

EXPRESSIVE TEXT: FROM A SPOKEN STYLE TO RHYTHMIC PLASTICITY

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**Abstract**

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This paper will explore the use of natural speech inflections according to linguistic principles in order to guide rhythmic expressivity in choral performance practice. The standard of rhythmic precision in choral elocution as it relates to serving exact durational values can often predominate over textual expression and rhetorical nuance in ensemble vocal music. The common practice in American choral tradition has a propensity to maximize the length of the primary vowel in a syllable during a given rhythmic value, which may lead to a bound and rigid performance with less prosodic shape. Written literature can be accessed on poetic accentuation, diction, vowel color, ethos, poetic context, and rhetoric in music. However, a better understanding of genres in a spoken style, the historical practice of note inequality, and the theoretical discourse on rhythm in language and music may allow for informed artistic flexibility in note durations for perceived accentuation. In addition, recent empirical research, which incorporates aspects of cross-domain speech and music, offers significant insight into how we can better understand the artistic goals of aesthetic expressivity through a malleable function of time.

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## **Dedication**

This paper is wholeheartedly and lovingly dedicated to my immediate family: Tara Ellis, her strength, encouragement in me, and hard work in caring for the family during the course of this degree is unparalleled, to our beautiful children, Keegan Jaim and Eden Maeve Ellis, and to Gordon and Lou Ellis.

- [ˈraɪən ˈɛlɪs]

## Preface

There are a number of recent musical experiences that led me to pursue this interdisciplinary inquiry into rhythmically expressing language in music. The rehearsal experience with Dr. Geoffrey Boers and the University of Washington Chamber Singers opened my eyes to effective strategies in teaching and learning expressive nuance by rote. The layer of artistry that is critical to style, emotion, and communication is not always evident in traditional notation and the director's ear for these subtleties is paramount in leading an ensemble to consistent performances of such expressive traits. As an Episcopalian musician, I often encountered the challenges of anglicized chant and uniformity in effectively performing speech rhythms with choirs. Teaching by rote was always a primary mode of instruction, but relying on our memory to retain irregular rhythmic structures of speech and the temptation of metrical emphasis often hindered our efficacy in chanting the prosody.

In 2013, I had the opportunity to travel the Baltic States to learn and perform their traditional choral music. I gained an appreciation for their quality of singing the entire color spectrum of their language. The timing of diphthongs and triphthongs appeared to be a unified expressive character, even among the song festival choirs made up of over 20,000 voices. Furthermore, this timing was not often aligned with the metrical structure in the music, it existed in an incalculable derivative of the spoken rhythmic shape. There was a noticeable pride in certain vowel and consonant colors that were unique to these Baltic languages and not fully developed within a Western European *bel canto* model. I began to imagine all of the unique characteristics of English, and especially some various American dialects, being performed in a similar way. I also started to notice the ways in which those salient characteristics are diluted in some standard choral performance practices in America.

After reading and reviewing the research literature on this topic and discovering the cross-domain aspects of certain studies, I was hopeful there could be a choral methodology for teaching the subtle expressive timing of language through experiencing speech rhythm. After reading *Music, Language, and the Brain* by Aniruddh Patel, I was certain empirical research would viably support such a pedagogical practice. In search of that methodology, I encountered the intense depth of linguistic science. Understanding of timing in language continues to be developed and digitally modeled to help with the acquisition of prosody in speech synthesis. There will certainly be more data-based evidence of these micro-timing aspects of spoken rhythm, however, I discovered a wealth of support for sung rhythmic nuance based in some general linguistic principles.

Through this dissertation, I began to take a bit of the mystery out of expressive prosody in singing. It was less of an indescribable and emotionally driven ethos or rhetorical rule from some distant culture, but more of an objective response to how language works in time to express and communicate. It is my hope that this demystification can lead other choral conductors to rhythmic expressivity that is not necessarily a product of predictable musical *rubato*, but a product of how they hear language in discourse and then impose that upon their prosodic interpretation of text in communicating their artistry.

# CHAPTER 1

## INTRODUCTION

Charles Darwin, in his 1871 publication, “The Descent of Man, and Selection in Relation to Sex,” proposed that language began with musical inflections and cadences. Nearly 150 years and an abundance of empirical data later, linguists, music-cognition researchers, and ethnomusicologists recognize Darwin’s theory of a “musical protolanguage” as a critical hypothesis in discovering an intrinsic relationship between language and music. Darwin suggested expressive communication was originally more musical than linguistic, which led researchers to correlate musical concepts and spoken language.<sup>1</sup> Most notable was the quest for *isochrony*, that is looking for a steady pulse in speech. Although unsuccessful, the idea of stress-timed and syllable-timed languages emerged as a theory by Kenneth Pike in 1945 and the perception of those tendencies has been subsequently supported through quantitative metrics. However, that concept of generalized periodicity in languages is mostly unsupported by research, and intrinsic rhythm in language appears to be largely a result of *phonological* characteristics.<sup>2</sup> *Phonology* is the system of contrastive relationships among the speech sounds that constitute the fundamental components of a language.<sup>3</sup> Tecumseh Fitch modified Darwin’s hypothesis from the “musical” to the “prosodic” and removed the concept of fixed pitch in comparing modern speech and song.<sup>4</sup>

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<sup>1</sup> W. Tecumseh Fitch, “Protomusic and Protolanguage as Alternatives to Protosign,” *Behavioral and Brain Sciences* 28, no. 2 (2005): 132–33.

<sup>2</sup> Aniruddh D. Patel, *Music, Language, and the Brain* (New York: Oxford University Press, 2008), 150.

<sup>3</sup> *Oxford Dictionaries*, s.v. “Phonology,” accessed April 6, 2017, <https://en.oxforddictionaries.com/definition/phonology>.

<sup>4</sup> W. Tecumseh Fitch, “Musical Protolanguage: Darwin’s Theory of Language Evolution Revisited,” in *Birdsong, Speech, and Language: Exploring the Evolution of Mind and Brain*, eds. Johan J. Bolhuis and M. Everaert (Cambridge, Mass.: MIT Press, 2013), 499.

With the recent empirical inquiries into the relationship between language and the perception of phrasing in music, this document posits that the acoustic features of phonological and *morphological* durations in syllables may be the greatest identifier of salient discrepancies in sung prosodic accentuation through perceived weight in time. *Morphology* pertains to the study and description of how the phonetics of a language are formed and structured.<sup>5</sup> Understanding the aspects of timing in spoken language, specifically at the level of consecutive-syllable relationships, the choir director will cultivate a performance aesthetic that favors natural speech-like inflections.

The rhythmic notation of words in music is often insufficiently specific about where each sound, or *phone*, takes place within the time domain of music. Common practices have been developed where elongating the “principal vowel” of each syllable on the given rhythmic duration has been assumed to be ideal for enunciation of text.<sup>6</sup> This approach may not always reinforce linguistic models and has the potential to weaken natural prosodic expression. A linguistic approach will guide performance decisions in the rhythmic subtleties of textual expression in order to provide more choices in style and interpretation.

This document will primarily explore the linguistic hypothesis of *metrical phonology*, which Aniruddh Patel describes as a theoretical approach to speech rhythm that offers insight into the rhythmic shape of words and utterances in languages.<sup>7</sup> This theoretical inquiry, and several related linguistic principles, will serve as agents in discovering inherent speech-rhythm

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<sup>5</sup> *Merriam-Webster's collegiate dictionary*, s.v. “Morphology,” accessed April 6, 2017, <https://www.merriam-webster.com/dictionary/morphology>.

<sup>6</sup> Robert Shaw and Robert Blocker, *The Robert Shaw Reader* (New Haven: Yale University Press, 2004), 101. According to Robert Shaw, this term denotes the vowel of “relatively great sonority” in comparison to other phonetic sounds in a syllable or word.

<sup>7</sup> Aniruddh D. Patel, *Music, Language, and the Brain* (Oxford; New York: Oxford University Press, 2008), 118.

tendencies. Those rhythmic tendencies will then be imposed upon metrical constraints of rhythm and meter within the music domain in order to prosodically manipulate time. This method is proposed as an aspect of rhythmic *plasticity*.<sup>8</sup> This writing will present the argument that tuning the ear to certain principles of linguistic structure will benefit an ensemble's acquisition of a subtle nuance in prosody that resists limitations of notation, for the purpose of connecting the singer to the phonological properties of language, and therefore effectively shaping expressive text in performances of choral music.<sup>9</sup>

### Statement of the Problem

The problem to be addressed in this work is two-fold. First, an *instrumental model* can often predominate the performance aesthetic in the vocal production of choral music for the purposes of supporting ensemble unity.<sup>10</sup> This is best exemplified through the practice of singing the principal vowel of a syllable over the maximum length in a given note duration.<sup>11</sup> The result is the augmentation and connection of language's most resonant, or spectrally rich, phonetic sounds. In effect, it models an instrumental quality with fewer phonological variegations than may be heard in naturally-sung language. The idea of natural-sung language will be referred to as

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<sup>8</sup> The concept of rhythmic *plasticity* is introduced in this document as the practice of manipulating time for expressive means, as in *rubato* and slight deviations of metronomic pulse, within the constraints of music's metrical hierarchy. For the purposes of this study, the decisions in manipulating time are guided by phonological features in *prosody*. The term *plasticity* was introduced by Howard Skinner, see Howard Skinner, "Some Comments on Rhythm," *The Choral Journal* 8, no. 5 (1968): 23.

<sup>9</sup> *Merriam-Webster's collegiate dictionary*, s.v. "Prosody," accessed April 13, 2017, <https://www.merriam-webster.com/dictionary/prosody>. 1. The study of versification, especially the systematic study of metrical structure, 2. a particular system, theory, or style of versification, 3. the rhythmic and intonational aspect of language.

<sup>10</sup> The term *instrumental model* is used in this document to denote the characteristics of the music-domain that are not intrinsically related to characteristics of speech.

<sup>11</sup> Shaw and Blocker, *The Robert Shaw Reader*, 101. This is Shaw's no.1 rule in the principal vowel sound: "...must continue to sound throughout the major portion of the assigned duration."

*colloquial music* in this document, and is commonly heard in most folk and popular genres.

Chapter 5 will further expound on this observation of contrasting attributes in the section

“Singing Vowels vs. Singing Language.”

Secondly, the constraints of music domain’s metrical hierarchy have a tendency to bind accentuation to the alternating strong-weak formula and conceivably limit textual expressivity in choral performances. In relation to the example given above, this practice directs that principal vowel to sound at the immediate onset of the perceived pulse.<sup>12</sup> Although there is overlap in these two areas, this document will attempt to partition the aspects of choral performance in respect to prosodic shaping and textual expressivity as it pertains to notated rhythm, performed rhythmic nuance, and perceived weight as obtained through syllabic durations. This is not to say that all performance aesthetics should serve the prosodic expression of text. Instrumental objectives continue to provide identifiers of musical expressivity, phrase shape, and stylistic attributes. Unpacking these problems will further explain the concern of this instrumental model, which is a current trend in American choral aesthetics.

For the purposes of this writing, the above standard of rhythmic precision and full duration of principal vowels in choral elocution will be referred to as the instrumental model. In this model, the metronomic performance of most notated rhythms could hypothetically undermine prosody when compared to the linguistic principles that will be discussed in Chapter 3. Robert Shaw dedicated himself to choral enunciation and clarity of text for the large symphonic choir and led the way in a performance practice that focuses the attention to a

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<sup>12</sup> Ibid. In reference to where the principal vowel sound is in music’s temporal design: “must be sounded (phonated) precisely on the forward edge of the beat-division assigned by the composer...”

performer's detail in diction, articulation, and prosody. He says, "enunciation yields beauty and phonetics yields semantics."<sup>13</sup> Shaw recognizes four primary means of accentuation:<sup>14</sup>

1. Metric – the psychological and physiological grouping of strong-weak patterns
2. Duration – in reference to the notated rhythmic values
3. Dynamics – varying loudness reinforces metrical or dynamic stress
4. Melodic – another psychological and physiological connection to higher pitches getting more perceived stress than lower ones

While this approach is arguably imperative for symphonic literature, the application of Shaw's rules governing diction, discussed later in Chapter 5, also influenced the aesthetic of chamber ensembles and a cappella choirs. The result could be considered an instrumental model of sound that often prevails when singing vowels as opposed to singing language, where a "vowel focuses on a vertical moment in time and language focuses on a series of vowels in time."<sup>15</sup> Most accomplished directors and choral singers modulate these attributes relative to the repertoire, style, and texture. However, it is possible that Shaw's methodology has become a default of articulation in the American choral tradition and may impede the accessibility of sung salient speech-like qualities.

As a proposed contrast to the instrumental model, this paper will explore the approach of a speech model through the application of principles and theories in linguistic science. Through this lens, one can better analyze the problematic default in overly applying the instrumental

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<sup>13</sup> Ibid., 99.

<sup>14</sup> Ibid., 113.

<sup>15</sup> Geoffrey Boers, "Develop a Philosophy of Group Vocal Technique" (class lecture, Advanced Choral Techniques, University of Washington, Seattle, Washington, January 7, 2014). Geoffrey Boers also shared a personal anecdote with me on this topic of differences between choral aesthetics in England and America when he heard the King's Singers make the same observation while visiting the United States for a clinical workshop.

model and risking a diminished quality in linguistic identifiers, which arguably support a natural prosody. Furthermore, the attraction of consistent “pure” vowels in metronomically rhythmic relationships serves the unification and blend within an ensemble performance. For instance, it could be considered more accessible to unify the five pure Latin vowels of [i], [ε], [a], [ɔ], and [u] because of their distinctive quality in *spectra* and *formants*.<sup>16</sup> However, as an example of the speech model, the practice of *vowel reduction*, or *centralizing* a vowel by the influence of a schwa [ə] resonance, is largely not developed as a determinant of rhythm in ensembles. Linguistic research shows that the process of centralizing an unstressed vowel coincides with a shortening of that phonological duration. In the instrumental model, we may not consistently incorporate the articulatory shape of this unstressed *phoneme* without adjusting the length of its duration and therefore overlook this empirical evidence in linguistic research. A *phoneme* is defined as the smallest significant sound in speech. In this regard, it is possible to consider the practice of instrumental modeling as a limitation of a natural speech-like expressivity.

### **Purpose of the Study**

The example provided above is just one of several principles in linguistics that can be applied to our toolbox of expressive devices. Howard Skinner sought to reconcile the composer’s intent in the art of sound and the verbal arts in a two-part series of *Choral Journal* publications in 1967. In the article, he confronted the issue of word-dominated styles vs. music-dominated styles in order to guide choral performers in verbal articulations that inform rhythmic expression.<sup>17</sup> In

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<sup>16</sup> Spectrum refers to the harmonic make-up of a vowel sound in a spectrogram and formants are the regions, or frequency bandwidths, of intensity in the spectrogram in vowel sounds. These regions of excitement in the spectra are what give a vowel its distinctive and perceptual quality.

<sup>17</sup> Howard Skinner, “Words and Music: Part I,” *The Choral Journal* 7, no. 5 (1967): 6–9.

Part II, he acknowledged that even after the performer has exhausted every detail of notation, true expressive interpretation cannot be notated.<sup>18</sup> This extensive treatise culminated in a follow-up article one year later to address inadequacies of the contemporary choral director's interpretation resulting from not fully understanding rhythmic groupings and types of accents.<sup>19</sup> By generalizing the concept of "speech rhythms," Skinner introduced the rhythmic quality of *plasticity*, or rhythmic malleability, in vocal music that could supersede metrical accent.<sup>20</sup>

Following the inquiry by Skinner, this writing will specifically relate to choral music where the words are a leading expressive aspect of the composer's intent. This will be referred to as *verbal music* in this document. Verbal music is arguably the primary treatment of text in the common practice era, but could be debatable in certain polyphonic settings or other contrapuntal textures. There are also modern compositional styles, uses of texts, or other abstract phonological effects used in the twentieth-century and into the twenty-first century that would not be considered verbal music by the definition used here. Strictly speaking, verbal music refers to meaningful language in music.

The purpose of this document is to expand the idea of rhythmic plasticity as it pertains to the principles of metrical phonology and other rules governing rhythm in spoken language. Genres that utilize *stile parlando*, or a spoken style in choral homophonic textures, will serve as a link to historical speech-music relationships.<sup>21</sup> The French tradition of rhythmic inequality, called *notes inégales*, and the theoretical discourse on rhythm in language and music will also

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<sup>18</sup> Howard Skinner, "Words and Music: Part II," *The Choral Journal* 7, no. 6 (1967): 15.

<sup>19</sup> Howard Skinner, "Some Comments on Rhythm," *The Choral Journal* 8, no. 5 (1968): 22–25.

<sup>20</sup> *Ibid.*, 23.

<sup>21</sup> The spoken style of the late Renaissance sought to elicit natural speech-rhythms as an expressive feature. This term was also a direction in instrumental music to discover a quality of discourse in phraseology. C.f. *sprezzatura*, baroque declamation, and *notes inégales*.

provide evidence of informed artistic flexibility in note durations for perceived accentuation. Furthermore, with relatively recent developments in linguistic research on speech-rhythms, choral directors and scholars can also benefit from data collected in certain cross-domain inquiries.

Any church musician has encountered prosodic challenges in Anglican chant, plainsong, and other chanted liturgical song. The unmetred prose of psalm and canticle texts sung in homophonic textures with a fixed harmonic progression, or set to plainsong tones, has slowly lost cultural significance in many parochial churches, as well as some cathedrals. The practice of adapting speech-like rhythms in extended durations of sung syllables has been weakened in our culture of metrical hierarchy. The strong-weak patterns in musical meter dominate our perception in grouping accentuation in unmetred prose. Francis Hopkinson (an American Episcopalian) describes chant as, “not being songs or tunes, but a species of recitative, which is no more than speaking musically.”<sup>22</sup> This translates well in theory but has not been successfully codified in practice beyond the means of rote and shared cultural experiences. This document’s application of linguistic research offers instruction for a common rehearsal language in unmetrical genres like Anglican chant and other musical styles of the antiquity, quicker assimilation of unified rhythmic expressivity in ensembles performing metrical music, and a possible direction for current composers to embrace the inherent phonology of a language to shape verbal music through chosen lyrics, poetry, or prosodic texts. Ultimately, this writing will seek to promote an informed practice of altering notated rhythmic values in metered music for greater poetic and linguistic communication in verbal music.

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<sup>22</sup> Ruth Mack Wilson, *Anglican Chant and Chanting in England, Scotland, and America, 1660 to 1820*, Oxford Studies in British Church Music (Oxford: Clarendon Press; New York, 1996), 225.

## Description of the Study

Chapter 2 will identify the influence of speech-rhythms in music during the development of hierarchically metrical music as it pertains to homophonic choral music. Free speech-rhythms are critical to the *falsobordone* style, or unmetred harmonized chant, of the Renaissance and offer the greatest link to performance objectives in a baroque text declamation style. This chapter will also examine the influence of speech-rhythms on the instrumental genre as seen in the French tradition of inequality. Each of these examples support the historical connection of speech rhythm and music expressivity, both declamatory vocal music and certain instrumental genres.

Chapter 3 will not be able to exhaust the historical discourse and debate of functional rhythm and meter in music. However, it will be important to have a broad overview of the theoretical, philosophical, and scientific arguments for rhythm's hierarchical and structural role in perceived accentuation, which informs the salient grouping of musical cells, motives, and phrases. As an example, the performance practice of time manipulation in *tempo rubato* (stealing time) has long been associated with declamatory, expressive, and structural purposes.<sup>23</sup> This chapter intends to connect the practice of *parlando rubato*<sup>24</sup> within music's metric hierarchy to discover the idiosyncrasies that may best inform a modern practice of shaping time to effectively communicate the text.<sup>25</sup>

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<sup>23</sup> Richard Hudson, *Stolen Time: The History of Tempo Rubato* (Oxford: Clarendon Press, 1994).

<sup>24</sup> *Parlando rubato* is a term Bartók used specifically in describing a declamatory singing style in Hungarian folk music where meter, rhythm, and tempo are not in strict time. As a general aspect of folk music, it denotes "a metrically uneven presentation reminiscent of speaking tempo." See Norm Cohen. "Folk music." *Grove Music Online. Oxford Music Online*. Oxford University Press, accessed April 6, 2017, <http://www.oxfordmusiconline.com.offcampus.lib.washington.edu/subscriber/article/grove/music/A2241135>.

<sup>25</sup> The organization of strong and weak beats in the music domain that constitute structure in rhythm and meter will be referred to as *metrical hierarchy*. This is in contrast to *prosodic hierarchy*, or the theoretical metrical grid in a spoken language.

Cross-domain linguistic principles of speech rhythm will be explained in Chapter 4. With supportive evidence from recent empirical research, both domain specific as well as cross-domain, certain rules and principles will emerge and develop as a specific choral method in acquiring phonemic articulatory shapes as a result of diction and syllabic durations. A number of rhythmic tendencies in speech are explored and the chapter concludes with a summarized table of rhythmically phonological features that can be applied to a practice of plasticity in text expressivity.

Chapter 5 offers several approaches to applying these linguistic principles in the choral repertoire of both unmetred and metered music to support the idea of rhythmic plasticity. This chapter will include examples of analysis through the lens of the linguistic model and propose some ideas about annotating the choral score to reflect certain phonemic shapes. A modest number of stylistic considerations will be presented, while providing some perspectives by musicologists, conductors, and performers.

Although this document does not intend to illustrate a singular methodology, Chapter 6 will provide examples of rhythmic plasticity in practice. A theoretical approach to timing in unmetred music will be developed into exercises of shifting metronomic relationships to prepare the conductor's flexibility of isochronous time based on speech rhythms. This chapter will also offer vocalizations for the choir to build skills in singing *centralized* vowels, which are vowels of reduced harmonic clarity (also referred to as reduced vowels). Finally, some examples are provided where melodic accent structure doesn't always align with prosodic structure and the application of metric phonology with rhythmic plasticity is proposed as a possible solution.

In the absence of a singular methodology, it is my hope that the archetype of practice illustrated in Chapter 6 will inform the reader about a way in which this research can teach the

“how” in text expressivity instead of hopelessly reciting the “what” throughout the choral rehearsal. In other words, the “how” refers to mapping spoken rhythm of prosody onto the notated durations while the “what” refers to rigid durations and accepted rules of choral elocution. This concept of distinguishing the “how” and “what” is a central approach of pedagogy in the choral department at the University of Washington under the direction of Geoffrey Boers and Giselle Wyers. The conductor/teacher is not expected to only demand the “what” of our singers, such as the prescriptive directions in the score like notated dynamics and durations. Instead, we endeavor to provide the “how” in their learning process, such as the vocal technique required to succeed in that musicianship. This document offers insight into the “why” of text expressivity based on scientific research of language and music. The “how” is the method of rhythmic plasticity through applying linguistic principles of rhythm. And the “what” becomes a collective performance aesthetic that draws upon the inherent aspects of expressivity as opposed to the micromanaged didactic approach in teaching the inexplicabilities of musical nuance.

The conclusion of this study will offer areas of further research as it pertains to the cross-over genres in contemporary commercial music and other colloquial styles that are becoming increasingly more popular in vocal ensembles. Some rhythmic notations of verbal music from popular genres present problems for the choir, particularly that the off-beat articulation of syllables creates a series of dots and ties at the level of a sixteenth note value. The goal of accuracy in performing those notated rhythms can often contradict the smooth and natural prosodic qualities that are necessary in such styles. Through the linguistic approach presented in this document, an ensemble may choose to allow the specific off-beat notations to comply with the prosodic flow of language and be performed in a slightly more-gentle rhythmic proportions.

Or in the case of over-simplified equal value notation, applying inequality according to linguistic models will heighten the performer's awareness of a prosodic hierarchy in relation to the metrical hierarchy. Either approach results in the musician's understanding of how rhythmic notation is often limited in serving the natural prosodic features in communicating the structure and rhythmic expressivity in ensemble singing of text. The outcome for the director and ensemble is to gain rhythmic flexibility in micro-timing nuance, which is one of the most salient identifiers in stylistic properties.<sup>26</sup> Although this document does use traditional articulation symbols in notation to show phonemic shaping, they should be realized within a legato slur. A formalized notational system for phonemic shaping is not proposed within this study because a variety of annotations are already a general practice for choral conductors in their score preparation. Therefore, the function of familiar symbols of notation in this document should be regarded as illustrative not definitive.

The glossary will provide definitions to terms that may be unfamiliar to the reader. Especially given the interdisciplinary nature of this research, some jargon from the science of linguistics will be required. Many terms are also defined through the writing and in footnotes, but the glossary should serve as a reference to the vocabulary that will be encountered throughout the document. Also included in the index are the current International Phonetic Alphabet chart and Charles Villiers Stanford's Anglican chant setting of *Psalm 150*.

