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WASHINGTON UNIVERSITY

Department of Music

Added-Tone Sonorities in the Choral Music of Eric Whitacre

by

Angela Paige Minahan Hall

A thesis presented to the
Graduate School of Arts and Sciences
of Washington University in
partial fulfillment of the
requirements for the
degree of Master of Arts

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2012

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“From my very earliest experience of singing in a choir I loved to sing in either major seconds or minor seconds with other voices. Still it makes me giggle, makes me tingle all over. And for some reason it only happens with voices. I love the sound of it with strings or brass but somehow with human voices when they’re that close together, it’s exquisite for me. And so I think that because I tend to use those gestures quite a bit, that singers are maybe having a physiological response when they’re singing my music – that it tingles them in the same way it does me.”

- Eric Whitacre

Introduction

This paper began as an inquiry into the choral music of contemporary American composer Eric Whitacre. I was first introduced to Whitacre's music through singing several of his pieces in my undergraduate choir, and was struck by the uncommon beauty of his music. What, I wondered, makes Whitacre's music so compelling? After an in-depth analysis of Whitacre's entire output for a cappella choir, I believe Whitacre's use of sonority is the key to his unique sound. This thesis presents an examination of Whitacre's sound world, exploring the sonorities he uses as well as how these sonorities affect the experience of listening to his music.

As an example, let us examine the first few chords of Whitacre's *With a Lily in Your Hand*.¹ The passage appears in Figure 1. Of the seven sonorities in this passage, only two are triads: the first chord is an F-sharp minor triad, and the last is an F-sharp major triad. The second sonority could be identified as an F-sharp minor seventh chord, but the seventh does not resolve down as one would expect it to. The second in the bass in chord three may make it appear that some sort of suspension is occurring, but again the bass does not resolve down as expected. Sonorities four and five continue to retain the F-sharp in the bass, while the sustained E gains prominence.

¹ In this thesis, the terms "chord" and "sonority" are used fairly interchangeably to mean "the collection of notes sounded at a given time." "Triad," on the other hand, always means a three-note chord forming a traditional major or minor triad in any inversion.

Pesante ♩=60

Soprano
Alto
Tenor
Bass

O! o my night love! La, la,
O! o my night love! La, la,
O! o my night love! La, la,
O! o my night love! La, la,

piano for rehearsal only

1 2 3 4 5 6 7

Figure 1: *With a Lily in Your Hand*, measures 1-3

Chord six is possibly the least mysterious and provides a vantage point from which to view sonorities two through five; chord six appears to be a B major triad in root position, with an added E in the second tenor. Though the E has been present in the tenor voice since chord two, it has served no discernible function until, in chord six, it forms a cluster with the F-sharp in the first tenor and the D-sharp in the baritone. This cluster, comprising a tone and semitone, causes chord six to strongly demand a resolution. The

dissonance, placed so high in the male voices, sounded at a *forte* and with a *crescendo*, positively tingles with energy. Having sung this piece myself, I can attest to the power of this introduction, the electricity coursing through the choir as we held chord six each rehearsal. One can observe the effect of this added E by first playing the passage as written, and then again without the added E in chord six.

If chord six is a B major triad with an added E, then perhaps chords two through five could also profitably be viewed as triads with added tones. After all, each of the sonorities maintains an F-sharp in the bass and an A in the alto. In trying to relate chords two through five to the F-sharp minor triad already sounded, listeners will naturally assume a continuation of the initial triad until a new one is suggested. Thus, all four sonorities may be heard to represent an F-sharp minor triad with various added tones. This being the case, the underlying chord progression in this passage is F# minor – B major – F# major.

Whitacre's added tones create movement where there might have been stagnation; they enliven the sound by altering the sonority without changing the underlying triad. In this example, they allow Whitacre to write five different F# minor chords before moving on to the B major triad. The added tones increase the beauty of each singer's individual line, adding new notes and dissonances where there would otherwise have been none. Of the six voices in this passage, only the bass and alto have what would be considered "standard" lines for this progression: the bass continuously states the root of each underlying triad, while the alto holds the third throughout the

duration of the F# sonority, a pitch necessary in order to ensure the listener's continued perception of sonorities two through five as variants of an F# minor triad.

The added tones also enhance the passage by adding color to the underlying triad. Each added tone interacts differently with the notes of the underlying triad, creating a unique combination of whole-tone and semitone dissonances with the pitches of the underlying triad. As Whitacre varies the added tones, he ensures that each sonority is colored slightly differently. The result is a sound which continually changes while also remaining the same: motion within stasis. This is a favorite compositional idiom of Whitacre, and will be discussed at length in later analyses.

Whitacre uses added-tone sonorities quite often in his works; I would approximate that at least 75% of his chords are added-tone sonorities rather than major or minor triads. These added-tone sonorities are what give Whitacre's music its unique sound. Analyzing Whitacre's chords as triads with added tones allows the analyst to perceive underlying chord progressions in Whitacre's pieces while at the same time retaining information about the non-triadic tones which add distinctive color and interest to Whitacre's compositional language.

Whitacre as Choral Composer

Eric Whitacre was born on January 2, 1970 in Reno, Nevada. He took piano lessons as a child, played trumpet in middle and high school, and played keyboard in a pop rock band as a teenager. After graduating high school, Whitacre attended the

University of Nevada, Las Vegas, intending to get his degree in music education.² While at UNLV, Whitacre had his first experience singing in a choir: the piece was the “Kyrie” from Mozart’s *Requiem*, and the experience changed Whitacre’s life forever - he became a composition major and began composing pieces for various ensembles at UNLV, as well as for high school ensembles around the area.³ Whitacre’s first composition was a setting of “Go, Lovely Rose” for a cappella choir, composed when he was 21.⁴ It was written for and performed by Whitacre’s college choir and became Whitacre’s first published composition later in that same year.⁵ After graduating from UNLV, Whitacre attended Juilliard to receive his master’s degree in composition under John Corigliano. Whitacre is currently composer in residence at Sydney Sussex College, part of Cambridge University.⁶

As of April 2012, Whitacre’s compositional output includes pieces for brass ensemble, concert band, orchestra, solo voice, musical theater, and film. However, Whitacre is best known as a choral composer. His website lists fifty compositions, thirty of which are choral works.⁷ Additionally, several of Whitacre’s instrumental works originated as choral pieces and were only later transcribed for instruments.⁸ In 2010,

² Whitacre, “Eric Whitacre,” pp. 253-54.

³ Whitacre, “Eric Whitacre,” p. 254; interview in Hairel, p. 129.

⁴ Whitacre, “Eric Whitacre,” p. 254.

⁵ Whitacre, interview in Hairel, p. 129; “Eric Whitacre,” p. 254.

⁶ EricWhitacre.com, “Biography.”

⁷ EricWhitacre.com, “Music.”

⁸ EricWhitacre.com, “Music.”

Whitacre began directing his own choir, the Eric Whitacre Singers.⁹ Their first album, *Light and Gold*, rose to the top of the classical charts in both the United States and the United Kingdom within a week after its release, and won a Grammy in 2012.¹⁰

Whitacre's second album, *Water Night*, became the number one classical album in America on the day of its release.¹¹ Whitacre has won composition awards from the American Choral Directors Association, the American Composers Forum, and the Barlow International Composition Competition. In 2001, ten years after writing his first composition, Whitacre became the youngest composer ever to receive the ACDA's Raymond C. Brock commission.¹² Whitacre's sheet music has sold well over a million copies, and his works are featured on nearly seventy CDs.¹³

Sonority plays an important role in Whitacre's compositional process. Often a single sonority will act as a starting point for a given piece: "When I start to write, sometimes I'll start to improvise, and a certain chord will mean something to me, and I'll start to change it, and something clicks with it, and that's the germ where it starts and that's my way in, the first step so to speak."¹⁴ Using that sonority as a starting point, Whitacre then develops a range of sonorities which help to define the piece:

⁹ Whitacre, "ZOMG."

¹⁰ EricWhitacre.com, "Biography."

¹¹ EricWhitacre.com, "Biography."

¹² EricWhitacre.com, "Biography."

¹³ Serinus.

¹⁴ Whitacre, interview with Hairel, pp. 131-32.

As I begin to refine the essential idea, I start to develop a general palette of sonic colors to use, and in this way the little universe of the piece starts to define itself. This helps me establish certain loose “rules” about my universe: What is its harmonic language? What kind of rhythm lives in this little world? What kind of “magic” does it contain?¹⁵

Not only does sonority help to define each of Whitacre’s compositions, Whitacre feels that it distinguishes his compositional style in general. He says, “When I think of my style it’s uniquely personal. I feel like I could be ten miles down the road and hear one chord that I wrote and it feels so personal, so truly personal to me.”¹⁶ In an even stronger statement, Whitacre writes that, on some level, his sonorities define him as a person:

For me there is really no separation between my person and my music. It’s hard to explain, but when I hear certain musical sounds created it is as if someone is speaking my true name. I often use the same chords or progressions in different pieces, quoting myself, and this is not because I have run out of ideas; it’s because those chords and progressions represent *me*.¹⁷

The importance of sonority in Whitacre’s music has been widely recognized by listeners and critics. Reviewers write of Whitacre’s “electric, chilling harmonies,”¹⁸ the “fluent, ambient, otherworldly quality created by luxurious chords of suspended harmonies,”¹⁹ and “close harmonies with ample, pillow-soft dissonances.”²⁰ One critic

¹⁵ Whitacre, “Eric Whitacre,” p. 255.

¹⁶ Whitacre, interview with Hairel, p. 131.

¹⁷ Whitacre, “Eric Whitacre,” pp. 256-57, emphasis original.

¹⁸ Robinson.

¹⁹ Gardner.

²⁰ Pfaff.

describes the hallmark of Whitacre's compositional style as "a sonorous haze of piled-up cluster chords, with deep basses and floating upper parts, punctuated by startlingly 'scrunchy' multi- (and oft-unresolved) suspensions of rapturous beauty."²¹ Another notes, "Whitacre writes in a fresh and varied style that makes a persuasive case for the beauty inherent in sustained dissonances. He inflects text with great care and has a gift for heightening key images or ideas through color choices."²²

Outline

This thesis conducts an investigation into the very harmonies which engender such colorfully descriptive metaphors. What sonorities, exactly, comprise Whitacre's harmonic vocabulary? How does Whitacre use sonority to create meaning in his compositions? By what logic does Whitacre's music progress from chord to chord? What sense, if any, can the listener make of Whitacre's harmonic language? The answers to these questions provide insight not only into the music of Whitacre but also into the experience of listening to non-conventional harmonies in general.

This study is unique in its focus; however, it is still important to consider those scholarly writings which overlap with the topic of this thesis. Chapter 1 encompasses a review of the available literature on Whitacre as well as selected literature on Debussy and on sonority in general. Though no scholarly work has been specifically devoted to Whitacre's sonorities, each previous Whitacre scholar makes at least implicit

²¹ Riley.

²² Castleberry, p. 81.

assumptions about how Whitacre's chords should be understood; these assumptions are examined and critiqued. I also examine Debussy analyses for any light they might shed on analysis of Whitacre's "neo-impressionistic" music. Additionally, I explore several existing theories which deal with non-triadic sonorities within a quasi-diatonic universe similar to that of Whitacre.

Chapter 2 develops the idea of the *chord structure*, a notation which preserves most of the information contained within musical notation (voicing, intervallic content, spacing) while maintaining the anonymity of the chord with respect to precise location along the pitch continuum. Whitacre uses a staggering number of unique chord structures in his compositions, a tendency which gives him greater compositional freedom than traditional choral composers. At times, Whitacre's emphasis on a specific chord structure within a piece provides evidence that the chord structure is, on some level, a primary musical object to him.

Chapter 3 focuses on the *chord type*, a simplification of the chord structure notation which allows the analyst to perceive similarities between seemingly disparate chord structures. Despite using so many chord structures in his compositions, Whitacre limits himself to those chord types which do not contain two or more contiguous semitones. This preference causes Whitacre's music to sound more conventionally diatonic, though in fact he uses modes of the diatonic, acoustic, and octatonic scales in his compositions. Whitacre's use of chord types within a piece helps to define the musical language of each composition.

Chapter 4 argues that, because of the quasi-diatonic nature of Whitacre's music, listeners are likely to hear Whitacre's chords as *added-tone sonorities*, that is, as triads with added tones. Several rules of interpretation are proposed to determine which tones in a chord will be perceived as composing an underlying triad and which will be heard as added to that triad. A detailed description of the effect of added tones follows, presenting information about the dissonance and stability of each single added tone as well as several common combinations of added tones. Finally, I argue that not all of Whitacre's added-tone sonorities are of equal importance. Rather, as in more traditional tonal music, a single triad may govern a large number of individual chords. Hearing Whitacre's chords as added-tone sonorities will enable listeners to relate structural triads to one another in a manner similar to the music of the common practice period.

In chapters 5-7, analyses of Whitacre's music present evidence for the arguments made in chapter 4. Chapter 5 investigates the opening phrases of several of Whitacre's pieces, examining how Whitacre uses his added-tone sonorities to establish a tonal center and to introduce listeners to the essence of each composition. Chapter 6 presents analyses of the final phrases of various Whitacre pieces, determining how closure is achieved through the use of added-tone sonorities. Chapter 7 analyzes several additional passages from Whitacre's compositions in order to gain as complete an understanding of Whitacre's compositional language as possible.

Chapter 1: Literature Review

The literature reviewed in this chapter includes all of the extant scholarly literature on Whitacre as well as several analyses involving sonority in the music of Claude Debussy, a composer whose music is more frequently analyzed and whose harmonic language is strikingly similar to that of Whitacre. Other theories which focus on sonority in post-tonal and neo-tonal music are also considered.

Whitacre Studies

There has of yet been no comprehensive examination of Whitacre's sonorities. However, the importance of sonority in Whitacre's music is such that each scholarly text involving his works must grapple with his unusual chords on some level. A close examination of the extant scholarly writing on Whitacre reveals each author's method of dealing with Whitacre's sonorities. The six writers below all assume that Whitacre's music is tonal to some degree but disagree on the extent to which his sonorities work as functional harmonies within a tonal context. In general, there are three schools of thought on how Whitacre's chords are comprised: they are variously viewed as either polychords, extended tertian harmonies, or triads with added tones.

Andrew Lloyd Larson

Larson's 2004 dissertation, "Textural and Harmonic Density in Selected Choral Works by Eric Whitacre," constitutes the first scholarly writing about Whitacre. As

evidenced by the title of his dissertation, Larson's primary concern is with *textural density*, by which he means the number of voices present at any given moment. Larson claims that Whitacre changes the textural density within his choral pieces much more frequently than do traditional choral composers. Larson also finds that, in general, Whitacre increases the textural density towards the climax of the piece and decreases the textural density towards the end of each piece.

Larson suggests that a vertical analysis of Whitacre's pieces using density variation is more enlightening than a vertical analysis of Whitacre's chords. Larson describes Whitacre's chords as "the use of triads that are expanded by adding additional thirds, 'color' notes or diatonic clusters."²³ He analyzes several sections of Whitacre's pieces as in Figure 2, using Roman numerals to indicate extended tertian sonorities or polychords. The numbers below the score represent the textural density of a vertical moment, while the Roman numerals present Larson's harmonic analysis of that moment. The textural density analysis shows that Whitacre treats the word "You" with special care by increasing its textural density relative to the rest of the passage, but offers no insight into the harmonic implications of Whitacre's sonorities.

²³ Larson, p. 80.

SOLO

f allargando *ff* a tempo

un - i - ma-gin - a-ble You? un - i - ma-gin - a-ble You?

un - i - ma-gin - a-ble You? un - i - ma-gin - a-ble You?

un - i - ma-gin - a-ble You? un - i - ma-gin - a-ble You?

un - i - ma-gin - a-ble You? un - i - ma-gin - a-ble You?

8 8 8 8 8 8 12 11 8 8 8 8 8 8 9 9 9 9

C: IV+V ii¹³ IV+V iii ii I I₂⁴ vi iii+V⁶+VII

Figure 2: Larson's analysis of *i thank you God for most this amazing day*, measures 69-72

Larson's Roman numerals do little to clear things up. Take, for instance, the IV+V label which Larson places on the first sonority of the passage. The notes present within the sonority (C, D, E, F, G, A) could be combined into any of several chord combinations, especially if one is allowed to choose a label which disregards a pitch in

the sonority (as the IV+V label disregards the E here) or which assumes pitches not present in the sonority (as that same label assumes a B). It would seem preferable to use labels that at least take into account all of and only the pitches actually present in the sonority, such as I+ii, ii¹¹, IV⁹+ii, or vi⁷+ii. What factors influenced Larson's choice of the IV+V label rather than one of these other options?

Assuming that Larson had reason to prefer a hearing of the sonority as a IV+V, further questions arise. For instance, what is the harmonic function of a IV+V chord? Does it function as a predominant or a dominant? When a listener hears such a sonority, what does he or she expect to hear next? Does the following ii¹³ fulfill or deny these expectations? Larson's analysis does little to elucidate the harmonic processes at work in Whitacre's music. He admits as much, stating "a chord-by-chord analysis does not clarify the composer's process in the concrete manner that the density analysis does. Function is simply less significant to the growth of the composition than the increase and subsequent decrease in amplitude of the textural density."²⁴

Though I agree with Larson that textural density is an important factor in Whitacre's compositions, I believe that sonority has an even greater impact on the experience of listening to Whitacre's music. Larson is wrong to assume that Whitacre's sonorities must be bereft of function simply because his analysis fails to make sense of the chord progression. Rather, his analysis serves to point to the need for a theory which is able to confront such complex sonorities, that is, for a method of analyzing Whitacre's chords in a way which allows meaningful connections to be made between them.

²⁴ Larson, p. 112.

Mark Shapiro

In a letter to the editor of *Choral Journal*, Mark Shapiro responded to Larson's ideas. His letter, though brief, is quite pertinent to this study:

Professor Larson rejects "Roman numeral analysis" in [Whitacre's] music as unhelpful, and seems to be arguing that this is because the music is harmonically complex. But all of the harmonies in the examples can be easily understood (and more importantly, heard) as versions of I or VI, II or IV, and V. I think most conductors and listeners sense this even if they cannot say so explicitly, so I hesitate (in this case) to toss overboard a handy and enlightening analytic tool. However, I would agree that *figures*, in their traditional role as conjuncts to Roman numerals, would be prohibitively cumbersome here, not to say downright annoying!²⁵

To my knowledge, Shapiro is the first writer to submit that Whitacre's sonorities may be best understood as basic triads with added pitches and to propose that these underlying triads interact with one another in fairly conventional ways. In this thesis, I also argue that Whitacre's music makes harmonic sense when his sonorities are understood as decorated versions of triads, and develop a method of determining "the" underlying triad within a given sonority.

Shapiro seems to imply that Whitacre's chords could be represented in analysis by using the Roman numeral, *sans* figures, of the diatonic triad which best corresponds to a given sonority. I disagree with Shapiro on this point, for to discard the non-triad tones in an analysis of Whitacre's music is to ignore the essential nature of his music. Therefore, I develop a notation which, without becoming "cumbersome" or "annoying," represents Whitacre's chords as triads within a key while still retaining essential information about the added tones that color each individual sound-moment.

²⁵ Shapiro, p. 6.

John Byun

Byun analyzed Whitacre's *When David Heard* in 2005. His analysis mainly concerns Whitacre's use of text and texture rather than sonority, but he does provide descriptions for three of Whitacre's chords within the course of his analysis. These chords, along with the labels given to them by Byun, are depicted in Figure 3. He calls the first chord a "two-octave, D-minor, dissonant chord," and the second chord a "B-flat-major, suspended second chord."²⁶ The third chord below is described as "a D-minor suspended four with an added two chord."²⁷ Byun's labels differ from Larson's in that they specify a single root for each chord. Like Shapiro, Byun interprets each sonority as a simple triad and views non-triad pitches within the sonority as added or suspended tones rather than extended upper structures.



Figure 3: Three of Whitacre's chords as labeled by Byun

Unfortunately, Byun does not specify why the C in the B-flat major chord was "suspended" but the E in the D minor chord was "added." The word "suspension" implies a tendency to resolve in a specific way: the bass should step down to resolve a

²⁶ Byun, pp. 21-22.

²⁷ Byun, p. 31.

suspended 2, while the suspended tone should step down in a suspended 4. While it is true that the “sus4” chord of popular music doesn’t necessarily demand a resolution, such a chord generally contains a fourth above the bass in place of, rather than in addition to, the third of the chord. Because Whitacre does not resolve the “suspended” tone as expected and also includes the tone of resolution in the chord, the term “suspension” is not really appropriate here. I prefer Byun’s use of the word “added” to describe these non-triadic tones; this term has no misleading implications in the vocabulary of chordal analysis and is also more neutral in that it does not imply an expected resolution or even that the tone in question is dissonant.²⁸

Byun’s labels fail to take into account the bass tone of the chord: while both of Byun’s D minor triads contain an A as the lowest note in the sonority, Byun does not explain his reasons for believing them to be D minor chords rather than some version of A chords. Because the first sonority contains all the pitches of the F major/ D minor diatonic collection, it could be seen as an A minor chord in root position or as an F major chord in first inversion just as easily as it could be a D minor chord in second inversion. His choice for a D minor label rather than any of the alternatives must be based on context, but Byun’s labels show nothing about the harmonic context of the chord or its placement within a key. Additionally, more detail is clearly needed in the description of this chord than the simple “dissonant” given by Byun.²⁹

²⁸ The use of the word “add” is sometimes used in chord notation, as in the “add2” chord, but this use of the term perfectly coincides with the effect of added tones in Whitacre’s music.

²⁹ An in-depth discussion of the first of these chords appears in chapter 4 of this thesis.

Kenneth Lee Owen

In his 2008 master's thesis, Owen describes the music of three composers whose compositional style he feels is closely related: Morten Lauridsen, Eric Whitacre, and René Clausen. What the music of these three composers has in common, he writes, is “an intense focus on vertical sonority, based on the conventional diatonic tertian system but with the addition of pitches that create harmonic seconds with other pitches in the triad.”³⁰ Owen goes on to state that “the harmonic seconds create a more complicated and colorful sonority, but the familiar framework of tertian harmony that Clausen, Lauridsen, and Whitacre adhere to allows accessibility to many listeners.”³¹ Furthermore, Owen states, these three composers use relatively simple rhythm, conjunct vocal motion, and homophonic texture to maximize the importance of sonority within their compositions.³²

As may be seen from the above quotes, Owen believes that Whitacre's sonorities are derived from familiar triads and seventh chords interacting with one another in conventional ways. Whitacre adds notes to these triads in order to create harmonic seconds, which function to “create forward motion. In the absence of either a strong rhythmic or melodic impulse, the addition of harmonic seconds increases the density of the vertical sonority and creates momentum.”³³ Owen calls these non-triad tones “added

³⁰ Owen, p. 1.

³¹ Owen, p. 4.

³² Owen, p. 2.

³³ Owen, p. 13.

seconds,” referring to the fact that, in a diatonic context, any non-triad tone will form a second with at least one of the three tones of the original triad.

Owen states that these added seconds are not necessarily dissonant: “While tonal music traditionally uses the interval of a second as a dissonance, these composers use harmonic seconds as chord tones, common tones between chords, or as a device to build harmonic tension by increasing the density of the harmony.”³⁴ Owen points out that several pieces in this style end on chords with added seconds, proving that the composers did not feel a need to resolve the added tones.³⁵ At other times, however, an added second “sets up an expectation for further development, thereby giving forward momentum.”³⁶ Unfortunately, Owen does not provide a way to differentiate the stable added-second chords from those that are unstable.

Any analyst who interprets Whitacre’s chords as some version of triads must grapple with determining “the” triad represented by each of Whitacre’s sonorities.

Unlike analysts before him, Owen describes his thoughts on this topic in detail:

It is important to decide what the core triad is to determine its function. . . . Frequently the root of the triad is made evident by a chord positioning that includes a strong root and fifth in lower voices, or other such grounding devices in the bass. Because the basic language is diatonic, an examination of the harmony in context of the phrase can also help decipher the core triad, but there are moments of chord planing (parallelism) or other less common-practice progressions where the context does not make the base chord any more evident.³⁷

³⁴ Owen, p. 21.

³⁵ Owen, p. 9.

³⁶ Owen, p. 14.

³⁷ Owen, p. 86.

8

clos - ing eyes and rest - ing head I

clos - ing eyes and rest - ing head I

clos - ing eyes and rest - ing head I

IV - V - - - vi ? IV iii7

Figure 4: Owen's analysis of *Sleep*, measures 8-10³⁸

Owen then gives an example of such an ambiguous chord, which he states could represent “a tonic major seventh chord in second inversion, or a mediant triad in first inversion with an added sixth.”³⁹ The passage is given above as Figure 4. After discussing each possibility, Owen decides on an interpretation of the sonority as a mediant triad.⁴⁰ He gives his reasons as follows: “due to inversion, texture, and metric positioning, the chord in question does not function well as a tonic. However, the

³⁸ Owen, p. 87.

³⁹ Owen, p. 87.

⁴⁰ My own interpretation of this “mystery chord” aligns with Owen’s for the most part: I also call the chord a first-inversion G minor triad and perceive the E as an added tone. However, I would refrain from calling the sonority a mediant, as I take the chord to be a neighbor to the subdominant triad, the true structural chord in this passage.

alternate analysis of the sonority as a mediant triad with an added sixth is logical because of the use of mediant triads in previous phrases.”⁴¹

I agree with Owen’s view of Whitacre’s chords as functional triads to which pitches have been added. I also appreciate Owen’s attention to detail when labeling each sonority, taking into account the bass note, soprano note, and harmonic context. However, I believe his theory could be improved in three ways: first, it would be useful to be able to differentiate between those sonorities that demand resolution and those that do not. Second, the chord labels ought to show which chords have added tones and which added tones they are. Thirdly, as Owen states, not every sonority used by Whitacre is harmonically functional; there should be some way to differentiate between those chords that participate in conventional tonal progressions and those that simply add “color” to the piece.

Shane Lynch

Lynch’s 2008 dissertation also emphasizes the stylistic similarities in the music of Eric Whitacre, René Clausen, and Morten Lauridsen. Lynch argues that the three composers are founders of a new idiom in American choral music: neo-impressionism. One of the stylistic qualities of neo-impressionism is, of course, sonority. Lynch states, “Neo-impressionistic music uses many of the same sonorities as impressionism. There is a similar focus on the life cycle of the sound that brings color into the musical phrase,

⁴¹ Owen, p. 89.

often leaving the ultimate goal unclear.”⁴² This aspect of neo-impressionism is especially important in Whitacre’s music: “Whitacre has a broader sense of sonority [than Clausen or Lauridsen] and makes effective use of everything from total unisons to cluster chords to bring out the color of the work in a combination of impressionism with later compositional techniques.”⁴³

Lynch seems ambivalent about how Whitacre’s sonorities are to be perceived. He describes them as “ninth, eleventh, and thirteenth chords,”⁴⁴ but proceeds to analyze them as triads with added tones rather than as triads with extended upper structures.⁴⁵ Lynch states of Whitacre’s sonorities in particular that “the cluster chords can be analyzed as variations on complex chords with additions, but the ethereal effect on the listener is one of a haze of sound that lacks any sense of forward motion and traditional triadic sonorities.”⁴⁶ Lynch provides a chordal analysis of only a single measure of Whitacre’s music; this measure, given here in Figure 5, is the final motive of perhaps Whitacre’s most famous choral work, *Sleep*. Whitacre concludes this piece with six written-out repetitions of the measure and includes the option for the conductor to extend the number of repetitions if desired.

⁴² Lynch, pp. 46-47.

⁴³ Lynch, p. 66.

⁴⁴ Lynch, p. 47

⁴⁵ See, for instance, Lynch p. 49.

⁴⁶ Lynch, pp. 66-67.

