TONAL GRAVITY

The Unseen Order



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Tonal Gravity

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Tonal Gravity: The Unseen Order

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Introduction

In the early 20th century, popular music in the U.S. “took off” in both popularity and distribution. Two developments made this possible: the technology to record music and the public’s new access to radio. Music notation was no longer necessary for learning, playing, or distributing music. Recordings of blues and jazz, the earliest forms of popular American music, could be distributed throughout the country and heard on the radio, as could live performances.

Since then, popular American music has become the dominant music of the world. It continues to thrive, especially in the various forms of rock, jazz, hip-hop, and soul. Building on its rhythmic foundation in West African aesthetics, pop music keeps changing: it absorbs the traditional musics of the world, revisits the early stages of its own development, and takes in the influences of every era of classical music, up to today’s 21st-century avant-garde.

I am a guitarist whose art is based on and informed by popular American music and culture in all of its iterations. With the guitar as my main instrument of expression, I explore the elements of popular American music using every strategy that new and developing technologies offer, along with experimental ways of thinking about, creating, contextualizing, and re-contextualizing this material. My art has no genre boundaries: I have no thematic limitations and no preconceived ideas about form or format. Although pop music literally means music that is popular, it is also a manifestation of our nation’s history, with specific ties to African

Americans and the African Diaspora. Pop music therefore reflects issues of capitalism and commercialism, race, intellectual property, and appropriation, all of which I aim to address through my music.

Chromatic tonality, when utilized in derivatives of jazz or modern music idioms, can create new options for developing scale, melody, and chord structures, as well as patterns for composition and improvisation when soloing. My contention is that we can include all twelve tones without destroying tonality, and expand the set of possibilities we consider "in" by incorporating those that are usually considered "out." To explore how this may be realized, we will consider chromatic tonality; modal borrowing; chromatic 12-tone scales; chord development relative to the overtone series; tone rows and serialism; tonal center and chromatic harmonic structure, relative to parallel motion; and symmetrical harmony, multi-tonic key centers.

Chromatic tonality, brought about by modal borrowing, the diatonic alterations of secondary dominants, and tritone relationships, is common. Constant structure (planing, or parallel harmony) opens up still more chromatic chord possibilities, and symmetrical harmony gives parallel movement additional structure. I propose that we recognize secondary dominants as functioning in the keys in which they occur, rather than as mini-modulations pointing toward their so-called target chords. I will also explore how any note can be part of any chord, and any chord can be part of any key.

1. A Chromatic Framework

The ideas in this book rest on a few working principles about keys, scales, and the chromatic scale. This chapter lays them out, then tests how chords function once all twelve tones are admitted into a key.

C) My Evolving Chromatic Pitch Theory

My basic view of tonality (harmony) is as follows:

- Keys and scales are not the same thing. We have major, minor, and a variety of other scales or modes, and we have twelve distinct key centers that can be established in a number of ways.
- The chromatic scale is the mother mode.
- Diatonic scales/modes are secondary.
- Any key can also be analyzed from a different key center, and the same is true for scales and chords. (C Ionian, for example, can be reinterpreted as D Dorian, or even viewed as a yet-to-be-named scale on an Eb tonic.)
- We have modes and altered modes.
- In our fully chromatic world, however, C Ionian can be viewed this way: 1, 2, 3, 4, 5, 6, 7, and 8 are the primary scale tones; b2, b3, #4, b6, and b7 are secondary scale tones; 1, 3, and 5 are the primary tertian chord tones; 7, 9, 11 (which deserves special attention because it lies a half step above the 3), and 13 are upper extensions; and 15, 17, 19, 21, and 23 are hyperextensions or superextensions.

- All tempered twelve tones exist as sound in a realm where all sound is music.

Pat Metheny was asked by a student, “How do you play outside of a chord?” His answer: “I can hear any tone on any chord as belonging to that chord.” The implication is that all twelve tones can exist within the harmonic structure of any chord quality. Further, if you accept Schoenberg’s idea of chromatic keys, any chord can exist within the framework of any tonal center.

These approaches open up a huge space for deriving tonal music from the chromatic scale. We are free to harmonize any note with any chord and to conceive of any chord as belonging to any key.

Chromatic Tonality

Chord function, with regard to these chromatic keys, is tricky. We have twelve notes that we can use as a root to build any of the previously mentioned chords. Understanding how we hear chords is integral to a discussion of chord development using 12-tone scales.

As we build increasingly complex chords, such as sevenths, ninths, and elevenths, our concept of how a pitch functions within a scale changes along with the new interval relationships. The 7 was once thought of as dominant; it no longer is. Now the complete structure of the chord determines how we hear it within the key and in relation to chromatic twelve-tone tonality. As the fourth note of stacked thirds on the I chord, the 7 is tonic; as the third of a V chord, it is dominant. Even a #9 or #5 can be part of a tonic I chord.

Levine (1995, p. 286) provided an illustration of such:



If the I7 can be thought of as tonic functioning, perhaps other dominant chords, such as the VI7 can be also.

If there is something comparable to function in twelve-tone chord harmony, since every chord contains every pitch, the function of a particular chord will not be determined by which pitches are included in the chord, but rather by how those pitches are ordered. In triadic harmony, a V triad is dominant, as it contains the pitches 5, 7, and 2, which want to resolve to the tonic. In seventh chords, this same structure is part of the Imaj7 tonic chord, i.e., 1, 3, 5, 7. It was once common for theorists of the classical tradition to consider the 7 to be a non-chord tone, which needed to be resolved. In other words, the 7 could not be a part of the I-tonic chord. Consider function with respect to "dyadic harmony." Within a 9, 11, or 13 chord we may see an extension of this same principle. As the V-triad has become the upper structure of Imaj7, so might the V7 chord become an upper structure of some kind of I-chord.