### **Scope and Limitations of the Study**

This document intends to offer a pedagogical approach to text expressivity in the choral classroom as a response to the lack of prosody, especially heard in less experienced and some

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<sup>26</sup> Caroline Palmer, "Music Performance," *Annual Review of Psychology* 48 (1997): 122–26.

community level or church choirs. A limited number of speech domain and cross-domain research studies will be referenced to support the specific techniques in this linguistic method of rhythmic plasticity. It should be noted that the musicologist William Caplin opens his chapter on musical rhythm in *The Cambridge History of Western Music Theory* by acknowledging the challenge of discussing rhythm and meter due to the intangibles of temporal space.<sup>27</sup> He says, “Compared to spatial relations, which appear to us as fixed and graspable, temporal ones seem fleeting and intangible.”<sup>28</sup> In many ways, the discussion of music’s temporal nature becomes a philosophical question. Andy Hamilton has approached this philosophical question through Zuckerkandl’s perceptual experience of time and Curt Sachs’ theory of rhythm and meter as belonging to the same phenomenon.<sup>29</sup> This document cannot fully engage in its support of expressive aesthetics, but experiencing the shared timing principles between language and music offers insight into the perception of how that time is shaped.

These intangibles have been extant prior to theories of unified rhythmic systems in the mid-17<sup>th</sup> century. Each theorist had their own way of addressing certain inexplicable inconsistencies beginning with Caccini’s condoning ‘faulty’ rhythms and ‘slips’ in tempo to serve rhythmic flexibility as informed by speech.<sup>30</sup> Koch’s claimed his concept of emphatic lingering was easier to feel than notate.<sup>31</sup> Bradley Hunnicut provides some insight in his preface

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<sup>27</sup> William E. Caplin, "Theories of musical rhythm in the eighteenth and nineteenth centuries," in *The Cambridge History of Western Music Theory*, ed. Thomas Street Christensen, Cambridge History of Music (Cambridge; New York: Cambridge University Press, 2002).

<sup>28</sup> *Ibid.*, 657.

<sup>29</sup> Andy Hamilton, *Aesthetics and Music* (London; New York: Continuum, 2007).

<sup>30</sup> Giulio Caccini, “Le nuove musiche.” (Madison, A-R Editions, 1970), 12.

<sup>31</sup> Clive Brown, *Classical and Romantic Performing Practice 1750-1900* (Oxford; New York: Oxford University Press, 1999).

to a translation of Hugo Riemann's *System der Musikalischen Rhythmik und Metrik* by Riemann's assertions of indeterminacies in rhythm. Riemann was aware that his theory of temporal shading resists quantification as the subtle differences only slightly deviated from the simple proportions of durational notation.<sup>32</sup> Ultimately, the indeterminacy and indescribable shape of time in language continues to perplex theorists and performers, but there is hope that the new cross-domain area of research could scientifically inform a theory of performing and analyzing verbal music.

It is important to distinguish and limit this inquiry to language *in* music and not the language *of* music. The latter sought to impose a *Chomskyan* generative theory of language onto the structural properties of music. This idea was the thesis proposed by Leonard Bernstein in his 1973 Norton Lectures at Harvard and subsequently in his book, *The Unanswered Question*.<sup>33</sup> This was developed further by Lerdahl and Jackendoff in *The Generative Grammar of Tonal Music*.<sup>34</sup> However, language *in* music is simply the nature of how text inhabits the music domain. This specific inquiry was best described by Feld and Fox as the phenomenological intertwining of musical and linguistic parameters.<sup>35</sup>

Finally, this dissertation excludes the aspects of Greek ethos in music and the baroque doctrine of the affections, or *Affektenlehre*. Although there could be an argument for overlap of

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<sup>32</sup> Bradley Hunnicutt, "Hugo Riemann's 'System Der Musikalischen Rhythmik Und Metrik', Part Two: A Translation Preceded by Commentary" (ProQuest Dissertations Publishing, 2000), 23, <http://search.proquest.com/docview/304634560/>.

<sup>33</sup> Bernstein, Leonard, *The Unanswered Question: Six Talks at Harvard*, Charles Eliot Norton Lectures ; 1973 (Cambridge, Mass.: Harvard University Press, 1976).

<sup>34</sup> Fred Lerdahl and Ray Jackendoff, *A Generative Theory of Tonal Music*, MIT Press Series on Cognitive Theory and Mental Representation (Cambridge, Mass.: MIT Press, 1983).

<sup>35</sup> Steven Feld and Aaron A. Fox, "Music and Language," *Annual Review of Anthropology* 23, no. 1 (1994): 30.

expressive articulation and emotional interaction with meaning, semantics, and affect, the focus here is exclusively related to the acoustical components of phonological events in language. The patterning tendencies of phonemes in language, even with the exclusion of syntax, can guide the choral director to an informed rhythmic plasticity. It is not an absolute, but a method to inform performance decisions and a tool for attempting an objective analysis in the subtleties of prosodic nuance.

## CHAPTER 2

### THE HISTORICAL CONNECTION TO SPEECH RHYTHM IN MUSIC

“*Sprezzatura* is that charm lent to a song by a few ‘faulty’ eighths or sixteenths on various tones, together with similar ‘slips’ made in the tempo; these relieve the song of a certain restricted narrowness and dryness and make it pleasant, free and airy, just as in common speech eloquence and variety make pleasant the sweet matters being spoken of.”<sup>1</sup>

During the long evolution of tactus-driven music, the unmetered flexibility of speech-like rhythmic features in *falsobordone* came into practice in the late fifteenth century. The *falsobordone* style is a chordal harmonization of a Gregorian psalm tone in root position triads that were chanted according to speech-rhythms as was known in the monophonic plainsong. The style originated in the late fifteenth century for the purpose of singing psalms and other liturgical prose.<sup>2</sup> In contrast to the periodic tactus, this style allowed for homophonic part-singing to express unmetered prose, as is commonly found in psalm and canticle texts. The performance objective was to acquire speech rhythms in a non-periodic recitation according to the flow of inflections (stress) and affective punctuation (pause). It is possible that this was an early reaction to the poor intelligibility of text in the polyphony music of the High Renaissance, a precursor to the Humanist Movement that sought to incorporate ancient Grecian models of rhetoric. This practice also aligned with the campaign for clarity of text in music during the Catholic Reformation. Some scholars argue that *falsobordone* is the foundation of tonality due to its vertical harmonic structure and functionality in cadential patterns. That may be argued, but *falsobordone* can certainly be linked to *stile parlando*, a predecessor of *monody*, the performance

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<sup>1</sup> Giulio Caccini, “Le nuove musiche.” (Madison, A-R Editions, 1970), 12.

<sup>2</sup> Murray C. Bradshaw. "Falsobordone." *Grove Music Online. Oxford Music Online.* Oxford University Press, accessed March 31, 2017, <http://www.oxfordmusiconline.com.offcampus.lib.washington.edu/subscriber/article/grove/music/09273>.

practice of Caccini's *sprezzatura*, baroque declamation, and other various *je ne sais quoi* terms that are intended to elicit prosodic expressivity.

### ***Falsobordone***

Murray Bradshaw, an expert in the genre of *falsobordone* and monody, came to the same conclusion as Edward Lowinsky in the theory that tonality can be found in the cadential patterns of these harmonized chants. He argued that this genre is the connective thread between ancient church modes and the major/minor modes and that it laid the ground-work for a new direction in simple accompaniment of the sacred monody.<sup>3</sup> Although chordal repetition and parallel sixth chords had been a compositional practice for some time, as seen in the French *fauxbourdon* and the English *faburden*, the most specific *falsobordone* trait of a bass part moving in fourths and fifths through root-position vertical harmonies clearly set the *falsobordone* apart from either the *fauxbourdon* or *faburden*.

In an article that describes a performance practice developed from the *falsobordone* genre, Bradshaw tracks this unsophisticated but popular Italian genre from its development to adaptability within the changing demands of style in the late 16<sup>th</sup> century. He considers *falsobordone* the most adaptable genre of the late Renaissance and early Baroque periods.<sup>4</sup>

Bradshaw supports a practice of singing *falsobordone* in one of three ways:

1. Free chant rhythm,

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<sup>3</sup> Murray C. Bradshaw, "The Falsobordone and the Development of Tonality," *Collected Work: "Et Facciam Dolci Canti": Studi in Onore Di Agostino Ziino in Occasione Del Suo 65° Compleanno, Vol. 1. (Number of Volumes: 2) Published by: Lucca, Italy: Libreria Musicale Italiana (LIM), 2003. ISBN: 88-7096-321-7; 978-88-7096-321-2. Pages: 515-531. (AN: 2003-12965).*, January 1, 2003.

<sup>4</sup> Murray C. Bradshaw, "Performance Practice and the Falsobordone," *Performance Practice Review* 10, no. 2 (1997): 247.

2. Irregular values in strict meter, or
3. Irregular values not in strict time.

He advocates the third option as the preferred practice.<sup>5</sup>

Giovanna Luca Conforti published *Salmi passaggiati* (1601-1603) which instructed a free recitation with natural rhythm of words rather than a strict metrical rhythm. The embellished cadential figure would follow in measured time.<sup>6</sup> Another Sistine chapel composer, Francesco Severi, later confirmed Conforti's free, declamatory approach to the recitation. However, he contradicts himself with a didactic approach of prescribing more weight and length to the first syllable and shortening the second, and to continue that in subsequent coupling. His compositions are noticeably more rigid than Conforti's, but his aim is still rooted in speech-like declamation of the text. Ludovico da Viadana was the master at adapting *falsobordone* to differing styles, primarily that of the monody. Viadana provides instruction in the preface material of his *Responsorii* and *Lamentationes* (1609) that indicates the *falsobordone* should be performed slowly with one voice on a part. This is in contrast to the louder *responsories*, where four to five voices would take a part.<sup>7</sup>

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<sup>5</sup> Ibid., 229.

<sup>6</sup> Ibid., 229–30.

<sup>7</sup> Ibid., 246.

S  
verbum iniquum mandaverunt adversum me, di - cen- tes:

A  
verbum iniquum mandaverunt adversum me, di - cen - tes:

T  
verbum iniquum mandaverunt adversum me, di - cen- tes:

Example 1. Viadana, *falsobordone*, transcribed from *Musica Divina*, Vol. IV (Ed. Karl Proske, 1863)

The first example of a *falsobordone* passage in Viadana's *Musica Divina*, Vol. IV, shows the standard practice of starting a verse with the intoned tertian sonority before moving to the cadential pattern. In contrast, example 2 shows the speech-rhythm passage in the middle of the verse, but following a punctuation and internal mediant cadence on the VII chord. These two through-composed pieces utilize the *falsobordone* practice to progress through much of the lengthy prose. However, formulaic *falsobordone*, or Tones, continued to be in use for chanting at the daily Offices. Example 3 shows Viadana's first two of eight *Tonus* in setting the *Magnificat* canticle for use at the Office of Vespers. Each of the eight Tones are presented in a different mode with varying cadential patterns.

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S  
tor Is - ra - el. Deduc quasi torrentem lacrymas per diem et

A  
tor Is - ra - el. Deduc quasi torrentem lacrymas per diem et

T  
tor Is - ra - el. Deduc quasi torrentem lacrymas per diem et

B  
tor Is - ra - el. Deduc quasi torrentem lacrymas per diem et

S  
no - ctem, et non taceat pupilla o - cu - li tu - i.

A  
no - ctem, et non taceat pupilla o - cu - li tu - i.

T  
no - ctem, et non taceat pupilla o - cu - li tu - i.

B  
no - ctem, et non taceat pupilla o - cu - li tu - i.

Example 2. Viadana, *falsobordone*, transcribed from *Musica Divina*, Vol. IV (Ed. Karl Proske, 1863)

# Canticum Magnificat

(in falso bordone secundum octo tonos)

Ludovico Viadana (1564-1627)

The image displays a musical score for the Canticum Magnificat by Ludovico Viadana. It is divided into two sections: Tonus I and Tonus II. Each section features four vocal parts: Alto, Tenor I, Tenor II, and Bass. The lyrics are: "Et exultavit spi-ri-tus me-us in Deo salu-ta-ri me-o." The notation includes treble and bass clefs, a common time signature, and various musical notations such as notes, rests, and bar lines. The Tonus I section starts with a key signature of one sharp (F#), while the Tonus II section starts with a key signature of one flat (Bb). The lyrics are written below the vocal staves, with syllables separated by hyphens to indicate their placement on the notes.

Example 3. Viadana, *falsobordone* Tonus I and II

This approach to implementing *falsobordone* settings in the Office texts was still in practice when Monteverdi wrote the monumental Vespers of 1610, *Vespro della Beata Vergine*. The compositional technique is presented in both the multi-syllabic text set to one sonority as seen in the examples above as well as a notated setting that gives nearly each syllable an equal note value. The opening movement, a call to God, presents the choir in a static tertian sonority essentially chanting in long notes against the florid instrumental decoration. This texture remains

throughout the choral Response and *Gloria Patri*. It is finally resolved in the “Alleluia” codetta that resembles a florid *falsobordone* cadential pattern. In consideration that this writing is related to the speech-like style of *falsobordone*, the static choral texture may be interpreted less as a full-voiced consistent intensity and more as prosodically shaped syllables. The slow pace of syllables over the note-value durations presents a particular challenge in elongating the phonemic shape, but a larger phrase structure emerges in a speech-like interpretation.

### Development of Anglican Chant

The connection between *falsobordone* and Anglican chant is not clear, but there are enough shared attributes to impose some historical association. There was a strong relationship between important English and Italian composers of the 16<sup>th</sup> century. John Aplin makes the strongest case for the influence of *falsobordone* on an English style by distinguishing it from the practice of *faburden* or *fauxbourdon*, which were usually in three voices.<sup>8</sup> Reformation and the establishment of the Church of England brought great change to music and texts in Christian worship. However, the Latin plainsong was manipulated to fit the English language and it retained aspects of the *Sarum Rite*.<sup>9</sup> The desire to chant psalm and canticle texts was still present and the challenges were likely similar to those in Italy: an excess of unmetered prose to be sung and to be understood by a congregation.

Ruth Mack Wilson has traced the history of Anglican chant to the start of the Church of England during the Tudor reign. There is some indirect reference to chant-like recitation in the Elizabethan psalms during the tenure of William Byrd, but the earliest examples of the

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<sup>8</sup> John Aplin, “The Fourth Kind of Faburden,” *Music & Letters* 61, no. 3/4 (October 1980): 245.

<sup>9</sup> Ibid. The *Sarum Rite* is the English variation of the Roman Rite originated at the cathedral city of Salisbury in England in the 11<sup>th</sup> century and was the practice of liturgy and worship prior to the Reformation in the 16<sup>th</sup> century.

homophonic settings of psalm tones are written by Thomas Tallis. These selections of Ps. 119 for Christmas Day propers display enough similarities to Anglican chant that it could be considered the predecessor of the style that developed in the early 17<sup>th</sup> century.<sup>10</sup> The practice of harmonizing the plainsong in four parts is referenced in Thomas Morley's *A Plaine and Easie Introduction to Practicall Musicke* (1597) and are extant in Wanley part books and Peterhouse manuscripts.<sup>11</sup>

The tradition of Anglican chant that is still in practice today was solidified during the Restoration. The common features of a mediant cadence in a related key and the unbalanced 7-bar structure became the standard formula. Wilson proposed that it is possible the phraseology came from the *Matins invitatory* on Psalm 95.<sup>12</sup> It is comprised of a 9-syllable opening clause followed by a 16-syllable answering clause on the text "O come let us / sing un/to the / Lord, // Let us heartily rejoyce in the / strength of / our sal/va-ti/on." The harmonic progression is made up of ten chords, four chords in the first clause followed by six chords in the second clause, in correlation to the uneven syllabic structure. This is considered a single chant and can be extended by another 10-chord progression to achieve the common double chant form that is frequently used. Example 4 demonstrates this common double chant form. In many ways, the developed English compositional aesthetic of strong harmonic relationships with clear declamation of text in the 20<sup>th</sup> century can be traced to the tradition of Anglican chant.

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<sup>10</sup> Ruth Mack Wilson, *Anglican Chant and Chanting in England, Scotland, and America, 1660 to 1820*, Oxford Studies in British Church Music (Oxford: Clarendon Press ; New York, 1996), 45–46.

<sup>11</sup> Aplin, "The Fourth Kind of Faburden," 252.

<sup>12</sup> Wilson, *Anglican Chant and Chanting in England, Scotland, and America, 1660 to 1820*, 79.



Example 4. Anglican chant by Samuel Sebastian Wesley

The psalm and canticle texts are “pointed” to instruct the singer on how the text underlay would progress through the notes of the chant. The objective of the pointer is to retain the natural stresses of the language. The objective of the performer is to restrain from any undue metrical accent associated with the melody and harmonic progression.<sup>13</sup> Alec Wyton states, “...this method underlies the sense of the words and the rhythm of well-modulated speech.”<sup>14</sup> Wyton also refers to the instruction given by Ray F. Brown in the preface to the *Oxford American Psalter* (1949) as the authoritative source of performance practice in Anglican chant. Much of that instruction will be explained and developed in Chapter 5 of this dissertation but it is appropriate to end this section with the following quote from Ray F. Brown:

“Plain chant came first. It was related to the musical pattern of the age in which it originated. The Anglican chant came much later and is related to the modern musical pattern... A psalm chant (Anglican or Gregorian) is a short, simple, flexible piece of music for the singing of unmetrical poetry, especially the psalms and canticles, in such a manner that the free, irregular rhythm of the words can be preserved in the singing.”<sup>15</sup>

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<sup>13</sup> Alec Wyton, *The Anglican Chant Psalter* (New York, NY: Church Hymnal Corp, 1987). vii.

<sup>14</sup> *Ibid.*, vi.

<sup>15</sup> Ray F. Brown, *The Oxford American Psalter: The Psalms and Canticles according to the Use of the Protestant Episcopal Church in the United States of America* (New York: Oxford University Press, 1949).

### *Stile Parlando*

The convergence of speech rhythms in a declamatory style and the new harmonic progressions with consecutive tertian chords, containing root notes in the lowest voice, germinated the genre of monody. This was a development that took nearly three decades between the late 1560s to the 1590s.<sup>16</sup> A significant difference that occurred with Conforti's *Salmi passaggiati* (1601-1603) was the use of a score instead of part books. This provided the accompanist with full knowledge of the singer's rhythmic flexibility.<sup>17</sup> The *seconda prattica* was fully taking shape and it was emphasizing the clarity of text and liberty in performance expressivity. As a leading composer in this new style, Caccini believed the prosodic flow of speech would best inform the rhythm and performance practice of the new song texture of monody. He strongly advocated that a composer should distinguish between short and long, or unaccented and accented syllables.<sup>18</sup> Caccini's ideal of *sprezzatura*, a graceful ease in the rhythmic interpretation of *stile parlando*, implies *rubato*, but more specifically a rhythmic flexibility that is informed by speech.<sup>19</sup>

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<sup>16</sup> Murray C. Bradshaw, "Cavalieri and Early Monody," *The Journal of Musicology* 9, no. 2 (April 1, 1991): 252.

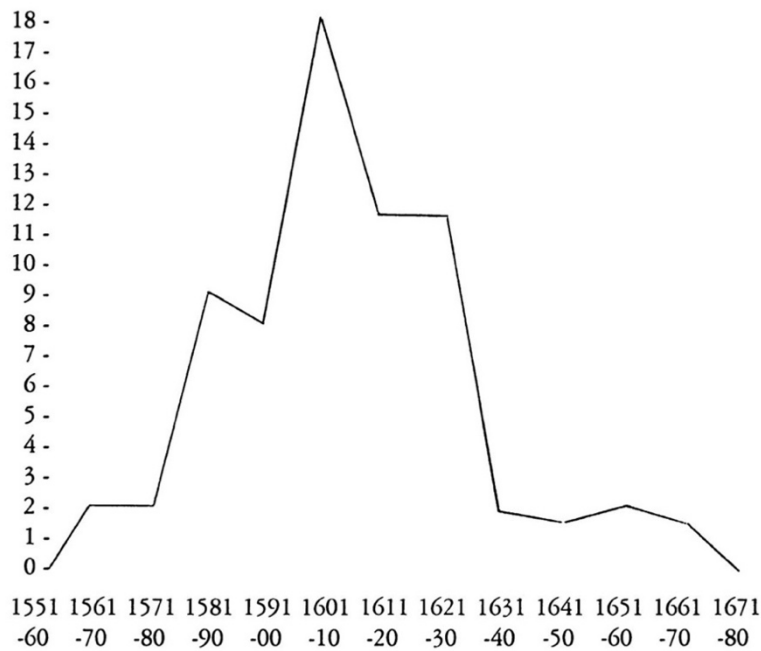
<sup>17</sup> Murray C. Bradshaw, "Text and Tonality in Early Sacred Monody (1599-1603)," *Musica Disciplina* 47 (January 1, 1993): 193.

<sup>18</sup> Caccini, "Le nuove musiche." (Madison, A-R Editions, 1970), 11.

<sup>19</sup> *Ibid.*, 12.

## Baroque Text Declamation

Susan Unmack and Robert Hartwell made the case that the *falsobordone* style was a precursor to the popularity of text declamation in the Baroque period.<sup>20</sup> Their research led to a 1983 article that provided data on the number of published *falsobordone* that showed a substantial peak at the turn of the 17<sup>th</sup> century as displayed in example 5.<sup>21</sup> These data do not include the appearance of the style in works that do not reference *falsobordone* in the title, such as Monteverdi's inclusion of the compositional technique in his sacred and secular works. Unfortunately, their research is left largely undeveloped, but they close with the argument that the *falsobordone* genre had a far-reaching influence over the treatment of text during the burgeoning Baroque period, in addition to influencing the *recitative* and the *toccatà*.<sup>22</sup>



Example 5. Number of *falsibordoni* published by ten-year time periods

<sup>20</sup> Susan Unmack and Robert Hartwell, "Baroque Ideals of Text Declamation and Their Relevance to the 'Falsobordone Genre,'" *Bach* 14, no. 4 (October 1, 1983): 15–24.

<sup>21</sup> *Ibid.*, 17.

<sup>22</sup> *Ibid.*, 19.

Nikolaus Harnoncourt explored the idea of *Klangrede*, or music as speech. His supportive evidence was sourced from Galilei's explanation of effective musical discourse as developed from the nuance of conversational speech.<sup>23</sup> Although much of his interpretation was on the art of the affections, Harnoncourt drew on the intrinsic nature of dialogue to inform the interpretation of the instrumental articulation during this period. He developed a fascinating philosophy of the relationship between words and tones. The foundation of that tenet is the idea that speech was leading the baroque composer to the new and developed mannerism.<sup>24</sup> Harnoncourt believed that the baroque text ideal was lost in the Romantic period since the compositional focus turned to the texture and beauty of the sound.<sup>25</sup>

### *Notes Inégales*

The practice of *notes inégales* in the French performance tradition of early music is a prime example of an instrumental style being influenced by speech rhythms. The performance practice confronted the limitations of notation by culturally devising a nuance of inequality in written note durations to inflect a deeper level of motion within a phrase. Scholars and performers have drawn the comparison to linguistics in the French language and the subtle rhythmic variability in performance.

Timothy Schultz referenced several scholars of French *notes inégales* that suggest instrumentalists should “imitate the natural stress and lingering of the French language.”<sup>26</sup> He

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<sup>23</sup> Nikolaus Harnoncourt, *Baroque Music Today: Music As Speech: Ways to a New Understanding of Music*, ed. Reinhard G. Pauly, Trans. Mary O'Neill, New edition (Amadeus Pr, 1995), 130.

<sup>24</sup> *Ibid.*, 131.

<sup>25</sup> *Ibid.*, 136.

<sup>26</sup> Timothy Schultz, *Performing French Classical Music: Sources and Applications*, Mannes Studies in Music ; No. 1 (Hillsdale, NY: Pendragon Press, 2001), 12.

provided the example of Raymond Erickson, who believed a performer should “think about the nuance of words such as *tendre* [tãd’Rə] instead of trying to imagine mathematical proportions of *notes inégales*.”<sup>27</sup> This remains in line with the practice of French musicians trying to imitate vocal music. Schultz refers to gambist John Hsu and his practice of notating sound images in his score to show an envelope of the articulation and envelope of a sound with prolongation and fading, or decay, to access expressive nuance in his mind’s ear, including the variation that different consonants provide at the onset of sound. “[John Hsu] varies the bow pressure to produce what he calls ‘hard’ or ‘soft’ consonants.”<sup>28</sup>

Robert Donington stated that the degree of inequality is on a spectrum from the mild and lilted to the sharp and rigorous, where notes of equal value would be lilted in a triple relationship or vigorously dotted or over dotted.<sup>29</sup> The important terms used for these rhythmic tendencies are *lourer*, a lilted rhythm of long-short but left to performers’ discretion, not specifically proportional within a triplet; and *couler*, a snapped rhythm where the first note is shortened. Donington distinguished the latter in a sharp articulation similar to the Scots snap or a gentler triplet proportion, often seen in Purcell’s notated values.

