Theorizing Modality vs. Tonality in Bach's Chorales and the Equal-Tempered Tuning in the Colombian Undergraduate Curriculum

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Abstract

The first chapter of this thesis "Tonal Features in Three of Bach's Modal Chorales Analyzed by Lori Burns" explores the relationship between modality and tonality through the analysis of three modal chorales by Bach. Burns' book *Bach's Modal Chorales* presents the harmonic relationship between tonic and dominant, and the directionality implied from V to I as the fundamental characteristic of tonality´s concept. Likewise, the lack of this relationship and directionality in modal music, where the fifth degree is not emphasized as a structural dissonance, is defined by Burns as the principal property of modality. This chapter aims to describe Bach's harmonization of these modal melodies from a tonal perspective, analyzing strategies the composer may have used to establish a tonal center. The article questions whether traditional music theory tools for analyzing harmony and chorale-style voice leading are appropriate in the study of these pieces from a tonal perspective and identifies the rules of tonal harmony present in these chorales, despite their modal traits and context. The study supports the tonal characteristics of these pieces, using concepts and analysis tools such as chromaticism, Roman numerals, and harmonic functions.

The second chapter aims to describe the relationship between the music theory teaching based exclusively on the equal-tempered (hereafter E.T.) tuning system and the exclusion of Colombian autochthonous musical manifestations based on non-E.T.

systems, more specifically, the *marimba de chonta*'s traditional tuning, which is in danger of disappearing. In a general survey of primary textbooks and syllabi that most of the undergraduate programs in Colombia currently employ as the music fundamentals guidance for teaching, it becomes evident a dependency on western canon repertoire and the E.T. as the unique reference regarding tuning systems. Other tunings not based on the twelve-equal division of the octave are referred to in these programs. Nevertheless, they are tangentially mentioned as part of musical practices and instruments unrelated to the western canon repertoire. The data supporting the problems proposed for this chapter were obtained from analyzing five university programs considered the most representative in formal music education in Colombia. This information was contrasted with other research on the marimba de chonta, its history, and its regional and musical context. Finally, from a postcolonial perspective, other authors' ideas support the critique about the E.T.'s imposition and the curriculum based exclusively in the Western canon.

Résumé

Le premier chapitre de cette thèse intitulé "Les Caractéristiques tonales dans Trois Chorals Modaux de Bach Analysés par Lori Burns" explore la relation entre la modalité et la tonalité à travers l'analyse de trois chorals modaux de Bach. Le livre de Burns intitulé *Bach's Modal Chorales* présente la relation harmonique entre la tonique et la dominante, ainsi que l'orientation implicite du V vers le I en tant que caractéristique fondamentale du concept de tonalité. De même, l'absence de cette relation et de cette orientation dans la musique modale, où le cinquième degré n'est pas mis en évidence en tant que dissonance structurelle, est définie par Burns comme la propriété principale de la modalité. Ce chapitre vise à décrire l'harmonisation de ces mélodies modales par Bach d'un point de vue tonal, en analysant les stratégies que le compositeur aurait pu utiliser pour établir un centre tonal. L'article remet en question la pertinence des outils traditionnels de la théorie musicale pour analyser l'harmonie et le contrepoint de style chorélique dans l'étude de ces pièces d'un point de vue tonal et identifie les règles de l'harmonie tonale présentes dans ces chorals, malgré leurs traits modaux et leur contexte. L'étude soutient les caractéristiques tonales de ces pièces, en utilisant des concepts et des outils d'analyse tels que le chromatisme, les chiffres romains et les fonctions harmoniques.

Le deuxième chapitre vise à décrire la relation entre l'enseignement de la théorie musicale basé exclusivement sur le système d'accordage égal tempéré (ci-après E.T.) et l'exclusion des manifestations musicales autochtones colombiennes basées sur des systèmes non E.T., plus précisément, l'accordage traditionnel du *marimba de chonta,* qui est en danger de disparaître. Dans une enquête générale des manuels scolaires et des programmes de la plupart des programmes universitaires en Colombie actuellement employés comme guide pour l'enseignement des fondements musicaux, il devient évident que cette dépendance du répertoire canonique occidental et de l'E.T. comme unique référence en ce qui concerne les systèmes d'accordage. D'autres accordages qui ne sont pas basés sur la division égale de l'octave en douze parties sont mentionnés dans ces programmes. Néanmoins, ils sont mentionnés de manière tangentielle comme faisant partie de pratiques musicales et d'instruments sans rapport avec le répertoire canonique occidental. Les données qui soutiennent les problèmes proposés dans ce chapitre ont été obtenues en analysant cinq programmes universitaires considérés comme les plus représentatifs dans l'éducation musicale formelle en Colombie. Ces informations ont été mises en contraste avec d'autres recherches sur la *marimba de chonta*, son histoire et son contexte musical et régional. Enfin, à partir d'une perspective postcoloniale, les idées d'autres auteurs soutiennent la critique de l'imposition de l'enseignement technique (E.T.) et du programme basé exclusivement sur le canon occidental.

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Introduction

The fundamentals of music theory and analysis in most undergraduate music programs are based on the major/minor scales and equal-tempered tuning. Since this tuning system and these scales are treated as foundational to curricula in tonal music, other diatonic collections like modal scales are often studied only superficially, and other tuning systems are rarely taught. Consequently, this dependency on the tonal system during elementary stages in formal education downplays the relevance of modality and non-equal-tempered tuning systems, not only in the analysis of music excluded from the western academic canon but also in the study of a wide range of European and tonal music from the eighteenth and nineteenth centuries, as well as many other kinds of music worldwide.

The chapters that make up this thesis raise these issues from two perspectives related to the teaching of music theory and analysis at the undergraduate level, as well as the problem of academic exclusion of music that falls outside the Western canon. The first chapter, "Tonal Features in Three of Bach's Modal Chorales Analyzed by Lori Burns," discusses the duality between modality and tonality through the analysis of three pieces cataloged as modal by Burns in her book *Bach's Modal Chorales* (1995). For her, the "tonal" concept is based on the tonic-dominant relationship as discussed by such theorists as Rameau, Fétis, and Schenker, who start from the ideas

of the string divisions, the overtone series, and the interval classifications, respectively, to define tonality as a natural source where the relationship between tonic and dominant generates a harmonic directionality. This relationship, according to Burns, turns out to be problematic in modal music, where the fifth degree is not necessarily emphasized as a structural dissonance.

To describe it, Burns' definition of modality is based on what it lacks in comparison to tonality: in modal harmony, the relationships between the principal and the secondary degree are not emphasized locally, as it happens in tonal harmony. Thus, for example, the secondary degree C, which is normally stressed in the global structure of a Phrygian-based piece, is not part of a local progression as the typical final cadence Dm/F – E. Likewise, Burn's asserts that, according to Dahlhaus, although there is a "bilateral" relation between two degrees (harmonies) in the modal system, this relationship not necessarily implies a "tendency." Neither of the two degrees involved is subordinated to the other or expects to be resolved in the other.

Thus, contrasting with Burns's ideas, this chapter aims to describe Bach's harmonization of these modal melodies from a tonal perspective, analyzing some strategies that the composer might have used to resolve the ambiguities of these melodies and consequently establish a tonal rather than modal center.

The chapter also questions the conventions and theoretical tools that are traditionally used for analyzing these pieces. Hence, while Burns argues in favor of the distinctive modal qualities of these chorales, such as the concluding cadence on the dominant, which is associated with the Phrygian mode, or the emphasis on the relationship between the tonic and subdominant, which defines the Mixolydian mode, this study supports the tonal aspects of these compositions by utilizing concepts and analytical tools like chromaticism, Roman Numerals, and harmonic functions.

The second chapter, "The Undergraduate Curriculum based on Equal-Tempered Tuning and the Exclusion of the *Marimba de Chonta* Music in Colombia," describes how the music curriculum has focused on the equal-tempered (hereafter E.T.) tuning system as the only basis for teaching theoretical foundations of music. Since tuning systems, in general, are not part of these curricula, there is a tacit assumption of the E.T. as the only tuning system, especially when the instrument used in teaching is the piano. Consequently, at the undergraduate level in Colombia, the teaching of concepts and repertoire has omitted indigenous and Afro-Colombian music that relies on tuning systems that do not conform to the Western musical tradition. This includes the music played on the *marimba de chonta*. Thus, this study aims to describe the impact of the teaching of traditional music theory on the conservation of regional music in the country, using as the case study the progressive

abandonment of the original tuning of the *marimba de chonta* and the musical practices that are part of the customs and ritual celebrations in different communities of the Colombian Pacific coast.

Performers of *marimba de chonta* music are not necessarily trained in university programs, and in fact, the mass media has had the most significant influence on the abandonment of their traditional tuning. Nevertheless, formal music education offered in these university programs plays a decisive role in preserving this instrument and its traditional tuning, as formal institutions have exercised power to hierarchize particular repertoires over others. In Colombia, these music programs have developed based on the Western canon since their establishment during the colonial period and the founding of the National Conservatory at the end of the nineteenth century, using the European repertoire of the common-practice period as a paradigm in teaching music fundamentals.

Hence, this research intends to answer questions like what is the role of the traditional methodologies in music theory teaching related to the E.T. tuning in the exclusion of autochthonous musical manifestations outside of the western canon? How can the case of the marimba de chonta's traditional tuning in Colombia be used to rethink and decolonize music theory in local undergraduate studies?

The data supporting the problems proposed for this chapter were obtained from analyzing five university programs considered the most representative in

formal music education in Colombia. This information was contrasted with other research on the *marimba de chonta*, its history, its regional and musical context, and its use in recent events that seek to rescue it from extinction. Finally, from a postcolonial perspective, other authors' ideas support the critique of the E.T.'s imposition and the curriculum based exclusively in the Western canon.

Thus, the analysis of the problems raised in these two articles represents a contribution to the pedagogical resources and offers a critical perspective on teaching music theory and analysis, which helps to widen the scope of the repertoire and concepts in music theory curricula.

Chapter 1

Tonal Features in Three of Bach's Modal Chorales analyzed by Lori Burns

Modality and tonality are generally presented as two distinct concepts or systems, each of which uses diatonic scales, each defined by specific characteristics. Nevertheless, an important part of the repertoire composed in the early-eighteenth century represents a difficult challenge for strict analysis from one perspective or the other. One example of this duality is Bach's chorales, whose melodies, derived from popular and religious modal chants were, in most cases, harmonized by the composer with chord successions that generate tonal progressions. From this perspective, it is paradoxical that Bach's chorales have been used as examples of tonal pieces in undergraduate curricula, somewhat ignoring the fact that most of the melodies harmonized by Bach were originally modal.[1] There, not only is this difference between modality and tonality made explicitly but the repertoire and contents concentrate almost exclusively on the tonal system. In this regard, the present study

[1] In the introduction of *371 Harmonized Chorales and 69 Chorale Melodies with Figure Bass* Riemenschneider (1941) explains: "[...] the melodies of these chorales were in only in a few instances created by J.S. Bach. In the large majority of cases the melodies are those from the vast number that were in current use by the Lutheran church. These melodies were derived from secular (folk-song) and Gregorian sources, as well as developed in the church itself[.]" (1941, 1). See also Bach Modal Cantatas Website: https://bach-cantatas.com/CM/index.htm.

proposes that Bach's chorales are an example of how modality and tonality, instead of maintaining an antagonistic relationship, can be complementary.

Thus, although the use of Bach's chorales as the unique examples of four-part writing has been reconsidered and lessened during the last 20 years in the undergraduate music programs (Burns et al. 2021), the teaching of tonal harmony basis in Latin America and North America still uses the so-called Bach-style four-part writing. And, although their use in teaching may vary depending on the curriculum and specific program, even some university programs in Latin America currently use Bach's chorales as the primary references for writing and analyzing choral texture in the tonal system.

This chapter discusses the relationship between modality and tonality through the analysis of three Bach's chorales (Bach 1941) cataloged as modal by the theorist Lori Burns (1995), namely "Gelobet seist du, Jesu Christ" BWV 91/6 (B & H, Nr. 51, see appendix no. 6), "Ach Gott, vom Himmel sieh darein" BWV 153/1 (B & H, Nr. 3, see appendix no. 2), and "Meine Seel erhebt den Herren" BWV 10/7 (B & H, Nr 358, see appendix no. 8)[2]. These three chorales have been chosen for this research because

[2] The appendix provides the Bach's chorales scores that will be referenced throughout this chapter. Chorales will be identified both with BWV numbers and with "B&H" numbers, which are based on their ordering in the Riemenschneider 1941 edition.

they are analyzed in Burns's book, and the modes on which they are based are contrasting. These are Mixolydian, Phrygian, and Aeolian, respectively. Hence, contrary to Burns's arguments, this discussion intends to describe Bach's harmonization of these modal melodies from a tonal perspective, analyzing some strategies the composer could have used to resolve the ambiguities of these melodies and with the intention of establishing a tonal rather than a modal center.

Thus, this analysis contributes to the understanding of differences and common features between modality and tonality through questions like: How can the traditional music theory tools of harmony and chorale-style voice leading be appropriate for analyzing these pieces from a tonal perspective? Which rules of tonal harmony are still present in these chorales, regardless of their modal traits and context? What is the role of chromaticism in the establishment of a tonal or modal center in these pieces? Thus, while Burns defends the modal character of these pieces based on specific characteristics such as the final cadence on the dominant, which would be attributed to the Phrygian mode, or the insistence on the tonic-subdominant relationship that would define the Mixolydian mode, the argument in this study supports the tonal characteristics of these pieces resorting to concepts and analysis tools like chromaticism, Roman numerals (hereafter RNs), harmonic functions and modulation.

Although the boundaries between modality and tonality are blurred, and there is no precise historical moment in which the transition from one system to the other took place, modern music theory tends to appeal to certain specific characteristics as hallmarks of modality or tonality. On the one hand, tonality involves harmony rather than melody, and this harmonic system results from the use of a series of triads organized hierarchically (Hyer 2001, 7). These triads are the result of the vertical superposition of intervals of thirds within a diatonic scale known as major or minor. This hierarchy depends on the tensions generated in the various chords, which acquire a specific harmonic function in the progression towards a final goal known as tonic. Thus, for example, the characteristic melodic motion from the leading tone to the tonic is supported by the chords V – I, which is considered the essential harmonic relation in the tonal system.

