o - nis tem - po - re". The Tenor staff contains the lyrics "pas - si - o - nis tem - po - re, hoc pas - si". The Bassus staff contains the lyrics "o - nis tem - po - re, hoc pas - si". Below the Bassus staff, there are two tonal markers: a box containing "C_{dec}" and another box containing "F".

Example 3.11. *Vexilla regis (more hispano)*, mm. 111–14.

114

Cantus
(que) do - na ve

Altus
ve - ni - am, re - is - que do - na ve - ni - am re

Tenor
am re - is - que do - na ve

Bassus
re - is - que do - na ve - ni - am, re - is - que

C

F
plagal

Vignette – F-ut Tonality in the *Missa pro defunctis à 4* (1583): I. Introit & II. Kyrie

Like *re* tonalities, F-ut has expected cadences on the final, confinal, and third above the final (F, A, C). However, as seen in the *Vexilla regis (more hispano)* vignette, it is conventional for commixture to occur between D-*re* and F-*ut*. This vignette focuses on the first two movements of the *Missa pro defunctis à 4* (1583): I. Introitus and II. Kyrie. The *Missa pro defunctis à 4* uses the plainchant from the Mass of the Dead as a *cantus firmus* in the cantus voice, although Victoria at times takes liberties with the *cantus firmus*. Both chants are categorized as Mode 6 (Hypolydian) chants in the *Liber Usualis*, which aligns with the expectation of an F-*ut* global tonality. As we have observed some tonal structures within an F-*ut* tonality as a local tonality in *Vexilla regis (more hispano)*, these two movements will demonstrate the overlap when F-*ut* is a global tonality.

Introit

Example 3.12 outlines the cadential structure of the polyphonic verses in the *Missa pro defunctis à 4*'s Introit. The frequency of cadences, especially in the first and third verses, is due to the outline of the imitative counterpoint which includes a 2–3 suspension that alludes to a *clausula vera* on F. The majority of cadences in the Introit are on F. Notably, there are no cadences to C, which is among our potential cadences in an F-*ut* tonality. However, it is important to consider the opportunities for cadences on C against the plainchant used as the *cantus firmus*. There are only two appearances of the pitch-class C in the *cantus firmus*, one in the middle of a melisma on the final syllable of *luceat*—hardly a location where a cadence should appear. The pitch-class E only appears in the *cantus firmus* voice as an addition by Victoria to articulate the syllable “ni” in *veniet*.²² While the pitch-class G occurs frequently in the plainchant, it is almost exclusively seen as a passing or neighboring tone with the pitch-classes F and A. The one exception occurs on the word *Jerusalem*, which features a distinctive musical moment that will be explored later in this chapter. Thus, there is little potential for cadences on C with this *cantus firmus*. This makes sense with the plainchant's classification as Mode 6 as demonstrated by the use of pitch-class A as a recitation tone, especially in the latter half of the work.

22. As seen in the *Liber Usualis*, the syllable “ni” in *veniet* also occurs on an F, thus Victoria took the liberty to change this to an E so the final cadence would punctuate the final syllable.

Example 3.12. Layout of the cadences for the polyphonic verses of the *Missa pro defunctis à 4* (1583), I: Introit.

Plainchant

do - na - e - is do - na e - is, Do - mi - ne: _____

Cadences

Dec.

Plainchant

et lux _____ per - pe - tu a

Cadences

Dec. Plag.

Plainchant

lu - ce - at _____ e - - - is.

Cadences

Delayed res.

Plainchant

et ti - bi red - de - tur vo - tum in Je - ru - sa - lem

Cadences

Failed Phyr.

Plainchant

ex - au - di o - ra - ti - o - nem me - am,

Cadences

N.B.: Starts on D

Plainchant

ad te om - nis ca - ro _____ ve - ni - et.

Cadences

Dec.

N.B.: Starts on D

While there are no cadences on C, there are five cadences on D (including two deceptive cadences) which do not fit the expectations of an F-*ut* tonality. However, D cadences could appear as a result of commixture, as seen in the *Vexilla regis (more hispano)* vignette. As seen in Example 3.12, all five of these cadences to D occur against either an F or A in the *cantus firmus*, thus representing a compositional decision made by Victoria, as one could also compose cadences to F against F or A, or A against A, which would fall within the F-*ut* global tonality better.

Example 3.13. *Missa pro defunctis à 4*, Introit, mm. 6–10.

6

Cantus
na e is, do

Altus
(Do) mi ne, do na e is, Do

Tenor
Do mi ne, do na e is,

Bassus
Do mi ne,

F D F

The first cadence on D is sandwiched between two cadences on F (see Example 3.13). This is an example of a fleeting shift—a “tonicization” as it were—to a D-*re* tonality before the global tonality of F-*ut* reestablishes itself later in measure 8. The only reason a listener may perceive this momentary D-*re* tonality is because of the C# in the altus voice in measure 7. This C# was indicated by Victoria in his prints, even though it is not a necessary inflection to avoid

mi-contra-fa.²³ Another fleeting allusion to a *D-re* tonality occurs during a deceptive resolution of a *clausula vera* on D in measure 23 (see Example 3.14). Both Example 3.13 and Example 3.14 may seem odd to the listener or performer at the time of their appearance as misplaced in an otherwise straightforward composition in *F-ut*, but they foreshadow an extended instance of *D-re* later in the Introit.

Example 3.14. *Missa pro defunctis à 4*, Introit, mm. 20–23.

20

Cantus
(et) lux per - pe

Altus
(lux), et lux per - pe - tu - a lu

Tenor
8 et lux per - pet - tu - a, et lux per - pe - tu - a lu

Bassus
et lux per - pe - tu - a

D_{dec}

The second polyphonic section of the Introit begins on a D_3^5 sonority (see Example 3.15). For the cantus (which contains the *cantus firmus*), this might seem odd if not remarkable, as their melody mirrors the same F–G–A–A melody from the beginning of the Introit. Toward the end of this phrase on the text *Jerusalem*, a prepared *clausula vera* on F fails to bring a resolution (as indicated by the exclamation point in Example 3.15), eschewing confirmation of the *F-ut* tonality. What follows is an extended passage in *D-re*. *F-ut* only returns

23. A facsimile of the 1592 print which includes the 1583 version of the *Missa Pro defunctis à 4* can be viewed online at <https://www.uma.es/victoria/1592/1592.html>.

upon the deceptive resolution of the *clausula vera* on D in measure 55 finally reestablishing the global tonality of the work by the end of the Introit.

Example 3.15. *Missa pro defunctis à 4*, Introit, mm. 38–end.

38

Cantus
et ti - bi red - de - tur vo - tum in Je - ru - sa -

Altus
et ti - bi red - de - tur vo - tum in Je - ru - sa -

Tenor
et ti - bi red - de - tur vo - tum in Je - ru -

Bassus
et ti - bi red - de - tur vo - tum in Je - ru - sa -

[F] [X]

46

C
lem: ex - au - di o - ra - ti - o - nem me - am,

A
lem: ex - au - di o - ra - ti - o - nem me - am,

T
sa - lem: ex - au - di o - ra - ti - o - nem me - am,

B
lem: ex - au - di o - ra - ti - o - nem

[A] [D]

53

C
ad te om - nis ca - ro ve - ni - et.

A
ad te om - nis ca - ro ve - ni - et.

T
ad te om - nis ca - ro ve - ni - et.

B
ad te om - nis ca - ro ve - ni - et.

[D_{dec}] [F] [F]

Kyrie

While the Kyrie is likewise based on a Mode 6 plainchant, the layout of cadences in the Kyrie differs significantly from the Introit (see Example 3.16). There are fifteen cadential figures in the Kyrie. As shown by the distribution of these cadences in Table 3.6. The frequency of cadences in *Missa pro defunctis à 4*, Kyrie., twelve cadences (80%) prepare a resolution to F. The remaining three cadences have prepared resolutions to A, C, and D, each once. This is remarkably different from the cadential structure of the Introit, which featured commixture between F-ut and D-re tonalities.

Example 3.16. Layout of the cadences for the polyphonic verses of the *Missa pro defunctis à 4* (1583), II: Kyrie.

The image displays three musical examples, each consisting of a plainchant line and a cadences line. The first example shows a plainchant line with the lyrics 'Ky - ri - e e - lei - son, Ky - ri - e e - lei - son,' and a cadences line with a Phrygian cadence (Phry.) and a Deceptive cadence (Dec.). The second example shows a plainchant line with the lyrics 'Chri - - - ste e - - - lei - - - son.' and a cadences line with a Phrygian cadence (Phry.). The third example shows a plainchant line with the lyrics 'Ky - ri - e e - - - - - lei - son.' and a cadences line with a Failed cadence and a Phrygian & Deceptive cadence (Phry. & Dec.).

Table 3.6. The frequency of cadences in *Missa pro defunctis à 4*, Kyrie.

F	12 (1 deceptive to A, 1 failed)
A	1 (Phrygian)
C	1
D	1 (Phrygian and deceptive to B \flat)

Notably, the Kyrie eschews any allusion to *D-re* through the lack of the pitch C \sharp throughout the entire movement. The Phrygian cadence on A does not have a raised third, as it typically would, to avoid the augmented second between C \sharp and B \flat in the tenor voice (see Example 3.17). The Phrygian cadence to D likewise does not feature a C \sharp as the *mi-fa* interval occurs between the E \flat and (expected resolution to) D in the bassus. With its deceptive resolution to B \flat , any potential for a local *D-re* tonality is eliminated, preparing the final two cadences on F in the movement (see Example 3.18).

Example 3.17. *Missa pro defunctis à 4*, Kyrie, mm. 6–11.

6

Cantus
 (e) - lei - son, Ky - ri - e e - lei

Altus
 lei - son, Ky - ri - e e - lei - son,

Tenor
 (Ky)-ri - e e - lei - son, Ky - ri - e e - lei - son,

Bassus
 (Ky) - ri - e e - lei - son,

A
 F_{dec}
 (G) F
 F

Example 3.18. *Missa pro defunctis à 4*, Kyrie, mm. 38–42.

38

Cantus
(e)

Altus
e - lei - son, Ky

Tenor
(e) - lei - son, Ky - ri - e e

Bassus
(e) - lei - son, Ky

F D_{dec} F

As shown in Example 3.17, there is a peculiar directed progression to G. This directed progression to G is part of a (slightly) larger compositional pattern of descending tenths leading toward a cadence on F. Thus, this directed progression to G lacks any perceptual weight as tonic outside of its directed progression and thus should not be considered a significant departure from the *F-ut* global tonality.

Despite having different cadence distributions and tonal structures, the Introit and Kyrie both clearly function within the global tonality of *F-ut*. Cadences can occur on scale-degrees $\hat{1}$, $\hat{3}$, and $\hat{5}$ without significantly changing the perception of the local and global tonality. Although, as seen in both the *Missa pro defunctis à 4* Introit and *Vexilla regis (more hispano)*, commixture between *Ut* and *Re* tonalities are not uncommon and can lead to extended divergences from the global tonality. On the other hand, works in a *Mi* tonality or *G-ut* tonality are not always as clear cut for a variety of reasons. The next two vignettes will explore a path to interpret works traditionally categorized as Modes 3/4 and Modes 7/8.

Vignette – Finding the Finality in *Mi* Tonalities: An Exploration of *E-mi* Works

The evolution of the Phrygian mode through Western common-practice music has led to difficulties in understanding the final of a Phrygian mode as the tonic—that is, an *E-mi* tonality. As Liam Hynes-Tawa argues in his dissertation, over time, the Phrygian mode lost its finality when its markers became traditionally associated with the dominant harmony in common-practice tonality.²⁴

However, there are ways that we, as modern-day listeners and analysts, can attune ourselves to the finality of *Mi*-tonality compositions. I personally became convinced of this during a presentation by Steven Rings at the University of Cincinnati, College-Conservatory of Music’s “Thinking About Music” lecture series, where Rings had the audience isolate the opening horn melody from Brahms’s Symphony No. 4 in E minor, II and have the audience identify what the tonic of that melody was (see Example 3.19).²⁵ The audience was roughly split between hearing this horn melody with a tonic of C and a tonic of E; however more surprisingly, there was a small group who heard this melody with the tonic of A. The listener soon finds out that the opening of this melody articulates $\hat{3}$, although transposed to begin on G \sharp to orient the listener to the key of E major. However, at the end of the movement, the original horn melody reappears harmonized over a root of E, affirming the possibility of a Phrygian hearing of the opening horn melody with the tonic of E. While the talk did not dive into the possibilities of why one might hear the tonic of A with the opening melody, I suspect that it is closely related to the struggle that modern listeners face when interpreting historical works based on Phrygian melodies and the possibility to hear *E-mi* works with a tonic of E or A.

24. Liam Hynes-Tawa, “How the Phrygian Final Lost Its Finality” (PhD diss., Yale University, 2020).

25. Steven Rings, “On Tonal Hearing: Quale and Chroma Revisited,” (lecture, University of Cincinnati, College-Conservatory of Music, Cincinnati, OH, February 17, 2012).

Example 3.19. Opening Horn in C melody from Brahms, Symphony No. 4, II, Op. 98, mm. 1–3.



Based on its title, one might assume that the freely-composed *Missa quarti toni* (1592) would exemplify an E-mi tonality. The *Missa quarti toni* is one of the few works by Victoria that specifically refers to the modal system. Each of the movements of *Missa quarti toni* ends on E, however, the inner-workings of the movements challenge the notion of E as tonic. While the numerical breakdown of cadences in the *Missa quarti toni*'s Kyrie is nearly equal, there is only one cadence to E by the end of the *Christe* section (see Table 3.7). Meanwhile, four cadences to A occur during this same period.

Table 3.7. The frequency of cadences in *Missa quarti toni* (1592), Kyrie.

A	6 (1 plagal)
E	4 (all Phrygian)

The two cadences to E in the final phrases of the Kyrie seem comparatively weak by modern standards (see Example 3.20). During the first cadence on E, the cantus voice does not resolve with the other voices and stays on A, weakening the strength of this cadence. The following phrase prepares a *clausula vera* on A between the altus and tenor voices in what could be the final cadence of the movement. However, the altus, tenor, and bassus move to an E₃ sonority, confirming the final of E.

Example 3.20. *Missa quarti toni*, Kyrie, mm. 36–end.

36

Cantus
Ky - ri - e e - lei - son.

Altus
(e) - - - lei-son Ky - ri - e e - lei - son.

Tenor
(son) Ky - ri - e e - lei - son.

Bassus
Ky - ri - e e - lei - son, Ky - ri - e e - lei - son.

E* A E

We cannot go back in time to understand how sixteenth-century performers understood the tonal structures of the works they performed. Hearing a work in a *Mi* tonality requires the modern listener to disregard much of their acculturation to markers of Phrygian-mode works. For example, the Phrygian cadence is traditionally associated with a half cadence in common-practice tonality (iv^6 to V). Since it is common for Phrygian cadences to include a raised-third upon resolution, this also introduces a *mi-fa* half step between G^\sharp and A , thus adding a position-finding cue toward the tonic A .

Given the emphasis on A throughout the movement, especially at the beginning, it may be difficult for modern-day listeners to interpret this movement in an *E-mi* global tonality rather than an *A-re* global tonality that ends inconclusively (on $\hat{5}$). Our acculturation to common-practice tonality leads us to interpret cadences a fourth/fifth apart ($A-E$ in this example) as articulating the tonic–dominant relationship found in the major–minor system. Furthermore, our acculturation to common-practice conventions code the Phrygian cadences on E as cadences to $\hat{5}$.

Herein lies the challenge for the modern-day listener engaging with works in a *Mi* tonality. It is reasonable to understand why a modern-day listener would interpret these works as a *Re* tonality since there are similarities with how the tonal phenomena of a *Mi* tonality align closely with our knowledge of minor-key conventions in later music. I argue that such interpretations are expected and acceptable for modern-day listeners, as we cannot ignore how we perceive these tonal functions based on our past musical knowledge, even if it is ahistorical. On the other hand, I argue that we can also interpret these works alternatively to function as a *Mi* tonality based on our historical knowledge that these works were meant to articulate *mi* as the tonic.

While the *Missa quarti toni*'s Kyrie provides a difficult example for modern-day listeners to interpret as a work in a global E-*mi* tonality, the motet *Senex puerum portabat* (1572) may be an easier work to interpret in an E-*mi* global tonality. Most of the cadences in *Senex puerum portabat* are on E (see Table 3.8). Unlike the Kyrie in *Missa quarti toni*, there are appearances of E cadences throughout the work, including four out of the first five cadences. Some cadences to A, like the one seen in Example 3.21, are undermined by resolving deceptively; in this example, the bassus steps up to F and the cantus has a delayed entrance on A in measure 24.

Table 3.8. The frequency of cadences in *Senex puerum portabat* (1572).

E	12 (all Phrygian, 3 initiating double cadences to A)
A	8 (2 deceptive)
C	2

Example 3.21. *Senex puerum portabat*, mm. 22–26.

22

Cantus
 (ge) - bat se - nem re - ge - - bat: quem

Altus
 (ge) - bat se - nem re - ge - bat: quem

Tenor
 nem re - ge - bat se - nem re - ge - bat: quem

Bassus
 au - tem se - nem re - ge - bat, re - ge - bat:

A_{dec}
E

Example 3.22. *Senex puerum portabat*, mm. 45–end.

45

Cantus
sit: ip - sum quem ge - nu - it, ad - o - ra -

Altus
sit: ip - sum quem ge - nu - it, ip - sum quem ge - nu - it, ad - o - ra -

Tenor
sit: ip - sum quem ge - nu - it ip - sum quem ge - nu - it, ad - o - ra -

Bassus
sit: ip - sum quem ge - nu - it ip - sum quem ge - nu - it, ad - o - ra -

A **E** **E**

52

C
vit ip - sum quem ge - nu - it

A
- vit, ip - sum quem ge - nu - it, ip - sum quem ge - nu - it, ad - o -

T
- vit, ip - sum quem ge - nu - it ad - o -

B
- vit ip - sum quem ge - nu - it ad - o -

E → A **E → A**

58

C
ad - o - ra - vit, ad - o - ra - vit.

A
ra - vit.

T
- ra - vit, ad - o - ra - vit.

B
- ra - vit ad - o - ra - vit.

E

Example 3.22, which contains the entire polyphonic setting of the final line *ipsum quem genuit adoravit*, highlights how the cadences to A are not necessarily contradictory to the global tonality of E-mi. This section begins after a cadence on A. Each statement of *ipsum quem genuit* in the bassus outlines the tetrachord A–E, ending on a cadence to E. Thus, this can be interpreted as a directed progression from A to E where E is the tonic. While there are two E→A double cadences (where the resolution of one *clausula vera* initiates another *clausula vera*) in this passage, the continued emphasis of the directed progression from A to E does not give much weight to these cadences on A, as they are only brief resting points. The final cadence on E begins a *supplementum*, an extended passage on the final of the work.²⁶ It is noteworthy that the beginning of the *supplementum*'s repetition of *adoravit* in the cantus and tenor rearticulate the E₃⁵ sonority and not the A₃⁵ sonority that immediately follows. As such, the A₃⁵ sonority during the *supplementum* acts as a plagal motion to E, behaving similarly to the plagal motion found in the *supplementa* of other tonalities.

As a contrasting example, the *supplementum* of another 1572 motet, *Sancta Maria, succurre miseris*, is more ambiguous in confirming E as the tonic (see Example 3.23). While the cantus and altus end their phrase at the E₃⁵ sonority, the tenor begins a new phrase outlining the third A–C in measure 71. The tenor's entrance severely undermines the arrival of the *supplementum* which usually is articulated by a pause in the other voices. Likewise, the cadence to E is undermined by the bassus as the E does not occur at the end of the bassus's phrase. Rather, the listener may be drawn to the bassus leap of a descending fifth E–A after the final cadence to E as a marker of resolution. Had there not been a break between G[#] and A in the cantus in measures 71–72, it is likely one would identify A as the final cadence. As such, all

26. Joachim Burmeister, *Musical Poetics*, trans. Benito Rivera (New Haven, CT: Yale University Press, 1993), 205.

possible interpretations of the final cadence are severely undermined by the dense counterpoint in the final measures of *Sancta Maria, succurre miseris*. Ensemble Plus Ultra's performance of this motet underscores the lack of emphasis on the final cadence to E by softening the arrival of the *supplementum*, accenting the bassus and tenor at the beginning of measure 72, and continuing to speed through measures 71–72, only slowing down in the penultimate measure on the final plagal motion from A to E.²⁷

As seen in the examples in this analytical vignette, the final of a work may not necessarily be the perceived tonic of that work to modern ears. Since Victoria did not have many compositions with a final of E, it is difficult to make sweeping judgments on whether those works also have a tonic of E. Victoria's compositions highlight some of the issues that led to the Phrygian mode's loss of finality over time. The emphasis of A sonorities in Victoria's Phrygian compositions were in dialogue with the greater perceptual shift of Phrygian cadences indicating $\hat{5}$ instead of $\hat{1}$. However, I would argue that it is still feasible to interpret some of these compositions as functioning in an E-*mi* global tonality. By creating a system based on tonal qualia, which centers the listener's apperceptions in one's analysis, one can advocate for interpreting these works in different, yet equally valid ways.