Most interesting in Donington’s supportive evidence is his reference to Fray Tomás de Santo Maria, a 16<sup>th</sup>-century organist, composer, and friar in Spain. Tomás addresses inequality in his *Arte de tañer fantasia* of 1565 (art of improvisation) with “vivid descriptions of lilted and snapped rhythms.” He described lingered notes followed by hurried notes by adding a dot and shortening the following note in the pair. Freedom is implied with such qualifiers as: “not too

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<sup>27</sup> Ibid.

<sup>28</sup> Ibid.

<sup>29</sup> Robert Donington, *The Interpretation of Early Music*, New rev. ed. (London ; Boston: Faber and Faber, 1989), 452.

hurried,” and “only moderately,” with a blatant lack of concern for mathematics, rather a focus on expressive proportional discretion.<sup>30</sup> Donington offers further support for the challenge in quantifiable rhythmic inconsistencies by referencing Joachim Quantz’s statement, “It is not possible to determine exactly the time of the short notes after the dot.”<sup>31</sup> The next chapter in this dissertation will offer some empirical data on the rhythmic proportions found in current performers of *notes inégales*.

Although these are strictly instrumental genres, they provide early evidence of incorporating a natural linguistic approach to expression in the time domain of musical phraseology. The prosodic features from the speech-rhythm vocal genres influenced these instrumental models and the sources referenced above conveyed the challenge in describing rhythmic plasticity and the possibility of designing any standard rules for application towards expressive means. Even with the assistance of modern scientific metrics, the incalculable and *je ne sais quoi* terms persist. Looking to linguistic models to inform our expressivity may assist in identifying these subtle rhythmic relationships, not only in verbal music but in many instrumental genres as well. One final resource that Schultz provided is that William Christie, director of the baroque ensemble *Les Arts Florissants*, requires his performers to understand French syntax, syllabic symmetry, and syllabic accent weight as he knows there must be a linguistic approach to instrumental music for it to have a vibrant quality.<sup>32</sup>

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<sup>30</sup> Ibid., 454–55.

<sup>31</sup> Robert Donington, *A Performer’s Guide to Baroque Music* (New York: CScribner’s Sons, 1974), 272.

<sup>32</sup> Schultz, *Performing French Classical Music*, 12.

## CHAPTER 3

### EXPRESSIVE TIME IN MUSIC AND LANGUAGE

It is worth stating again that the scope of this study does not allow for an exhaustive review of the vast amount of literature pertaining to rhythm, meter, perception, and expectation in the time domain. The cognitive neuroscience of music is currently offering new empirical data in this area of music psychology and will be judiciously referenced in this document. This chapter primarily focuses on the theoretical discourse that has taken place during the era of common practice and in the 20<sup>th</sup> century, in regards to the styles within those periods. Specifically, the focus is around the key development of a theoretical modern metrical system that contrasted the *mensural system* of the Middle Ages and Renaissance periods. The theoretical organization of proportional rhythms within a larger hierarchical strata was first codified in the treatise *Principles of Musik* by Charles Butler in 1636.<sup>1</sup>

Framing an historical perspective with a current scientifically supported understanding of expressive timing will help contextualize the purpose of outlining past treatises in this study. It is my intent to show that language was always inextricably related to accentuation and expressivity in music, but the advocacy and practice of those ideals failed to establish any formal methods within a didactic learning model. This is in part due to the indescribable nature of slight rhythmic deviations. Expressive timing in music is the physical measure of deviations in human performance and critical to aesthetic enjoyment. Patel illustrates this point through empirical

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<sup>1</sup> Justin London, "Rhythm," *Grove Music Online, Oxford Music Online*. Oxford University Press, accessed March 18, 2016, <http://www.oxfordmusiconline.com.offcampus.lib.washington.edu/subscriber/article/grove/music/45963>.

research that shows our perceptual system is quicker to reject computer renditions of exact notated rhythms in most music examples and especially rejects them in classical genres.<sup>2</sup>

In the process of cognitive research on the human perception of these timing deviations, researchers have continually drawn a correlation to language. Bruno Repp illustrated this comparison while looking for structural boundaries of timing in instrumental phrasing. He stated, “[t]he activities of producing and perceiving melodic gestures and phrases are analogous in many ways to those of producing and perceiving prosodic constituents in spoken language.”<sup>3</sup> Patel offered a concise review of other recent research that supports the parallel between musically expressive timing and prosodic structure in speech. These rhythmic variations in performance are not simply dismissed by a listener for normalization of musical and spoken phrases, but both linguistic and music cognition researchers argue that these salient discrepancies contain acoustical properties that are retained in the memory.<sup>4</sup>

### **Metric Accentuation**

The advancement of a modern metric system in the 17<sup>th</sup> century was led by Praetorius (1614-19) and Marsene (1636-37), and finally codified by Butler (1639) through published theories that supported unified rhythmic systems. However, it was the work of Mattheson, Kirnberger, and Koch in the 18<sup>th</sup> century that led to the formulation of the relationship between rhythm and meter. William Caplin conceived these developments as innately responding to the

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<sup>2</sup> Aniruddh D. Patel, *Music, Language, and the Brain*, 114.

<sup>3</sup> Bruno H. Repp, “Probing the Cognitive Representation of Musical Time: Structural Constraints on the Perception of Timing Perturbations,” *Cognition* 44, no. 3 (1992): 275.

<sup>4</sup> Patel, *Music, Language, and the Brain*, 116.

compositional practices of their time.<sup>5</sup> These 18<sup>th</sup>-century theorists discovered the importance of emphasizing length over dynamics to articulate an accent, with an explicit correlation to speech rhythms.<sup>6</sup> More specifically, they referred to the internal length of a note (*quantitas intrinseca*) as the primary identifier in weight and accentuation. They were aware of the psychological implications of meter on perceived lengths and accents. Wolfgang Caspar Printz distinguished between the actual length of an event and the listener's perception. Johann Mattheson also embraced this psychological theory by his explanation of the inner content and emphasis within an accentuated note (*innerlich Gehalte und Nachdruck*).<sup>7</sup>

Scholars and performers in the 19<sup>th</sup> century sought to reconcile the differences between metric accentuation and prosodic or poetic accentuation as an aspect of time manipulation. Mathis Lussy distinguished between metrical and expressive accents and gave preference to the latter by stating, "In spite of the importance of the bar, metrical accent must give way to rhythmical accent, and both must in turn give way to the expressive accent, which will always take the lead and rule the others."<sup>8</sup> Hugo Riemann's concern with Lussy's theory was based in the multitude of accent types, of which Lussy provided few to no examples. Riemann then formulated his *agogik* theory in response, which developed Printz and Mattheson's idea of durational weight and inner emphasis as a function of time in a text-music relationship.

Riemann struggled to overcome the lack of specificity in his theories of rhythmic organization and accentuation, however, his quest to impose the temporal weight as the intrinsic

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<sup>5</sup> William E. Caplin, "Theories of musical rhythm in the eighteenth and nineteenth centuries," in *The Cambridge History of Western Music Theory*, ed. Thomas Street Christensen, Cambridge History of Music (Cambridge; New York: Cambridge University Press, 2002).

<sup>6</sup> *Ibid.*, 671.

<sup>7</sup> *Ibid.*, 662.

<sup>8</sup> *Ibid.*, 676.

identifier over hierarchical meter deserves attention within the scope of this research, if even within the most surface level of his schema. He rejected metrical accent and professed it to be subservient to accent required by the musical phrase.<sup>9</sup> Riemann's philosophy of "temporal shading" through the revived term of *agogik* is intended to instruct a performance practice of the durational lengthening of a note for perceived accentuation. This approach could also be coupled with an acceleration leading to the note. Combined with a dynamic contrast, it was Riemann's intent that it be an alteration of time to emphasize accentuation through temporal weight. The relative nature of these perceived accents affected neighboring articulations, which expanded Riemann's theory to identify those relationships through his guiding principle of the ebb and flow or statement and answer; a transfer of weight, energy, and motion from an anacrusis proceeding to crasis. Motion takes the place of periodicity as the defining characteristic of a measure.<sup>10</sup> Strong and weak energy placement does not function to segment pulses into bars, but to create motion as moving toward and away.

Christopher Hasty also made a case for clarifying the relationship between strong and weak or stressed and unstressed beats. He argued, "our feeling of strong and weak arises from internal relationships. The relativity between the two and the quality of duration in between provides the salient features of what has been and what is projected to come."<sup>11</sup> Hasty supported the idea that lengthening, as in classical prosody, is more than metaphorical. Even in sounds of

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<sup>9</sup> Clive Brown, *Classical and Romantic Performing Practice 1750-1900* (Oxford ; New York: Oxford University Press, 1999).

<sup>10</sup> Christopher Francis Hasty, *Meter as Rhythm* (New York: Oxford University Press, 1997), 36–37.

<sup>11</sup> *Ibid.*, 105.

intended equal duration, we may perceive the first beat as longer since it is the beginning of a whole duration and the weak beat, as a continuation, may be perceived as shorter in duration.<sup>12</sup>

### **Prosodic *Rubato***

The first appearance in vocal music of the term *rubato* (robbery, as in stealing time) was seen in the writings of Pier Francesco Tosi in 1723 in reference to the ‘pathetic’ aria.<sup>13</sup> The perceived tension between the melody and accompaniment intensified emotion and expression beyond the written notation.<sup>14</sup> Tosi referred to this technique as anticipation and delay, or the term suspension.<sup>15</sup> After living and performing in London, Tosi’s theory was reinterpreted in the performing practice of English genres. A *strascino*, or *drag* is described as being a most graceful glide in a descending melody and resembles the inequality of *notes inégales*. Quantz was also in London and heard “great passion and expression... in the dragging, sliding, or notes of syncopation, and *tempo rubato*,” which he brought back to Germany in the form of treatises on flute playing.<sup>16</sup> This influenced other German theorists to write about anticipation, delay, and displacement. Agricola, Marpurg, and Kirnberger are notable, but the treatise by Hiller (1780) developed the use of anticipations and retardations in the rhythm of text in song.<sup>17</sup>

Manuel García’s work in 1847 (English translation in 1857) developed the early style *rubato*, a flexibility in melody over stable pulse, yet within the romantic ideal of a later *rubato*,

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<sup>12</sup> Ibid., 105–6.

<sup>13</sup> Hudson, *Stolen Time*, 41.

<sup>14</sup> Ibid., 42.

<sup>15</sup> Ibid., 49.

<sup>16</sup> Ibid., 54–55.

<sup>17</sup> Ibid., 59–60.

where temporal flexibility is present in all parts of the musical texture. His idea of *prolongation* is very much aligned with the tradition of inequality.<sup>18</sup> He holds strong to the aesthetic of the dichotomy between melody and accompaniment because the lengthening and shortening can be most salient and it “breaks the monotony of regular movements, and gives greater vehemence to bursts of passion.”<sup>19</sup> García provided many notated versions of his expressive *rubato*, but failed to communicate the specifics to the reader about how a performer is successful in altering notated rhythms.<sup>20</sup>

The term *parlando rubato* mostly appears in reference to the twentieth-century performance practice of speech rhythms in Bartók’s music. Bartók incorporated Hungarian folk melodies into his music and considered the free, declamatory rhythm as a complementary attribute of that style. Bartók explained the *parlando rubato* practice by saying, “single notes are often diminished or augmented by rational or, still more often, irrational values. The resulting rhythmic flexibility conveys a feeling of improvisation and spontaneity.”<sup>21</sup> This is an apt descriptor of the qualities that would benefit the current choral director in search of a natural aesthetic in prosody.

A similar development of speech-melody in the twentieth century was Janáček’s application of spoken rhythms and inflections of the Czech language in his operas. Janáček believed that speech embodied an “inner life” of emotion conveyed through the intonational

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<sup>18</sup> Ibid., 66.

<sup>19</sup> Ibid., 67.

<sup>20</sup> Ibid., 79.

<sup>21</sup> Ibid., 366.

curve of the utterance.<sup>22</sup> In more than ninety published articles, Janáček developed his theory of speech-melody as containing four components of spoken language: speed of delivery, register, rhythm, and intonation.<sup>23</sup> Janáček states, “I am certain that all the melodic and rhythmical mysteries of music in general are to be explained solely from rhythmical and melodic points of view on the basis of the melodic curves of speech. No one can become an opera composer who has not studied living speech.”<sup>24</sup>

### **Nested Structural Hierarchy**

The most prominent analogue between rhythm of speech and rhythm in music is the concept of nested structural hierarchy. Patel defined rhythmic structure as “the systematic patterning of sound in terms of timing, accenting, and grouping.”<sup>25</sup> The prior sections of this chapter presented a brief overview of the friction between the more isochronous periodicity of metrical accentuation and that of the less stable groupings found in speech.

Cross-domain research in the field of music and language cognition is providing new insight into the correlation between the perception and grouping of utterances. If we assume the musicological theory that a language of a culture influences the music of a culture<sup>26</sup>, of which new studies are continuing to find evidence, then we should aim to discover the inherent

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<sup>22</sup> Paul Wingfield, “Janáček’s Speech-Melody Theory in Concept and Practice,” *Cambridge Opera Journal* 4, no. 3 (November 1, 1992): 282.

<sup>23</sup> *Ibid.*

<sup>24</sup> *Ibid.*, 283–84.

<sup>25</sup> Patel, *Music, Language, and the Brain*, 96.

<sup>26</sup> Mireille Besson and Daniele Schön, “Comparison between Language and Music,” *Annals of the New York Academy of Sciences* 930, no. 1 (2001): 234. See the section “The Old Masters,” which include Rousseau among others that connect music, language, and culture to social and cognitive processes.

linguistic rhythms within the structure of a sung musical phrase. The subtle variation in length and weight in syllables can be imposed upon the notated values to articulate shape within the larger hierarchical phrase structure. The music retains a nested hierarchical timing model, but is shaped by a prosodic paradigm rather than a metrical organization of strong and weak beats. Patel referred to this as a rhythmic phenomenon that is fundamental to both music and language, both of which share cognitive processes for grouping.<sup>27</sup>

The features of language that dictate the nested groupings are often at the phonetic-phonological level.<sup>28</sup> The segmental aspects of phonology, discrete acoustic moments in speech known as phonemes, are nested within *suprasegmental* levels, or the perceptual grouping that is considered prosody.<sup>29</sup> This area of linguistic research is exploring the prevailing idiosyncrasies of rhythmic shape in these phonological aspects of utterances.<sup>30</sup> Several theoretically formulized rules of metrical phonology will be applied to verbal music in Chapter 4 as an example of this type of informed analytical approach.

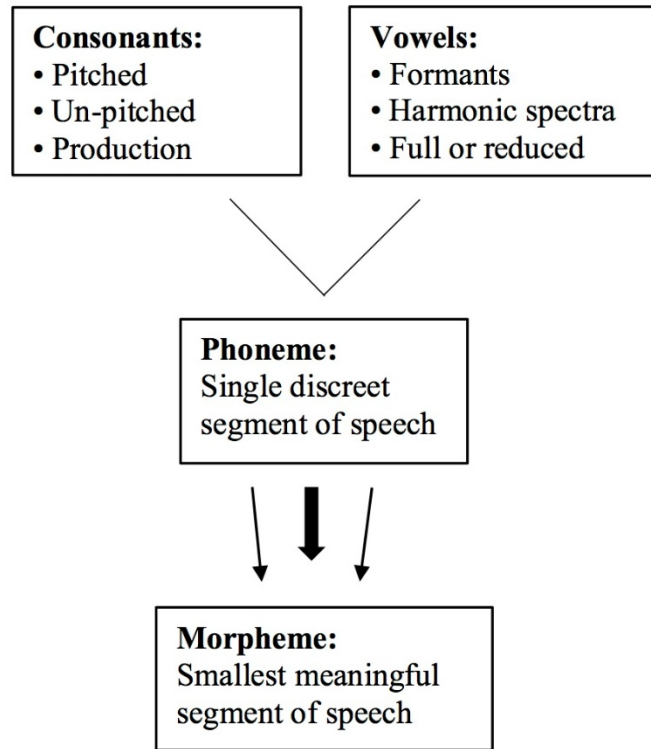
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<sup>27</sup> Patel, *Music, Language, and the Brain*, 112.

<sup>28</sup> Besson and Schön, “Comparison between Language and Music.”

<sup>29</sup> *Ibid.*, 237.

<sup>30</sup> Patel, *Music, Language, and the Brain*, 118.



Example 6. Suprasegmental acoustical components in language

### Inequality

It is worth taking one final look at the French instrumental model of manipulating time before continuing to the phonological aspects that shape weight and duration in rhythmic expressivity of verbal music. Dirk Moelants set out to study how tempo and metrical structure influences expressive timing in violinists and harpsichordists that are trained in the historically informed performance practice of the *inégalité*.<sup>31</sup> The performances of consecutive eighth notes resulted in considerable differences, but maintained ratios between 1.25 (5:4), a slight lengthening in the first value, and 2.0 (2:1), which is at the equal subdivision of a triplet. The

<sup>31</sup> Dirk Moelants, “The Performance of Notes Inégales: The Influence of Tempo, Musical Structure, and Individual Performance Style on Expressive Timing,” *Music Perception* 28, no. 5 (2011): 449–59.

global ratio of inequality was 1.63 (SD = 0.39), close to a ratio of 5:3. Ultimately, it is an affect of a mild triplet. The results primarily indicate that inequality is an expressive means according to personal taste but shows correlation to tempo, melodic structure, and metrical structure.<sup>32</sup>

Moelants also noted how the subjects reported using the French language to access a natural rhythmic inequality. Similar to the John Hsu example given in Chapter 2, these performers referenced the phrase, “*Bonjour monsieur, bonjour madame*” as a typical iambic shape.<sup>33</sup>

This study provides evidence of the performer’s effort to reconcile grouped segments within the pulse strata of metric accentuation and structure. Those are two levels in this particular instrumental genre, however, the addition of sung verbal music will introduce a third architectural level of structure. It is not possible to consider these levels as mutually exclusive, but one can consider how they contribute to the whole of temporal expression and perception. Andy Hamilton, in his analysis of Christopher Hasty’s writings, showed that the musicologist believed the abstract grid of durations and analysis outside of experiential time is counter-productive to understanding a natural regularity.<sup>34</sup> Just as Repp provided evidence of the rhythmic inconsistencies and deviations, Hamilton supported this idea with examples of tiny irregularities or elasticities that characterize a time-feel and present human and musical movement through sound events.<sup>35</sup>

It is possible that Duke Ellington and Irving Mills were not aware of the full implication of their lyric, “It don’t mean a thing, (if it ain’t got that swing).” Natural expressivity is not

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<sup>32</sup> Ibid., 455.

<sup>33</sup> Ibid., 457.

<sup>34</sup> Andy Hamilton, *Aesthetics and Music* (London; New York: Continuum, 2007), 136.

<sup>35</sup> Ibid.

equally proportional in time. “Eighth notes are not created equally” has become a jazz adage, but it is also heard in the rehearsals of traditional concert music. Research shows that, even through a wide mean ratio for variability among individuals, our perception of the subtlest rhythmic irregularities contributes to expressivity. Some research has even shown that rhythmic segmentation proved to be the performer’s greatest malleable feature in expressivity.<sup>36</sup> The perception of time at the level of microseconds emerges as a primary determinant in expressivity and is linked to our human predisposition for understanding the complexities of meaning in language. It would be the choir director’s responsibility to not dilute that intrinsic rhythmic component when attempting to honor the communicability of the text in verbal music.

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<sup>36</sup> Carolyn Drake and Caroline Palmer, “Accent Structures in Music Performance,” *Music Perception: An Interdisciplinary Journal* 10, no. 3 (1993): 343–78.

## CHAPTER 4

### LINGUISTIC PRINCIPLES GOVERNING TIMING IN SPEECH

The purpose of this chapter is to introduce a number of linguistic principles that have been formulated in the past three decades. Much of the speech-domain specific data have supported rhythm in language as a primary identifier in prosodic shape and expressivity. In some cases, timing aspects of prosody has influenced cross-domain research and supports further connections between language and music. Many of these studies are aimed at the structural correlates between linguistic generative theories and structural aspects in instrumental music, as in the language of music model found in Lerdahl and Jackendoff.<sup>1</sup> However, the phonological aspects of linguistic principles also offer insight into speech rhythms that will inform characteristics of verbal music to aid in the choir director's interpretation of prosody.

The sections of this chapter follow the categorical approaches for discovering various rhythmic tendencies in speech. These three approaches are typological, theoretical, and perceptual. Of the typological category, this document will discuss and apply aspects of periodicity/duration and typology, and phonology and typology. The theoretical approach of metrical phonology, which was introduced in the previous chapter, will also be implemented as a tool of analysis. The perceptual approach offers new and fascinating empirical evidence, but I will not develop that material within the scope of this dissertation as the purpose of this study is to guide a pedagogical practice. However, perception is always present in any of the typographical theories and the aural intuition of phonologists and linguists is and has been a primary source for hypothetical inquiry.<sup>2</sup>

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<sup>1</sup> Lerdahl and Jackendoff, *A Generative Theory of Tonal Music*.

<sup>2</sup> Patel, *Music, Language, and the Brain*, 135.

## Stress-Timed vs. Syllable-Timed Languages

The study of linguistics has long sought evidence to support the hypothesis of regular periodicity in spoken rhythms, known as isochrony, as a defining attribute of prosody. The quest for isochrony in speech was finally dismissed after decades of empirical research fell short of supporting the hypothesis. Certain aspects of speech periodicity, however measurable or perceivable, remain a patterning of temporal accentuations and salient groupings. This category of rhythm in speech is known as periodicity and typology.

Prior to the awareness that these rhythmic patterns were largely shaped by phonological phenomena,<sup>3</sup> Kenneth Pike proposed the hypothesis of contrastingly grouped tendencies in differing languages. He categorized languages as either “stress-timed” (English, German, Dutch) or “syllable-timed” (Spanish, French, Italian). These rhythmic tendencies are both found within each language, so no language is strictly stress- or syllable-timed, but each exhibits various combinations of that prosodic rhythm. Amalia Arvaniti provides examples of the two types found in English, in addition to her inclusion of an “uncontrolled” type that does not exhibit strong characteristics of either stress- or syllable-timing as see example 7.<sup>4</sup>

<b>Stress-Timed:</b> The production increased by three-fifths in the last quarter of 2007.
<b>Syllable-Timed:</b> Lara saw Bobby when she was on the way to the photocopy room.
<b>Uncontrolled:</b> I called Gatsby’s house a few minutes later, but the line was busy.

*Example 7. Stress-Timed vs. Syllable-Timed sentences*

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<sup>3</sup> Ibid., 150.

<sup>4</sup> Amalia Arvaniti, “Rhythm, Timing and the Timing of Rhythm,” *Phonetica* 66, no. 1–2 (April 2009): 50.

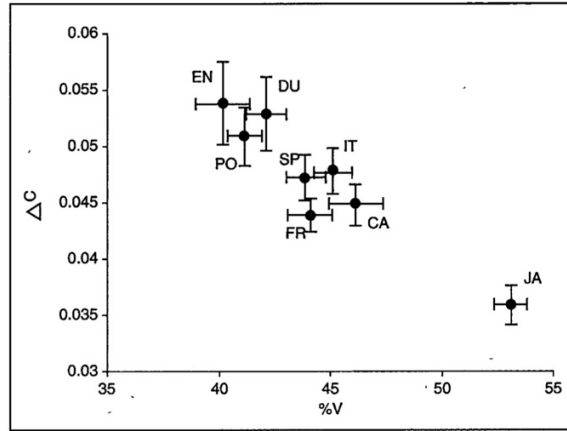
The purpose of her article, and the introduction of an uncontrolled type, was to identify the flaws in the recent metrics of quantifying periodicity in speech, which will be discussed in the next section. However, for the purpose of this study and because of a need to impose the rhythmic characteristics of speech in an ensemble performance of unmetered chant, the concept of finding stress- and syllable-timed tendencies in prose is helpful in ensemble pacing of the prose.

### **Metrics of Speech Rhythms and the nPVI Algorithm**

The development of periodicity and typology was advanced through the phonological approach and new metrics were created to discover intrinsic durations of speech. This is known as duration and typology and for the purpose of this study, I am conflating periodicity and duration typologies in order to support the method of finding these rhythmic tendencies in prose for the purpose of guiding a choral pedagogy. These are empirical measurements of vowel duration (%V) in contrast to variability of intervals between consonants ( $\Delta C$ ). Patel states, “This [research] demonstrated an empirical correlate of traditional rhythmic classes, and has inspired other researchers to examine more languages in this framework.”<sup>5</sup> He provides the graph from Ramus et al. (1999) as an example of stress- and syllable-timed languages plotting respectively within those metrics as seen in example 8. The stress-timed languages of English, Dutch, and Polish have greater intervocalic consonants and a lower percentage of vowel duration while the syllable-timed languages of Spanish, Italian, French, and Catalan plot together with lower consonant variability and higher duration of vowels. Japanese exhibits a unique rhythmic organization known as mora-timed but it will not be discussed within this document.