On the other hand, according to Hyer, in the modal system of Renaissance polyphony melody seems to be the most salient remarkable element (Hyer 2001, 11). During this period preceding the rise of tonality, the superposition of different voices, in a texture that emphasized imitation and independence among the melodies, harmonic tension was not as important as the melodic weaving. As a result, the absence of the characteristic tensions generated by triadic progressions of the tonal system, especially the relation between the principal functions V – I, does not allow the concept of functional harmony as an analytical tool. In the Phrygian mode, for

example, the characteristic semitone between the first and second degrees of the scale, as well as the major second interval between the seventh and the first, does not permit the construction of a major triad on the fifth degree that would acquire the dominant function. Finally, when comparing the textures, it can be noted that the intricate weaving and melodic imitation that prevailed in the modality is simplified into a harmony that progresses through chords, replacing the intervallic relationships that predominate in the modal repertoire (Hyer 2001, 12).

In general, although a modal piece mostly uses the collection of seven diatonic notes, very similar to that of the major and minor scales, it is normally not limited to the use of these two scales only (Ionian and Aeolian modes). Also, Bach's chorales show how modality and tonality are not mutually exclusive. A *cantus firmus* with clearly mixolydian gestures and whose final note is G, for example, could be harmonized in the key of C major. Other Dorian or Aeolian melodies are usually harmonized by Bach in the minor key with which these modes share the same final note, e.g., Dorian D will be harmonized in D minor.

The term "tonality" was used for the first time by Choron in 1810 "to differentiate the harmonic organization of modern music (*tonalité moderne*) from that of earlier music (*tonalité antique*)" (Hyer 2001, 1). However, it is Fétis's theory of "tonality" the most essential resource in following the trail of the dichotomy between tonality and modality. In his *Complete Treatise on the Theory and Practice of Harmony*

(Fétis 2008), after defining the concepts of harmony and melody and the logical succession that should support the mutual relation between them, Fétis uses the term "Tonality" to describe "The results of the harmonic and melodic affinities of the major and minor scales[.]." Likewise, after discussing the particular character and the unique function of each scale degree, the author insists that "The collection of harmonies belonging to each degree of the scale determines the tonality" (Fétis 2008, 2-3).

Fétis's theories about tonality were recently analyzed by Thomas Christensen (2019). According to him, Fétis described the Ecclesiastical modality of the Middle Ages as "a fertile soil in which seeds of harmony could start grow" (Christensen 2019, 182), and under the influence of Guillaume-André Villoteau's (1759–1839) studies, Fétis analyzed non-western musical cultures whose scale systems differ from his own idea of tonality to extend the concept to the notion of "plurality of tonalities" (Christensen 2019, 165).

In *The Art of Strict Musical Composition*, J. P. Kirnberger (1982) also compares the modal and the major-minor systems, considering the former as the more valuable because of its variety and the possibility of expressing different characters and feelings, in contrast with the limitations of the latter, especially when using the equal temperament tuning. The "new style," writes Kirnberger, which reduces old church modes to only two scales, lacks the "variety of harmony and modulations" offered by

the old modes (1982, 319-20). The author insists on the importance of distinguishing the character and nature of each mode when composing a chorale accompaniment. He also recognizes that it is necessary to use accidental notes outside the mode to avoid the tritone, as well as to generate the leading tone in the cadences. Regarding the possibilities of tonalities when modulating, Kirnberger specifies that these tonalities must respect the scale of the original mode. For example, in the Lydian mode, the tonality on the second degree must be major, as well as in the fourth degree of the Dorian mode (Kirnberger 1982, 328–29). This issue of modulation will be discussed later in this paper under the question of whether these rules are fulfilled in Bach's chorales.

Regarding the relationship between the chords considered as fundamental in defining a modal or tonal center, such as V and I, Dahlhaus defends the idea that in the tonal system this relationship implies subordination and is unidirectional: ii goes to V and V goes to I. Nevertheless, although this relationship is also possible in the modal system, it can be perceived as bidirectional, i.e., there is no tendency, and a chord is not necessarily perceived as the resolution of the other. The relationship between Am and E is not necessarily a tonic-dominant relationship, and even the E chord can be perceived as final, without expecting any subsequent resolution. (Dahlhaus 1990, 240-41)

Likewise, other twentieth-century theorists like Heinrich Schenker, Joel Lester (1989), William Renwick (1992), and Lori Burns (1995), discuss this contrast, being this latter one of the most critical writers that defend the modal character of Bach's chorales against a tonal perspective. Thus, the following discussion will offer a critical summary of the first two chapters of Burns 1995, which outline some reflections for considering modality and tonality in Bach's chorales.

Burns's arguments for describing some of Bach's chorales as modal rather than tonal are based on several characteristics of these pieces, among them: the idiomatic cadential progressions in Mixolydian (C – G) and Phrygian (A – E) modes, the use of chromaticism to highlight modal relations in the whole chorale structure, the *cantus firmus*'s modal traits, and the lack of harmonic consistency that allows for a tonal analysis of these pieces from a Schenkerian perspective. Thus, Burns analyzes "Gelobet seist du, Jesu Christ" BWV 91/6 (B & H, Nr. 51, see appendix no. 6), as an example of Mixolydian chorale, "Ach Gott, vom Himmel sieh darein" BWV 153/1 (B & H, Nr. 3, see appendix no. 2), which she describes as an expression of the Phrygian mode in E, and "Meine Seel erhebt den Herren" BWV 10/7 (B & H, Nr 358, see appendix no. 8), as an example of Aeolian mode.

Regarding the Phrygian mode, Burns sets out two questions related to Dahlhaus's proposal of conceiving modal relations as self-contained rather than as harmonic relations that generate tensions and await resolution:

> In the case of the Phrygian mode, […] is it not possible to understand that a concluding IV – I progression could resolve tensions that were established through the harmonic and melodic fabric of the composition? That is, can we understand structural dissonance as being based on the particular features of a given chorale in a given mode, rather than based on an assumed hierarchy such as the tonal relationship of dominant to tonic? (1995, 5)

The modal features Burns highlights contrast sharply with her discussion of tonality, which is rooted in the metaphor of "directionality" and in the resolution of certain tones. The progression V – I and the expectation for a stable tonic generated by the tensions of V7 and the chords that preceded it simply do not apply to the "modal hearing." Each mode generates its own expectations, which do not necessarily align with the consistent fifth relations of tonal system (Burns 1995, 13). In the same vein, Burns cites Dahlhaus's idea about the absence of subordination implications among fifth-related harmonic functions in modal music, especially in the Phrygian mode (1995, 14)., For Dahlhaus, as mentioned earlier, the relation between A minor and E major does not imply a subordination where E must be resolved to A. Regarding the Phrygian cadence (Dm6 - E), whereas a tonal interpretation might treat

the cadential harmony as dominant (ii6 - V), it is possible to hear the cadence in modal terms ending on the Phrygian final (vii6 - I).

In her analysis of the chorale "Ach Gott, vom Himmel sieh darein" BWV 153/1 (see appendix no. 2), whose final gesture proves problematic for the establishment of a clear tonal center in A minor, Burns suggests that E, as the final chord of the chorale, establishes the Phrygian mode rather than a half-cadence in the key of A minor. This idea is supported by William Renwick, who suggests that the Phrygian mode can also be interpreted as a tonal gesture in A minor, but that at the same time the descending movement from F to E, when harmonized by D minor - E major, clearly reveals the establishment of the Phrygian mode (cited in Burns 1995, 12). Along the same lines, Joel Lester (1989, 157-58) discusses several harmonizations of this melody and the tonal interpretation that defines the end of the chorale in its dominant chord. Still, he prefers to read the initial and final chord of the chorale (E major) as the concluding chord that establishes the Phrygian mode as the actual context of the melody. Bellow, I will offer my own analysis of this chorale in the key of A minor, which proposes that the half-cadence at the end has characteristics that allow us to perceive it as a stable event, very similar to an authentic cadence.

Regarding the chorale melody "Gelobet seist du, Jesu Christ" (Figure 1), Burns summarizes Kirnberger's considerations about using F sharp versus F natural in Mixolydian mode. For him, the raised third over the dominant chord (D minor)

would neutralize the modal character in these kinds of melodies, turning them into Ionian. The leading tone, notwithstanding, would be necessary for other modes like Dorian and Aeolian (cited in Burns 1995, 22). Thus, to avoid the F-sharp, Kirnberger suggests the progression G – C – G as Plagal close, a harmonic relation explicit at the end of Bach's chorales BWV 64/2 (B & H, Nr. 160) and BWV 91/6 (B & H, Nr. 51), whose scores can be seen in appendix no. 5 and no. 6.

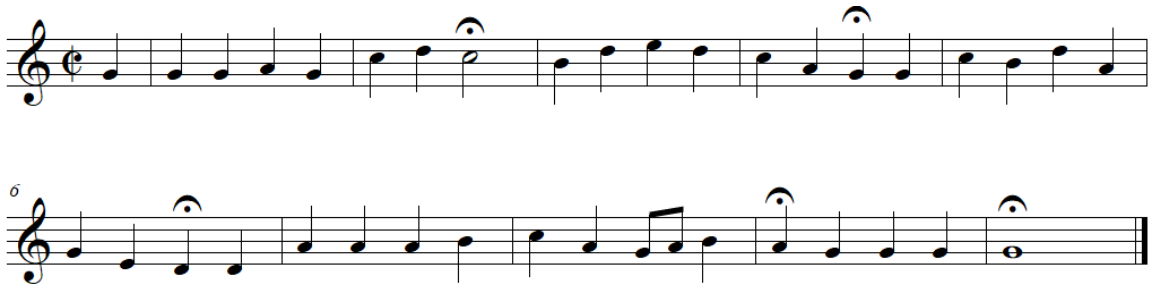

Figure 1: "Gelobet seist du, Jesu Christ"

From a tonal perspective, Burns also explains Schenker's analysis and harmonization of this chorale in *Counterpoint I*, which, ends up revealing some inconsistencies in the compositional style of these pieces and on the note that is established as the end of the melody: G instead of C. For Schenker, the key of the melody is C major even though the final note is G, due to the reiteration of the fifth as an interval between G and C throughout the chorale. Schenker asserts it is necessary to abandon the biases that hinder us from reading the melody as tonal; otherwise, "the "forced" Mixolydian features distort the internal relationships of the melody," as he criticizes regarding the modal harmonization by Bach (cited in Burns 1995, 17).

In this way, Burns reveals the influence of Schenkerian analysis on her thinking, since his perspective tends to favor tonal (rather than modal) relationships rooted in the well-defined tonal relation between tonic and dominant.

Building on the positions of these theorists, Burns explains the background framing this dichotomy between modal and tonal in the understanding of these pieces and then proposes a model for the application of Schenkerian analysis to support the idea of a modal center for them. For this purpose, Burns adjusts the original Schenkerian tonal model to a modal one. Thus, some harmonic and melodic idiomatic relations inherent to the modal system that do not correspond to Schenkerian models are adapted to the formulas that define the Phrygian, Mixolydian, Dorian and Aeolian modes, using Schenker's principles that explain a compositional structure (Burns 1995, 39).

Employing a modified version of Schenker's *Ursatz*, Burns replaces the original arpeggio I – V – I by I – iv – I, and she defines it as the Phrygian subdominant-tonic relation. She presents several models of the fundamental structure based on the subdominant-tonic relation, which is characteristic of the Phrygian mode, and illustrates this relation with the chorale "Christus, der uns selig macht," BWV 245/21 (B & H, Nr. 81, see appendix no. 3). Burns describes the first three phrases of this chorale as clear examples of Phrygian gestures and underlines the plagal cadence in the second and third phrases. Nonetheless, after she provides a potential tonal

analysis of some events, she immediately abandons it in favor of a modal interpretation emphasizing the Phrygian subdominant-tonic relation. When she asserts, for example: "The second phrase begins on A minor, and after tonicizing D minor returns to A as the penultimate harmony in a plagal cadence to E" (1995, 45), Burns recognizes a tonal progression with a secondary dominant of D minor, and the returning to the principal key A minor at the end of the phrase, which might be perceived as a half cadence. Furthermore, her analysis of the third phrase disregards the tonicization of D, which in fact drives the listener to perceive the phrase ending as a half cadence in D minor. For her, this phrase is based on the prolongation of A as subdominant, which implies a plagal progression A – D – A (Burns 1995, 45). However, the chord A at the end of the phrase appears twice as a major chord, which makes it perceived as a dominant, especially when the seventh appears. This effect tends to encourage hearing the three last chords as V6/5 – i – V in the key of D minor.

Therefore, the discussion continues to be open to the possibility of analyzing these chorales from a tonal perspective. While it is true that modes are based on the diatonic system, as expressed in the chorale melodies, it seems that Bach's harmonization seeks to compensate for the tonal ambiguity of these melodies, establishing tonal centers with the aid of secondary dominants and modulations. Also, it is essential to consider that these tonicizations and modulations usually obey tonal rules, i.e., the tonalities emphasized or modulated belong to the tonal scale

rather than the modal scale. At the same time, they seem to solve some issues pertaining to the uncertainty in identifying a key center of the original melody.

These issues are related to the fact that Bach's chorale harmonizations were conditioned by their melodies. Then, one could speculate that he had to resolve some problems of tonal ambiguity. For instance, in the case of the Mixolydian melody of the chorale in G "Gelobet seist du, Jesu Christ" (Figure 1), the possibilities are limited to C and G chords in harmonizing the repetition of G in the last phrase of the melody. In her analysis of the entire melody, Burns recalls that, according to Kirnberger, the modulations must keep the chord's quality that corresponds to the mode: in G Mixolydian, a D chord must be minor (Burns 1995, 21-22). However, in Bach's version BWV 91/6 (B & H, Nr. 51, appendix no. 6), D is always used as a dominant chord, which implies a D major.

A possible interpretation of this chorale from a tonal perspective is that the penultimate caesura, a half cadence in m. 9, expresses a dominant harmony in G major, not only through the tonicization of D major throughout the phrase (mm. 7-9), but also through the fermata at the end of the phrase. This prolongation of D major as dominant function finally arrives at G major in the last phrase, where the tonic, in turn, is expanded throughout the tonicization of IV when the F natural appears. This way to prolong the principal functions recalls the use of the pedal at the end of some pieces like the Prelude in C major from *The Well Tempered Clavier I*, where a Bb (the

lowered seventh scale degree in C major) appears as part of the tonicization of IV after the resolution of the dominant chord in the final cadence. Thus, following the real cadence (on m. 9), a progression similar to what Gjerdingen called the *Quiescenza* takes place in m. 10 (2020, 183). In this case, the only difference is that the pedal is performed by the melody instead of the bass and that the seventh scale degree does not return to the leading tone before the final resolution to the tonic.[3]

From the modal perspective of Burns, however, the F natural in the last phrase of the chorale is used to maintain the Mixolydian character of the piece. But it would not be said the same about Bach's prelude, where the emphasis on the subdominant could be described as a standard feature at the end of some tonal pieces. Then, besides the quiescent moment just described, this emphasis followed a model of tonal organization commonly used during the Baroque period (Caplin 1998, 196; 280. n. 7).