27. Ensemble Ultra Plus, "Sancta Maria – Motet a 4," conducted by Michael Noone, disc 4, track 11 on *Victoria: Sacred Works*, Archiv Produktion 477 9747, 2011, compact disc.

Example 3.23. *Sancta Maria, succurre miseris*, mm. 70–end.

70

Cantus
me - mo - ra - ti - o - nem tu - am com -

Altus
(o) - - - - - nem.

Tenor
nem tu - am com - me - mo - ra - ti -

Bassus
nem, com - me - mo - ra - ti - o - nem tu -

73

C
me - mo - ra - ti - o - - - - - nem.

A

T
o - nem, com - me - mo - ra - ti - o - - - - - nem.

B
am com - me - mo - ra - ti - o - - - - - nem.

E **A?**

Vignette – The *Missa O quam gloriosum* (1583) Kyrie and the Differences of G-*ut* from Other *Ut* Tonalities

There is a notable difference in the scale degrees of expected cadences between the F-*ut* and G-*ut* tonalities as seen in Table 3.3. Summary of expected cadences from Table 3.2.

Cadences without a plurality of theorists agreeing are shown in parentheses.: F, A, C (î, ð, ê) and G, C, D (î, â, ê) respectively. There are several reasons why these cadence points may be

different. First, C is the *repercussa* of Mode 8, and so polyphonic settings of Mode 8 chants would likely feature cadences on C as it is an emphasized pitch in those chants. As also posited earlier in this chapter, the expected cadences as outlined by Victoria's contemporaries, could articulate two different tonalities, C-*ut* and G-*ut* where cadences to $\hat{1}$ and $\hat{5}$ are expected in each tonality, with overlap on G, the final of these compositions. On the other hand, G-*ut* does not include $\hat{3}$ as a cadence point as cadences to B \flat are quite rare in this era of music—and in the case of Victoria's music, nonexistent. While a Phrygian *clausula vera* to B would be easy to accomplish within the useable gamut, Victoria's disposition to raise the third in accompanying voices of a Phrygian cadence may have dissuaded him from composing these cadences, as D \sharp would require a further expansion of the gamut beyond the G \sharp that appears in Phrygian cadences to E.

Since B \flat is not a viable cadence point (at least as observed in Victoria's repertoire), this limits the types of tonal structures observed in G-*ut* compared to those in F-*ut* (or even C-*ut*). For example, compositions with the final of G hardly feature commixture between two different types of tonalities, compared to the somewhat frequent use of commixture between *Ut* and *Re* tonalities on works with D and F finals. By virtue of a different final, we can assume some variations of the expected tonal structures.

Despite these observable differences between G-*ut* and the other *Ut* tonalities, I still find it valuable to consider them similar and group them together as the *Ut* class of tonalities. This is because the arrangement of the pitches in the diatonic collection in these tonalities is similar enough where the tonal phenomena aiding in position finding and pattern matching are the same. In the case of a composition in a G-*ut* global tonality and its cadential expectations, the orientation of F—whether it is F \flat or F \sharp —plays a major role in how one perceives where they are

in tonal space. As will be demonstrated in the analysis of *Missa O quam gloriosum* (1583), appearance of F[♯] often is associated with passages in a local C-*ut* tonality, whereas the appearance of F[♮] will lead the listener to the G-*ut* tonality by establishing the expectation of cadences to G and D. The opening Kyrie in *Missa O quam gloriosum* is a good example of how the orientation of F aligns with its corresponding tonality (see Example 3.24).

The opening leap G–C, imitated by C–F, establishes a strong expectation of a cadence to C. There is a directed progression to C at the beginning of measure 4, disrupted by the 4–3 suspension, F–E; however two measures later, an established *clausula vera* resolves on C. The first repetition of *Kyrie eleison* features the same melodic pattern as the opening, except the points of imitation changed from G and C to G and D. Shortly thereafter, an F[♯] appears as part of a *clausula vera* to G, but rather than ending on G, it initiates a double cadence to C. It is not until the final appearance of an F[♯] in the cantus that the tonality of G-*ut* is confirmed.

Without much context, these first eleven measures suggest the global tonality of C-*ut*, rather than G-*ut*, given the emphasis on C. One could argue that the cadence on G at the end of the first Kyrie is within the confines of a C-*ut* global tonality. However, the following *Christe* section is unquestionably within the G-*ut* tonality, featuring cadences on G and D (see Example 3.25). Notably, the *Christe* ends on a D cadence, which might be interpreted as a similar emphasis on $\hat{5}$ as seen in the first Kyrie, if it were completely interpreted as a C-*ut* tonality. However, the *Christe* sections of Victoria's Kyries tend to end inconclusively (that is, on $\hat{5}$) whereas both Kyries often end on the tonic of the global tonality—in this case, G-*ut*. Thus, the G sonority that ends the first Kyrie should be interpreted as the confirmation of a G-*ut* tonality that was ambiguous at the opening, rather than a destabilization of an initial C-*ut* tonality.

Example 3.24. *Missa O quam gloriosum, Kyrie, mm. 1–11.*

1

Cantus
Ky - ri - e e - - - lei - son

Altus
Ky - ri - e e - lei - son, Ky - ri - e

Tenor
Ky - ri - e e - lei - son, Ky - ri - e e - lei - son Ky -

Bassus
Ky - ri - e e - lei - son Ky - ri - e e -

(C) [C]

7

C
Ky - ri - e e - lei - son Ky - ri - ee - lei - son.

A
e - lei - son Ky - ri - e e - lei - son.

T
ri - ee - lei - son Ky - ri - e e - lei - son.

B
lei - son, Ky - ri - e e - lei - son.

[G → C] [G]

Example 3.25. *Missa O quam gloriosum*, Kyrie, mm. 12–22 (Christe).

The musical score consists of two systems. The first system (measures 12-16) features four vocal parts: Cantus, Altus, Tenor, and Bassus. The lyrics are: "Chri - ste e - lei - son, Chri - ste e - lei - son, Chri - ste e - lei - son, Chri - ste e - lei - son." Chord markings 'G' are placed below the Bassus part at measures 14 and 16. The second system (measures 17-22) features four instrumental parts: C, A, T, and B. The lyrics are: "ste e - lei - son, Chri - ste e - lei - son. son, Chri - ste e - lei - son, Chri - ste e - lei - son. e - lei - son, Chri - ste e - lei - son. Chri - ste e - lei - son. Chri - ste e - lei - son." Chord markings 'G_{dec} (D)' and 'G_{dec} → D' are placed below the B part at measures 19 and 22 respectively.

The opening of the second Kyrie reconfirms *G-ut* as the current tonality (see Example 3.26). The $F\sharp$ in the bassus is not an indicator of *C-ut* here, because it is necessary to avoid the diminished fifth in the chain of 5–6 suspensions between the bassus and altus. Similarly, the C in the bassus is deemphasized through its duration, treated as a dissonant passing tone between D and B. The bassus outlines a complete octave from G to G, which includes the *clausula tenorizans* A–G in the *clausula vera* to G. Similar features appear in the repetitions of *Kyrie*

eleison, including the 5–6 suspensions, outlining important *G-ut* intervals (such as the octave G–G and the descending fifth D–G and descending fourth G–D), and cadences on G. Even when the tenor enters with a point of imitation of C, referring back to the tenor’s opening melodic pattern in the beginning of the second Kyrie (see Example 3.26), there is no directed progression to C (see Example 3.27). Rather, the passage continues to reaffirm *G-ut* until the end of the movement with two cadences to G.

Example 3.26. *Missa O quam gloriosum*, Kyrie, mm. 23–26.

23

Cantus
Ky - ri - e e

Altus
Ky - ri - e e - lei - son, Ky - ri

Tenor
Ky - ri - e e - lei - son, Ky

Bassus
Ky - ri - e e - lei - son

G

Thus, while the Kyrie of *Missa O quam gloriosum* began with a strong inference of *C-ut* as the global tonality, ultimately the global tonality of the Kyrie was *G-ut* as confirmed by the *Christe* and *Kyrie II*. However, this example clearly demonstrates how works in *G-ut* can shift to and from a local *C-ut* tonality quite seamlessly, depending on the orientation of the pitch F and how that pitch functions. For example, F[♯] was often a stable pitch in the opening of the Kyrie, as evidenced by the leap C–F appearing in the first entrance of the cantus, altus, and bassus (see Example 3.24). However, future appearances of F[♯] were not as stable or pronounced in the *Christe* or *Kyrie II*. All of the F[♯]s in the *Christe* are descending passing tones (see Example 3.25).

Likewise, most of the appearances of F \sharp s in the Kyrie II are either treated as passing tones or are necessary to avoid outlining an augmented fourth or diminished fifth. For example, the F \sharp in the altus in measure 33 (the beginning of Example 3.27) is there to avoid the augmented fourth with the C at the end of the phrase.

Example 3.27. *Missa O quam gloriosum*, Kyrie, mm. 33–end.

33

Cantus
e e - lei - son, Ky - ri - e e - lei - son.

Altus
(lei) - son Ky - ri - e e - lei - son.

Tenor
(son,) Ky - ri - e e - lei - son, Ky - ri - ee - lei - son.

Bassus
Ky - ri - e e - lei - son.

G G

Conclusion: Global Tonalities and Their Differing Inner Tonal Structures

As seen in these four vignettes, the use of Judd's *Ut*, *Re*, *Mi* tonalities helps the listener and analyst use a composition's tonal phenomena to identify the tonic of those works through position finding. Each tonality has a different relationship with these tonal phenomena; and in the case of the *Mi* tonality, it may be difficult for modern listeners to disregard their acculturation to the common-practice interpretations of these phenomena.

At the same time, these four vignettes also demonstrate that there is diversity in the inner tonal structures of compositions within these tonalities. Some of these tonal structures are influenced by the tonal structure of the *cantus firmus*, as seen in the analyses of *Vexilla regis*

(*more hispano*) and the *Missa pro defunctis* à 4. These tonal structures can also be influenced by what the composer considered possible within their interpretation of the gamut. As seen by the differences observed in the *G-ut* tonality, Victoria is quite conservative in his interpretation of the useable gamut, certainly in comparison to his contemporary Carlo Gesualdo (1566–1613). There are certain cadences that we can expect within these tonalities that align closely with historical discussions on possible cadence points—and in the case of the *Ut* tonalities, we can even differentiate these expectations based on the tonic. When deviations from these expectations occur, they indicate something to be explored further.

Now that the concept of the *Ut*, *Re*, *Mi* tonalities has been established through the use position finding to identify the tonic, Chapter 4 will explore how pattern matching, through the use of compositional schemata, can also further aid in identifying tonalities as well as specific scale-degree functions within those tonalities. Chapter 4 will focus on the compositional schemata observed in the Responsories of Victoria's *Officium Hebdomadae Sanctae* (1585), all of which are in a *G-re* global tonality. The identification of these schemata helps the analyst and listener begin to explore the tonal functions within these tonalities and explore the nuances and minutiae within this repertoire.

Chapter 4: Defining Tonal Space in the Music of Tomás Luis de Victoria: Imitation and Compositional Schemata

The previous chapter defined the three classes of tonalities—*Ut*, *Re*, and *Mi*—and showed how cadences are fundamental in identifying a global tonality within a piece of music. However, cadences are not the only musical parameter that can help the analyst and listener identify a tonality of a composition. As discussed in Chapter 2, Browne’s rare-intervals hypothesis helps the analyst and listener in position finding.¹ Additionally, common intervals help with the process of pattern matching.² Both position finding and pattern matching aid the listener and analyst in determining the tonal space that within which a musical passage operates.

Browne notes that pattern matching creates an axis between literal imitation and non-literal imitation, where literal imitation necessitates a change or “reorientation” of the tonal space, whereas non-literal imitation most likely does not.³ Both literal and non-literal imitation are frequently observed in sixteenth-century compositions. Thus, the type of imitation used can inform whether or not the music moves between two different tonal spaces or stays within the same tonal space. The first part of this chapter will demonstrate how literal and non-literal imitation define tonal space through the process of pattern matching.

The second part of this chapter investigates Victoria’s use of compositional schemata as a different type of pattern matching.⁴ Musical applications of schemata derive from their application in psychology, where a schema represents a cognitive structure that aids in memory

1. Richmond Browne, “Tonal Implications of the Diatonic Set,” *In Theory Only* 5, no. 6–7 (July–August, 1981): 8.

2. Browne, 7.

3. Browne, 8–9.

4. “Schemata” is the plural of “schema.”

and processing.⁵ This dissertation uses “compositional schemata” to mean recurring polyphonic musical patterns. I will define these schemata in further detail in the pages that follow. Through the process of pattern matching, the listener and analyst can use the compositional schemata as a way to identify the tonal space of the music at that point in time.

This chapter will investigate imitation and compositional schemata within the eighteen Tenebrae Responsories from Victoria’s *Officium Hebdomadae Sanctae* (1585). The responsories are all stylistically similar, consisting of four voices beginning—and primarily operating—in a *G-re* global tonality. The responsories’ refrains contain several textures, including imitative polyphony and homophony. Verses, on the other hand, primarily feature imitative polyphony. As a result, they provide an excellent opportunity to observe the use of imitation and compositional schemata that can be found in—and help define—*Re* tonalities.

Defining Tonal Space: Imitation as Pattern Matching

Imitation and repeated blocks of counterpoint are common occurrences in Renaissance polyphony. For example, the imitation (or sometimes referred to as the parody) mass was a common compositional form where composers would paraphrase “motives, points of imitation, consonant relationships, and cadences from a polyphonic model, incorporating portions of all the model’s voices in the process.”⁶ Imitation could be limited to the repeating of a motive between single voices at the same or different transposition levels; or, it could extend to the imitation of all voices in one polyphonic work to another.

5. For a detailed exploration of psychology’s schema theory and its application to music, see Marc Leman, *Music and Schema Theory: Cognitive Foundations of Systematic Musicology* (New York, Springer, 1995).

6. J. Peter Burkholder, “Johannes Martini and the Imitation Mass of the Late Fifteenth Century,” *Journal of the American Musicological Society* 38, no. 3 (Autumn 1985): 470.

Browne referred to two types of imitation when exploring the tonal implications of the diatonic set: literal and non-literal imitation.⁷ For the purposes of analyzing sixteenth-century music, it is more beneficial to view imitation through the lens of the diatonic collection. Peter Schubert observes that diatonic imitation “can be *exact* or *inexact* as to the positions of tones and semitones, *depending on where in the diatonic arrangement the imitation falls.*”⁸ This is an important observation because diatonic imitation could be literal or non-literal. For example, the three-note pattern, F–G–A, would be exact imitation if it began on C (C–D–E), but would be inexact imitation if it began on D (D–E–F) (see Example 4.1). For the purposes of this dissertation, literal imitation is synonymous with exact imitation where the size of the steps between notes is preserved. Non-literal imitation is synonymous with inexact imitation where at least one of the steps within the imitative passage is altered to remain within same the diatonic collection.

Example 4.1. Diatonic imitation of F–G–A beginning on C and D, demonstrating literal and non-literal imitation.

The image shows a musical staff with a treble clef. It is divided into three sections. The first section shows the original pattern F-G-A with a bracket underneath labeled 'M2'. The second section, labeled 'Literal Imitation', shows the pattern D-E-F with a bracket underneath labeled 'M2'. The third section, labeled 'Non-literal Imitation', shows the pattern D-E-G with a bracket underneath labeled 'm2'.

In early music, nondiatonic imitation is only achievable through literal imitation. Schubert notes that nondiatonic imitation is rare in Renaissance music since the use of accidentals can lead to undesired cross-relations.⁹ Since accidentals in early music largely arise

7. Browne, “Tonal Implications of the Diatonic Set.”

8. Peter Schubert, *Modal Counterpoint: Renaissance Style* (New York: Oxford University Press, 2008), 165 (emphasis his).

9. Schubert, 164–65. In some repertoire, cross-relations are not problematic and considered stylistic of that music (see Peter Urquhart, “Cross-Relations by Franco-Flemish Composers after Josquin,” *Tijdschrift van de Vereniging voor Nederlandse Muziekgeschiedenis* 43, no. 1 (1993): 3–41). However, cross-relations are especially rare in Victoria’s repertoire. Chapter 5 will explore one of these cross-relations in the *Officium Hebdomadae Sanctae*.

out of contrapuntal necessity—often to avoid these cross-relations—the use of accidentals to retain the size of intervals to achieve literal imitation is highly uncommon. However, nondiatonic imitation does appear occasionally in early music. These passages of nondiatonic imitation should be analyzed as initiating a shift between two different musical spaces, since the imitative passages use different diatonic collections.

The opening of the verse in Victoria’s responsory “Tamquam ad latronem” begins with literal nondiatonic imitation but then shifts to literal nondiatonic imitation shortly thereafter for the majority of the phrase (see Example 4.2). The non-literal diatonic imitation—indicated by the downward leap of a fifth, D–G, in the cantus—preserves the initial tonal space of *G-re* by outlining the two most critical pitches in *G-re* space, $\hat{1}$ and $\hat{5}$. However, by the end of the second measure of this phrase, the cantus shifts to literal nondiatonic imitation raising the C to C#. C# lies outside of the *G-re* tonality, therefore necessitating a shift from *G-re* to some tonality, in this case *D-re*. Eventually *D-re* is confirmed with the Phrygian cadence on A ($\hat{5}$). In addition, the entrance of the tenor outlines the third D–E–F, offering further evidence of a shift to *D-re*.

Example 4.2. *Officium Hebdomadae Sanctae*, “Tamquam ad latronem,” mm. 38–42.

The image displays a musical score for six voices: Cantus, Altus, Tenor, Soprano (S), Alto (A), and Tenor (T). The music is in a single system with a common time signature. The lyrics are: "Cum - que in - ie - cis - sent ma - nus in Ie - nus in Ie - sum et te - nu - is - sent". A downward-pointing arrow is positioned above the first 'ie' in the Cantus part. Below the Tenor part, there is a horizontal line with an arrow pointing right, labeled "G-re" at the start and "D-re" at the end. A circled letter 'A' is located at the bottom right of the score, below the Tenor part.

Compositional Schemata in Victoria’s Tenebrae Responsories

While imitation is the most common form of pattern matching in early music, Victoria employs a different type of pattern matching: compositional schemata. Compositional schemata are recurring polyphonic musical patterns found across compositional works. Analysts have used these repeated blocks of counterpoint containing two or more voices—otherwise known as “modules”—to conduct modular analysis of works that extensively feature imitation.¹⁰

10. The term “module” first appeared in Jessie Ann Owens’s exploration of Cipriano de Rore’s compositional process. She defined the term “module” as “a contrapuntal relationship that can be repeated.” See “The Milan Partbooks: Evidence of Cipriano de Rore’s Compositional Process,” *Journal of the American Musicological Society* 37, no. 2 (Summer 1984): 284. A group of music scholars from McGill University developed

Compositional schemata are similar to modules in that they are repeated blocks of counterpoint consisting of two or more voices. However, these modules are not derived from preexisting works, but rather are patterns of counterpoint that reappear across repertoire of a single composer—and in some cases, across composers. The most common compositional schemata in use during the Renaissance were cadential schemata, such as the *clausula vera* and Phrygian cadence.¹¹ I have opted to limit my discussion in this chapter to non-cadential schemata to limit the scope of this dissertation.

I draw my use of compositional schemata from Robert Gjerdingen's definition of schemata as "stock musical phrases" in his *Music in the Galant Style*.¹² Similar to Gjerdingen's schemata, the compositional schemata found in Victoria's music are primarily defined by the intervallic relationship of the outer voices. These schemata maintain the general syntactic functions across appearances in the repertoire. That is, we can use these schemata to define tonal functions within a tonality. Victoria's compositional schemata, however, lack the social and phenomenological associations with the schemata defined in Gjerdingen's galant schemata. Rather, the compositional schemata found in Victoria's music are purely stock polyphonic musical patterns that can be found across works with no discernible extramusical meaning.

a methodology to use the module as a way to interpret musical modeling in fifteenth and sixteenth-century music. See Peter Schubert and Marcelle Lessoil-Daelman, "What Modular Analysis Can Tell Us about Musical Modeling in the Renaissance," *Music Theory Online* 19, no. 1 (March 2013), http://mtosmt.org/issues/mto.13.19.1/mto.13.19.1.schubert_lessoil-daelman.html; Marcelle Lessoil-Daelman, "Une Approche Synoptique des Motifs et des Modules dans la Messe Parodique," (PhD diss, McGill University, 2002); Peter Schubert, "Hidden Forms in Palestrina's First Book of Four-Voice Motets," *Journal of the American Musicological Society* 60, no. 3 (Fall 2007), 483–556; Julie E. Cumming, "Composing Imitative Counterpoint around a Cantus Firmus: Two Motets by Heinrich Isaac," *The Journal of Musicology* 28, no. 3 (Summer 2011), 231–88.