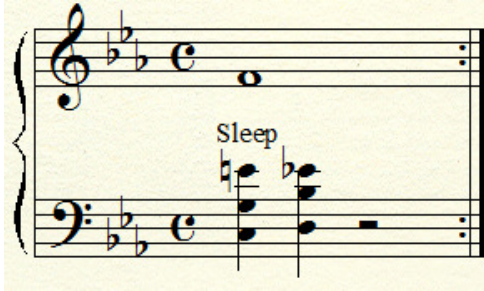


Figure 5: Final motive of *Sleep*

Lynch's analysis is as follows:

The voices are first arranged in a C-major+4, which functions in E-flat major (nominally the key for [Figure 5]) as a VI with the added fourth in the soprano's inverted pedal. The added fourth leads the ear to believe that a 4-3 suspension-resolution is coming, but instead the added tone remains and becomes the pivot to the following first inversion B-flat major+4, which functions as V. The new added fourth is E-flat, the tonic pitch, but it is presented in a manner that obscures any traditional sense of finality normally associated with the tonic, blurring the expected outcome for the listener.⁴⁷

Though Lynch never explains his "+4" notation, it may be assumed from his analysis that the figure denotes the addition of a tone a fourth above the root of the chord. Whether the added fourth is to be taken from the key of the passage, the key of the chord, or is to be assumed perfect unless otherwise specified, is unclear. Lynch seems to think that the individual tones or chords have tendencies of resolution (the added 4 wants to resolve down, the V wants to resolve to I), but that Whitacre deliberately obscures those tendencies by, for instance, retaining the added 4 into the next chord or by adding the tonic pitch to the V chord.⁴⁸

⁴⁷ Lynch, p. 70.

⁴⁸As will be shown later, Whitacre prefers to write his V chords with an added tonic pitch. I do not believe that this is what is happening here, however. To my ear, the passage seems to want to resolve to a C major

Thought I agree with Lynch on both points, it does not necessarily follow that Whitacre's habit of obscuring more conventional harmonic motion leads to a sound-world that "lacks any sense of forward motion and traditional triadic sonorities." Lynch's analysis, in fact, focuses specifically on the expectation of forward motion inherent in the traditional triads underlying the sonorities. Whitacre is only able to deny and obscure these natural tendencies because of their initial presence in the music. Nevertheless, I appreciate Lynch's description of how Whitacre goes about doing this. I also agree with Lynch's main argument that Whitacre (and others) can profitably be classified as neo-impressionistic composers and that this compositional idiom is growing in popularity. This trend means that the analytical system developed in chapters 2-4 of this thesis will be applicable not only to Whitacre's works, but to those of a great many composers besides.

John Hairel

Hairel's 2009 dissertation closely examines three of Whitacre's pieces for wind band: *Cloudburst*, *Sleep*, and *Lux Aurumque*. These three pieces were originally written for choir and were later adapted by the composer for performance by instrumental ensemble. Hairel's main focus is on the changes Whitacre makes to his original composition, attempting to use these alterations to determine Whitacre's views on timbre, register, and attack. Hairel speaks often of Whitacre's use of "subtle, coloristic

triad, not an E-flat major triad. Thus, perhaps the key signature signifies C minor, and Whitacre is ending here on a Picardy third.

harmonies,” describing them as “lush, sensitive, warm.”⁴⁹ However, Hairel rarely looks at specific sonorities, labeling only five chords in the entirety of his dissertation. These chords are depicted in Figure 6.



Figure 6: Five of Whitacre’s chords analyzed by Hairel

Hairel’s descriptions of these chords leave little doubt that he perceives the sonorities as polychords. He calls chord one a “major/minor chord cluster,” and chord four is also described as a cluster chord comprised of “an [A] major triad juxtaposed with a [G#] minor cluster.”⁵⁰ Chord five contains “an open fifth cluster of C[#] and G[#] against [B] and F[#].”⁵¹ Hairel’s description of chord three sheds some light on what he believes the purpose of these polychords could be: “The initial C[#] minor dyad in measure one is juxtaposed with a [B] major triad in measure two. Together these two chords create a minor/major tonality.” Chord three, which contains only one extra tone,

⁴⁹ Hairel, pp. 80 and 112.

⁵⁰ Hairel, pp. 55 and 105. *Cloudburst* and *Lux Aurumque*, originally in sharp keys, were transposed down by semitone in the wind band transcriptions, and thus in Hairel’s analytic descriptions. I have notated and described them in their original (choral) key here, for ease of comparison with my own later analyses of these chords. However, this means I must alter Hairel’s descriptions of Chords 1, 3, 4, and 5 by a semitone in order to bring them to the correct pitch level.

⁵¹ Hairel, p. 106.

is analyzed as in a key rather than as defining a key: it is called “a second inversion Bb major triad with a sixth degree C added to the chord in the key of Eb major.”⁵²

Hairel’s descriptions recall many of the same problems as Larson’s polychordal labels: how can the analyst know which two triads are being combined when a variety of possibilities exist? This is especially problematic when, as in Hairel’s description of chord four, a given sonority may be viewed as a combination of two chords that may already themselves be cluster chords. If, as in Hairel’s analysis of chord three, a polychord may be the basis for bitonality within a composition, under what circumstances would such a thing happen? Does chord one, which Hairel likewise analyzes as a major/minor chord cluster, also cause such an effect?

Debussy Studies

As submitted by Lynch, evidenced by my own ear, and stated by the composer himself, Whitacre’s music is very similar in sound to that of Claude Debussy.⁵³ Both composers use non-traditional sonorities, write within a fairly diatonic universe, eschew traditional V-I motion and conventional cadences, and tend to connect harmonies in non-conventional ways. Naturally, there are many more analyses of Debussy’s compositions than of Whitacre’s, and several of them grapple with complex sonorities like those found in Whitacre’s music. An overview of these analyses may help inform an analysis of Whitacre’s compositions.

⁵² Hairel, p. 85.

⁵³ Whitacre, “Eric Whitacre,” p. 265.

Jim Samson

In *Music in Transition* (1977), Samson creates a narrative tracing “the radical changes in the language of music” that occurred between 1900 and 1920. Debussy, along with Bartok and Stravinsky, are discussed in chapter 3: “New Tonal Languages.” Samson emphasizes Debussy’s use of sonority, stating that Debussy “frequently neglected totally the traditional tonal obligations of the chord, whether a plain triad or dissonant combination, treating it as a vertical ‘colour’ chosen for its empirical sound quality. In so doing he modified the function of the chord in relation both to its immediate and its overall harmonic context.”⁵⁴

Samson feels that Debussy’s use of coloristic sonorities alters the tonal function of his harmonies rather than negating tonal function entirely. In fact, Samson argues, Debussy’s music derives much of its meaning from the interplay between his new harmonic language and the expectations inherent in common practice tonality. “The tonal coherence of his music depends on a carefully calculated and often dramatic interaction of these various harmonic ‘types’ with each other and with orthodox diatonic harmony. The result is a tonal language, but one that is fundamentally different in concept from classical tonality.”⁵⁵

⁵⁴ Samson, p. 37.

⁵⁵ Samson, p. 38. While Samson mentions Debussy’s use of “harmonic types” several times, he never defines the term; perhaps the categorization systems described in Chapters 2-4 of this thesis may be brought to bear on Debussy’s music to help define these harmonic types.

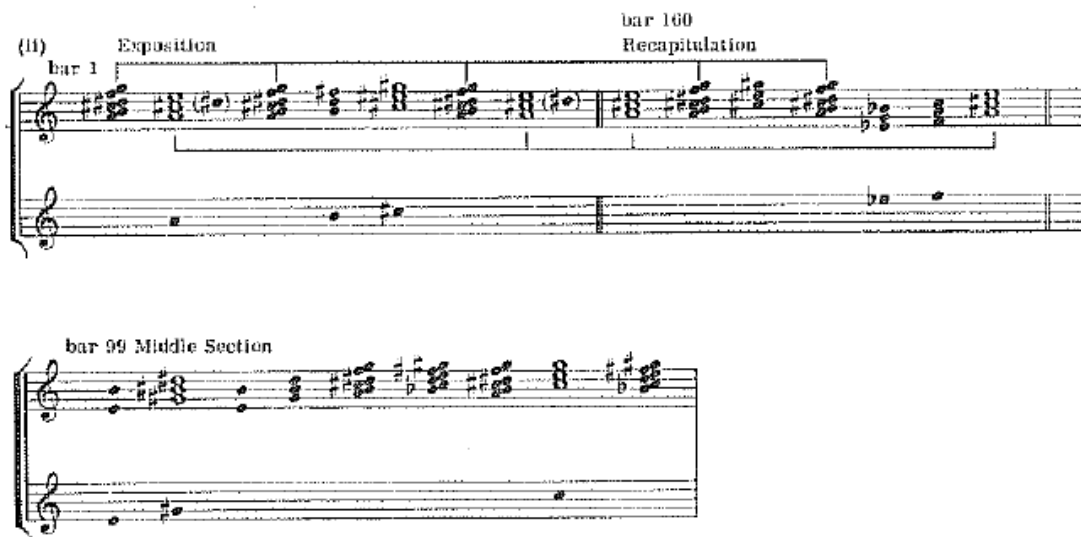


Figure 7: Samson's analysis of *L'Isle Joyeuse*⁵⁶

Samson argues that despite the emphasis placed upon the individual sound-moment, Debussy's music is "dynamic" rather than stagnant.⁵⁷ An analysis that focuses on harmonic type and collection, he feels, can make this ongoing motion apparent. Samson's analysis of *L'Isle Joyeuse*, pictured in Figure 7, shows what Samson believes to be the macrostructure of the piece. The top staff shows an almost regular alternation of a cluster chord with various root-position triads, while the bottom staff shows what Samson perceives as the points of harmonic articulation. It is notable that only triads seem able to produce harmonic articulation, while cluster chords do not participate in the overall tonal scheme of the work. Samson states, "Debussy has deliberately chosen to

⁵⁶ Samson, p. 39.

⁵⁷ Samson, p. 36.

emphasize through points of triadic clarification tonal regions associated with the two whole-tone scales, as [Figure 7], a tonal-harmonic summary of the work, suggests.”⁵⁸

I find Samson’s view of Debussy as an essentially tonal composer using an enlarged harmonic language to be a tenable one; this thesis will present a similar argument for Whitacre’s music. Debussy’s use of complex sonorities interwoven with more traditional triads is mirrored in the music of Whitacre. The quasi-diatonic language of both composers draws the listener toward a modified tonal interpretation of their compositions. In contrast to Samson’s implicit assumption that only triads may serve as points of harmonic articulation, I submit that non-triad sonorities may serve the same function provided that listeners perceive the sonority as a triad with added tones.⁵⁹ The root of the underlying triad may then be related to previous and subsequent harmonic material in tonally meaningful ways.

Arthur Wenk

Arthur Wenk, author of *Debussy and Twentieth-Century Music*, has a very different viewpoint. For Wenk, Debussy was the first *atonal* composer. Despite composing in an essentially diatonic space, Debussy used new harmonies to “nullify the tonal center,” resulting in music that is no longer tonal at all.⁶⁰ In an especially powerful paragraph, Wenk states, “Just as, until recently, the shimmering surface of [Debussy’s]

⁵⁸ Samson, p. 38.

⁵⁹ See chapter 4.

⁶⁰ Wenk, p. 77.

music concealed its underlying structures, so his diatonic approach to atonality has beguiled those looking for a chromatic frontal assault on the tonal system. While others emancipated the dissonance, Debussy quietly drowned tonality in a pool of triads.”⁶¹

Wenk argues that Debussy negates the tonal implications inherent in his music by treating his harmonies in a thoroughly non-conventional way. For instance, Debussy avoids the traditional dominant-tonic relationship by using root motion by tritone rather than fifth, as well as by using a whole-tone chord rather than a triad or dominant seventh chord to harmonize scale degree five. Wenk notes that Debussy is especially concerned with omitting the leading tone from the traditional V-I cadence.⁶²

Wenk argues that the continuous motion brought out in analyses like Samson’s is merely apparent, a surface elaboration of the underlying tonal framework of the piece, which moves so slowly as to be almost stagnant. Wenk writes, “Debussy’s methods of elaboration permit variety in melodic rhythm while preserving a nearly static harmonic rhythm. The forward impulse of the music depends on a continually changing mosaic of melodic fragments while harmonic progression in the traditional sense has been arrested, sometimes nearly to the point of stasis.”⁶³ The sonorities in these underlying progressions are themselves prolongations of a higher structural level.⁶⁴ Wenk describes several methods of elaboration and prolongation used by Debussy:

⁶¹ Wenk, p. 119.

⁶² Wenk, p. 68.

⁶³ Wenk, p. 69.

⁶⁴ Wenk, pp. 68-69.

A single chord may be ornamented with a melodic motive ... a single chord may be ornamented with one or more neighboring chords, an extension of the melodic neighbor-note principle. A single chord, sustained as a pedal, may be prolonged by a complete harmonic progression. In this case the underlying principal harmony takes precedence of the decorative progression and negates its forward impulse. A single sustained harmony may be decorated by a succession of chords whose logic depends on melodic rather than harmonic principles.⁶⁵

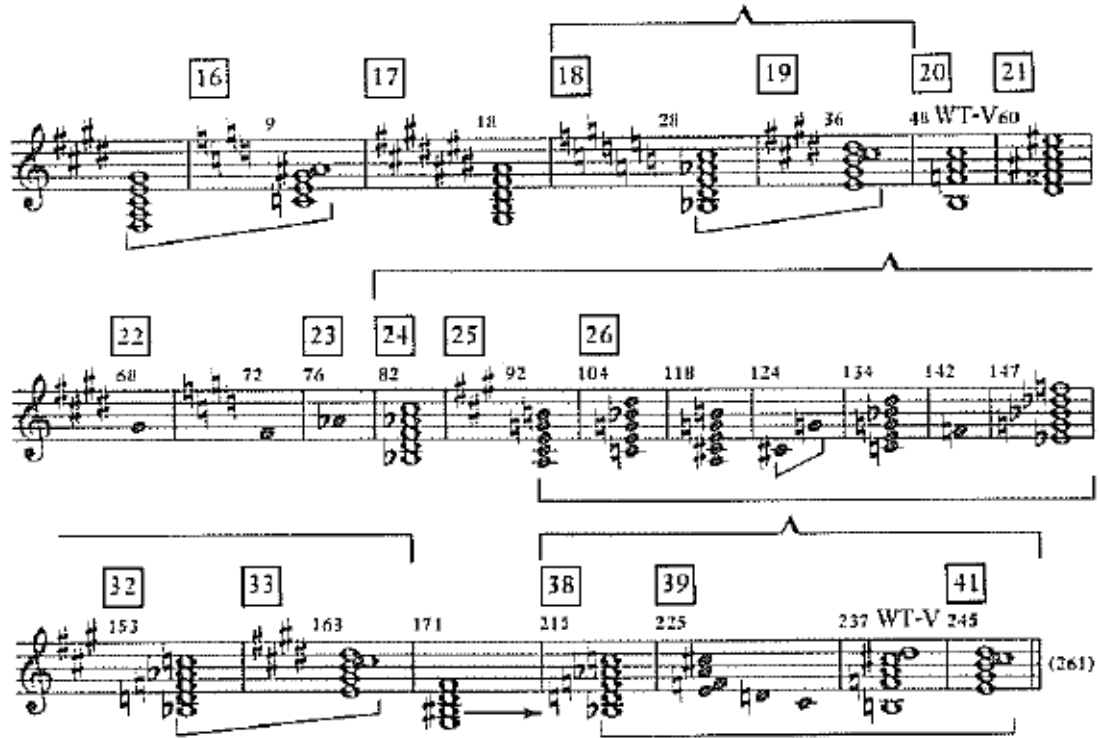


Figure 8: Wenk's analysis of *Jeux de Vagues*⁶⁶

Wenk's analysis of the underlying structure of Debussy's *Jeux de vagues* is given in Figure 8. The measure numbers provided show just how static Wenk perceives the harmonies to be. Brackets show the tritone relationships around which Debussy

⁶⁵ Wenk, p. 23.

⁶⁶ Wenk, p. 69.

structures the motion of this piece. In contrast to Samson's analysis, none of the structural harmonies posited by Wenk are pure triads. Unfortunately, Wenk does not include a middle- or foreground analysis of the piece, which would have helped to clarify the still-fuzzy distinction between elaborating a five- or six-note chord and simple melodic motion within the scale of a seven-note collection.

I find Wenk's analysis compelling and appreciate his description of Debussy's elaboration techniques. Whitacre uses many of the same techniques to prolong structural harmonies in his own compositions.⁶⁷ At times, Whitacre's compositions also evidence the harmonic stasis Wenk finds in Debussy, and both composers seem prone to negate the leading-tone function of the dominant chord, though each uses different methods. In Whitacre's case, however, I do not feel that the negation of dominant function and the long-term prolongation of a single sonority cause his music to be non-tonal. Whitacre's structural sonorities, for instance, are much more similar to conventional harmonies than the chords given in Wenk's analysis, and Whitacre prefers to use root motion by fifth rather than tritone, privileging IV-I root motion in place of V-I.⁶⁸

Avo Somer

Somer's study is concerned with formal structure in the music of Debussy. He believes that Debussy's compositions may be profitably viewed as "a distinctive

⁶⁷ See chapters 5-7.

⁶⁸ See chapter 5.

amalgamation of Classical phrase structure and modal-chromatic pitch materials.”⁶⁹ Debussy’s harmonic language is essentially tonal, Somer argues, but that tonality is colored by Debussy’s use of sonority and modality; for instance, Debussy often uses a dissonant tonic in the initial statement of his primary theme.⁷⁰ Often, Somer notes, Debussy adds a different harmonic “flavor” to each theme or formal section: “The juxtaposition (and occasionally the interpenetration) of diatonic, modal, pentatonic, chromatic, and occasionally whole-tone and non-tonal styles create the particular coloristic profile of syntactical segments. A different harmonic style may be used to define the character of a particular theme, while the musical narrative is significantly complicated by harmonically striking divergent cadences.”⁷¹

Somer uses metaphorical language to describe the various effects of Debussy’s coloristic harmonies. A dissonant tonic produces “a palpable restlessness,” while a sonority which implies bitonality introduces “shadowy tension.” The use of elements from the Phrygian mode within the initial tonic causes a feeling of “ominousness,” while modal mixture contributes to “a lively sense of motion.”⁷² In contrast to Classical norms, Debussy often supports the basic idea of a piece with a non-tonic harmony, a technique which lends the music “tonal instability and a potential for expressive differentiation.”⁷³

⁶⁹ Somer, p. 74.

⁷⁰ Somer, p. 91.

⁷¹ Somer, p. 91.

⁷² Somer, p. 90.

⁷³ Somer, p. 90.

Of particular interest to this project is Somer's discussion of cadences in Debussy's compositions, quoted here in its entirety:

In the sonatas of Debussy, phrases may terminate either with a half-cadence, at a "plagal half-cadence," or most frequently at a novel "divergent cadence," a caesura or brief pause at any one of the secondary diatonic or chromatic scale degrees, often at a dissonant sonority. Such articulations usually do not provide a fully "cadential" sense of tonic closure, except when occasionally a consonant triad is reached through a sudden "tonicization"; but they are nevertheless highly significant in marking syntactical divisions. The divergent cadence, in particular, does not represent merely an interruption but is essentially analogous to the half-cadence – marking an internal formal segmentation, yet without the strong arrival at an important dominant. Such a cadence is especially remarkable for effecting a sudden, brief deflection from the established tonal path to a novel harmonic region, or even a dissolution of harmonic functions altogether at a medial structural articulation created primarily through rhythmic or gestural means.⁷⁴

Somer clearly views Debussy's harmonic language as tonal. Analytical labels such as "plagal half cadence" and "divergent cadence" have no meaning without the projection of a tonal center throughout the piece. Such vocabulary will enrich the analyses of Whitacre's compositions presented later in this thesis. Though Somer does not explicitly state as much, he seems to view Debussy's chords as triads to which Debussy has added dissonances, modal inflections, and chromaticism to lend the sound distinctive color. Somer's descriptions of some of the specific effects used by Debussy are echoed in this thesis with a description of the effect of various added tones in Whitacre's music.⁷⁵

⁷⁴ Somer, p. 74.

⁷⁵ See chapter 4.

Sonority Studies

The general style of music in which Whitacre writes has long been regarded as difficult to analyze. This type of music, variously called neotonal, pantonal, post-tonal, and neocentric, includes compositions by the likes of Debussy, Ravel, Bartok, and Stravinsky. These composers utilized mainly pitches of the diatonic scale while avoiding more conventional functional tonality. Because the music is mostly (and in some cases completely) diatonic, it is rife with tonal allusions. Set theory analysis is thus less than convincing, as it ignores any tonal implications inherent in the music. Traditional Roman-numeral analysis also proves less than satisfying, as the sonorities involved are often more complex than in more conventional tonal music and do not necessarily behave in a functional manner. Analysts thus tend to approach this music on a piece-by-piece basis, developing a new analytical approach for a specific piece or for works by a single composer. Several theorists have developed analytical methods for use on post-tonal music in general, but none have come into general use as yet. Nevertheless, certain theories dealing specifically with sonority are pertinent to this study.

Richard Parncutt

Parncutt's psychoacoustic theory of harmonic root uses algorithms to model a listener's perception of chord root for any steady-state complex sound.⁷⁶ Parncutt's theory is actually a revision of Ernst Terhardt's 1982 theory, which uses the overtone

⁷⁶ Parncutt, p. 68.

series to predict the root of the chord. Parncutt summarizes the basic premise of the theory:

The pitch of a complex tone is determined by a spontaneous process of *pattern recognition*. The audible harmonics of a complex tone describe a specific pitch pattern ... this “harmonic pitch pattern” is very common in ordinary sounds, and is especially common in speech. It is therefore highly familiar to the auditory system – so familiar that the listener is unaware of ever “recognizing” the pattern. Instead, the listener is (normally) aware of a single tone sensation whose pitch corresponds to that of the first fundamental. A tone sensation is normally experienced at the fundamental if part of the harmonic pitch pattern is missing, even if this includes the fundamental itself.⁷⁷

According to Parncutt’s theory, as listeners determine what they perceive to be the root of a chord, they are subconsciously searching for the fundamental pitch whose harmonic series encompasses the entirety of the audible tones present in the sonority. Parncutt is able to simulate this process via complex algorithms.

Harmonics above the tenth are generally inaudible in complex tones and thus do not form part of the listener’s internalized harmonic pitch pattern. Terhardt calls harmonics above the tenth *root detractors*; these include the minor second, perfect fourth, tritone, minor sixth, major sixth, and major seventh. All other intervals (perfect unison, perfect fifth, major and minor thirds, major ninth, and minor seventh) are *root supports*; the unison, fifth and major third are the strongest of these. When root detractors are voiced lower than their natural position in the upper reaches of the harmonic series, we perceive the entire chord as more dissonant. Parncutt states, “When such “detractors” occur at lower pitches, they tend to be heard as separate from the rest of the complex

⁷⁷ Parncutt, pp. 68-69, emphasis original.

tone. Similarly, chords in which weak supports or detractors are voiced among or below strong supports tend to sound bitonal – they seem to have more than one root.”⁷⁸

Parncutt’s adaptation of Terhardt’s theory includes some alterations to Terhardt’s formulas which improve how well the results mirror those of actual listeners and also the addition of an algorithm that weights possible chord roots relative to one another and assigns each sonority a root ambiguity rating based on how strongly the most likely root presents itself.⁷⁹ The root of the dominant seventh chord is unambiguous, for instance, while the half-diminished seventh chord is considerably more ambiguous.⁸⁰ In general, Parncutt states, “more dissonant chords ... have more ambiguous roots.”⁸¹ Additionally, “The consonance (‘root disambiguity’) of a chord is enhanced if root supports are voiced below detractors, and if strong supports are voiced below weak supports.”⁸²

Though Parncutt is concerned with the psychology of listening and perception, his theory has important implications for the analysis of complex sonorities like those found in Whitacre’s music. In traditional tonal music, chords progress from one to another through a harmonic logic based on chord roots; with Parncutt’s theory, analysts can determine the chord root of even the most complex chord, opening the door for new theories of root motion in post-tonal music. This thesis submits an alternative method of

⁷⁸ Parncutt, pp. 87-88.

⁷⁹ Parncutt, p. 73.

⁸⁰ Parncutt, p. 78.

⁸¹ Parncutt, p. 78.

⁸² Parncutt, p. 87.

finding “the” root of a complex sonority, as well as determining the ambiguity of a given chord.

Anthony Pople

Before his untimely death in 2003, Anthony Pople was developing a computer program called *Tonalities* which was to be capable of analyzing any piece of music that falls under the broadest definition of tonality. The principle aim of the project was to enable an analysis of “a body of music, much of it written around 1900, to which the word ‘atonal’ seems inapplicable, and yet which cannot easily be held up as exemplifying ‘tonality’ either.”⁸³ Pople provides a list of twenty-nine composers who fit this description and suggests that his system could also be used for a good portion of the output of many less tonal composers.⁸⁴ Additionally, the *Tonalities* system is capable of analyzing more traditionally tonal music.⁸⁵

Pople states that segmentation is a necessary starting point for any musical analysis; that is, the analyst must determine the time-points where harmonies change. Segmentation is the essence of atonal analysis: after determining the length of a segment, “the chord” of the segment is defined to be the entire collection of pitches present within the segment.⁸⁶ In tonal analysis, on the other hand, the theorist assumes a more limited

⁸³ Pople, p. 153.

⁸⁴ Pople, p. 153.

⁸⁵ Pople, p. 167.

⁸⁶ Pople, pp. 155-56.

vocabulary of possible chords. Presented with the collection of pitches within a given segment, the tonal analyst finds the chord that best fits the given information, classifying any pitches within the segment but outside the chord as nonharmonic tones.⁸⁷

Pople's *Tonalities* software works on the principle that the majority of the interpretation inherent in musical analysis is contained in the analyst's segmentation and definition of permissible harmonic vocabulary. Given these two pieces of information, *Tonalities* is able to complete the more mechanical process of comparing the pitches present in each segment against the possible chord types to determine the chord best represented by a given segment. When presented with situations in which more than one chord type is possible, *Tonalities* expresses a preference based on the same criteria on which a human analyst would depend: duration, metric emphasis, and collection.⁸⁸ *Tonalities* even retains information about previous musical material, with "memories being set up to decay over time so that more recent musical events have a correspondingly greater effect on decision-making in relation to the segment currently being analysed. Within this framework, the transition to the current segment from the immediately prior segment is given special attention."⁸⁹

The real advantage to Pople's *Tonalities* software is its flexibility. Analysts can easily change their segmentation or the accepted harmonic vocabulary until the resulting

⁸⁷ Pople, pp. 157-59.

⁸⁸ Pople, p. 158.

⁸⁹ Pople, p. 159.

analysis fits their intuitive understanding of the passage.⁹⁰ Such reevaluation would be much less time-consuming with this software than with traditional analysis. The idea of segmentation and of defining a vocabulary of chords is especially applicable to an analysis of Whitacre's music.

Matthew Santa

John Clough's diatonic set theory combines the rigor of set theory with a sensitivity to diatonic steps not contained in traditional twelve-tone set theory. Matthew Santa, who developed a practical analytical version of Clough's speculative theory, believes that diatonic set theory provides a theoretical language capable of expressing both "the analysis of tonal allusions in post-tonal diatonic music [and] the analysis of motivic networks." Santa goes on to state, "The problems inherent in analysing post-tonal diatonic music can be solved by a careful application of set theory modulo 7, in interaction with the more familiar mod12 set theory."⁹¹

Santa provides an introduction to diatonic set theory. Diatonic set theory, which is based on essentially the same principles as twelve-tone set theory, is a modulo 7 system and works with step-classes rather than pitch-classes, where a step-class is defined as "the set of all notes of a particular letter name, regardless of accidentals or register." The step-class is a broader theoretical category than the pitch-class, a generalization which "allows us to see beyond the chromatic partitioning of the octave to

⁹⁰ Pople, p. 168.