Another chorale, "Ach Gott, vom Himmel sieh darein" BWV 153/1 (B & H, Nr 3, see appendix no. 2), has served as an example of a piece susceptible to be analyzed in the Phrygian mode. In the first chapter of her book, Burns illustrates this chorale to explain Renwick's, Lester's, and Dahlhaus's arguments in support of a modal analysis of it (Burns 1995, 13). For Renwick, Phrygian mode implies a conflict between tonal

[3] "[...] a Quiescenza exploits a moment of quiescence following an important cadence, likewise holding back the further progress of the movement or delaying its ultimate close." (Gjerdingen 2020, 183).

and modal centrality, since the characteristic second degree impedes the dominant triad over the fifth degree and, at the same time, the motion from F to E in the melody is typically harmonized as iv – V, which would involve a tonal cadence in A minor. Joel Lester, in turn, recognizes the fifth relation A – E as functional in the tonal context, and refers to this chorale to discuss the possibility of hearing the opening and closing chord (E) as the conclusive harmony instead of a dominant chord, suggesting that the norms of harmonic directionality could be analyzed the other way around: the minor tonic leading to the major dominant.

Thus, Burns refers to the fifth-relation as self-contained in the Phrygian mode using the Dahlhaus idea when he suggests that the relation between A and E lacks of subordination, as it is the case in the tonal context. But Burns goes even further than Dahlhaus's self-contained concept. She proposes that the relation IV – I (A – E) in the Phrygian mode could be heard as a progression where the tensions of the mode, understood as "structural dissonance […] based on the particular features of a given chorale in a given mode," are resolved (Burns 1995, 15). Nevertheless, she does not offer her analysis of this chorale and it is not clear her own stand against a tonal analysis, especially when she decides to analyze Bach's setting of the same melody in BWV 77/6 (B & H, Nr 253, appendix no. 1) as Aeolian, which implies a dominant

ending.[4] Then, an analysis in the key of A minor from a tonal perspective remains warranted.

Burns's argument draws on Kirnberger's observations about the use of the Aeolian mode in chorales. Yet Kirnberger makes no explicit distinction between the Aeolian mode and the (tonal) minor mode. Indeed, his examples showing the raised chordal third above dominant note can easily be interpreted as typical tonal progressions. The following is an analysis of this chorale that recognizes the modal character of the melody but emphasizes the tonal features in the use of chromaticism.

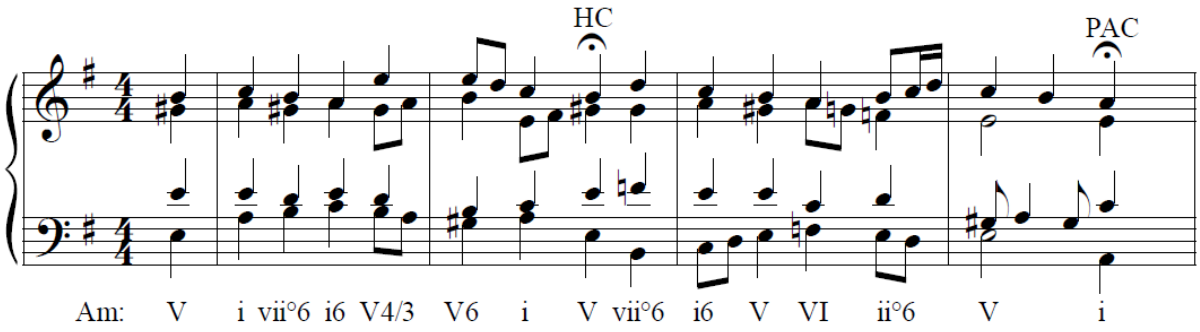

Figure 2: "Ach Gott, vom Himmel sieh darein" BWV 153/1 (B & H, Nr. 3), phrases 1 and 2, mm. 1–4.

[4] Burns analyzes Bach's setting of the chorale "Ach Gott, vom Himmel sieh darein" BWV 77/6 (B & H, Nr 253, see appendix no. 1) as Aeolian, which is explained in the chapter 3 of her book (1995, p. 115). This version of the chorale shares the same harmonic structure with the Bach's setting in BWV 153/1 (see appendix no. 2). The first four phrases alternate a half cadence and a perfect cadence in the key of A minor (G minor in the case of BWV 77/6), while the ending phrase, which seems to be the most problematic due to its ending in the dominant chord, in both chorales finishes with the same chromatic ascendent scale C# - D – D# - E. The only difference is in the fifth phrase: in BWV 153/1 is a half cadence in E minor, while in BWV 77/6 the phrase ends in the subtonic chord, which would highlight the Aeolian character claimed by Burns.

In Bach's setting of this chorale, the first two phrases clearly express the key of A minor through a half cadence in the first ending and a perfect authentic cadence in the second one (Figure 2). The unresolved tension created in the first phrase is finally relieved with the following closing gesture. But beyond the cadential gestures, the bass melody reaffirms A minor as the center through the intervals of perfect fourths between the two most important degrees of this key: E and A. From a functional analysis, in the harmonies that build these phrases it is remarkable the resolution of several melodic tensions in the internal voices. The vii°6 that opens the second phrase, for example, neatly resolves the characteristic tensions of this dominant, which underlines the function of these harmonies and their directionality towards a tonal center. Also, in the last phrase of the chorale (Figure 3), whose ending on a dominant harmony (in tonal terms) seems unusual, chromaticism plays a fundamental role in the arrival at the V chord at the end of the phrase. This harmony has neither the tension nor the instability of the dominant chord that would have been reached through a diatonic scale. That is, the chromatic ascent from C# to E in the bass slightly weakens the expression of dominant harmony in the final chord through the secondary dominants. Thus, although the phrase clearly starts in the key of A minor, which is reaffirmed with the previous cadence, two elements weaken a possible tonal instability of the E chord at the end of the phrase: on the one hand, the bass stepwise motion in the entire phrase, which leads the listener to perceive a contrapuntal

relation between the melody and the bass instead of harmonic functions. This effect is also reinforced with the use of chords in inversion. On the other hand, the secondary dominants generated by a chromatic scale in the bass starting at the upbeat to measure 10. Thus, the second part of this phrase, which involves extensive chromaticism, detracts from the strength of the last chord as a tension to be resolved. This effect allows a tonal analysis in which a half cadence at the end of the piece can be perceived as a stable harmony.

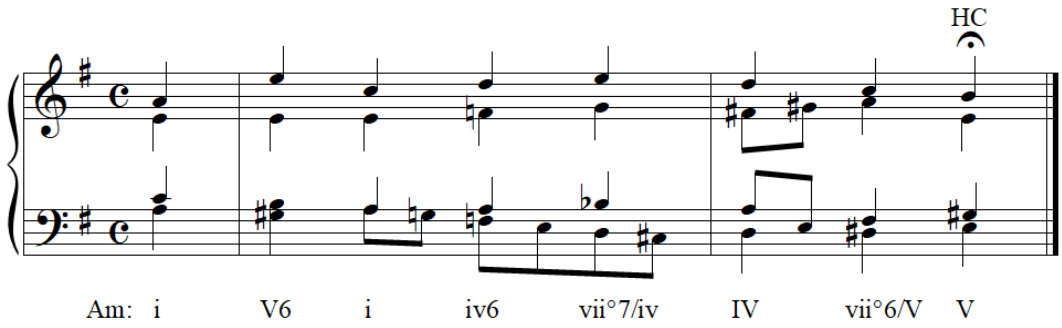

Figure 3: "Ach Gott, vom Himmel sieh darein" BWV 153/1, (B & H, Nr. 3) last phrase, mm. 9–10.

These considerations about the use of accidental notes question the real function of chromaticism in chorales, perhaps as a means of maintaining tonality rather than emphasizing modality. In most of the chorales, especially those where the tonal ambiguity of the melody seems to be the principal issue, Bach likely uses chromatic notes to establish tonal centers and, at the same time, achieves stability at the end of the phrases employing modulations or secondary dominants that allow the melody to finish coherently with the tonal system. So then, what is the role of

chromaticism in establishing a tonal or a modal center in these pieces? Is the modal system not based on diatonic scales rather than accidental notes (chromaticism)? Burns offers the following commentary:

> Chromaticism is not impossible within a modal language. Major thirds are invoked to create E major closes in PH [(Phrygian)]. When it comes to creating a D major chord in Mixolydian, the predecessors [and contemporaries] of Bach (Bellermann, Walther and Kirnberger) discuss the application of *musica ficta*. A purist approach would emphasize the natural degrees of the modal scale, but in practice that is not what they did. I remember pouring over all of the harmonizations by Bellermann and Walther. It is really interesting to look at the degree of chromaticism. We also have to see Bach as someone for whom these choices (pure modality or modern tonality) were strategies in his toolkit for expressive purpose. It is interesting to think about when chromaticisms serve tonicization purposes and when they are expressive within the primary tonic/mode.[5].

As Burns asserts, Kirnberger recognizes the possibility of using chromaticism and other notes outside the original mode in the composition of a chorale. He emphasizes, however, that these notes should be used with caution so as not to alter the character of the original mode, preserving the main melody and preferring the use of notes common to the mode in the bass. Thus, these notes would be used to

[5] Personal communication (email Interview with the author, 25 November 2021).

avoid the tritone, "to create a more euphonious sound," or to generate the leading tone in the cadences (Kirnberger 1982, 329).

Hence, for Burns, chromaticism in Bach's chorales has an "expressive purpose," and although she also acknowledges its tonicization function, her idea suggests that these accidental notes are ornaments without a role in the tonal or modal structure. Nevertheless, my analysis identifies the major third at the end of phrases in minor keys, or the use of the *ficta* in the melody, as chromatic effects with a harmonic function. This effect influences the perception of a tonal or modal center, especially when it comes to the secondary dominants and modulations.

Without denying its expressive intention, chromaticism in Bach's chorales could be analyzed as a strategy for resolving the problem of tonal ambiguity and, at the same time, generating a link between modality and tonality. In the chorale "Meine Seel erhebt den Herren" BWV 10/7 (B & H, Nr 358, see appendix no. 8), the second phrase (mm. 6–8 in Figure 4) is an example of the use of modulation as a strategy to mitigate the ambiguity created by the melody. This phrase challenges RNs analysis from a tonal perspective because of the relation between F major, as the dominant of Bb, and D major as the dominant of G minor. The difficulty is in the unusual resolution of F major (apparently the dominant of Bb), which might imply a retrogression of harmonic relations: V (F) – ii (Cm). Here, the term "retrogression" deserves attention as an opposite process to directionality. According to the tonal

principle of directionality, harmonic functions are expected to be related to each other to increase tension, which involves a strict order in the appearance of these functions: Tonic - Subdominant - Dominant. Therefore, from a tonal analysis, the C minor chord in the third beat of m. 7 would imply a retrogressive relation. The RNs in m. 7 would be V – V6 – ii – ii6 in Bb major.

It is undeniable that such a harmonic relationship between the chords of mm. 6-9 highlights the modal nuances of the chorale, and it is inappropriate to explain it in tonal terms. Nevertheless, it proceeds fluently to connect the two major keys, Bb major and G minor, which, in a global analysis of the phrase, highlights the tonal nuances of the chorale. Then, is it possible to hear the F harmony (first half of m. 7) resolving to the G minor 6/4 chord (downbeat of m. 8), with the intervening C minor chord (second half of m. 7) as an extension of the dominant? From that perspective this C minor chord would have two functions: it is the pivot chord in the modulation from Bb major to G minor, and the extension of the dominant F7(9), where the 7th of the chord resolves in the bass (Eb in the fourth beat of m. 7 to D in the first beat of m. 8) and, although not in an explicit way, the leading tone on the soprano (A - Bb in measure 8). Thus, this analysis suggests that the second part of m. 7 could be heard

as the extension of one single harmony: V9, and, at the same time, identifies the importance of the C minor triad as a shift in the harmonic rhythm.[6]

Also, the leaps in the bass melody play an important role in connecting these two keys: in m. 6, the leap from Bb4 to D3 is compensated by the ascended triad F – A – C in m. 7, which in turn compensates with the leap to Eb, that finally resolves to D in m. 8. Consequently, by listening to the bass melody on its own, the progression I (m.6) – V7 (m.7) – I6 (m.8) is perceived in the key of Bb major; however in the actual harmony, the would-be I6 harmony is replaced by G minor in second inversion. This effect highlights the melodic function of the bass in Bach's chorales, which, from a contrapuntal perspective, could have the same prominence as that of the melody.[7]

This analysis highlights that the chorale melody has a motion that hinders a logical tonal progression. In this case, the relationship between the notes G (m. 7 beat 4) and B flat (m. 8 beat 1) does not allow using two chords that generate a harmonic progression due to the absence of the leading tone. In the passage, these notes correspond to the 6th and 1st degrees of the key of Bb major and they must be directly

[6] Willingam 2013 analyzes non-harmonic tones in Bach's chorales as part of extended harmonies (e.g., ninth, eleventh, and thirteenth).

[7] This issue is addressed extensively in Caplin 2008. Although his analysis is focused on classical composers, his analysis of bass lines is a pertinent reference for this issue. He states, for example: "I want to take seriously the idea that the bass line can be heard as an independent object of aesthetic attention, without necessarily referring to its contrapuntal interaction with the soprano. I entirely concede that this is a highly partial mode of hearing, but I believe that interesting results can be obtained by such a focused listening experience." (161)

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connected. Then, this C minor chord as the bridge between these keys or the extension of the same dominant chord F7(9), might be interpreted as a solution for this tonal ambiguity.