11. Kyle Adams, "Victoria the Progressive: The Cadential Formula as Historical Nexus" (Paper, 34th Annual Meeting of the Society for Music Theory, Minneapolis, MN, October 28, 2011). Victoria has several different extended compositional schemas purely associated with cadences. For example, Adams highlighted the use of a specific cadential formula in Victoria's compositions.

12. Robert O. Gjerdingen, *Music in the Galant Style* (New York: Oxford University Press, 2007), 6.

The following compositional schemata discussed in this chapter are found throughout several of Victoria's Tenebrae Responsories from the *Officium Hebdomadae Sanctae*. All of the eighteen responsories occur in *G-re*, which allow for easy identification of the schemata and comparison of their compositional context. While this discussion of compositional schemata is limited to those found in the Tenebrae Responsories, these schemata can be found in many works across Victoria's oeuvre. The purpose of the following discussion is to demonstrate how schemata can aide the listener and analyst in position finding within a tonal space through the process of pattern matching.

The $\flat\hat{6}$ - $\hat{5}$ Over Tonic Schema

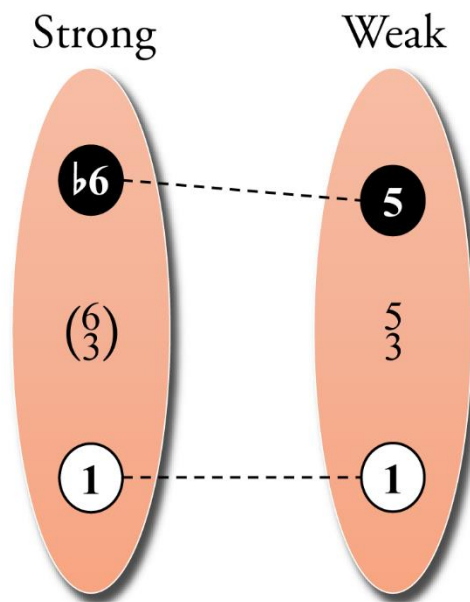
Compositional schemata do not need to be complex to elevate themselves to a recurring pattern that can define a tonal space. Consonant $6-5$ motion is common in Victoria's compositions, as demonstrated by his frequent use of them in his archetypal $ii^{\flat\hat{6}}-V-i$ cadential schema. In this schema, $6-5$ motion happens over the tonic in *re* space, where $\flat\hat{6}$ must occur on a strong beat (as shown in Figure 4.1).¹³ The initial harmony that supports $\flat\hat{6}$ is often a $\frac{6}{3}$ harmony.

However, as seen in Example 4.3 from "Amicus meus"—the first appearance of this schema in the Tenebrae Responsories—the actual harmony is an $\frac{8}{6}$ harmony. The tenor moves $D-E\flat-D$ over a static bassus on G . While any move between D and $E\flat$ would not be unusual in *G-re*, this particular instance is striking. First, while both D and $E\flat$ are consonant over G , there is no compelling reason for the voice to move this way contrapuntally. Furthermore, the movement occurs on a strong beat. As mentioned earlier, $6-5$ motion is common in suspension figures

13. In the discussion of the $\flat\hat{6}$ - $\hat{5}$ over tonic schema, I consistently refer to the sixth scale degree as $\flat\hat{6}$ rather than $\hat{6}$. I have only found this schema in passages functioning in *re* space. Thus, the use of $\flat\hat{6}$ is meant to indicate that this schema must occur as *fa-mi* melodically. Since all of the responsories are in *G-re* space, I will continue to refer to $B\flat$ as $\hat{3}$ and not $\flat\hat{3}$ for this reason.

where the sixth is on a strong beat resolving to a fifth. However, this is not what happens here. $\flat\hat{6}$ is not prepared as a suspension. Notably, all other voices are on G at this moment. When $E\flat$ moves to D, the cantus leaps up to $B\flat$ creating a $\frac{5}{3}$ sonority on the final. Yet, this sonority occurs on a weak beat, despite typically signifying a more stable sonority. Since there is nothing requiring the tenor to move to $E\flat$ and since the move happens on a strong beat, this small melodic gesture in the tenor is elevated in status.

Figure 4.1. $\flat\hat{6}-\hat{5}$ over tonic schema.



Example 4.3. *Officium Hebdomadae Sanctae*, “Amicus meus,” mm. 16–17.

Cantus
fe - cit sig - num, qui per o

Altus
num qui per o

Tenor
ma - lum fe - cit sig - num qui
1 5 b6 5

Bassus
num qui per o
1 5

Example 4.4. *Officium Hebdomadae Sanctae*, “Amicus meus,” mm. 33–34.

Cantus
se su - spen -

Altus
(se) su - spen - dit, se su

Tenor
se su - spen - dit se
1 5 b6 5

Bassus
se su - spen -
1

Victoria reuses this melodic gesture later on in “Amicus meus” in measure 34 (see Example 4.4). Several differences arise in this use of the $\flat\hat{6}-\hat{5}$ schema. While the $\flat\hat{6}-\hat{5}$ schema appears in the tenor, it is preceded by a C ($\hat{4}$). Thus, the arrival of $\flat\hat{6}$ does not have to be a simple oscillation between D and $E\flat$. Notably, a D on beat 4 of the tenor would be consonant with the bassus’s F. However, the tenor must use C rather than D as D would clash against the cantus’s C.

Another compositional possibility for the tenor is to double the bassus F, thus making the E \flat an accented passing tone between F and D. This would create smoother voice leading from the tenor's previous F at the beginning of measure 33, but would also create parallel fifths against the cantus C–B \flat .

Why does the tenor leap up to E \flat since it could easily move from C to D? The answer is that the leap up to E \flat avoids parallel fifths with the bassus. However, if Victoria wanted to avoid parallel fifths, he could have opted to keep the tenor on F and avoid the C altogether. Rather, the text clarifies the justification to leap up to E \flat by literally creating a 6–5 motion during the word *suspendit*. The tenor mimics a suspension without ever fully realizing the preparation of the suspension. E \flat once again occurs on a strong beat, elevating its strength as a consonance in comparison to the following G sonority on the final. This time, however, the E \flat fills out a fuller $\frac{3}{2}$ harmony compared to Example 4.3's $\frac{2}{2}$ harmony.

Example 4.5. *Officium Hebdomadae Sanctae*, “Caligaverunt oculi mei,” mm. 42–44.

The musical score for Example 4.5 consists of four staves: Cantus, Altus, Tenor, and Bassus. The Cantus staff is mostly silent with a few notes. The Altus staff has the lyrics "vi - - - - am" and includes a circled "5" above the final note. The Tenor staff has the lyrics "tis per vi - - am" and includes a circled "b6" above the final note. The Bassus staff has the lyrics "tis per vi - - am" and includes a circled "1" above the final note and a boxed "G" below it. The score is in a key with one flat and a 3/2 time signature.

In “Caligaverunt oculi mei,” another example of the $\flat\hat{6}-\hat{5}$ over tonic schema is used for text painting (see Example 4.5). Like the previous example, this schema should catch the listener’s ear. However, rather than doing so through quick melodic motion, this example appears during the resolution of a *clausula vera* on G. The only explanation for this melodic motion is for expressive purposes. It notably occurs at the end of the line *O vos omnes, qui transitis per viam*, foreshadowing the appearance of the famously solemn responsory “O vos omnes.” The $\flat\hat{6}-\hat{5}$ motion creates tension at the moment of strongest resolution—the completion of a *clausula vera*—expressing the grave demeanor of the text.

The previous examples of the $\flat\hat{6}-\hat{5}$ over tonic schema demonstrate how the schema is used for expressive purposes. In particular, Example 4.4 and Example 4.5 show how the schema appears despite there being more sensible contrapuntal solutions to the passage. Example 4.6 contains another appearance of the $\flat\hat{6}-\hat{5}$ over tonic schema that appears to be for expressive purposes. Like Example 4.4, the tenor leaps up to the $E\flat$ from C, resolving to D over a static G in the bassus. However, the $E\flat$ only lasts a semiminim due to the semiminim anticipation of D. Both the $E\flat$ and D must be consonant as the $E\flat$ occurs on a strong beat, whereas the D prepares a suspension that leads into a Phrygian cadence on D. There is no contrapuntal reason for the $E\flat$ to appear in this example. The leap up to $E\flat$ and its quick reversal to D brings the listener’s attention to this schema, as does the fact that the texture has thinned to only two voices.

Example 4.6. *Officium Hebdomadae Sanctae*, “Animam meam dilectam,” mm. 30–31.

The image shows a musical score for four voices: Cantus, Altus, Tenor, and Bassus. The Cantus and Altus parts are mostly silent, indicated by rests. The Tenor and Bassus parts have lyrics: "de - vo - ran - dum il - lum:". The Tenor staff has a circled "1" under the first note of "il" and circled "b6" and "5" above the notes "il" and "lum:". The Bassus staff has a circled "1" under the first note of "il" and a boxed "D" at the end of the line.

As demonstrated by the past few examples, there are various ways that the $b\hat{6}-\hat{5}$ over tonic schema can appear. There have been differences in the preparation of the schema, the harmony supporting $b\hat{6}$, and the length of $b\hat{6}$. Despite these differences, all of these appearances of the schema are marked moments. With two examples of this schema appearing in the first responsory “Amicus meus” (Example 4.3 and Example 4.4), the sound of $b\hat{6}-\hat{5}$ over tonic becomes engrained in the listener’s memory. Thus begs the question: how many more alterations can be made to the schema before it loses its status as a recognizable pattern? The next two examples identify two possible appearances of this schema.

Example 4.7. *Officium Hebdomadae Sanctae*, “Animam meam dilectam,” mm. 1–5.

The musical score consists of four staves. The lyrics are: A - ni - mam me - am di - le - ctam. The Cantus staff is in G major. The Altus staff has a key signature of one flat (F major). The Tenor staff has a key signature of one flat (F major) and a soprano clef. The Bassus staff has a key signature of one flat (F major) and a bass clef. Circled numbers 1, 3, 5, and b6 are placed above notes in the Tenor and Bassus parts. Boxed letters G and D are placed below notes in the Bassus part.

One possible version of the $\flat\hat{6}-\hat{5}$ schema occurs at the beginning of the ninth Tenebrae responsory, “Animam meam dilectam” (see Example 4.7). Like the previous examples of the schema, the $E\flat$ is not contrapuntally necessary. However, in this example, the bassus leaps up to $B\flat$ ($\hat{3}$) as $\flat\hat{6}$ steps down to $\hat{5}$ —the first example where the $\flat\hat{6}-\hat{5}$ schema appears with bass motion. The bass leaps from G to $B\flat$ mimicking the same leap of a third in the cantus from $B\flat$ to D. The tenor, however, cannot imitate this leap of a third on *meam* because F is not consonant with the $\frac{8}{3}$ sonority on G in measure 2. Rather, the tenor can only step up to $E\flat$, creating the conditions for an appearance of the $\flat\hat{6}-\hat{5}$ on tonic schema.

Does the leap up to $B\flat$ in the bassus negate hearing this passage as an example of the $\flat\hat{6}-\hat{5}$ on tonic schema? The listener may perceive the onset of the $\frac{8}{3}$ sonority on G in measure 2 as having the potential to become an example of the $\flat\hat{6}-\hat{5}$ on tonic schema, since the schema has been well established in previous responsories. Furthermore, the leap in the bassus from G to $B\flat$ is not necessarily expected since it is not clear that the bassus is loosely imitating the opening tenor line. Given the static nature of the melody at the opening of “Animam meam dilectam,” it

is completely reasonable that the bassus would remain on G at the beginning of measure three. Thus, for a listener familiar with Victoria's style, the $\flat\hat{6}-\hat{5}$ on tonic schema has been established despite the bassus leap up to $B\flat$.

The opening of "Iudas Mercator pessimus" contains an example with several melodic gestures of $\flat\hat{6}-\hat{5}$ where $\flat\hat{6}$ occurs on a strong beat (see Example 4.8). Yet, the $\flat\hat{6}-\hat{5}$ melodic gestures in this example are not examples of the $\flat\hat{6}-\hat{5}$ over tonic schema, nor are they derivative of the schema's prototype. Example 4.10 demonstrates that there is a limit to the number of changes contrapuntally and harmonically before a schema falls apart. In this case, the $\flat\hat{6}-\hat{5}$ melodic motion in the cantus occurs as a result of its counterpoint with the tenor.

Example 4.8. *Officium Hebdomadae Sanctae*, "Iudas mercator pessimus," mm. 1–4.

The image shows a musical score for four voices: Cantus I, Cantus II, Altus, and Tenor. Each voice part is written on a five-line staff with a treble clef and a key signature of one flat (B-flat). The lyrics are: "Iu - das mer - ca - tor pes - si - mus". The notes are as follows:

- Cantus I:** Iu (half), - das (quarter), mer (quarter), - ca (quarter), - tor (quarter), pes (quarter), - si (quarter), - mus (quarter).
- Cantus II:** Iu (half), - das (quarter), mer (quarter), - ca (quarter), - tor (quarter), pes (quarter), - si (quarter), - mus (quarter).
- Altus:** Iu (half), - das (quarter), mer (quarter), - ca (quarter), - tor (quarter), pes (quarter), - si (quarter), - mus (quarter).
- Tenor:** Iu (half), - das (quarter), mer (quarter), - ca (quarter), - tor (quarter), pes (quarter), - si (quarter), - mus (quarter).

A box containing the letter "G" is located at the bottom right of the Tenor staff, indicating the tonic.

Thus, I suggest that the $\flat\hat{6}-\hat{5}$ motion in Example 4.7 is an example of the $\flat\hat{6}-\hat{5}$ over tonic schema. While there is a small deviation from the idealized version of the schema with the bass leap from $\hat{1}$ to $\hat{3}$, the other markers of the schema appear in this example. The $E\flat$ in Example 4.7 is not a contrapuntal necessity, like it is with Example 4.8. In addition, $\flat\hat{6}$ appears on a new word, textually accenting the $E\flat$. All of these factors suggest that this passage is closer to the

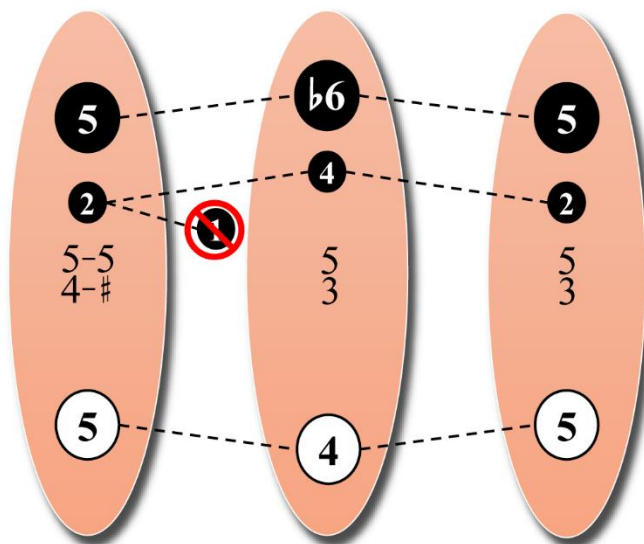
schema's prototype than it is to general contrapuntal motion between the sixth and fifth scale degrees in *Re* space.

While the $\flat\hat{6}-\hat{5}$ over tonic schema is relatively small in scope, it can still portray intense expressive meanings through the tension it creates. As demonstrated in Example 4.5, the appearance of the $\flat\hat{6}-\hat{5}$ over tonic schema undermined the resolution of a *clausula vera* on G. The V–iv–V schema, the next schema explored in this chapter, exists solely to undermine traditional cadential formulas by disrupting the resolution of a *clausula vera* and extending the phrase.

The V–iv–V Schema

Several times in this dissertation, I refer to Roman numerals to evoke parallels in Victoria's music to common-practice conventions, especially around cadential schemata. The V–iv–V schema is related to these cadential schemata in that it contains a prepared *clausula vera*. As shown in Figure 4.2, this schema features a $\hat{5}-\flat\hat{6}-\hat{5}$ motion in the cantus and a $\hat{5}-\hat{4}-\hat{5}$ motion in the bass. However, the function of this schema is to prohibit a successful *clausula vera*, requiring the phrase to extend further until another *clausula vera* can be prepared and achieved. This denial of the *clausula vera* is realized by the $\hat{2}-\hat{4}-\hat{2}$ leap which occurs in the second highest voice (either altus or cantus II depending on the cleffing of the responsory).

Figure 4.2. The V–iv–V schema.



Notably, this schema outlines a “harmonic progression” that is impracticable in common-practice tonality. Rather, it alludes to the prolongation of a dominant harmony through neighboring contrapuntal motion. This distinction between progression and prolongation, something that may be quite familiar to music theorists versed in Schenkerian theory, is apropos in understanding how this schema functions as it is used to prolong a listener’s perception of a cadential resolution.

The first V–iv–V schema appears in the first responsory “Amicus meus” (see Example 4.9). The opening of the phrase *et in fine* begins with a *clausula vera* on G. Yet, the altus does not resolve the A to G as expected. Rather it leaps up to C. This unexpected leap requires the other voices to move as well, creating the “iv chord”—a $\frac{5}{3}$ harmony on C. Following this failed *clausula vera* the tenor reinitiates cadential motion with F \sharp which successfully resolves to G.

Example 4.9. *Officium Hebdomadae Sanctae*, “Amicus meus,” mm. 30–32.

There are several reasons why a successful *clausula vera* should not occur during its first attempt. First, the resolution would have happened at the beginning of a word, *fine*, which would have been unorthodox. Second, it would have been strange to have such a strong resolution at the beginning of a new phrase. When the second attempt of the *clausula vera* succeeds, it does so on a weak beat, undermining the strength of the cadence. However, this is preferred since the text *et in fine laqueo se suspendit* is far from over allowing for a stronger cadence at the end of the phrase.¹⁴

The next appearance of the V–iv–V schema occurs in the fourth responsory “Eram quasi agnus.” There are similarities to the example in “Amicus meus” worth noting. The voicing is exactly the same between the two examples, including the register. The altus moves from A to C, albeit through an intermediary B (see the dashed oval in Example 4.10). Additionally, this

14. Notably, this cadence which also corresponds with the end of the responsory is a half cadence with a 4–3 suspension on *suspendit*, clearly text painting the feeling of suspension. Thus, a strong beat complete resolution of a *clausula vera* on G never comes within this phrase.

appearance of the V–iv–V schema also occurs quite early in the phrase and in the middle of a word. Therefore, the V–iv–V schema results out of the need to extend the phrase. These similarities help the listener connect this example of the V–iv–V schema in “Eram quasi agnus” to the previous “Amicus meus” example. Both of these responsories are for Maundy Thursday, therefore the listener would be able to connect these musical moments in the performance of these works.

However, unlike the “Amicus meus” example, this example of the schema occurs during a striking moment of homophony during the text *consilium fecerunt inimici mei*, the moment that Jesus notes that his enemies have conspired against him and led him to be slaughtered like a sacrificial lamb. This instance of the V–iv–V schema is less about disrupting a *clausula vera* on G since there is no suspension which typically accompanies a cadence. Rather, it primarily signifies a moment of heightened expression—a moment to grasp the listeners’ attention before Jesus reveals what his enemies said as he was sacrificed.

Example 4.10. *Officium Hebdomadae Sanctae*, “Eram quasi agnus,” mm. 14–19.

Cantus
 (bam): con-si-li-um fe-ce-runt in-i-mi-ci me-i

Altus
 (bam): con-si-li-um fe-ce-runt in-i-mi-ci me-i

Tenor
 (bam): con-si-li-um fe-ce-runt in-i-mi-ci me-i

Bassus
 con-si-li-um fe-ce-runt

G

The next appearance of the V–iv–V schema appears in the fifth responsory, “Una hora” (see Example 4.11). This is the third example of the schema within the Maundy Thursday responsories. There are a few differences within this example. First, “Una hora” is set in a higher group of voices than the previous two examples. Second, this appearance occurs near the end of the phrase *qui exhortabamini mori pro me?* rather than close to the beginning. Despite these differences, the V–iv–V schema rises out of the necessity to continue the phrase as the *clausula vera* on G occurs before the phrase concludes. Furthermore, since the phrase is a question, it allows the phrase to opt out of achieving a full cadence on G. Rather, Victoria ends the phrase on a half cadence on D, preventing the phrase from concluding rhetorically.

Example 4.11. *Officium Hebdomadae Sanctae*, “Una hora,” mm. 13–15.

The musical score for "Una hora" consists of four staves: Cantus I, Cantus II, Altus, and Tenor. The lyrics are: (mo) - - - ri pro me? / mo - - - ri pro me? / mo - - - ri pro me? / mo - - - ri pro me? / D. The figured bass notation for the V-iv-V schema is as follows: Cantus I (5, b6, 5), Cantus II (2, 4, 2), Altus (5, 4, 5), and Tenor (5, 4, 5). The final note of the Tenor staff is marked with a boxed 'D'.