⁹¹ Santa, pp. 168-69.

larger diatonic contexts.”⁹² The number of set-classes possible in by diatonic set theory is startlingly small compared to chromatic set theory: there are 18 Tn-types, which reduce to 16 TnI-types.⁹³

One of Santa’s primary contributions to diatonic set theory is his method of dealing with chromaticism. This allows diatonic set theory to expand beyond the realm of purely diatonic music, “provided that there is sufficient musical reason to hear the chromatic notes as embellishments [of a given step-class].” Santa proposes that the analyst begin by separating the piece into spans, with each span containing a complete diatonic collection. A new span is begun when a pitch class appears that is not part of the diatonic collection of the previous span. This new span is then extended backwards as far as possible, overlapping with the previous span to produce a transitional span with a “fuzzy” set; that is, which implies more than one collection.⁹⁴ This transitional span seems to be analogous to the pivot chord of tonal theory.

Santa uses diatonic set theory to analyze several pieces from the post-tonal repertoire, and his methods reveal some interesting results. For instance, Santa shows that the passage from Stravinsky’s *Symphony of Psalms* shown in Figure 9 is governed by the diatonic set (0135). Of course, with only 16 possible set classes, these connections are not quite as significant as in chromatic set theory; motivic connections are inherently weaker in diatonic set theory because of the smaller number of possibilities.

⁹² Santa, p. 171.

⁹³ Santa, p. 176.

⁹⁴ Santa, pp. 176-77.

The image shows a musical score for measures 6-18 of the *Symphony of Psalms*. The score includes parts for Cello (labeled [solo cello]), Horn (mf [Hn.]), Piano (mf [Pno.]), and Voice (mf [altos]). The analysis below the score shows transformations T₆ and T₅ between diatonic sets (0135)⁷.

Measure 6: (0135)⁷ {B C E G}

Measure 13: (0135)⁷ {A B D F}

Measure 18: (0135)⁷ {F G B D}

Measure 18 (voice): (0135)⁷ {D E G B}

Figure 9: Santa's analysis of *Symphony of Psalms*, measures 6-18.⁹⁵

Unfortunately, Santa's analysis reveals little about the "tonal allusions" made by this music, one of the "analytic problems" which diatonic set theory purports to solve. Though diatonic set theory does more than any other theory to combine the seemingly disparate worlds of tonal and atonal analysis, much relevant information is lost in the process. In analyzing Whitacre's music, I thus prefer a theory which emphasizes the tonal relationships between sonorities while retaining information about motivic connections.

⁹⁵ Santa, p. 182.

Chapter 2: Whitacre's Chord Structures

When singing or listening to Whitacre's choral pieces, I am continually struck by the beauty of each individual sound-moment. In my experience, individual vocal lines function not as melodies so much as a string of pitches with which Whitacre creates his uncommon and, to my ears, breathtakingly beautiful sonorities. Naturally, as a music theorist I want to know *why* Whitacre's sonorities should move me as they do. In order to better understand Whitacre's use of sound within his choral compositions, I closely studied Whitacre's entire output for a cappella choir. I chose to limit my investigation to a cappella choral pieces because, to my ear, Whitacre's sonorities are emphasized when timbral distinctions do not detract from the unity of sound. Additionally, as noted by Owen, Whitacre's use of slow tempi, homophonic texture, indistinct melody, and relatively steady rhythm enhances the importance of sonority in his compositions. Within these a cappella pieces, then, I documented each chord, eventually forming a massive database representing the entirety of Whitacre's harmonic vocabulary for a cappella choir. I strove to capture the details of each sound-moment as fully as possible and accomplished this by developing a new notational device, the *chord structure*.

Methods and Notation

In developing my database, I was interested Whitacre's chord structures only in those passages of his compositions which clearly emphasize sonority above all else. Though this describes most of Whitacre's music, some of his pieces also include passages

in which sonority is not as much of a factor. At times, the melody of each individual line seems to be prominent, and my ear does not understand the resulting combination as a chord so much as a coincidence of tones caused by the simultaneous sounding of multiple melodies. It seems to me that the simultaneities occurring in passages such as the one shown in Figure 10 are not representative of Whitacre's harmonic vocabulary; thus, I omitted such passages from my analysis. This is not to say, however, that Whitacre does not conceive of each melodic line as a composing-out of a specific sonority: the bass line in Figure 10, for instance, clearly projects a D-A dyad. However, this passage does not project an emphasis on the color of each individual sound-moment as does the majority of Whitacre's output.

The image shows a musical score for four vocal parts: Soprano (S), Alto (A), Tenor (T), and Bass (B). The score is in 3/4 time and includes lyrics such as "O my son, O my son, Ab-sa-lom, my". The music features a dynamic marking of *f* (forte) and includes triplets in several places. The lyrics are: S: O my son, O my son, Ab-sa-lom, my; A: Ab-sa-lom, O Ab-sa-lom, O Ab-sa-lom, my; T: O Ab-sa-lom, O Ab-sa-lom, Ab-sa-lom; B: my son, O Ab-sa-lom, O my.

Figure 10: *When David Heard*, measures 40-43.

Piece	Measures Analyzed	Number of Measures Analyzed	Number of Measures in Piece	Percent of Piece Analyzed
<i>Go, Lovely Rose</i>	1-32, 37-54	50	54	92.6
<i>With a Lily in your Hand</i>	1-29, 34-64	58	64	90.6
<i>I Hide Myself</i>	1-32	32	32	100
<i>Cloudburst</i>	1-22, 26-58, 65-71, 75-84	72	84	85.7
<i>Water Night</i>	1-59	59	59	100
<i>When David Heard</i>	1-19, 46-62, 70-87, 100-151, 195-214	126	214	58.9
<i>i will wade out</i>	7-10, 15-26, 31-32	18	38	47.4
<i>hope, faith, life, love</i>	1-25, 30-50	46	50	92
<i>i thank you God for most this amazing day</i>	1-94	94	94	100
<i>Lux Aeterna</i>	1-48	48	48	100
<i>Sleep</i>	1-74	74	74	100
<i>Leonardo Dreams</i>	1-2, 5-14, 16-17, 21-38, 44, 47-57, 76-84, 98-134, 139-141	93	156	59.6
<i>A Boy and a Girl</i>	1-52	52	52	100
<i>Her Sacred Spirit Soars</i>	1-99	99	99	100
<i>This Marriage</i>	n/a (no measure numbers)	n/a	n/a	100
<i>The Stolen Child</i>	22-27, 41-43, 55, 62-63, 66-67, 71-76, 89-93, 101-104, 112-117	35	122	28.7
<i>Sleep, My Child</i>	13-18, 35-39, 43-49, 56-63	26	63	41.3
<i>Nox Aurumque</i>	1-12, 14-54, 65-83	72	83	86.7

Table 1: Passages included in this study

A complete list of the passages I analyzed for this project is shown in Table 1.⁹⁶ Eight of the eighteen pieces in this study were included in their entirety. Five more of the pieces could be mostly included, as greater than 85% of their content appeared to be chord-driven. Of the five remaining pieces, which contain less than 85% of chordal material, one (*Sleep My Child*) is an adaptation of a solo vocal piece, and so should be expected to show more melodic influences. Solo lines are used for effect in *When David Heard* and for text painting in *Leonardo Dreams of his Flying Machine*. A large portion of *i will wade out* was omitted from this study because it consists of a single line set against itself in canon. *The Stolen Child*, a setting for quintet and chorus, often has

⁹⁶ Appendix A contains a brief introduction to each piece for readers less familiar with Whitacre's compositions.

homophony within an individual ensemble but rarely between both ensembles. In total, my study encompasses 1,102 measures (76.8%) of the 1,434 measures contained within the eighteen pieces.⁹⁷

For each of the passages above, I identified the vertical sonority present at every individual moment, regardless of duration. In other words, my segmentation of the music refrains from analytical interpretation as much as possible.⁹⁸ Each segment lasts for precisely as long as each combination of tones lasts, a segmentation which allows me to deal with each sonority on its own terms before considering its connection to the surrounding music. Lacking an understanding of Whitacre's chordal vocabulary and without a program such as *Tonalities* to aid in refining my guesses as to what constitutes a chord in Whitacre's music, I felt it prudent to consider all possibilities. Even if my segmentation technique results in the categorization of simultaneities achieved by non-harmonic methods such as melodic ornamentation, I argue, the frequency of occurrence of each type of sonority within the large sample of sonorities included in this study should aid in identifying those harmonies which are merely coincidental.

There is, however, one exception to my otherwise strictly mechanical segmentation. At times, Whitacre introduces a sonority using a method somewhat analogous to the arpeggiation of a triad: a melody ascends and/or descends through the pitches of the intended chord, and each pitch is retained in at least one voice after its

⁹⁷ An estimate of 48 total measures for *This Marriage* has been used here and elsewhere in this thesis. The estimate is derived from an approximation of four measures per line for each of the twelve lines in the piece.

⁹⁸ A further segmentation, which does involve interpretation, is defined in Chapter 4 and used consistently in the analyses of Chapters 5-7 of this thesis.

onset to form a chord. I refer to this technique as a “chord build,” as Whitacre seems to be building the chord from a melody.⁹⁹ Figure 11 gives an example of a chord build.

The vertical lines in the score represent my segmentation of the passage.

The image shows a musical score for measures 46-49 of 'Water Night'. It consists of five systems of staves. The first system has a vocal line with lyrics: 'cur - rent, fills you from with - in, flows for - ward,'. The second system has a vocal line with lyrics: 'cur - rent, fills you from with - in, flows for - ward,'. The third system has a vocal line with lyrics: 'cur - rent, fills you from with - in, flows for - ward,'. The fourth system has a vocal line with lyrics: 'cur - rent, fills you from with - in, flows for - ward,'. The fifth system has a piano accompaniment with lyrics: 'cur - rent, fills you from with - in, flows for - ward,'. Vertical lines are drawn through the score to segment the passage into measures.

Figure 11: Segmentation of *Water Night*, measures 46-49

Having identified the sonority present at each moment within Whitacre’s pieces, I proceeded to classify each chord. I omitted single tones and dyads from my classification, defining a “chord” as consisting of three or more distinct pitches. Several of Whitacre’s chords are identifiable as major or minor triads in various inversions; I did not include these chords within my classification system. Major and minor triads, as well

⁹⁹ Larson also notes this compositional technique, and calls it “additive/subtractive by scale or leap,” a descriptive but unwieldy term which I do not care to use here.

as dyads and single tones, are already well-understood as musical entities and need no further theorizing. Additionally, I believe that it is Whitacre's use of non-triadic chords that influence my perception of his musical sound as unique. Thus, I recorded the chord structure of any chord that was not a major or minor triad, including those chords that are typically classified as "seventh chords," "diminished triads," "suspensions," and the like. I feel justified in including these chords in my investigation because, in Whitacre's music, dissonances such as diminished fifths and sevenths generally do not resolve in the expected manner. In all, my analysis resulted in 1,717 non-triadic chords.

In developing a notation for each chord I wished to study, I chose to retain as much information about the original sonority as possible. My chord structure notation thus retains the exact voicing of each chord as well as the number of individual pitches present. I discard exact pitch in my chord structure notation so that the final notation represents all possible transpositions of a given voicing. I use pitch class zero to notate the lowest-sounding pitch in the sonority, and notate higher pitches by their pitch class designation relative to the bass tone.¹⁰⁰ I use slashes to represent new octaves, so that the individual pitches within a pitch class can be distinguished from one another without reference to a specific register.

Take, for example, the chord structure 6/07t/357. The first number of the chord structure (6 here) represents the total number of voices within that sonority. The following numbers represent the pitches contained within the sonority. The first of these pitches is always represented by the number zero. In this example, a seven and "t" follow

¹⁰⁰ In keeping with set-theory analysis, I use a "t" to represent pitch class ten, and an "e" to represent pitch class eleven.

the zero before the next slash; these indicate the existence of tones seven and ten semitones, respectively, above the bass tone.¹⁰¹ The slash implies a change of register: the three, five and seven following the slash represent pitches fifteen, nineteen, and twenty-one semitones, respectively, above the bass tone. For ease of interpretation, intervals larger than eleven semitones are represented by their mod12 equivalent.¹⁰² A representative of the 6/07t/357 chord structure is given as the first chord in Figure 12 below, along with other examples of chord structures.¹⁰³ Notice that the chord structure notation maintains most of the information available in musical notation, disregarding only exact location of the sonority in pitch space and the exact spelling of the chord.



Figure 12: Example chord structures

Results

My analysis of Whitacre's chords resulted in an overwhelming abundance of chord structures: the 1,102 measures I analyzed contained 1,151 unique, non-triadic

¹⁰¹ Because each interval is measured above a stable bass tone, intervals may not be inverted as in traditional mod12 analysis. For instance, 7 is distinct from 5.

¹⁰² That is, the distance between two pitches, though measured in intervals, is recorded as an interval class for ease of comprehension.

¹⁰³ Because chord structures are transposable, any instance of a chord structure written in musical notation is only a representative of an infinite class of such chord structures.

chord structures! These range from three-voice chords to massive sonorities containing up to eighteen individual pitches. While a complete list of Whitacre’s chord structures can be found in Appendix B, Table 2 seeks to summarize the information.

		Lowest Sounding Interval of Chord Structure													
		01	02	03	04	05	06	07	08	09	0t	0e	0/0	other	total
Number of Voices in Chord Structure	3	3	7	3	3	3	0	7	2	1	1	0	0	5	35
	4	3	17	19	15	24	2	36	15	22	16	7	2	5	183
	5	3	19	23	19	36	3	71	25	32	4	5	5	3	248
	6	8	21	38	30	34	3	82	9	20	2	1	5	4	257
	7	3	11	20	13	22	1	71	7	19	2	1	1	0	171
	8	0	11	30	11	18	1	46	8	23	2	0	3	1	154
	9	0	1	5	4	10	1	9	4	3	1	1	0	1	40
	10	1	5	2	3	4	0	11	4	0	0	0	0	0	30
	11	0	4	4	1	4	0	4	0	0	0	0	0	0	17
	12	0	1	0	0	0	0	4	0	0	0	0	0	0	5
	13	0	0	1	0	0	0	1	0	1	0	0	0	0	3
	14	0	1	0	0	0	0	3	0	0	0	0	0	0	4
	15	0	0	0	0	0	0	1	0	0	0	0	0	0	1
	16	0	1	0	0	0	0	0	0	0	0	0	0	0	1
	17	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	18	0	0	0	0	1	0	1	0	0	0	0	0	0	2
	total	21	99	145	99	156	11	347	74	121	28	15	16	19	1151
	%	2	9	13	9	14	1	30	6	11	2	1	1	2	

Table 2: Chord structures by number of voices and lowest interval

As may be seen, Whitacre’s chords most typically contain from four to eight voices, with five- and six-voice chords being the most typical. While he uses chords larger than ten voices only rarely, these massive chords constitute an immense wave of sound, and so are important to consider in my investigation of Whitacre’s chord structures. The columns of the table are arranged in terms of the lowest-sounding interval in the various chord structures, as that interval is perhaps the most aurally prominent interval and helps to ground the chord. Whitacre seems to prefer more acoustically consonant lowest intervals: his favorite by far is the perfect fifth, followed by

the perfect fourth, minor third, and major sixth. Whitacre is least likely to place the interval of a tritone or diminished fifth in the lowest two voices and is also unlikely to start with an interval of an octave or more, an interval of a single semitone, or an interval of a major seventh.

Whitacre's preference for more acoustically consonant intervals as the lowest-sounding intervals in his chords may help make his music more accessible to unaccompanied choirs. The perfect fifth, in particular, is a very stable interval for the low voices, as the rest of the choir may tune to the overtones of the bass and tenor. In general, Whitacre's chord structures reveal a closer spacing in higher registers, emulating that of the harmonic series. Parncutt would say that this spacing contributes to the root disambiguity of even Whitacre's more dissonant chords. Additionally, Whitacre's preference for fairly wide spacing in the lower voices, along with the emphasis on more consonant intervals, helps give his music a more traditionally tonal feel.

Given the above statements, it may at first seem odd that Whitacre does not use the octave as his lowest interval very often; after all, the octave would be the easiest for unaccompanied vocalists to tune. However, especially in chords with a large number of individual parts, the use of an octave (or any interval greater than an octave) as the lowest interval has the potential to greatly increase the difficulty of singing that chord because of the increased range required of the choir. Whitacre does use a fair number of octaves in his 5- and 6-voice chords, as well as several intervals larger than an octave in his 3- and 4-voice chords. As the number of voices increases, Whitacre tends to use smaller initial intervals. However, the majority of Whitacre's chord structures contain pitches one or

two octaves above the lowest sounding pitch, even if that octave interval is not the lowest sounding interval.

Comparison: Voicing a Major Triad

In order to better understand the richness and diversity of sounds available to Whitacre through his multitude of chord structures, let us examine the various chord structures possible with one of the most common musical entities: a major triad in root position. In four-voice writing, the root of the chord is most commonly doubled. Composers generally maintain a spacing of an octave or less in the upper voices, with more space possible between the tenor and bass voices. For this exercise I will limit the spacing between tenor and bass to two octaves.¹⁰⁴

Based on these constraints, twelve possible chord structures arise; the first six are identical to the second six except for the octave of the bass pitch. These possible chord structures are depicted in Figure 13. In traditional four-part writing, certain of these chords are considered “better” than others, but none are “wrong.” Composers are free to choose whichever chord structure they prefer, depending on context. Similarly, there are twelve possible chord structures for a root-position minor triad, as well as for either triad in first or second inversion: a grand total of 72 possible chord structures for strict four-part writing with no seventh chords, diminished triads, or nonharmonic tones.¹⁰⁵

¹⁰⁴ Whitacre never exceeds an octave and a half between the tenor and the bass in his chord structures.

¹⁰⁵ That is, with none of the sonorities already included in Appendix B.

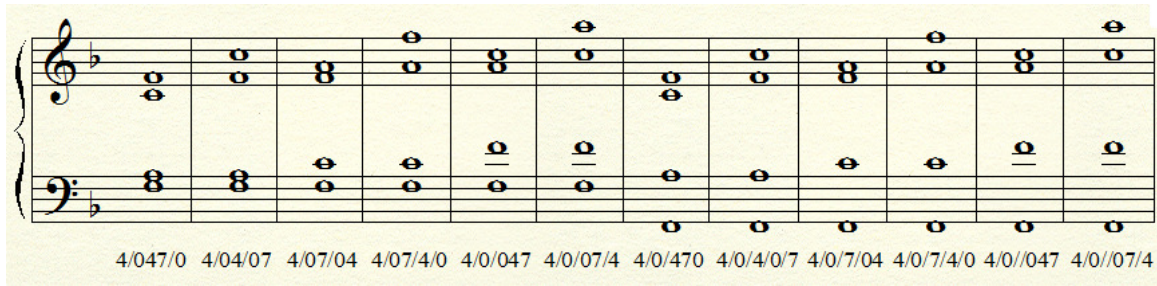


Figure 13: Possible chord structures for a root-position F major triad in four voices

Admittedly, this compositional context does not arise in real life outside of a first-semester theory course, but it may still be enlightening to compare Whitacre’s harmonic vocabulary with this much more restricted set of triadic chord structures. Whitacre’s compositional sound is enhanced through the use of 183 four-voice chord structures in addition to these 72 traditional chord structures, giving him a compositional vocabulary of 255 chord structures in four voices, over four times that available to him in strict four-voice triadic writing. Add to this Whitacre’s tendency, documented by Larson, of constantly changing the textural density in his compositions, and an overwhelming abundance of chord structures become available to him. This diversity of chord structures gives Whitacre’s music its unique sound and distances it from the realm of conventional tonality.

When confronted with the chord structures of Figure 13, analysts would typically affix the same label to each chord structure: “I,” “5/3,” “Tonic,” etc. These labels are not wrong, because on some level each of the above chord structures represents the same musical entity, an F major triad in root position. However, these labels are a simplification of the audible information. Based on context, composers will typically prefer one chord structure over another. Each chord structure has a slightly different

sound based on the lowest-sounding interval, the highest-sounding pitch, the register of the bass, open or closed voicing, etc. Composers are aware of these differences, and prefer a certain structure in a given context because of these differences.

Case Studies

Despite using such a huge variety of chord structures, Whitacre occasionally shows a preference for one specific chord structure in a given piece. Because of the high level of detail retained in the chord structure notation, it is unlikely that a composer would repeat the same chord structure multiple times within a piece without specifically intending to. For this reason, chord structure repetitions are more meaningful than a composer's use of, for instance, the same chromatic or diatonic set class within a piece. Identical chord structures do not just have similar characteristics; they are "the same" in a much stronger sense. Figure 14 depicts chord structures Whitacre emphasizes in *A Boy and a Girl*, *Cloudburst*, and *Three Songs of Faith*, respectively.

4/07/24 7/03579e/0 8/038t/0378

Figure 14: Chord structures for case studies

A Boy and a Girl

The 4/07/24 chord structure is especially significant in Whitacre's *A Boy and a Girl*. The composition begins and ends with the 4/07/24 chord structure, and that structure appears a total of 33 times within the 52-measure piece. This constitutes nearly a third of the composition's 103 vertical sonorities. Often Whitacre moves from one to another of these chord structures via parallel motion in all voices. Owen suggests removing the added tone in rehearsal in order to allow all parts but the alto to tune to a pure major triad.¹⁰⁶ I would like to point out, however, that the alto's pitch here sits a perfect fifth above the tenor's, adding to the ease of tuning the chord. Apart from the 33 statements of this chord structure within this piece, Whitacre uses 4/07/24 only four other times in his entire output: once in *Go, Lovely Rose*, twice in *With a Lily in Your Hand*, and once in *Sleep*.

Cloudburst

Whitacre uses the chord structure 7/03579e/0 six times in *Cloudburst* and never uses it in any other work included in this study. It is the first non-triadic sonority heard in the piece and becomes the signature sound for the composition. The chord structure appears at significant moments throughout the piece: in the opening at measure 2, at the start of the B section at measure 28, directly after the instrumental interlude at measure 70, and in three of the final four measures of the piece (mm. 81, 83, and 84). Whitacre ends the piece on this same chord structure.

¹⁰⁶ Owen, p. 90.

Three Songs of Faith

The chord structure 8/038t/0378 makes an appearance six times in Whitacre’s song cycle *Three Songs of Faith*: twice within *hope, faith, life, love* and four times in *i thank you God for most this amazing day*. It is most prevalent in the latter piece and makes its appearance as the first non-triadic sonority in the movement. In *i thank you God for most this amazing day*, the chord structure appears on the words “God,” “tasting,” “touching” and “seeing,” while in *hope, faith, life, love*, the chord governs the “Faith” phrase. Whitacre states that this chord structure was the first sonority he wrote when composing *i thank you God for most this amazing day*, making it the “germ” of the movement.¹⁰⁷

Conclusions

As seen above, Whitacre sometimes singles out a specific chord structure for emphasis within a given piece. However, the case studies given here are more the exception than the rule: as shown in Table 3, the vast majority (78%) of Whitacre’s 1,151 chord structures appear only once in the 1,102 measures analyzed for this study. Only 56 chord structures (5%) appear more than three times, and only two chord structures (.2%) appear more than ten times.

Number of Appearances	1	2	3	4	5	6	7	8	9	10	21	37
Number of Chord Structures	900	134	61	21	10	6	6	6	2	3	1	1

Table 3: Frequency of appearance of chord structures within Whitacre’s works

¹⁰⁷ Whitacre, “Writing *The Stolen Child*, Part II.”

The vast number of chord structures used by Whitacre would make it highly difficult for listeners, analysts, or Whitacre himself to keep track of each chord structure as it occurs. Though Whitacre's chord structures greatly contribute to the variety of sound inherent in his compositions, they are of limited use in making sense of the experience of listening to his music. The level of detail inherent in the chord structure notation ensures that the connections made in the case studies above are significant while simultaneously preventing the analyst from making a large number of such connections.

Chapter 3: Whitacre's Chord Types

Though Whitacre's 1,151 chord structures are all unique, they vary in the degree to which they are "different" from one another. The *chord type* is a notation that discards some of the detail present in the chord structure in order to show a greater degree of similarity between previously distinct chord structures. This allows analysts to make a larger number of meaningful connections between Whitacre's sonorities and brings us closer to understanding Whitacre's sound world.

Methods and Notation

As seen in the previous chapter, a "family" of chord structures can represent the same musical entity. Each of the chord structures depicted in Figure 13 are distinct, but are also somewhat alike in that the chord structure notation of each includes the pitches 0, 4, 7, and no others. The placement of the pitches with regard to one another and to the bass tone is what determines the individual chord structure, but the mere presence of the three pitches, regardless of octave, determines the "sameness" of the chord structures. The registral order of those intervals within the chord structure is irrelevant, as are the number of voices and the relative strength of the 0, 4, and 7.¹⁰⁸ If a chord structure

¹⁰⁸ Recall that every chord structure begins with a zero; all other voices may be freely ordered.

contains these three interval classes and no others, it represents a specific voicing of a more general musical entity (in this case, a major triad in root position).¹⁰⁹

I define a *chord type*, then, to be the ordered collection of all pitch classes contained within a chord structure. Chord types disregard some of the information contained within the chord structure notation, such as number of voices and the exact position of each note within the chord. Chord types retain information about the pitch classes (not pitches) contained within the sonority, as well as keeping track of the bass tone. To notate a chord type, one must simply record each pitch class that occurs within the chord structure as an interval class above the bass tone, which is again taken to be zero. These are then placed in numerical order.¹¹⁰ As an example, the chord structure 6/07t/357 is a representative of the chord type 0357t. Though pitch class 7 appears twice in the chord structure, it appears only once in the chord type. Thus, though the chord structure had six voices, its representative chord type contains only five pitch classes.

At first glance, a chord type might seem to resemble the TnI set-class of chromatic or diatonic set theory. Indeed there are some similarities: both notations, for instance, begin with a zero and use numbers mod 12 to represent pitch classes present in a given sonority. With TnI set-classes, however, analysts will often invert and transpose the collection of pitch classes present in the score in order to achieve closest form. On the other hand, a chord type has already been transposed so that the zero corresponds

¹⁰⁹ Because the octave of pitches doesn't matter in chord type notation, the numbers in the notation will represent pitch classes rather than pitches, with intervals between the bass and the upper pitch measured, as in chord structure notation, as interval classes.

¹¹⁰ Technically, since this zero occurs at the beginning of each chord structure it could be dropped from the notation. However, I have found it advantageous to retain the zero as a reminder of the number of pitch classes contained with a chord, for ease of visualizing and auralizing a particular chord type, etc.

with the lowest-sounding pitch. Chord types are never inverted because information about the lowest-sounding pitch is highly relevant to the experience of listening to tonal music such as Whitacre’s and should thus be maintained in the notation we use when analyzing this music.

Results

Whitacre’s 1,151 chord structures group into 245 chord types. A complete list of these chord types can be found in Appendix C, and the findings are summarized in Table 4. Whitacre’s chord types contain anywhere from three to seven interval classes.

Though the minimum amount of interval classes was predetermined by my initial decision to limit this investigation to sonorities containing three or more distinct pitch classes, the upper limit of seven is revealing. One may recall that Whitacre used up to eighteen individual pitches in his chord structures, and there is no external factor that would limit the number of pitch classes used to seven rather than twelve. I believe that Whitacre’s tendency to use a maximum of seven individual pitch classes in each chord represents a compositional choice to remain within a fairly diatonic realm of sound.

Number of Pitch Classes	3 pcs	4 pcs	5 pcs	6 pcs	7 pcs
Number of Chord Types	33	79	79	42	12

Table 4: Chord types by number of pitch classes

A closer look at those chord structures containing seven interval classes can give us a clearer picture of Whitacre’s sound-world. Whitacre uses twelve of these seven-interval-class chord structures, which I call *full-collection sonorities*; each is depicted in Table 5. As may be seen, these full-collection sonorities represent the diatonic, acoustic,

and octatonic scales.¹¹¹ Whitacre uses full-collection sonorities representing each of the seven modes of the diatonic scale, as well as three of the modes of the acoustic scale.