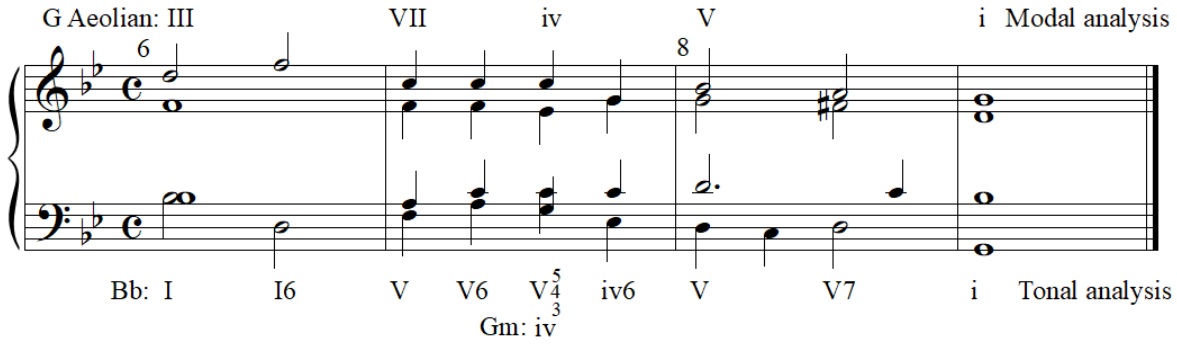


Figure 4: "Meine Seel erhebt den Herren" BWV 10/7 (B & H, Nr. 358), second phrase (mm. 6–8). Roman Numeral labels at the top refer to the modal analysis, and the tonal analysis labels at the bottom. The chord in m. 7 beat 3, is the pivot chord: it is analyzed as the extension of the dominant V (F9) in the key of Bb, which is at the same time the subdominant iv (Cm) in the key of Gm.

Burns's analysis of this chorale highlights its modal character exclusively, and although she does not make it explicit, her RNs analysis of the Aeolian G-phrase would be as shown in the top of Figure 4. Her analysis accounts for the relation between G minor and Bb as the principal keys in the chorale and recalls the role of the seventh natural degree that characterizes the Aeolian mode. However, she does not explain a direct relation between the chords F major and G minor, which are connected by the C minor chord in the phrase analyzed above.

This analysis triggers forward reflections about the use of RNs and their role in understanding harmony. Although RN analysis is a pedagogical resource of modern music theory alien to the historical context in which this music was

composed, as a device to label chords and harmonic functions in tonal music appears to be an adequate tool for the analysis of chorales, even in those where the melody and some harmonic relations reveal a modal behavior. How do RNs depict modal relations with these labels that initially represent harmonic functions in tonal harmony? How to understand the relation I - V, that is, in tonal harmony, the relation Tonic – Dominant in a typical half-cadence, as IV – I representing subdominant – tonic? In the latter case, do RNs accomplish the same function as in the former one? The author's reply to these questions proposes an exciting way of using these labels in the relationship of these chords:

> The RNs in a modal analysis would really just reflect the degrees of the scale and the quality of the harmony. For instance, in the progression VI – vii – I in Phrygian, those RNs tell me that it is a C major – d minor – E major succession. The RNs are still worthwhile to identify the harmonic content in that way. What changes for modal analysis is that we do not evaluate/interpret the progressions with the same set of expectations attached to the tonal system. We would not hear that vii chord (d minor) as having a "leading tone" function, because it does not. So, concerns for directionality and generative harmonic patterns must be set aside. What begins to emerge when [one] analyzes a lot of Phrygian chorales is the frequency of that progression as a closing gesture. [One] also would find a lot of emphasis on iv – I or iv – i patterns. […]

The RN application is useful because it allows you to observe idioms as they emerge in the different modes.[8].

It is worth acknowledging that the RNs are only an abstract representation of diatonic chords that are not inherently tonal and that some tonal bias may interfere with the perception of modal relationships in this music. However, implementing the RNs could be a bit forced and anachronistic in some specific cases. Thus, by trying to justify a global modal center, Burns's analysis downplays the local relationships between chords throughout a phrase. For example, in the case of the chorale "Meine Seel erhebt den Herren" (Figure 4), it would be difficult to perceive the first chord of the phrase (m. 6) as III after a perfect authentic cadence (m. 5) that establishes Bb as the center. Likewise, it would be impossible to understand the relation between F major and Bb major chords in this cadence as VII – III (m. 5), ignoring the modulation process from Gm to Bb in the first phrase.

As noted above, based on my experience analyzing most of Bach's chorales, Pedraza and I have argued that the harmonizations appear to represent Bach's efforts to translate modal melodies into tonal pieces (Pedraza et al, 2020). In other words, chromaticism and other tonal devices like modulations and cadential formulas transform the original modal melodies into tonal versions. The composer thus appears to have been attempting to resolve a problem of tonal ambiguity, and some

[8] Personal communication (email Interview with the author, 25 November 2021).

chorales like BWV 64/2 and BWV 245/21,[9] among others, where the intention of emphasizing modal features is explicit might be the exceptions that proves the rule. Thus, my general perception is that Bach did not entirely overcome this ambiguity, and the result is a collection of complex pieces that combine modal and tonal features. Is it possible to say that Bach's chorales are the bridge between the modal and tonal age? Burns addresses this point as follows:

> I think he [J.S. Bach] was mobilizing modal forces for expressive purposes in his large cyclic works. Modality was a powerful tool and these melodies have such an impressive and extensive history. It was a language completely established in his ears. I do think he probably heard modality as grounded in a tradition, while tonality was a modern language that was evolving with its own challenges and attributes.[10]

Kirnberger's description of characteristic degrees for each mode could explain what Burns means when she writes "modal forces for expressive purposes" (2021).

[9] In Bach's setting of the chorale "Gelobet seist du, Jesu Christ," BWV 64/2 (B & H, Nr. 160, see appendix no. 5), although the chorale is in G (major or Mixolydian) the first phrase ends with an emphasis of A minor. The last note of this phrase on the bass (A) is reached stepwise from a G# which makes it difficult to identify a real cadence. The last phrase starts in G major, but the sudden appearance of an F natural in the middle of the phrase after a tonicization of A minor as the second degree of G major stands for a modal relation between F major and G major as VII – I. The end of the phrase is characterized by a plagal cadence IV – I (C – G). The chorale "Christus, der uns selig macht," BWV 245/21 (B & H, Nr. 81, see appendix no. 3) is a harmonization of a Phrygian melody. Contrary to other Bach's settings of Phrygian melodies, the last phrase does not emphasize the last chord (E) as a dominant. Nor is there a harmonic relation that establishes A minor as the central key after the penultimate phrase, which ends on a half cadence on D minor. This effect further emphasizes the relationship between D minor and E major at the end of the choral. See the scores of these chorales in the appendix.

[10] Personal communication (email Interview with the author, 25 November 2021).

As it was mentioned earlier, Kirnberger asserts that the keys involved in modulation should respect the qualities of the different triads that are essential to each mode:

> In the case of modulations, the tonic of the new key must retain the third that the scale of the main key indicates. Thus, in the Dorian mode, for example, one modulates to the subdominant with the major third; but in the Aeolian mode, which is our minor mode today, one modulates to the subdominant with the minor third. In the Lydian mode, one modulates to the second degree with the major third, but in the Ionian, which is our major mode today, to the second degree with the minor third (Kirnberger 1982, 330).

Kirnberger's observations may not influence an analysis of Ionian or Aeolian chorales (owing to the close correspondence with modern major and minor). Nonetheless, in the case of Bach's chorales whose original melodies are Dorian, Kirnberger descriptions can be just partially confirmed. In the Dorian choral melody "Durch Adams Fall ist ganz verderbt," for example, although Bach's harmonization setting BWV 18/5 (B & H, Nr. 100, see appendix no. 4) modulates to the subdominant in the penultimate phrase, two important facts represent tonal characteristics instead of modal: 1) the final cadence, which contrary to using the C minor - G major chords as an ending plagal gesture, confirms the key of G through the progression Am7b5 – D7 – G, (ii°6 - V7 – I); and 2) the modulation to the third degree Eb major (relative major) on the third phrase, which would be completely distant from the major

subdominant (F major) that is characteristic of the Dorian mode according to Kirnberger.

Kirnberger provides two additional examples of chorales with Dorian melodies in which Bach's settings largely do not follow Kirnberger's rules (1982, 325). For example, the chorale "Jesus Christus unser Heiland" BWV 363 (B & H, Nr. 30, see appendix no. 7) is in E minor and there is no modulation to A major. Indeed, the last phrase begins tonicizing C major, moving it away from the Dorian scale that contains C# as the 6th degree. In the chorale "Mit Fried und Freud ich fahr dahin" BWV 83/5 (B & H, Nr. 325, see appendix no. 9), in D minor, there is no modulation to G major as representative of the Dorian mode. However, there is a half cadence on C major in the phrase 3, so that the ending chord on this phrase is G major. Besides the third phrase, the chorale does not seem to highlight the Dorian scale. Other keys involved are A minor (first and second phrase), and F major (fourth phrase).

From this perspective, it could be said that the final gestures of the melodies forced the composer to select a specific type of cadence that clearly defined a tonal center. Thus, more than a possibility of modal expression, Bach's harmonization, in some chorales, were subordinated to the melody. The cadential formulas that constitute the last two or three notes of the melodies in each phrase confirm this fact. (e.g., 3 - 2 - 1; 2 - 2 - 1; 1 - 2 – 1).

Trevor de Clercq (2015) has traced these formulas aiming to find the types of modulatory and cadential procedures that are more typical according to several melodic structures in the 371 chorale harmonizations by J. S. Bach. Although the relation between the involved keys in each chorale is not the principal interest for De Clercq, one can infer a pattern in this relation by analyzing his statistics. In major keys, for example, the most preferable destinations are V, ii, and vi, (G major, D minor, and A minor in the key of C major) where V and ii are the most frequent (De Clercq 2015, 197). By analyzing these results in minor keys, which are potentially modal chorales like Aeolian, Dorian, or Phrygian, it is evidence that a preference for certain key areas underlies the tonal system. Thus, De Clercq's initial conclusions show that the most common cadence is on the tonic (i), followed by the mediant and the minor dominant. This information depicts a trend in the selection of the keys for modulating in minor keys, where the chords that represent a tonal center, rather than a modal one, seem to be the first option for Bach (the mediant and the minor dominant). In"Ach Gott, vom Himmel sieh darein" BWV 153/1 (B & H, Nr. 3, see appendix no. 2), for example, that Burns uses as an instance of Phrygian chorale, the modulation to E minor (v) involves a scale that uses accidental notes alien to the Phrygian mode (F# and D#). In the case of the Aeolian mode, in her analysis of the Bach's setting of "Meine Seel erhebt den Herren" BWV 10/7 (B & H, Nr 358, see appendix no. 8) in G minor, Burns underlines the relation between Bb and G minor as representative of the mode, which can be

corroborated in the modulation to Bb in phrases 1 and 3 of this chorale. Nonetheless, her argument is undercut by De Clercq's finding that modulations to the mediant are a general tendency in minor-key chorales. Such modulations can be interpreted as an aspect of minor-mode tonality.

Thus, neither Kirnberger nor De Clercq help to confirm Burns's arguments for a modal analysis of these chorales. On the one hand, the degrees Kirnberger considers representative of the Dorian, Aeolian, Phrygian, and Mixolydian modes are altered by chromatic turns expressing a major or minor tonal scale. On the other hand, De Clerq's analysis confirms a tendency to establish specific centers through modulations. And finally, the present study corroborates that these centers correspond to what modern music theory defines as tonality.

In summary, this analysis adds to our comprehension of the distinctions and similarities between modality and tonality. Thus, in contrast to Burns's arguments, I identify harmonic relations and chromatic operations considered unusual in tonal music as strategies to resolve the ambiguities of these modal melodies and consequently to establish a tonal rather than a modal center. Also, while acknowledging the expressive purpose defended by Burns, I argue that Bach's use of chromaticism in his chorales could be interpreted as a technique for addressing the issue of tonal uncertainty and simultaneously establishing a connection between

modality and tonality. Thus, while Burns analyzes these chorales as modal, this study stands for a tonal perspective without denying their modal features.

As mentioned earlier, although North American institutions are trending away from using chorales as a primary reference for teaching tonal harmony, institutions in Latin America and elsewhere still use this repertoire for training in analysis and composition. Yet since many chorales contain harmonic relationships that are difficult to explain from a tonal perspective, these pieces are typically left aside. Thus, the implementation of a modal analysis, as suggested by Burns, could be enriched with a tonal analysis that recognizes the composer's strategies for facing the challenges of modal features in the *cantus firmus.*

From this perspective, despite the recent debate about whether to include this repertoire in the curricula, the pedagogical value of these pieces as a tool for understanding a possible connection between the modal and the tonal is warranted. The principles of tonal music taught by traditional theory, through concepts such as chromaticism, harmonic functions, and modulation, are put to the test in the analysis of those chorales in which Bach seems to combine the two systems. Likewise, four part-writing exercises could be pushed beyond the tonal paradigms by trying to resolve modal melodies while using tonal harmonization.

Chapter 2

The Undergraduate Curriculum based on Equal-Tempered Tuning and the Exclusion of the *Marimba de Chonta* Music in Colombia

In Colombia, the undergraduate music curriculum has focused on the equal-tempered (hereafter E.T.) tuning system as the only basis for teaching the theoretical foundations of music. As a result, the concepts and repertoire taught at undergraduate levels have excluded autochthonous musical manifestations that remain outside formal education because they are based on different tuning systems that do not fit into the Western canon. In a general survey of primary textbooks and syllabi that most of the undergraduate programs in Colombia currently employ as the music fundamentals guidance for teaching, it becomes evident a strong dependency on Western canon repertoire and the E.T. as the unique reference regarding tuning systems. Other tunings not based on the twelve-equal division of the octave are referred to in these programs. Nevertheless, they are tangentially mentioned as part of older tuning systems that preceded the E.T. or musical practices and instruments unrelated to the Western canon repertoire, as is the case of the *marimba de chonta*, the *millo* flute, the gaitas, the chirimia and other instruments from different Colombian regions (Sossa 2011).

This reliance on the Western repertoire in formal music programs in Colombia has its roots in the Spanish colony in the fifteenth century and the subsequent foundation of the *Academia Nacional de Música* (National Music Academy) at the end of the nineteenth century, which later became the *Conservatorio Nacional* (National Conservatory). Both the catholic schools, which would later become universities, and the National Conservatory would influence the subsequent establishment of other countrywide musical institutions (Barriga 2014; Mesa 2011). Thus, from their foundation to the present day, these formal educational institutions have primarily based their curricula on the Western repertoire of the so-called common practice period, tacitly assuming the E.T. tuning as the unique system.