Example 4.12. *Officium Hebdomadae Sanctae*, “O vos omnes,” mm. 22–24.

The musical score consists of four staves, each with a treble clef and a key signature of one flat (B-flat). The lyrics are: (sic) - ut do - lor me - - us. The notes are as follows:

- Cantus I:** (sic) - ut do - lor me - - us. Scale degree numbers: 5, $\flat 6$, 5.
- Cantus II:** sic - ut do - lor me - - us. Scale degree numbers: 2, 4, 2.
- Altus:** sic - ut do - lor me - - us. Scale degree numbers: 2, 4, 2.
- Tenor:** sic - ut do - lor me - - us. Scale degree numbers: 5, 4, 5. A boxed 'G' is placed below the final note.

The last example of the V–iv–V schema in the *Tenebrae* responsories occurs in “O vos omnes” (see Example 4.12). Similar to the other examples, the V–iv–V schema extends the phrase as the text has not ended. Like the last example with “Una hora,” this appearance occurs towards the end of the phrase. On the other hand, the V–iv–V schema leads into a *clausula vera* on G, ending the phrase conclusively on the final of the responsory.

Both the $\flat\hat{6}$ – $\hat{5}$ over tonic and V–iv–V schemata are motivated by rhetorical function. The contrapuntal motion in the $\flat\hat{6}$ – $\hat{5}$ over tonic schema does not occur out of necessity. Rather, it adds tension in the passage, often to emphasize the text at that moment. The V–iv–V schema appears because contrapuntal motion sets up a *clausula vera* when the text is not ready for closure. Both of these schemata also demonstrate the potential of how schemata can help define the tonality for the listener, performer, or analyst since the scale degree

The next schema discussed in this chapter, however, takes this position finding function to another level. Each of these schemata will seem familiar to listeners, performers, and analysts experienced in common practice period music. Thus, while both the $\flat\hat{6}$ – $\hat{5}$ over tonic and V–iv–V

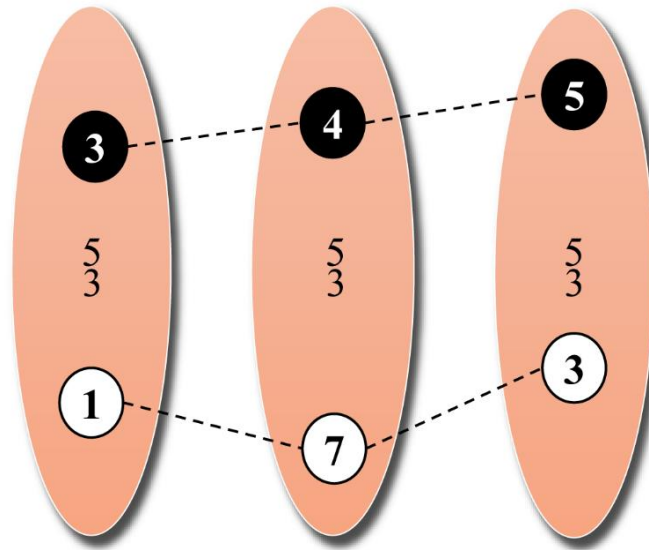
schemata are helpful in the act of position finding, I argue that these other schemata are crucial with defining the tonal space of the work, just as much as cadences define a tonal space as discussed in Chapter 4.

The Ascending 10–12–10 Schema (The Folia)

The next few schemata are named after their outer voice intervallic patterns. The Ascending 10–12–10 schema features rising stepwise motion of a third harmonized with a distinctive bass pattern that includes a step in contrary motion followed by a leap in parallel motion (see Figure 4.3. The Ascending 10–12–10 schema.). This pattern may seem familiar to listeners of Baroque music as a segment of the harmonic conventions commonly associated with the *Folia*.¹⁵ This segment of the *Folia* outlines a shift from a minor key to its relative major by using the subtonic chord of the minor key (VII) as the dominant chord of the major key (V/III). This harmonic progression also became popular as it was an effective way to harmonize ascending parallel thirds.

15. For more on the history of the *Folia* dance and harmonization conventions, see Oxford Music Online, s.v. “Folia,” by Guisepppe Gerbino and Alexander Silbiger, accessed July 21, 2019, doi:10.1093/gmo/9781561592630.article.09929.

Figure 4.3. The Ascending 10–12–10 schema.



In the sixth responsory “Seniores populi,” the Ascending 10–12–10 schema is used as a way to harmonize ascending thirds in the top two voices (see Example 4.13 and Example 4.14). Yet, these appearances of the Ascending 10–12–10 schema in the responsories appear in both homophonic and polyphonic textures. For instance, in Example 4.15, the ascending parallel thirds do not occur during the appearance of the Ascending 10–12–10 schema but are perhaps implied with the appearance of the ascending parallel thirds in the previous measures between the cantus II and altus voices. Had Victoria wanted parallel thirds, he could have extended the altus line to repeat the ascending third G–A–B \flat . However, the polyphonic texture of Example 4.15, including the *clausula vera* to B \flat in measures 11 and 12, makes it difficult to have parallel thirds. As shown in Example 4.16, there would be parallel octaves between the second cantus and altus without a recomposition of the second cantus’s suspension on B \flat .

Example 4.13. *Officium Hebdomadae Sanctae*, “Seniores populi” mm. 19–21.

Cantus
 (rent): cum gla - di - is et fu - sti - bus

Altus
 (rent): cum gla - di - is et fu - sti - bus

Tenor
 cum gla - di - is et fu - sti - bus

Bassus
 cum gla - di - is et fu - sti - bus

D

Example 4.14. *Officium Hebdomadae Sanctae*, “Animam meam dilectam,” mm. 6–9.

Cantus
 (tra) - di - di in man - us in - i - quo - rum

Altus
 (tra) - di - di in man - us in - i - quo - rum, et fa

Tenor
 di in man - us in - i - quo - rum et

Bassus
 (tra) - di - di in man - us in - i - quo - rum

D

Example 4.15. *Officium Hebdomadae Sanctae*, “Iudas mercator pessimus,” mm. 10–12.

Cantus I
(num): il - le ut a - gnus

Cantus II
il - le ut a - gnus in - no - cens,

Altus
(num): il - le ut a - gnus

Tenor
il - le ut a - gnus

B \flat

Example 4.16. Recomposition of “Iudas mercator pessimus” mm. 10–12 to contain parallel thirds, but also cause parallel octaves.

Cantus I
(num): il - le ut a - gnus

Cantus II
il - le ut a - gnus in - no - cens,

Altus
(num): il - le ut a - gnus, il - le ut a - gnus

Tenor
il - le ut a - gnus

B \flat

The Ascending 10–12–10 schema in the opening of “Eram quasi agnus” harmonizes parallel thirds in the cantus and altus (see Example 4.17). However, the altus breaks the homophonic texture to initiate the *clausula cantizans* of a *clausula vera* on A as part of a double cadence ending on D. What makes this example strikingly different than Example 4.15 is that the cadential goals are a half step apart, as the end of the Ascending 10–12–10 schema in Example 4.17 initiates a Phrygian cadence to A. Yet, both of the appearances of the Ascending 10–12–10 schema are ultimately goal-oriented toward the pitch D, whether it results in an eventual cadence on D (as in Example 4.13, Example 4.14 and Example 4.17) or with D as the highest voice (as in Example 4.15).

Example 4.17. *Officium Hebdomadae Sanctae*, “Eram quasi agnus,” mm. 1–5.

The musical score consists of four staves: Cantus, Altus, Tenor, and Bassus. The lyrics are: "E - ram qua - si a - gnus in - no - cens:". The Cantus staff has circled numbers 3, 4, and 5 above it. The Bassus staff has circled numbers 1, 7, and 3 below it. The Bassus staff ends with boxed letters 'A' and 'D'.

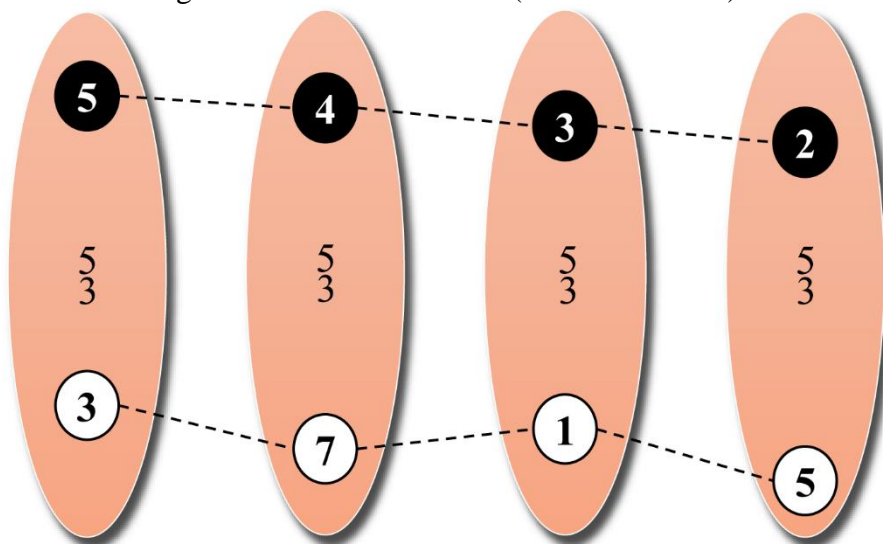
Unlike the V–iv–V schema which can be seen as an elaboration or prolongation of a single harmony, the Ascending 10–12–10 schema functions as a segue from (G, *re*, $\hat{1}$) to (D, *la*, $\hat{5}$). As evidenced by these different examples, there are multiple ways for the schema to elaborate the movement from the tonic of the underlying G-*re* tonal space to its fifth (D, *la*, $\hat{5}$). Several

other schemata in the Tenebrae Responsories function similarly, including another schema that bears resemblance to a galant schemata: the *Romanesca*.

The Descending 10–12–10–12 Schema (The Romanesca)

The Descending 10–12–10–12 schema outlines descending parallel thirds with consecutive $\frac{5}{3}$ harmonies, closely resembling the galant *Romanesca* (see Figure 4.4).¹⁶ While the Ascending 10–12–10 schema appears in both polyphonic and homophonic textures, the Descending 10–12–10–12 schema only appears in a homophonic texture which strengthens its resemblance to the *Romanesca*.

Figure 4.4. The Descending 10–12–10–12 schemata (*The Romanesca*)



This schema’s first appearance in the third responsory “Unus ex discipulis” appears during a lengthy passage of homophony (see Example 4.18). This passage starts in *G-re*, where the Descending 10–12–10–12 schema directs the listener to a rhetorical pause locally at (D, *la*, $\hat{5}$), isomorphic with what modern listeners experience as a half cadence.¹⁷ The appearance of the

16. For an extensive discussion of the history and variations of the *Romanesca*, see the second chapter of Robert O. Gjerdingen, *Music in the Galant Style* (New York: Oxford University Press, 2007), 25–44.

schema in the thirteenth responsory “Recessit pastor noster” functions similarly to that in “Unus ex discipulis.” The appearance of this schema in the fourth responsory “Eram quasi agnus” also directs the listener from (G, *re*, $\hat{1}$) to (D, *la*, $\hat{5}$); however, the text in the upper two voices eschews the rhetorical pause in the lower two voices, prompting an immediate weak resolution back to (G, *re*, $\hat{1}$), promptly followed by a much stronger resolution to (G, *re*, $\hat{1}$) just a few beats later (see Example 4.19).

Example 4.18. *Officium Hebdomadae Sanctae*, “Unus ex discipulis,” mm. 16–21.

The image shows a musical score for four voices: Cantus, Altus, Tenor, and Bassus. The lyrics are: "Me - li - us il - li e - rat, si na - tus non fu - is - set." Above the Cantus staff, there are four circled numbers: 5, 4, 3, 2. Below the Bassus staff, there are four circled numbers: 3, 7, 1, 5, and a boxed letter D. At the end of the Bassus staff, there is a boxed letter G. The music is in a single system with four staves. The Cantus staff is in treble clef, and the Bassus staff is in bass clef. The lyrics are written below the staves.

17. Since many modern-day listeners would experience this as a half cadence, I have marked it as a cadence in Example 5.22.

Example 4.19. *Officium Hebdomadae Sanctae*, “Eram quasi agnus,” mm. 10–14.

The musical score consists of four staves: Cantus, Altus, Tenor, and Bassus. The Cantus staff has circled numbers 5, 4, 3, and 2 above the notes. The lyrics for each part are: Cantus: (lan) - dum, et ne - sci - e - bam, et ne - sci - e - bam:; Altus: et ne - sci - e - bam:; Tenor: lan - dum, et ne - sci - e - bam et ne - sci - e - bam:; Bassus: et ne - sci - e - bam: Below the Bassus staff are circled numbers 3, 7, 1, and 5, and boxes containing 'G?' and 'G'.

The last appearance of the Descending 10–12–10–12 schema occurs in the final responsory “Sepulto Domino,” once again directing the listener from (G, *re*, $\hat{1}$) to (D, *la*, $\hat{5}$) (see Example 4.20). After the rhetorical pause on (D, *la*, $\hat{5}$), the schema then appears in retrograde. However, this retrograde statement of the *Romanesca* schema can also be perceived as an appearance of the Ascending 10–12–10 schema (*Folia*). While the Descending 10–12–10–12 schema starts in G-*re*, this retrograde statement does not direct the listener back to G-*re*, but rather toward B \flat -*ut*. This is confirmed by the appearance of (E \flat , *fa*, $\hat{4}$) in both the altus and cantus, initiating a ii $\hat{6}_5$ –V–i cadence in B \flat -*ut*.

Example 4.20. *Officium Hebdomadae Sanctae*, “Sepulto Domino,” mm. 1–8.

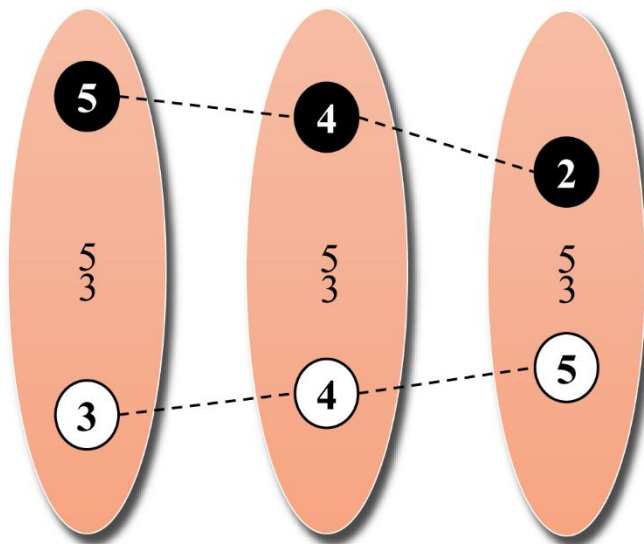
The musical score consists of two systems. The first system features four vocal parts: Cantus, Altus, Tenor, and Bassus. The lyrics are "Se - pul - to Do - mi - no". The Cantus part has circled numbers 5, 4, 3, and 2 above the notes. The Bassus part has circled numbers 3, 7, 1, and 5 below the notes, with a boxed 'D' at the end. The second system features four instrumental parts: C, A, T, and B. The lyrics are "si - gna - tum est mo - nu - men - tum, vol - ven - tes". The C part has circled numbers 2, 3, 4, and 5 above the notes. The B part has circled numbers 5, 1, 7, and 3 below the notes, with a boxed 'Bb' at the end. Below the B part, there is a line of figured bass notation: "G-re —————> Bb-fa".

The 10–8–5 Schema

Another schema that directs the listener toward (D, *la*, $\hat{5}$) is the 10–8–5 schema, featuring three consecutive $\frac{5}{3}$ sonorities ascending stepwise in the bass (see Figure 4.5). The fifth responsory “Una hora” features this schema twice, however each appearance is prefaced

differently. In Example 4.21, the schema appears after a $\frac{5}{3}$ sonority on G, directing the listener toward (D, *la*, $\hat{5}$).

Figure 4.5. The 10–8–5 schema.



Example 4.21. *Officium Hebdomadae Sanctae*, “Una hora,” mm. 10–12.

Cantus I
cum qui ex - hor - ta - ba - mi - ni mo

Cantus II
cum qui ex - hor - ta - ba - mi - ni

Altus
cum qui ex - hor - ta - ba - mi - ni

Tenor
cum qui ex - hor - ta - ba - mi - ni

The second appearance, as shown in Example 4.22, follows a successful *clausula vera* to B \flat .

While cadences to B \flat are not uncommon in works in a G-re tonality, too much emphasis on B \flat may create the perception of commixture between G-re and B \flat -ut. The sudden appearance of the

10–8–5 schema dissolves this possibility by quickly ushering in a rhetorical pause on (D, *la*, $\hat{5}$), the fifth of *G-re* space.

Example 4.22. *Officium Hebdomadae Sanctae*, “Una hora,” mm. 22–24.

The musical score consists of four staves: Cantus I, Cantus II, Altus, and Tenor. Each staff has a treble clef and a key signature of one flat (B-flat). The lyrics are: Cantus I: quo - mo - do non dor - mit,; Cantus II: tis, quo - mo - do non dor - mit, sed fe - sti; Altus: tis, quo - mo - do non dor - mit, sed; Tenor: tis, quo - mo - do non dor - mit,.

Diagrammatic elements: A 10-8-5 schema is indicated by circled numbers 5, 4, and 2 above the notes. A B-flat symbol is in a box below the first measure, and a D symbol is in a box below the final measure.

The passage of “Seniores populi” in Example 4.16 also contains a 10–8–5 schema overlapping the end of the Ascending 10–12–10 (*Folia*) schema (see Example 4.23). With the kinetic potential for the Ascending 10–12–10 to initiate a cadence to B \flat (as seen in Example 4.15), the immediate appearance of the 10–8–5 schema dispels any chance of a cadence to B \flat , keeping the listener within the *G-re* tonality.

Example 4.23. *Officium Hebdomadae Sanctae*, “Seniores populi,” mm. 19–21.

Cantus
 (rent): cum gla - di - is et fu - sti - bus

Altus
 (rent): cum gla - di - is et fu - sti - bus

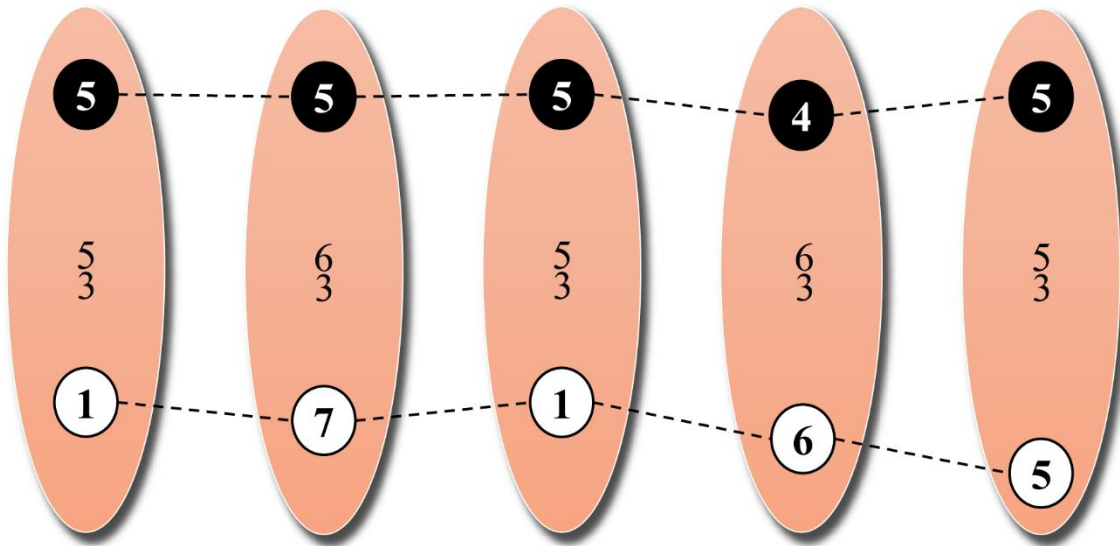
Tenor
 cum gla - di - is et fu - sti - bus

Bassus
 cum gla - di - is et fu - sti - bus
 D

The 5–6–5–6–8 Schema

This last example of a compositional schema for this chapter demonstrates the adaptability of the schematic framework in sixteenth-century counterpoint. Most of the examples of the 5–6–5–6–8 schema seen in Victoria’s *Tenebrae Responsories* do not appear as shown in Figure 4.6. Rather, the appearances of this schema are altered, primarily for contrapuntal or textual reasons. Nevertheless, the framework of the 5–6–5–6–8 schema is perceptible in each of these examples. This schema is directed from $(re, \hat{1})$ to $(la, \hat{5})$, ending in a Phrygian half cadence. Most of the examples of the 5–6–5–6–8 schema articulate an end of a phrase in at least one voice, making this schema one of the most goal-directed schemas observed in the *Responsories*. This strong direction towards the $(la, \hat{5})$ goal allows for moderate alterations to occur prior to the goal without disrupting the perception of the schema as a whole.