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<sup>5</sup> Patel, *Music, Language, and the Brain*, 128.



Example 8. Measurement of %V and  $\Delta C$  in eight languages<sup>6</sup>

The development of the normalized pairwise variability index (nPVI) in 2000 by Low, Grabe, and Nolan refined the metrics with consideration for other phonological properties that affect vowel length.<sup>7</sup> This provided a more accurate representation of the mean duration of vowels and consonants in a sequence by looking at neighboring phonological events in a spoken language. Patel provides a similar schematic to example 9 to visually represent the typical contrast between in stress- and syllable-timed languages.<sup>8</sup> The higher nPVI value correlates to stress-timed languages and the lower nPVI value correlates to syllable-timed languages.

Higher nPVI with greater contrast in neighboring durations



Lower nPVI with less contrast in neighboring durations



Example 9. Schematic of relative nPVI in stress- and syllable-timed languages

<sup>6</sup> Franck Ramus, Marina Nespov, and Jacques Mehler, “Correlates of Linguistic Rhythm in the Speech Signal,” *Cognition* 73, no. 3 (1999): 265–292.

<sup>7</sup> Ee Low, Esther Grabe, and Francis Nolan, “Quantitative Characterizations of Speech Rhythm: Syllable-Timing in Singapore English,” *Language and Speech* 43 (2000): 382–83.

<sup>8</sup> Patel, *Music, Language, and the Brain*, 132.

Interestingly, cross-domain research compared rhythm in language to rhythm in music using the nPVI algorithm. Patel and Daniele set out to study how music of a geographical region may have been a reflection of the respective spoken languages in late 19<sup>th</sup>-century England and France. They were able to support a correlation between the spoken nPVI values and the nPVI values of strongly nationalistic musical themes.<sup>9</sup> Other researchers, Huron and Ollen, wanted to broaden the sample size from 318 themes in that study with analysis of 737 English tunes, 1188 French tunes, and 12 other languages. *Agogic* contrast, an accent qualified by duration rather than dynamic, was confirmed in English and French but no conclusions were drawn from the other languages.<sup>10</sup> These authors were able to provide data to affirm the hypothesis that spoken prosody impacts the music of a culture.

A limitation to this method is that the musical nPVI is taken strictly from the notation and does not include performance style, which would be expected to include the variability of rhythmic nuance, especially in the case of France, given the practice of inequality. Patel addresses this by acknowledging the primary concern about individuality of performance and which would be the authoritative sample. He contends that notation is the best representation of the composer's intended relativity in note durations.<sup>11</sup>

This empirical data was considered substantial evidence for the categorization of stress- and syllable-timed languages. Patel and Daniele conducted one more study that used those categories as the subject of further nPVI analysis in a larger sample as a response to Huron and Ollen. They found a contradiction in the correlation of speech and music nPVI in the Austro-

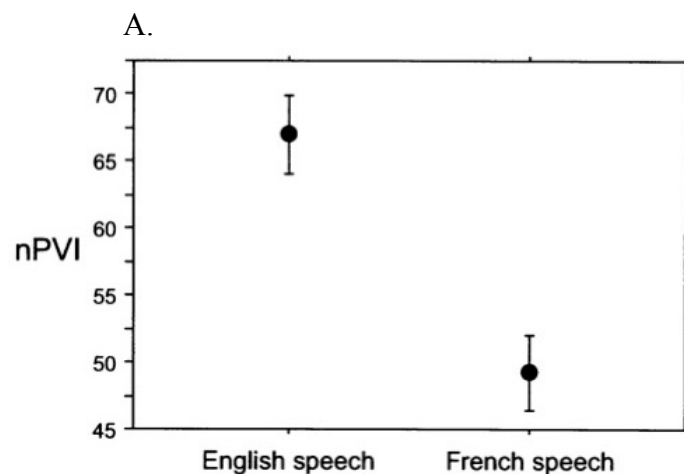
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<sup>9</sup> Aniruddh D. Patel and Joseph R. Daniele, "An Empirical Comparison of Rhythm in Language and Music," *Cognition* 87, no. 1 (February 2003): B35–45.

<sup>10</sup> David Huron and Joy Ollen, "Agogic Contrast in French and English Themes: Further Support for Patel and Daniele (2003)," *Music Perception: An Interdisciplinary Journal* 21, no. 2 (December 1, 2003): 267–71.

<sup>11</sup> Patel and Daniele, "An Empirical Comparison of Rhythm in Language and Music," 40.

Germanic samples. They formulated the “Italian hypothesis,” which postulated that the influence of Italian musical style supplanted the direct influence of an intrinsically stress-timed German language.<sup>12</sup> To test this hypothesis, the authors analyzed the nPVI of Austro-German composers in a chronological order from Buxtehude (b.1637) to Hindemith (b.1895) and found that the nPVI increased over the 250-year span. This may suggest that the Italian influence subsided or that the musical style accommodated larger values. This observation influenced their conclusion that historical influences should be considered when studying linguistic effects on music.<sup>13</sup> The graphs in example 10 show (A) the spoken nPVI values for English and French,<sup>14</sup> (B) the nPVI values for notated melodic themes,<sup>15</sup> and (C) the nPVI values of notated melodic themes from the 250-year span of Austro-German composers.



B.

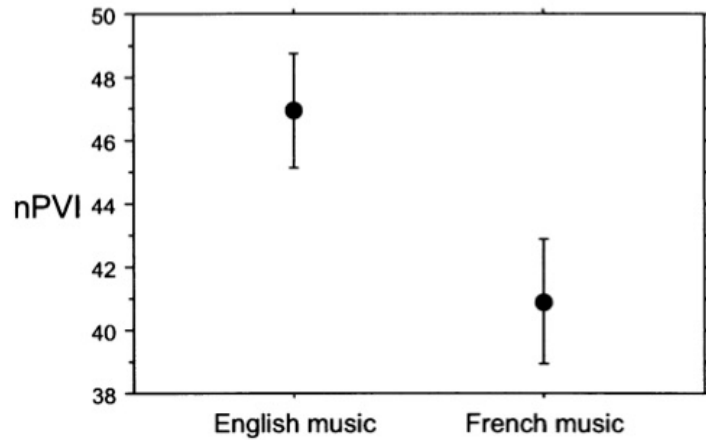
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<sup>12</sup> Aniruddh D. Patel and Joseph R. Daniele, “Stress-Timed vs. Syllable-Timed Music? A Comment on Huron and Ollen (2003),” 2003, 275.

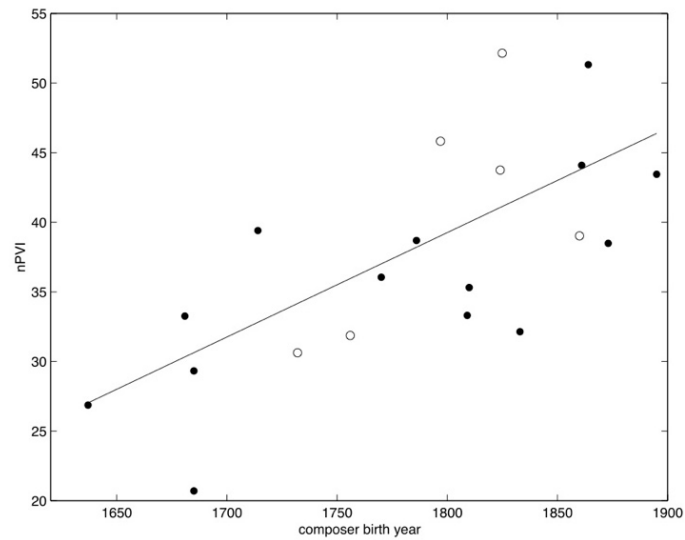
<sup>13</sup> Ibid.

<sup>14</sup> Patel and Daniele, “An Empirical Comparison of Rhythm in Language and Music,” 38.

<sup>15</sup> Ibid., 41.



C.



Example 10. nPVI in speech, melodic rhythm, and over time span for Austro-German composers

In an effort to compare spoken dialects of regional English with performance style in the folk traditions of those areas, McGowen and Levitt applied these metrics to recordings of spontaneous speech and unscored music from the Shetland Islands in Scotland, County Donegal in Ireland, and the state of Kentucky.<sup>16</sup> The results showed further empirical support for similar rhythmic relationships in dialect and musical styles where the greater nPVI of the Kentucky

<sup>16</sup> Rebecca W. McGowan and Andrea G. Levitt, “A Comparison of Rhythm in English Dialects and Music,” *Music Perception: An Interdisciplinary Journal* 28, no. 3 (2011): 307–314.

spoken dialect correlated to the prevalence of dotted rhythms in the performance style of the traditional folk music.<sup>17</sup> Nicholas and David Temperley looked specifically at the Scottish language to find a linguistic correlate in the rhythmic pattern known as a Scotch Snap, a sixteenth-note on a beat followed by a dotted eighth. They found a convincing connection between the presence of the four “short” vowels [ɛ, ɪ, ʊ, ɑ] as in “pet,” “pit,” “put,” and “pot” and their appearance in the Scotch Snap rhythm.<sup>18</sup> The authors believe that this research adds to the evidence that a language and its regional dialects can have an influence over the music of that region.

Although these data do support correlations of spoken rhythms and notated rhythms from the music within those languages, Arvaniti argues that certain metrics are unreliable predictors of rhythm in speech and that all languages display these variable rhythmic tendencies.<sup>19</sup> Gibbon compares the three modern metrics for measuring timing in languages and finds that the general results are quite similar.<sup>20</sup> For the purpose of this document, the prevailing tendencies in speech rhythm will provide an archetypal awareness for the nearness of pacing features. This knowledge of rhythm in spoken language also empirically sets out a starting point from which a choral director can assimilate expressive trends.

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<sup>17</sup> Ibid., 311.

<sup>18</sup> Nicholas Temperley and David Temperley, “Music-Language Correlations and the ‘Scotch Snap’,” *Music Perception: An Interdisciplinary Journal* 29, no. 1 (2011): 60.

<sup>19</sup> Arvaniti, “Rhythm, Timing and the Timing of Rhythm.”

<sup>20</sup> Dafydd Gibbon, “Prosody: The Rhythms and Melodies of Speech,” *arXiv:1704.02565 [Cs]*, April 9, 2017, <http://arxiv.org/abs/1704.02565>.

## Phonology and Typology

This approach to emphasizing the principles of rhythm in speech is based on the idea that the structure of accentuation is a product of the phonological properties in a language.<sup>21</sup> The make-up of these phonological properties influence the patterns of time. Rebecca Dauer's work in the 1980s identified three phonological characteristics as having a guiding effect on rhythm in spoken sentences:

1. Diversity in syllabic structure,
2. Vowel reduction through schwa [ə], and
3. Accentuation through elongation of a vowel.

In other words, there are distinctive syllabic shapes created through the number of consonants (C) in relation to vowels (V), as graphed through CV models. The example word Patel provides is “strengths,” which has a particularly diverse onset and coda modeled by [CCCVCCC]<sup>22</sup>. These properties, in conjunction with reducing the roundness or fullness of a vowel in unstressed phonemes and elongating in stressed phonemes, dictate the rhythmic structure of spoken language.

Dwight Bolinger developed his theories of distinguishing between the use of “full” and “reduced” vowels in language and their influence on rhythm.<sup>23</sup> He did not limit the reduction of unstressed vowels to the schwa [ə], but maintained the idea that other centralized vowels of [ɪ], [ä], and [ö] function equally in the process of vowel reduction. The use of the ‘umlaut’ diacritic is to denote the reduced quality where the tongue is more centralized in comparison to its near-

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<sup>21</sup> Patel, *Music, Language, and the Brain*, 122.

<sup>22</sup> Ibid.

<sup>23</sup> Dwight Bolinger, *Aspects of Language*, 3d ed. (New York: Harcourt Brace Jovanovich, 1981).

front or near-back counterparts. Phonetically speaking, all reduced vowels are formed near the schwa and Bolinger argues that they should be considered a subclass of vowels that predicate syllabic duration in prosody.<sup>24</sup> Bolinger formulates this metrical aspect of phonology in two claims:

1. Alternating full and reduced vowels is a strong tendency in English (stress-timing), and
2. A “lengthening rule” applies where consecutive full vowels are lengthened in comparison to a full vowel in a full-reduced consecutive pair (syllable-timing).

He contends that the full vowel, or long (L) syllable shares some of its temporal weight with a reduced, or short (S) syllable when in a couplet. Therefore, consecutive L syllables are lengthened and perceptually longer than the L in an L-S pair. This supports the variable tendencies of stress- and syllable-timing prosody in English and gleans a particularly focused analysis of textual temporality in verbal music. That insight offers the choir director interpretive reasoning in syllabic articulation and length. Chapters 5 and 6 will provide examples of this approach.

Another layer of Bolinger’s rhythmic patterning observations is in relation to a lexical accent in contrast of pitch, or the rise and fall of frequency in speech. Since vocal music is bound to constraints of pitch, spoken lexical stress of this quality should be temporarily detached from the analysis of locating accentuation through phonemic durations. Awareness of how the melody affects accentuation should always be of concern for the choir director, as in Robert Shaw’s fourth of four primary means to accentuation. The final section of Chapter 6, “The Phonemic Swing and Melodic Accent Structure” provides an example of a melody that could be considered

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<sup>24</sup> Patel, *Music, Language, and the Brain*, 124.

a contradiction to the prosodic structure. In applying phonological considerations, the choir director may emphasize the prosody over the melodic shape. However, the primary purpose of this study is to attempt an isolation of the time domain for expressive means. What is important in Bolinger's claim is his adapting a hierarchical model by examining a second layer and that temporality is a greater determinant of prosodic shape. This further supports the concept of time manipulation in expressivity of verbal music.

### **Metrical Phonology and Prosodic Hierarchy**

Metrical phonology follows the theory that prosodic shape is a hierarchical strata determined by the typological principles mentioned above as well as other systematic phonological features.<sup>25</sup> Some of these features are organized by articulatory constraints and coarticulation phenomena. In line with Dauer's work in phonology and typology, this theoretical approach examines how diverse syllabic structure may be constrained by motor rate of articulation and/or neighboring phones.<sup>26</sup> This interweaving of individual motor movements in coarticulation have also imposed durational variability on vowels and consonants as evidenced through Dennis Klatt's study in 1976 that shows a variety of phonetic factors:<sup>27</sup>

1. Inherent vowel duration where some vowels are shorter in length,

e.g. "bad" vs. "bed," [æ] is longer than [ɛ],

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<sup>25</sup> Ibid., 139.

<sup>26</sup> Dennis Klatt, "Stop Consonant Perception: A Comparison of Several Perceptual Theories," *The Journal of the Acoustical Society of America* 65, no. S1 (1979): S81.

<sup>27</sup> Dennis H. Klatt, "Linguistic Uses of Segmental Duration in English: Acoustic and Perceptual Evidence," *The Journal of the Acoustical Society of America* 59, no. 5 (1976): 1213–17.

2. Voiceless fricatives are longer than voiced fricatives,  
e.g. “sue” vs. “zoo,” [s] is longer than [z],
3. Bilabial stops are typically longer than alveolars and velars,  
e.g. “bum” vs. “bun,” [m] is longer than [n],
4. Final voiced consonant generates longer duration of the preceding vowels in  
comparison to an unvoiced final consonant,  
e.g. “hid” vs. “hit,” [ɪ] is longer before the [d] than the [t].

The articulatory constraints in biomechanical motor functions are often alleviated through pacing in speech. The theory of clash avoidance is found in most languages and might support the alternating principle, where strong and weak syllables tend to alternate. However, Patel points out that the data do not substantially support this principle and that irregular patterns of prominence are not encumbering speech rhythms.<sup>28</sup> English, and other syllable-timed languages do exhibit this tendency because of the distinction of greater variability in phonemic structure and inherent durational properties like the ones discussed above.

In contrast to consecutive stresses, grouping of unstressed phonemes, either consecutively or in groups with a stressed syllable, exhibit prosodic tendencies. These groupings, known as clitic groups, are critical to the five-level hierarchy of prosodic structure suggested by Bruce Hayes.<sup>29</sup> Patel defines this prosodic hierarchy as the “organization of prosodic groupings at multiple levels of speech, ranging from the syllable up to the utterance.”<sup>30</sup> Although lacking

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<sup>28</sup> Patel, *Music, Language, and the Brain*, 142.

<sup>29</sup> Bruce Hayes, “Final Lengthening and the Prosodic Hierarchy,” *The Journal of the Acoustical Society of America* 84, no. S1 (1988): S97. This was also in continuation of work in prosodic hierarchy by Elisabeth O. Selkirk, “The Role of Prosodic Categories in English Word Stress,” *Linguistic Inquiry* 11, no. 3 (1980): 563–605

<sup>30</sup> Patel, *Music, Language, and the Brain*, 109.

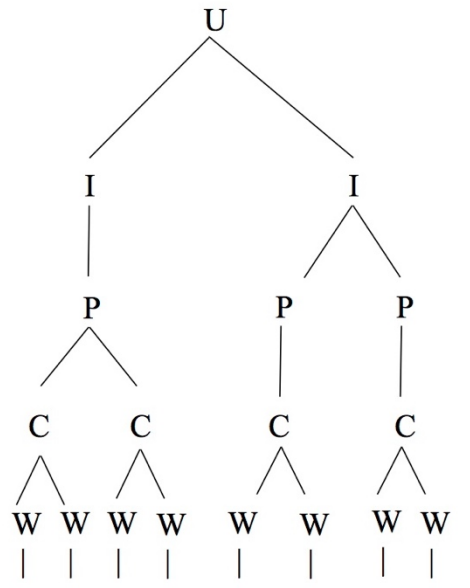
some specificity of phonemic characteristics, Hayes' smallest hierarchical layer is the word, nested within clitic groups, and moves outward to phonological phrases, intonational phrases, ending at the largest layer of the utterance. His tree diagrams are similar to syntactic hierarchies but this approach is guided by phonemic segmentation rather than the syntax in grammar. These clitic groups often present variations in phonemic articulation based on their position in the nested hierarchy. As an example, the [v] in "save mom" is more pronounced than the [v] in "will you [save me] a seat?" since "save mom" does not belong to the same clitic grouping. Hayes proposed this theory as a concept known as consonant deletion.

Clitic groupings have continued to offer phonologists and linguists a distinctive analysis in most spoken languages, but a challenge arises in setting apart the criteria for the various determinants upon those groupings.<sup>31</sup> Phonological properties do play a large role in those distinctions. The following nested hierarchical diagrams show two possible structures of a psalm verse. The first tree diagram attempts to follow the Hayes model of structure, where the second rendering incorporates the above phonological tendencies and considers the word "glad" to be its own clitic group. It is possible to consider four metrical phonology principles governing the word "glad."

1. Consonant structure at onset (CCVC)
2. Articulatory constraint of that onset: [g], voiced velar plosive moving to [l], an alveolar lateral approximate
3. The vowel [æ] is inherently longer than the neighboring vowels of the phonological phrase
4. The final voiced consonant of [d] lengthens [æ] even further

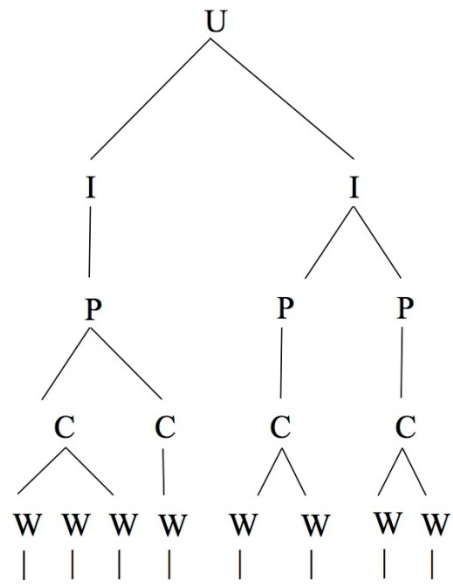
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<sup>31</sup> Andrew Spencer and Ana R. Luís, *Clitics: An Introduction*, Cambridge Textbooks in Linguistics (Cambridge ; New York: Cambridge University Press, 2012), 220.



I will be glad and rejoice in you

A.



I will be glad and rejoice in you

B.

Example 11. Prosodic hierarchy according to metrical phonology  
*U=utterance, I=intonational phrase, P=phonological phrase, C=clitic group, W=word*

Caroline Palmer and Michael Kelly provided interesting cross-domain empirical data to support this phonological hierarchy. In addition, they considered syntactic relations because of the belief that these clitic groups were not entirely independent of structural syntax and these boundaries influenced cliticization.<sup>32</sup> Palmer and Kelly were interested in the musical settings of compound words like “blackbird” and “moonlight,” in comparison to adjective-noun combinations in “black bird” and “soft notes.” It is a linguistic rule that the stress of a compound word is on the adjective as in “blackbird” while the adjective-noun pair follows the nuclear stress theory and the noun is slightly lengthened in “the black bird.” They gathered data on how compound word and nuclear stress rules were set in song compositions by Gilbert and Sullivan, as well as how singers treated them in various alignments within musical meter. The results

<sup>32</sup> Caroline Palmer and Michael H. Kelly, “Linguistic Prosody and Musical Meter in Song,” *Journal of Memory and Language* 31, no. 4 (1992): 533.

showed the singer's use of rhythmic elongation to express syllabic accentuation in both prosody and musical meter. The sung prosodic features aligned with the principles of cliticization, compound word, and nuclear stress rules.<sup>33</sup>

During the same research period as his nested prosodic hierarchical structure studies, Hayes empirically supported a theory of "final lengthening" where segments are extended to articulate phrasal boundaries in speech. Most often applied to the phrase-final, it can also be found in medial placements.<sup>34</sup> The structural implication in gradual retard and phrase-final lengthening goes back to Guido of Arrezzo in the early 11<sup>th</sup> century instruction for Gregorian Chant.<sup>35</sup> Bruno Repp correlated this phenomenon in empirical music-domain research on expressivity through evidence of lengthening at the ends of phrases to mark structural boundaries.<sup>36</sup> His results suggest that one's perception of time is "warped," or displays slight discontinuities that aid in the representation of structure.<sup>37</sup>

The comparison between linguistic and musical hierarchies is a fascinating area of cross-domain research. The purpose in this study is to have an empirical guideline to aid the instincts of prosody in a choir director's artistic vision for their ensemble in terms of phrasing through manipulating time in the notated rhythms. This is by no means an absolute. Even within the science of linguistics and phonetics, research continues to explain these typologies, theories, and neurological perceptions. This comparison only serves as an added analytical layer at the phonological level in order to influence timing plasticities in choral diction, elocution, and

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<sup>33</sup> Ibid., 538.

<sup>34</sup> Hayes, "Final Lengthening and the Prosodic Hierarchy."

<sup>35</sup> Hudson, *Stolen Time*, 5.

<sup>36</sup> Repp, "Probing the Cognitive Representation of Musical Time," 243.

<sup>37</sup> Ibid., 241.

rhythmically proportional ratios. The following table provides a synopsis of the phonological features discussed in this chapter.

<b>Table of Phonological Features Governing Time in Speech</b>	
<b>Tendencies, Principles, or Rules</b>	<b>Definitions or Examples</b>
<p><b>Rebecca Dauer:</b></p> <ol style="list-style-type: none"> <li>1. Diversity in syllable structure</li> <li>2. Vowel reduction through [ə]</li> <li>3. Accentuation through elongation of a vowel</li> </ol>	<ol style="list-style-type: none"> <li>1. “Strengths” is CCCVCCC with 3 diverse phones at the onset and coda</li> <li>2. The schwa [ə] is inherently shorter in duration</li> <li>3. Just noticeable difference (JND) of length in vowels of stressed syllables</li> </ol>
<p><b>Dwight Bolinger:</b></p> <ol style="list-style-type: none"> <li>1. Alternating full and reduced vowels</li> <li>2. Broader concept of vowel reduction</li> <li>3. Lengthening rule in comparing relativity in syllable sequences</li> </ol>	<ol style="list-style-type: none"> <li>1. Tendencies of grouping</li> <li>2. Includes other centralized vowels like [ĩ], [ã], and [ö]</li> <li>3. L-L sequences are slightly longer syllables than Ls in L-S sequences</li> </ol>
<p><b>Dennis Klatt:</b></p> <ol style="list-style-type: none"> <li>1. Inherent vowel durations</li> <li>2. Coarticulatory constraints</li> <li>3. Length in voiced vs. unvoiced fricatives</li> <li>4. Tendencies in bilabial articulations vs. velar and alveolar articulations</li> <li>5. Final voiced vs. unvoiced consonants affecting preceding vowel</li> </ol>	<ol style="list-style-type: none"> <li>1. [æ] is longer than [ɛ]</li> <li>2. A motor consideration of diverse syllable structure as seen in “strengths” above, it occupies more time to produce</li> <li>3. [s] is longer than [z]</li> <li>4. [m] is longer than [n] or [ŋ]</li> <li>5. [ɪ] or [ɛ] is longer before the [d] than the [t], as in “bid” vs. “bit” or “bed” vs. “bet”</li> </ol>
<p><b>Bruce Hayes:</b></p> <ol style="list-style-type: none"> <li>1. Clitic grouping</li> <li>2. Consonant deletion</li> <li>3. Final lengthening to mark phrase boundary</li> </ol>	<ol style="list-style-type: none"> <li>1. Phonological features and prominence dictate tight grouping of unstressed syllables</li> <li>2. This often leads to altering certain phonemes</li> <li>3. Phrasal boundaries articulated by lengthening the final syllable</li> </ol>
<p><b>Caroline Palmer and Michael Kelly:</b><sup>38</sup></p> <ol style="list-style-type: none"> <li>1. Compound word theory</li> <li>2. Nuclear stress theory</li> <li>3. Sung lengthening for accentuation</li> </ol>	<ol style="list-style-type: none"> <li>1. Lengthen adjective in compound words, “blackbird”</li> <li>2. Lengthened noun in adjective-noun pairs, “black bird”</li> <li>3. Singers accentuated through elongation of stressed syllable</li> </ol>

Example 12. Table of phonological features discussed in Chapter 4

<sup>38</sup> These are not the linguists who proposed the theories, but application of those theories in this cross-domain research provides evidence of rhythmic shape, lengthening, or *agogic* accent in the expressivity of the sample singers in this study.