This tuning system divides the octave into twelve equal semitones (Lindley 2001). In this way, to build a circle of identical fifths the real or natural sizes of the intervals (just intonation) must be adjusted to match harmonically and then close the circle. With this adjustment to some intervals, keyboards now allow playing in any key without having to adjust the pitch of some intervals. The establishment of the E.T. as the standard system was a complex process that took place between the sixteenth and seventeenth centuries and became the usual keyboard tuning in the nineteenth century. In this process, both instruments and musical composition were influenced. Thus, without E.T. tuning, the complex enharmonic processes found in music by Brahms, Debussy, or any other romantic and (post)-romantic piano compositions

would not be possible. Also, twentieth-century musical theories like the neo-Riemannian model, that analyses late Romantic composers, are based on the symmetrical twelve-division of the octave. This way, the belief that E.T. is a synonym for progress or musical evolution is reinforced, especially when other genres, such as jazz or popular music, most of which are also based on this tuning system, gain space in the formal academy.

An example of a musical tradition that is in danger of disappearing because of E.T.'s imposition in Colombia is the *marimba de chonta's* music. The original tuning of this traditional instrument, which is part of the customs and ritual celebrations at the Pacific Colombian coast, is progressively being abandoned and replaced by the E.T. tuning. According to the official document by the Colombian cultural ministry *Plan especial de salvaguardia de la música de marimba* (Special plan for the safeguarding of marimba's music, 2010) "Its traditional tuning [*marimba de chonta*'s tuning] does not adjust to the Western scale, although the modernity and the necessity of interacting with other instruments in concerts are imposing the twelve-tone tuning." (Vanin, Olarte, Ortiz and Romero 2010, 13).

In this context, this chapter aims to examine the relationship between the music theory teaching, which is exclusively based on the E.T., and the omission of autochthonous, non-E.T. musical practices such as the *marimba de chonta*'s traditional

tuning, which is at risk of disappearance. This study also emphasizes the need to review and question the hegemonic paradigms on which music education has been built in the country. Acknowledging these power dynamics can lead to the development of curricula that honor and incorporate musical diversity and its various expressions, especially those that do not conform to the Western model on which traditional music theory is based. At the same time, this chapter recalls the historical debt that today's society owes to the indigenous and Afro-descendant communities where these musical practices take place and have suffered displacement and marginalization since colonial times.

Some post-colonial studies have served as a theoretical basis for determining how the exclusive use of E.T. can be considered a form of perpetuating Eurocentric bias. Such studies reveal how, for example, the undergraduate programs in Colombia have followed an Eurocentric model where the E.T. tuning is assumed as "normal" or "universal." This model is performed and promoted by the institutions which claim "intellectual authority" to determine the curriculum's contents and repertoire (Ashcroft, Griffiths, and Tiffin 2007, 84). Further on in this document, these concepts are expanded upon and related to specific examples, but first, a general description of the instrument and recent research on it is provided.

Considered by UNESCO as a "Heritage of Humanity," the *marimba de chonta* is a percussion, xylophone-like instrument from the Colombian Pacific coast. Made

of palm wood known as chonta, the marimba has a series of plates or bars placed over a piece of wood furniture and a series of resonators made of *guadua* bamboo, generally between 18 and 25 bars that are hit by mallets of rubber. As a versatile instrument, it can be played by one or two players. While its primary role is melodic and harmonic, its percussive nature also allows it to play an important role in the rhythm section.

Its tuning system does not follow the equal division of the octave into twelve tones. Instead, it is an irregular system more related to iso-heptatonic scales commonly found in African instruments. Thus, although the researchers have not confirmed it, its origin is attributed to the arrival of enslaved Africans during the Spanish colony between the seventeenth and eighteenth centuries. This theory is supported by the existence of other very similar instruments in Central American countries, like the *marimba de tecomates* in Guatemala, or the *marimba de arco* in Nicaragua, as well as other marimbas in Ecuador, which use tuning systems foreign to the E.T. (Garfias 1983; Neustadt 2007).

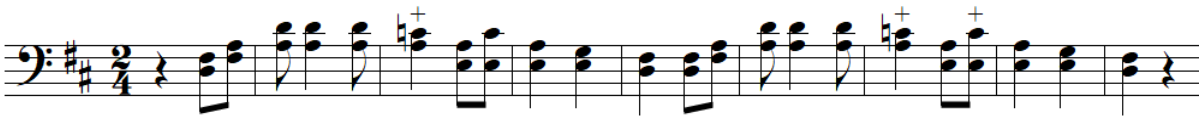
A detailed description of the music in which the *marimba de chonta* is immersed would not be possible within the limits of the present investigation. The different rhythms and formats that make up this music are as diverse as the geography of the region in which it is found. The marimba found in the southern Pacific region of the country, for example, can be remarkably different from the one found in the northern

Pacific, both in its tuning and in the music it accompanies. However, some characteristics that differentiate this music from that commonly addressed in formal university studies are worth mentioning.

The population in the Pacific region of the country is predominantly of African descent, and music is part of the daily rituals that define their culture. Some genres that correspond to specific social events are *alabaos* at adult funerals, *bundes* at the wakes of children under five years of age, *cantos de cuna* (lullabies), *jugas* and *bundes de adoración* (to worship the Child God or the saints), and *bambucos viejos*, and *rumbas* for party occasions (Ochoa et al., 2014).

One of the most recognized genres in the region is the *bunde*. This music is generally in binary meter (2/4) and like most of the musical genres of the region, its rhythmic richness based on syncopation contrasts with its harmonic simplicity. The figure 5 shows two examples of a basic accompaniment or *bordon* to a *bunde*. This accompaniment is executed by the *bordonero* in the lowest region of the marimba, while other musician plays the *requinto* or *tiple* in the highest register.

a)



b)

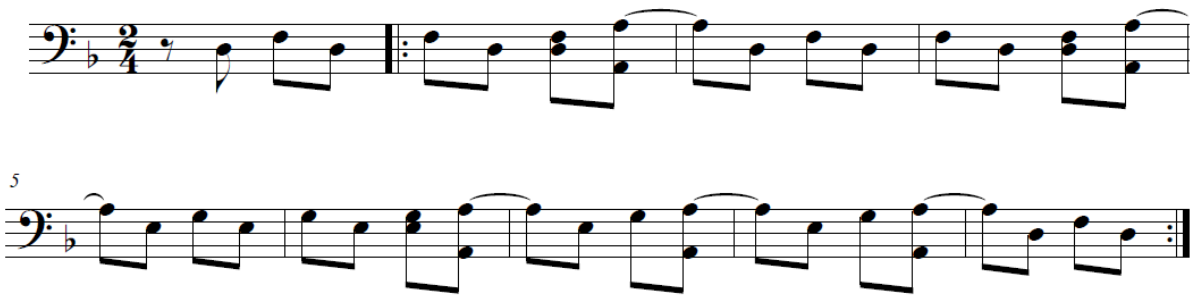


Figure 5: Accompaniment base for a *bunde*. The symbol (+) in the accompaniment a) indicates that this pitch does not correspond to the E.T. tuning. This C sounds higher than the C natural.

Although some metrics are binary, most of these genres are based on ternary subdivisions such as 6/8. The *currulao*, for example, which is the most common genre in the South Pacific, contrasts with the *bunde* not only in this aspect but also in the way the different instruments interact with each other. The polyphonic and polyrhythmic play, both melodic and rhythmic, supported by the constant use of syncopation, is the main characteristic of *currulao.* Here the marimba plays a fundamental role, both for its percussive and melodic qualities. Figure 6 is a fragment of the popular *currulao* song by the Colombian composer Alvaro Julio Agudelo. The song is performed by two vocal lines, two *marimberos*, and a *bombo* o *tambora*. In this fragment, the polyrhythm generated by the different instruments is evident, which contrasts with the main melody interpreted by voice one and duplicated by the requinto on the marimba.

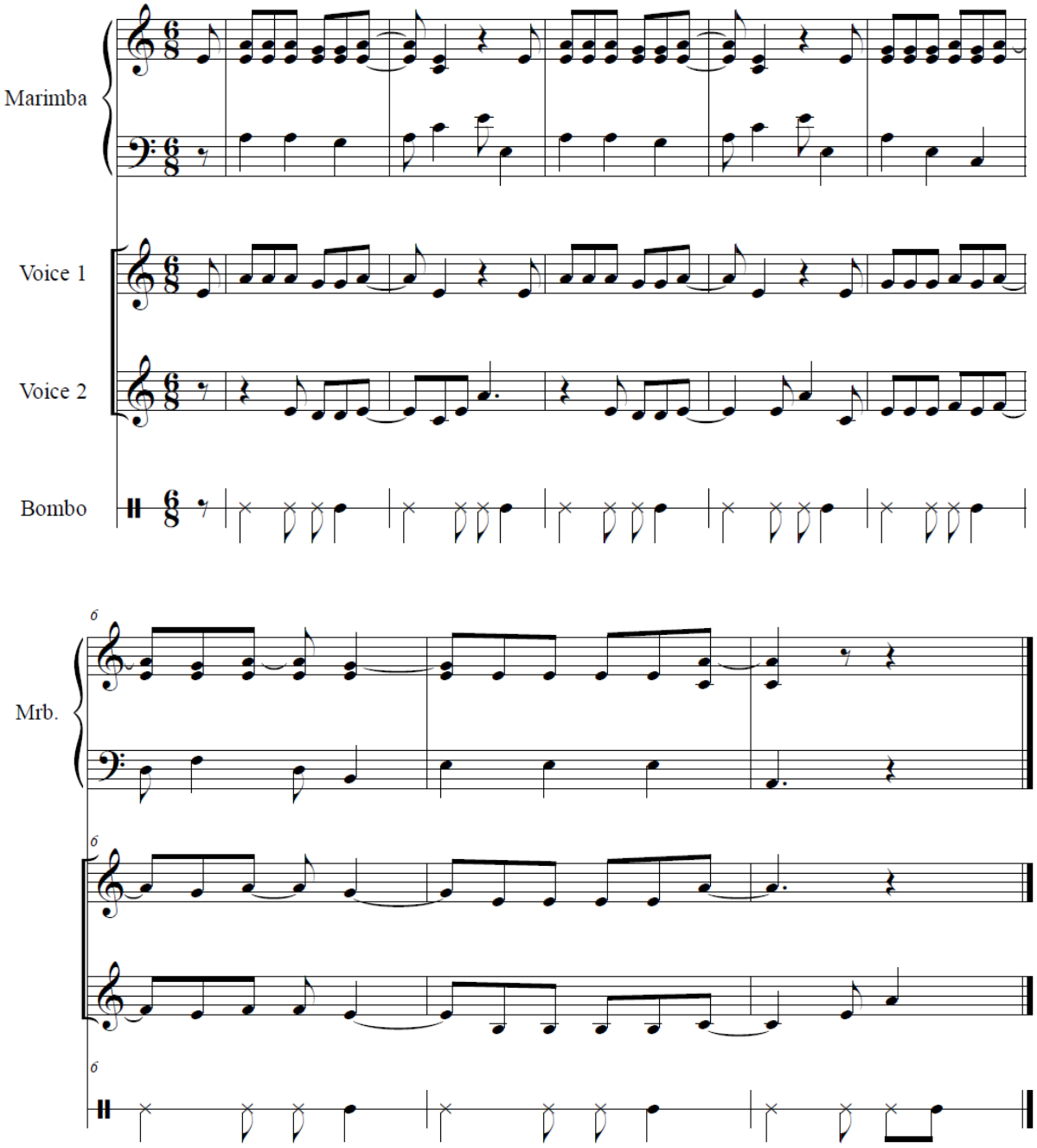


Figure 6: Fragment of a popular *currulao* song for two voices, a *bombo* o *tambora* and a *marimba de chonta* by the Colombian composer Alvaro Julio Agudelo.

In this example, although the notation system corresponds to the Western notation, some pitches in the *marimba* does not coincide with the 12-E.T. division. This characteristic aligns with that the melodies are primarily pentatonic, at least in the

more modern compositions, as in this last example, which demonstrates the equal temperament's influence, both in the composition processes for ensembles that use the marimba and in its tuning.

Several investigations undertaken during the last 30 years have shown this slowly changing process in the tuning system of the instrument. Some marimba makers describe the difference between the original and the "modern" tuning and how this change, although it has opened the way for its conservation and popularization, has slowly led to the abandoning of the original melodies and rites around the instrument and its music. In an interview granted to Banrepcultural (Cultural Area of the *Banco de la Republica* in Buenaventura, Colombia), Baudilio Cuama, one of the most important marimba makers in Buenaventura, explains how the modern marimba has been replacing the traditional marimba and how young people perceive its tuning:

> All the youth is playing with the marimba 440 because it has a sound closer to the piano, you can get some different themes, you can make a fusion with the clarinet, with the piano, with a saxophone or with a guitar […] But we are moving away from the traditional. The traditional is the marimba that our grandparents played, it is the marimba that cannot be lost, that cannot be forgotten. So, what happens? As the boys have already begun to hear this marimba sound in a more advanced

> form, they hear a traditional marimba and say that it is out of tune, and they don't play with it (Cuama, in Banrepcultural 2016).

Cuama complains not only about how the marimba is abandoning its original tuning but also about the need for more awareness among the younger people to preserve their regional tradition. A tradition that has been transmitted orally and of which there is no written record since the builders of this instrument tune it by ear.

This transformation of the marimba tuning may also be due to political causes. The use of the instrument as a symbol of a local culture adapts to the modern musical context in order to survive. It is a clear example of "appropriation" in which the dominant culture takes ownership of the instrument with the intention of conservation (Ashcroft et al. 2007, 15), but at the same time, in this paradoxical situation, this appropriation jeopardizes the original tradition. The case of the *marimba de tecomates* in Guatemala and its modern transformation represents this dynamic. According to Neustadt (2007), by declaring this instrument as the national symbol, the indigenous culture is rejecting and celebrating at the same time:

> The technical differences between the *marimba de tecomates* and the chromatic marimba belie the conceptual distance between the European and indigenous

> understandings of music. Whereas the *marimba de tecomates* plays a ritual role in traditional culture, the chromatic marimba is played as an instrument of entertainment to *amenizar* (enliven) social gatherings (Neustadt 2007, 8).

The *marimba de chonta* in Colombia is going through the same crisis. In the eagerness to include it in cultural events, festivals in major pacific-coast cities welcome the instrument as a representative of their culture but simultaneously show a transformed marimba alien to its original tradition. This cultural appropriation ends up being counterproductive since it fails to ignore the historical and cultural significance while threatening the rituality of which the traditional instrument is a vital part.