Figure 4.6. The 5–6–5–6–8 schema.



The only three appearances of the 5–6–5–6–8 schema that are unaltered appear in succession during the responsory “Tamquam ad latronem” (see Example 4.24). The first appearance of the schema is in *G-re* whereas the second and third appearance of the schema is in *D-re*. While the first appearance operates in *G-re*, the goal-directedness of the schema connects the cadence on *D* in measure 5 to the cadence on *D* in measure 7. Any perception of *G-re* is fleeting in this moment. The second appearance of the schema is directed toward a cadence on *A*. The goal-directedness of the third appearance of the schema however is weakened by the altus and bassus counterpoint. The bassus imitates the altus in measure 9. The resulting early entrance of the bassus *D* creates a weak D_4^6 harmony that resolves to a D_3^5 harmony in measure 10, reorienting the listener back from $(A, la, \hat{5})$ to $(D, re, \hat{1})$. This is reinforced by the altus’s line where *F* is not an accented passing tone down to *E* in a hypothetical cadence to *A*. Rather the *F* is the third in the resulting D_3^5 harmony.

Example 4.24. *Officium Hebdomadae Sanctae*, “Tamquam ad latronem,” mm. 5–10.

The musical score consists of two systems of staves. The first system includes Cantus, Altus, Tenor, and Bassus. The second system includes Soprano (S), Alto (A), Tenor (T), and Bass (B). The lyrics are: "cum gla - di - is et fu - sti - bus, cum gla - di - is et fu - sti - bus, com - pre - hen - de - re". Fingerings are indicated by numbers in circles (1-7) and breath marks by numbers in squares (D, A). A tonal shift is indicated by an arrow from G-re to D-re.

This subversion of the cadence on A signals the beginning of a tonal shift. Over the next several measures, subsequent entrances of the descending third (*la-sol-fa*) from all four voices shifts the tonal space back from *D-re* to *G-re*.¹⁸

18. The imitative entrances of the (*la-sol-fa*) descending third help “flatten” the tonal space by descending fifths. An analogous passage in common practice music is shifting a tonicization of V back to I through a chain of

Two altered appearances of the 5–6–5–6–8 schema occur in the opening responsory “Amicus meus.” The first appearance, as shown in Example 4.25, omits the top voice of the schema as the tenor and bassus are the only active voices during the text *quem osculatus fuero*. The altus holds the A from the previous cadence which substitutes the repeated $\hat{5}$ at the beginning of the schema. While the end of the upper voice in the schema does not appear, it can be assumed as it is the only stepwise contrapuntal solution if a third voice were to appear.

Example 4.25. *Officium Hebdomadae Sanctae*, “Amicus meus,” mm. 8–10.

The musical score for Example 4.25 consists of four staves: Cantus, Altus, Tenor, and Bassus. The Cantus staff is mostly silent with a few notes at the end. The Altus staff has a circled '5' above the first note. The Tenor and Bassus staves have lyrics and circled numbers 1, 7, 1, 6, 5 below them. A box with 'A' is under the first and fifth notes of the Bassus line.

The second appearance of the 5–6–5–6–8 schema, as shown in Example 4.32, omits the beginning of the upper voice in the schema, although it is present as an inner voice in the tenor. Furthermore, a D_3^{\sharp} harmony is inserted prior to the $\hat{6}-\hat{5}$ descent in the bass. This alteration of the bass line is imitated in the tenor in measures 15–17, initiating one of the examples of the $\flat\hat{6}-\hat{5}$ over tonic schema seen earlier in the chapter. Prior examples of the 5–6–5–6–8 schema have the

descending V^7 chords until landing on V^7/IV which is used to strengthen the predominant in the eventual cadence to I. Similarly, Victoria goes through imitations starting on A, then D (twice), and then simultaneously on $B\flat$ (which ends on G) and G (which ends on $E\flat$). The $E\flat_3^{\sharp}$ harmony then moves to Victoria’s ii^{\flat}_6-V-i cadential schema in *G-re*. The appearance of $E\flat$ occurs because of the points of imitation descending by fifth.

$\hat{6}$ in the bass in a rhythmically-weak position. However, the inclusion of the $D\frac{5}{3}$ harmony in Example 4.26 shifts the $\hat{6}$ in the bass to a rhythmically-strong position, allowing for its imitation in the tenor to have the necessary strong–weak rhythmic characteristics to form a $b\hat{6}$ – $\hat{5}$ over tonic schema. Furthermore, the imitation of the bass pattern in the tenor creates a subversion of the cadence on D. Instead, the suspension of the G at measure 16 imitates the beginning of a *clausula vera* on G. Yet, there is not a satisfactory resolution to the *clausula vera* as neither voice on A resolves to G. Avoiding a strong cadence at this time is necessary because there is no break in the text. However, it does raise questions why such a goal-oriented schema would be used only to be undermined later. There are textual similarities between the lines where both appearances of the schema appear in “Amicus meus” (*quem osculatus* and *qui per osculum*), although the second appearance of the schema precedes the actual appearance of *qui per osculum*.

Example 4.26. *Officium Hebdomadae Sanctae*, “Amicus meus,” mm. 14–17 with both 5–6–5–6–8 and $b\hat{6}$ – $\hat{5}$ schemata.

The musical score consists of four staves: Cantus, Altus, Tenor, and Bassus. The lyrics are: "um: hoc ma-lum fe-cit si-gnum, qui per o-scu-lum: hoc ma-lum fe-cit si-gnum qui per o".

Annotations include circled numbers 5, 4, 5 above the Cantus staff and circled numbers 1, 7, 1, 6, 5, 1 below the Bassus staff. Boxed letters G, D, and G? are placed below the Bassus staff. A circled $b6$ and a circled 5 are placed above the Tenor staff.

Another hypothesis for the allusion to a double cadence and subsequent subversion of that double cadence is that it establishes an expectation for a future appearance of the schema. In fact, in “Tenebrae factae sunt,” the 5–6–5–6–8 schema ends with a double cadence from D to G (see Example 4.27). Further similarities include the inclusion of a D sonority before the $\hat{6}$ – $\hat{5}$ motion in the bass, albeit on a D_3^{\natural} sonority rather than the D_3^{\flat} sonority in “Amicus meus.” In addition, the double cadence is initiated by imitation of the bass voice in both cantus voices. The text in this example of the schema is unambiguously ending a phrase with strength: *exclamavit Iesus voce magna*. This example of the schema projects strength through its declamatory rhythm ending with a double cadence that reinforces the G-re tonality of the entire responsory.

Example 4.27. *Officium Hebdomadae Sanctae*, “Tenebrae factae sunt,” mm. 13–16.

The image shows a musical score for four voices: Cantus I, Cantus II, Altus, and Tenor. The lyrics are: "nam, ex - cla - ma - vit Ie - sus vo - ce ma - gna: vo". The score includes figured bass notation at the bottom, with circled numbers 1, 7, 1, 6, 5 and boxed letters D, D, G. There are also circled numbers 5, 4, 5 above the Cantus I staff.

Cantus I
 nam, ex - cla - ma - vit Ie - sus vo - ce ma

Cantus II
 nam, ex - cla - ma vit Ie - sus vo - ce

Altus
 nam, ex - cla - ma - vit Ie - sus vo - ce ma - gna:

Tenor
 ex - cla - ma - vit Ie - sus vo - ce ma - gna: vo

Figured Bass: \boxed{D} $\textcircled{1}$ $\textcircled{7}$ $\textcircled{1}$ $\textcircled{6}$ $\textcircled{5}$ \boxed{D} \boxed{G}

The Limits and Value of Compositional Schemata in Pattern Finding

Example 4.28 shows measures 3–6 in “Unus ex discipulis.” Strictly, this passage does not conform to any of the schemas presented in this chapter; but upon a closer look, there are striking similarities to the 5–6–5–6–8 schema recently explored. For example, the bassus descends stepwise from $\hat{1}$ to $\hat{5}$. The cantus hovers around $\hat{5}$ with a lower neighbor $\hat{4}$ that is itself embellished by a lower neighbor. It even bears resemblance to some of the other appearances of the 5–6–5–6–8 schema with a D^{\sharp} harmony inserted before the $\hat{6}$ – $\hat{5}$ motion in the bass. Should this example be considered an alteration of the 5–6–5–6–8 schema?

Example 4.28. *Officium Hebdomadae Sanctae*, “Unus ex discipulis,” mm. 3–6.

The musical score consists of four staves: Cantus, Altus, Tenor, and Bassus. The lyrics are: "ex di - sci - pu - lis me - is".

- Cantus:** Notes are on the 5th line (circled 5), 4th line (circled 4), and 5th line (circled 5). A slur covers the first three notes.
- Altus:** Notes are on the 4th line, 3rd line, 4th line, 3rd line, 2nd line, and 1st line (with a sharp sign).
- Tenor:** Notes are on the 4th line, 3rd line, 4th line, 3rd line, 2nd line, and 1st line. An '8' is written below the first note.
- Bassus:** Notes are on the 1st line, 2nd line, 3rd line, 2nd line, 1st line, and 1st line (with a D-sharp symbol below it).

Solfège numbers are circled below the lyrics: 1, 7, 6, 5, and a boxed D below the final 'is'.

To help answer this question, Browne uses the following monologue in defining pattern matching: “(1) ‘Is this the same as that?’ (2) ‘Could this become more or less like that?’”¹⁹ Thus, according to Browne’s monologue, no—Example 4.28 is not the same as the other appearances

19. Browne, “Tonal Implications,” 4.

of the 5–6–5–6–8 schema. However, it could become more or less like that schema. While one can debate whether or not this is another example of the 5–6–5–6–8 schema, the more important revelation of this passage is that the listener or analyst can use the information from the 5–6–5–6–8 schema to inform how this passage functions within tonal space. It does not matter that it is not an exact fit. Rather, the context clues help the listener understand that this is a goal-directed passage that ends on (D, *la*, $\hat{5}$) in *G-re*.

The use of compositional schemata, like the ones shown in this chapter, is rare in sixteenth-century music. Nevertheless, recurring contrapuntal patterns occur in many works. Furthermore, cadential schemata, such as the *clausula vera*, are fundamental contrapuntal devices used to articulate rhetorical breaks across the sixteenth century (and before). Once a listener or analyst understands how a *clausula vera* works and that it represents a rhetorical break, then they can use that information across the repertoire.

As listeners and analysts begin to identify these recurring patterns of counterpoint, these schemata can inform future interpretations when they come across these patterns again. The patterns can help listeners and analysts orient themselves within a tonality. If nothing challenges this apperception of where one is in the tonality, then the pattern becomes a stronger signifier of the tonal functions within that tonality. Then when alterations are made to the pattern, such as the alterations in Example 4.28 above, the listener and analyst can make a determination if the passage is similar enough (“Could this become more or less like that”) to function similarly to the pattern they know, or if more information is needed before making a determination.

Chapter 5: Analyzing Tonal Shifts in the Music of Tomás Luis de Victoria: Transformations of Tonal Qualia

To this point, the analyses in this dissertation have centered on identifying global and large-scale tonalities and investigating how imitation and compositional schemata can help the analyst and listener position themselves within these tonalities. While our new tonal quale (*littera, vox, scale degree*) is useful in defining these tonalities and broad tonal functions, modern scholars have often been able to achieve the same results using modal analysis with various degrees of success. The strength of these new tonal qualia, however, is in their ability to also contextualize tonal shifts at the local level, allowing the analyst and listener to describe how their apperceptions of these qualia change and transform their understanding of where they are located within the larger tonal structures.

This chapter will establish a framework for analyzing transformations of the tonal quale in order to capture the changing apperceptions associated with these shifts in tonal space. First, this chapter will introduce how to measure intervals between tonal qualia and how to map these intervals as part of a transformational network. Next, this chapter will revisit hexachordal mutation in order to understand how changes in solmization can influence the perception of shifting tonal spaces.

Finally, this chapter will close with three analyses that illustrate different use cases for analyzing tonal shifts. The first analysis investigates a jarring cross-relation between B \flat and B \sharp in the sixth Lamentation of Jeremiah “Aleph. Ego vir” from the *Officium Hebdomadae Sanctae* and how the transformation between these tonal qualia can convey the clashing between the soft and hard Bs. The second analysis will look at the opening of Victoria’s most famous composition, *O magnum mysterium* and examine how our perception of a work’s tonality and tonal functions

may be recontextualized as a result of a tonal shift. The final analysis will consider works that do not have a global tonality across the entire work. As a continuation of the earlier analyses of the *Missa pro defunctis à 4* Introit and Kyrie in Chapter 3, this analysis will examine the Gradual which ends in a different tonality than it begins in. These three analyses will demonstrate the utility of transformational analysis of tonal qualia to explain tonal phenomena at all hierarchical levels in Victoria's music.

Mapping Transformations of Tonal Qualia

As noted in Chapter 2, the goal of this dissertation is not to form a Generalized Interval System (GIS) for Western early music. A GIS is the “central construct in transformational theory, used to render intervallic statements and apperceptions formal” which comprise of a “set of elements, a group of intervals, and a function that maps the former to the latter.”¹ As Rings aptly notes, GISes “cannot model intervals in musical spaces that have a boundary or limit.”² Given the limits of the useable gamut and the limits of hexachordal solmization to be mapped onto a heptachordal space, I contend that it does not make sense to create a formalized GIS to analyze this music. If there were a tonal GIS that is appropriate for early Western music, the majority of that GIS would consist of inconceivable tonal qualia and intervals between those qualia that would largely render this analytical tool ineffectual for my goals. In addition, any formalized tonal GIS would need to elevate all mod-12 pitch classes to equal status, even though it is evident that historically, they were not.

With that said, there is value in defining intervals between the elements of the tonal quale (*littera, vox, scale degree*) even if they are not formalized. This section on mapping

1. Steven Rings, *Tonality and Transformation* (New York: Oxford University Press, 2011), 10, 225–26.

2. Rings, 19.

transformations of these tonal qualia will forgo formalization of these intervals between each element, but rather will use colloquial measurements of these intervals which will help convey their meaning to a wider audience.

Consider the opening chant fragment for the Introit “Requiem aeternam” for the Requiem mass from the *Liber Usualis* (see Example 5.1).³ As seen in Example 5.1a, the *Liber Usualis* categorizes this chant as a Mode 6 chant with the final of F. Bernhard Meier cites “the plagal species of fourth *ut-fa* and the third *fa-la*, the repercussion” as exordial motives of Mode 6.⁴ As shown by the bracketed passage in Example 5.1b, the main melodic motive of “Requiem aeternam” is the third F–A (*fa-la*), highlighting the *repercussa* of Mode 6.

Example 5.1. (a) The opening chant fragment from the Introit “Requiem aeternam” as it appears in the *Liber Usualis*. (b) A transcription of the chant fragment.

(a)

(b)

Let us consider how each of the elements in the tonal quale (*littera, vox, scale degree*) can be measured by the ascending third F–G–A. With *litterae*, it is helpful to measure the interval as a direction (+ for ascending, - for descending) and number associated with the number of steps between letters. In this example, we should measure the interval between F and G as +1 and G to

3. The Benedictines of Solesmes, ed., *Liber Usualis* (New York: Desclee Company, 1961): 1807.

4. Bernhard Meier, *The Modes of Classical Vocal Polyphony*, trans. Ellen S. Beebe (New York: Broude Brothers Limited, 1988), 202.

A as +1. The interval between *voces* should be measured by the direction and size of the musical interval, as solmization gives context to the pattern of musical intervals based on the *mi-fa* half step. There are two possible *voces* for F to consider, *fa* in the natural hexachord and *ut* in the soft hexachord. However, whether measuring the interval *fa-sol* or *ut-re*, both are an ascending major second (+M2). Lastly, I borrow Rings's nomenclature for measuring intervals between scale degrees, using the generic interval between sensed scale degrees (i.e. 2nd, 3rd, 4th). In this example, the interval between $\hat{1}$ and $\hat{2}$ would be 2nd. Thus, the intervals between the tonal qualia in the ascending third F-G-A are (+1, +M2, 2nd) and (+1, +M2, 2nd) for a composite interval of (+2, +M3, 3rd) (see Example 5.2).

Example 5.2. Mapping of the intervals of the ascending third F-G-A.

The diagram shows a musical staff with a treble clef and a key signature of one flat (B-flat). Three diamond-shaped solmization symbols are placed on the staff: $\hat{1}$ on the first line (F), $\hat{2}$ on the second space (G), and $\hat{3}$ on the second line (A). Below the staff, three rows of text describe the intervals between these notes:

- F-ut:** (F, *fa*, $\hat{1}$) — (+1, +M2, 2nd) —> (G, *sol*, $\hat{2}$) — (+1, +M2, 2nd) —> (A, *la*, $\hat{3}$)
- Alternate voces** (F, *ut*, $\hat{1}$) — (+1, +M2, 2nd) —> (G, *re*, $\hat{2}$) — (+1, +M2, 2nd) —> (A, *mi*, $\hat{3}$)
- (F, *fa*, $\hat{1}$) — (+2, +M3, 3rd) —> (A, *la*, $\hat{3}$)

The intervals listed in Example 5.2 may not seem interesting on their own, as it is a rather complicated way to express traditional tonal intervals of two ascending major seconds to form a composite of an ascending major third. When all elements of the interval are moving, they will often describe these traditional (and perhaps uninteresting) tonal intervals. However, the value of mapping these intervals arises when one of the elements of the interval remains stagnant while the others move. These intervals will identify some type of tonal shift, depending on which element (or elements) remain stagnant.

Mutation of Hexachords and Other Changes in Solmization

Since hexachordal solmization only contains six elements (*ut, re, mi, fa, sol, and la*), it is not able to align one-to-one with the seven elements of a diatonic scale, represented by scale degrees in this dissertation. As mentioned in Chapter 1, while some plainchant fragments could be solmized with a single hexachord, singers often would need to use multiple hexachords to be able to solmize passages larger than a major sixth or to solmize passages that include notes that exist outside of a single hexachord. Singers would “mutate” to another hexachord in order to solmize *litterae* that do not exist in their current hexachord.

However, singers could not mutate between any of the hexachords since the hard and soft hexachords have two versions of B: \flat -*fa* and \natural -*mi*. Hexachordal theory traditionally prohibited *mi-fa* mutation and thus, mutating between the hard and soft hexachords was not allowed.⁵ The sixteenth-century composer and theorist Martin Agricola demonstrated two different types of mutation based on whether \flat -*fa* and \natural -*mi* were part of the melodic material, both of which included the natural hexachord.⁶ Thus, mutation would occur through the natural hexachord (C–D–E–F–G–A), either overlapping with the soft hexachord (F–G–A–B \flat –C–D) or the hard hexachord (G–A–B \natural –C–D–E) to create a full diatonic scale with either the soft or hard B (see Example 5.3). Likewise, the combination of the natural/soft and natural/hard hexachords can be transposed to expand the gamut to include E \flat , accounting for the vast majority of the diatonic collections that Victoria used as the basis of his compositions.

5. Oliver Ellsworth, “The Origin of the Coniuncta: A Reappraisal,” *Journal of Music Theory* 17, no. 1 (Spring 1973), 90.

6. Martin Agricola, *Musica choralis deudsch* (Wittenberg, Germany: Georg Rhaw, 1533), 24–27. Modern transcriptions of these charts can be found in Anne Smith, *The Performance of 16th-Century Music: Learning from the Theorists* (New York: Oxford University Press, 2011): 31–33.

Example 5.3. The natural hexachord overlapped with the hard and soft hexachords respectively.

The image shows two musical staves in treble clef. The first staff is labeled 'Soft' and shows a sequence of notes: (sol), (la), ut, re, mi, fa, sol, la. The notes are on a four-line staff. The second staff is labeled 'Hard' and shows a sequence of notes: (fa), sol, la, ut, re, mi, fa, sol, la. The notes are on a four-line staff. Below each staff, the notes are labeled with their solfège names: 'Natural: ut re mi fa sol la (ut re)' for the soft hexachord and 'Natural: ut re mi fa sol la (ut re mi)' for the hard hexachord. The 'Soft' hexachord has a flat sign under the 'fa' note, and the 'Hard' hexachord has a sharp sign under the 'mi' note.

These two different combinations of hexachords align with the description of the *Tetrachorda coniuncta* and *Tetrachorda disiuncta* by Jean de Muris.⁷ That is, if the tetrachord (*ut–re–mi–fa*) was conjunct, there was overlap between two tetrachords where *fa* in the first tetrachord became *ut* in the second tetrachord. This aligns with the overlap observed between the natural and soft hexachords in Example 5.3. If the tetrachord was disjunct, that meant that the second tetrachord started a step from the original tetrachord, as observed in the overlap between the natural and hard hexachords. Gaston Allaire, drawing from Jean de Muris’s descriptions of the *Tetrachorda coniuncta* and *Tetrachorda disiuncta*, describes the “hexachord-order Durum-naturale *conjunct*, and the hexachord-order Naturale-durum *disjunct*.”⁸ That is, conjunct refers to the “soft” version of the octave-species C-c where the B is \flat -*fa* and disjunct refers to the “hard” version of the octave-species C-c where the B is \sharp -*mi*.