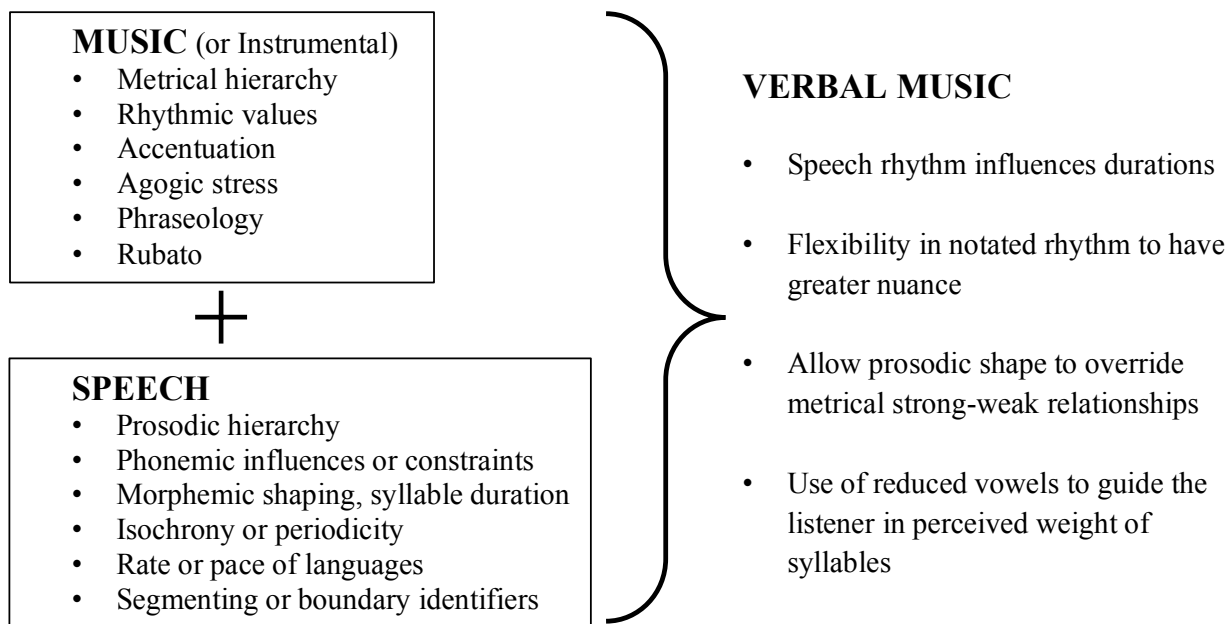
## CHAPTER 5

### LINGUISTIC PRINCIPLES IN VERBAL MUSIC

There are many biomechanical and physiological analogs between the production of both speaking and singing. Both types of vocal production utilize the same breathing anatomical requisites of bones, organs, muscles, and cartilage along with the resonating and articulating components of glottis, laryngeal and pharyngeal shape, oral and nasal cavity, tongue, teeth, and lips. However, singing requires a greater amount of muscular contraction with a coordinated balance of sub-glottic pressure to sustain air flow, harmonic spectra, and intensity or volume in vocal production. Although the purpose of this chapter is to correlate certain linguistic principles to the singing voice, the director and performer are also aware of the required amplification or elongation of these features in order for them to be felt and heard. While Chapter 3 made the case for rhythm as a prominent feature of expressivity, this chapter will identify those linguistic principles that help us understand how to shape the durations of phonemes and morphemes, and their inherent grouping structures from spoken rhythm to a temporal elongation in the music domain. And in the case of metered music, that process will also be mapped over the given notated values in the music to manipulate durations for the purpose of uncovering characteristics of speech rhythm.

To illustrate those elements of both music and speech that makeup rhythmic aspects of expressivity, example 13 shows a list of attributes in both the music domain and the generally correlated attributes in the speech domain. In a theoretical exercise, these attributes are combined to create verbal music that elicits the essence of speech applying a sensitive use of inequality within the limits of rhythmic values. This does not suggest an absolute, but only a guide to understanding how much influence one particular domain may have over another in any given

performance or interpretation. This analytical theory will be developed later in the chapter after the introduction of several linguistic principles.



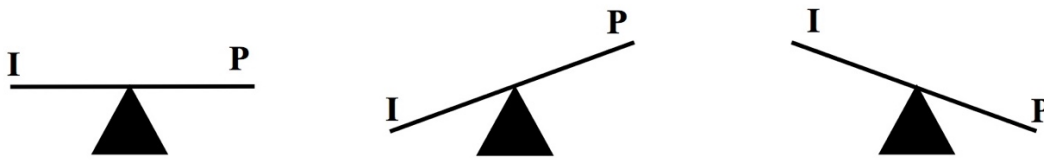
Example 13. Music and speech domains combined in verbal music

### Instrumental Model vs. Speech Model

Following this paradigm, it is possible to suggest that there would be a relative amount of one domain dominating or outweighing the other in any performance interpretation of verbal music. One could consider a scale that hypothetically weighs performance decisions favoring the “musical” aspects of rhythmic expressivity or the speech-like aspects of rhythmic expressivity. I would like to use the term “instrumental” instead of “musical” since the latter term is obviously shared in verbal music. Howard Skinner referred to this distinction as “body rhythm” in opposition to speech rhythms, as that term is indicative of a steady pulse in dance.<sup>1</sup> I would like to consider it as an “instrumental model” for the purposes of this study, which encompasses those

<sup>1</sup> Skinner, “Some Comments on Rhythm,” *The Choral Journal* 8, no. 5 (1968): 22.

attributes in the “music” category of example 13 but also denotes a certain limitation where quasi-static timbral characteristics are specific to instrument type. This concept will also be discussed in the section of this chapter “Singing Vowels vs. Singing Language.” The following analysis considers the hierarchical nature of linguistic principles in the highly metrical baroque genre.

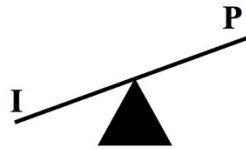


Example 14. Hypothetical scale of instrumental or prosodic influences

As an example of bridging this gap between instrumental ideals and speech rhythms, analysis of phonemic characteristics in three different permutations of baroque declamation will yield a perspective in understanding the degree to which phraseology is weighted in either category. The first chorus in Handel’s *Messiah* includes the utterance, “And all flesh shall see it together,” which contains a particular phonological constraint of the possible double articulation in [ʃ] at the end of “flesh” and beginning of “shall,” as well as the double [t] in “it:together.” This also serves as a good example since the instrumental ideal is so emphatically a dance meter, as is much of baroque music. Ensembles still make decisions about articulation and prosodic shape in this phrase while retaining a metrically brisk *menuet*. It is heard first in the alto section then answered by the tenor section as shown in example 15.



short, almost *staccato*, articulation of quarter notes in the orchestra is sustained throughout this movement. The vocal aesthetic adheres to that model and each eighth-note pair followed by a quarter note in measures 44-45, and respectively 48-49 in the tenor answer, are presented with a considerable *decrescendo* and the sound is truncated before the final consonant. The pronunciation could be represented as, “And all fle() shall see i() together,” where the empty parentheses show a stop in the phonation. Given the importance of the instrumental articulation, this sample is purportedly weighted in the instrumental side of the hypothetical scale.

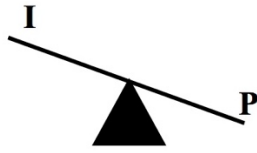


*Example 17. Hypothetical scale for The Monteverdi Choir*

The final sample is taken from a performance by *The Sixteen*, under the direction of Harry Christophers. In this realization of the prosodic features of the text, the singers are either eliding the *coarticulation* of [j] and [t] or performing an extremely light re-articulation of those consonants without any extra space between the two.<sup>4</sup> The result is less vigorous than *Apollo's Fire* and retains a larger prosodic shape. By adhering to linguistic principles, the natural speech-like articulation is preserved and a larger hierarchical grouping is maintained. This performance provides an example of a prosodically-weighted model in the hypothetical scale.

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<sup>4</sup> George Frideric Handel, *Messiah* (Great Britain: Coro, 2008), <http://www.naxosmusiclibrary.com>.



*Example 18. Hypothetical scale for The Sixteen*

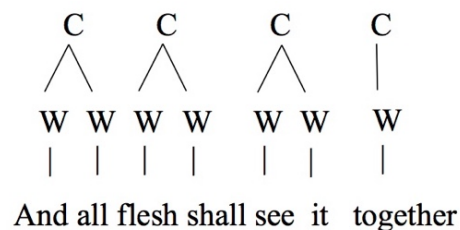
It is worth stating again that this analysis is not deemed an absolute. It simply offers a perspective for listening to details in performance decisions that offer insight into the aesthetic and artistic goals for a choral performance. Furthermore, it provides an agreed upon continuum for the director and their singers. The choir will be able to understand the director's motivation in text articulation when instructing an instrumental model or a prosodic model. The salient, but micro-timing expressivity in phonemic differences between the two are more quickly distinguishable by the ensemble and the need for prescriptive direction is diminished.

### **Metrical Hierarchy vs. Prosodic Hierarchy**

Considering the previous analysis, it is possible to deconstruct the instrumental vs. speech model divergences at the cross-domain hierarchical level. Both domains function in a nested hierarchy but vary greatly in the degree of isochrony, or equal time intervals between accentuated events. Linguistic science has disproven any notion of isochronous speech, however perceived rhythm as a function of periodicity in accentuated events remains a structural entity. Given speech's less exacting framework of periodicity than in music and its irregularity of phrasal patterning, one would expect to find frequent discontinuities between the two domains.

Text settings during the era of common practice most often coincide between syllabic stress and metrical accentuation. However, there will be many instances where it may not. Furthermore, analyzing the prosodic hierarchy at the phonological level reveals nested

subdivisions and clitic-groups, which help identify prosodic subdivisions of stressed-unstressed relationships in an utterance and elicit a larger prosodic phraseology. Example 19 proposes a clitic-group tree diagram of the same Handel phrase referenced above. Even though Spencer and Luís claim that the work of clitic analysis is essential to the relationship between sound structure and utterance structure, they admit to the difficulty in its precision.<sup>5</sup> The application of this linguistic model is strictly viewed as a theoretical exercise.



*Example 19.* Clitic analysis of Handel phrase

In this example, we see an inherently stable text setting within the musical meter. There is an anacrusic quality in the first clitic group of “and all,” which is set to the weaker final two beats in a triple meter. The second clitic group is also made up of two words but could be considered a short noun-phrase with the key word of “flesh.” This noun is arguably the most important word of the utterance and Handel gives it the greatest length of the entire phrase as it fills two beats of the bar. The third clitic group of “see it” could be considered a short verb-phrase but has little to no phonological constraints in its CV.VC phonemic structure. There is a natural elision of the vowel phonemes of [i] and [ɪ] creating the shape of a quickly stressed vowel followed by a centralized unstressed vowel [-̃]. Thus, each syllable occupies one quarter note and the elongated vowel in the word “see” aligns with the metrical weight in beat one. That measure also contains the first phoneme in the last clitic group of “together.”

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<sup>5</sup> Spencer and Luís, *Clitics*, xiii.

Performing the unstressed syllables in each clitic group with a light *staccato* will provide perceptual lengthening to the stressed syllable. In this case, the Gardiner articulation in the above example is ideal to de-emphasize the unstressed syllable, but each does not need to be regarded as equal. Even in the anacrustic clitic group of “and all,” one syllable has a relatively longer duration. This is debatable without fully engaging syntax and semantics, but according to metrical phonology, the phonemic structure of “and” requires a longer duration to speak. So this anacrustic clitic group has a [-~] shape within a *staccato* articulation on the weaker part of the triple-meter bar.

Example 20. Annotated clitic group analysis of the Handel excerpt

The metrical phonology applied to this utterance is supporting an analogous triple-meter accentuation at a hyper-measure level. Considering “flesh” to be the syllable with the greatest phonemic structure and syntactic importance, it is placed on beat 1 of the hyper-meter. Semantically speaking, it could be argued that either the word “see” or the syllable ‘ge’ has greater weight in this utterance. However, in a phonological comparison, the [i] vowel is perceived as longer in duration than [ε] due in part to the tongue’s more centralized location.

Although the Handel example aligns with the musical meter, the above analysis can be useful in phrases that do not innately associate between both domains. This notion is exemplified in another chorus excerpt from *Messiah*. Number 37 *Let us break their bonds asunder* contains

the utterance, “and cast away their yokes from us.” The setting of the first three syllables is not an intuitive connection to the musical meter. Handel’s rhetorical setting depicts the unsteadiness



Example 21. Excerpt from the chorus *Let us break their bonds asunder* by G.F. Handel

of breaking bonds, perhaps the bonds of periodicity. However, this effect may be lost due to the hazard in putting too much emphasis on the metrical structure of this phrase and prosodically inflecting the preposition “and” instead of lengthening the syllable “cast” on the metrically unaccented second beat of this triple meter. The performer must be thoughtfully prosodic in this case instead of allowing the instrumental model to control the rhythmic interpretation.

### Misalignment in Temporal Structures

One final and important observation on the direct relationship between these hierarchical domains is in regards to perception of prosodic misalignment. Since empirical research in linguistics has proven the non-isochronous nature of speech-rhythms, an intentional misalignment of rhythmic durations imposed over the periodic musical meter will generate a more prosodically weighted model in the performance of verbal music. This can be most easily altered in the release of a phrase-final syllable. By synchronizing the final consonant or release of a vowel in vertical alignment with the musical hierarchy, the phraseology would arguably be weighted in an instrumental model.

The practice of shortening the phrase-final syllable to end within a subdivision before the next metrically strong beat elicits the speech-rhythm principle of rhythmic variability. An offbeat

release will be inherently less accentuated than one that occurs within the expectancy scheme of rhythmically predictable beats.<sup>6</sup> This relates to Harnoncourt's *Klangrede* ideals in baroque declamation where a performer does not always adhere to full notated durations by following the principles of linguistic stress.<sup>7</sup> Mark Shapiro summarized Harnoncourt's philosophies on linguistic models serving baroque declamation and the intended ambiguities of notation. Shapiro states, "Harnoncourt distinguishes between two types of written music: one wherein the *work* is notated and another wherein the *performance* is notated."<sup>8</sup> Inferring that the former version of notation is purposefully ambiguous and relies on the interpretive knowledge of a performer. And that interpretive knowledge comes from an understanding of speech-rhythms and prosodic shape.

Turning one final time to number 4 *And the glory of the Lord* from *Messiah*, there is a notated ambiguity in the inconsistencies within the phrase-final words of "Lord" and "it" in the utterance that ends "...hath spoken it." Each appearance varies between a dotted half-note and a half-note followed by a quarter rest on beat three. Harnoncourt performs the majority of these in the shorter permutation in his 1983 recording with the *Stockholm Kammerkören*.<sup>9</sup> It is also worth noting that the final consonants in the words "revealed" and "it" at the end of the movement are mostly imperceptible.

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<sup>6</sup> Patel, *Music, Language, and the Brain*, 146.

<sup>7</sup> Mark Shapiro, "Baroque Music Today: Music as Speech (Ways to a New Understanding of Music) (Book Review)," *The Choral Journal* 34, no. 2 (1993): 51.

<sup>8</sup> Ibid.

<sup>9</sup> George Frideric Handel, "Der Messias" (Teldec, 1983).

Alto mm. 11-14  
and the glo - ry, the glo - ry of the Lord,

Soprano mm. 14-17  
and the glo - ry, the glo - ry of the Lord,

Example 22. Handel's notation inconsistencies of phrase-final durations

Harnoncourt acknowledged an aesthetic change in music around 1800 that moved from the linguistic nature of discourse to the pictorial imagery of romantic ideology.<sup>10</sup> He believed the performance was more specifically notated and individual interpretation was less desirable. Another approach to this belief is that the practice of speech-like inconsistencies in expressivity were slowly diluted. Although the later type of tempo *rubato* was becoming more prevalent, where there was temporal flexibility in the composite parts of the musical texture, there is no evidence that this is connected to any linguistic model.

### Manuel Garcia's Prolongation and the Linguistic Principle of Vowel Reduction

It is possible that the speech-rhythm principle in manipulating durations against a steady pulse lay dormant for the first half of the 19<sup>th</sup> century. When Manuel Patricio Rodríguez García (1805-1906) published the *Traité complet de l'art du chant* in 1847, he introduced the idea of *temps d'arrêt*, or *prolongation*.<sup>11</sup> He instructed that any note in a passage of equal values could be increased in length to increase accentuation. Exercises were given on vocalises without text,

<sup>10</sup> Shapiro, "Baroque Music Today," 51.

<sup>11</sup> Hudson, *Stolen Time*, 65–66.

however they were followed by examples taken from the opera arias by W.A. Mozart, Rossini, and Donizetti.

García gave three characteristics of time: regular time keeps a steady musical meter, free-measure, and a combination of the two. He defined free-measure through its connection to discourse and following accents of prosody, of which chanting and recitative are examples. García refers to “slackening the rapidity of a measure” and “breaking the monotony of regular movements” through the concept of prolongation.<sup>12</sup> In many examples of prolongation he showed a lengthening in syllables of either prosodic accentuation or of those that contain complex phonemic structures; in some instances they share both features.

García did include other examples that were more related to expressivity outside of strict time that enhance the instrumental model, but it is his concept of prolongation as a means of accentuation which correlates to linguistic models and that can be inversely related to the principle of vowel reduction. Bolinger’s research on inherent vowel lengths, which are dependent upon spectral properties and categorized as full and reduced, supports this performance practice of *prolongation* as accentuation.

This inversely related reduced vowel is the phonemic aspect that requires more attention for a singer, and especially within the amplified manifestation of a choral ensemble. The challenge for the singer, who is striving for richness of tone throughout the vocal line, is to allow a reduced vowel to find maximum resonance within in its centralized spectral characteristics. A proper understanding of the linguistic principle then informs us to shorten the duration of that reduced vowel.

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<sup>12</sup> Ibid., 68.

A common frustration for the church choir director is the annual appearance of the utterance “Angels we have heard on high” often set to the French tune of *Gloria*. The quarter notes are emphatically sung as equal durations on the word “angels” and produces equal weight, if not more accentuation on ‘gels’ due to the plosive nature of the [g]. The director’s request for a quick dynamic shift on the unstressed syllable often results in a clunky performance and an unnatural sensation for the singer. Through the application of vowel reduction and its impact on phonemic shape, the singer manipulates timing in order to serve the articulation of the phoneme in the second syllable of the word “angels.” In comparing the phonemic timing in the first word of example 23, it is possible to rhythmically place all the phones in the unstressed syllable on beat two and shorten the time allowed for the centralized vowel. The extreme case would be to remove the unstressed vowel completely and sing the phonemes [ŋg-lz] with the [ɨ] making only a brief fraction of the time as a result of the plosive [g].

A.

[ˈeɪ ŋdʒ-ɛ lz] [wi] [hæv] [hɜːd] [ɔn] [hai]—

B.

[ˈeɪ - ŋdʒɨlz] [wi] [hæv] [hɜːd] [ɔn] [hai]—

Example 23. Vowel reduction and phonemic shaping to alter length of unstressed syllable

### Singing Vowels vs. Singing Language

The example above displays an approximation of the distinction between the aesthetic of singing vowels as opposed to singing the language. These attributes also occur somewhere on the continuum of an instrumental vs. prosodic model. Primarily singing the full vowel with clipped

consonants is indicative of a consistent harmonic series as found in instrumental spectrograms. These are found in the Robert Shaw model of diction and elocution discussed in Chapter 1 of this dissertation. The hard and fast rule of maximizing the length of vowels, squeezing diphthongs into minute rhythmic values (with some exceptions), and the *appoggiatura* treatment of consonants primarily results in a perceptual string of vowels.<sup>13</sup> It was mentioned that Shaw's rules were likely out of necessity for the large choral-orchestral repertoire and his awareness of treating phonemic fragments was highly influential over the American choral sound in the twentieth century. However, the influence of those rules has diluted the natural prosodic shape in the performance objectives of smaller ensembles.

Shaw was well aware of the rhythmic aspects in language but the method to his technique favored the musical model over the linguistic model. "The principal problem in enunciation is not that of acquiring a common vocabulary of phonetic building blocks (that is a necessary and relatively simple acquisition), but of placing these blocks in their precise approved slots in time."<sup>14</sup> The rigid metrical hierarchy seemed to be the most logical approach to getting the large orchestral chorus to articulate with the greatest precision. However, he also recognized that rhythmic agreement within the large chorus has its own challenges. "Area and distance" is a notable difficulty for the large ensemble.<sup>15</sup> But more importantly, Shaw acknowledged the challenge in a collective agreement in feeling and experiencing time.<sup>16</sup>

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<sup>13</sup> Shaw and Blocker, *The Robert Shaw Reader*, 101-102. Shaw refers to the "appoggiatura" treatment where any phonetic sound that precedes the principal vowel should be articulated prior to the beat or rhythmic division assigned to that syllable.

<sup>14</sup> *Ibid.*, 83.

<sup>15</sup> *Ibid.*, 62.

<sup>16</sup> *Ibid.*, 65.

There may be contradictions in Shaw's ideology. He sought to confine linguistic principles into the instrumental model while teaching instrumental phraseology through linguistic structure. Shaw described two or three-note cells in melismatic Bach passages as "syllables" that connect the larger melodic units of "words," each being nested within "phrases" and "sentences."<sup>17</sup> And it should be noted that Shaw describes the theoretically rhythmic approach in shaping "syllables," or individual acoustic events, through the time domain.<sup>18</sup> However, there is a middle ground where linguistic principles can retain rhythmic attributes while being mapped over the metrically rigid time domain in music.

Allowing language to be sung is a natural aesthetic in colloquial music and can be heard in most folk and pop traditions. Our choral repertoire has preserved a connection to the idiomatically folk genres and is now increasingly presented with cross-over arrangements of other popular styles. For the purposes of referencing these genres within this document, I will use the term colloquial music. Singing language in these genres, as opposed to singing vowels, is critical to the inherent expressivity of the style. We understand this, but a danger arises in manipulating the language beyond a natural linguistic model. A good example is the transference of the African-American spiritual from an oral art form to a notated representation of linguistic performance practices. The natural speech became overly prescriptive of dialect such that some score editions and performances generate a caricature of the style.

Is it possible that Shaw's prescriptive rules of elocution may create caricature performances of the traditional choral repertoire, especially within smaller ensembles? Certainly skilled directors and ensemble singers overcome these limitations. Therefore, the question may

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<sup>17</sup> Ibid., 74.

<sup>18</sup> Ibid.

be that if these linguistic principles were developed in our primary music education, would the cultural accessibility to prosodic nuance and rhythmic variability be a more natural technique of expressivity?

### **Unmetered Genres**

I return to the unmetered genres of *falsobordone* and Anglican chant as a choral literature that offers methodology of linguistic principles in verbal music for our ensembles. This choral practice presents the challenge of abandoning the periodic metrical hierarchy in music and the requirement to discover speech-rhythms stretched over a controlled pace of recitation. It is possible to incorporate plainchant as source material in this methodology, but there is an added challenge in the homophonic texture of *falsobordone* and Anglican chant. The choir director will encounter *falsobordone* in some popular works of Monteverdi and Palestrina and should be encouraged to not rely on editorial suggestions provided as an *ossia* that rhythmically notate the passages. Charles Ives does incorporate the compositional technique of setting multi-syllabic prose to a short harmonic progression in his choral works *Psalm 67* (c.1898-99) and *Psalm 90* (1923-24). Example 24 illustrates his treatment of the homophonic chant in measures 16-18 of *Psalm 90*. However, this document will restrict the methodology within the performance practice of Anglican chant for the purposes of quickly assimilating this technique into music with English text.