The instrument has been threatened not only by modernity but also by the power of the Catholic Church and its interference in education through evangelization during the colonial period. From a more acoustic and musicological perspective that intends to determine the *marimba de chonta*'s tuning system, Carlos Miñana, a Colombian anthropologist and ethnomusicologist, quotes the responses of some conquerors and missionaries during the colonial period in their encounter with the instrument:

> In 1734, in Barbacoas the Franciscan monk Fernando de Jesús Larrea had all the marimbas picked up; he gathered more than 30 and had them burned." (Fr. Fernando de Jesús Larrea1700-1773. Cited in Miñana 1990, 3)

> "There they [indigenous community] have an instrument that they call marimba for their functions. […] the sound of the internodes forms an *imperfect* organ but very soft because it has only twenty-five internodes." [Emphasis added] (Serra, Juan de Santa Gertrudis (Fray), 1956. Cited in Miñana 1990, 3)

With these quotations that serve as the epigraph of his article, Miñana draws attention to how these types of instruments have been underestimated when measured from the E.T. system, and then they are considered *out of tune*. This way, the instrument and the music associated with it, are forced to fix in a tonal-European system.

Miñana has been probably the most valuable reference in exploring marimba's traditional music on the Pacific Coast and has served as the basis for further investigations. Perhaps the first to study first-hand the tuning of the marimba, he went deep into the Choco territory and had the opportunity to interview several makers of the instrument. He gathered enough data to discover a close relationship between the Colombian marimba and other similar African marimbas. Using the Western chromatic scale as a primary reference and the division in cents for his data, he established that the *marimba de chonta* is based mainly on an iso-heptatonic system

in which the octave is divided into seven sounds separated by approximately 171 cents each. This relationship with African marimbas is evidence of an intervallic memory preserved by the instrument makers, who used it in the tuning process. The tuning is also transformed and adapted to the instrument's context in this oral process. This process makes the *marimba de chonta*'s tuning a practice that cannot be standardized or analyzed as a static system as it happens with the E.T.

One of the most recent analyses that study its tuning system was carried out in 2019 by the physicist Jorge Eduardo Useche Ramirez, who analyzed the relationship between the marimba's timbre, traditional singers of the region, and traditional tuning. According to Useche, most marimbas follow an isotonic tendency in their tuning, which is a consequence of the adaptation of the instrument to the variations in the female singers' voices in each region. Thus, the seemingly "irregular" tuning obeys the necessity of transposition practice according to the register of different female singers. This relationship between the marimba's traditional tuning and the singers is as meaningful as the connection with rites, spiritual celebrations, and nature. In the documentary video "*Una mirada desde la Física y la Música*" (A look from the physics and music), Federico Demmer refers to Baudilio Cuama, one of the traditional marimba builders, to share his experience when tuning the traditional marimba: "When I [Cuama] have to tune a traditional marimba, I have to go to the

jungle, and I have help there […] that help is the forest birds, the forest sounds" (Demmer and Useche 2019).

Cuama's experience tuning the marimba shows how it is considered an organic instrument, in a way, a living instrument because of the materials with which it is made. Likewise, its tuning is linked to a certain freedom, the same freedom that characterizes the music it plays. In the manual *Qué te pasa vo!* (What's up!), a guide for the initial teaching of the *marimba de chonta*, the authors describe the instrument and the accompanying voices in the marimba ensemble as follows:

> The marimba and the voices of the marimba ensemble describe intricate scalar and harmonic patterns that go beyond the possibilities of description offered by writing models based on Western tuning systems [...]. The description of chords and scales with labels such as major, minor, diminished, etc., does not reflect the spirit of the logic of articulation of sounds that encompass spectra of greater freedom in singers and marimba makers. Such labels are conceived for describing music governed by the Western tuning system, derived from the twelve basic and absolute sounds (Duque, Sánchez, and Tascon 2009, 18 – 19).

For marimba-music performers, the authors continue, intervals such as major third and minor third can be equivalent or commutable. While for the Western system, this difference is essential because it determines the quality of some tonal elements like intervals, triads, and scales, the tunings of traditional South Pacific

music are not absolute but are adapted to the voices of the singers. Thus, during a performance, the accompanying marimba player looks for the sounds most similar to those made by the singer, imitates them, and then expands the texture by adding other sounds (Duque et al. 2009, 19).

This flexible tuning model makes this instrument and its music closely linked to the voices and songs it accompanies. Meanwhile, the chromatic marimba retains only the original timbre since the repertoire and the ensemble change dramatically in its adaptation to the twelve-tone tuning.

Mainstream music, spread by the radio, social networks, and digital music platforms, has probably the most substantial influence on adopting E.T. tuning. Most of the youngest musicians involved in marimba music prefer the E.T. tuning, which they are more familiar with due to the impact of the mass media on their musical preferences. Referring to the instruments that are used in the Petronio Alvarez's festival[11] in Colombia, the musicologist Oscar Hernandez states that the use of the equal-tempered (or chromatic) Marimba has become a trend, and "it is only logical when considering that both the audience and the musicians have been listening to equal-tempered music for several generations through the commercial genres like salsa and pop ballad, which have had a remarkable influence in the Pacific"

[11] The Petronio Alvares is a festival celebrated yearly in the Colombian Pacific. It gathers musicians around the traditional music of the region. https://petronio.cali.gov.co/

(Hernández 2010, 12). Thus, although the younger musicians have respect for the traditional marimba (non-E.T. marimba), they prefer to play the chromatic marimba because, with it, they have the opportunity to play with more ensembles and win more prizes at the festival.

Beyond the manifest influence of mainstream music in using the original/traditional tuning of this instrument, the Western music theory curriculum, its methodologies, and its contents have also adversely impacted the way autochthonous musical manifestations in Colombia are perceived and remain outside formal teaching. The exclusive concentration in one tuning system (E.T) gives rise to a false conception of E.T. pitches, and the tonal system, as the absolute references, creating the misleading idea that other tuning systems do not deserve a place in formal education.

It is essential to recognize, however, that the study of tuning systems is not part of undergraduate curricula in most of the universities. In fact, there is an implicit assumption that the equal temperament (E.T.) tuning system is the sole system in use, particularly when the piano is employed as the reference instrument in music theory and musicianship teaching. Thus, from the very first lessons, new students in undergraduate programs must study a long list of concepts from tonal music without any place to question the tuning system behind these concepts. When applying these concepts to analysis or composition, the student assumes that there is nothing to

question about a system that mathematically finds a perfect foothold in the division of the octave into twelve equal parts.

The privileged position enjoyed by the E.T. over other tuning systems in music theory may have been the result of the influence of eighteenth-century theorists such as Jean-Philippe Rameau (1683-1764). His idea of the "chord of nature" as the scientific-acoustic proof that the major triad is linked to the harmonic series somehow paved the way for the theory to explain music from the positivist position of science (Lloyd 1940, 360). Thus, Rameau sought to explain the nature of dissonance as opposed to consonance and how the latter is represented by the major triad in a close relationship to an acoustic phenomenon that can be tested in a laboratory. However, his theory could only explain Western tonal music in which the set of triads that could be perceived as harmonic functions operate in the E.T. system. And although his theory remains weak in many respects, it is surprising to find it referenced in some relatively recent student texts as part of the first harmony lesson in both South American and North American undergraduate courses. One example of this reference appears in the book *Harmony and Voice Leading* where the authors list some characteristics of the overtone series that "can be observed in the works of the great composers of tonal music." (Aldwell, Schachter, and Cadwallader 2018, 25)

In the Colombian academic context, Sossa (2011) points out the problems of hierarchies and classifications that result from the implementation of the "*Dispositivo académico musical*" in undergraduate programs. Sossa's idea is based on the concept of "dispositive" by Foucault, which refers to the strategies of institutions to maintain the exercise of power (Sossa 2011, 3). When it is implemented by Colombian instructors in formal music education, this "dispositive" subordinates all musical manifestations to the scientific paradigm, forgetting that most, if not all, traditional Colombian music is transmitted orally and cannot be subjected to the reduction of the score or to other mechanisms that only apply to the analysis of the music of the Western canon.

Under this subordination to the scientific paradigm, both popular and traditional music have been deprived of their respective aesthetic paradigm (Sossa 2011). The rules established as universals by the formal academy, that is, the set of musical programs linked to the universities and considered part of the higher education system, leave little or no room for experimentation and flexibility as characteristics of popular and traditional music. Then, by using the label "exotic," these topics are considered "trivial affairs" and are treated tangentially. (2011, 1.)

Kubik and Evans, also question this scientific paradigm when he refers to the concept of "cognitive problem" (2008, 15) to explain how the Western constructs

interfere with the perception and understanding of music that does not use the E.T. tuning system and its particular characteristics:

> I eventually arrived at the sacrilegious conclusion that the blue notes as a concept had no cognitional reality in the communities concerned [early twentieth-century United States blues musicians] but that they were a Western construct, reflecting a Western cognitive problem in the encounter with African American music (2008, 15).

In this sense, it might be said that the pitches of the heptatonic scale in the *marimba de chonta* are not deviations from another system, but they exist as "*intrasystemic units"* (Kubik et al. 2008, 16, italics added). Therefore, any analysis of this tuning system from E.T.'s perspective could be biased if it does not consider the social, religious, and natural context to which this music belongs.

A summary of the history of Colombia's most influential university programs in music provides a reliable reference to this imbalance in the curriculum contents. As mentioned above, most of these institutions originated during the Spanish colony. In this context, the first formal schools of musical education were in the hands of European composers and chapel masters during the colonial period in the New Kingdom of Granada.[12] Likewise, most of the schools founded in the country's main cities, which were Catholic in nature, would later become universities, as is the case

[12] The New Kingdom of Granada (*Nuevo Reino de Granada* or *Reino de la Nueva Granada*) is the territory belonging to the Spanish empire from the conquest until 1819. This territory includes what is now Colombian territory, which was established as the Republic of Colombia in 1820.

of the Pontifical Xaverian University, which today has one of the most important music undergraduate programs in the country (Mesa 2011).

Concerning the methodologies and contents, these programs followed the European conservatory model. In this sense, it is worth mentioning the management of the Italian composer Oreste Sindici (1837-1904), who was commissioned by the Ministry of Public Instruction to prepare the programs for the main music schools in Bogotá at the end of the nineteenth century (Mesa 2011). Also, several Colombian composers trained in Europe between the late nineteenth and early twentieth centuries returned to their country and served as teachers or founded the main institutions, as in the case of the National Conservatory, founded by the Colombian composer Guillermo Uribe Holguín (1880-1971), who insisted on following the French methodological conservatory model. This model included courses in harmony, counterpoint, sight-reading, and ear training under the philosophy of establishing a special area for academic music and laying the foundations for a model to be followed by other institutions in the country. This is how Ellie Ann Duque sums it up when referring to the changes that the conservatory in Bogota underwent with the arrival of Uribe Holguín in the 1920s:

> Uribe Holguín does not delay in correcting a century of musical negligence. Without warning, Bogotans were surprised by the works of Ravel, Debussy, Brahms, Mussorgsky, Tchaikovsky, Duparc, Franck, D'Indy, Wagner, in short, a plethora of

works and names that hardly existed in dictionaries written in languages other than Spanish (Duque 2000, 142).

All this influence of the European conservatories is still latent in Colombian institutions. When consulting the course catalogs of the five most important universities in the country's capital for this study, it is found that in their undergraduate programs in music, which last ten semesters, a fundamental cycle that is completed in the first four or six semesters is based on the courses listed below. These institutions include the Conservatory National University (*Conservatorio de Música*), the Andes University (*Universidad de los Andes*), the National University of Education (*Universidad Pedagógica Nacional*), the Pontifical Xaverian University (*Pontificia Universidad Javeriana*), and the District University (*Universidad Distrital*).[13] This cycle consists of courses focusing exclusively on Western tonal music, following the European conservatory model and North American textbooks as the principal references. These courses are:

- Harmony
- Ear Training/Solfege (Musicianship)
- Harmonic instrument piano/guitar
- History of Music
- Musical practices: Choir, Orchestra, bands, chamber

[13] The catalogs of these five universities were consulted through their web pages. The links to these pages can be found in the bibliography at the end of this document.

Although most of these programs have followed the National Conservatory model since their foundation, each includes different music-related areas that give its program a particular identity. Thus, for example, the National University of Education is focused on Music Pedagogy, while the Andes University music program stands out for its emphasis on music production and digital media.

In this dynamic, two programs seem to be especially opposed in their emphases: the Pontifical Xaverian University and the District University. On the one hand, although students have several options to choose from as emphases during their studies at Pontifical Xaverian University — among them sound recording, performance, jazz, and others — the required courses include a course called *Literatura y Materiales de la Música*, (Music Materials and Literature) which focuses on the Western canonical repertoire and deepening in each semester on a specific period of the common European practice. Three out of eight semesters are dedicated to the music of J.S. Bach. They analyze his four-voice chorales, the two- and three-part inventions, and some of the fugues of *The Well-Tempered Clavier*, which somehow generates in the student the false notion that Bach's music is the most important reference for tonal music and, therefore, the E.T. —sometimes confused with the well-temperament used by Bach— is understood by the students as the only tuning system on which the music is based. It is interesting that during one of these semesters, in which the main topic is Renaissance music, — a period

in which E.T. was not yet established as standard — in the vocal practices of this repertoire, the students use E.T. as the only reference.

On the other hand, the District University opted for a program oriented to traditional Colombian music. Therefore, its curriculum includes an area called "Regional Music," which delves into the musical styles of different regions in the country, such as the joropo llanero style in the eastern part of the country, the chirimia of the northern pacific, or the music of the *marimba de chonta* in the southern pacific. Also, the instrumental options include regional instruments like cuatro, charango, tiple, and bandola.

This District University program, known as ASAB (*Academia Superior de Artes de Bogotá*), was founded in the 1980s by a group of teachers with diverse musical experiences and backgrounds, both formal and informal. Although its original purpose was the inclusion and study of the country's regional music, the project failed when the "oral," as the characteristic of the traditional, autochthonous manifestations, was captured by the "literal," which is the trait of academic rigor. Jorge Sossa, one of the teachers involved in this initiative, describes the situation as follows:

> The capture of the oral by the literal, the suction that "the academic" makes of popular musical expressions, when they are granted academic status, are a possible trap that must be unveiled. We have as an example in Colombia, José Antonio Torres "Gualajo", an excellent performer of the traditional marimba, native of the

> town of Guapi on the Pacific coast. He could not teach in universities since he does not have the academic records to support it. However, he is a connoisseur with deep knowledge of his musical tradition and, in fact, in practice, city musicians approach him to learn from his knowledge and wisdom (Sossa 2011, 4).