Therefore, when mutating between hexachords, I will refer to mutations that shift hexachords toward the soft version of an octave species (hard→natural→soft) as disjunct mutations (**dis.** for short) and mutations that shift toward the hard version of an octave species (soft→natural→hard) as conjunct mutations (**con.** for short). On their own, one **dis.** or **con.**

7. Gaston Allaire, *The Theory of Hexachords, Solmization and the Modal System* (n.p.: American Institute of Musicology, 1972), 17.

8. Allaire, 18 (emphasis his).

mutation may not change the tonal phenomena in a composition. This is because polyphonic works within a single tonality will naturally invoke at least two hexachords in order to invoke an entire diatonic set. However, two or more **dis.** or **con.** mutations will prompt a shift in tonal space, as at least one *mi* or *fa* syllable will shift to *fa* or *mi* respectively. For example, if a melodic passage begins in the soft hexachord and goes through two **dis.** mutations, \flat -*fa* will transform into \natural -*mi*. These two mutations allow for the otherwise prohibited *mi*-*fa* mutation which signals a shift in tonal space.

Let us revisit Example 3.1 with the tonal qualia listed in the Introit of the *Missa pro defunctis à 4* (see Example 5.4). How do we reconcile the difference between the tonal quale of the initial F in the tenor with the tonal quale of the initial F in the bassus? In these two tonal qualia, the only difference is the *vox* element. Since these qualia are within one **dis.** or **con.** mutation, it does not alter the overall tonality of this passage. For example, we could map these qualia as shown in Figure 5.1.

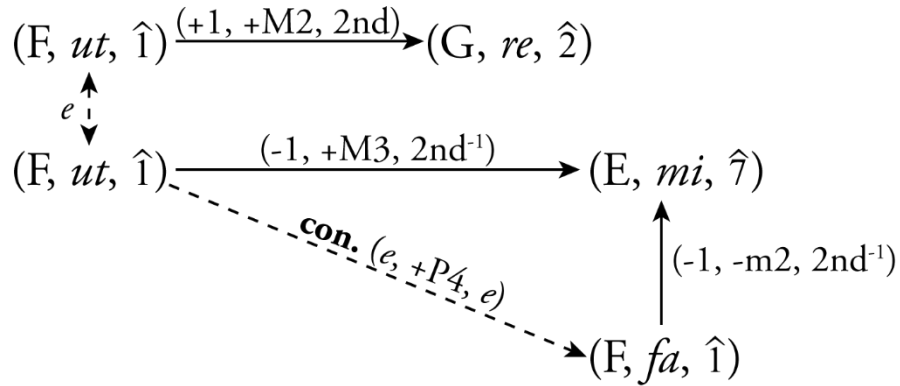
Example 5.4. *Missa pro defunctis à 4*, Introit, mm. 1–5 (reproduced from Example 3.1).

The musical score for Example 5.4 consists of four staves: Cantus, Altus, Tenor, and Bassus. The lyrics are: "do - na e - is, Do do - na e - is, Do". The tonal qualia annotations are as follows:

- Cantus:** (F, *ut*, $\hat{1}$) (G, *re*, $\hat{2}$) (A, *mi*, $\hat{3}$)
- Altus:** (F, *fa*, $\hat{1}$) (E, *mi*, $\hat{7}$) (F, *fa*, $\hat{1}$) (C, *ut*, $\hat{5}$)
- Tenor:** (F, *ut*, $\hat{1}$) (G, *re*, $\hat{2}$) (A, *mi*, $\hat{3}$) (F, *ut*, $\hat{1}$) (C, *sol*, $\hat{5}$)
- Bassus:** (F, *fa*, $\hat{1}$) (E, *mi*, $\hat{7}$) (F, *fa*, $\hat{1}$) (D, *re*, $\hat{6}$) (C, *ut*, $\hat{5}$) (F, *fa*, $\hat{1}$)

A boxed 'F' is located at the bottom right of the score, below the Bassus staff.

Figure 5.1. Mapping of the intervals between tonal qualia in the first two measures of *Missa pro defunctis à 4*, Introit.



As shown in Figure 5.1, the **con.** mutation is shorthand for the interval $(e, +P4, e)$ or its inversion $(e, -P5, e)$. Therefore, the **dis.** mutation is $(e, +P5, e)$ or its inversion $(e, -P4, e)$.⁹ It is important to note that the combined interval $(-1, +M3, 2nd^{-1})$ on its own does not make much sense as it suggests that the *littera* descends by a second, but the interval between solmization syllables is an ascending major third. The disjunct mutation is important in understanding this combined interval. In this practical example, the bassus would never solmize their F as *ut* as they are privy to the knowledge that their following note is E-*mi*. However, a listener may conceptualize both Fs in the tenor and bassus as the same tonal quale before the bassus's stepwise descent to E recontextualizes its tonal quale to (F, *fa*, $\hat{1}$) instead of (F, *ut*, $\hat{1}$).

Example 5.4 and its corresponding Figure 5.1 demonstrate how disjunct and conjunct mutations of the *vox* may not change the perception of tonality. However, it is important to consider how these mutations are gradual and can indicate shifts in tonality over time. As mentioned earlier, one disjunct or conjunct mutation likely does not change the perception of tonality, but two consecutive disjunct or conjunct mutations over any period of time will prompt

9. The italic *e* is shorthand for the identity element in a group.

a perceptual shift in tonal space. Thus, it is important to indicate these mutations as they occur since they can clue an analyst and listener into shifts in tonality.

Shifts between Tonalities

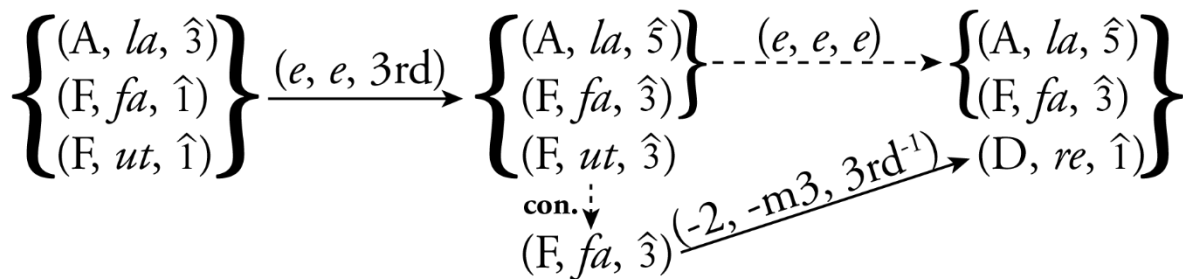
Let us revisit the *Vexilla regis (more hispano)* analysis, where a cadence to F is immediately followed by a D in the lowest voice, shifting the tonality back to D-re (see Example 5.5). Only considering the A in the cantus in measure 59, the tonal quale of that A changes from (A, la, $\hat{3}$) to (A, la, $\hat{5}$) for the interval of (e, e, 3rd). While the *littera* and *vox* do not change, there is a change in the number of diatonic steps from the tonic when the cadence to F, signaling F as $\hat{1}$, is quickly transformed with the return of D in the tenor, shifting the local F-*ut* tonality back to D-re.

Example 5.5. *Vexilla regis (more hispano)*, mm. 57–59 with changing scale degree interval in the cantus.

(A, la, $\hat{3}$) $\xrightarrow{(e, e, 3rd)}$ (A, la, $\hat{5}$)

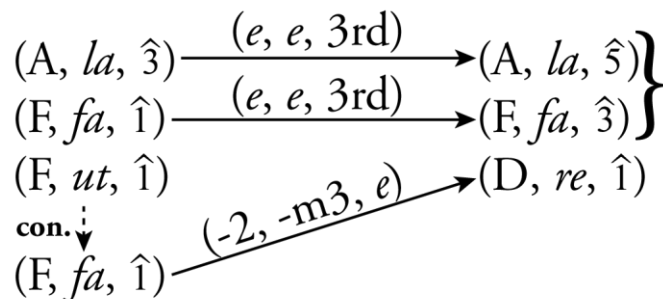
F \rightarrow D

Figure 5.2. The intervals of all three voices in the first one-and-a-half beats in *Vexilla regis* (*more hispano*), m. 59.



The shift from the F-*ut* tonality to D-*re* global tonality in measure 59 of *Vexilla regis* (*more hispano*) can be broken down into several steps (see Figure 5.2). These steps happen simultaneously with the onset of the D in the tenor, but they break down the various transformations happening at this time. First, the initial sonority in F-*ut* can be recontextualized in D-*re* through the $(e, e, 3rd)$ interval. This interval denotes the perceptual shift from F-*ut* to D-*re* by indicating that the tonic has shifted down a third (since the scale degree has shifted up a third). The next step then depicts the leap in the tenor from F to D, **con.** $+(-2, -m3, 3rd^{-1})$, while the A in the cantus and F in the altus remain the same. By breaking down each step, it is clear how the shift in tonality occurs perceptually. Now that each perceptual step has been broken down, they can be consolidated, as seen in Figure 5.3. The combined interval depicting the leap from F to D in the tenor **con.** $+(-2, -m3, e)$ emphasizes that the scale degree remains the same despite a moving *littera* and *vox*, which indicates that the tonality has shifted. Thus, we can express shifts in tonality when either the scale degree remains stagnant while pitches move ([not e], [not e], e) or when the scale degree moves while the pitch does not (e, e , [not e]).

Figure 5.3. The intervals in Example 3.4 consolidated into one step.



Vignette – Apperceptions of Foreground Level Tonal Shifts: A Rare Cross-Relation in “Aleph. Ego vir”

Peter Urquhart, in his study of Franco-Flemish music, makes a compelling argument that cross-relations—that is, when one pitch is followed by a chromatic alteration of that pitch in another voice—was a feature of that music and not a mistake needing editorial fixing.¹⁰

Traditionally, early music theory suggested that singers should rectify this cross-relation, which would be perceived as a *mi-contra-fa*, by adding in *musica ficta* to avoid that cross-relation. However, there are many cases when a composer intentionally includes in the accidentals that cause such a cross-relation within the printed parts.

Cross-relations are quite rare in Victoria’s repertoire. However, the sixth Lamentation of Jeremiah in Victoria’s *Officium Hebdomadae Sanctae* (1585), “Aleph. Ego vir” contains such a remarkable moment where a cross-relation is clearly marked in the parts (Example 5.6. *Officium Hebdomadae Sanctae*, “Aleph. Ego vir,” mm. 1–9.). Perhaps more significantly, despite the compositional differences in the separate handwritten collection of the nine Lamentations of

10. Peter Urquhart, “Cross-Relations by Franco-Flemish Composers after Josquin,” *Tijdschrift van de Vereniging voor Nederlandse Muziekgeschiedenis* 43, no. 1 (1993): 3–41.

Jeremiah at the Vatican Library (*Capella Sistina MS 186*),¹¹ both versions of “Aleph. Ego vir” contain this cross-relation (Example 5.7).¹²

The melody in the altus I has a B \sharp in measure 3 shortly followed by a B \flat in measure 4, which on its own is not a cross-relation as the chromatic alteration does not occur in a different voice. However, it is the immediate appearance of B \sharp in the tenor in Example 5.6 and in the cantus in Example 5.7 that forms this clashing cross-relation. What is especially notable is that this B \flat in measure 4 of Example 5.6 is not necessary by any contrapuntal procedures. In the *Capella Sistina MS 186* version, at least the B \flat avoids a melodic tritone from B to F, although Victoria could have easily recomposed this section to avoid parallel motion in all three voices. This provides further evidence that this cross-relation is not a contrapuntal mistake—that is, there is not a missing *ficta causa necessitatis* (“because of necessity”) to avoid the *mi-contra-fa*.¹³ Rather, this cross-relation appears to be a desired melodic effect, even though it is not serving a text-painting purpose as the only word is the Hebrew letter *aleph* (א).

11. Robert Stevenson, *Spanish Cathedral Music in the Golden Age* (Berkeley: University of California Press, 1961), 444–458. Stevenson discusses the differences between the *Capella Sistina MS 186* version and the printed *Officium Hebdomadae Sanctae* version at length. Of additional interest, he also cites a critique by Giuseppe Baini in 1828 who characterized the lamentations as either too Flemish or too Spanish in style, which likely is due to moments like the cross-relation noted in “Aleph. Ego vir.”

12. Eugene Cramer, *Studies in the Music of Tomás Luis de Victoria* (Burlington, VT: Ashgate, 2001), 73–78. Cramer notes that the “‘O vos omnes’ motive” appears in both versions of the opening “Aleph” in this Lamentation of Jeremiah. While the cross-relation is not part of this motive, it appears directly after this motive in both versions. Transcriptions of both versions of the Lamentations of Jeremiah are available on Nancho Álvarez’s website (<https://www.uma.es/victoria/partituras.html>). A facsimile of the partbook of the full *Officium Hebdomadae Sanctae* is available at <https://www.uma.es/victoria/1585a/1585a.html>.

13. Karol Berger, *Musica ficta: Theories of Accidental Inflections in Vocal Polyphony from Marchetto da Padova to Gioseffo Zarlino* (New York: Cambridge University Press, 1987), 94.

Example 5.6. *Officium Hebdomadae Sanctae*, “Aleph. Ego vir,” mm. 1–9.

The musical score consists of two systems of five staves each, representing different vocal parts: Cantus, Altus 1, Altus 2, Tenor, and Bassus. The notation includes notes, rests, and lyrics. A dashed arrow in the first system points from a note in the Altus 1 staff to a note in the Tenor staff. A boxed letter 'D' is located at the end of each system.

System 1 (mm. 1-5):

- Cantus:** Rests throughout.
- Altus 1:** Lyrics: "A - - - - - leph,"
- Altus 2:** Rests throughout.
- Tenor:** Lyrics: "A - - - - - leph,"
- Bassus:** Lyrics: "A - - - - - leph,"

System 2 (mm. 6-9):

- C:** Lyrics: "leph."
- A 1:** Lyrics: "a - leph a - - - - leph."
- A 2:** Lyrics: "leph, a - leph."
- T:** Lyrics: "a - - - - - leph."
- B:** Lyrics: "a - - - - - leph."

Example 5.7. “Aleph. Ego vir,” *Capella Sistina MS 186* version, mm. 1–13.

Musical score for measures 1-7. The score includes five parts: Cantus, Altus 1, Altus 2, Tenor, and Bassus. The lyrics are: Cantus: A - - - - - leph,; Altus 1: A - - - - - leph,; Altus 2: A - - - - - leph, a - -; Tenor: A - - - - -; Bassus: A - - - - -.

D

Musical score for measures 8-13. The score includes five parts: C, A 1, A 2, T, and B. The lyrics are: C: a - - - - - leph.; A 1: a - - - - - leph a - - - - - leph.; A 2: - - - - - leph.; T: - - - - - leph, a - - - - - leph.; B: - - - - - leph, a - - - - - leph.

D

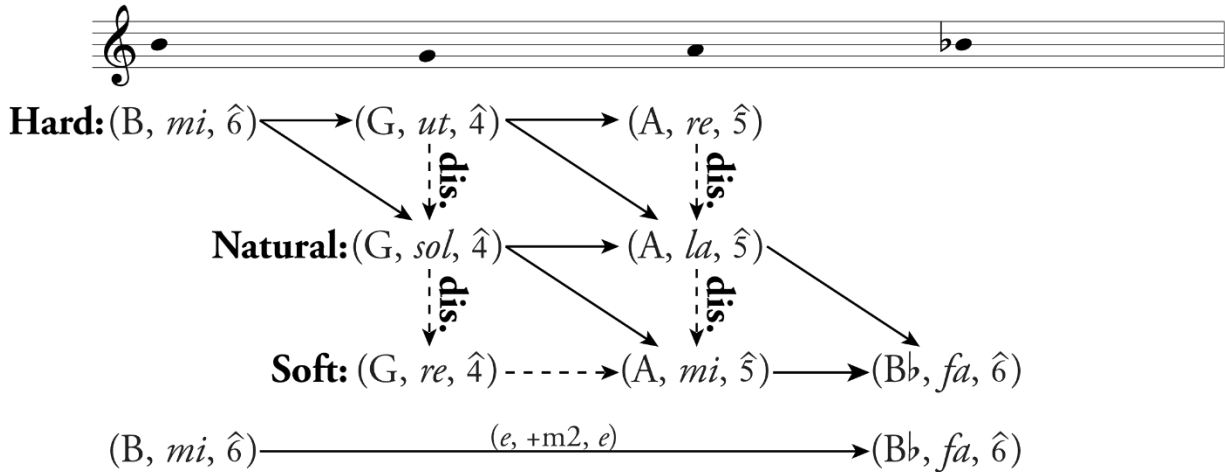
Mapping the intervals between the tonal qualia can elucidate the perceptual changes in tonal phenomena happening during this cross-relation. First, it is important to establish the tonality of this section. Each section articulating a Hebrew letter in Victoria's nine Lamentations of Jeremiah clearly outlines the global tonality of that Lamentation. As seen in both Example 5.6 and Example 5.7, the *aleph* in "Aleph. Ego vir" unambiguously establishes a *D-re* tonality. Thus, the B^{\sharp} and B^{\flat} both would be $\hat{6}$ but have different *voces* (*mi* and *fa* respectively). As mentioned earlier in this chapter, mutation directly from the hard hexachord to the soft hexachord was not allowed because of the prohibition of *mi-contrafa*, and thus, to move from B^{\sharp} to B^{\flat} this would require two disjunct mutations to get there. Given the proximity of these two versions of B, those mutations must happen rapidly.

As seen in Example 5.8, there are multiple paths to achieve this quick mutation from B^{\sharp} to B^{\flat} in the altus I voice. The overall effect of these mutations leads to the interval $(e, +m2, e)$ between the B^{\sharp} and B^{\flat} . The interval between B^{\sharp} and B^{\flat} is the identity element because they are the same *littera*. The scale degree also is the same since the diatonic distance from the tonic has not changed. The only change is in the *voces* which is the interval from *mi* to *fa*, or an ascending half step.

Again, it is important to note that this interval does not make sense within a formalized GIS. The duplication of the disjunction mutation, which yields $(e, +P5/-P4, e)$ is not $(e, +M2/-m7, e)$ because hexachordal solmization is not a mod-7 property. The reason I opt to avoid a formal GIS is because formalizing the elements into mod-7 or mod-12 properties would disrupt the historical understanding of a passage like Example 5.8, because mutation arises out of the need to fit its hexachordal apparatus in a heptachordal space—and those mutations *mean* something to those familiar with hexachordal theory either as a listener, performer, or analyst. It

takes two mutations in rapid succession to alter a *fa* syllable to a *mi* syllable (or vice versa), in what takes traditional tonal theory one transformation—a transposition by ic5.

Example 5.8. Rapid mutations leading to the shift from B \natural to B \flat in the altus I voice, mm. 3–4 in “Aleph. Ego vir.”



Now a rapid chromatic shift within one voice on its own is not particularly notable.

There are numerous examples where chromatic shifts occur as part to strengthen a directional progression. In Example 5.9, there is a shift from B \flat to B \natural in the Cantus II, but the B \natural is strengthening the motion to the C \flat_3 sonority.¹⁴ Other chromatic shifts like this introduce the *ficta causa pulchritudinis*, such as the shift from F \natural to F \sharp in the altus which helps define G as the tonic. Both of these examples differ from the chromatic shift in “Aleph. Ego vir” as the new chromatic note B \flat does not have the same strong gravitational effect as the other directed progressions, as the B \flat leaps down to G.¹⁵

14. Cramer, *Studies in the Music of Tomás Luis de Victoria*, 73. The cantus II voice that has this chromatic shift is the basis of the “O vos omnes” motive that Eugene Cramer connects to the opening of Lamentation “Aleph. Ego vir” in his analysis.

15. While the B \flat is immediately preceded by an A in the *Capella Sistina MS 186* version of “Aleph. Ego vir,” the A is an ornamentation of the underlying counterpoint which mirrors the same B \flat –G leap in the *Officium Hebdomadae Sanctae* version.

Example 5.9. *Officium Hebdomadae Sanctae*, “O vos omnes,” mm. 1–4.

The image shows a musical score for the piece "O vos omnes" from the *Officium Hebdomadae Sanctae*, measures 1-4. It features four vocal parts: Cantus I, Cantus II, Altus, and Tenor. The lyrics are "O vos omnes". Cantus II has a specific melodic line labeled "O vos omnes" motive (Cramer). A boxed letter 'D' is placed below the Tenor line at the end of the passage.

What solidifies the jarring perception of the cross-relation is, in part, the rapid reversal in the tonal quale for the pitch B, especially when it happens in another voice. There is a complex process that sets up the transformation of (B, *mi*, $\hat{6}$) to (B \flat , *fa*, $\hat{6}$) only to have the quale (B, *mi*, $\hat{6}$) reappear immediately. It is this jerking between qualia, emphasized by cross-relation, that makes this passage feel unstable.