16 (Chanted)

S.  
2. Before the mountains were brought forth, or ever thou hadst formed the earth and the world, even from everlasting to everlasting,

A.  
2. Before the mountains were brought forth, or everthou hadst formed the earth and the world, even from everlasting to everlasting,

T.  
2. Before the mountains were brought forth, or ever thou hadst formed the earth and the world, even from everlasting to everlasting,

B.  
2. Before the mountains were brought forth, or everthou hadst formed the earth and the world, even from everlasting to everlasting,

16

Example 24. Charles Ives' use of homophonic chant

Alec Wyton acknowledged in his preface to the *Anglican Chant Psalter* “[t]he intent is to bring to Anglican chanting the flexibility and expressiveness of well-modulated speech.”<sup>19</sup> The principles that Ray Brown studied in England during the early twentieth century can be closely associated with subsequent linguistic research. This English tradition in worship was able to retain a spoken style of verbal music through the various periods of aesthetic change and metrical importance over the prior two centuries. Therefore, we can preface this methodology with the principles of good Anglican chant.

<sup>19</sup> Wyton, *The Anglican Chant Psalter*, v.

The tenets of good Anglican chant according to the teachings of Ray Brown during his tenure as Director of Music at The General Theological Seminary can be best described in his own words:<sup>20</sup>

“The pace of the recitation is determined by the two opposing requirements of clarity and fluency; on the one hand, all details of pronunciation should be explicit with pure vowels, clear consonants, and right accentuation; and on the other hand, the movement should be quick and flexible. Attention to the clarity will keep the tempo from being too fast, and attention to fluency will keep it from being too slow.”

“In English the vowels are not all of equal length. If the foregoing principles, especially the careful pronunciation of consonants, are observed in chanting, the syllables will be more nearly equal in duration than they are in normal speech. But the syllables should not be made exactly equal in duration, as is sometimes wrongly done in plainsong psalm chanting in English.”

In a condensed form, the following principles offer generalized rules in realizing speech-rhythms in their lengthened permutation during chant:<sup>21</sup>

1. Lengthening vowels of stress – be aware of short vowels and those that end in the pitched consonants of [l, m, n, or v].
2. Treatment of weak-endings – final weak syllables, especially before a breath should not be given too much weight.
3. Words of three or more syllables are given deliberate time – clarity needs to be a priority in these multi-syllabic words through phonemic distinction in pacing.
4. Vowels in juxtaposition – be careful not to elide or displace accent in such places as “we are” and “he is.”

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<sup>20</sup> Ibid., vii. Wyton includes much of Ray Brown’s introduction in his own preface material.

<sup>21</sup> Ray F. Brown, *The Oxford American Psalter*.

5. Commas observed by prolonging the preceding syllable – this is not a proportional lengthening, nor should it be an abrupt break in the flow of recitation.
6. Do not lengthen an unstressed syllable in moving from the recitation to the cadential patterns.

These general observations offer a broad overview of certain goals and familiar difficulties encountered in Anglican chant. Incorporating other linguistic understanding in speech-rhythm will further the choir director's comfort in leading in this style of chant. Listening for the tendencies of stress- and syllable-timed utterances helps to guide pacing in psalm prose.

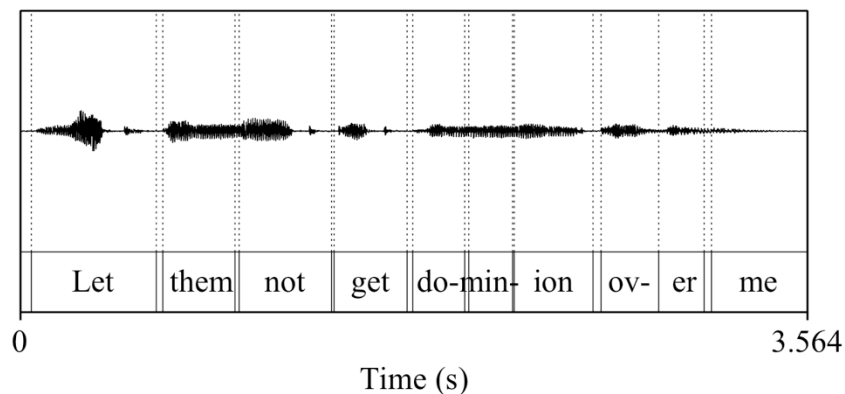
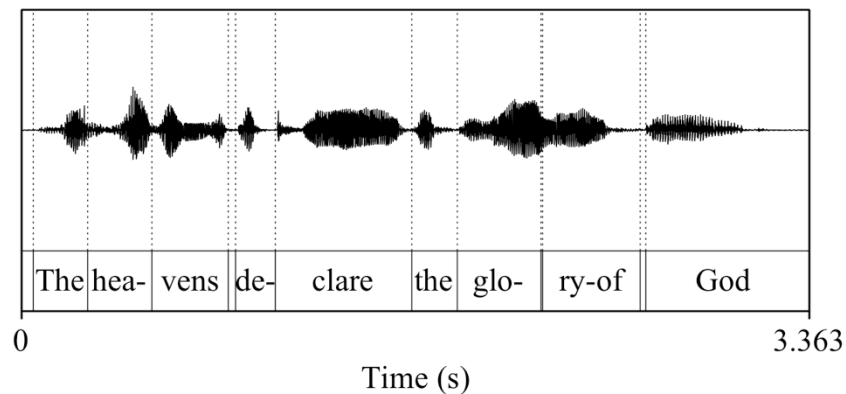
In comparing verses one and thirteen from Psalm 19, one can identify those tendencies:

- |    |   |
|----|---|
| 1  | The heavens declare the glory of God,*<br>and the firmament shows its handiwork.  |
| 13 | Above all, keep your servant from presumptuous sins;<br>let them not get dominion over me;*<br>then shall I be whole and sound,<br>and innocent of a great offense. |

The first verse has a typical English tendency for syllable-timing. However, the first half of the verse displays periodic accentuation closer together and therefore dictates a quicker speech-rhythm. The second half is also syllable-timed but accentuation is further apart and attention to syllable lengthening dictates a broader periodicity and therefore a slower speech-rhythm.

Verse thirteen has a tendency to be a syllable-timed utterance due to the certain attributes of metrical phonology and its lacking a predisposition for Bolinger's principle of alternating full and reduced vowels. Further analysis using both Brown's general rules and Bolinger's lengthening rule shows verse thirteen to require prolongation in many consecutive phonemes. The prepositional phrase "Above all," contains three general rules of Brown's pedagogy; lengthening vowels before [v] and [l], treatment of weak-endings, and observing the comma

through a prolongation of the preceding vowel. From the onset of this verse, a near equal phonemic shape predominates and therefore exhibits tendencies of syllable-timed pacing. The gridlines in example 25 show an approximation of the syllabic grouping in a spoken recitation of excerpts from Psalm 19 where the first excerpt resembles a greater nPVI than the second example.



Example 25. Waveforms of spoken psalm phrases

The syllable-timed utterances in English may be more problematic since the language is intrinsically stress-timed. Furthermore, the singer's metrical *entrainment*, which often seeks to prevail in phrases of grouping ambiguity, entices them to impose unnatural segmentation in the

prosody. In other words, we desire a more regular periodicity and struggle to adhere to the lengthening of syllables, in both the stressed and unstressed type. Now, through an awareness of Kenneth Pike's theory of inherent speech-rhythm tendencies, Bolinger's lengthening rule, and the intuitive principles written out by Brown, the director has an empirically sound methodology and vocabulary in leading ensembles through a convincing performance of a spoken style.

At the core of this methodology is the practice of good monotoning.<sup>22</sup> Choirs should strive to pace language together on a single pitch before advancing to the homophonic chant setting. In order to find natural linguistic points of accentuation, a simple speaking together of the text can expose prosodic shape that might not be as recognizable when speaking alone. This group-speak method also engages the communal aspect of recitation.

### **Rhythmic Plasticity in Metered Music**

The spoken style influence in metered verbal music should elicit a rhythmic malleability, or plasticity, in notated durational values and pulse. Once the choir has experienced the time-domain of speech-rhythms, they are less likely to rigidly adhere to the strict time of music's metrical accentuation and rather follow the prosodic shape of the words. These nuances may be clearly evident in most experienced ensembles as such characteristics are concomitant of expressive singing and poetic communication. However, it is not always heard in a choir's first rendering of a notated score and text expression can often be reserved for the finishing touches in preparing a performance. With the implementation of a spoken-style, text expressivity is more quickly able to shape musical attributes of metric accentuation, pulse, and inequality.

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<sup>22</sup> Ibid.

For the church musician, a hymn presents a viable source of material in which to explore the concept of plasticity. Given the strophic setting of text in a typical hymn, not every verse will coincide with the metric accentuation. Allowing the text to predominate accentuation as an aspect of syllabic duration and articulation, prosodic shape should potentially be revealed independent from the restrictions of music's meter. Hymnody was developed during the 16<sup>th</sup> century where humanist tenets of text clarity and declamation were of utmost priority. Therefore, this approach is particularly useful in much of hymnody that predates the common practice era of organized metric accentuation, but can be applied in any homophonic declamatory textures.

The tune *Victory* is an adaptation from the *Gloria Patri* of Palestrina's *Magnificat* for 4 voices on the third tone.<sup>23</sup> It provides a good example in utilizing plasticity to clarify the prosody as the adaptation of text by William Henry Monk does not naturally coincide with the musical meter. The downbeat of each musical phrase in stanzas one to three begins with the unaccented participle "The." In this joyfully triumphant resurrection hymn, that downbeat will naturally be the strongest pulse in the triple meter following an instrumental model. Example 26 displays verses one and two in order to illustrate the misalignment of text stress and musical meter in the first two verses. The final two verses do begin with metrical alignment and verse four is shown to illustrate that difference. The prosody in verse four would be treated differently and more in alignment with the instrumental model.

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<sup>23</sup> This selection is found in Palestrina's *First Book of Magnificats*, which contains two complete sets of *Magnificats* on each of the eight tones. It was originally published 1591 with a second book of *Magnificats* in larger voicings.

1 The strife is o'er, the bat - tle done, the vic - to -  
 2 The powers of death have done their worst, but Christ their  
 4 He closed the yawning gates of hell, the bars from

1 ry of life is won; the song of tri - umph  
 2 le - gions hath dis - persed: let shout of ho - ly  
 4 heaven's high por - tals fell; let hymns of praise his

1 has be - gun. Al - le - lu - ia!  
 2 joy out - burst. Al - le - lu - ia!  
 4 tri - umphs tell! Al - le - lu - ia!

Example 26. The hymn tune *Victory*, adapted from Palestrina

Giving the prosodic weight to the word “strife” in verse one creates a dissonance with the musical meter. The goal is to not generate a syncopation, but to elicit a smooth flow of speech-like prosody. The syntactic relationships in the utterance “The strife is o’er” are obvious, but applying concepts of metrical phonology also supports an interpretation of prosodic shape through the articulations required in grouping the phonemes and morphemes. This methodology should inspire the salient spoken accentuations to be heard as musically elongated in contrast to

shorter, more staccato articulations of the unaccented *clitic* groupings. Treating the established triple meter of the *instrumental model* as a malleable structure, the *verbal model* can shape our interpretation of expressive time. This document argues that allowing these two aspects to coexist and be reconciled in our interpretation is psychologically different than simply shifting bar lines and altering meter as shown in example 27.

1 The strife is o'er, the bat - tle done,

1 the vic - to - ry of life — is won;

Example 27. The hymn tune *Victory* with metrical shifts

Example 28 will illustrate both the articulations employed to shape the aspects of metrical phonology heard in the spoken text and the approximations of how that may affect rhythmic durations. It is worth stating again that these notated rhythms can only be approximations by virtue of the concept of expressive rhythm within domains of both speech and music. The unquantifiable inaccuracies are found in both prosodic speech-rhythms as well as micro-timing of instrumental model expressivity.<sup>24</sup> Another interesting prosodic aspect shared between the two domains and seen in this excerpt is Ilse Lehiste's theory of phrasal-final lengthening as a boundary identifier in segmentation.<sup>25</sup> The research by Neil Todd within the

<sup>24</sup> Vijay Iyer, "Embodied Mind, Situated Cognition, and Expressive Microtiming in African-American Music," *Music Perception: An Interdisciplinary Journal* 19, no. 3 (2002): 397. "It turns out that these deviations from strict metronomicity both convey information about musical structure and provide a window onto internal cognitive representations of music."

<sup>25</sup> Patel, *Music, Language, and the Brain*, 146–47.

music domain supported phrase-final lengthening as a structural device.<sup>26</sup> In this setting, each phrase-final syllable is given the longest rhythmic duration. It would be assumed that a performance would articulate the punctuation marks with a breath and therefore shorten the dotted half-note value. Similar to the Handel excerpt discussed in the section above “Misalignment in Temporal Structures,” the linguistic approach may be further expressed by an off-beat release of both the vowel and the sung consonant [n] before the breath.

1 The strife is o'er, the battle do[n], the vic - to -

1 ry of life is wo[n]; the song of tri - umph

1 has be - gu[n]. Al - le - lu - ia!

Example 28. The hymn tune *Victory* with articulations and approximate rhythmic *plasticity*

This type of phonological approach can be applied even when the poetic groupings align with the metrical accentuation. There will be instances in hymnody where phrasing is not notated in rhythmic values but expected in performance due to punctuation or the need for breath. The use of the *incise* notation symbol marks those places of attenuating the pulse and slightly

<sup>26</sup> Neil Todd, “A Model of Expressive Timing in Tonal Music,” *Music Perception: An Interdisciplinary Journal* 3, no. 1 (1985): 33–57.

breaking the forward momentum.<sup>27</sup> This is often seen in chant hymns that have also been set in an *isometric* chorale rhythm, where regularity of common meter is the confining structural basis of the text rhythms. There is a requirement to notate that break in momentum in coordination with a breath. Marking this phrase boundary with the linguistic theory of phrase-final lengthening helps articulate these phonemic shapes in time rather than a proportional elongation of the final syllable. Example 28 illustrates a good example of this in the Lutheran hymn *Ein feste Burg*, which is a J.S. Bach harmonization of the original rhythmic version by Martin Luther.

The image shows two systems of musical notation for the hymn 'Ein feste Burg'. Each system consists of a treble clef staff and a bass clef staff. The lyrics are written below the notes. In the first system, the lyrics are 'A might - y for - tress is — our God, a'. The second system has lyrics 'bul - wark nev - er fail - ing; our help - er...'. The notation includes various note values, rests, and a sharp sign in the first system. The word 'fail' in the second system is followed by a long horizontal line, indicating a phrase boundary or a break in momentum.

Example 29. Use of notational *incise* in the *isometric* chorale version of *Ein feste Burg*

It is a common practice to double the length of the phoneme “ling” just before the incise and take a quarter-note value breath before continuing to the next utterance. This is frequently shaped with slowing the tempo just prior to that proportional change in duration. That performance practice favors the instrumental model in phraseology and does not have the same

<sup>27</sup> Episcopal Church, *Hymnbook 1982: The Hymns Together with Accompaniments from the Hymnal 1982*. (New York, N.Y.: Church Hymnal Corp, 1985), 1027.

natural prosodic flow as was intended with the use of the incise to only slightly break the momentum. Furthermore, the application of linguistic principles will prepare the unstressed syllable in a phrase-final lengthening, and allow for a breath to be taken in a temporal space that is not bound to the musical meter.

This is not only important for prosodic hymn singing, but can be applied to much of the metered choral canon that utilizes homophonic textures in isometric rhythms in an intended declamatory style. The colloquial music styles that are more frequently seen in choral arrangements may often be notated in the most simple rhythmic values for ease of reading but rely on performance expressivity to prosodically communicate the emotional and semantic meaning in the text.

Craig Hella Johnson's popular choral arrangement of *Requiem* by American singer-songwriter Eliza Gilkyson provides a possible case for rhythmic plasticity through phonemic inequality in order to elicit prosodic shape. This is also an interesting case because Gilkyson's studio version of this song is performed without much expressive effect in rhythmic alterations.<sup>28</sup> The rhythms are equal and consistent with little variation in prosodic weight. It has a static beauty in this version that is reminiscent of a mantra or invocation. However, a live performance from 2013 posted on YouTube has the altered prosodic rhythms and nuances typical of a colloquial music style.<sup>29</sup>

This analysis is in no way implying that one version is better than the other, but offers an interesting comparison between the two and if nothing else, gives the choir director an approach to finding their interpretation. Similar to the variables governing ensemble diction and tempo, the

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<sup>28</sup> Eliza Gilkyson, *Paradise Hotel* (United States: Red House Records, 2005)

<sup>29</sup> 709Austin. "Eliza Gilkyson - Requiem (Live 2013)." YouTube, 14 Nov. 2013. Web. 06 Apr. 2017. <http://www.youtube.com/watch?v=blaXolwznVQ>.

amount of rhythmic plasticity will also be dependent upon such logistical factors as the number of singers and the acoustic attributes of the performance space. The goal of rhythmic plasticity is to create a natural flow in the prosody that is characteristic of meaningful verbal communication. These characteristics are resistant to quantifiable measures and may be further obscured in the approximate notation. These approximations are only meant as an imprecise indication of the inequality applied to the quarter-note values and how they may fall before or after a pulse or as an aspect of modifying the pulse. Example 29 illustrates the notated version in comparison to one possibility of rhythmic plasticity as approximated in music notation.

mm. 11-13

moth - er ma - ry, full of grace, a - wak - en

A. As written

mm. 11-13

m[ʌ]th - [ə] - m[ɛ] - r[i], f[ʊ]ll [ʌv] — gr[æ:]ce, — [ʌ] - w[æ:]k - [ɪn] —

B. Possible rhythmic plasticity

Example 30. Excerpt of Gilkyson *Requiem* as arranged by Craig Hella Johnson with rhythmic plasticity

## Conclusion

There are a variety of ways in which linguistic principles can affect the isochrony of tactus, the periodicity of meter, and the perceived lengthening of notated durations. Within the typical expressive norms of *rubato*, other directions of tempo adjustments, and purposefully aligned metric accentuation, these linguistic principles of metric phonology can inform a suprasegmental level of expressive time. In standard metrical music, the historically distinctive types of early and later *rubato* remain accurate, but subjective to phonological features. Bartók's term of *parlando rubato* seems to be the best designating label for this type of time manipulation for the means of expressivity.

This idea of a modern *parlando rubato* incorporates both types of traditional *rubati* interchangeably. The early *rubato*, where altered rhythms in a melody or lead voice juxtaposes the steady pulse, is seen in the above example of the hymn tune *Victory*. And the later *rubato*, where the composite sound is temporally shaped and the metric accentuation of inherent strong-weak relationships is reduced, is seen in the example on Gilkyson's *Requiem*. The free use of either *rubato* type according to phonological principles, independently or in conjunction, is the performance aesthetic of rhythmic plasticity in a modern conceptualization of *parlando rubato*.

## CHAPTER 6

### RHYTHMIC PLASTICITY IN PRACTICE

The intent in chapters two through four was to provide evidence of linguistic features as a key attribute of expressivity in the evolution of music through the era of common practice. Chapter 5 provided examples of this concept through both an analytical perspective as well as a brief introduction to the possible application of these theoretical ideas. Further evidence could certainly be extracted from other dramatic genres with the prevalence of various recitative styles, *parlando* in Italian opera of all periods, *sprechstimme* in the early twentieth-century, as well as the wide variety of indigenous styles heard in folk music from around the world. While those cases are arguably overt in their connection to attributes of speech, one should consider that innate aesthetic quality in these styles and imagine how the practice of incorporating linguistic models may significantly inform expressive communication in verbal music, if not all western classical music.

Given the highly interpretive nature of this approach it would be a futile effort to design a didactic approach through specific methodology. These subtle nuances will likely be exceedingly individualized given socioregional aspects of language and music, as well as the stylistic goals in respecting and honoring music of various cultures. However, establishing practices of rhythmic plasticity in a choral method may nurture a flexibility of timing for the whole ensemble that will serve expressivity in either the instrumental model or the speech model. Skinner said, “I know of no clearer measurement of a conductor’s rapport with his group than the clarity of the rhythmic response which he is able to elicit.”<sup>1</sup> Capitalizing on our linguistically rhythmic identifiers that defy quantification, are independent of metrical isochrony, and yet still convey qualifiers of

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<sup>1</sup> Skinner, “Some Comments on Rhythm,” 25.

meaning, should arguably heighten the director and choir's ability to comfortably manipulate time for expressive means.

The following sections outline a potential practice in realizing the group vocal and musical technique of rhythmic plasticity for the purpose of performing meaningful and expressive text. These methods in implementing a practice of rhythmic plasticity are only intended as exercises and not meant to be absolute solutions for a one-size-fits-all performance practice in any of the styles or genres encountered. In addition to style specific attributes, all of the other variables discussed in previous chapters, such as group size and acoustics, are also continually factored into a thoughtful musical interpretation.

### **Unmetered Music as Etudes**

It is important to have a choir experience the unmetered genres explored in this document in order to unbind the entrainment to metrical hierarchy. The renaissance *falsobordone* style will provide the opportunity to pace the syllable-timed language of Italian and practice the subtle elongation of syllables as the salient identifier in accentuation instead of the dynamic accent heard in volume adjustments. In addition to the Viadana and Palestrina mentioned in Chapter 2, Paolo Isnardi (c.1536-1596) published a set of Vesper psalms in 1585 that is primarily in four voices. If expanded voicings are an option, Monteverdi's use of the *falsobordone* style in the motet *Dixit Dominus* of *Vespers* (1610) and the madrigal *Sfogava con le stelle* from his fourth book of Madrigals (1603) are exceptional choices.<sup>2</sup> The use of *falsobordone* is considered a

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<sup>2</sup> Claudio Monteverdi, *Vespers (1610)*, Rev. ed. (Redcroft, Huntingdon: King's Music, 1990). This edition by Clifford Bartlett is recommended as he does not attempt to offer rhythms for the *falsobordone* appearances in this work.

trademark of this madrigal as it contains the only appearance of this declamatory style among all of his secular madrigals.<sup>3</sup>

In any unmetered style, it will be important for the director to utilize the linguistic theory of stress-timed and syllable-timed tendencies. In any language, assume the dominant rhythmic tendency will be encountered, then allow for a contrasting rhythmic tendency to prevail as necessary from the principles of metrical phonology. Considering the Italian in Monteverdi's *Sfogava con le stelle*, one would begin with the assumption of syllable-timed tendencies and seek to equalize consecutive syllables. The stressed syllables will be given slightly longer durations compared to the unstressed syllables but retain relative duration. The first three utterances in the *falsobordone* style are given here with the diacritical marks of syllabic accentuation:

1. Sfogáva con le
2. sótto nottúrno
3. E dicea

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<sup>3</sup> Imogene Horsley, "Monteverdi's Use of Borrowed Material in 'Sfogava Con Le Stelle,'" *Music & Letters* 59, no. 3 (July 1, 1978): 327.

# Sfogava con le stelle

Quarto libro de madrigali

Ottavio Rinuccini (1562 – 1621, doubted)

Claudio Monteverdi (1567 – 1643)

The musical score is written for five voices: Canto (Soprano), Quinto (Alto), Alto, Tenore (Tenor), and Basso (Bass). The lyrics are: "Sfogava con le stelle un infermo d'amore sotto notturno ciel il suo dolore. E dicea fis -". The score includes dynamic markings such as *f* and *f'*, and performance instructions like *SFogaua*. The music is in a common time signature (C) and a key signature of one flat (B-flat).

Example 31. Opening to Monteverdi's *Sfogava con le stelle*

Given the relationship to the metered music that follows, the pace of syllables in the speech-rhythm will be near the chosen tempo, but not bound to it. Applying rhythmic plasticity to the metered music in measures two through five will create a smooth transition between the *falsobordone* speech-rhythms and the metrical hierarchy. In the first utterance, the stressed syllable of “ga” is slightly longer than the surrounding unstressed syllables, which are more equal in duration. The anacrustic aspect in the phoneme “Sfo-” leads to the stressed syllable and

the grouping of the three unstressed syllables that follow gather a slight momentum in propelling towards the next stressed phoneme in the word “stelle.” The second utterance contains two unvoiced stops in the phone [tt]. The vowel that proceeds each appearance will be slightly shorter in relation to the other unstressed syllables. The final utterance in this example does not have a substantially more stressed syllable than any other since typical diphthong endings as in “dicea” are often without stress.<sup>4</sup> This also supports the syllable-timed tendency in Italian and these three syllables can be articulated with equal duration.