Dmitri Tymoczko has pointed out that these three scales, along with the whole-tone scale, “are *locally diatonic* within a three-note span: that is, any three adjacent pitches of any of these scales are enharmonically equivalent to three adjacent pitches of some diatonic scale ... We can therefore expect significant and audible similarities between music based on the locally diatonic scales and traditional diatonic music.”¹¹²

Chord Type	Scale Type	Mode of Scale	Number of Smaller Chord Types Contained Within the Full-Collection Sonority
013467t	Octatonic	01, missing 9	16
013568t	Diatonic	Locrian	36
013578t	Diatonic	Phrygian	38
023578t	Diatonic	Aeolian	49
023579t	Diatonic	Dorian	51
023579e	Acoustic	Mode 5	44
024578t	Acoustic	Mode 2	44
024579t	Diatonic	Mixolydian	48
024579e	Diatonic	Ionian	44
024679t	Acoustic	Mode 1	43
024679e	Diatonic	Lydian	48
034679t	Octatonic	01, missing 1	29

Table 5: Whitacre’s full-collection sonorities

Whitacre’s full-collection sonorities are especially relevant to this study because they contain within them the vast majority of chord types with fewer pitch classes. In fact, 217 of Whitacre’s 245 chord types (89%) are subsumed within these twelve full-

¹¹¹ The acoustic scale, so named because it represents the first seven pitch classes of the harmonic series, can be represented in mode 1 as C-D-E-F#-G-A-Bb-C. Mode 5 of the acoustic scale, which can be represented as G-A-Bb-C-D-E-F#-G, is also known as ascending melodic minor.

¹¹² Tymoczko, “Consecutive Semitone Constraint,” pp. 138-39.

collection sonorities.¹¹³ Many smaller chord types are contained within multiple full-collection sonorities. These multivalent chords often act as pivot chords, allowing Whitacre to change collections smoothly. As may be seen in Table 5, more of Whitacre's smaller chord structures fit within the diatonic and acoustic scales than fit within the octatonic scale. This pushes Whitacre's compositional language closer still toward a diatonic sound-world.

Whitacre repeats chord types much more often than he repeats chord structures. In the previous chapter I noted that only 22% of Whitacre's chord structures were used more than once in the passages included in this study. In contrast to this, 73% of Whitacre's chord types are used more than once. Over half of his chord types are used four or more times, compared with a mere 5% of Whitacre's chord structures, and whereas only two of Whitacre's chord types are used more than ten times, 55 of Whitacre's chord structures (22%) are reused to that extent. There are two ways of measuring the relative importance of a given chord type in Whitacre's music: by the number of chord structures represented by the chord type, and by the number of appearances of that chord type in Whitacre's output. While Appendix C contains both of these numbers for each chord type, Table 6 cites only the number of appearances for ease of comparison with Table 3 in the previous chapter.

¹¹³ By "subsumed" here, I mean that each pitch class of the smaller chord type is contained within the larger chord type. For instance, the full-collection sonority 024578t contains within it the chord types 0245, 027, 0578t, and many others.

Number of Appearances	1	2	3	4	5	6	7	8	9	10	11	12	13
Number of Chord Types	67	40	20	21	11	6	9	13	7	5	3	3	3
# of Appearances, ctd.	14	15	16	17	18	19	20	23	24	25	26	27	28
# of Chord Types, ctd.	4	1	2	2	4	1	2	14	1	2	1	2	2
# of Appearances, ctd.	29	32	36	39	40	44	57	92					
# of Chord Types, ctd.	1	1	1	1	1	1	1	1					

Table 6: Frequency of appearance of chord types within Whitacre's works

Comparison: Chord Types in a Twelve-Tone Universe

While Whitacre's chord structures are remarkable for their diversity as compared to traditional four-part writing, Whitacre's chord types are remarkable for containing only a very small number of the mathematically possible chord types. Assuming a twelve-tone, equal-tempered universe, the number of possible chord types can be calculated with the formula for finding combinations: $C(n,r) = n! / r! (n - r)!$, where n is the number of possible pitch classes to choose from (in this case eleven, since the use of pitch class zero is predetermined in our definition of chord type) and r is the number of pitch classes chosen (in this case, one less than the total number of pitch classes used in the chord type, since the zero is predetermined). The total number of possible chord types is 2,046, of which Whitacre uses a mere 12%. When we limit the possible chord types to those which only contain seven or fewer pitch classes (1,474 chord types), Whitacre's chord types still comprise a startlingly small percentage (17%) of the possibilities.

Number of pcs	3	4	5	6	7	Total
Possible Chord Types	55	165	330	462	462	1,474
Whitacre's Chord Types	33	79	79	42	12	245
Percentage Used	60%	48%	24%	9%	3%	17%

Table 7: Whitacre's chord types versus possible chord types

Whitacre's selectiveness when choosing chord types once again points to the quasi-diatonic nature of his music. He consciously avoids those chord types which contain a cluster of semitones, that is, two or more immediately adjacent semitones. In fact, only three of Whitacre's 245 chord types contain a semitone cluster.¹¹⁴ Tymoczko states that music which avoids semitone clusters sounds "recognizably similar" to music of the classical tradition. He continues: "We can contemplate the possibility that the non-consecutive-semitone scales are musically familiar, at least in part, *because* they do not contain consecutive semitones."¹¹⁵ My ears support Tymoczko's statement, at least in regard to Whitacre's music. By restricting his choice of chord types, Whitacre ensures that his music remains firmly rooted in diatonic, tonal traditions.

Case Studies

Chord types, like chord structures, may be used to describe the sound-world of an individual piece, but here we can only speak of "similar," not "identical," sound. Because of the level of generality inherent in the chord type notation, as well as the smaller number of distinct chord types, analytical statements using chord types are inherently weaker than those using chord structures. Nevertheless, there is still a significant amount of meaningful analytical statements to be made using chord types. The case studies below tell two different analytical stories about Whitacre's use of chord types within a piece. First, I submit evidence that Whitacre's *Nox Aurumque* uses a

¹¹⁴ These chord types are 3457, 5789, and 589t. These occur 2, 2, and 3 times, respectively, in the portion of Whitacre's output analyzed for this study. This amounts to 0.4% of Whitacre's sonorities.

¹¹⁵ Tymoczko, "Consecutive Semitone Constraint," p. 136.

harmonic language which is substantially different than that of any other piece included in this study. Second, I investigate Whitacre's self-quotation in *hope, faith, life, love* as an example of chord type, rather than chord structure, quotation.

Nox Aurumque

Nox Aurumque, written in 2009, is the most recent piece included in this study. It contains a great many chord types that are not used in other compositions. The chord types unique to *Nox Aurumque* include but are not limited to: 0159, 0134679, 03457, 034679t, 03467t, 05789, 0589t, and 013589. These chord types include Whitacre's only three sonorities to use contain a semitone cluster, giving the harmonic language of *Nox Aurumque* a less tonal, more sharply dissonant sound and one that is substantially different from that of any other piece included in this study.¹¹⁶

hope, faith, life, love

The harmonic language of *hope, faith, life, love*, by contrast, is closely related to that of Whitacre's other compositions, in large part because it includes quotations from all of his extant works.¹¹⁷ He writes, "Each of the [eight words which comprise the lyrics of this piece] ... quotes a different choral work from my catalogue, and its corresponding musical material comments on the word I set (e.g. the word 'life' quote the musical

¹¹⁶ As we will discover in the next chapter, the cause of this harmonic shift is Whitacre's adoption of the triad with split third as a primary chord type to which tones may be added.

¹¹⁷ At the time, Whitacre's extant works included *Three Flower Songs*, *Cloudburst*, *Water Night*, *When David Heard*, and *Three Songs of Faith*.

material from *Cloudburst*, where the text is ‘roots, trunks, branches, birds, stars’).

Because I wrote it last, the middle movement even quotes the first and last piece in this set on the word ‘soul’, and ends with quotes from *Water Night* and *When David Heard*.¹¹⁸

An investigation into Whitacre’s self-quotations reveals that, in most cases, Whitacre quotes his own material through using the same chord type rather than the same chord structure (see Table 8). As may be seen, the eight sections of the piece prior to the entry of the word “soul” quote every piece except *When David Heard*; *Cloudburst* is quoted twice. In all but two of these cases, chord type quotation is used in place of chord structure quotation. When chord structure quotation is used, it is to emphasize the seminal chord structure of the work (“faith”) or because the entire section sustains a single chord, potentially making it difficult to recognize a chord type quotation (“truth”).

Section of Piece	Piece Quoted	Type of Quotation
oo	<i>Cloudburst</i>	chord type
hope	<i>With a Lily in Your Hand</i> or <i>Water Night</i> ¹¹⁹	chord type
faith	<i>i thank you God for most this amazing day</i>	chord structure
life	<i>Cloudburst</i>	chord type
love	<i>I Hide Myself</i>	chord type
dream	<i>With a Lily in Your Hand</i> or <i>Water Night</i>	chord type
joy	<i>i will wade out</i>	textural
truth	<i>Go, Lovely Rose</i>	chord structure
soul	All	chord type and structure

Table 8: Self-quotation in *hope, faith, life, love*

¹¹⁸ Whitacre, commentary for *hope, faith, life, love*.

¹¹⁹ When the same chord types are used in two different pieces, the sound-worlds of those pieces will be similar. *With a Lily in Your Hand* and *Water Night* use many of the same chord types; thus, they sound similar. This type of reasoning can also be used to explain the similar sound of works by two or more composers, for instance the similar sound of Whitacre and Debussy.

Quotations within the final section (“soul”) deserve a closer look. This section comprises two phrases, divided from one another by a caesura. The first phrase is, as Whitacre stated, a quotation of the other two movements in *Three Songs of Faith*. The phrase uses mostly chord type notation, with one instance of chord structure notation. Four of the chord types in this section are used in *i will wade out*, and three correspond to *i thank you God for most this amazing day*. In addition, one of the chord structures here is an exact quotation of *i will wade out*.

The final phrase quotes the remainder of Whitacre’s oeuvre, mostly using chord structure quotation. The phrase opens with an important chord structure from *With a Lily in your Hand*. This is followed by a chord structure from *I Hide Myself*, then a chord structure from *Cloudburst*. The following sonority does not have a chord structure match, but uses a chord type also found in *Cloudburst*, *Go, Lovely Rose*, and *With a Lily in Your Hand*. The next chord quotes *When David Heard* by using the same chord structure, while the final chord is not an exact quote but uses a chord type also found in *I Hide Myself*, *With a Lily in your Hand*, *Cloudburst*, *Water Night*, *i will wade out*, and *i thank you God for most this amazing day*. If the two ambiguous sonorities are taken to represent *Go, Lovely Rose* and *Water Night* respectively, then the final word “soul” contains a quote from every choral piece Whitacre had composed at the time.

Conclusions

As evidenced in the previous case studies, the chord type can be a useful tool in analysis, especially when in discussions of the “sound world” of compositions, either on

their own on in comparison with other pieces. In the context of Whitacre's compositions specifically, the theoretical construct helps to connect seemingly disparate chord structures by focusing on those qualities that they have in common. Despite being less precise than the chord structure, the chord type still contains a wealth of information about the original sonority, allowing the analyst to draw general conclusions about the experience of listening to the music. Chord structures also lend themselves to interval class vector analysis, though this aspect of the notation is not explored in this thesis. Despite these benefits, the chord structure falls short in one important aspect: it does not help the analyst to relate chord progressions to one another in tonally meaningful ways. Certainly, with chord structures the analyst can track some changes such as harmonic growth (from 0237 to 0237t, for instance), chromatic inflection (as from 0237 to 0137), or some aspect of voice leading (from 0237 to 0239). But these observations offer no explanation of the moment-by-moment experience of listening to Whitacre's pieces and say nothing about tonal expectation within the music.

Chapter 4: Whitacre's Added-Tone Sonorities

Both the chord structure and the chord type are theoretical constructs that retain information about a given sonority with a minimal amount of interpretation on the part of the analyst. The chord structure is a basic identification of the precise intervallic ordering of pitches present in the chord. As we have seen, Whitacre uses a vast number of chord structures in his music, lending his compositional language richness and variety. These chord structures may be grouped into families of related chord structures via the chord type. The chord types used by Whitacre point to a fairly diatonic sound-world, one which avoids clusters of semitones in favor of chords based on the diatonic, acoustic, and octatonic scales.

There is more to say, however, about the experience of listening to Whitacre's music. Because of the diatonic setting, the emphasis on seven-note collections, and the lack of semitone clusters, listeners may be drawn to a hearing of Whitacre's music as more or less tonal. If a listener interprets Whitacre's music as tonal, he or she will not be content simply to identify the chord type of a given sound-moment, as one might in atonal music. Rather, the listener will attempt to make sense of the chords in relation to a perceived tonic, as in more traditional tonal music. One way a listener may accomplish this is by interpreting each of Whitacre's chords as a diatonic triad with added tones, an interpretation that I call the *added-tone sonority*.

Methods and Notation

As noted in chapter 1, Whitacre's chords allow for a variety of triadic interpretations. Though each chord could be interpreted in a variety of ways, each also projects one root and, by extension, one triad more strongly than any other. Each of Whitacre's chord types thus has a "default" interpretation, with other interpretations possible based on context. Parncutt's method of determining the default interpretation of a chord, while fairly accurate, is dependent upon the exact voicing of a chord. I argue, however, that in everyday analysis chords are recognized not by their chord structure but rather by their chord type, as in the 047 example. For this reason, I have developed an alternate method of determining "the" root of a chord based on chord type rather than structure.

I posit that the following factors are important when determining the default triadic interpretation for a given chord: (1) inclusion of the root within the chord, (2) major and minor triads as privileged musical entities, (3) completeness of the underlying triad, (4) structural significance of the bass tone, (5) roothood tendency of the bass tone, and (6) importance of third over the fifth of the chord for listeners of tonal music. Let us examine each of these factors more closely, using the chord type 013578t to guide our discussion.¹²⁰

Whitacre's sonorities include between three and seven individual pitch classes. When choosing a root for the sonority, listeners are likely to choose one of the sounding pitches classes as root rather than mentally generating an additional pitch class. When

¹²⁰ One representative of this chord type is Whitacre's massive 18-voice chord in *When David Heard*. It is also one of the chords ambiguously analyzed by Byun (see chapter 1).

interpreting the chord type 013578t, for instance, listeners are unlikely to pick a pitch class 2, 4, 6, 9, or e semitones (mod 12) above the bass as root of the triad. In this case, not only would such a choice force the listener to generate a pitch class out of thin air, but the introduction of an eighth pitch class into the chord would be inconsistent with the quasi-diatonic sound world so carefully created by Whitacre.

The rule of root inclusion limits the listener's choices of potential root from 12 to 7. The pool of possibilities is further limited if listeners consider the basic chord built on each potential root. Listeners will prefer a root that supports a major or minor triad, rather than some other musical entity. In traditional tonal pieces, major and minor triads are by far the most prevalent objects; listeners familiar with tonal music are thus well-versed in identifying major and minor triads as musical entities and will be able to hear these triads within a dense sonority much more readily than other combination of tones.¹²¹ Diminished triads, which occur naturally within a diatonic sound-world and which are often quite common in traditional tonal music, are less stable and therefore less likely candidates for "the triad" represented by the sonority. If we apply the rule of major and minor triads in our 013578t example we note that pitch class 7 is less likely to be interpreted as a root because it supports a diminished triad.¹²²

After determining which of the pitch classes contained within a given chord are capable of supporting a major or minor triad, I suggest that listeners will prefer to hear a

¹²¹ To quote Riemann, "The major and minor chords are not two fortuitous conglomerations of tones, next to which stand ever so many possible equals, but distinct in themselves as a matter of principle, in whose meaning all other possible combinations will belong." (translated in Harrison, p. 264).

¹²² That is, pitch classes 7, t, and 1 form a diminished triad.

complete major or minor triad as the underlying triad, rather than a triad that is only partially represented within the sonority. This follows the same logic as the root inclusion rule: it is simpler for listeners to accept a complete triad that is already present within the chord than to aurally imagine additional notes.¹²³ The complete triad rule does not affect our example interpretation; each possible triad is already complete, since the chord type is a full-collection sonority. However, this rule is the deciding factor in the seemingly intuitive choice to interpret the chord type 0247 as a root-position major triad with added 2 rather than a triad of ambiguous quality with 7 as root, 2 as fifth, and 0 and 4 as added tones.

A fourth consideration relevant to the triadic interpretation of Whitacre's sonorities is the structural significance of the bass tone. In tonal theory, the lowest-sounding note in any sonority is generally considered of primary importance when determining the function of a chord, which is why both figured bass and Roman numeral notation preserve information about the bass tone of a chord. Because traditional tonal music emphasizes the structural importance of the bass tone, I suggest that listeners will prefer an interpretation that recognizes the bass tone of a chord as a member of the underlying triad.¹²⁴ The rule of bass tone inclusion thus reduces the six potential roots in our 013578t example to three: 0 as the root of a minor triad, 0 as the third of a major triad based on 8, and 0 as the fifth of a major triad based on 5.

¹²³ If no complete triad exists within the sonority, of course, listeners will be forced to imagine such notes.

¹²⁴ If the bass tone is not a member of any complete triad, listeners will interpret the bass as a nonharmonic tone ornamenting the underlying triad, as in the pedal point of traditional tonal theory.

A fifth factor to consider when determining the underlying triad is the roothood tendency of the lowest tone. In the absence of contradictory information, the lowest tone of a sonority asserts itself as the root of a chord. If, for instance, a piece starts on a single tone, listeners will likely interpret that tone as the root of a triad (more specifically, the root of the tonic triad) until such a point as that assumption is disproved by subsequent musical information. In much the same way, given the choice of hearing the bass tone of one of Whitacre's chords as the root, third, or fifth of the underlying triad, I suggest that listeners will generally prefer to interpret the bass tone as the root.¹²⁵ Thus, we finally arrive at our final interpretation of the 013578t chord type as a minor 037 triad enhanced by the addition of pitch classes 1, 5, 8, and t. Again, this does not mean that this chord type will or should always be interpreted in this manner; the context may well point to a different interpretation. However, in the absence of any information to the contrary, this interpretation is the "best" one. As a fairly ambiguous chord type like this one is stretched out in time, it gradually loses its connection to context and becomes more and more like its "default" interpretation.

The final rule of interpretation has to do with the higher significance placed on the third of a triad rather than the fifth in tonal music.¹²⁶ When confronted with a chord type that does not contain a complete triad, I suggest that listeners will be more likely to use a

¹²⁵ If such an interpretation is not possible, listeners will prefer a hearing which interprets the bass as the third of the chord, and then as the fifth of the chord, in keeping with the preference for first-inversion over second-inversion triads found in traditional tonal music.

¹²⁶ Though Schenker writes that the fifth as boundary interval is the most important interval in determining the identity of a triad, common-practice harmony does not always bear this out. The fifth is often omitted from seventh chords, for instance, and is sometimes omitted from the final tonic of a piece in order to place more emphasis on the root of a triad.

sounding third as the basis for interpretation, imagining the missing fifth of a chord, than to use a sounding fifth and imagine the third.¹²⁷ In these cases, listeners will prefer to use the 03 or 04 interval as the root and third of a root-position triad. If the chord type contains neither a 3 nor a 4, listeners will use the 08 or 09 interval as the root and third of a first-inversion triad. If the chord type does not contain pitch classes 3, 4, 8, or 9, listeners will interpret the 07 interval as the root and fifth of a root-position triad. If the chord type does not contain pitch classes 3, 4, 7, 8, or 9, listeners will use the 05 interval as the fifth and root of a second-inversion triad. Finally, if the chord type does not contain pitch classes 3, 4, 5, 7, 8, or 9, listeners will interpret the bass as an added tone ornamenting a triad implied by the interval of a third or fifth between two of the remaining pitch classes.¹²⁸

I represent added-tone sonority interpretations by a notation that specifies the quality (and root tone, if desired) of the underlying triad, the bass tone of the chord, and the specific pitch classes added to the underlying triad. The above interpretation of the 013578t chord type as an added-tone sonority, for example, would be represented using the notation $m(1,5,8,t)/0$. The lower-case “m” specifies that the underlying triad is minor. Other options include “M” for a major triad and “M/m” for a triad with split third or no third; upper- and lower-case letter names may be used to specify a single transposition of

¹²⁷ Auralizing the third would entail a greater degree of interpretation on the part of the listener, who must then decide whether the underlying triad is to be major or minor. Using the sounding third and imagining the fifth is thus simply less work than the alternative. In addition, the fifth of the chord is already present to some degree in the harmonic series of the root tone; thus, listeners may be able to imagine an absent fifth more easily than an absent third.

¹²⁸ There are three possible combinations of pitch classes in which a third or fifth does not appear between the remaining tones. These three chord types (012, 01e, and 0te) are therefore not identifiable as added-tone sonorities via this system. One may note that the three non-analyzable chord types are the three possible “inversions” of a semitone cluster.

the added-tone sonority. The numbers inside the parentheses specify added tones, i.e., those pitches included in the sonority but not in the underlying triad. Each number refers to the distance in semitones between the root of the triad and an added tone, measured upward from the chord root (not bass) and reduced mod 12. Following the parentheses, a slash denotes a single pitch class representing the bass tone of the chord. In this case, the bass tone is zero semitones above the root of the chord, meaning that the underlying triad is in root position. A 3 or 4 would represent a first-inversion triad,¹²⁹ and a 7 represents a second-inversion underlying triad. Other pitch class designations for the bass tone are used when the lowest pitch of the sonority is not interpreted as a member of the underlying triad.¹³⁰

Though all of Whitacre's non-triadic chords may be interpreted as added-tone sonorities, not every chord is as easily assimilated into a tonal context. Added-tone sonorities form a sort of continuum depending on how well-suited the original chord was to a triadic interpretation. In general, the more rules of interpretation that must be applied to determine the underlying triad for a given sonority, the less credible the interpretation of the chord as an added-tone sonority will be. This information is retained in the notation as a combination of the bass tone's relationship to the underlying triad and, if necessary, an additional suffix indicating missing triad tones. Table 9 shows all possibilities arranged along a graded scale of credulity.

¹²⁹ The word "3rd" may be used to represent a first-inversion underlying triad without specifying the quality of that triad.

¹³⁰ The letters "ntt" may be used to represent that the bass is a non-triadic tone without specifying a particular pitch class.

More Credible-----					-----Less Credible				
/0	/3 rd	/7	/ntt	/0 no 5 th	/3 rd no 5 th	/0 no 3 rd	/7 no 3 rd	/ntt no 5 th	/ntt no 3 rd

Table 9: Continuum of credulity for added-tone sonorities

When a chord type presents multiple possible interpretations, analysts are free to choose a less plausible interpretation if the musical context suggests such a thing. However, the farther removed the alternate interpretation is from the default interpretation along the continuum of credulity, the less plausible the alternate interpretation becomes. For instance, one could quite plausibly interpret our example 013578t chord type as a M(2,5,9,t)/4 chord rather than a m(1,5,8,t)/0 (one step further on the continuum of credulity), while an interpretation of the sonority as a m(1,5,6,8,t)/5 chord with no fifth is considerably less credible (8 steps removed from the default interpretation).

Results

An interpretation of Whitacre's chord types as added-tone sonorities enables the analyst to detect similarities in sonorities that were not evident before. The chord types 0247, 038t, 0579, and 025t, for instance, seem at first to be unrelated to one another. When analyzed as added-tone sonorities, however, they are all seen to be various inversions of the same musical entity: a major triad with added 2 (see Figure 15). If the quality of the underlying triad is disregarded, even more connections may be made among chords, reducing Whitacre's 245 chord types to just 58 combinations of added tones. The number of added tones ranges from one to four: Whitacre uses nine individual

added tones, twenty-two combinations of two added tones, twenty-one combinations of three added tones, and six combinations of four added tones.

0247	038t	0579	025t
M(2)/0	M(2)/4	M(2)/7	M(2)/2

Figure 15: Four chord types represented by a single added-tone sonority

While Appendix D gives a complete account of Whitacre’s added-tone sonorities, listing the default triadic interpretation for each chord type, Table 10 summarizes the information. Each combination of added tones is listed, along with the number of chord types subsumed by each and the number of times this particular combination of added tones occurs in the portion of Whitacre’s output analyzed for this project. As may be seen, Whitacre does not use all combinations of added tones equally. Some of the combinations are used only once in the music considered in this study, while others are used a staggering number of times: the added 2, for instance, is Whitacre’s favorite added-tone sonority and accounts for nearly 15% of the 1,717 sonorities included in this study. While certain of the less common added-tone sonorities may appear here only because of my mechanical segmentation of Whitacre’s music, other added-tone sonorities

are undoubtedly conceived of as chords by Whitacre. The added 2 chord, specifically, is treated as a stable sonority on par with a major or minor triad.

One Added Tone			Two Added Tones			Three Added Tones			Four Added Tones		
tones added	# of chord types	# of appearances	tones added	# of chord types	# of appearances	tones added	# of chord types	# of appearances	tones added	# of chord types	# of appearances
1	5	10	1,5	3	9	1,5,8	2	3	1,5,8,t	1	2
2	15	255	1,8	1	1	1,5,9	2	3	2,5,8,t	2	10
4	1	1	1,t	3	12	1,5,t	1	1	2,5,9,t	3	14
5	15	210	2,4	1	2	1,6,t	1	1	2,5,9,e	2	10
6	7	33	2,5	16	96	1,8,t	2	2	2,6,9,t	1	1
8	10	87	2,6	9	31	1,9,t	1	1	2,6,9,e	1	7
9	9	92	2,8	3	4	2,5,8	2	5			
t	10	98	2,9	8	38	2,5,9	5	19			
e	7	104	2,t	5	35	2,5,t	3	46			
			2,e	4	46	2,5,e	2	2			
			3,5	1	1	2,6,9	3	38			
			5,6	1	25	2,6,t	2	10			
			5,8	5	42	2,6,e	1	6			
			5,9	6	82	2,8,t	2	3			
			5,t	10	38	2,9,t	3	7			
			5,e	5	9	2,9,e	1	18			
			6,9	7	26	5,8,t	2	13			
			6,t	5	11	5,9,t	5	19			
			6,e	5	6	5,9,e	3	12			
			8,t	4	33	6,9,t	1	1			
			9,t	4	19	6,9,e	4	6			
			9,e	3	11						

Table 10: Added-tone combinations by number of added tones

Whitacre's chords lend themselves to an interpretation as added-tone sonorities.

In fact, approximately two thirds of Whitacre's chord types can be interpreted within the top third of the continuum of credulity (see Table 11). Thus, an interpretation of his music as a succession of added-tone sonorities is quite credible, and may well represent a listener's experience of his music. Additionally, as will be seen in the following

chapters, those chord types which repeat themselves most often throughout Whitacre’s oeuvre are those with the most plausible triadic interpretations.

Interpretation	Number of Chord Types
/0	79
/3 rd	31
/7	35
/ntt	25
/0 no 5 th	37
/3 rd no 5 th	22
/0 no 3 rd	9
/7 no 3 rd	5
/ntt no 5 th	3
/ntt no 3 rd	0
no triadic interpretation	0

Table 11: Distribution of Whitacre’s chord types along the continuum of credulity

Effect of Added Tones

The idea that triads may be decorated with added tones is certainly not unique to this thesis, but added-tone sonorities have never been sufficiently theorized until now. Musicians seem content to state that added tones change the “color” or “flavor” of the underlying triad, a description that does little to describe the experience of listening to such a sonority. In 1930, Henry Cowell expressed his displeasure with such descriptions:

There has been sporadic use of the device of adding a second of some sort to a common chord, with the excuse of ‘adding colour.’ This, of course, is not a tenable explanation of why the particular second should be used, and is a confusion of the theory and purpose of music. The purpose of every note in a large chord may be to add colour to the composition as a whole, yet from the standpoint of theory there must be some reason why the chord used was one which, in the way it was handled, would produce colour. To say that in such a group as C, D, E played together the D is a colour-note does not explain why it should be there, nor why another note would not be just as good as a colour-note; it merely gives a name.¹³¹

¹³¹ Cowell, pp. 115-116.