As mentioned earlier, cross-relations were a rarity in Victoria’s music. Modern performances of “Aleph. Ego vir” demonstrate different philosophies on how to perform this passage given its incongruity with the majority of Victoria’s repertoire. For example, the conductor Michael Noone, who is a Spanish early music specialist and scholar, and his Ensemble Plus Ultra take a balanced approach between all of the voices in their performance of “Aleph. Ego vir” (*Capella Sistina MS 186* version).¹⁶ This balanced approach between all voices highlights the cross-relation for those who are familiar with Victoria’s music, but may not seem

16. Ensemble Ultra Plus, “Aleph. Ego vir,” conducted by Michael Noone, disc 2, track 9 on *Victoria: Sacred Works*, Archiv Produktion 477 9747, 2011, compact disc.

especially notable to those unfamiliar with Victoria's music or Renaissance sacred music. On the other hand, The Sixteen's performance of "Aleph. Ego vir" (the *Officium Hebdomadae Sanctae* version) leans into the cross-relation by emphasizing the intonation of B \sharp and B \flat .¹⁷ Meanwhile, the tenors in the Regensburger Domspatzen version of "Aleph. Ego vir" (*Capella Sistina MS 186* version) practically swallow the B \sharp which undermines the perception of the cross-relation entirely!¹⁸

This cross-relation in "Aleph. Ego vir" is a musical moment that has stuck with me since my first analytical project on Victoria's music in 2012. However, I also recognize that not every analyst or listener may react the same way to this moment, based on their own apperception of the tonal qualia in this passage. I present this analytical vignette as an example of how apperceptions of tonal shifts may differ due to the surrounding musical context, its performance, and the listener's acculturation to the historical concepts of musical space in this music. This analytical tool that I have developed allows for the discussion of foreground events like the cross-relation in "Aleph. Ego vir," allowing analysts and listeners to "compare notes" on their apperception of these tonal phenomena. For the performer, this analytical tool can help inform performance practice and make conscious decisions on how to convey specific musical moments.

17. The Sixteen, "Lamentations for Good Friday: III. Lectio III," conducted by Harry Christophers, track 7 on *Victoria: The Mystery of the Cross*, CORO16021, 2004, compact disc.

18. Regensburger Domspatzen, "Aleph. Ego vir videns," conducted by Roland Büchner, track 11 on *Gesänge für die Ewigkeit – Passions – und Ostergesänge*, Verein "Freunde des Regensburger Domchors" e.V., 2011, MP3.

Vignette – Interpretation and Reinterpretation of Tonalities: The Opening of *O magnum mysterium* (1572)

Of all of Victoria's compositions, the motet *O magnum mysterium* (1572) is his most famous and cited as one of the premier examples of High Renaissance counterpoint. For example, Peter Schubert centers his textbook on Renaissance counterpoint around *O magnum mysterium*, revisiting the composition as students learn about the different elements covered in the work, ultimately culminating in a full analysis of the motet at the end of the book.¹⁹ Schubert's analysis largely concentrates on contrapuntal motives, multi-voice modules, and texture and generally avoids analysis of the tonal structure of Victoria's work. In one of the only analyses of the tonal structure of *O magnum mysterium*, Roig-Francolí identifies the motet as "clearly mode 2" both in tonal type and structure with the final of G, translating to the G-re global tonality used in this dissertation.²⁰

While the motet is undoubtedly a G-re composition when considering the tonal structure and observed cadences across the entire work, the first section of the motet is more tonally ambiguous than the tonal structure would suggest. For example, consider the first nine measures of the cantus voice by itself (see Example 5.10). The range of this phrase is the octave d to dd. The opening descending fifth leap A–D would likely suggest the scale degree pattern $\hat{6}-\hat{5}$. The phrase also ends on D, preceded by melodic ornamentation that suggests the cadence will be on D. From these nine measures, one might assume that the tonality of this work is D-re. However, there is one clue in the notation that immediately would let the performer know that this work

19. Peter Schubert, *Modal Counterpoint: Renaissance Style* (New York: Oxford University Press, 2008), 307–14.

20. Miguel A. Roig-Francolí, "Tonal Structures in the Magnificats, Psalms, and Motets by Tomás Luis de Victoria," in *Estudios: Tomás Luis de Victoria*, ed. Javier Suárez-Pajares and Manuel del Sol, (Madrid: ICCMU, 2013), 157.

does not have the tonic of D: the *cantus mollis* signature. However, those who do not have access to the notation (such as a listener) would not be privy to this key piece of information.

Example 5.10. *O magnum mysterium*, mm. 1–9, cantus voice only.

The image shows a musical score for the cantus voice part of 'O magnum mysterium', measures 1–9. The score is written in a single system with two staves. The first staff begins with a treble clef and a key signature of one flat (B-flat). The melody starts on a whole note G4, followed by a half note F4, and then a series of eighth notes: E4, D4, C4, B3, A3, G3. Above the first two notes are scale degree symbols: a hat over 5 (5̂) above G and a hat over 1 (1̂) above F, with a question mark after the 1̂. The lyrics 'O mag - num mys - te - ri - um et ad - mi - ra - bi -' are written below the notes. The second staff begins with a treble clef and a key signature of one flat. It starts with a half note G4, followed by a half note F4, and then a series of eighth notes: E4, D4, C4, B3, A3, G3. Above the last two notes are scale degree symbols: a hat over 2 (2̂) above G and a hat over 1 (1̂) above F. The lyrics 'le sa - cra - men - - - - - tum,' are written below the notes.

However, the altus begins with exact imitation of the cantus voice, but with the opening leap of a descending fifth D–G (see Example 5.11). Is the opening fifth suggesting the scale degrees $\hat{1}$ and $\hat{4}$, or is this opening fifth articulating the scale degrees $\hat{5}$ and $\hat{1}$? Both of these scale degree options are feasible, as it is not uncommon for imitation at the fifth below. The altus voice is an exact imitation of the cantus voice; and as mentioned in Chapter 4, exact imitation is somewhat rare in Renaissance music as it introduces the possibility for cross-relations. That is not the case in this example, but this exact imitation in the altus introduces $E\flat$ which directly conflicts with the interpretation of *D-re* as the opening tonality, except for one reason. The $E\flat$ is also *ficta causa necessitatis* to avoid a diminished fifth with the cantus's $B\flat$. This means that while $E\flat$ does complicate a *D-re* reading, it can also be just an anomaly out of contrapuntal necessity. In fact, the altus begins the second half of the phrase (*et admirable*) with exact imitation of the cantus at the octave until the cantus initiates the beginning of a cadential formula in measure 8, ultimately leading to a cadence on D. Thus, a *D-re* interpretation is still viable at this point.

Example 5.11. *O magnum mysterium*, mm. 1–9, cantus and altus voice only.

Cantus
 (5̂ 1̂)?
 O mag - num mys - te - ri - um et ad - mi - ra - bi -
 (1̂ or 5̂ 4̂ or 1̂)?
 Altus
 O ma - gnum mys - te - ri - um
 6
 le sa - cra - men - tum,
 et ad - mi - ra - bi - le sa - cra - men - tum,
 D

The tenor comes in just before the cadence on D in measure 9 with exact imitation of the cantus voice an octave below (see Example 5.12). This means that all three voices are on D in measure 9, adding further sonic evidence that D may be the tonic. The bassus enters in measure 10, imitating the altus entrance at an octave below. As noted earlier, it is unclear whether D or G is the tonic, although most of the evidence prior to the bassus entrance points to D-re. However, there is one major difference in measure 10 that tips the scales to interpreting the opening as G-re with an initial cadence on the confinal: the F# in the cantus in measure 10. One might hear this F# as a Picardy third of the previous cadence to D in measure 9. However, to my ears, this F# appears as a start of a new phrase that aligns with the entrance of the bassus voice, thus guiding my understanding of this F# as driving a directed progression to G in measure 11. In the following measures, there are more clues for the listener to determine that G is the tonic, including established *clausulae verae* to G in measures 13 and 16 as well as Phrygian motion to

D in measures 12–13 and 15–16. Lastly, there is an example of the *Folia* compositional schema in measure 17, which also confirms the G-re tonality.

Example 5.12. *O magnum mysterium*, mm. 1–19.

First system of the musical score for 'O magnum mysterium', measures 1–19. It features four vocal parts: Cantus, Altus, Tenor, and Bassus. The lyrics are: O magnum mysterium et admirabile sacramentum. The score shows the vocal lines with lyrics and rests.

(D_{Phr})

Second system of the musical score, measures 8–13. The lyrics continue: tum, o magnum mysterium et admirabile sacramentum. The score shows the vocal lines with lyrics and rests.

D

(D_{Phr}) **G**

Third system of the musical score, measures 14–19. The lyrics continue: ri-um et admirabile, et admirabile sacramentum, ut admirabile sacramentum, et admirabile sacramentum, ut. The score shows the vocal lines with lyrics and rests. Fingerings are indicated with circled numbers: 3, 4, 5 for the Tenor part and 1, 7, 3 for the Bassus part.

(D_{Phr}) **G**

G

The *O magnum mysterium* example demonstrates how musical contexts for different participants in the music consumption process may result in different apperceptions of tonal qualia, and therefore tonal structure. The singers and analysts who are privy to the score will know that the *cantus mollis* signature would preclude a global tonality of D-*re* in this context. However, the listener who may not have access to the score will not have the same information to make this determination; and as demonstrated in the above analysis, there is enough plausible perceptual evidence that the tonality could be D-*re*. It is only after the entrance of all four voices, the pivotal F# in the cantus in measure 10, and a succession of cadences to G, that D-*re* is no longer plausible as the tonality for this section. However, other listeners who may interpret the F# in measure 10 as a Picardy third might not realize the confirmation of G-*re* until the first cadence on G in measure 13. No matter how one arrives to the final understanding of G-*re* as the global tonality, *O magnum mysterium* begins by locally emphasizing the confinal D before it ultimately settles into the G-*re* global tonality.

Then what does the listener who experiences the opening in a D-*re* tonality do when it becomes clear that G-*re* is the global tonality? The musical technique of *inganno* offers some insight. The term *inganno* was coined by Giovanni Maria Artusi in 1603 but the concept was described by Zarlino fifty years prior. *Inganno* is the musical technique that describes how a *soggetto* (commonly referred to as a “subject” in imitative polyphony of the common-practice era) can occur on different pitches while retaining its solmization syllables.²¹ As van Damme argues, “solmization proves to be the key to musical identity and non-identity.”²² Thus, one could argue that *inganno* allows for one to retain not only the same *voces* but also the same scale

21. Simon van Damme, “Willaert’s Ricercars and Their Use of Inganno,” *Tijdschrift van de Koninklijke Vereniging voor Nederlandse Muziekgeschiedenis* 59, no. 1 (2009), 51.

22. Simon van Damme, 50.

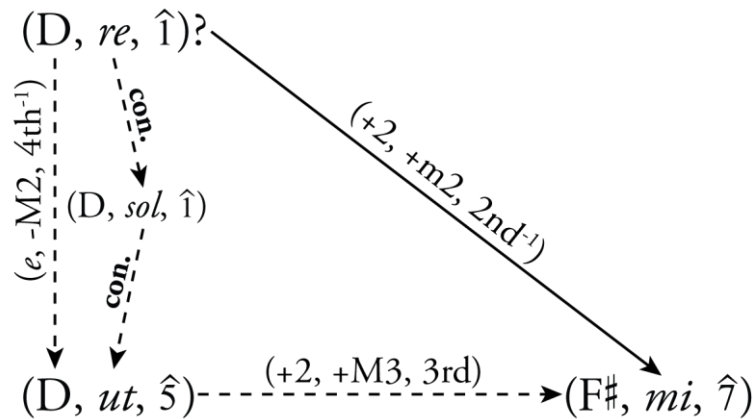
degrees. As such, it is quite reasonable that a listener and analyst might interpret the opening A–D leap at the beginning of *O magnum mysterium* as $(A, la, \hat{s}) \rightarrow (D, re, \hat{i})$ as the eventual D–G leap in the bassus in measures 10–11: $(D, la, \hat{s}) \rightarrow (G, re, \hat{i})$.

As mentioned earlier in this dissertation during the *Vexilla regis (more hispano)* analysis, modern listeners frequently participate in retrospective reinterpretations of music as more context becomes available.²³ While these retrospective reinterpretations are often a result of repeated listenings or performances, the fact that *O magnum mysterium*'s opening is imitative polyphony also gives the listener a chance to reinterpret the tonal qualia as each successive imitative voice comes in. In this particular example, I find that it is the F# in the cantus in measure 10 that aligns with the final imitative entrance in the bassus that prompts the reinterpretation of the previous imitative entrances (see Example 5.13). As seen in Figure 5.4 if someone were perceiving the opening of *O magnum mysterium* in a D-re tonality, the F# initiates the tonal shift, which goes through two conjunct mutations to build a *ficta* hexachord on D.

23. Janet Schmalfeldt, *In the Process of Becoming: Analytic and Philosophical Perspectives on Form in Early Nineteenth-Century Music* (New York: Oxford University Press, 2011).

Example 5.13. *O magnum mysterium*, mm. 8–13.

Figure 5.4. Network of the shift from D-re to G-re in the cantus voice, *O magnum mysterium*, mm. 9–10.



Vignette – When a Global Tonality Does Not Exist: Reflections on the Gradual from the *Missa pro defunctis á 4* (1583)

Earlier in Chapter 3, the first two movements of Victoria’s *Missa pro defunctis á 4* were used as examples of the F-ut tonality. While many of Victoria’s compositions have a global tonality—that is, there is one tonality that begins and ends a composition—there are a few

compositions that do not have a global tonality. The previous analytical vignette on *O magnum mysterium*, for example, is a work that has a global tonality though there is some ambiguity at the beginning of the work. Even if one were to opt to hear the work beginning in *D-re*, it is only a local level tonality emphasizing the confinal of the overall global tonality of *G-re*. This current analytical vignette explores the works that begin and end in different tonalities unambiguously.

For Victoria, these works that do not have a global tonality are influenced by the *cantus firmus* which often features a chant that is somewhat modally ambiguous. Such is the case with the Gradual plainchant from the Mass of the Dead (see Example 5.14).²⁴ The chant is classified as a Mode 2 chant, which would indicate a modal final of D. However, D is not a pitch of emphasis in this plainchant. Of the eight phrases in the Gradual, five of them end on A (including the final phrase), two end on F, and only one ends on D. This Gradual is one of the examples of a plainchant that does not end on one of the four modal finals (D, E, F, or G) yet still had to be classified as one of those modes. With all but one of the phrases ending on F and A, the chant could have been classified as either Mode 2 or Mode 6. It is the one phrase that ends on D that tips the modal classification toward Mode 2 over Mode 6. Yet despite being classified as a Mode 2 chant, it is clear from the plainchant that D is not a major point of emphasis, outside of the opening phrase of the verse (*In memoria aeterna*). The primary pitches of emphasis in the plainchant are A, due to the number of times it ends a phrase, and C, as it frequently is used as a recitation tone throughout the plainchant.

24. The Benedictines of Solesmes, ed., *Liber Usualis* (New York: Desclee Company, 1961): 1808–09.

Example 5.14. Gradual from the Mass of the Dead (*Liber Usualis*, p. 1808–09).

Grad.
2.
R

Equi-em * aetér- nam dó- na é- is

Dó- mi- ne : et lux perpé- tu-a lú- ce-at é- is.

∇. In memó-ri- a aetér- na é- rit jú- stus : ab audi-ti- óne má- la

* non timé- bit.

When used as a *cantus firmus*, this plainchant offers a significant challenge to the composer on how to construct a tonal plan around these various pitches of emphasis. As seen in the earlier analyses of the *Missa pro defunctis á 4*, the *cantus firmus* is in the cantus voice. The

first phrases in both of the major sections (*requiem aeternam, in memoria aeterna*) are monophonic, leaving Victoria to set the other six phrases polyphonically. Victoria excises large portions of the melismatic passages of the plainchant in order to shorten the length of the composition. In addition, Victoria freely composes three major sections of the Gradual's cantus voice (*Domine, erit justus, auditione mala*). With these alterations of the *cantus firmus* in mind, Victoria has some control over the how he wants to shape the tonal structure of his polyphonic setting of the Gradual. Notably, since the phrase *In memoria aeterna* is one of the two monophonic phrases, Victoria avoids the need to compose a cadence to D. Since that particular phrase was likely the primary influence for a Mode 2 classification, this gives Victoria even more flexibility with the Gradual's polyphonic tonal structure.

Example 5.15 presents the layout of cadences for the six polyphonic phrases. Brackets indicate the freely-composed sections or interpolations compared to the original plainchant. There are cadences on F, G, A, C, and D in this movement, highlighting the lack of a global tonality within this work. In addition, there is a tension between B \natural and B \flat , as evidenced by the four B \flat s in the cantus voice (one naturally in the plainchant and three added by Victoria in his freely-composed sections). The cadences at the ends of the six phrases are split evenly between A and F, although two cadences to F are resolved deceptively with the entrance of a D in the bassus, and one cadence to A quickly shifts back to an F sonority after resolution, much like the numerous F \rightarrow D motions as observed in *Vexilla regis (more hispano)*. Overall, the tonal structure of this movement is more complex and less intuitive than most other compositions by Victoria, which helps establish guidelines of expected cadences and tonal structures.

Example 5.15. Layout of the cadences for the polyphonic verses of the *Missa pro defunctis à 4* (1583), III. Gradual.

Plainchant

do - na - e - is, Do - mi - ne:

Cadences

Dec. (G)

Delayed res.

Plainchant

et lux per - pe - tu - a

Cadences

Delayed res.

Dec. (G)

Plainchant

lu - ce - at - e - is, lu - ce - ate - is

Cadences

Dec. (G)

Plainchant

e - rit - jus - tus, e - rit jus - tus:

Cadences

N.B. Starts on F

Plainchant

ab au - di - ti - o - ne ma - la ab au - di - ti - o - ne ma - la

Cadences

Dec. (G)

N.B. Starts on F

Plainchant

non - ti - me - bit, non ti - me - bit.

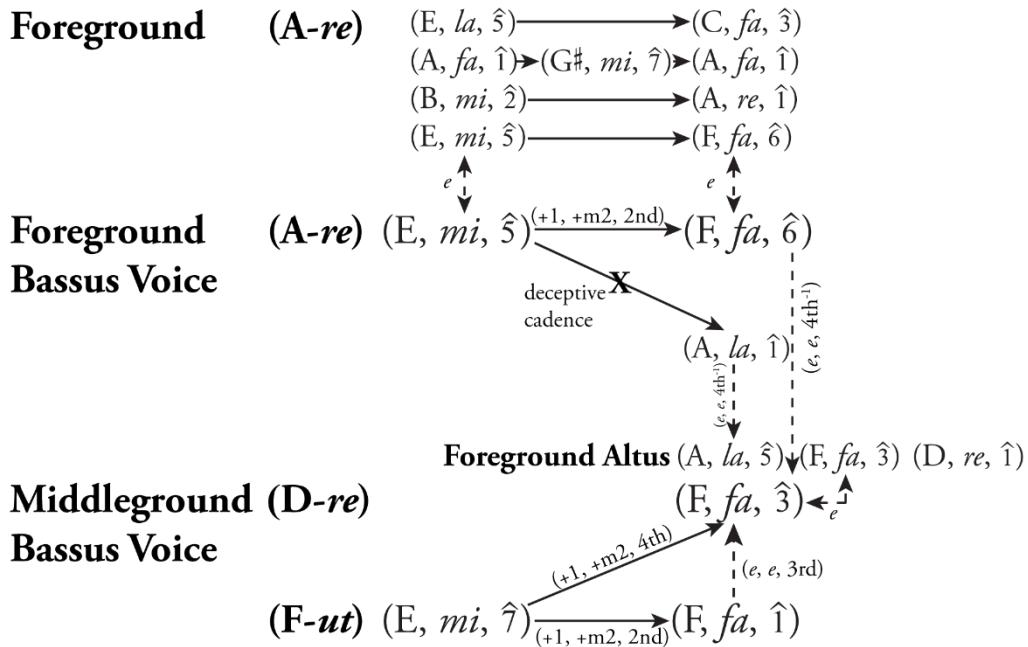
Cadences

Dec. (G)

As seen with other analyses with a global tonality, cadences to pitches other than the tonic are within the scope of that tonality. This becomes more difficult to extrapolate when there is no overarching global tonality, as is the case with the Gradual. In these cases, the beginnings of phrases are just as important as the ends of phrases. For example, the beginning of the Gradual starts with imitation on C and F (see Example 5.16). While the imitative phrase is only three notes long (C–A–C | F–D–F), it reinforces common intervals found in the F-*ut* tonality, such as the perfect fifth F–C as the two points of imitation, the major third sonority F–A between the cantus and altus in measure 2, and the melodic minor third A–C in the cantus. In the first 11 measures, there are three cadences to F and one to C. There is also a deceptive cadence to A with the bassus stepping to F, which could also be within the scope of an F-*ut* tonality. However, the cadence to D in measure 9 suggests that there is a tonal shift to D-*re*. As such, the deceptive cadence to A can be interpreted as the pivot point in switching from F-*ut* to D-*re*.