Sossa questions not only the academy's rejection of music that is transmitted orally but the blind trust in degrees and institutions as having the last word. This program of the District University is still alive. However, a parallel, fundamental cycle is structured under the model in which Western tonal harmony prevails. Some differences between the two program cycles are found in the inclusion of courses concentrating on the interpretation of traditional regional music, but the basis of the fundamental cycle is still Western theory. This clear example of "Eurocentrism" (Ashcroft et al. 2007, 84) is revealed in how the academic authorities in Colombia assess the viability of this program. Thus, a so-called professional program must be within the standard, that is, within the "normative" Western paradigm.

By maintaining these standards, when university programs include these autochthonous practices, they do so from a Eurocentric vision that continues to consider them according to its canon and then strips them of their real characteristics. Birenbaum summarizes this attitude when he refers to how musicology approaches this music and analyzes it from the tempered tuning:

> To speak of harmonic progressions and to assume the normativity of the tempered tuning, for example (although they can sometimes be useful for description), ends up deafening us when the aesthetic values of these sonorities do not obey the same organizing logic of Western music (Birenbaum 2010, 208).

Although several schools in the Pacific region are dedicated to teaching regional music that includes the traditional marimba and focuses on traditional genres, these schools remain outside of the formal institutions responsible for professional training or pre-university preparation. Thus, for example, the music program at the *Universidad del Valle* in Cali city, to which musicians from the region would turn to obtain their professional degree, is based on the Western canonical model. Also, the *Instituto Popular de Cultura* (Popular Institution of Culture), in the same city, offers a two-year program focused on "folkloric, traditional and popular," as it is described in the pensum. However, the institution requires a basic knowledge of tonal music from its applicants, as the admission test model corroborates. These cases reflect a dependence on the Western model where the E.T. system is taken as the unique tuning system.

In another scenario outside the academic sphere, an attempt to rescue the marimba tradition of the Pacific coast is the aforementioned Petronio Álvares Festival. Every year, during August, various musical groups gather in Santiago de Cali to participate in a contest that seeks to rescue this traditional music that includes

the *marimba de chonta*. Nevertheless, when trying to promote this music through its popularization in the festival, the twelve-pitch chromatic marimba seems to be the instrument that best suits the public preferences and the younger musicians while allowing the instrument to be included in ensembles using modern instruments. Unfortunately, this adaptation of the instrument to the E.T. system not only distances it from its original natural sonority but arguably also sacrifices the rites and particular features of this music, which are significantly different from the forms of the Western canon and even from modern popular songs.

In this context, the notion of authenticity becomes remarkably contested when the origins of the *marimba de chonta* are analyzed as part of the process of rescuing the traditional practice. Considering its African origin and its postcolonial transformational process, the *marimba de chonta* is in an "essentialist cultural position" (Ashcroft et al. 2007, 17) that might also, under certain circumstances, exclude new ways of using the marimba in modern popular music. In other words, some advocates of the use of the chromatic marimba would argue that the instrument, as part of the culture, naturally undergoes a process of transformation that must be accepted. Hence, when the instrument is pigeonholed into an essentialized culture, it loses its ability to evolve and adapt to change. In a way, the new culture absorbs the older one by transforming its characteristics, and in this process, the *marimba de chonta* does not cease to exist but is transformed.

Thus, in an endeavor to preserve the *marimba de chonta*'s music and traditions, the use of E.T. tuning has been promoted while traditional tuning is increasingly abandoned. While this is a genuine intention to rescue the instrument from extinction, it is necessary to question how modernity appropriates it as a distinctive element of a particular culture. Ashcroft et al. (2007) emphasize that appropriation is characterized by how "the dominated or colonized culture" —in this case, the musicians of the pacific region and their Marimba de chonta's traditional music— "can use the tools of the dominant discourse" —the E.T. tuning— "to resist its political and cultural control." (2007, 15)

It is precisely this appropriation that undervalues the original tuning of the instrument and the cultural elements associated with it. In his research, Useche (2019) finds that, for example, the tuning of the traditional marimba is closely linked to the voices of the singers it accompanies. The marimba can be used as an accompaniment for different registers of the singers' voices. That is, being an iso-heptatonic instrument, it allows transposition while maintaining the same relative distance between the bars. This makes it evident that the melodies that constitute particular rhythms and music genres, such as the *bunde*, or the *currulao*, can only be interpreted in this type of tuning.

In the same article, Useche (2019) also refers to this process of appropriation, and warns about the risk of disappearance of this music because of government policies that seek to rescue it while promoting Western tuning:

> Specifically, the Government promotes musical education in the regions where *marimba de chonta* music is present, the instruments provided are commonly tuned using diatonic twelve-TET marimbas, and the courses emphasize in the Western music theory associated with tempered instruments (Useche 2019, 146 – 147).

As we can see, the instrument and the traditional ceremonies around it have been threatened during the colonial and post-colonial periods. Nowadays, mainstream popular commercial music based on Western models is probably the most serious threat. Nevertheless, in recent times, some initiatives have taken place to mitigate the disappearance of the instrument's practice, like the inclusion of the instrument in the celebration of public musical festivals in the region and the adaptation of the instrument as part of modern musical practices. However, although these activities promote the conservation of the instrument as part of the Colombian-Pacific culture, they also negatively impact the preservation of the original tuning and the authentic musical tradition. Thus, the cultural framework in which the marimba still survives is not necessarily the one that best preserves its real tradition.

The role of the university programs in Colombia is essential in facing this issue. And although some areas, such as music history or musicology, have included them in their curricula, these practices continue to remain on the margins of more serious studies that really acknowledge their identity. This study does not pretend to denounce an intentional exclusion of the *marimba de chonta* from university curricula, nor that all the responsibility for the loss of the original tuning falls on formal education. Instead, it argues for an awareness of the curriculum's paradigms, intending to warn that these paradigms may reinforce erroneous ideas about music outside the Western canon. Palfy and Gilson (2018) considerations about the "hidden curriculum" implemented in the contemporary music theory classroom shed light on this issue by saying:

> The presence of a hidden curriculum in a classroom, though not always problematic, can impart and reinforce a message about who is and can be important; thus, it is important to note its presence and understand its effects. (Palfy et al. 2018, 81)

It was noted earlier that E.T. is not openly taught but is implicit in teaching music theory in undergraduate programs. Although the same happens with other musical systems such as tonality, which groups other concepts such as harmonic function or circle of fifths, unlike E.T., tonality is not taken as the only system when the modal or atonal music is included in the curriculum and serves as a point of

comparison. Then, what is problematic in the E.T. is that this system is taken as the only reference, and when used as the ultimate measure, other systems could be considered erroneous or less important since they do not represent a repertoire that has been systematically studied in the academy. Palfy et al. continue referring to these implicit concepts in the music theory curriculum by saying: "While a hidden curriculum can manifest in manifold ways, the most important effect of a hidden curriculum is the way in which it implicitly communicates a system of values" (2018, 82). Hence, in formal education, E.T.-based teaching is not just a way to disseminate this tuning system as the only one that is usable or correct but also a way to validate its position in a hierarchy over the others.

Undoubtedly, it is impossible to detach ourselves from E.T. as the fundamental tuning system that underpins most contemporary music, instruments, and performances. However, with the advent of new technologies and the ease of access to information, it is now possible to create more academic spaces for the study and analysis of music that employs non-E.T. tuning systems. Thus, through a diversified study of music theory that questions its foundations, this research proposes that alternative approaches to music can bring marginalized cultures to the forefront and facilitate their revitalization.

It is also understandably that a big topic such as tuning systems are not manageable in an undergraduate curriculum. These other systems are not relevant to the repertoire and content studied in these courses and they would only apply to specific examples and instruments that are not necessarily the most common. However, it is also the responsibility of the formal academy to notice and explore the existence of these other systems and this local music. Thus, without the intention of universalize this music that is part of a specific region and its identity, it is essential that students develop an appreciation for diversity, recognizing that the traditional music theory is built upon a tuning system that is not unique. Hence, if it is impossible to approach these other systems in depth, students will know that the E.T., even if it is used as a reference to understand others, is also an imperfect system adjusted to the limitations of some instruments and the need to combine them in ensemble performance.

The *marimba de chonta* and its music represent just one of many other examples of musical practices that are left out of formal education because of its particular system of tuning. This research can be as a point of departure for following research about other instruments and musical practices that could undergo the same problem in Center and South America. Some theorists, nonetheless, could argue that this is a field of study that seems to be reserved for anthropology or musicology areas, but this study proposes that music theory can both contribute to these fields and enrich

itself by diversifying the contents. Music theory will most certainly continue to use the Western model to explain music based on the E.T., but at the same time, could gradually complement its contents by including other tuning systems and musical practices that do not follow the canonical models.

A final word is worth mentioning in relation to curriculum design and its role in inclusion and reparation policies in Colombia. The discussion about what must be included or not in the music curriculum at universities in this country is not new. Especially from the perspective of traditional and popular music, which have been seen as opposed to the European canon, musicologists and music educators have vehemently advocated for including traditional Colombian music in the curriculum. This discussion has also questioned the objectives of the university as an institution and concept and its role in recognizing the nation with its identity and cultural practices. Thus, if the word "university" simultaneously implies unity and diversity, it can not be detached from its context. And, when these formal institutions renounce this diversity, they are also influencing the identity from its political power. This is how Castillo explains it:

> As the university institution has not been alien to politics and identity discourses, the music that privileges or proscribes the university participates in our national identity discourses, which implies recognizing that the academy has intervened implicitly or

> explicitly in the construction of the national imaginary, and in this process the symbolic and artistic elements, such as music, are fundamental. (Castillo 2018, 17)

Castillo's argument adds to the problem related to the recognition and validation of certain repertoires and concepts in formal education. But this study intends to go further and draw attention to the danger of ignoring these musical practices and their particular systems. For the academy, through curriculum design, adds to the negligent policies that have overlooked the displacement and invisibility suffered by these communities. Thus, music theory in Colombia should also assume social responsibility.

The Colombian Pacific Coast has been one of the territories hardest hit by violence. Especially during 80's and 90's, the arm conflict forced the displacement of more than 2,2 million of people (Escobar 2004). Added to all this violence is the abandonment of the state and the desire to occupy territories for economic exploitation. Even so, many indigenous and Afro-descendant communities survive and preserve their customs. It is surprising to see how these populations have developed their capacity "to resist *in situ* the traumas of modernity [...], relying on the struggles they carry out to defend their localities and cultures [...]. (2004, 54). In analyzing this post-colonial crisis, which is added to that already undergone by these peoples during colonialism, the concept of "historical debt" emerges.

The problem of centralism is compounded by "the lack of knowledge of ancestral indigenous and Afro-Colombian cultures, and the absence of the state, which has favored illegality and the presence of armed groups" (Duque 2017). Formal academy perpetuates this centralism. In the way in which a division is made explicit between universal music (composers of common practice) and local music, as well as between music of the first world and music of the colonized world, the curricula favor colonial processes (Ochoa 2003). How can formal education contribute to the reparation and paying off this historical debt?

Questioning Eurocentric paradigms is a good place to start. And to question E.T., the teaching of music theory in Colombia does not need structural changes in its contents. Perhaps it is enough to constantly remind our students that it is just one system among many others. Music theory classes, beyond academic technicalities, are open to discussion and questioning of their contents, at least in the Colombian context. These questions provoke students' curiosity and generate interest in the origin of E.T., about the relationship it has to those other systems; then, music theory will contribute to the vindication of the cultural rights that some of these afro-descendant communities have lost.

General Conclusion

The two major studies that constitute this thesis encourage an expansion of the traditional boundaries of music theory in the face of two of its most significant paradigms: the modal-tonal duality and the E.T. tuning system. On the one hand, the analysis of some of Bach's chorales proposes that modality and tonality are not mutually exclusive and that chorales are still a powerful pedagogical tool for understanding the tonal system. Thus, despite the recent debate proposing to reduce their use in the classroom, this study suggests that even those chorales that are tonally and/or modally ambiguous can be still a stimulating challenge in the implementation of analysis tools and concepts such as Roman numerals, harmonic functions, and chromaticism.

On the other hand, from a musicological perspective that analyzes musical practices out of the Western canon, the *marimba de chonta* in Colombia serves as a case study to question how the music theory curriculum concentrates exclusively on the E.T. While all concepts and systems studied at the undergraduate levels are based on E.T., other tuning systems are marginalized. Thus, this study draws attention to the responsibility of the institutions in the gradual loss of musical practices based on tuning systems other than E.T. Without saying that the music theory curriculum is directly responsible for this exclusion, this study argues that by tacitly assuming E.T.

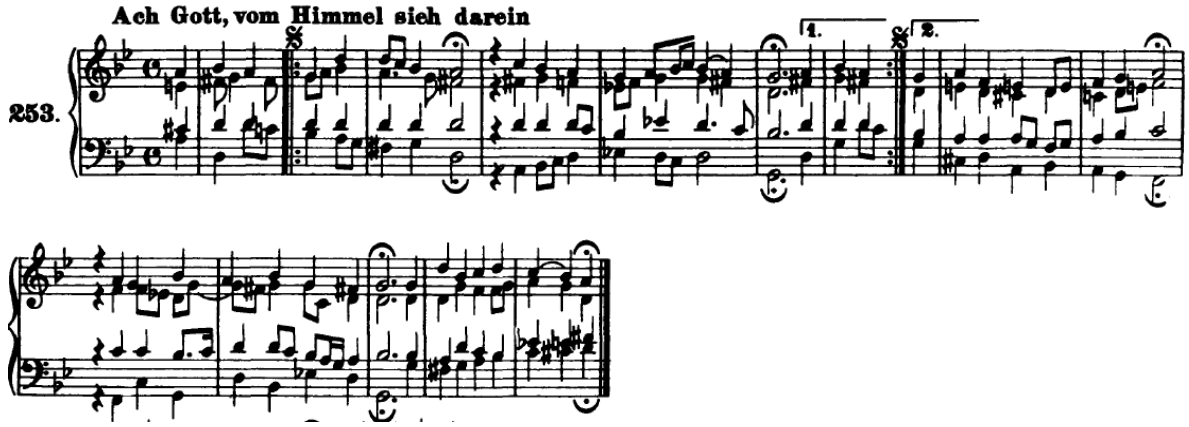
as the only system, the hegemony exercised by the Western canon in the teaching of music theory in Colombia is perpetuated.