I agree wholeheartedly with Cowell and thus will now endeavor to explain the “effect” created by adding various tones to a pure triad. This sort of explanation is necessary here because the average musician may not have the same degree of familiarity with the experience of listening to an added-tone sonority that he or she might with, say, a major or minor triad. I will begin by describing the effect of each of the single added tones and will then focus on those tone-combinations that appear a significant number of times in Whitacre’s music.¹³² It should be noted that, while the effects I describe are generally applicable to a given combination of added tones, the degree and type of effect may vary depending on the inversion of the chord, the number of each added tone present within the chord structure, and whether the added tone or a chord tone is the uppermost pitch in the sonority.

In the explanations below, the terms “dissonance” and “consonance” are used to describe the intervallic relationships between the tones of a chord. In general, added tones that form a semitone with one of the tones of the underlying triad will create dissonance, while consonance can be defined as a lack of dissonance. This quality is distinct from the terms “stable” and “unstable,” which refer to a listener’s imagined resolution of a tone. Steve Larson defines the term: “To hear a note as unstable means to auralize a more stable pitch to which it tends to move and a path (usually involving

¹³² Statistically significant would mean a 5% occurrence rating. However, since only one combination of added tones (2,5) occurs in more than 5% of Whitacre’s added-tone sonorities, I define “significant” here to be a mere 1%. In this case, this means 18 or more appearances of a given added-tone sonority.

stepwise motion) that would take it there, displacing its trace.”¹³³ In general, more dissonant sonorities will also be less stable, but this is not always the case. I treat both consonance/dissonance and stable/unstable as continua rather than binary oppositions. For instance, an added 2 is more stable than an added 5, but less stable than a pure triad. Similarly, the added 6 is dissonant, but not as dissonant as an added 1.

Single Tones

Added 1 – This added tone is quite dissonant. It is a semitone removed from the root tone, as if it were attempting to subvert the root. The added 1 prevents the chord in question from sounding like a tonic.

Added 2 – Listeners are likely familiar with the sound of the added 2 from popular music and jazz, as well as the 9-8 suspension of the common practice period. Whitacre treats the added 2 as a consonance, often ending his compositions with an added-2 chord.¹³⁴ The tone may be treated as consonant because it forms no semitone dissonances; additionally, it forms a perfect fifth with the fifth of the underlying triad. The stability of the added 2 is a direct result of its position between the root and third of the underlying triad. The added 2 fills in the third of the chord, and the presence of the two triad pitches to which the added 2 could potentially “resolve” negates any desire to resolve. Unlike a 9-8 suspension, where the 9 is pulled downward to take the place of the root of the chord, the added 2 has no tendency of motion. The added 2 is more dissonant with an underlying minor

¹³³ Larson, p. 106.

¹³⁴ See chapter 6.

triad, because it creates a semitone with the triad's third, but it may still be considered stable.

Added 4 – Since the writing of *Paradise Lost*, Whitacre has begun using chords with split thirds, that is, with both a major and minor third above the root of the chord. The added 4 comes about when a chord with split third occurs in first inversion, with the minor third of the chord as the bass tone. In general, chords with split thirds are highly dissonant, but have no strong tendency of resolution. This is because, with both the major and minor thirds present in the chord, the function of the chord is obscured.

Added 5 – This added tone will be familiar to listeners from the 4-3 suspension of the common practice period, as well as the “sus4” chord of popular music. The added 5 is not overly dissonant, but is distinctly unstable, with a tendency to resolve downward into the third of the underlying triad. This is especially true when the underlying triad is major, increasing the dissonance of the added 5. Like the added 2, the added 5 has nowhere to resolve to when the underlying triad is complete; Whitacre typically maintains this pitch into the following sonority. Specifically, Whitacre likes to add a 5 to his dominant chords, adding, in other words, the tonic scale degree and thereby blurring the traditional V-I progression.¹³⁵

Added 6 – Whitacre only adds this tone to major triads. Though the tone is dissonant, forming a semitone with the fifth of the chord as well as a tritone with the root of

¹³⁵ See chapter 5.

the triad, it is also fairly stable due to its placement between two triad tones: it has nowhere to resolve, and thus has no strong tendency of resolution. The added 6 creates an expectation for further motion, and is rarely used to decorate the tonic triad.

Added 8 – The added 8 has a drastically different effect when added to major or minor triads. When added to a minor triad, the added 8 creates a sense of ambiguity by introducing an alternative triadic interpretation featuring itself as root of a major triad: that of a major triad in first inversion with added e (see Figure 16). As with all ambiguous chords, the secondary interpretation may be chosen over the primary one based on context.¹³⁶ When 8 is added to a major chord, the tone is perceived as quite dissonant, creating a sound that is foreign to a listener’s ears because 8 does not naturally occur in the major scale.



Figure 16: Inherent Ambiguity in m(8) and M(9)

Added 9 – This added tone is quite consonant, sounding a tone away from the fifth of the underlying triad and a full minor third away from the root. The added 9 creates ambiguity when added to major triads, as it competes for position as root of the

¹³⁶ This alternate interpretation is quite plausible, only being one step removed from the default along the continuum of credulity.

sonority (see Figure 16).¹³⁷ The added 9 is more dissonant when attached to a minor triad, as the 9 creates a tritone with the third of the triad.

Added t – This is the added tone with which listeners are likely to be most familiar. A major triad with added t is a dominant seventh chord, while a minor triad with added t is a minor seventh chord. Whitacre seems to prefer the sound of the added t with a minor, rather than major, triad. When he does use the added t with a major triad, the chord occurs only for a short duration, and Whitacre *never* resolves the t downward as one would expect of the dominant seventh chord. The conventional tonal progression V⁷-I is not found in any of the passages included in this study.

Added e – This added tone lends the sonority an air of repose, possibly due to jazz musicians' tendency to use this added-tone sonority to represent the tonic triad. While Whitacre does use this chord at moments of rest (at divergent cadences, for instance), he never ends a piece with this added-tone sonority.

Multiple Tones

When more than a single tone is added to an underlying triad, the effects of the individual added tones combine and interact with one another in a manner unique to each combination of tones. It is thus appropriate to discuss the effect of multiple added tones, especially the specific combinations of added tones that appear many times within the repertoire. As more non-triadic tones are added to an underlying triad, the total effect

¹³⁷ Again, this interpretation is one degree removed from the default.

begins to resemble the most familiar collection which contains the sonority more strongly than it resembles the underlying triad; full-collection sonorities represent their collection more so than any specific added tone.

Added 2,5 – This combination of added tones is quite stable, as it fills the entire space between the root and fifth of the underlying triad. Neither added tone has a strong tendency of resolution. Whitacre will often have the choir sustain this sonority for an extended period of time.

Added 2,6 – This tone combination is stable for the reasons outlined for (2,5) above but is more dissonant than the previous combination. The 6 lends the sonority its air of expectancy, while the 2 enhances the stability of the chord. When added to a major chord, the sonority represents a sizeable segment of the whole-tone scale, which decreases the feeling of dissonance inherent in the added 6.

Added 2,9 – In major, the ambiguous nature of the added 9 is enhanced by the added 2. The added tones form a perfect fifth with one another, forming a boundary interval in opposition to that of the underlying triad. The added 2 fills the third between the root and third of the underlying triad, which could be reinterpreted as the third and fifth of a triad with the added 9 as its root. Despite its ambiguity, this sonority is quite stable: the 2 transfers its stability to the added 9 via the acoustically consonant interval between them. In fact, M(2,9) chords represent the pentatonic scale in its entirety. When added to a minor chord, however, the

added (2,9) is more dissonant than the added 9 alone, and contains a half-diminished seventh chord.

Added 2,t – This combination maintains much of the character of the added t chord, but the added 2 lessens the tendency of the added t to resolve downward. By filling the space between the root and third of the underlying triad, the added 2 lessens the dissonance of the tritone inherent in the dominant seventh sonority. Additionally, the 2 detracts from the resolution tendency of the t by forming a complete minor triad with 7 as root. Because the t is now acting as the third of its own triad, it is more stable.

Added 2,e – This combination of tones is quite stable, especially when added to a major triad, where it creates a peaceful sound. The combination is more dissonant when added to a minor triad, where the collection of pitch classes (e, 0, 2, 3) contains more closely-spaced semitones than is found in diatonic music.

Added 5,6 – The appearance of this sonority here is clear evidence that Whitacre regards the diminished triad as a fundamental triad. Even in the context of my theory, which does not accord the diminished triad the status of the major and minor triads, there occur a reasonable number (25) of these sonorities, always in the chord type 0356. Interestingly, the “pure” diminished triad occurs only four times in Whitacre’s analyzed output.¹³⁸ This particular chord, then, can be seen as a

¹³⁸ My rules of interpretation categorize the pure diminished triad as a minor triad with added 6 and no fifth.

diminished triad with added 5, which serves to help temper the dissonance of the root-position diminished triad.

Added 5,8 – In major, this tone combination is quite dissonant, as the downward tendency of the added 5 is combined with the jarring quality of the added 8. The tones engender two clashing triadic interpretations: the major underlying triad competes with a minor triad whose root is the added 5 (see Figure 17). These two chords never appear in the same diatonic collection, which is part of what gives the combination its peculiarly dissonant quality. Both added tones want to resolve downward into the tones of the underlying triad. In minor, however, this chord is diatonic, and thus more stable, though somewhat ambiguous. The added 5 and 8 act as a potential root and third, attempting to appropriate the true root of the underlying sonority as their fifth.¹³⁹ Both the true triad and the potential one are minor, giving this sonority an air of melancholy.

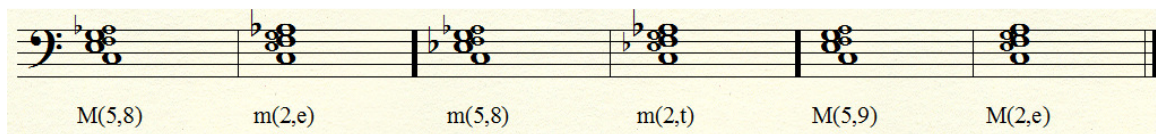


Figure 17: Inherent ambiguity in M(5,8), m(5,8), and M(5,9)

Added 5,9 – When added to a major triad, this tone combination acts similarly to the (5,8) combination in minor: the two added tones combine with the root of the underlying triad to form a second complete triad that competes for attention with the true triad (see Figure 17).¹⁴⁰ This time, however, both the real and potential

¹³⁹ Both of these potential interpretations are two degrees removed from the default.

¹⁴⁰ This interpretation is also two degrees removed from the default.

triads are major, creating a restful and light sound. In minor, the combination contains a large portion of the whole tone scale and reminds me strongly of the music of Debussy.

Added 5,t – When added to a major chord, this combination feels strongly like a dominant seventh chord; the added 5 only adds to the longing for resolution. Both 5 and t want to resolve downwards. With a minor chord, however, this sonority sounds the full pentatonic scale, exhibiting all the consonance, stability, and ambiguity of that collection.

Added 6,9 – This tone combination, which Whitacre prefers to add to major triads, gives the sonority an air of excitement. It is not a stable chord as both added tones want to resolve downward, but neither is it overly dissonant. A forward-looking sonority, listeners expect to hear something new after this chord.

Added 8,t – The added t only serves to enhance the identity of the added 8 here. In minor, the added 8 acts as a potential root for the chord, and the t supports this potentiality by filling in the third between the added 8 and its would-be third, the true root of the underlying triad. In major, the extreme dissonance of the added 8 is enhanced by the added t, which is also unstable.

Added 9,t – Here the added t lessens the ambiguous quality of the added 9, subverting its bid for roothood much as an added 1 would detract from the stability of the root. The normally strong tendency of the added t to resolve downward is somewhat lessened by the added 9, which takes the place of its resolution. Regardless, the effect of the added t still colors the sonority more strongly than does the added 9.

Added 2,5,9 – This tone combination presents a nearly immovable wall of sound, as it fills not only the full fifth of the underlying triad but also a whole step higher.

Though this combination is quite stable when added to a major triad, the sonority takes on the attributes of a dominant seventh chord in second inversion when added to a minor triad.

Added 2,5,t – Because of the tendency of added 2 and 5 to emphasize the underlying triad by filling it, the added (2,5,t) strongly represents a minor or dominant seventh chord, depending on the quality of the underlying triad. Again, Whitacre never resolves the dominant form of this sonority as expected in common-practice tonal music.

Added 2,6,9 – Whitacre only uses the added (2,6,9) with major triads, where the added tones lend the sonority an impressionistic, whole-tone feel. The sonority is not dissonant and may be sustained for quite a while without the listener feeling a need to move on. Whitacre sometimes uses this chord as a tonic.

Added 2,9,e – This combination is only used with major triads. The sonority is quite ambiguous, containing all of the qualities of the added (2,9) discussed above. The added e fills the third between the added 9 and its would-be third, while the added 2 fills the space between the third and fifth of the new triad. The two triads compete for primacy in the listener's ear.

Added 5,9,t – This sonority is distinctly unresolved, and Whitacre uses it for both major and minor triads. The added 5, as usual, lacks stability, while the added t subverts the tendency of the added 9 to act as a potential chord root.

Full-collection sonorities – Whitacre’s full-collection sonorities were discussed in the previous chapter, and no particular combination of added tones appears frequently enough to merit individual discussion here. In general, Whitacre uses full-collection sonorities as stable entities, often holding them without resolution for several beats or measures. This stability results from the fact that the added tones completely fill all the spaces between the triad tones, leaving no room for resolution.

Conclusions

An added-tone sonority is an interpretation of a complex chord as an ornamented form of a basic tonal entity: the triad. Once the underlying triad and root has been established for a given chord, that chord can be related to its musical surroundings in a specifically tonal way that was not possible before. Analysts are thus enabled to make statements about the extent to which Whitacre’s compositions emulate common-practice tonality, project a tonal center, etc. Through an interpretation of Whitacre’s chords as added-tone sonorities, analysts may begin to interpretively segment Whitacre’s music, understanding specific chords as part of an underlying progression or as decorating that underlying progression through neighboring or passing motion.

As will be seen in the following chapters, an analysis of Whitacre’s music using added-tone sonorities reveals much about his compositional style, his distinctive twist on traditional tonal language. Whitacre’s compositions, when viewed on a larger scale, may

be seen as analogous to his added-tone sonorities; that is, they may be understood as unconventional elaborations of a conventional tonality.

Chapter 5: Added-Tone Sonorities in Analysis - The Opening Phrase

The opening phrase of a common-practice tonal work generally functions as an orientation to the home key. Classical idioms include oscillating between tonic and dominant chords, moving through a complete harmonic progression over a tonic pedal, and presenting a melody that clearly outlines the tonic triad. Whitacre states that, like traditional tonal compositions, his opening phrases serve as an orientation or “primer” to the piece at hand.¹⁴¹ If Whitacre’s music is to be understood as tonal, this primer should include an orientation to the home key. Is this the case with his opening phrases? How can added-tone sonorities, which are fundamentally more ambiguous than pure triads, effectively suggest a tonal center? How does Whitacre use added-tone sonorities to enhance his opening phrases?

This chapter works to answer these questions through analysis and commentary focusing on the opening phrases of several of Whitacre’s works. The analyses in this and subsequent chapters use added-tone sonorities to draw comparisons between Whitacre’s compositional syntax and that of common-practice tonality. Our discussion will begin with Whitacre’s more harmonically conventional opening gestures and then move to music that is more harmonically distinctive.

¹⁴¹ Whitacre, interview by Hairel, p. 133.

Sleep

The opening passage of *Sleep* is entirely homophonic and diatonic (see Figure 18). It is clearly divided into two three-measures phrases, each of which begins with an A-flat major triad with identical chord structure. During the first full measure the tenor and bass move in parallel fifths, working with the upper voices to state the entire E-flat major collection so that when the chorus returns to an A-flat major triad on the downbeat of the second bar the triad feels like a IV chord in the key of E-flat major. This IV chord quickly progresses to an added-tone sonority on V, which is revealed to be an important chord by virtue of its duration relative to the previous chords. The second phrase begins on the same A-flat major triad as the first phrase, and again the tenor and bass move in parallel fifths during the first full measure, arriving once again on an A-flat major triad on the downbeat of measure five. This chord serves as the predominant to a strikingly conventional IV-V-I cadence in the key of E-flat major.

The image shows a musical score for the piano accompaniment of the opening of 'Sleep'. The score is in E-flat major (two flats) and common time. It consists of six measures. The first measure is in common time and contains an A-flat major triad (Ab, C, Eb) in the right hand and a bass line with notes Ab, C, Eb, G. The second measure is in 2/4 time and contains an A-flat major triad (Ab, C, Eb) in the right hand and a bass line with notes Ab, C. The third measure is in common time and contains a B-flat dominant seventh chord (Bb, D, F, Ab) in the right hand and a bass line with notes Bb, D, F. The fourth measure is in 2/4 time and contains an A-flat major triad (Ab, C, Eb) in the right hand and a bass line with notes Ab, G, F, C, Bb. The fifth measure is in 2/4 time and contains an A-flat major triad (Ab, C, Eb) in the right hand and a bass line with notes Ab, Bb. The sixth measure is in common time and contains an E-flat major triad (Eb, G, Bb) in the right hand and a bass line with notes Eb. Below the score, the chord labels and Roman numerals are: Eb: IV, Bb(5)/4, Ab, Bb, Eb. The Roman numerals are: IV, V, IV, V, I.

Figure 18: *Sleep*, measures 1-6

This two-phrase opening contains clear references to common-practice tonality, including an antecedent-consequent phrase structure and the use of a full cadence to orient listeners to the key of the piece. The emphasis on the subdominant chord, the

delay of the initial tonic until the downbeat of the final measure, and the extensive use of parallel fifths in the lower voices, however, are less like common-practice tonal writing.¹⁴² Regardless, the opening section of *Sleep* serves to orient the listener to the key of E-flat major in a way that is emphatic and, for Whitacre, quite straightforward.

Added-tone sonorities do not have much impact on this passage; in fact, only two occur within the six measures of the introduction. Interestingly, both added-tone sonorities are a B-flat triad with added 5. This sonority occurs in first inversion at the end of the first phrase and again in root position on the fourth beat of measure four. In both cases the added E-flat is held over from a consonance within a previous triad, and in the second case the E-flat continues to be held while the surrounding voices resolve to a consonant sonority around it. This added 5 serves to negate the effect of the dominant triad, which Whitacre rarely uses in its pure form.¹⁴³

Leonardo Dreams of his Flying Machine

This piece is Whitacre's homage to Monteverdi and is clearly influenced by the style of the early Baroque. The entire opening passage (see Figure 19) uses only two underlying triads: F minor and C major, a clear tonic-dominant pair. The passage begins with an F minor triad in second inversion, which turns out to be a neighboring chord to

¹⁴² Because both phrases begin on and later return to the IV chord, I interpret that chord as dominating the majority of both antecedent and consequent phrases. The chords between the IV chords serve to introduce the full collection, but do not move in a harmonically logical way; I view these chords as ornamenting the underlying IV chord.

¹⁴³ In *A Geometry of Music*, Dmitri Tymoczko states that jazz composers may add any diatonic pitch except the tonic to the V chord while still maintaining its identity as a dominant (p. 354). Whitacre's addition of that very pitch here thus serves to negate the effect of the sonority as dominant.

the C major triad sounded on beat four. An $f(2)/0$ sonority on the downbeat of measure two begins a Monteverdian chain of suspensions in the soprano parts. These resolve to an F minor triad at the end of measure four, after which Whitacre uses his chord building technique, starting at the top, to create a $C(2,5,8,t)/0$ chord by the fourth beat of measure five. This full collection is the F melodic minor scale. The function of C as dominant, so strong just a few measures earlier, is somewhat negated when it is represented by this full-collection sonority. However, when the added tones are cleared away at the end of measure seven the C chord returns to its function as dominant, resolving to an F major tonic triad on the downbeat of measure eight.

This passage, though brief, acts as a microcosm for the entire piece: it is inspired by Monteverdi and uses many techniques from his time (the chain of suspensions, the trillo, the Picardy third, and the use of pure triads) interspersed with some of Whitacre's own style (beginning on a second-inversion triad, use of the $M(2)$ chord, and full-collection sonorities). The mixture of the two styles makes this piece one of my favorite works by Whitacre.

Rubato, e molto espressivo

SOPRANO 1
Le - o - nar - do dream

SOPRANO 2
Le - o - nar - do dream

ALTO
Le - o - nar - do dreams dream

TENOR
Le - o - nar - do dreams

BASS
Le - o - nar - do dreams

PIANO (rehearsal only)

V ----- i

SOLO *mf* *f* *p*

ma - - - - - chine. *p* *mp*

5

(m)s. of his fly - i(ng). ma - chine. Tor -

(m)s. of his fly - i(ng). ma - chine. Tor -

(m)s. of his fly - i(ng). ma - chine. Tor -

(m)s. of his fly - i(ng). ma - chine. Tor -

dream. (m)s. of his fly - i(ng). ma - chine. Tor -

dream. (m)s. of his fly - i(ng). ma - chine. Tor -

C(2,5,8,t)/0 = V ----- I

Figure 19: Leonardo Dreams of his Flying Machine, measures 1-8

Lux Aurumque

Lux Aurumque will serve as an excellent transition into Whitacre's less conventional chord progressions. Though *Sleep* and *Leonardo Dreams* both contained clear V-I motion, this is more the exception than the rule in Whitacre's compositional style. Indeed, even the above passages one can see how Whitacre negates the function of the dominant triad through the addition of the tonic pitch to the V chord in *Sleep* and through the use of a full-collection sonority built on the fifth scale degree in *Leonardo Dreams*. This compositional preference is even more evident in the opening to *Lux Aurumque*. The piece opens with a fourfold repetition of the opening gesture depicted in Figure 20.

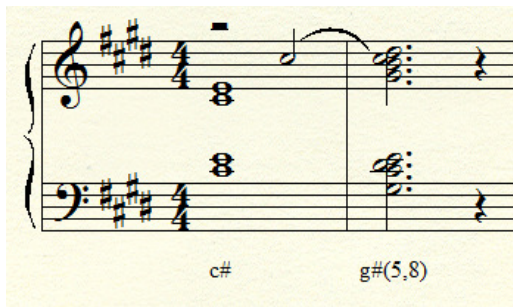


Figure 20: *Lux Aurumque*, opening gesture

The gesture begins on a C# minor dyad, which listeners will interpret as representing the tonic chord in the key of C# minor. The bass supports this conclusion when it moves down to scale degree 5 in the second measure. However, not all of the upper voices move with the bass; in fact, the original two tones are still preserved in the second chord. This opening gesture resembles the traditional motion from i to V with a tonic pedal, but Whitacre negates this by inserting the subtonic rather than the leading

tone, and by keeping the mediant as a pedal tone as well. In fact, the second chord combines all the pitches of the i and v chords. The overall effect is of motion and stasis coexisting, as the i chord both persists and is altered. The repetitive motion does not feel like a progression and resolution, but more like an expansion and contraction. Whitacre aptly calls this gesture his “breathing” motive.¹⁴⁴

Nox Aurumque

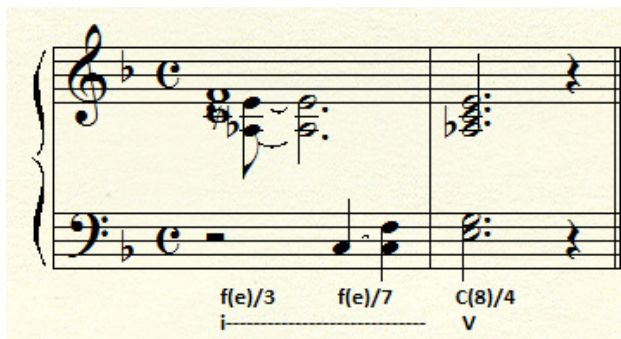


Figure 21: *Nox Aurumque*, opening gesture

Whitacre uses another version of this breathing motive in the opening of *Nox Aurumque*, his companion piece for *Lux Aurumque* (see Figure 21). Like the original version found there, this motive spans two measures and two chords, is repeated multiple times at the start of the work, maintains pitches from the first chord within the second chord, and moves from tonic to dominant. The sound-world introduced by this second motive, however, is vastly different than that in *Lux Aurumque*. Whereas that motive was strictly diatonic, this one uses chromaticism to create more dissonant sonorities. Specifically, Whitacre produces dissonance in this piece by using two added-tone

¹⁴⁴ Whitacre, “*Nox Aurumque*,” weblog.

sonorities that cannot occur within a diatonic sound-world: a minor triad with added e and a major triad with added 8. The addition of a traditionally “major scale” element to a minor triad, and of a “minor scale” element to a major triad allows Whitacre to introduce listeners to his main idea for the piece, the mixing of light and dark, in a way which is still relatable to a tonal context (motion from i to V).¹⁴⁵

Water Night



Figure 22: *Water Night*, measures 1-5

A more extended example of motion within stasis can be found in the first five measures of *Water Night*, given in Figure 22. The piece starts with a root-position B-flat minor triad, which will likely be interpreted as the tonic. While the bass tone never moves from its initial pitch, the upper voices begin to add pitches to the underlying triad, introducing the entire B-flat minor collection by the third beat of measure three. This beat is also the peak of the initial phrase, after which the texture gradually thins to reveal a root-position tonic triad that is nearly identical to that which began the piece. This expansion of tonic seems analogous to the Classical idiom of writing a full phrase over a

¹⁴⁵ Whitacre, “*Nox Aurumque*,” weblog.

tonic pedal, though in this case the emphasis seems to be on introducing the full collection rather than emulating any harmonic motion.¹⁴⁶

i thank you God for most this amazing day

Whitacre begins this piece on a pure C major triad, which then expands to an a(8,t)/0 chord on the word “God” (see Figure 23).¹⁴⁷ Whitacre gives a description of this motion: “the first three chords ... dissolve to the cluster on the word ‘God.’”¹⁴⁸ Whitacre’s use of the verb “dissolve” here shows that he thinks of the pure triad as being more stable or well-ordered than this added-tone sonority but also implies that the pure C triad contained within itself the potential for the a(8,t)/0 chord. This may be because the added-tone sonority only contains pitches from the C major collection implied by the first triad, and also retains two pitches from the original triad.

On a structural level, the a(8,t) chord can be seen as passing between the C triad and the e minor arpeggiations. Apart from the root motion by third, each added tone is clearly moving in stepwise motion toward a goal. Here again, Whitacre’s tendency to hold onto previous tones makes the sonority much richer than it may otherwise have been. The ultimate goal seems to be an F major chord, which is reached at the downbeat of measure four and sustained, with different added tones, for six full beats.

¹⁴⁶ The default interpretation of all but one of the chords in this passage is that of a B-flat minor triad with added tones. The chord on the fourth beat of measure three, however, defaults to a G-flat major triad with added tones; this is an example of a situation where context would dictate the choice of a non-default interpretation.

¹⁴⁷ We have already examined this chord as part in the case studies of chapters two and three.

¹⁴⁸ Whitacre, “Writing The Stolen Child, Part II,” weblog.

The image shows a musical score for the first nine measures of the song "I Thank You God for Most This Amazing Day". The score is written for piano, with a treble clef on the upper staff and a bass clef on the lower staff. The music is in 4/4 time. The bass line is particularly melodic, moving through various chords. Below the staff, a series of chord symbols are provided: C, a(8,t), e/3, e/7, e, e/3, F(2,e), F(9), F(2,e), F(9), C, d(2,5,t), C, G(5)/4, G/4, a(8,t). The symbols are aligned with the measures of the music.

Figure 23: *i thank you God for most this amazing day*, measures 1-9

On the third beat of measure five, the bass moves to a D, causing the chord to change to d(2,5,t)/0. On the downbeat of measure six, the tones of the D minor triad are cleared away to reveal a pure C major triad once again. The effect is as if the sun were suddenly appearing from behind clouds: with the second appearance of a pure C major triad, the key is solidified in the ear of the listener and a sense of closure is achieved.