Example 5.17 charts the shift in tonal qualia at the deceptive cadence to A in measures 6–7 at the foreground level (A-*re*) as well as the bassus voice at the middleground level depicting the shift from F-*ut* to D-*re*. At the most foreground level, the tonal qualia indicate a *clausula vera* to A, confirming A as a fleeting tonic. However, the bassus voice blurs the boundaries between this hyperlocal tonic of A with the more established tonic of F from the previous 5 measures. At the onset of the deceptive resolution, we can understand that bassus F as the tonal quale (F, *fa*, $\hat{6}$), however the F can be understood as the tonal quale (F, *fa*, $\hat{1}$) when retroactively contextualizing this deceptive cadence in F-*ut*.

Example 5.17. *Missa pro defunctis à 4*, Gradual, mm. 6–7. Mapping of tonal quale at the foreground and middleground levels in different tonalities.



However, several intervallic clues in the measures that follow outline a new tonic of D. For example, the altus voice outlines a descending D_3^5 sonority (A–F–D) beginning with the resolution of the *clausula cantizans* to A. Example 5.17 includes this descending altus passage because I personally find that the F in the altus helps guide the listener from the transition from

F-*ut* to D-*re* when it intersects with the F in the bassus. Other intervallic clues that key the listener towards a local D-*re* tonality include the tenor's imitative entrance in measure 8 (now expanded to outline the descending fourth D–A–D) and the similar bassus's leap of an ascending perfect fifth D–A–D in measures 8–9, outlining the tonic and fifth above the tonic.

Commixture between F-*ut* and D-*re* tonalities is common in Victoria's music, as observed in Chapter 3. In fact, this local D-*re* tonality only lasts 4 measures before several cadences to F reconfirm F-*ut*. Thus, for the listener unfamiliar with this work and the *cantus firmus* it is based on, this local D-*re* tonality does not disrupt the potential for F-*ut* to be a global tonality, especially considering that the global tonality of the previous two movements (the Introit and Kyrie) was F-*ut*. This expectation of a global tonality extending across all of the movements of a mass is also logical as 17 of Victoria's 20 masses have all of their movements end with the same final.²⁵

However, singers and analysts who are looking at the partbook would notice that, unlike the Introit and Kyrie, the Gradual is in *cantus durus*. This is not immediately noticeable as the *littera* B is conspicuously absent in the first four measures. Its first appearance in the tenor initiates a cadence to C (*à la* Landini) and the following B is the *clausula tenorizans* for the cadence to A, which then initiates the tonal shift to D-*re* in measure 7. At this point, the first B could be interpreted as the common chromatic alteration to initiate directed motion to C, which is not uncommon. A savvier listener may question why the deceptive cadence to A in measure 7 was not prepared as a Phrygian cadence (with the major sixth B \flat –G instead of B \natural –G \sharp) which would come more naturally in an F-*ut* tonality. One more B \natural appears in the cantus as part of the

25. Miguel A. Roig-Francolí, "From Renaissance to Baroque: Tonal Structures in Tomás Luis de Victoria's Masses" *Music Theory Spectrum* 40, no. 1 (Spring 2018): 31–34. The only masses that have different finals in one or more movements are the two Requiem masses (1583, 1605) and the *Missa de beata Maria virgine* (1576).

cantus firmus in the second half of measure 7. Had the deceptive cadence to A been prepared with as a Phrygian cadence, there would have been an even harsher cross-relation between that hypothetical B \flat in measure 6 with the B \natural in the cantus, as dictated by the plainchant. Thus, out of these two options, the harshness of preparing the deceptive cadence to A with the major sixth B \flat –G \sharp is mitigated by the tonal shift to D-*re* and likewise avoids the potential for a greater clash with the *cantus firmus* in the following measure.

The first B \flat appears in the tenor and then the cantus in measure 10 which initiates the tonal shift back to F-*ut*. Notably, the cantus's B \flat is the only B \flat in the original plainchant. While the *Liber Usualis* indicates a breath at the end of *eis* on G (see Example 5.14), Victoria avoids turning G into a possible cadence point by using an early entrance of the altus on *Domine* to prevent a substantive pause in the contrapuntal motion. This results in two quick successive cadences to F in measures 10 and 11 with the altus containing the *clausula cantizans* both times. By omitting a pause between *eis* and *Domine* in the cantus, the B \flat also becomes *ficta causa necessitatis* to avoid the tritone between B and F. I find this shift from F-*ut* to D-*re* back to F-*ut* to be a particularly clever solution to resolve the tension between the B \natural and B \flat in the *cantus firmus*. Neither the B \natural nor B \flat in the *cantus firmus* feels out of place while the opening of the Gradual continues to maintain the perception of the F-*ut* global tonality from the previous two movements of the mass.

The deceptive cadence to A sows the seeds for further instability in the Gradual's tonal structure. For example, the first major rhetorical pause, which comes at the end of the first phrase in the plainchant, is a cadence on A (see Example 5.18). This cadence differs from the previous A cadence in that it is prepared by one of Victoria's extended cadential schemas—similar to a iv–V $\frac{6}{4}$ – $\frac{5}{3}$ –i tonal cadence—that would commonly end major sections of compositions. The altus

voice, however, does not rest and moves up to F after an ornamental flourish. The successive entrances by the bassus, tenor, altus, and cantus on F and C confirm that the tonality has shifted back to F-*ut*.

Example 5.18. *Missa pro defunctis à 4*, Gradual, mm. 16–19.

Cantus
(Do) - - - mi - ne: _____

Altus
Do - - - mi - ne: _____

Tenor
Do - - - mi - ne: et lux per

Bassus
(e) - is, Do - mi - ne: et lux per - pe

C → A → F

The next cadence to A occurs at the end of the first major section of the Gradual, *luceat eis*, before the monophonic section on *in memoria aeterna* (see Example 5.19). Like Example 5.18, this cadence is prepared by another one of Victoria’s cadential schemata, reminiscent to the tonal progression $ii^{\circ} \frac{6}{5} - V \frac{6-5}{4-3} - i$. The shape of the cantus melodies in both examples are similar as well, descending from the high point C to the eventual cadence point of A. In fact, the other two cadences to A are almost identical to the version found in Example 5.19.

Victoria, however, could have composed these cadences to retain the F-*ut* tonality. Example 5.20 presents a hypothetical reconstruction of Example 5.19 to stay within F-*ut*. As seen in many examples throughout this dissertation, the *cantus firmus* pitch does not necessarily equate to the cadential goal. In addition, the “frustration” of the cantus’s resolution from G to A

is common enough in Victoria's compositions that this recomposition is a viable alternative in Victoria's contrapuntal style. Thus, if it is possible to retain *F-ut* as the global tonality in the Gradual, why do these A cadences end the major sections of the work?

Example 5.19. *Missa pro defunctis à 4*, Gradual, mm. 40–43.

Cantus
(e) - - - is, lu - ce - at e - is.

Altus
is, lu - ce - at e - is.

Tenor
is, lu - ce - at e - is.

Bassus
is, lu - ce - at e - is.

C **A**

Example 5.20. A hypothetical recomposition of Example 5.23 retaining the *F-ut* tonality.

Cantus
(e) - - - is, lu - ce - at e - is.

Altus
is, lu - ce - at e - is.

Tenor
is, lu - ce - at e - is.

Bassus
is, lu - ce - at e - is.

C **F**

While it is impossible to know a composer's intentions, it is most likely that Victoria chose to compose the Gradual's main cadences in A because the *cantus firmus* itself ends in A. As evidenced by the remaining movements of the *Missa pro defunctis à 4*, the final cadence aligns with the final pitch of the corresponding plainchant (see Table 5.1). However, the opening tonic suggested by the beginning of these movements is often different than the final tonic as determined by the final cadence (see Table 5.2).

Table 5.1. Mode of the plainchant (final pitch in parentheses) compared to the final cadence of Victoria's *Missa pro defunctis à 4*.

Movement	Mode (Final)	Final Cadence in <i>Missa pro defunctis à 4</i>
I. Introit	Mode 6 (F)	F
II. Kyrie	Mode 6 (F)	F
III. Gradual	Mode 2 (A)	A
IV. Offertorium	Mode 2 (D)	D
V. Sanctus	* (G)	G
VI. Agnus Dei	* (G)	G
VII. Communio	Mode 8 (G)	G
VIII. Libera me	Mode 1 (D) / (F)**	D / F
IX. Peccantem me quotidie	Mode 1 (A) **	A / D
X. Credo quod Redemptor	Mode 8 (G)**	G

* No mode is designated

** There is a closing Kyrie at the end of the of the last three responsories that has a different final than the responsory, with the exception of the final movement.

Table 5.2. Opening tonic compared to the final cadence of Victoria's *Missa pro defunctis à 4*.

Movement	Opening tonic in <i>Missa pro defunctis à 4</i>	Final Cadence in <i>Missa pro defunctis à 4</i>
I. Introit	F	F
II. Kyrie	F	F
III. Gradual	F	A
IV. Offertorium	A	D
V. Sanctus	D	G
VI. Agnus Dei	D	G
VII. Communio	D	G
VIII. Libera me	D	D / F
IX. Peccantem me quotidie	D	A / D
X. Credo quod Redemptor	C	G

With these few cases where a global tonality is not present, the final of the *cantus firmus* determines the final tonic of the overall work. Thus, while Victoria could have recomposed cadences in the Gradual to retain an F-*ut* tonality, it was likely never a possibility in Victoria's mind, as the final cadence should align with the final of the *cantus firmus*. Rather, it is more likely that Victoria plays with the expectation of F-*ut* being retained as a global tonality from the Introit and Kyrie and subverting expectations at the final moments with each A cadence in the Gradual. This theory aligns closely with the actual tonal structure of Victoria's Gradual where the cadences to A are rather abrupt and the A-*re* tonality is short-lived. Meanwhile, the majority of the Gradual suggests an F-*ut* tonality with extended passages in C-*ut* (especially in sections with cadences to G).

The *Missa pro defunctis à 4* (as well as the 1605 *Missa pro defunctis à 6*) are some of the only compositions by Victoria to feature multiple *cantus firmi* from the original Gregorian chants, and thus present the challenge of creating tonal coherence and tonal structures in these compositions. Given Victoria's penchant for remaining in a global tonality in the vast majority of his compositions, these anomalous works should be seen as such. Therefore, examples like the Gradual from the *Missa pro defunctis à 4* convey the back-and-forth struggle with the desire for tonal coherence with the eventual tonal structure of the composition. I would not make such a claim for most Western Renaissance composers before 1600, but as several scholars have pointed out in the past, Victoria is often seen as a bridge between the Renaissance and the Baroque.²⁶ Thus, I find the insistence of F-*ut* as a key tonality in the Gradual of *Missa pro*

26. Miguel A. Roig-Francolí, "From Renaissance to Baroque: Tonal Structures in Tomás Luis de Victoria's Masses" *Music Theory Spectrum* 40, no. 1 (Spring 2018): 27–52; Kyle Adams, "Victoria the Progressive: The Cadential Formula as Historical Nexus" (Paper, 34th Annual Meeting of the Society for Music Theory, Minneapolis, MN, October 28, 2011); Steven D. Mathews, "Victoria's Secret: Harmonic Bass Lines?" (Paper, 36th Annual Meeting of the Society for Music Theory, Charlotte, NC, November 1, 2013).

defunctis à 4 as a compelling example of Victoria's resolve (or struggle) with the his contemporary ideals on tonal coherence with the actuality of the musical reality of the plainchant *cantus firmus*. While we can never be certain of Victoria's intentions, the evidence suggests that such a reading into Victoria's compositional process is quite probable. The musical evidence should empower the analyst to make these claims as it can provide interesting and meaningful paths to understanding this music.

Final Thoughts

These three analytical vignettes demonstrate how an analyst and listener can articulate their apperception of tonal shifts through the changes to tonal qualia we experience at the local level. However, it is important to recognize that these apperceptions are influenced by a historical understanding of musical space in Western music before 1600 as well as how this music is performed. These analyses offer a roadmap on how one can apply the methodology presented throughout this dissertation to comprehend the tonal phenomena and describe one's apperceptions of these phenomena in ways that other analysts and listeners can understand.

Epilogue

This dissertation presents a methodology for understanding tonal phenomena in the music of Tomás Luis de Victoria; however, many of the ideas presented here can be applied to a wealth of Western music prior to 1600 and well as Western music post 1600 that does not align with common-practice tonal techniques. While many of the ideas that I have presented in this dissertation arose out of research and analysis of Victoria's music, I became interested in how the extended tonal quale of (*littera, vox*, scale degree) could extend to modal music beyond the sixteenth century. In particular, I became fascinated with the organ works of Nicolas Gigault (c. 1627–1707), a seventeenth-century French composer, who wrote a number of multi-modal works depending on where the organist decided to end the composition. It was clear to me that my tonal quale for Renaissance music could morph into a new tonal quale of (pitch class, [movable do] *solfège* syllable, scale degree) for modal music when the full musical gamut was realized. I had many of these discussions and revelations with my colleague Nathan Lam who developed similar ideas into his own dissertation “Relative Diatonic Modality in Extended Common-practice Music.”¹ I recommend reading his dissertation on a more-advanced methodology in exploring modality in music after the nineteenth century.

While my focus was on the music of Victoria, I believe in this methodology in applying to repertoire across geographical locations and extending into the fourteenth-century and earlier. Each geographical region and composer will have their own nuances in determining tonalities and identifying (and perceiving) tonal phenomena. However, the theoretical apparatus provided in this dissertation should offer a *tabula rasa* to define these idiosyncrasies across regions and

1. Nathan Lam, “Relative Diatonic Modality in Extended Common-practice Music” (PhD diss., Indiana University, 2019).

composers. My hope is that this methodology provides a pathway into understanding the perceptual shifts in tonality by homing into the note or notes that initiate that shift in perception.

The work in this dissertation is far from exhaustive, even in Victoria's oeuvre. There are many fruitful areas of research that can spawn from the work in this dissertation. In particular, I hope this dissertation encourages further exploration of compositional schemata in Renaissance compositions. As I identified compositional schemata in Victoria's *Tenebrae Responsories* of his *Officium Hebdomadae Sanctae*, I began to identify them in other compositions across his body of work. As alluded to earlier in this dissertation, there is substantial and meaningful work in identifying the various cadential schemata in Victoria's work (as well as his contemporaries) and how they align with cadential schemata within common-practice music.

For those who have taken the time to read through this dissertation and explore the possibilities of the methodology provided within, I want to thank you. It is my hope that this dissertation is the catalyst for further explorations into tonal phenomena without the undue influence of modal theory. That is, I do not want to discount the work that analysts have done with modal theory to date. Rather, I wanted to demonstrate that there is the opportunity for rich discussion of tonality and tonal phenomena in Renaissance music beyond what modal analysis affords us.

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———. *Victoria: Sacred Works*. Ensemble Ultra Plus. Conducted by Michael Noone.
Archiv Produktion 477 9747, 2011, 10 compact discs.

Curriculum Vitae

DEVIN CHALOUX

EDUCATION

- 2012–2022 Indiana University – Ph.D., Music Theory
 MINOR FIELDS: Music History and Literature, Higher Education
 DISSERTATION TITLE: “Tonality and Tonal Structures in the Music of Tomás Luis de
 Victoria: A Case Study for Analyzing Tonal Phenomenology in Renaissance
 Polyphony”
- 2016–2018 Southern New Hampshire University – M.S., Higher Education Administration
- 2010–2012 University of Cincinnati, College-Conservatory of Music – M.M., Music Theory
- 2006–2010 University of Connecticut – B.M., Music Theory, *summa cum laude*
 University Scholar, Honors Scholar

TEACHING EXPERIENCE

- 2018– Adjunct Professor, Southern New Hampshire University
 Music and Meaning
 Perspectives in the Liberal Arts
 Success Strategies for Online Learning
- 2012–2015 Associate Instructor of Music Theory, Indiana University
 Music Theory and Literature I
 Music Theory and Literature II
 Music Theory and Literature V
 Coordinator
 Musical Skills III
- 2010–2012 Graduate Assistant, University of Cincinnati, College-Conservatory of Music
 Theory I
 Theory II
 Musicianship I
 Musicianship II

RELATED EMPLOYMENT

- 2020– Esme Learning
 Learner Experience (LX) Operations Manager
 Director of Learner Success
 Lead Learner Success Manager
- 2015–2020 Southern New Hampshire University - COCE
 Academic Advisor III

PUBLICATIONS

- 2012 Review: ‘Analyzing Schubert’ by Suzannah Clark. *Music Research Forum* 27: 83–87.

PAPERS PRESENTED

NATIONAL PRESENTATIONS

- 2020 “When Analysis Is Performance, What Ethical Guidelines Music Forensic Musicologists Consider?” American Musicology Society and Society for Music Theory joint annual conference, virtual (November 7–8, 14–15)
- 2015 “Phrygian Expectations and Denials.” In the “The Council of St. Louis: Broadening the Discussion of the Pope Marcellus Mass” special session. Society for Music Theory, St. Louis (October 29–November 1)
- 2013 “The Synthetic Scale, Space S, and Sonata Form in Charles Griffes’s Piano Sonata.” Society for Music Theory, Charlotte, NC (October 31–November 3)

REGIONAL PRESENTATIONS

- 2020 “EDM Remix Culture’s Commentary on Rhetorical Functions in Recent Top 40 Music.” New England Conference of Music Theorists, New Haven, CT (April 24–25) – postponed due to COVID-19
- 2019 “Texture and Compositional Schemata as Semiotic Signs in Victoria’s Tenebrae Responsories.” Brandeis Graduate Conference, Waltham, MA (June 7–8)
- 2016 “Liszt’s Two Versions of His Requiem and the Revisionist’s Case for a Double-Tonic Complex.” Music Theory Midwest, Fayetteville, AR (May 6–7)
- 2015 “Tonal Spaces in Victoria’s Gradual from *Missa pro defunctis à 4*; or, Is Mode *à la mode* Anymore?” Rocky Mountain Society for Music Theory, Fort Collins, CO (March 27–28)
- 2014 “The Q↔LW Generated Loop Progression and Hermeneutical Implications in Elliott Smith’s ‘Between the Bars.’” Music Theory Midwest, Appleton, WI (April 25–26)
- 2013 “The Synthetic Scale, Space S, and Sonata Form in Charles Griffes’s Piano Sonata.” Music Theory Midwest, Norman, OK (April 26–27)

LOCAL PRESENTATIONS

- 2018 “‘No’stalgia: One Roadmap to a Public Music Theory,” Symposium of Research in Music Theory, Bloomington, IN (February 23–24)
- 2013 “Reinvestigating Harmonic Dualism and Underchords.” Symposium of Research in Music Theory, Bloomington, IN (February 14–15)
- 2013 “Chromaticism and Commixture as a Vehicle for Text Painting in Tomás Luis de Victoria’s Lamentations 4–6.” Symposium on the Music of Tomás Luis de Victoria, Cincinnati, OH (February 23)

HONORS

- 2012–2016 Jacobs School of Music Doctoral Fellow, Indiana University
- 2010–2012 University Graduate Assistantship Award, University of Cincinnati, College-Conservatory of Music
- 2009–2010 University Music Scholarship, University of Connecticut
- 2008–2010 University Scholar, University of Connecticut *selected as one of twenty-four in their Junior year on GPA, rigor, and imagination*
- 2008–2009 New England Scholar, University of Connecticut

PROFESSIONAL SERVICE

- 2015–2018 Society for Music Theory
Professional Development Committee, Student Representative
Professional Development Committee, Alternative Career Committee
Member
- 2015–2017 Music Theory Midwest
Student Representative, Areas II & IV (IL, IN, WI, MO, KS, OK, AR, TN)
- 2013–2017 *Indiana Theory Review*
Editor (2014–2017)
Editorial Assistant (2013–2014)
- 2012–2014 Indiana University Graduate Theory Association
Vice President (2013–2014)
Member of program planning committee for annual symposium (2013–2015)
- 2011 *Music Research Forum*
Editorial Board

SELECTED COMPOSITIONS

- 2010 *6 Emily Dickinson Poems* for Mezzo-Soprano and Piano
Premiered on March 28, 2010 at the University of Connecticut, performed by Rachel Postovoit and Devin Chaloux
- 2010 *An American Sonata for Violin and Piano*
Premiered on March 28, 2010 at the University of Connecticut, performed by Gabrielle Bouissou and Sebestyen Nyiro
- 2009 *To You* for Mezzo-Soprano and Piano
Premiered on February 14, 2009 at Syracuse University, performed by Erika Mitchell and Michelle di Bona.
- 2008 *In Memoriam* for Symphonic Band
Premiered on April 20, 2010 at the University of Connecticut, performed by the UConn Concert Band.