The topics this thesis has developed exemplify how diverse music theory could be and how some bias might hinder its possible expansion toward musical practices and systems out of the traditional canon. The intention to find an interface between modality and tonality and the attempt to encourage debate on the exclusive use of E.T. are two issues apparently very distant. However, these are gathered as a sample of this diversity, a diversity that should be fostered through the contents used in undergraduate teaching, which considers its historical context and promotes an experience of music theory as a dynamic, inclusive, and ever-changing field.

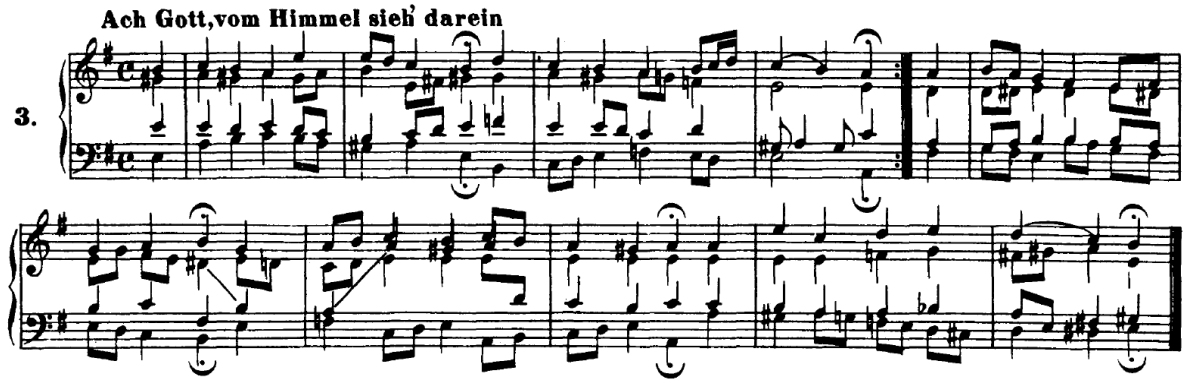
APPENDIX

Bach's Chorales scores referenced in Chapter 1: **Tonal Features in three Bach's Modal Chorales analyzed by Lori Burns**

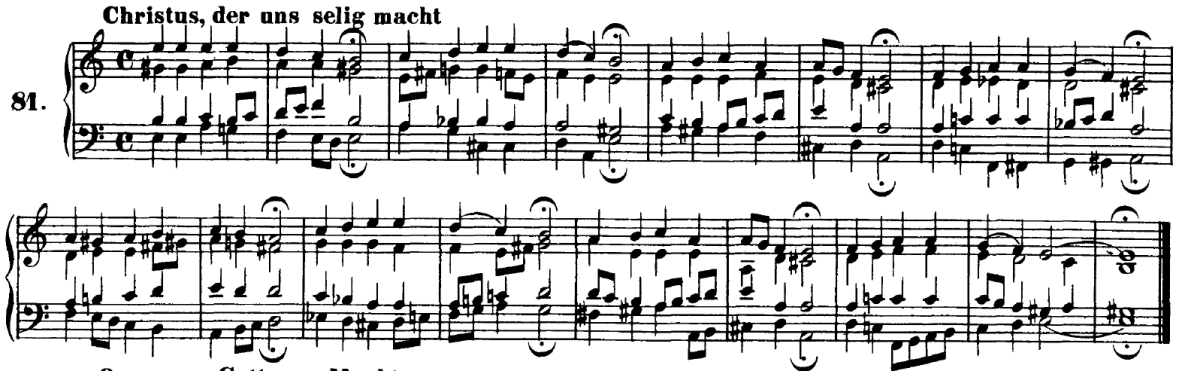
1. "Ach Gott, vom Himmel sieh darein" BWV 77/6 (B & H, Nr. 253)



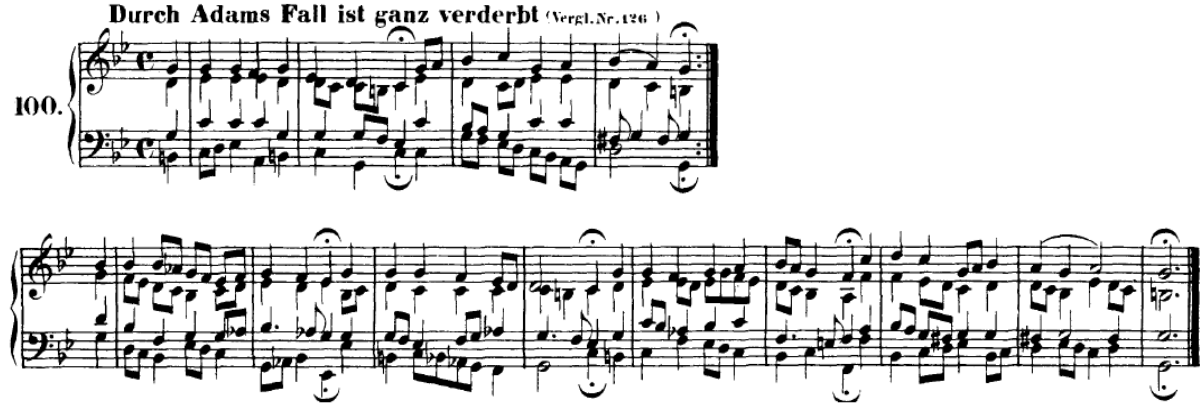
2. "Ach Gott, vom Himmel sieh darein" BWV 153/1 (B & H, Nr. 3),



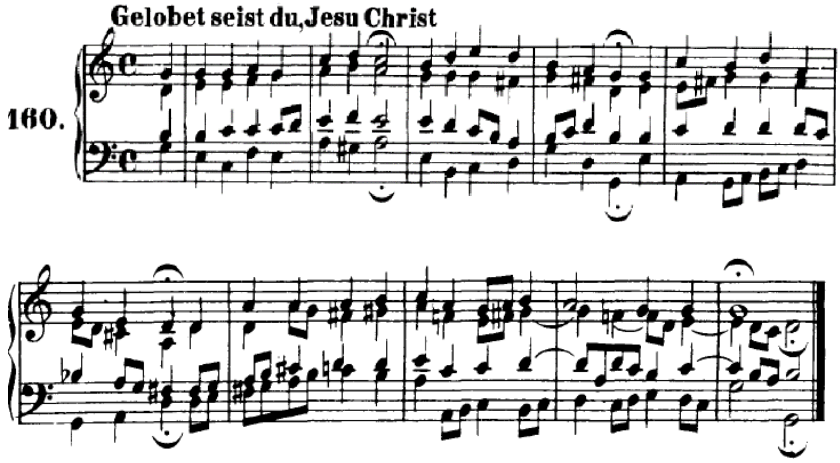
3. “Christus, der uns selig macht,” BWV 245/21 (B & H, Nr. 81)



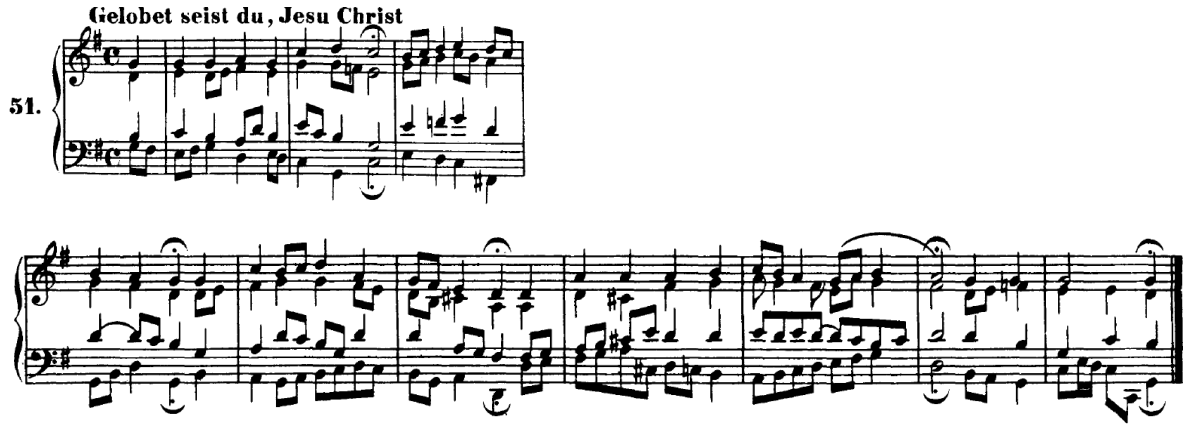
4. “Durch Adams Fall ist ganz verderbt” BWV 18/5 (B & H, Nr. 100)



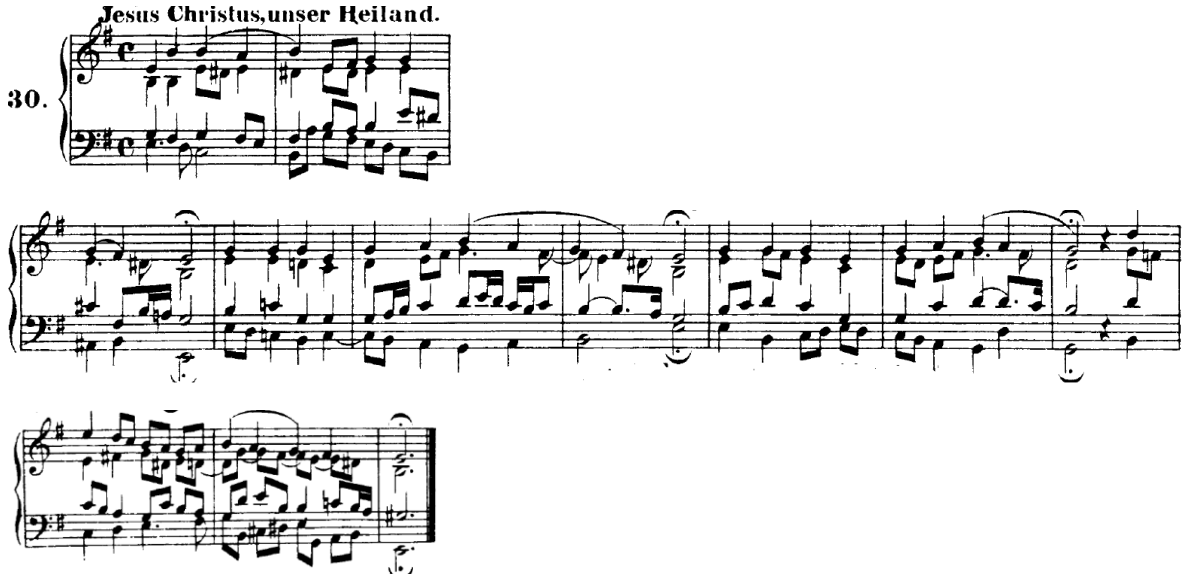
5. “Gelobet seist du, Jesu Christ” BWV 64/2 (B & H, Nr. 160)



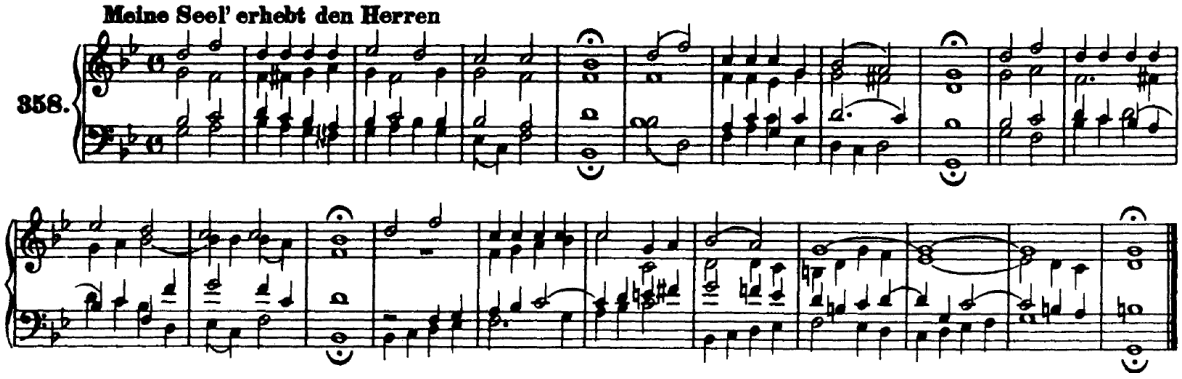
6. “Gelobet seist du, Jesu Christ” BWV 91/6 (B & H, Nr. 51)



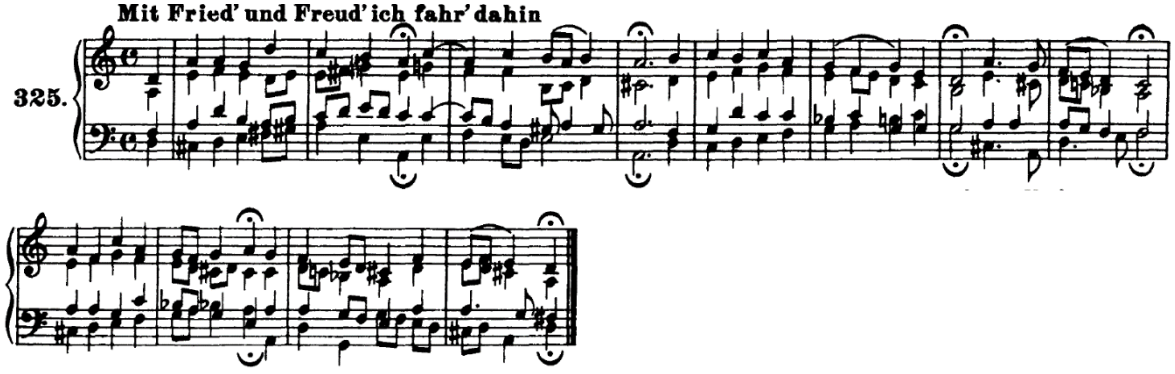
7. “Jesus Christus unser Heiland” BWV 363 (Breitkopf & H, Nr. 30)



8. “Meine Seel erhebt den Herren” BWV 10/7 (B & H, Nr. 358).



9. “Mit Fried und Freud ich fahr dahin” BWV 83/5 (B & H, Nr. 325)



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