Whitacre is not content to end the phrase here, however; instead he has the voices move through a passing G6(5) chord to land on an a(8,t) chord, echoing the initial motion of the song. The introductory phrase thus ends in an open state, and listeners expectantly await more music.

I wish to take a moment here to examine the d(2,5,t) sonority in measure five in greater detail. Its function is difficult to determine: as a D minor triad following an F major triad in the key of C, one would expect it to function as a predominant. Instead of leading into a dominant chord of some sort, however, it resolves directly into a tonic chord. I posit this explanation: the d(2,5,t) sonority functions to interweave, not to contrast, the F major and C major sonorities that precede and follow it. The sonority contains all the pitches of both the C major and F major triads, as well as a D which in this case makes the bass line more melodic. The d(2,5,t) sonority here thus serves the

function of a strange kind of passing chord: it passes between the two harmonies by absorbing each and combining them into an interesting simultaneity. Whitacre seems drawn to these types of chords, which lend his music a sense of flow as well as interesting harmonies.

Cloudburst

The first ten measures of *Cloudburst* are given in Figure 24. The piece opens on what appears to be a D major triad in second inversion. In measure 2, however, each of the upper parts split: in each part, the upper voice holds a pitch of the D triad while the lower voice steps down. Though this new sonority, an $a(5,9,e)/0$ chord, contains all the pitches of the previous D triad, listeners will prefer to interpret this chord as a root-position A minor chord due to the roothood tendency principle, as well as the lesser structural significance of second-inversion triads in tonal music. This interpretation will lead the listener to retroactively interpret the previous second-inversion D triad as an upper neighbor to what is now understood to be the underlying triad of the passage. This compositional technique of beginning with a second-inversion chord as an incomplete upper neighbor to the following sonority has its roots in late common-practice tonality, though the technique of stating the initial tonic via a triad with three added pitches is unique to Whitacre. In measure 5 the bass part splits, stepping up to form an $a(2,5,9,e)/0$ sonority. This chord contains the complete pitch collection of A melodic minor and cements the position of A as tonic in the ear of the listener. The fullness of the sonority gives the listener the feeling of being awash in sound.

Figure 24: *Cloudburst*, measures 1-10

On the final beat of measure 6, the chorus returns to the opening triad of the piece as if ready to repeat the opening gesture.¹⁴⁹ This is not to be, however, for the bass leaps down an octave on the downbeat of measure 7. For the first time, all the other voices move as well (the first time this has happened in the piece), forming an a(2,e)/0 sonority that is sustained for the entirety of measure 7. Both added tones introduce half-step dissonances into the sonority, and these dissonances are not tempered by whole-step clusters as in the previous a(2,5,9,e) chord. The added e resolves upward in measure eight, but the added two sustains into the following chord as a dissonance, becoming the added 6 of a neighboring F(6)/0 chord in measure eight.¹⁵⁰ The added 6 forms a tritone dissonance with the bass as well as a semitone dissonance with the first soprano; the

¹⁴⁹ If repeated, this gesture would be quite similar to the “breathing” motive of *Lux Aurumque* and *Nox Aurumque*.

¹⁵⁰ This F(6) chord appears to me to be a neighbor because it immediately returns to the a(2,e) chord, and also because it seems to serve no function other than to add color and interest to the passage.

strength of this dissonance contrasts against the sudden and unexpected beauty of the underlying root-position major triad, the first in the piece so far. The combination is strikingly beautiful. The second sopranos hold this dissonance as the other voices return to form an A minor chord in which the dissonant tone is an added 2. One beat later, the added 2 resolves downward into a pure A minor triad, the first pure root-position triad in the piece. Whitacre ends the opening phrase by thickening the sonority with an added 9 and t, a combination dissonant enough to warrant more music in the next phrase.

When David Heard

The first nineteen measures of *When David Heard* (see Figure 25) form what is, to my mind, one of the most moving passages in choral music. The piece opens in free tempo and recitative style on a pure A minor triad in root position. This A minor triad moves through an e6(8) and two pure e(6) chords to an F(2,e) sonority. While this chord progression is harmonically unremarkable, the added tones in each chord truly enrich the music. At this incredibly slow tempo, the color of each added tone becomes more tangible, and the dissonances add interest and flavor to the passage. As each chord extends in time, it loses much of its connection to context, and becomes more tonic-like, especially in the case of the A minor and F major sonorities. Each added tone in this passage is a tone held over from a previous chord, giving the music a ponderous feeling, as if the choir cannot quite muster the collective will to move forward fully into the next chord.

a e(8)/3 e6 e6 F(2)/0 F d(2,5)/7 a e(8)/3
 5 9
 F a a(1,5,8,t)/0
 13
 17
 d C(5,9)/0 Bb(2)/0

Figure 25: *When David Heard*, measures 1-19

The F(2,e) chord resolves to a pure F triad at the top of the second page. This returns to a root-position A minor triad by way of a passing d64(2,5) chord. The A minor triad in turn repeats its motion to the relative major through a passing e6(8) chord. At this point, the entire A minor collection has been stated. Though the music has oscillated

between A minor and F major triads, listeners will feel that A is the tonic because it was stated first and also fits the collection. This assumption is reinforced when, at measure 5, the soprano leaps up to an A while the other voices drop out.

The soprano repeats this lone A for four full measures before the basses enter on an A two octaves lower. While a portion of the basses continue to hold this low A, others leap up a fourth and begin to build a full-sonority chord by stepping up the scale. In this case, the end result is a massive a(1,5,8,t)/0 sonority of eighteen individual voices, sounded fully by the downbeat of measure 13. This sonority is repeated verbatim for four measures. The density of this chord, as well as the minor quality of the underlying triad and the half-step dissonance with the root of the chord, expresses for me a grief unimaginable. Whitacre reserves this combination of added tones for this piece alone, using it only here and in a parallel passage later in the piece.

Though A was the tonic in the recitative section of the introduction, the listener may be more inclined to hear the root of this new sonority as the fifth scale degree of D minor rather than as the tonic in A minor. The a(1,5,8,t) sonority contains the entire pitch collection of the D natural minor scale, which interpretation listeners might prefer to the A phrygian mode. Additionally, the fourth between the lowest two notes of the sonority, as well as the pronounced fourth motion in the bass at the beginning of the scalar motion, emphasize the importance of D within this A minor sonority.

The ending of this passage confirms a hearing in D minor: the massive sonority resolves into a pure D minor triad in root position at measure 17. This is followed by

motion through a passing C(5,9) chord to a Bb(2) chord, a move that mimics the motion to the F chord in the recitative section.

Conclusions

Though Whitacre regularly uses added-tone sonorities within his opening phrases, he seems to prefer to begin the piece on a pure triad, be it tonic or dominant, root position, or second inversion. He establishes the tonic through a variety of methods, including traditional I-V motion as in *Leonardo Dreams of his Flying Machine*, I-V motion with an altered dominant as in *Sleep*, and I-V motion with a tonic pedal as in *Lux Aurumque* and *Nox Aurumque*. Other techniques include a I-IV-I progression as in *i thank you God for most this amazing day*, an extended tonic prolongation as in *Water Night*, or the assertion of tonic through the use of a full-collection sonority as in *When David Heard* and *Cloudburst*. Even when Whitacre does not use a full-collection sonority, he tends to introduce the main diatonic collection of the work within the opening phrase.

Chapter 6: Added-Tone Sonorities in Analysis: The Closing Phrase

Let us now examine the final phrases of Whitacre's choral works to see how he uses added-tone sonorities at the ends of his pieces. As will soon become evident, Whitacre seems to prefer to end his pieces with added-tone sonorities rather than with pure triads. Additionally, he sometimes chooses to end with a second-inversion chord rather than one in root position and often opts out of a final cadence; in fact, none of the pieces included in this study end with an authentic cadence of any type. How does Whitacre achieve closure in the absence of the traditional V-I motion? How can listeners be expected to attribute a sense of rest to an added-tone sonority, especially one not in root position? A close examination of the final phrases of Whitacre's pieces will enlighten us.

When David Heard

The final section of this piece (mm. 195-214) mimics the opening passage analyzed in the previous chapter. The section begins with a free tempo, recitative style, an oscillation between A minor and F major triads, and the same text as at the start of the piece. At measure 206 the voices take up the "my son" motive from the beginning of the piece. The sonority here is not as full as in the first phrase, but is a repeated d(2,5)/7 chord. The phrase "my son" is repeated four times, after which the choir holds the chord for another three measures. Finally, in measure 213 the voices move to form an empty fifth: A and E (see Figure 26). The hollow sound of this would-be triad is well suited to

the ending of this very emotional piece and is especially striking in this otherwise harmonically rich work. Whitacre produces a sense of closure here by clearing away the dissonances inherent in the $d(2,5)/7$ chord to reveal the A-E dyad within the chord. The overall harmonic motion of the final phrase, starting at measure 202, may be interpreted as $i - iv64 - i$, an expansion of the tonic chord enhanced through passing motion and, of course, Whitacre's added tones.

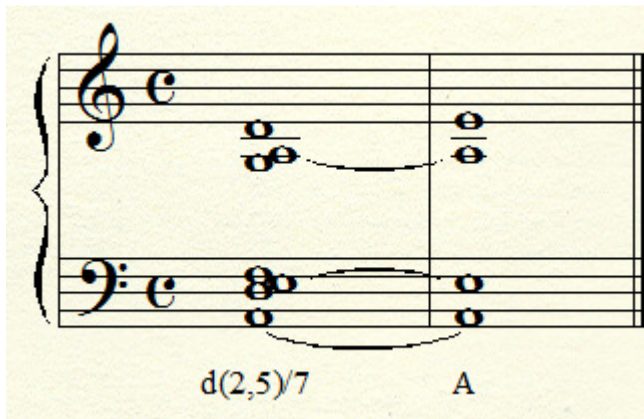


Figure 26: *When David Heard*, closing gesture

Sleep My Child

The closing gesture of *Sleep My Child* also reveals a plagal cadence, this time with root-position chords (see Figure 27). The final phrase of the piece is filled with consistent eight-note motion and no pure triads. In measure 60, the voices coalesce into a $Gb(2)/0$ chord, which is held for a much longer duration than any of the chords in the previous measures. The sudden arrival on what is, to Whitacre's mind, a consonant tonic chord after so much melodic motion is surprising and leaves the listener wanting more. Whitacre accommodates this need by having the three soprano parts hold their pitches

while the other voices move to form a $Cb(2,9,e)/0$ chord. This new sonority is held for a measure, after which the voices return to the $Gb(2)/0$ chord, the final chord in the piece. This motion is analogous to a traditional plagal cadence, decorated and enhanced by the use of added tones. In this case, the added tones are all members of the tonic chord (not tonic triad), and thus create the effect, once again, of motion within stasis.

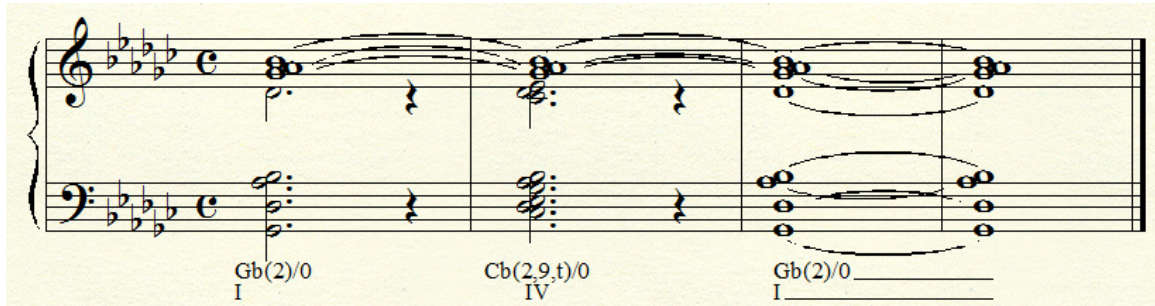


Figure 27: *Sleep My Child*, measures 60-63

Her Sacred Spirit Soars

Up until the final phrase, *Her Sacred Spirit Soars* has been in constant motion, with chord changes every quarter note. In measure 92, for the first time, a massive pure triad in half notes is the center of attention (see Figure 28). An E-flat major triad in second inversion is iterated in the top choir and then in both choirs. The sonority shifts to an $Ab(2,9,e)/0$ chord at measure 94, then returns to an Eb triad in second inversion two measures later, to which a 2 is added on the fourth beat of measure 96.

Figure 28: *Her Sacred Spirit Soars*, measures 92-99

The final sonority thus contains an added 2, as with so many of Whitacre's final chords. What is especially interesting about this added 2 is that Whitacre added the 2 *after* the chord was voiced as a pure triad, clearly showing his preference for the added-2 chord as a final sonority. Once again Whitacre shows his preference for the plagal cadence, as well as his avoidance of the dominant chord and proclivity for adding tonic tones to his penultimate chords. It is worth noting that, as with the added 2, Whitacre

clearly wanted the final chord to be in second inversion. The final bass note is quite high in the bass register; Whitacre had the option of moving the bass note down a fifth, or even a twelfth, to a tonic pitch. That Whitacre left the bass on the B-flat is, therefore, a clear indication of his preference.

Water Night

Figure 29: *Water Night*, measures 53-59

The final phrase of this piece (Figure 29) begins by quoting the opening of the piece. Measure 53 begins with a B-flat minor triad in the same chord structure as in measure 1; the voices move upward as at the beginning, while the bass continues to hold the B-flat. At measure 56 the bass jumps down to the lower B-flat, forming a B-flat minor triad with the upper voices. This chord moves through a Gb(2)/0 to an Eb(2,t)/0 chord before resolving to a pure B-flat minor triad once again to finish the piece. The final progression is once again analogous to a plagal cadence with traditional bass

arpeggiation of the iv chord, while the added tones in the penultimate chord once again contain all the tones of the final chord.

hope, faith, life, love

This piece is the second in a three-movement work, and its final phrase is supposed to lead directly into the start of the third movement (*i thank you God for most this amazing day*). Nevertheless, I thought the ending worth analyzing here because there is a definite sense of rest at the end of this movement and because the movement is often performed on its own.

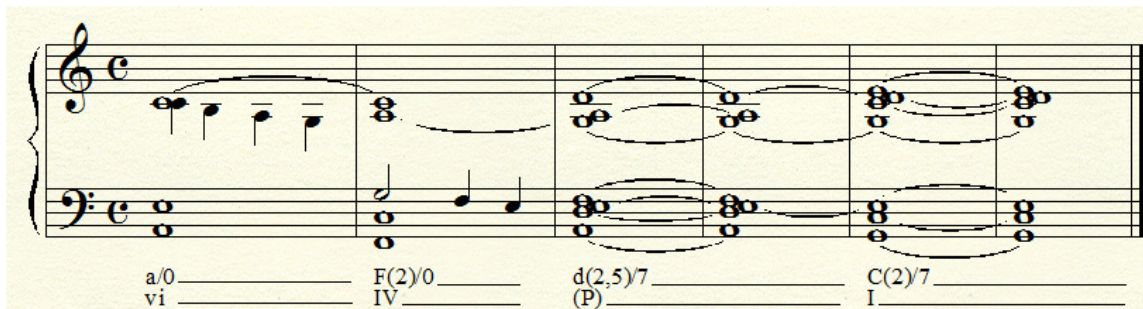


Figure 30: *hope, faith, life, love*, measures 45-50

The previous passage ended on an F(2)/0 chord via a plagal cadence, so when the A minor triad in measure 45 moves to an F(2)/0 chord in measure 46, it seems to be a neighboring sonority decorating the underlying F chord. During the A minor triad, however, the altos upset the feeling of F as tonic by passing through a B-natural. The F chord, now acting as a subdominant, moves through a d(2,5)/7 sonority, resolving at last to a C(2)/7 chord. The tonic of measure 43 has thus turned into the subdominant, leading to another plagal cadence here at measure 49. This motion is akin to the more traditional

V/V – V – I progression, but inverted: an applied subdominant progression. The insertion of the d(2,5)/7 chord between the IV and I here acts much as the d(5,t)/0 chord will at the beginning of *i thank you God for most this amazing day*.

On paper, the final resolution to the C(2)/7 does not look like the motion one would expect at the end of a piece. The soprano has just stepped up from scale degree one to scale degree three; the bass is on the fifth of the chord, and there was no hint of a dominant or leading tone in the penultimate chord. Despite this, the move to the final chord does sound like a resolution to my ear. I believe this effect is a direct result of sonority. The added 2 and 5 within the penultimate D chord were none other than the third and fifth scale degrees of the key of C major. As the sonority changes to the final chord, we hear notes that were previously dissonant added tones become consonant as the other voices move around them. Essentially, the added E and G anticipate the chord of resolution; when the C chord arrives, one feels as if it has been expected all along.

Lux Aurumque

The final phrase of this piece (Figure 31) begins by quoting the breathing motive from the opening of the work. The i-v motion is repeated three times before the voices seem to get stuck on the v chord at measure 36. At measure 38 the chord changes to a C# triad in second inversion. This chord is decorated with a neighboring D#(2,5,t)/0 chord which, as in the breathing motive, contains all the pitches of the C# triad within itself. We have seen this sonority act as a passing chord between I and IV, but here the sonority acts as a neighboring chord to tonic, a neighboring chord which contains all of the pitches

of the tonic chord. The music alternates between these two chords three times, getting stuck on the third repetition. At measure 46 the voices resolve to the final chord, a root-position C# major triad.

30

35

40

46

Chord labels: $C\#_I$, $G\#(5,8)/0_V$, $C\#_I$, $G\#(5,8)/0_V$, $C\#_I$, $G\#(5,8)/0_V$, $C\#7_I$, $D\#(5,t)/0$, $C\#(7)_i$, $D\#(5,t)/0$, $C\#7_I$, $D\#(5,t)/0$.

Figure 31: *Lux Aurumque*, measures 30-48

A Boy and a Girl

45

C(2)/0 Eb(2)/0 F(2)/0 e(t)/3 C/0 Eb(6)/0 F(5)/0 Eb(6)/3

I IV I IV

49

F/0 G(5)/0 F/0 Bb(2)/0 C(2)/0 G(2)/0

IV V IV V (I?)

(=G-IV I)

Figure 32: *A Boy and a Girl*, measures 45-52

A Boy and a Girl is a modified strophic piece containing three verses. This final phrase begins after the third verse and is an exact quotation of sections of the first verse. The final phrase (Figure 32) combines the first three measures with the last four measures of the first verse, stating the verse in miniature, as it were. In their initial context, these measures were heard in C major, and there is no new material here to dissuade listeners from hearing that tonality. It is only after the final chord, a G(2) sonority, fails to move on that listeners are aware that the piece is over. This G major chord, situated within a C major context, thus has the effect of a half cadence, though this effect is dulled by the slow tempo and the added tone. Whitacre tends to add 5 to dominant chords and 2 to tonic chords; the addition of the 2 here in the G chord works as a calming agent. As the sonority stretches out in time, listeners cease feeling the need of the soprano B to resolve

up to C and begin to feel the need of the alto A to resolve down to G. Whitacre fulfills neither desire; for him, the added 2 chord is a stable sonority with no need of resolution.

i thank you God for most this amazing day

The closing passage (Figure 33) begins with a single tone: F-sharp. In measure 83 the line blossoms into a chord that Whitacre builds from the bottom up. Three chords are built in this fashion, each filling two full measures: B(2,5,9,t)/0 moves to A(2,6,9,e)/0, which in turn moves to g#(2,5,8,t)/0. Each of these chords is a full-collection sonority: the first two outline an E major collection, while the third contains a B major collection. The bass has thus far descended in stepwise motion from B to A to G-sharp and finishes its descent on an F-sharp on the downbeat of measure 89. The chord in measure 89 is a B(2)/7 chord and feels distinctly like tonic despite being in second inversion. The added 2, along with the new B major collection, aids this perception. The chord is held for two measures, and the piece feels complete.

However, on the third beat of measure 91, the upper parts move, creating a B(2,6,9)/7 sonority, which is held throughout the end of the piece. This chord contains considerably more dissonance than the previous sonority; the added 6, placed prominently as the highest note in the chord, is especially dissonant. This final chord also somewhat negates the tonic status of the previous chord; it contains an E-sharp, which changes the collection to F-sharp major. This chord seems like an odd choice with which to end the final movement of a three-movement work, especially after having already arrived at a stable sonority. I believe Whitacre chooses this ending here to mimic

the beginning of the piece: the B(2)/7 chord “dissolves” into a richer, less stable sonority much as the C triad moved to the a(8,t)/0 chord at the start of the piece.

The image displays a musical score for measures 81 through 94. It is organized into four systems, each with a measure number at the top left. The notation includes a grand staff with a treble and bass clef, and a key signature of one sharp (F#). Measure 81 is marked with the chord F# and B(2,5,9,t)/0. Measure 84 is marked with A(2,6,9,e)/0. Measure 87 is marked with g#(2,5,8,t)/0. Measure 89 is marked with B(2)7 and B(2,6,9)/7. The score shows a progression of chords and melodic lines across these measures.

Figure 33: *i thank you God for most this amazing day*, measures 81-94

I Hide Myself

The image shows a musical score for measures 28-32 of the piece 'I Hide Myself'. The score is written for piano in common time (C). It features two staves: a treble clef staff and a bass clef staff. The key signature has one flat (B-flat). The music is characterized by a gradual relaxation into a single underlying triad. The soprano voice (treble clef) holds a single G-flat for the final five measures. The bass voice (bass clef) continually reiterates a G-flat two octaves below. The inner voices move within this two-octave span but utilize only notes of the G-flat major collection. A triplet of eighth notes is marked in measure 30. The piece concludes with a final chord labeled Gb(2).

Figure 34: *I Hide Myself*, measures 28-32

This piece is not as clearly tonal as the majority of Whitacre's pieces. Whitacre does not use a key signature nor does he constrain himself to a single diatonic scale. For the most part, traditional harmonic progressions are avoided. Whitacre achieves closure in this piece not through cadential motion but through a gradual relaxation into a single underlying triad over the course of the final phrase (see Figure 34). The outer voices begin the process in measure 28: the soprano holds a single G-flat for the final five measures, while the bass continually reiterates a G-flat two octaves below. The inner voices move within this two-octave span but utilize only notes of the G-flat major collection. Despite the influences of the outer voices and the collection, however, the sonorities continue to imply added-tone Cb/7 or eb/3 chords rather than G-flat chords. When a G-flat sonority *is* implied, it is as a neighboring chord as on the second beat of measure 28, or at a weak timepoint as on the second half of the second beat of measure 30. In both appearances, the G-flat chord is missing a fifth and contains an added e. A full G-flat sonority does not make an appearance until the final chord of the piece; the effect is of the inner voices agreeing at last with the outer voices. All except the tenor,

that is. It continues to hold an A-flat, causing the final sonority to be a Gb(2)/0 chord. This piece, the second Whitacre ever composed, is the first example of Whitacre's tendency to add a 2 to his final chord.

Conclusions

Several distinctive features are frequently found in Whitacre's closing phrases. He seems to prefer to come full-circle in his compositions, as it were, and often begins his final phrase by referring to the opening measures of the piece. This is the case even when, as in *A Boy and a Girl*, the piece ends a fifth higher than it began. Whitacre generally moves to his final chord in one of two ways: via a plagal cadence or through the gradual introduction of tonic-triad pitches into the sonority. His preferred final sonority seems to be a M(2) chord, though he is not averse to using a M/7 or M(2)/7 chord as well. At times, a unique ending may be called for by the setting, such as the dissolve into the dissonant final sonority in *i thank you God for most this amazing day* or the empty fifth in *When David Heard*.

Chapter 7: Added Tone Sonorities in Analysis: Interesting Moments

In this chapter, I wish to explore certain passages within Whitacre's output that I find especially compelling, moving, climactic, or otherwise interesting. I take up the question that I believe to be the true essence of music theory: Why does this passage sound the way that it does? What gives this music its special affect? In Whitacre's case, I suspect, much of the answer will have to do with his added-tone sonorities.

Go, Lovely Rose

Measures 18-25 of this piece constitute their own eight bar phrase, which to me is very beautiful and peaceful, especially at the cadence in measure 25 (see Figure 35). The phrase begins by quoting the opening gesture of the piece, a chord build starting on B. While at the opening the chord build formed a full B(2,6)/0 chord, here the motion is cut short after the first three notes, and the choir moves to a root-position A major triad instead. Halfway through measure 19, part of the choir moves up to form a B major triad against the sustained A major triad, resulting in an A(2,6,9)/0 added-tone sonority. The choir continues to repeat this gesture, which is similar to Whitacre's breathing motive, until measure 23. Every other measure, the moving voices step down to form the B major triad, resulting in a sonority that could be construed as an f#(5,9,t)/0 chord; context, however, suggests that this chord be interpreted as an A(2,6,9)/7 sonority.

18 Tenor Solo

22 Soprano Solo

Chord symbols for measures 18-25:

- Measure 18: B(2)
- Measure 19: A A(2,6,9)
- Measure 20: A A(2,6,9)/9
- Measure 21: A A(2,6,9) with solo: A(2,6,9,e)
- Measure 22: A A(2,6,9)/9
- Measure 23: A g#(8)/3 c# g#(5)/3
- Measure 24: A g#(8)/3 c# F#(2)/4 = IV
- Measure 25: C#(2)/7 I

Figure 35: *Go, Lovely Rose*, measures 18-25

Meanwhile, a tenor soloist moves between the voices of the choir, singing a line which fits within the E major collection with the other voices but which shows no obvious correspondence to the rhythm and chords being sung by the main choir. In measure 21, however, the soloist leaps up a perfect fifth in rhythm with the choir. The tenor's first note (C#) was part of the choir's chord, but the tenor's final note (G#) is not present in the chord sung by the choir, nor has it been stated in the entire passage thus far. If the tenor's note is perceived as part of the sonority in the second half of measure 21, the result is a full-collection A(2,6,9,e) sonority, with the tenor's added e the highest note of the chord.

Measure 23 begins with a return to the A major triad. In this and the following measure, the voices again oscillate between two chords; this time, however, all voices move, passing up to a C-sharp minor triad through a $g\#(8)/3$ chord and then back to the A major triad through a $g\#(5)/3$ chord. After beat three of measure 24, however, the voices cease their oscillation. Instead, they move through an $F\#(2)/4$ chord to a $C\#(2)/7$ chord, on which the phrase ends. A soprano soloist sings in these three measures and ends with an ascending fifth motion up to a high G#, which is again the highest note of the chord. This time, however, the G# is consonant, the fifth of the chord. The changing chordal context of the G#, consonant where once it had been dissonant, lends the cadence at the end of this passage a sense of peace and unexpected beauty.

With a Lily in Your Hand

The climactic phrase of this piece also makes use of the $M(2,6,9)$ sonority, though in a different context. Measure 49 begins with all voices iterating a single line: a double-neighbor figure centered on C# and involving B and D. The configuration of half- and whole-steps here could occur in A major or F-sharp minor; the listener is drawn toward an F-sharp minor interpretation because the previous phrase ended on a B major triad. This interpretation is confirmed when the voices arpeggiate an F-sharp major triad downwards, starting from that same C#. In measure 51, the upper voices move to a G-sharp major triad while the lower voices remain on the F-sharp major triad, creating an $F\#(2,5,9)/0$ sonority.

49

53

57

C#----- F#/4 F#(2,6,9)----- F#-----

F#(2,6,9)----- F#----- G#----- b(2)----- b(5) b e(2)/3

f#/3 b c# b(e)/3 e(5,9) e(2) B

Figure 36: *With a Lily in your Hand*, measures 49-58

The move from F-sharp minor to F-sharp major was effected by a change of key signature at measure 50. The F#(2,5,9)/0 sonority contained all the pitches of the new key except for some form of E. In measure 52 the upper voices recede back into an F-sharp major triad, after which the soprano leaps up to an E# for a moment, introducing the remainder of the collection. In measure 53 the choir restates the F#(2,5,9)/0 sonority. Rather than receding back into the F-sharp major triad this time, however, the upper voices drop out completely. The lower voices continue to state the F-sharp major triad;

the bass arpeggiates the triad as it moves down an octave. In measure 55 the upper voices reenter on their G-sharp major triad, but this time they are joined by the lower voices to create a full, pure G-sharp major triad.