Anglican chant may not be the most accessible transition considering the learning curve associated with the pointing system. This system directs the singer as to which syllables move through the harmonic progression. It does take considerable practice but has the potential to instill an entirely new approach to prosodic rhythm. The other benefit to this system is the complete visual disassociation of the text with the notated music. A more accessible option can be found in other variations of unmetred chant, such as the Gelineau settings, which combine metered refrains with unmetred verses.<sup>5</sup> These unmetred verses are notated directly within the staff of notated reciting and inflecting harmonies. This score provides a quicker assimilation for the singer. Likewise, the Charles Villiers Stanford setting of Psalm 150 to Anglican single chant (see Appendix III) is notated with the text in the music staff.<sup>6</sup>







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<sup>4</sup> David Adams, *A Handbook of Diction for Singers: Italian, German, French*, 2nd ed. (New York: Oxford University Press, 2008), 6.

<sup>5</sup> *The Gelineau Gradual: Responsorial Psalms from the Lectionary for Mass for the Sundays and Principal Feasts of the Liturgical Year; Antiphons from the Hymnal Worship II; Psalms from the Grail-Gelineau Psalter*. (Chicago: GIAPublications, 1977).

<sup>6</sup> Wyton, *The Anglican Chant Psalter*, 330–32.

Another possible introduction to Anglican chant is *The 23<sup>rd</sup> Psalm (Dedicated to My Mother)* by Bobby McFerrin.<sup>7</sup> It was originally conceived as an Anglican chant but also appears in a rhythmically notated transcription by Dan Stolper. The transcription is given the expressive marking of “very free, with rubato m.m. = ca.63,” and includes many *poco ritardando*, fermata, and *a tempo* markings. In practicing rhythmic plasticity to attain elongated speech-rhythms, the metronome fluctuates between ca.48 and ca.96 in order to bring the rhythmic ratios closer together and smooth out the phonemic relationships. The quickest note values get the slowest pulse while the longer durations increase the pace of the pulse.

Written Note Value Duration	Variable Metronome	Syllabic Duration
	♩ = 48	192
	♩ = 58	174
	♩ = 68	136
	♩ = 78	117
	♩ = 88	88
	♩ = 96	48







Example 32. Possible variable metronome table to be used in McFerrin’s *23<sup>rd</sup> Psalm*

### The Variable Metronome Etudes

The practice of varying the metronome in imprecise inverse proportions through McFerrin’s *The 23<sup>rd</sup> Psalm* prepares the choir for a flexible clarity in rhythmic nuance. This is

<sup>7</sup> Bobby McFerrin, *The 23rd Psalm*, accessed April 9, 2017, <http://www.aspresolver.com/aspresolver.asp?JAZZ;899472>.

providing a method to achieve the conductor-choir rapport that Skinner was advocating. A director will be forced to explore a variety of space and time in their gesture to properly show these rhythmic relations that are not bound in *isochrony*. Exercises are provided below based on typical rhythmic patterns found in *The 23<sup>rd</sup> Psalm* but generally reflect speech-like patterns in phonemes. The variable tempi will often be dictated by the mood, space, and prevailing pace of a psalm text or other prose. For the purpose of the following etudes, I am applying the variable metronome table shown in example 33.

Written Note Value Duration	Variable Metronome	Syllabic Duration
	♩ = 40	160
	♩ = 50	150
	♩ = 60	120
	♩ = 70	105
	♩ = 80	80
	♩ = 90	60
	♩ = 100	50

Example 33. Variable metronome table for etudes

## Variable Metronome Etudes

A.

(♩=60) (♩=80) (♩=70) (♩=100) (♩=60) (♩=70) (♩=60) (♩=80)

B.

(♩=60) (♩=50) (♩=90) (♩=60) *rit.* (♩=100) (♩=60) (♩=70) (♩=100)

C.

(♩=60) (♩=80) (♩=60) (♩=50) (♩=70) (♩=60) (♩=90) (♩=40) (♩=50) (♩=70) (♩=100)

*Example 34.* Variable Metronome Etudes

The flexibility in tempi through these etudes will prepare the director for finding the moments of periodicity encountered in Anglican chant. Much of the communication of the tempo is directed between the pulses and the director's projection of those relationships will eventually smooth into a flowing cycle of forward momentum and decelerating pace. The rests are also variable in time and will be dependent upon the punctuation or line breaks in the prose. The tenuto articulations given in etude C will be considered a typical default in showing the elongated syllable of accentuation. Be careful to listen for the singer's use of time rather than relying on volume to articulate syllable stress.

This approach of a rhythmic transcription treated in a variable metronome realization will be further shaped through principles of metrical phonology. In addition to the evident aspects in

syntax, metrical phonology will influence rhythmic plasticity. This final layer is directed by how the *phonological* sounds influence the micro-timing of rhythmic aspects at the level of the *phone* and is best shown through articulation marks in the notation. As an example, verse nineteen of Psalm 118 displays typical English stress-timed patterns in the utterances:

19    Open for me the gates of righteousness;\*  
       I will enter them;  
       I will offer thanks to the Lord.

As one would do in Gregorian chant, finding the groups of twos and threes are ideal for gesture patterning. The first utterance begins with a group of three and will be relatively elongated due to its initial position in the phrase. It is followed by two couplets in a long-short articulations and ends with the group of three on the word “righteousness.” This closing word will be given care in clarity and the last phoneme is elongated as a phrase-final boundary identifier. The purpose in notating it as an upbeat release also denotes its function as an unstressed phrase-final phoneme.

(♩ = 80)                      (♩ = 60)                      (♩ = 50)

|| ♩    ♩    ♩                      ♩    ♩                      | ♩    ♩    ♩    ♩

Op - en for                      me the gates of                      right-eous-ness;

['oʊ - pən fɔr                      mi ðə geɪts ʌv                      'raɪ - tʃəs - nəs]

Example 35. Notation of rhythmic plasticity in Psalm 118: 19a

The use in notating the tenuto on the staccato is to denote both the presence of an unstressed vowel and the sung consonant. The inequality heard in the articulations of *phonemes* “me the gates of” shapes the typical L-S relationship that Bolinger attributes as a frequent modifier of speech rhythm in stress-timed languages. This relationship will be discussed further in the section “The Phonemic Swing” of this chapter. Example 36 shows the remaining utterances of verse nineteen in this notational exercise.

(♩ = 60) (♩ = 70) (♩ = 50) (♩ = 60) (♩ = 70) (♩ = 40) (♩ = 70)

I will enter them; I will offer thanks to the Lord.

[aɪ wɪl ɛn - tər ðɛm; aɪ wɪl ʌ - fər θæŋks tu ðə lɔrd.]

Example 36. Notation of rhythmic plasticity in Psalm 118: 19b and 19c

### Repertoire of Inequality as Etudes

Any repertoire of metered music that is reliant upon inequality as a defining feature of its style can serve as an etude for the director and choir to build the skills of rhythmic rapport. Given the baroque performance practice of *notes inégales* and double-dotting, much of that repertoire can be stylized with rhythmic nuances that are not notated. This experience will lead the singer to not rely on their own internal metronome, but rather allow for rhythmic shading to be a result of the director's semiotic gesture or the collective nuance as determined by the ensemble in the absence of a director. That latter scenario is a product of fine-tuned listening from individuals within an ensemble and something all good choirs need to practice. Either way, the goal of using linguistic properties to inform a level of stylized rhythmic inequality can be the objective in this repertoire.

There is still some debate about the use of over-dotting in Handel, but it is certain that he knew the French style and practices of altering long-short relationships through the use of the dot. Handel's inconsistencies in his own notational style is likely due to presence of these practices in performance.<sup>8</sup> Byrt makes the argument that Handel knew the expressive

<sup>8</sup> John Byrt, "Inequality in Alessandro Scarlatti and Handel: A Sequel," *Early Music* 40, no. 1 (February 1, 2012): 91.

characteristic in lilting and vigorous inequality.<sup>9</sup> However, he also acknowledges the difficulty in conveying these subtleties in modern editions.<sup>10</sup> In consideration of many scholars and performers on the subject of historically informed practices, Byrt concludes with “cautious suggestions” in applying inequality to vocal music to benefit expression. Of the four suggestions, the most essential to this research is to apply inequality when the vocal part is primarily a “syllabic word-setting.”<sup>11</sup> This is a significant feature in declamatory textures.

If one feels that the sanctity of Handel’s popular works is not upheld by an application of inequality that may overly stylize a performance, it may be worth exploring the practice in lesser known works or pieces by other composers, such as Domenico Scarlatti and G.P. Telemann. The homophonic declamatory moments can be treated with rhythmic *plasticity* for a delightful contrast to the typical contrapuntal textures. Example 37 shows two places in Telemann’s *Missa Super “Christ lag in Todesbanden”* where the text declamation could be articulated with varying degrees of phonemic lengthening and shortening.

32

S. vo - lun - ta - tis, pax ho - mi - ni bus bo - nae vo - lun - ta - - - - -

A. pax, pax, pax ho - mi - ni bus bo - nae vo - lun - ta - - - - -

T. pax, pax ho - mi - ni bus bo - nae vo - lun - ta - tis, vo - lun - ta - -

B. ra pax, pax ho - mi - ni bus bo - nae vo - lun - ta - - - - -

Bc. ra pax, pax ho - mi - ni bus bo - nae vo - lun - ta - - - - -

<sup>9</sup> Ibid., 107.

<sup>10</sup> Ibid., 108.

<sup>11</sup> Ibid., 109.

72

S. tu - am. Do - mi ne De - us, Rex cae - les - tis, De - us Pa - ter om - ni - po -

A. tu - am. Rex cae - les - tis, Rex cae - les - tis, De - us Pa - ter om - ni - po - tens.

T. tu - am. Rex cae - les - tis, Rex cae - les - tis, De - us Pa - ter om - ni - po -

B. tu - am. Rex cae - les - tis, Rex cae - les - tis, De - us Pa - ter om - ni - po -

Bc. tu - am. Rex cae - les - tis, Rex cae - les - tis, De - us Pa - ter om - ni - po -

Example 37. Telemann excerpts from *Missa Super* “Christ lag in Todesbanden”

Many other genres of colloquial music traditions could be used as etudes in exploring inequality through rhythmic plasticity. Varying amounts of swing in jazz styles may be the most obvious in experiencing inequality. However, folk songs from the British Isles and in early America will provide ample opportunity to manipulate rhythm for expressive means. In doing so, the shape of the language should be more inherently connected to the musical phraseology. These practices are clearly evident in other popular genres as well. Much like the case of *Requiem* in Chapter 5, modern choral ensembles will need to acquire the flexibility of performing rhythms that are not explicitly notated. In some instances, the transcriber or arranger will go to great lengths to produce a score of exact rhythms with a substantial amount of dots and ties in the rhythmic notation. It may be the case that a literal realization of those rhythms in the choir could produce a syncopated and bumpy feel. The solution could be to soften the vigorous quality in the precise notation by applying natural speech-rhythm nuances.

### The Resonant Centralized Vowels

Exercising the concept of centralizing vowels without losing too much vocal resonance will need to be practiced. Assuming that a choir consistently produces good vocal resonance

throughout the *cardinal* vowels of [i, e, ε, a, α, ɔ, o, u], vocalizations can be effective on the centralized vowels and vowels of *rhoticity*, which are the liquid consonants associated with the letter /r/ or the alveolar approximant [ɹ]. Familiarity with the technique of inner resonance is critical to keeping warmth, depth, and roundness of tone in these vowels with less defining characteristics of spectra and formants. The limitations of this document will not allow for a thorough explanation of “resonating vowel space,” but principles of balancing the inner shape of vocal resonators with proper air pressure is implicit in these exercises.<sup>12</sup> This is a primary tenet of group vocal technique at the University of Washington and a pedagogy that Geoffrey Boers developed from the research of Berton Coffin and the practices of *appoggio*.<sup>13</sup>

Stretching the resonators on diphthongs, triphthongs, and vowel glides encourages the sensation of creating space in contrasting vowels. The objective is to listen and feel for consistency of resonance throughout the duration of phonation, or the whole length of the sound from onset to release. Preparing that space in the breath is essential to acquiring resonance at the onset of the sound. The use of words like “wow,” “whoa,” and “whoops” stretch the back vowel spaces while words like “hi,” “hey,” and “sweet” stretch the front vowel spaces.<sup>14</sup> Example 38 provides simple vocalizations that illustrate this concept.

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<sup>12</sup> Geoffrey Boers, “Resonance” (Advanced Choral Techniques, University of Washington, Seattle, Washington, January 21, 2014).

<sup>13</sup> Berton Coffin, *Coffin’s Sounds of Singing: Principles and Applications of Vocal Techniques with Chromatic Vowel Chart*, 2nd ed., 1st pbk. ed. (Lanham, Md.: Scarecrow Press, 2002).

<sup>14</sup> Geoffrey Boers, “Pre or Proto Tonal Warm Ups” (Advanced Choral Techniques, University of Washington, Seattle, Washington, January 13, 2015).

Example 38. Vocalise to set sensation of resonating space

Once the choir is consistent in setting the space prior to phonating and keeping resonance through the above vowel glides, they will be ready to vocalize on a variety of centralized vowels while creating the resonant space of the cardinal vowels above. Instructing the singer to feel the difference between the biomechanical characteristics in these contrasting vowels will help them understand the physiology and aid in motor recall. The eleven individual muscles in the tongue and mouth floor are least engaged in centralized, [ə] influenced vowels, as opposed to the more pronounced forward and back tongue placement in cardinal vowels.<sup>15</sup> The lips are also more neutral in position from the relaxed posture and they neither protrude as in [u] or open as much as in an [a].<sup>16</sup> The soft palate is not as lifted and remains closer to the speaking position. The director's eyes will be as beneficial as their ears in aiding the singer to find the correct posture of oral cavity in these centralized vowels.

<sup>15</sup> Stéhanie Buchaillard and Pascal Perrier, "A Biomechanical Model of Cardinal Vowel Production: Muscle Activations and the Impact of Gravity on Tongue Positioning," *The Journal of the Acoustical Society of America* 126, no. 4 (October 1, 2009): 2041.

<sup>16</sup> *Ibid.*, 2042.

In the following vocalizations on centralized vowels, it is still crucial to set the space during inhalation for the typical cardinal vowel resonance. Have the singer continue to use “wow” or “hi” during the silent intake of air and seek to retain that stretch of inspiratory muscles of the upper thoracic cage. This is characteristic of the *appoggio* technique and will serve healthy *phonation* and resonance in the centralized vowels. When retention of those inner resonant spaces are successful, the timbre of the centralized vowels will tend to be darker for “wow” and brighter for “hi.”

The purpose of this exercise is to train singers to sing the non-distinct centralized vowels with richness of tone through resonance and breath support. These vowels, which are often modified and avoided, can be a valuable part of the singer’s linguistic color palette. It can even become a fun game of making the traditionally “ugly” vowels or the American /r/ sound beautiful. And it is certainly an access point into singing language in time and not just singing the “principal” or cardinal vowel.

1. Have singers speak centralized vowels in short repetitions on their natural fundamental frequency of phonation (F0)
  - a. I.e. [ʊ] as in “put,” “put,” “put” or [ʌ] as in “but,” “but,” “but”
  - b. Bring singers’ awareness to biomechanical features: tongue, lips, palate, jaw
  - c. Possibly relax or neutralize those biomechanical features even further
2. Have singers speak-sing those chosen centralized vowels based on their speech (F0), approximately Bb<sub>2</sub> for men and G<sub>3</sub> for women, around A<sub>2</sub> and A<sub>4</sub> for mixed adult choirs
  - a. Remain a staccato articulation
  - b. Notice shortness of vowel

- c. Continue to neutralize biomechanics, but retain thoracic expansion
- 3. Have singers slowly connect in a legato articulation
  - a. Aim to elongate centralized vowel without modulating the biomechanics
  - b. Tendency may be to create a larger “singing” space than is needed
- 4. Connect the repeated legato articulation to a 3-note melisma
  - a. Aim to keep the quality of the centralized vowel in the melismatic phrase
  - b. Tendency will be to change space in the moving notes, especially by the third

The musical notation is divided into four sections:

- 1. speak 3x:** Three quarter notes on a treble clef staff with a key signature of three sharps (F#, C#, G#). The notes are marked with an asterisk (\*). Below the notes are the phonetic transcriptions [pʊt], [pʊt], [pʊt] and [bʌt], [bʌt], [bʌt].
- 2. speak-sing 3x:** Three quarter notes, each with a dot below it, indicating a longer duration. Below the notes are the phonetic transcriptions [pʊt], [pʊt], [pʊt] and [bʌt], [bʌt], [bʌt].
- 3. legato:** Two quarter notes, each with a dot below it, followed by a melisma of three eighth notes. Below the notes are the phonetic transcriptions [pʊt], [pʊt], [pʊt] and [bʌt], [bʌt], [bʌt].
- 4. melisma:** A melisma of three eighth notes, each with a dot below it, followed by a quarter note. Below the notes are the phonetic transcriptions [pʊt] and [bʌt].

Below this, a second staff is labeled "repeat 2. to 4. in chromatic steps etc...". It shows the same sequence of notes as section 2, but with a chromatic step down in the final note of the melisma. Below the notes are the phonetic transcriptions [pʊt], [pʊt], [pʊt] and [bʌt], [bʌt], [bʌt].

Example 39. Centralized vowel vocalise from speaking to singing

The singers will then be able to graduate to longer and higher melismatic vocalizations on these centralized vowels. The vowels provided in example 40 illustrate some of the centralized vowels with their *rhotic* counterparts. Due to the similar biomechanical structure, these sound very similar and the *rhoticity* is often a by-product of a vowel glide. All of these are dependent upon dialect. For instance, the difference between [ɜ] and [ɝ] in the word “curve” characterizes the distinguishable quality of British English and American English, respectively.

etc...

"again" [ə] [ə]  
 "editor" [ə] [ə]  
 "curve" [ɜ] [ɜ]

etc...

"include" [i] [i]  
 "beard" [ɪ] [ɪ]  
 "put" [ʊ] [ʊ]  
 "air" [ɜ] [ɜ]

Example 40. More advanced *centralized* vowel vocalise

### The Phonemic Swing in Melodic Accent Structure

The rhythmic by-product of long-short phonemic pairs, which are typical features in stress-timed languages, creates a lilting swing proportion. Much like the jazz tradition of notating straight eighth note values with a performance practice of inequality, which is understood as approximating a 2:1 ratio, the long-short in a typical triplet subdivision. Friberg and Sundström found that there are deviations in jazz musicians' swing ratios and downbeat delays, but that tempo has a consequence on those ratios and they will often be larger ratios at slower tempi.<sup>17</sup> They concluded that ratios were much greater than 2:1 in jazz drummers and actually averaged closer to 3.5:1.<sup>18</sup> The same features of inconsistent and tempo relative inequality in language is prevalent in morphemic pairs.

<sup>17</sup> Anders Friberg and Andreas Sundström, "Swing Ratios and Ensemble Timing in Jazz Performance: Evidence for a Common Rhythmic Pattern," *Music Perception: An Interdisciplinary Journal* 19, no. 3 (2002): 333.

<sup>18</sup> *Ibid.*, 348.

This section shows an application of rhythmic plasticity of performing inequality based on phonological properties in typical morphemic and accentuated/centralized vowel pairs that are notated in equal durations. The relationship between melody and accompaniment also plays a role in this melodic expressivity. In classical repertoire, performers commonly play the melody 20-30 milliseconds before the voices of harmony.<sup>19</sup> Palmer studied this micro-timing relationship to “melody-lead” voices as identifiers in expressive intentions.<sup>20</sup> This is in contrast to the “laid-back” feel of playing a melodic voice behind the beat, or other off-beat relations as in the jazz idiom.<sup>21</sup>

The purpose here is to utilize the intrinsic duration of the long-short phonemic shape in the linguistic model to dictate the variable inequality and intentionally structure it in a misalignment to the metrical hierarchy. In other words, a subtle phonemic swing with a combination of “melody-lead” and “laid-back” appearances are used to articulate prosodic motion. Example 41 illustrates this application in music from *Where the Earth Meets the Sky* by Z. Randall Stroepe. Movement 2, *The Pasture* depicts an American rural scene in his setting of the poem of the same name by Robert Frost.<sup>22</sup> The composition is inviting a prosodic rendering with directions of “Simply expressive” and “unhurried” in addition to his use of mixed metrical hierarchy and parabolic dynamics.

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<sup>19</sup> W. Goebel, “Melody Lead in Piano Performance: Expressive Device or Artifact?,” *The Journal of the Acoustical Society of America* 110, no. 1 (2001): 563–72.

<sup>20</sup> Caroline Palmer, “On the Assignment of Structure in Music Performance,” *Music Perception: An Interdisciplinary Journal* 14, no. 1 (1996): 23.

<sup>21</sup> Friberg and Sundström, “Swing Ratios and Ensemble Timing in Jazz Performance,” 345.

<sup>22</sup> Z. Randall Stroepe, *Where the Earth Meets the Sky: 2. The Pasture* (Indianapolis, IN: Colla Voce, 2000).

Text: The Pasture by Robert Frost

I'm going out to clean the pasture spring;  
I'll only stop to rake the leaves away  
(And wait to watch the water clear, I may):  
I sha'n't be gone long.—You come too.

I'm going out to fetch the little calf  
That's standing by the mother. It's so young,  
It totters when she licks it with her tongue.  
I sha'n't be gone long.—You come too.

mm. 5-6 *unhurried*  
*mp*  
I'm go - ing out to clean the pas - ture spring:  
*mp*

Example 41. Excerpt from *The Pasture*, Z. Randall Stroope

This pastoral melody presents an interesting challenge for the prosodic shape of the text as the highest note is heard twice on unaccented syllables. The phonological accentuation in the couplets of “going” and “clean the” dictates a long-short (L-S) phonemic swing but melodic emphasis may contradict this linguistic intention. Two elements that oppose the linguistic L-S shape should be considered. First, the perceptual emphasis of the higher note (c.f. Shaw’s means of accentuation) and secondly, the possibility that a young or amateur singer might unintentionally accent this note due to lack of breath support. Phonological principles and rhythmic plasticity can aid in counteracting these tendencies.

Perceived loudness of a singer is a complex study in psychoacoustics due to many factors that are beyond the scope of this research.<sup>23</sup> However, given the principles within this document, one may assume the relative degrees of intensity and duration in the following exercises. Have singers perform three or four variations of the second phoneme in the word “going.”

1. [gɔʊ-ɪŋ] – cardinal vowel, increased perceptual intensity in [ɪ]
2. [gɔʊ-ĩŋ] – centralized vowel, decreased perceptual intensity in [ĩ]
3. [gɔʊ-(i)ŋ] – extraction of vowel, further decrease perceptual intensity
4. [gɔʊ-ɪn] – replace [ŋ] with [n] for American colloquial dialect as in *goin'*<sup>24</sup>

Aim for supported and connected singing without any added dynamic modulation, then ask the ensemble to assess their perception of loudness and duration. The exercise may also help guide the group’s awareness of intrinsic phonological accents. The fourth iteration is only intended as a possible interpretation; several other alterations would be required throughout the text to be consistent in that dialect.

The same exercise can be applied to the “clean the” couplet where “the” is modulated from the open and back vowel in [ðɑ] to the more centralized [ðə]. Less distinct harmonic spectra in the centralized vowel lessens perceived loudness. Further encouraging the natural linguistic sensation of shortening the the centralized vowel will shape the inherent phonemic swing. And similar to the variables of a jazz swing, which is adjusted linearly to tempo and not bound to a 2:1 ratio of a triplet subdivision, the phonemic swing is adjusted to phonological characteristics as well.

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<sup>23</sup> Johan Sundberg, “Perceptual Aspects of Singing,” *Journal of Voice* 8, no. 2 (1994): 115–17.

<sup>24</sup> This follows the Bruce Hayes principle of consonant deletion in clitic grouping.

This application can be applied to other melodies in this piece for expressive effect and to aid in unintentional non-prosodic accentuation. Example 42 shows Stroope’s development of the original motive in a melodic contour that contains an ascending skip to the unaccented syllable of “water.” This musical phrase also has the first appearance of a dotted rhythm, which aligns with Frost’s punctuation of a comma after the word “clear.” Even though that comma does not appear in the score, the rhythmic setting elongates the word to show the phrase boundary. In a rhythmically plastic interpretation of the prosody, this rhythm could be considered closer to a double dotted inequality. The immediately subsequent repetition of the text and melody does not contain this dotted rhythm and could be further distinguished through an elongation of “I” in a mild *coulter*, or S-L variety of inequality. In addition, a slight hesitation in the arrival of the downbeat in measure sixteen will rhythmically identify the phrase-final ending.

mm.13-16 *mf*

(And watch the wa - ter clear I may,

and watch the wa - ter clear I may,

Example 42. Excerpt from *The Pasture* with annotated articulations to illustrate plasticity

### Conclusion

This chapter offered only examples of preliminary methods to practicing rhythmic plasticity in verbal music and any approach mentioned here could be developed further depending on the level of the ensemble. Another result of this practice is the strengthening of the

director-choir rapport in expressivity. A flexibility of music making in the moment becomes an artistic undertaking for the director and the singers. In this paradigm, the rigid schema of metrical accentuation and proportional note-values is no longer the authority on how music is shaped in time. The structural aspects of utterances, intonational phrases, clitic groups, words, morphemes, and phonemes can become the overriding hierarchy of how a choir conceives and perceives the durational nuances of expressive text.