F# was very prominent in measures 49 through 54. At first the tonality appeared to be F-sharp minor, but then it changed to F-sharp Lydian at the key signature. The heavy emphasis on the G-sharp major triad in measure 55 heralds a change of tonality. The soprano line supports this, visiting E natural, rather than E sharp, as an upper neighbor. Whitacre returns the key signature to original three sharps just as he has the voices move to a b(2)/0 chord on the downbeat of measure 56. The bass immediately begins stepping up the B minor scale, traversing an octave and a fourth before coming to rest on an E minor chord. After a fermata, the sonority resolves into a pure B major triad.

Here again, in measures 56-58, Whitacre outlines the progression from B minor to E minor to B major. This time the progression is unambiguous: the bass outlines the entire B minor scale, and the added tones within the E minor chords deter listeners from interpreting that chord as tonic. Whitacre confirms an interpretation of B as tonic when, for the rest of the piece, he has the choirs reiterate that single triad, moving to an E minor chord in second inversion as a pedal IV decorating this tonic triad.

Sleep

The climax of Whitacre's *Sleep* (Figure 37) is a compelling musical moment that has brought me to tears on several occasions. The moment of climax occurs on the downbeat of measure 58, but I have included the surrounding passage in my analysis as

well. The passage seems fairly self-contained and has a clear melodic and dynamic contour that rises to the climax and then settles down again. The high range and loud dynamics clearly mark this passage as climactic, but it is the use of added-tone sonorities in the passage that heightens the beauty of the passage for me.

Whitacre begins the passage with an octave C between the voices. This single pitch expands outward to form a pure A-flat major triad. The bass then moves down by step, passing through an Eb/4 chord to an F minor chord, and then to a Bb(5)/7 chord. Measures 46 through 48 repeat this basic chord progression, though the upper voices move much higher this time, bringing the clash between 5 and 7 to the top of the soprano register. One might recall from the analysis of the first phrase of *Sleep* that this piece is strongly in the key of E-flat major. The B-flat chord here thus asserts itself as a dominant, giving these two phrases the effect of half cadences. Especially in measure 48, the Bb(5)/7 chord strongly demands a resolution.

Whitacre does not provide that resolution, however. Instead, the bass reiterates its descent from Ab to F in measures 50-51, while the upper voices ascend to form an f(2,5,t) chord on the downbeat of measure 51. The upper voices hold their parts while the lower voices sing an echo figure in a higher register. Because of this motion in the lower voices, the added 2 in the first soprano, the most dissonant pitch in the chord, is last heard as the added 11 of an A-flat major chord.

43

48

53

58

Ab-----Eb(2)/4 c/7 f(t) f(5,t) Bb(5)/7 Ab--Eb(2)/4 c/7 f(2,9,t) f(2,t)
 IV----- ii----- V IV----- ii-----

Bb(5)/7----- Ab-----Eb/4-----f(2,5,t)----- f
 V IV----- ii-----

Ab-----Eb/4----- f(2,5,t)----- f Ab-----Eb/4-----f(2,5,t)---Db(2)---
 IV----- ii----- IV----- ii----- IV/IV-----

Ab-----Eb/7 f(2,t)-----Bb(5)/7 Bb/7 Ab Bb Ab g Ab Eb Bb(5)/4
 IV----- I ii V (IV----- I) V

Figure 37: *Sleep*, measures 43-61

Measures 52-55 are an exact repetition of the previous three measures, again ending with the soprano on an added e. Measures 55-57 promise to be a repetition of the same material, but then on the third beat of measure 57 the added e in the first soprano finally resolves upward to an Ab. This “resolution” only increases the dissonance,

however, for the second soprano had joined the first soprano on the G one beat earlier and continues to hold the pitch, creating a half-step dissonance between the soprano voices on beat three. At the same time, the lower voices introduce a Db, the only pitch in the entire piece that is outside the E-flat major collection. This change causes the chord on beat three of measure 57 to be a Db(6)/7 chord, a highly dissonant but beautifully unexpected chord. The bass arpeggiates through a Db(6) chord in root position, and the sonority finally resolves to a pure A-flat major triad on the downbeat of measure 58. The sudden release of the tension, combined with the change of key, the high register, and the fortissimo dynamics, make this moment glorious.

The Db chord resolves to a root-position Ab major triad on the downbeat of measure 58, which itself resolves to an Eb chord later in the measure. This chord progression is thus another example of an applied subdominant progression: IV/IV – IV – I. In the remainder of the passage, the voices elaborate the dominant chord, so that the entire passage ends on a half cadence.

Leonardo Dreams of His Flying Machine

Measures 110-116 may be viewed as the climax of *Leonardo Dreams* and take place just before Leonardo's "flight" (see Figure 38). Sonority does not come into play until the very end of this passage; rather, the majority of the chords Whitacre uses here are root-position pure triads. I focus here particularly on the pure E major triad, which arrives on the downbeat of measure 114. For me, the arrival of this chord feels for a moment like a sense of repose. Not only does this chord have a much longer duration

than the sonorities that precede it, but it can be interpreted as the goal of a IV-ii-V-I progression in E major.

d----- Ab----- F----- bb----- G----- c---A---d---B---E-----E(8) E(2,8) E(2,8,t)/7 E A
E: IV ii V I----- not I-----A: V I

Figure 38: *Leonardo Dreams of his Flying Machine*, measures 111-116

As the E major chord extends in time, however, it becomes less and less stable, a development which brings into question the chord's role as tonic. The bass arpeggiates upward through the tones of the chord but seems to get stuck on B, forming a second-inversion E chord. Simultaneously, the altos leap up to a C, which adds a dissonant 8 to the chord. As the alto holds the added 8 the tenors step up, adding a 2 to the chord as well. Finally, on the downbeat of measure 114, both soprano voices split, forming an E(2,8,t)/7 chord. This sonority could also be understood as a b(1,5,9) chord, of course, but the prominence of the E major triad in the previous measure is sufficiently strong that

listeners would be hesitant to change chords, especially since the majority of the pitches of the E major triad continue to be sounded in their original registers.

The E(2,8,t)/7 chord is written under a fermata and at a *forte* dynamic. The sonority is very powerful to me; the longer it is held, the more I want to hear of it. It is highly dissonant but somehow not displeasing to the ear, at least in my hearing of it. The gradual adding of dissonances to the original E major triad has caused me to rethink my choice of the chord as tonic; specifically, the added t has caused me to reinterpret the chord as a dominant. When the added tones clear for another statement of the pure E major triad, I feel that it needs to resolve to an A major chord. For once, Whitacre satisfies this need for resolution in an entirely conventional manner.

Water Night

This passage shows evidence of Whitacre's modulatory technique, as well as an interesting use of the leading tone. Measure 16 of *Water Night* begins on a B-flat minor chord, the uncontested tonic thus far (see Figure 39). In measure 17, however, the introduction of a G natural into the collection subverts the feeling of B-flat minor as tonic, especially when the chord is sounded with added tones (5 and t) consistently reserved for the dominant in Whitacre's music. The music oscillates between a pure B-flat minor triad and a B-flat chord with added pitches from the E-flat major triad; this could be heard as i-IV in B-flat minor or as v-I in E-flat major.

As the passage progresses, the listener may lean more toward an E-flat major hearing of the section, a hearing which the bass confirms in measure 23 by dropping

down a fifth to a low E-flat, by far the lowest pitch in the piece so far. The upper voices, for once, present this chord unadorned. Such a strong assertion of the E-flat major chord (at a cadence, in root position, and as a pure triad) strongly points to a new key center beginning in measure 23. However, the addition of a 2, 6, and t to the chord a mere two beats later will likely cause the listener to immediately rethink the status of E-flat as tonic, because the added-tone sonority on E-flat does not belong within the E-flat major collection. When the subsequent phrase begins on a pure, root-position B-flat minor triad, listeners will likely revert to thinking of B-flat as tonic.

16

17

18

19

20

21

22

23

24

25

26

Chord labels below the score:

- Measure 16: bb
- Measure 17: $bb(5,t)$
- Measure 18: $bb(5,9,t)$
- Measure 19: bb
- Measure 20: $bb(5,9)$
- Measure 21: $bb(5,9)$
- Measure 22: bb
- Measure 23: bb
- Measure 24: $bb(2,6,t)$
- Measure 25: bb
- Measure 26: $bb(2,5)$

Figured bass notation below the chords:

- Measure 16: i
- Measure 17: $i?$
- Measure 18: $i?!?$
- Measure 21: $(i?!?)$
- Measure 23: I
- Measure 24: IV
- Measure 26: i

Figure 39: *Water Night*, measures 16-26

Measure 23 marks the only point in the entire B-flat minor piece where the leading tone is present; everywhere else it is presented in its flattened minor state, bringing to mind the Aeolian mode rather than a traditional minor key. The leading tone

in measure 23 did not function in a cadential way but rather served simply to undermine a new potential tonic and reorient the listener to the true tonic of the piece.

Conclusions

As demonstrated above, an analysis of Whitacre's music using added-tone sonorities can tell us valuable information about modulation, climaxes, cycles of tension and release, and interesting sonorities, even in sections of music that may not cadence or project a clear tonal center.

Conclusion

This thesis has presented an in-depth look at the harmonic language of Eric Whitacre's a cappella choral music. After collecting a huge amount of information regarding vertical sonorities in this repertoire, I began to organize and categorize the types of sounds used by Whitacre. Three new forms of notation (the chord structure, the chord type, and the added-tone sonority) were developed to aid in this process. Though each of the three notations can be useful analytical tools when describing the sound-world of a specific piece or the vocabulary of a given composer, the added-tone sonority is most beneficial when analyzing Whitacre's compositions.

Added-tone sonorities allow the analyst to relate Whitacre's complex chords to a musical object that is much better understood: the triad. The added-tone sonority may then allow analysts to view Whitacre's music from a tonal standpoint, as a progression of diatonic triads with various added pitches ornamenting each one. The notation strongly projects the tonal relationships between Whitacre's chords while also maintaining information about those added tones that lend his compositional language its beauty and variety.

The use of added-tone sonorities in analysis reveals several of Whitacre's compositional traits that might otherwise have remained hidden, such as his propensity for adding a 5 to dominant triads and a 2 to tonic triads. An application of the theories developed within this thesis may be enlightening in the analysis of works by other neo-tonal composers and especially of other neo-impressionistic composers.

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Appendix A: Whitacre's Compositions

This appendix presents a brief history and description of each of the pieces included in this study for the benefit of those readers who are not familiar with Whitacre's individual compositions. Pieces are listed chronologically by date of composition. Unless specified otherwise, all information is taken from the liner notes of the individual composition.

Go, Lovely Rose (October 1992, Revised August 2001)

This piece, scored for SATB choir and set to Edmund Waller's famous poem, is Whitacre's first composition.¹⁵¹ Despite being composed first, this piece is the final piece in Whitacre's *Three Flower Songs*. Whitacre writes that the piece is structured around the life cycle of a rose, following the change of seasons from spring (mm. 1-12) through summer (mm. 13-25), fall (mm. 26-38), and winter (mm. 39-48) to spring again (mm. 49-55). The number of total measures in the piece is based on the Fibonacci sequence, and the climax appears at the golden mean (m. 34). Whitacre requests that this piece be performed "with the child-like innocence and naivety that allows us to marvel at the return of the rose each spring."

¹⁵¹ Whitacre, "Eric Whitacre," p. 254.

I Hide Myself (October 1992, Revised August 2001)

This is the first piece in *Three Flower Songs* and is also scored for SATB choir. The text is by Emily Dickenson. Whitacre states that this piece stems from a careful reading of the poem and that a good performance of the piece should emulate the persona of the poet: “this mood must prevail in the performance: shy and sullen, her passion surging to the surface only to sink back into the silence that is herself.”

With a Lily in your Hand (October 1992, Revised August 2001)

This piece, the second of Whitacre’s *Three Flower Songs*, is the liveliest of Whitacre’s entire output for a cappella choir. It is scored for SATB, and the text has been translated from Federico Garcia Lorca’s original Spanish by Jerome Rothenberg. Whitacre writes that the piece is based on the contrast between water and fire, with fire prevailing everywhere except measures 30-38 and 44-53.

Cloudburst (1993)

Cloudburst is scored for SATB chorus, piano, and percussion, and uses many aleatoric devices such as choice music, random entrances, and body percussion, to represent the actual experience of a sudden, brief thunderstorm. Whitacre was inspired to write the piece when he was caught in just such a thunderstorm while on tour with his college choir.¹⁵² The Spanish text is by one of Whitacre’s favorite poets, Octavio Paz. Whitacre’s liner notes read: “The Cloudburst is a ceremony, a celebration of the

¹⁵² Whitacre, “Commentary,” Hairel, p. 143.

unleashed kinetic energy in all things. The mood throughout is reverent, meditative and centered. This does not imply solemn or calm; it simply means the performer must take the spiritual journey with total respect for the power of the water and the profundity of the rebirth.” *Cloudburst* received first prize in the ACDA’s 1993 “Composers of the Future” competition.

Water Night (December 1994)

This piece is an SATB setting of another poem by Octavio Paz, translated into English by Muriel Rukeyser. Whitacre writes that this piece was “a composer’s dream. The music seems to set itself, and the process feels more like cleaning the oils from an ancient canvas to reveal the hidden music than composing.” The piece was a finalist in the 1997 Barlow competition.¹⁵³

When David Heard (March 1999)

This piece is Whitacre’s first for divided chorus. Though it is scored for SSAATTBB, the piece contains chords written for up to eighteen individual voices. This piece is Whitacre’s only composition based on a biblical text. Interestingly, this longest of Whitacre’s choral compositions is set to only one verse: Samuel II 18:33. Whitacre chose the text because of its relevance to the personal life of Dr. Ronald Staheli, who commissioned the piece.¹⁵⁴ As Whitacre composed *When David Heard*, he tried to

¹⁵³ Strimple, p. 251.

¹⁵⁴ Byun, p. 16.

imagine what it would feel like to lose a son as David had just lost Absalom in the text. This technique took him to a very dark place emotionally, and the finished composition still engenders those terrible feelings in him today.¹⁵⁵ For this reason, Whitacre avoids conducting *When David Heard*.

i thank you God for most this amazing day (March 1999)

This piece is an SATB setting of a poem by e.e. cummings, is the final piece in the set *Three Songs of Faith*. Whitacre writes that the text “is such a beautiful and joyous poem that the music was at times almost effortless.”

i will wade out (July 1999)

Another SATB setting of an e.e. cummings poem. This is the first in the set and is set rather sparsely, unlike the majority of Whitacre’s pieces from this time period. Whitacre writes, “the text is so passionate, so sensual, and I found it to be the perfect opening to a cycle of pieces about my own personal faith.”

hope, faith, life, love (August 1999)

This piece, the final movement of *Three Songs of Faith* to be composed, includes references and quotations to the other two movements as well as to every choral piece written by Whitacre up to that time. Though it was the last to be written, this piece is the second in the set.

¹⁵⁵ EricWhitacre.com, “*When David Heard*.”

Lux Aurumque (July 2000)

An SATB setting of a very brief poem by Edward Esch, translated from the original English into Latin by Charles Anthony Silvestri. Whitacre writes, “A simple approach is essential to the success of the work, and if the tight harmonies are carefully tuned and balanced they will shimmer and glow.”

Sleep (August 2000)

This SATB piece was originally set to Robert Frost’s “Stopping by Woods on a Snowy Evening.” Unfortunately, after completing the piece Whitacre realized that Frost’s poem was still under copyright and that his estate would not allow any new settings of his poetry. Faced with this dilemma, Whitacre asked his good friend, poet Charles Anthony Silvestri, to compose a poem to fit the preexisting music. Whitacre feels that Silvestri’s poem is “absolutely exquisite” and that it finds a “completely different (but equally beautiful) message” in his music.

Leonardo Dreams of his Flying Machine (February 2001)

This piece is a setting of a poem by Charles Anthony Silvestri, composed for SSATB chorus and percussion. The piece was commissioned by the ACDA, making Whitacre the youngest composer to ever receive the Raymond C. Brock commission. The work was truly a collaboration between Whitacre and Silvestri. Whitacre describes the process: “We started with a simple concept: what would it sound like if Leonardo da Vinci were dreaming? And more specifically, what kind of music would fill the mind of

such a genius? ... We approached the piece as if we were writing an opera breve. Silvestri would supply me with draft after draft of revised 'libretti', and I in turn would show him the musical fragments I had written ... I think in the end we achieved a fascinating balance, an exotic hybrid of old and new."

A Boy and a Girl (January 2002)

This is an SATB setting of a poem by Octavio Paz, translated into English by Muriel Rukeyser. The poem has three verses, which Whitacre maintains in his modified strophic setting of the text. He writes, " 'A Boy and a Girl' is such a tender, delicate, exquisite poem; I simply tried to quiet myself as much as possible and find the music hidden within the words."

Her Sacred Spirit Soars (June 2002)

This piece was commissioned for a Shakespeare festival, so Whitacre asked Charles Anthony Silvestri to write a sonnet incorporating the phrase "Long live fair Oriana." Silvestri's completed poem is also an acrostic spelling "Hail fair Oriana." The piece is set for double chorus, each chorus comprising SSATB voices. For the majority of the piece the choirs sing in canon one measure apart, though they join together in unison on the final line of the poem, "Long live fair Oriana."

This Marriage (October 2004)

Whitacre composed this SATB piece as a gift to his wife for their seventh wedding anniversary. The text is by eleventh-century poet Jalal al-Din Rumi. The work is practically completely homophonic, and Whitacre very uncharacteristically restricts himself to pure triads throughout this entire work; the only non-triads are generated by traditional suspensions.

The Stolen Child (January 2008)

This setting of William Butler Yeats' poem is composed for full chorus and an all-male sextet comprising two countertenors, one tenor, two baritones, and a bass. The work was commissioned for a joint performance by the National Youth Chorus of Great Britain and the King's Singers. Whitacre writes that the chorus represents the "human child, innocent and naïve," while the sextet represents the "the highland faeries of the 'water and the wild', seducing the children away from a world full of troubles with the promise of endless revelry and eternal youth."

Sleep My Child (August 2008)

This is a choral adaptation of a piece from Whitacre's *Paradise Lost: Shadows and Wings*. The original version is performed by three women, but this adaptation, for SATB choir with two soprano soloists, was commissioned by the all-male choir Chanticleer. Whitacre states that the ideal sound for this piece is "delicate" and "ethereal."

Nox Aurumque (March 2009)

This piece was written as a companion piece for *Lux Aurumque* and incorporates themes from that piece as well as from *Paradise Lost*. Whitacre asked Silvestri to write the text for this piece, a difficult task, as Silvestri first had to write the poem in English and then translate it into Latin. Silvestri writes that the imagery of the poem is darker than usual for Whitacre, adding, “[*Nox Aurumque*] has a distinctly different sound from earlier works.” Part of what makes the sound different is Whitacre’s use of his “light/dark chord” from *Paradise Lost*.¹⁵⁶

¹⁵⁶ Whitacre, “*Nox Aurumque*,” weblog.

Appendix B: Chord Structures

The following table lists each of Whitacre's 1,151 chord structures. The chord structures are listed by number of voices present within the chord and by the lowest-sounding interval, realized in twelve-tone notation. Within each category, chord structures are ordered, voice by voice, from lowest to highest. For instance, a chord structure beginning with 01 precedes chord structures beginning with 02. Similarly, 013 comes before 014, and so on. The notation of each chord type is as described in the second chapter of this thesis.

	3 voices	4 voices	5 voices	6 voices	7 voices	8 voices	9 voices	10 voices	11 voices or more
01	3/013 3/015 3/01/3	4/0135 4/0138 4/0159	5/0138e 5/0148t 5/015t/0	6/01359/0 6/0135t/0 6/01368t 6/0138t/0 6/013/158 6/0158/03 6/0158/35 6/015/015	7/0137t/15 7/013/156t 7/0158/037			10/01368t/0135	
02	3/023 3/024 3/025 3/026 3/027 3/029 3/02e	4/0236 4/0237 4/0245 4/0246 4/0247 4/0249 4/024/7	5/0237t 5/0245/0 5/0245/7 5/02467 5/02469 5/0246t 5/0247/0	6/023578 6/02358e 6/0235/02 6/0237e/0 6/0237/03 6/02459/2 6/024679 6/0246/07	7/0237t/25 7/02467e/2 7/02469/02 7/02479/02 7/0247e/25 7/0247e/26 7/0249e/02 7/0258/037 7/025t/024 7/0269/047 7/02/037t/2	8/023579e/0 8/0237/0237 8/02457/047 8/02469/024 8/02469/246 8/02469/269 8/02479e/24 8/02479/024 8/0249/0247 8/02579e/25 8/027e/259/0	9/02368t/023	10/02357/02357 10/02358t/0235 10/02457t/0245 10/02469/24679 10/027t/245t/07	11/02457/024579 11/02479e/0279e 11/0279/03579e/0 11/027t/2357t/03 12/02479e/02479e 14/023579t/023579t 16/024693/024679e/024
03	3/035 3/036 3/03t	4/0346 4/0357 4/0358 4/0359	5/0348/0 5/03578 5/03579 5/0357t	6/03579t 6/03579e 6/03579/0 6/0357t/0	7/03578/03 7/03578/05 7/03579e/0 7/03579/03	8/03578t/03 8/03579t/03 8/03579e/02 8/03579/037	9/0357t/0235 9/0357/03579/0 9/0378t/0237 9/037t/3578t	10/03578t/0237 10/0357t/0357t	11/03578t/02357 11/0357/03579/02 11/0379/03579e/0 11/038t/37/378t/0

3 voices	4 voices	5 voices	6 voices	7 voices	8 voices	9 voices	10 voices	11 voices or more
03 ctd	4/036/0	5/0357/0	6/0357/03	7/0357t/02	8/03579/03/0	9/038/02378/0		13/038t/0378t/0235
	4/0378	5/0358/0	6/0357/13	7/0357t/23	8/03579/07/0			
	4/0379	5/035t/0	6/0357/15	7/0357/035	8/03579/09/0			
	4/037t	5/035t/2	6/0357/23	7/0358t/03	8/0357t/59/0			
	4/037e	5/035/03	6/0358/02	7/0358/037	8/0357t/7t/2			
	4/037/2	5/0378/0	6/0358/03	7/0359/037	8/0358t/013			
	4/037/5	5/0378/3	6/0358/05	7/035/0357	8/0358t/023			
	4/038t	5/0379/0	6/0358/15	7/0369t/02	8/0358t/037			
	4/038/1	5/037t/0	6/0358/23	7/036t/6t/1	8/0358/0238			
	4/038/2	5/037t/2	6/0358/35	7/0379/059	8/0359t/357			
	4/038/5	5/037t/3	6/0359/01	7/037t/259	8/0359/037t			
	4/039/2	5/038t/3	6/035t/25	7/037t/357	8/036t/58/03			
	4/039/3	5/038t/8	6/035/025	7/037t/37t	8/036/368/15			
	4/03t/2	5/038/16	6/035/035	7/037/237/2	8/0378/038/0			
	4/03/58	5/038/25	6/0368t/3	7/038/0238	8/037t/037t			
		5/03t/03	6/0369t/2	7/03/0136t	8/037t/25t/2			
		5/03t/37	6/036/16t		8/037t/37t/2			
		5/03/059	6/036/38/0		8/037t/58/03			
		5/03/257	6/0378t/3		8/037/3/037t			
			6/037t/23		8/038t/0378			
			6/037t/25		8/038t/037t			
			6/037t/37		8/038t/037/3			
			6/037/025		8/039/037t/2			
			6/037/38/0		8/03t/0378t			
			6/037/5t/3		8/03t/0378/3			
			6/038t/03					
			6/038t/35					
			6/038/037					
			6/038/05t					
			6/038/078					
			6/038/235					
			6/038/5t/1					
			6/039e/36					

	3 voices	4 voices	5 voices	6 voices	7 voices	8 voices	9 voices	10 voices	11 voices or more
03 ctd				6/03t/037					
04	3/045	4/0457	5/04578	6/0457/07	7/0459/059	8/0469/0246	9/0479e/0245	10/04679/02469	11/047e/47e/047/0
	3/046	4/0459	5/0469e	6/0459/04	7/0479/049	8/047t/59/04	9/047/027e/02	10/0479e/02467	
	3/048	4/045/0	5/0469/0	6/0479t/0	7/0479/479	8/047t/7t/25	9/047/047e/02	10/047e/47e/047	
		4/0467	5/0469/2	6/0479t/7	7/047e/27e	8/047e/027e	9/047/247e/02		
		4/0478	5/0478t	6/0479/04	7/047e/479	8/047e/249e			
		4/0479	5/0479/4	6/0479/25	7/047e/47e	8/047e/47e/2			
		4/047t	5/047t/0	6/0479/26	7/047e/59/0	8/047e/69/04			
		4/047e	5/047t/2	6/047t/25	7/047/057/0	8/047/02457			
		4/047/2	5/047t/5	6/047e/07	7/049/0246	8/047/0479/0			
		4/0489	5/047e/0	6/047e/27	7/049/029e	8/047/247e/2			
		4/048/0	5/047e/2	6/047/027	7/049/049e	8/047/247/24			
		4/049e	5/047/02	6/047/045	7/04/0247e				
		4/049/6	5/047/05	6/047/04e	7/04/679/04				
		4/049/7	5/047/0e	6/047/059					
		4/04e/0	5/048/04	6/047/247					
			5/048/27	6/047/27t					
			5/049e/0	6/047/27e					
			5/049/07	6/047/27/0					
			5/049/26	6/048/05t					
				6/049/047					
				6/049/059					
				6/04t/058					
				6/04e/269					
				6/04/0457					
				6/04/0459					
				6/04/047e					
				6/04/049e					
				6/04/269/0					
				6/04/57t/2					
				6/04/59t/2					
05	3/057	4/0578	5/0578/0	6/0568/15	7/0578t/05	8/0578/0357	9/0578/0357/0	10/0578/0378/07	11/0579/03579e/0
	3/05t	4/0579	5/0578/3	6/0578t/5	7/0578/248	8/0578/037t	9/0579e/259/0	10/0579t/0357t	11/0579/04579/04

	3 voices	4 voices	5 voices	6 voices	7 voices	8 voices	9 voices	10 voices	11 voices or more
05 ctd	3/05/3	4/05/7t 4/05/7/0 4/058t 4/058/3 4/059t 4/059e 4/059/2 4/059/3 4/059/4 4/059/7 4/05t/0 4/05t/3 4/05t/4 4/05t/7 4/05e/3 4/05/02 4/05/03 4/05/23 4/05/27 4/05/3/0 4/05/57 4/05/79	5/0579t 5/0579/0 5/0579/3 5/057t/0 5/057t/2 5/057t/3 5/057e/2 5/057/05 5/057/47 5/058e/4 5/058/02 5/058/07 5/058/45 5/059t/0 5/059t/2 5/059t/5 5/059/01 5/059/04 5/059/0e 5/059/27 5/05t/01 5/05t/05 5/05t/09 5/05t/19 5/05t/35 5/05t/3t 5/05t/9/0 5/05/037 5/05/03e 5/05/045 5/05/079 5/05/159 5/05/237	6/0579/05 6/0579/07 6/057t/03 6/057/023 6/057/05t 6/057/08t 6/057/159 6/057/39/1 6/058t/38 6/058/037 6/058/045 6/058/18/0 6/059t/09 6/059t/19 6/059t/35 6/059t/59 6/059/019 6/059/03e 6/059/047 6/059/057 6/059/05t 6/059/079 6/059/23/0 6/059/5t/0 6/05t/03t 6/05t/047 6/05t/9/0 6/05t/159 6/05t/27t 6/05/05t/1 6/05/259e 6/05/37t/2	7/0579e/02 7/0579/037 7/0579/05/0 7/057e/259 7/058t/135 7/058/0578 7/058/08/37 7/058/25t/2 7/058/58/15 7/059/0159 7/059/0357 7/059/035e 7/059/0457 7/059/0579 7/059/159/0 7/059/159/1 7/059/235/0 7/059/2457 7/05t/02t/0 7/05t/5t/03	8/0579/0237 8/0579/0245 8/0579/0357 8/0579/037t 8/0579/0457 8/0579/047e 8/057t/235t 8/057e/0237 8/057/09/259 8/058/03578 8/058/08t/37 8/058/15t/15 8/059t/0357 8/059/0249/2 8/059/0579t 8/059/059/45	9/0579/0479/0 9/057/03578/0 9/058/058t/57 9/059t/02359 9/059t/02459 9/059e/047e/2 9/059/03579/0 9/059/059/045	10 voices 10/0579e/0257e 10/0579/013579	11 voices or more 11/057/039/579/03 11/057/04579/047 18/0578t/013578t/013578