Friberg and Sundström concluded their research on the ratios of swing in jazz drummers with the need for pedagogical applications in experiencing micro-timing nuances. They acknowledge that “most pedagogues and musicians claim that good timing is the most important factor in jazz playing. When timing exercises are suggested, there are often simplifications that can lead to undesirable results.”<sup>25</sup> Many of the exercises in this chapter could suffer from the same over-manipulated treatment. That is certainly not the intent. Rather, the subtle deviations in timing should result from an equilibrium between micro-timing awareness and the *sprezzatura* slips and faulty rhythms.

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<sup>25</sup> Friberg and Sundström, “Swing Ratios and Ensemble Timing in Jazz Performance,” 344.

## POSTLUDE

The philosophical question of how temporality in music is experienced remains. Curt Sachs pondered the space between chaos and mechanization in time, with many possible “shades” between freedom and strictness in rhythm and meter.<sup>26</sup> He asserts that rhythmical liberty is neither considered as disobeying a law nor inferior to strict time keeping, it is just different, but connected by a smooth transition of motion.<sup>27</sup> Sachs refers to Riemann’s revived Greek term of *agogic* in describing this manipulation of time.

Alf Gabrielsson noted that the majority of empirical research between 1995 and 2002 in music performance is specific to ‘timing’ as it relates to durations of single notes or other subtle deviations from expectations.<sup>28</sup> Areas of phonological research continue to uncover inherent rhythmic patterns at the level of the phoneme in consonantal and pitch perturbations, which has been termed microprosody.<sup>29</sup> And cross-domain research in auditory cognitive neurosciences are finding greater links between the perception of music and speech prosody, specifically as it relates to word stress.<sup>30</sup>

In addition to the research disciplines listed above, a narrow field of study known as musico-linguistic anthropology has emerged through a combination of ethnomusicology, anthropology, and linguistics.<sup>31</sup> In this interdisciplinary approach, researchers analyze sung

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<sup>26</sup> Curt Sachs, “Rhythm and Tempo: An Introduction,” *The Musical Quarterly* 38, no. 3 (1952): 388.

<sup>27</sup> *Ibid.*, 388-389.

<sup>28</sup> Alf Gabrielsson, “Music Performance Research at the Millennium,” *Psychology of Music* 31, no. 3 (2003): 225.

<sup>29</sup> Gibbon, “Prosody.”

<sup>30</sup> Hausen, Maija et al., “Music and Speech Prosody: A Common Rhythm,” *Frontiers in Psychology* 4 (2013).

<sup>31</sup> Feld and Fox, “Music and Language.”

verbal texts to bridge textual and musical domains in a cultural inquiry of folk traditions and contemporary popular genres.<sup>32</sup> Analyzing the expressive roles of phonology and phonetics in sung music, Tyler Bickford observed these linguistic aspects as elements of form and structure in certain American vernacular music.<sup>33</sup> Through an analysis of Bob Dylan’s recorded version of “Down the Highway,” Bickford claims, “the linguistic systems of sound and meaning mediate the sensory and semiotic modes of expressivity in singing.”<sup>34</sup> He concludes that the role of language sounds in music is mostly an unexplored analytical tool in understanding how the shared discourse agents in speech and music are rooted in culture.<sup>35</sup>

It can be argued that those same colloquialisms belong to a similar aesthetic as the *Klangrede* philosophy, of which Harnoncourt’s understood to be discourse in the baroque text declamation. Would analysis of the phonologically shaped speech rhythms in a corpus of American popular song result in an organized patterning of structural aspects of expression? Nicholas and David Temperley’s research into how the accented unstressed vowels in spoken British English are the likely origin of the Scotch Snap rhythm resulted in further support for linguistic rhythm shaping musical rhythm. Their hope in publishing that claim was to “stimulate this inquiry into other cultures where specific characteristics of language and speech can explain distinctive features of national music style.”<sup>36</sup>

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<sup>32</sup> Ibid., 31.

<sup>33</sup> Tyler Bickford, “Music of Poetry and Poetry of Song: Expressivity and Grammar in Vocal Performance,” *Ethnomusicology* 51, no. 3 (2007): 439–476.

<sup>34</sup> Ibid., 442.

<sup>35</sup> Ibid., 466.

<sup>36</sup> Temperley and Temperley, “Music-Language Correlations and the ‘Scotch Snap,’” 62.

The Baltic tradition of choral music offers a useful case study of how language prevails in aspects of style, structure, and performance practice. Song accompanied everyday life for the people of Estonia; work songs, songs of thanksgiving, lullabies, nature songs, songs of mourning, love songs, and songs for dance, games, and feasts, are among the many various types. The unique characteristics of the Finno-Ugric language, especially the durational, or quantity-related, features of spoken Estonian, has influenced a choral aesthetic that continues today. Relative length in certain phonemes, that are otherwise identical, change the meaning of the word. For example, the word “sata” can mean three entirely different things (“hundred,” “send,” and “get”) depending on the length of the first /a/.<sup>37</sup>

Ross and Lehiste measured the durations of acoustical segments in syllabic folk songs based on the notation, meter, and speech prosody. “The purpose of this study is to investigate the relationship between word-level prosody, the meter, and the notation in the timing of the Estonian folk song performance.”<sup>38</sup> The researchers were able to support the presence of microdurational variations in the performance of the notated melodies.<sup>39</sup> The semantic differences in phonemic durations are reduced in the musical meter, but still evident.<sup>40</sup> The authors formulate the hypothesis that Estonian music accommodates speech characteristics of phonemic durations but not prosodic stress in the consolidation of poetic meter, musical rhythms and melody, and speech rhythm.<sup>41</sup> This amalgamation of language in music can still be heard in

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<sup>37</sup> Patel, *Music, Language, and the Brain*, 114.

<sup>38</sup> Jaan Ross and Ilse Lehiste, “Timing in Estonian Folk Songs as Interaction between Speech Prosody, Meter, and Musical Rhythm,” *Music Perception: An Interdisciplinary Journal* 15, no. 4 (1998): 321.

<sup>39</sup> *Ibid.*, 329.

<sup>40</sup> *Ibid.*

<sup>41</sup> *Ibid.*, 331.

new choral compositions by Estonian composers in the Estonian language. The aesthetic is defined by truly singing the language.

Applying the hope for inquiry from the Temperleys, and the methodology of analysis from Bickford, is it possible that American linguistic features could determine a more inherently expressive communication of text in verbal choral music? Is diluting the phonological characteristics of our cultural speech to produce a European instrumental model of the common practice era impeding a development of a uniquely American choral aesthetic in new compositions? This is not to suggest that it hasn't happened; the African-American spiritual tradition and its choral performative evolution is likely the best case study, but other genres could benefit from such defining and empirically supported characteristics of expressive aesthetics.

This document has intended to illustrate a linguistic approach in expressive timing. The flexibility in a conceptual rhythmic plasticity is derived from the attributes in a given language or regional dialect. As demonstrated above, these attributes are most familiar to us in the understanding of style and particularly prominent in colloquial music found in indigenous folk traditions. In a current American choral culture of cross-over genres, and new composers that embrace popular music idioms, these practices will be an even greater necessity in performing a naturally prosodic singing style. Understanding and practicing the skills of how the language is sung in choral music, especially those arranged from oral traditions, could benefit from a linguistically informed pedagogy. As the pedagogy is specific to language and dialect, it should be applicable to any culture and style. It is possible that this approach will further distinguish performance aesthetic in a variety of styles, both current and historical.

Ultimately, the choir director should continue to teach these subtle nuances by rote. The collective understanding of how metrical phonology inherently shapes time allows the director

and their singers to strengthen their rhythmic rapport of prosody. This approach informs rote learning and should aid in its retention among singers within the ensemble. A formalized notation system would greatly improve this methodology and will be considered in future work. It is possible that symbols for phonemic shaping could also be used to annotate instrumental parts and scores to direct the musicians performing without text towards a linguistic approach to phraseology.

## APPENDICES

### Appendix I: Glossary of Terms

#### *Agogic accent*

“A qualification of expression and particularly of accentuation and accent. The qualification is concerned with variations of duration rather than of dynamic level.”<sup>42</sup>

#### *Appoggio*

Italian meaning “to lean.” The noun is used to reference the vocal technique based in a balance of breath support and control with corresponding phonation and resonance.

#### *Cardinal vowels*

The eight primary vowels of distinctive character and extreme anatomical relations as developed by the research of Daniel Jones, phonetician.<sup>43</sup> [i, e, ε, a, ɑ, ɔ, o, u].

#### *Centralization*

In vowel quality, this process denotes a more central tongue position in comparison to a vowel’s tongue position of full quality, which would be more front or back. This ultimately gives the vowel a schwa [ə] influenced sound. IPA uses the umlaut symbol as in [ĩ ẽ ö].

#### *Clitic groups*

The second innermost level in the five-level prosodic hierarchy as developed by linguist Bruce Hayes in 1989. His is a liberal use of a term clitic as the current definition is more specifically related to truncated words in dialectical speech that rely on their neighboring words

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<sup>42</sup> Matthias Thiemel. "Agogic." *Grove Music Online. Oxford Music Online*. Oxford University Press, accessed April 1, 2017, <http://www.oxfordmusiconline.com.offcampus.lib.washington.edu/subscriber/article/grove/music/00296>.

<sup>43</sup> Daniel Jones, *An English Pronouncing Dictionary (on Strictly Phonetic Principles)* (JMDent & sons, limited;--EPDutton & co; etc, etc, 1917), xx, <http://hdl.handle.net/2027/mdp.39015030997020>.

to be contained in a group with possible elision or deletion of consonants and most importantly having unstressed components.<sup>44</sup>

### ***Coarticulation***

The physiological articulatory placement of one phone in relation to the physiological articulatory placement of its neighboring phone.

### ***Colloquial music***

A general term to denote popular genres in music that incorporate language in its informal permutation that often follows natural speech-rhythms as heard in blues, folk, and early rock, among others.

### ***Baroque Text Declamation***

A text setting that focuses on the clarity and dramatic quality of the words themselves. A key feature of the Baroque period that was developed from earlier *parlando* genres.

### ***Entrainment***

Cognitive recognition and expectancy of a cycle or period. A listening strategy where internal markers are generated based on recurring accentuations in music.<sup>45</sup>

### ***Falsobordone***

A chordal recitation of root position triads originally based in a Gregorian psalm tone. The style originated in the late 15<sup>th</sup> century for the purpose of singing psalms and other liturgical

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<sup>44</sup> Andrew Spencer, *Clitics: An Introduction*, Cambridge Textbooks in Linguistics (New York: Cambridge University Press, 2012).

<sup>45</sup> Candace Brower, "Memory and the Perception of Rhythm," *Music Theory Spectrum* 15, no. 1 (1993): 26–27.

*prose*.<sup>46</sup> This research draws its connection to *Stile Parlando*, Anglican chant, and baroque text declamation.

### ***Formants***

Regions, or frequency bandwidths, of intensity in the spectrogram in vowel sounds. These regions of excitement in the spectra give a vowel its distinctive and perceptual quality.

### ***Incise***

A musical notation often found in chant hymns denoted by a vertical tick across the top line of the staff in order to denote a “slight break in momentum.”<sup>47</sup>

### ***Inequality***

The practice based in French performance tradition of *notes inégales* where equal notated durations are performed with varying degrees of asymmetry for expressive purposes.

### ***Instrumental model***

This term is used to denote the characteristics of the music-domain that are not intrinsically related to characteristics of speech in verbal music. Primarily used in this document to refer to the metric accentuation, rhythmic precision not related to prosody, and articulation not related to phonetic principles.

### ***Intonational phrase***

The largest phonological unit in which an utterance can be divided that has a prominent point of accentuation and contains syntactic structure.

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<sup>46</sup> Murray C. Bradshaw. "Falsobordone." *Grove Music Online*. *Oxford Music Online*. Oxford University Press, accessed March 31, 2017, <http://www.oxfordmusiconline.com.offcampus.lib.washington.edu/subscriber/article/grove/music/09273>.

<sup>47</sup> Episcopal Church, *Hymnbook 1982*, 1027.

### ***Isochrony***

An outdated linguistic theory of speech-rhythm that postulated an equal division of time between stresses in spoken languages.

### ***Matins invitatory***

The invitational call to worship for the morning office hour chanted on Psalm 95.

### ***Mensural system***

System of rhythmic notation developed during the 13<sup>th</sup>–16<sup>th</sup> centuries where each note is given a specific durational value in contrast to the free rhythm of chant.

### ***Metrical hierarchy***

The schema in music of proportional rhythmic durations that accentuate strong-weak relationships in familiar, periodic patterns.

### ***Metrical phonology***

A linguistic theory of prominence in speech which was inspired by hierarchical patterns in music. This approach “seeks to uncover the principles that govern the rhythmic shape of words or utterances in a given language or languages.”<sup>48</sup>

### ***Monody***

Accompanied solo song developed as the defining genre of the *seconda prattica*. It featured a speech-influenced performance practice in text declamation.

### ***Monotoning***

The practice of chanting prose on a single pitch to focus on grouping natural speech-rhythms.

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<sup>48</sup> Patel, *Music, Language, and the Brain*, 118.

### ***Morpheme***

The smallest meaningful unit in a language, can be free or bound in reference to their functioning alone or requiring a conjunction.

### ***Morphology***

pertains to the study and description of how the phonetics of a language are formed and structured.

### ***Parlando rubato***

A term Bartók used specifically in describing a declamatory singing style in Hungarian folk music where meter, rhythm, and tempo are not in strict time. As a general aspect of folk music, it denotes “a metrically uneven presentation reminiscent of speaking tempo.”<sup>49</sup>

### ***Periodicity***

Recurrence of accentuations in regular intervals. Although support for even generalized periodicity in linguistics is largely unsupported, the labels of stress- and syllable-timed languages still persist.<sup>50</sup>

### ***Phone***

Any single discreet sound in speech.

### ***Phoneme***

The smallest significant sound in speech.

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<sup>49</sup> Norm Cohen. "Folk music." *Grove Music Online. Oxford Music Online*. Oxford University Press, accessed April 6, 2017, <http://www.oxfordmusiconline.com.offcampus.lib.washington.edu/subscriber/article/grove/music/A2241135>.

<sup>50</sup> Patel, *Music, Language, and the Brain*, 121.

### ***Phonology***

The system of contrastive relationships among the speech sounds that constitute the fundamental components of a language.<sup>51</sup>

### ***Phonation***

The production of vocal sounds.

### ***Prepositional phrase***

A phrase, usually within an intonational phrase, that begins with a preposition.

### ***Principal vowel***

A term used by Robert Shaw to denote the vowel of “relatively great sonority” in comparison to other phonetic sounds in a syllable or word.<sup>52</sup>

### ***Prose***

A literary medium distinguished from poetry especially by its greater irregularity and variety of rhythm and its closer correspondence to patterns of everyday speech.<sup>53</sup>

### ***Prosody***

The patterns of stress and grouping within an utterance to express meaning.

### ***Prosodic hierarchy***

The theoretical analysis of prosodic structure in an utterance where levels of relative prominence are subsumed, or contained within larger levels of segmentation.

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<sup>51</sup> *Oxford Dictionaries*, s.v. “Phonology,” accessed April 6, 2017, <https://en.oxforddictionaries.com/definition/phonology>.

<sup>52</sup> Shaw and Blocker, Robert, *The Robert Shaw Reader*, 102.

<sup>53</sup> *Merriam-Webster's collegiate dictionary*, s.v. “Prose,” accessed April 6, 2017, <https://www.merriam-webster.com/dictionary/prose>.

### ***Rhotic***

A phonetic quality that affects a vowel sound with the influence of an /r/ color.<sup>54</sup>

### ***Rhythmic plasticity***

The concept of manipulating time for expressive means, as in *rubato*, within the constraints of music's metrical hierarchy. For the purposes of this study, the decisions in manipulating time are guided by phonological features in *prosody*. The term *plasticity* was introduced by Howard Skinner.<sup>55</sup>

### ***Sarum Rite***

The variation of the Roman Rite originated at the cathedral city of Salisbury in England in the 11<sup>th</sup> century and was the practice of liturgy and worship prior to the Reformation in the 16<sup>th</sup> century.

### ***Seconda prattica***

The second practice established at the turn of the 17<sup>th</sup> century that exhibited a preference for the intelligibility and declamation of text with vertical harmonic sonorities as seen in *monody*.<sup>56</sup>

### ***Spectra***

The plural form of spectrum in reference to the harmonic make-up of a vowel sound in a spectrogram. See *Formants*.

### ***Sprechstimme***

“Speak-sing” developed in the early twentieth century as a half-sung vocal technique.

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<sup>54</sup> Merriam-Webster's collegiate dictionary, s.v. “Rhotic,” accessed April 6, 2017, <https://www.merriam-webster.com/dictionary/rhotic>.

<sup>55</sup> Skinner, “Some Comments on Rhythm,” 23.

<sup>56</sup> Don Michael Randel, *Harvard Concise Dictionary of Music* (Cambridge, Mass.: Belknap Press, 1978).

### ***Sprezzatura***

Renaissance Italian term that describes an effortless show of grace in achieving something. Caccini references this style when describing speech elegance in the rhythmic interpretation of song.

### ***Stile parlando***

The spoken style of the late Renaissance that sought to elicit natural speech-rhythms as an expressive feature. This term was also a direction in instrumental music in order to discover a quality of discourse in phraseology.<sup>57</sup>

### ***Stress-Timed***

A typological theory of periodicity in speech-rhythm where at the intervals of stresses within a given language are regular. I.e. English, German, and Russian.

### ***Suprasegmental***

Linguistic features of an utterance that denote boundaries and groupings of segments in a hierarchical layer of accent cues in *prosody*.

### ***Syllable-Timed***

A typological theory of periodicity in speech-rhythm where each syllable is spoken at roughly the same rate within a give language. I.e. French, Italian, and Spanish.

### ***Unmetered music***

Music that does not have meter or regular periodicity. I.e Gregorian chant or plainsong, *falsobordone*, Anglican chant and other forms of liturgical chant.

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<sup>57</sup> "Parlando." *The Oxford Companion to Music*. Oxford Music Online. Oxford University Press, accessed April 1, 2017, <http://www.oxfordmusiconline.com.offcampus.lib.washington.edu/subscriber/article/opr/t114/e4987>.

***Verbal music***

Vocal music that is intended to express and communicate the text through clear and intelligible language.

***Vowel reduction***

A phonetic weakening of a vowel most often through *centralization* that results in a de-emphasis of that vowel and affects its duration in a phoneme.

## Appendix II: International Phonetic Alphabet

### THE INTERNATIONAL PHONETIC ALPHABET (revised to 2015)

CONSONANTS (PULMONIC)

© 2015 IPA

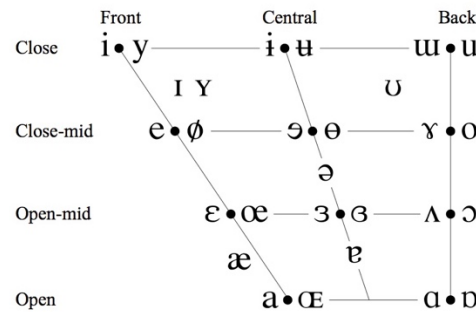
	Bilabial	Labiodental	Dental	Alveolar	Postalveolar	Retroflex	Palatal	Velar	Uvular	Pharyngeal	Glottal
Plosive	p b			t d		ʈ ɖ	c ɟ	k ɡ	q ɢ		ʔ
Nasal	m	ɱ		n		ɳ	ɲ	ŋ	ɴ		
Trill	ʙ			r					ʀ		
Tap or Flap		ⱱ		ɾ		ɽ					
Fricative	ɸ β	f v	θ ð	s z	ʃ ʒ	ʂ ʐ	ç ʝ	x ɣ	χ ʁ	ħ ʕ	h ɦ
Lateral fricative				ɬ ɮ							
Approximant		ʋ		ɹ		ɻ	j	ɰ			
Lateral approximant				l		ɭ	ʎ	ʟ			

Symbols to the right in a cell are voiced, to the left are voiceless. Shaded areas denote articulations judged impossible.

CONSONANTS (NON-PULMONIC)

Clicks	Voiced implosives	Ejectives
◌ Bilabial	ɓ Bilabial	ʼ Examples:
Dental	ɗ Dental/alveolar	ɓ' Bilabial
! (Post)alveolar	ɟ Palatal	t' Dental/alveolar
≠ Palatoalveolar	ɠ Velar	k' Velar
Alveolar lateral	ɠ Uvular	s' Alveolar fricative

VOWELS



OTHER SYMBOLS

- ʍ Voiceless labial-velar fricative
- ʎ Voiced labial-velar approximant
- ɥ Voiced labial-palatal approximant
- ʜ Voiceless epiglottal fricative
- ʕ Voiced epiglottal fricative
- ʡ Epiglottal plosive
- ɕ ʑ Alveolo-palatal fricatives
- ɹ Voiced alveolar lateral flap
- ɥ Simultaneous ʃ and X
- Affricates and double articulations can be represented by two symbols joined by a tie bar if necessary.

ts k̟p

SUPRASEGMENTALS

- ˈ Primary stress
- ˌ Secondary stress
- ː Long
- ˑ Half-long
- ◌̥ Extra-short
- | Minor (foot) group
- || Major (intonation) group
- Syllable break
- ◌̣ Linking (absence of a break)

TONES AND WORD ACCENTS

- | LEVEL             | CONTOUR             |
|-------------------|---------------------|
| ē or ˥ Extra high | ē or ˨ Rising       |
| é ˥ High          | ē ˨ Falling         |
| ē ˨ Mid           | ē ˨ High rising     |
| è ˨ Low           | ē ˨ Low rising      |
| ē̇ ˨ Extra low    | ē̇ ˨ Rising-falling |
| ˩ Downstep        | ↗ Global rise       |
| ˩ Upstep          | ↘ Global fall       |

DIACRITICS Some diacritics may be placed above a symbol with a descender, e.g. ɲ̥̄

◌̥ Voiceless	◌̄ Breathily voiced	◌̇ Creaky voiced	◌̚ Dental
◌̇ Voiced	◌̚ Breathy voiced	◌̚ Creaky voiced	◌̚ Apical
◌̚ Aspirated	◌̚ Linguolabial	◌̚ Linguolabial	◌̚ Laminar
◌̚ More rounded	◌̚ Labialized	◌̚ Labialized	◌̚ Nasalized
◌̚ Less rounded	◌̚ Palatalized	◌̚ Palatalized	◌̚ Nasal release
◌̚ Advanced	◌̚ Velarized	◌̚ Velarized	◌̚ Lateral release
◌̚ Retracted	◌̚ Pharyngealized	◌̚ Pharyngealized	◌̚ No audible release
◌̚ Centralized	◌̚ Velarized or pharyngealized	◌̚ Velarized or pharyngealized	
◌̚ Mid-centralized	◌̚ Raised	◌̚ Lowered	
◌̚ Syllabic	◌̚ Lowered	◌̚ Lowered	
◌̚ Non-syllabic	◌̚ Advanced Tongue Root	◌̚ Retracted Tongue Root	
◌̚ Rhoticity	◌̚ Retracted Tongue Root	◌̚ Retracted Tongue Root	

Appendix III: Charles Villiers Stanford, *Psalm 150*

O Praise God In His Holiness

Psalm 150

Charles Villiers Stanford (1852-1924)  
ed. S J Pirttijarvi

Full Unison

Soprano  
Alto

1. O praise God in His ho - li - ness: praise him in the fir - ma - ment of his power.

Tenor  
Bass

Organ

8

2. Praise Him in His no - ble acts:— praise Him ac - cor - ding to His ex - cel - lent greatness.

15 Decani

3. Praise Him in the sound of the trum - pet: praise Him up - on the lute and harp.

Man.

22 Cantoris

4. Praise Him in the cym-bals and dan - ces: praise Him up - on the strings and pipe.

29 Full Tenors & Basses

5. Praise Him upon the well tuned cym - bals: praise Him up - on the loud cymbals.

Ped.

36 Full

6. Let every thing that hath breath:— praise— the Lord.—

44

Glory be to the Father, and to the Son: and to the ho - ly Ghost:

51

As it was in the beginning, is now and ev - er shall be: world without end.

56

A - - - - - men.

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