	3 voices	4 voices	5 voices	6 voices	7 voices	8 voices	9 voices	10 voices	11 voices or more
05 ctd			5/05/25e						
06		4/069/2 4/06t/3	5/067t/2 5/068t/3 5/06t/04	6/068t/13 6/068t/16 6/06t/269	7/06t/3467	8/0679/047e	9/069e/02469		
07	3/078	4/078/0	5/078/02	6/078/045	7/079/0359	8/078/0378/0	9/078t/02357	10/079/24579/04	11/079/459/04579
	3/079	4/078/3	5/078/45	6/079t/69	7/07t/026/4	8/079/03579	9/079e/02467	10/079/459/0457	11/07/04579/0457
	3/07t	4/079/0	5/078/47	6/079/037	7/07t/247t	8/079/0457/0	9/07/0257/035	10/07e/024579/4	11/07/247t/02467
	3/07e	4/079/4	5/079t/9	6/079/046	7/07t/24/07	8/079/047/04	9/07/247/0247	10/07/024578t/0	11/07/37/023579t
	3/07/2	4/07t/2	5/079/03	6/079/047	7/07t/257/0	8/07t/02357	9/07/24/0247e	10/07/03t/237t/0	12/07/2469/02467/0
	3/07/5	4/07t/3	5/079/04	6/079/059	7/07t/3467	8/07t/02467	9/07/3/25t/035	10/07/23t/237t/0	12/07/247t/024579
	3/07/8	4/07t/4	5/079/09	6/079/05e	7/07e/0246	8/07t/04/047	9/07/457t/245	10/07/247e/0247	12/07/37/023579t/0
		4/07t/5	5/079/0/0	6/079/27e	7/07e/259/0	8/07t/24/047	9/07/49/047e/0	10/07/35/03579/0	12/07/37/023579t/2
		4/07t/7	5/079/0/e	6/079/27/0	7/07/037e/2	8/07t/35t/23	9/07/4/027e/02	10/07/35/0579/03	13/07t/024579t/024
		4/07e/0	5/079/29	6/079/457	7/07/037/23	8/07e/247e/2		10/07/459t/0579	14/07t/23579t/02357
		4/07e/2	5/079/67	6/079/7t/2	7/07/0457/2	8/07/02467/2		10/07/47e/0279e	14/07/023579t/02357
		4/07e/3	5/07t/03	6/07t/037	7/07/045/25	8/07/027e/02			14/07/49t/024579t/02
		4/07e/4	5/07t/0t	6/07t/237	7/07/0479/0	8/07/035/035			15/07/2359e/023579e/2
		4/07e/6	5/07t/23	6/07t/246	7/07/047e/0	8/07/039t/03			18/07/023579t/023579t/02
		4/07e/7	5/07t/25	6/07t/259	7/07/047e/2	8/07/047/045			
		4/07/02	5/07t/35	6/07t/37t	7/07/047/45	8/07/047/067			
		4/07/05	5/07t/37	6/07t/39/0	7/07/048/57	8/07/247t/04			
		4/07/09	5/07t/47	6/07e/02/4	7/07/057/05	8/07/247e/02			
		4/07/23	5/07e/04	6/07e/237	7/07/07t/37	8/07/247/024			
		4/07/24	5/07e/23	6/07e/259	7/07/0t/047	8/07/247/045			
		4/07/25	5/07e/24	6/07e/269	7/07/23t/02	8/07/24e/024			
		4/07/26	5/07e/25	6/07e/49/0	7/07/23t/23	8/07/24e/027			
		4/07/27	5/07e/26	6/07/0237	7/07/23t/2t	8/07/25t/024			
		4/07/2t	5/07e/47	6/07/0357	7/07/2457/5	8/07/27e/024			
		4/07/2e	5/07e/49	6/07/045/0	7/07/245/07	8/07/27/24/6/2			
		4/07/35	5/07/023	6/07/047e	7/07/25t/47	8/07/358t/02			
		4/07/3t	5/07/027	6/07/048/0	7/07/269/04	8/07/359/059			
		4/07/45	5/07/035	6/07/049/4	7/07/27e/04	8/07/35t/235			
		4/07/46	5/07/045	6/07/04t/7	7/07/357/27	8/07/35t/25t			

3 voices	4 voices	5 voices	6 voices	7 voices	8 voices	9 voices	10 voices	11 voices or more
07 ctd	4/07/4e	5/07/048	6/07/04e/4	7/07/357/8t	8/07/37/35t/2			
	4/07/4t	5/07/049	6/07/04/24	7/07/358/05	8/07/3t/039t			
	4/07/49	5/07/04t	6/07/04/27	7/07/35t/23	8/07/3t/239t			
	4/07/4/2	5/07/057	6/07/0/057	7/07/35t/25	8/07/457/037			
	4/07/57	5/07/059	6/07/237/0	7/07/35/023	8/07/45t/245			
	4/07/67	5/07/0/02	6/07/23/02	7/07/37/267	8/07/47t/025			
	4/07/7/2	5/07/147	6/07/245/0	7/07/37/2t/3	8/07/47/0245			
		5/07/237	6/07/2467	7/07/38/038	8/07/47/0247			
		5/07/23t	6/07/247/4	7/07/39t/29	8/07/47/0457			
		5/07/247	6/07/24/27	7/07/3t/27/2	8/07/47/0467			
		5/07/24/2	6/07/25/03	7/07/3t/37t	8/07/47/2467			
		5/07/24/4	6/07/25/07	7/07/3t/39t	8/07/47/246/2			
		5/07/257	6/07/25/23	7/07/3/35t/2	8/07/47/247/2			
		5/07/258	6/07/258/0	7/07/3/5/2t/5	8/07/47/47/24			
		5/07/25t	6/07/25t/0	7/07/457/03	8/07/4/47e/02			
		5/07/27/0	6/07/267/2	7/07/459/25	8/07/57/0457			
		5/07/27/2	6/07/27/03	7/07/479t/0	8/07/69/2467			
		5/07/357	6/07/27/27	7/07/47t/06				
		5/07/35/2	6/07/35/23	7/07/47e/02				
		5/07/37t	6/07/37/02	7/07/47e/47				
		5/07/37e	6/07/3t/03	7/07/47/045				
		5/07/37/2	6/07/3t/3t	7/07/47/046				
		5/07/38/7	6/07/3/035	7/07/47/247				
		5/07/3t/3	6/07/3/038	7/07/47/267				
		5/07/3/23	6/07/4578	7/07/49t/07				
		5/07/457	6/07/45/04	7/07/49e/02				
		5/07/47/2	6/07/469/4	7/07/4t/07t				
		5/07/478	6/07/47t/6	7/07/4t/267				
		5/07/47e	6/07/47e/0	7/07/4t/27t				
		5/07/49/4	6/07/47/24	7/07/4e/024				
		5/07/49/5	6/07/47/27	7/07/4/04e/0				
		5/07/4e/2	6/07/47/45	7/07/4/07e/0				
		5/07/4/02	6/07/47/67	7/07/4/47/27				

	3 voices	4 voices	5 voices	6 voices	7 voices	8 voices	9 voices	10 voices	11 voices or more
07 ctd			5/07/4/06 5/07/4/24 5/07/57t 5/07/57/0 5/07/5t/3 5/07/5t/5 5/07/5/23 5/07/5/45 5/07/7/35	6/07/49t/7 6/07/49/09 6/07/49/26 6/07/49/67 6/07/4/024 6/07/4/045 6/07/4/048 6/07/4/04e 6/07/4/04/2 6/07/4/0e/0 6/07/4/247 6/07/4/269 6/07/4/2/02 6/07/57/04 6/07/57/05 6/07/57/23 6/07/59/03 6/07/67/24 6/07/7/267 6/07/8/047	7/07/4/578t 7/07/67/267 7/07/6t/267 7/07/79/047 7/07/79/267 7/07/7t/247 7/07/7t/257 7/07/7t/267 7/07/7/0457				
08	3/08t 3/08/1	4/08t/0 4/08t/3 4/08/02 4/08/13 4/08/15 4/08/18 4/08/1/1 4/08/23 4/08/2t 4/08/35 4/08/36 4/08/3t 4/08/3/1	5/089/04 5/08t/08 5/08t/37 5/08t/38 5/08t/3t 5/08t/57 5/08/025 5/08/035 5/08/037 5/08/045 5/08/135 5/08/138 5/08/138 5/08/138 5/08/13t	6/08t/035 6/08t/03t 6/08t/357 6/08t/378 6/08/135/5 6/08/138/3 6/08/35t/2 6/08/38/01 6/08/037 6/08/045 6/08/135 6/08/138 6/08/138 6/08/13t	7/08t/037t 7/08t/2357 7/08t/358/0 7/08t/38t/3 7/08/037t/3 7/08/057/05 7/08/3t/013	8/08t/36t/16 8/08t/38/138 8/08/0358/03 8/08/0358/05 8/08/03t/37t 8/08/03/037/0 8/08/058/015 8/08/136t/16	9/08/023578t 9/08/35t/0135 9/08/38t/378t 9/08/3t/378t/0	10/08/358t/2357 10/08/358t/357t 10/08/38/0138t/0 10/08t/02358t/2	

	3 voices	4 voices	5 voices	6 voices	7 voices	8 voices	9 voices	10 voices	11 voices or more
08 ctd		4/08/45 4/08/t/3 5/08/15t 5/08/168 5/08/1/01 5/08/23t 5/08/378 5/08/38t 5/08/38/3 5/08/3t/0 5/08/3t/3 5/08/457	5/08/13/0 5/08/13/1 5/08/15t 5/08/168 5/08/1/01 5/08/23t 5/08/378 5/08/38t 5/08/38/3 5/08/3t/0 5/08/3t/3 5/08/457	6/09t/048 6/09e/04/4 6/09/0259 6/09/0269 6/09/027/4 6/09/027e 6/09/037/0 6/09/0469 6/09/047e 6/09/057 6/09/07 6/09/0e 6/09/25 6/09/27 6/09/29 6/09/2t 6/09/45 6/09/47 6/09/4/2 6/09/57 6/09/5t 6/09/67 6/09/6/2 6/09/79 6/09/7/0	7/09t/3467 7/09e/259/0 7/09/02469 7/09/045/04 7/09/047e/2 7/09/047e/4 7/09/04e/27 7/09/19t/01 7/09/2579e 7/09/359/27 7/09/36e/36 7/09/36e/37 7/09/36e/39 7/09/3e/36e 7/09/579/07 7/09/5t/058 7/09/5t/0t/0 7/09/5/05t/0 7/09/9/13/58 6/09t/058 6/09e/059	8/09t/2457/0 8/09/02469/2 8/09/0459/05 8/09/0459/59 8/09/0469/26 8/09/047/047 8/09/049/269 8/09/057/045 8/09/059/045 8/09/05/05e/0 8/09/079/067 8/09/247/047 8/09/249/049 8/09/24e/27e 8/09/279/067 8/09/357/023 8/09/3t/239t 8/09/479/027 8/09/479/047 8/09/479/067 8/09/49/0246	9/09e/02457/4 9/09e/024679 9/09/024579/0		
09	3/09e	4/09t/0 4/09t/5 4/09t/7 4/09e/0 4/09e/3 4/09/02 4/09/07 4/09/0e 4/09/25 4/09/27 4/09/29 4/09/2t 4/09/45 4/09/47 4/09/4/2 4/09/57 4/09/5t 4/09/67 4/09/6/2 4/09/79 4/09/7/0	5/09e/47 5/09e/4/0 5/09/029 5/09/045 5/09/047 5/09/057 5/09/05t 5/09/089 5/09/0/01 5/09/159 5/09/246 5/09/257 5/09/257/0 5/09/27/2 5/09/36/3 5/09/39/6 5/09/39/7 5/09/3e/3 5/09/3e/6 5/09/3e/7 5/09/47/0	6/09t/048 6/09e/04/4 6/09/0259 6/09/0269 6/09/027/4 6/09/027e 6/09/037/0 6/09/0469 6/09/047e 6/09/057 6/09/07 6/09/0e 6/09/25 6/09/27 6/09/29 6/09/2t 6/09/45 6/09/47 6/09/4/2 6/09/57 6/09/5t 6/09/67 6/09/6/2 6/09/79 6/09/7/0	7/09t/3467 7/09e/259/0 7/09/02469 7/09/045/04 7/09/047e/2 7/09/047e/4 7/09/04e/27 7/09/19t/01 7/09/2579e 7/09/359/27 7/09/36e/36 7/09/36e/37 7/09/36e/39 7/09/3e/36e 7/09/579/07 7/09/5t/058 7/09/5t/0t/0 7/09/5/05t/0 7/09/9/13/58 6/09t/058 6/09e/059	8/09t/2457/0 8/09/02469/2 8/09/0459/05 8/09/0459/59 8/09/0469/26 8/09/047/047 8/09/049/269 8/09/057/045 8/09/059/045 8/09/05/05e/0 8/09/079/067 8/09/247/047 8/09/249/049 8/09/24e/27e 8/09/279/067 8/09/357/023 8/09/3t/239t 8/09/479/027 8/09/479/047 8/09/479/067 8/09/49/0246	9/09e/02457/4 9/09e/024679 9/09/024579/0		13/09/024679e/0249

	3 voices	4 voices	5 voices	6 voices	7 voices	8 voices	9 voices	10 voices	11 voices or more
09 ctd		4/09/9/2 5/09/5t/0 5/09/5/45 5/09/6e/6 5/09/79/0 5/09/79/4 5/09/7/58 5/09t/01 5/09t/02 5/09t/15 5/09t/25	5/09/57/0 5/09/5t/0 5/09/5/45 5/09/6e/6 5/09/79/0 5/09/79/4 5/09/7/58 5/09t/01 5/09t/02 5/09t/15 5/09t/25			8/09/49/0489 8/09/579e/02			
0t	3/0t/2	4/0t/02 4/0t/05 4/0t/09 4/0t/13 4/0t/18 4/0t/23 4/0t/25 4/0t/27 4/0t/2/0 4/0t/37 4/0t/38 4/0t/3t 4/0t/47 4/0t/4/0 4/0t/57 4/0t/7t	5/0t/237 5/0t/246 5/0t/37t 5/0t/37/0	6/0t/2357 6/0t/3467	7/0t/03467 7/0t/13467	8/0t/35t/27 8/0t/3t/239t	9/0t/23579t/2		
0e		4/0e/25 4/0e/26 4/0e/3/2 4/0e/4/2 4/0e/79 4/0e/7/0	5/0e/25/0 5/0e/36/3 5/0e/49/0 5/0e/57/0 5/0e/59/0	6/0e/249/2	7/0e/258/05		9/0e/024679e		

	3 voices	4 voices	5 voices	6 voices	7 voices	8 voices	9 voices	10 voices	11 voices or more
De ctd		4/0e/7/2							
0/0		4/0/035 4/0/0/27	5/0/0259 5/0/025/9 5/0/045/0 5/0/0478 5/0/069/6	6/0/0357t 6/0/0359/0 6/0/047e/2 6/0/06e/36 6/0/07e/36	7/0/037e/26	8/0/0249e/02 8/0/0269/047 8/0/03t/239t			
0/1		4/0/158 4/0/159							
0/2	3/0/23 3/0/24 3/0/25 3/0/27	4/0/249	5/0/249/2 5/0/25t/2	6/0/2579/0 6/0/257t/2 6/0/257e/2 6/0/259t/2			9/0/24679t/02		
0/4	3/0/45	4/0/459 4/0/4/27							
0/5			5/0/59/01						
0/6						8/0/679t/024			

Appendix C: Chord Types

The following table is a complete list of Whitacre's chord types. Chord types are separated into categories by the number of pitch classes present within the chord type and are then placed in ascending numeric order. Beside each chord type is listed the number of appearances (App) of that chord type within the passages analyzed for this study, as well as the number of chord structures (Str) that are represented by the given chord type.

Chord Type	App	Str	Chord Type	App	Str	Chord Type	App	Str	Chord Type	App	Str	Chord Type	App	Str
013	3	2	0135	1	1	027e	8	5	049e	7	7	01357	2	2
015	2	2	0138	20	10	028t	2	2	0578	8	5	01358	7	6
018	4	4	013t	1	1	029t	6	4	0579	40	19	01359	4	2
019	1	1	0147	1	1	029e	1	1	057t	8	8	0135t	1	1
023	3	2	0158	8	5	0346	1	1	057e	1	1	01368	1	1
024	5	2	0159	16	10	0348	10	10	058t	2	1	0136t	3	3
025	10	3	015t	3	3	0356	25	14	059t	25	16	0138t	8	5
026	1	1	0168	1	1	0358	18	12	059e	5	5	0138e	1	1
027	23	15	018t	1	1	0359	4	4	0679	7	3	0148t	1	1
028	1	1	019t	2	2	035t	6	6	067e	1	1	01568	1	1
029	5	5	0235	3	3	035e	2	2	069e	1	1	01579	1	1
02t	4	4	0236	1	1	0368	2	2	079t	2	2	01589	1	1
02e	2	2	0237	29	17	0369	2	2	079e	2	2	0158t	4	2
035	17	7	0238	3	3	036t	1	1				0159t	4	4
036	3	2	0239	1	1	036e	2	2				0168t	1	1
038	1	1	023t	3	3	0378	23	15				02357	15	15
039	1	1	023e	1	1	0379	10	6				02358	9	6
03t	4	3	0245	2	2	037t	44	24				02359	3	2
045	7	5	0246	4	4	037e	3	3				0235t	5	2
046	2	1	0247	92	35	038t	28	15				02367	2	1
048	4	3	0249	8	6	039e	2	2				02378	2	2
04t	1	1	024e	1	1	0457	57	23				0237t	20	16
04e	2	1	0257	13	6	0458	18	4				0237e	5	4
057	27	11	0258	9	4	0459	23	17				0238t	1	1
05t	16	5	0259	8	6	045t	1	1				0239t	3	3
069	1	1	025t	3	3	0467	18	8				02457	14	11
078	11	3	025e	2	2	0469	3	3				02459	3	3
079	17	9	0267	6	4	046t	1	1				0245t	1	1
07t	10	4	0269	4	4	0478	11	8				02467	13	10
07e	8	4	026e	2	2	0479	32	26				02469	24	16
08t	5	3	0278	1	1	047t	11	11				0246t	3	2
09t	2	2	0279	6	5	047e	36	23				02478	1	1
09e	3	3	027t	9	6	0489	14	5				02479	7	6

Chord Type	App	Str	Chord Type	App	Str	Chord Type	App	Str	Chord Type	App	Str
0457t	2	2	013568	1	1	03568t	1	1	013467t	1	1
0458t	2	2	01356t	1	1	03578t	12	9	013568t	1	1
0458e	1	1	013578	1	1	03579t	12	8	013578t	2	1
04679	7	5	013579	2	2	03579e	9	4	023578t	9	8
0467t	2	2	01357t	1	1	03679e	1	1	023579t	9	9
0469e	1	1	013589	1	1	04578t	1	1	023579e	6	5
0478t	2	1	01358t	4	4	04579t	4	2	024578t	1	1
0479t	5	5	01368t	4	4	04579e	2	2	024579t	4	4
0479e	8	7	023578	4	2	04679e	2	2	024579e	4	4
05789	2	2	023579	4	4				024679t	1	1
0578t	8	5	02357t	28	22				024679e	7	7
0579t	5	3	02357e	1	1				034679t	1	1
0589t	3	3	02358t	4	4						
0679t	1	1	02358e	1	1						
			02359t	1	1						
			02368t	1	1						
			02369t	2	2						
			02378t	2	1						
			02379t	3	3						
			024578	1	1						
			024579	8	7						
			02457t	14	10						
			02457e	1	1						
			02459t	2	2						
			024679	14	11						
			02467t	7	5						
			02467e	6	4						
			02469e	2	2						
			02479e	18	9						
			02579t	1	1						
			02579e	10	10						
			02679e	1	1						
			03467t	5	4						

Appendix D: Added-Tone Sonorities

The following is a complete list of Whitacre's added-tone sonorities. Within each combination of added tones, chords are categorized by quality of underlying triad, chord inversion, and suffix.¹⁵⁷ More plausible interpretations are listed higher within each combination of added tones. Each added-tone sonority is paired with a chord type whose primary triadic interpretation results in said added-tone sonority, along with the number of appearances of that chord type within the portion of Whitacre's output included in this study.

¹⁵⁷ For information on notation, see chapter 4.

One Added Tone		M		m		M/m	
(1)	/0 /1 /0 no 5th /3rd no 5th /1 no 5th	0147	1				
				026e	2		
				013	3		
				09t	2		
				02e	2		
(2)	/0 /3rd /7 /2 /0 no 5th /3rd no 5th /0 no 3rd /2 no 5th	0247	92	0237	29		
		038t	28	049e	7	05789	2
		0579	40	0578	8		
		025t	3	015t	3		
		024	5	023	3		
		08t	5	09e	3		
						027	23
		02t	4				
(4)	/3 no 5th					019	1
(5)	/0 /3rd /7 /5 /0 no 5th /3rd no 5th /0 no 3rd /7 no 3rd	0457	57			03457	2
		0138	20	0249	8		
		059t	25	058t	2	0589t	3
		027e	8	027t	9		
		045	7	035	17		
		018	4	029	5		
						057	27
						05t	16
(6)	/0 /3rd /7 /0 no 5th /3rd no 5th	0467	18				
		0238	3				
		059e	5				
		046	2	036	3	0346	1
		028	1				
(8)	/0 /3rd /7 /0 no 5th /0 no 3rd /7 no 3rd	0478	11	0378	23		
		0348	10				
		0159	16	0158	8	01589	1
		048	4	038	1		
						078	11
						015	2
(9)	/0 /3rd /7 /0 no 5th /3rd no 5th /7 no 3rd	0479	32	0379	10		
		0358	18	0469	3		
		0259	8	0258	9		
				039	1		
				069	1		
						025	10
(t)	/0 /3rd /7 /t /0 no 5th /3rd no 5th	047t	11	037t	44		
		0368	2				
		0359	4				
		0269	4				
		04t	1	03t	4		
				079	17		

One Added Tone, ctd.		M	m	M/m
(t) ctd.	/0 no 3rd /t no 5th	026	1	07t 10
(e)	/0 /3rd /7 /0 no 5th /0 no 3rd	047e 0459 04e	36 23 2	037e 3 0489 14 0458 18 07e 8
Two Added Tones				
(1,5)	/0 /0 no 5th /3rd no 5th			01357 2 0135 1 029t 6
(1,8)	/7			01568 1
(1,t)	/1 /0 no 5th /3rd no 5th	0369e	9	013t 1 079t 2
(2,4)	/3 no 5th			019t 2
(2,5)	/0 /3rd /7 /2 /5 /0 no 5th /3rd no 5th /0 no 3rd /7 no 3rd	02457 0138t 0579t 0235t 0279e 0245 018t	14 8 5 5 5 2 1	02357 15 0249e 5 0578t 8 0135t 1 0279t 2 0235 3 029e 1 0257 13 057t 8
(2,6)	/0 /3rd /2 /6 /0 no 5th /3rd no 5th /0 no 3rd	02467 0238t 0245t 0168t 0246 028t	13 1 1 1 4 2	02367 2 0236 1 0267 6
(2,8)	/0 /7	02478 01579	1 1	02378 2
(2,9)	/0 /3rd /7 /2 /0 no 5th /3rd no 5th	02479 0358t 02579 0257t	7 7 7 12	0469e 1 02578 2 0239 1 069e 1
(2,t)	/0 /3rd /0 no 5th /3rd no 5th	0247t 0368t	8 2	0237t 20 023t 3 079e 2

Two Added Tones, ctd.		M		m		M/m	
(2,e)	/0	0247e	39	0237e	5		
	/0 no 5th	024e	1	023e	1		
(3,5)	/4					0138e	1
(5,6)	/0 no 5th			0356	25		
(5,8)	/0	04578	8	03578	23		
	/3rd			02459	3		
	/7	0159t	4	0158t	4		
(5,9)	/0	04579	19	03579	27		
	/3rd	01358	7	02469	24		
	/7	0259t	4	0258t	1		
(5,t)	/0	0457t	2	0357t	13		
	/3rd	01368	1				
	/7	0359t	1				
	/5	0257e	4				
	/t	02679	3				
	/0 no 5th	045t	1	035t	6		
	/3rd no 5th	0168	1	0279	6		
(5,e)	/7			0458t	2		
	/5	0267e	1	0267t	8		
	/0 no 5th			035e	2		
	/0 no 3rd					057e	1
(6,9)	/0	04679	7				
	/3rd	02358	9				
	/7	0259e	2	0258e	1		
	/6	0136t	3				
	/0 no 5th	0369	2				
	/7 no 3rd					025e	2
(6,t)	/0	0467t	2			03467t	5
	/7	0359e	2				
	/0 no 5th	046t	1	036t	1		
(6,e)	/0			0367e	1		
	/7			0458e	1		
	/0 no 5th			036e	2		
	/3rd no 5th	0278	1				
	/0 no 3rd					067e	1
(8,t)	/0	0478t	2	0378t	26		
	/7	01359	4				
	/t	0269t	1				
(9,t)	/0	0479t	5	0379t	4		
	/7	02359	3				
	/3rd no 5th			0679	7		
(9,e)	/0	0479e	8	0379e	1		
	/0 no 5th			039e	2		

Three Added Tones		M	m	M/m
(1,5,8)	/0 /3rd		013578 1 02459t 2	
(1,5,9)	/0 /3rd	013589 1	013579 2	
(1,5,t)	/0		01357t 1	
(1,6,t)	/0			013467t 1
(1,8,t)	/8 /0 no 5th	02358e 1 0148t 1		
(1,9,t)	/3rd no 5th	0679t 1		
(2,5,8)	/0	024578 1	023578 4	
(2,5,9)	/0 /3rd	024579 8 01358t 4	023579 4 02469e 2	
(2,5,t)	/0 /3rd	02457t 14 01368t 4	02357t 28	
(2,5,e)	/0	02457e 1	02357e 1	
(2,6,9)	/0 /3rd /7	024679 14 02358t 4 02579e 10		
(2,6,t)	/0 /0 no 5th	02467t 7 0246t 3		
(2,6,e)	/0	02467e 6		
(2,8,t)	/0 /0 no 5th		02378t 2	
(2,9,t)	/0 /3rd /0 no 5th		02379t 3	
		03568t 1	0239t 3	
(2,9,e)	/0	02479e 18		
(5,8,t)	/0	04578t 1	03578t 12	
(5,9,t)	/0 /3rd /7 /t	04579t 4 013568 1 02359t 1 02679e	03579t 23	
(5,9,e)	/0 /9	04579e 2	03579e 9 02368t 1	
(6,9,t)	/0			034679t 1
(6,9,e)	/0 /6 /9	04679e 2 01356t 1	03679e 1 02369t 2	
Four Added Tones				
(1,5,8,t)	/0		013578t 2	
(2,5,8,t)	/0	024578t 1	023578t 9	
(2,5,9,t)	/0 /3rd	024579t 4 013568t 1	023579t 9	
(2,5,9,e)	/0	024579e 4	023579e 6	

Four Added Tones, ctd	M	m	M/m
(2,6,9,t) /0	024679t 1		
(2,6,9,e) /0	024679e 7		