We hear chords in two ways: (1) by virtue of their internal intervallic structures, and (2) by virtue of their relationships to the tonal center in which they exist, or tonal centers in a theoretical polytonal setting. A major triad is heard as such because it contains a major third and a perfect fifth within itself. A V chord, e.g., G in the key of C, is heard as dominant because it contains the tone B, which resolves to C. This structure affects the way we perceive chords. Two identically structured chords can have a different function depending on their position within a key. For

instance, even though they have the same vertical structure, Cmaj7 functions as a tonic while Fmaj7 functions as a subdominant.

Chords borrowed from parallel modes offer options for harmonic movement that have been accepted as part of functional harmony. For example, the bII/IV (the IV refers to the bass-tone only), the so-called Neapolitan chord, and the II-7b5 have both been clearly recognized as having subdominant function. The Neapolitan chord is borrowed from the Phrygian and the II-7b5 is borrowed from the minor.

There is a precedent to analyzing chords borrowed from parallel modes in terms of function. The II-7b5 is commonly considered to be subdominant minor, and thus has been commonly employed. It enables the use of the b6. Also, the Neapolitan chord borrowed from the Phrygian mode and scale is considered to be subdominant, even though it introduced a chromatic note, the b2.

How do all of the chromatic chords derive from modal borrowing function?

One method I've come up with follows:

Any dominant 7 chord that resolves to any tonic functioning chord will be considered dominant functioning. G7 and Db7, resolve to C (although Db7 considered in the below chart); F7 and B7, resolve to Em7; E7 and Bb7 resolve to Am7. These also include -7b5 chords built off of the thirds of any of the dominant functioning chords

All chords that the previously mentioned Dominant 7th chord resolve to will be considered tonic functioning: Cmaj, Cm7, Ebm, Ebmaj7, Em7, Emaj7, Am7, Amaj7, Gbmaj7, Gbm7.

Subdominant functioning chords will be identified by their ability to act as pre dominant:

Ab-7, Bb-7, Fmaj7, F-7b5 etc

Tonic				**Subdominant**					**Dominant**		
Imaj7 Ionian	III-7	VI-7		II-7	IVmaj7				V7		VII-7b5
I-7 Dorian	bIIImaj7	VI-7b5		II-7	IV7	V-7		bVIImaj7			
I-7 Phrygian			bIII7	bIImaj7	IV-7	V-7b5	bVImaj7	bVII-7			
Imaj7 Lydian	III-7	VI-7		II7	bV-7b5	Vmaj7	VII-7				
I7 Mixolydian		II-7		III-7b5	IVmaj7		V-7		VI-7	bVIImaj7	
I-7 Aeolian		II-7b5	bIIImaj7		IV-7		V-7	bVImaj7		bVII7	
I-7b5 Locrian	bIImaj7		bIII-7	bVmaj7	IV-7			bVI7		bVII-7	

It gets more complicated still when we consider the Imaj7#5. Mark Levine (1995) theorized that it is a tonic function. If this is true, we have a situation where the b6 does not resolve to 5 and is considered to be a member of a stable I chord. The bVImaj presents another issue, because it contains the chromatic pitch b6 in the key. Like the 4's needing to resolve to 3, the b6 may also want to resolve to 5. There is some evidence that chords with the b6 from the key may be considered subdominant. Compare the Imaj7#5 to the bVI maj7, which both contain the 1 as a chord tone. Their internal structure and notes in relationship to the tonic may determine their function. The bVI has a b3, the Imaj7#5 has a 3; the bVI has the 5, the Imaj7#5 does not have the 5; the Imaj7#5 has a 7, the bVI does not. Perhaps the bVImaj7 may indeed be considered tonic functioning or subdominant functioning, because it contains the 5 and b6.

When testing the function of chromatic chords, I test these chords with my ear. I like to play II-V-I's a few times in order to firmly set the tonal center in my ear. I substitute the chord in question for the II, V, or I, and decide where I like it the best. If at any time I start to lose the sense of key, I reset the key by playing simple II-V-I's. It may be necessary to use inversions so as not to get confused about good voice leading and a chromatic chord's ability to sit in a key. I discovered this when I was experimenting with the bVmaj7. Depending on where I used it, inversions became a valuable asset. Recognizing that a lot of these are tonal, there should be no doubt that these chords can exist in any key. To hear how it sounds, set the tonic by cadence and then interject one of these chords in the progression.

In strict diatonicism we have clear and obvious guidelines for determining function. Chords with 4 but not 7 are subdominant, chords with 4 and 7 are dominant, and the others are tonic. It's worth mentioning that these rules apply to the primary chord structure, in what might be considered the first octave. In other

words: In the first four notes of the chord, the 1, 3, 5, and 7, we do not consider these rules to apply to the extensions of the chord. For example, in the key of C, although Fmaj7#11 contains both a 4 and a 7 in the key of C, it is still considered subdominant functioning. The 7(B) is an extension and not part of the chord's primary structure.

Determining function in a full chromatic environment is a bit tricky and might not even be appropriate. We might have to revise our notions of function in light of all of these possibilities. I consider chords that are pre-dominant to be subdominant, through principles of voice leading. So I might consider D7 to be subdominant in the key of C because it moves to G7 very well. The D7 contains the 1 and the #4 in the key of C. I also would consider the Abm7 to be subdominant function. It contains the note #4 and 7 in the key of C. Perhaps an amendment to the concept of chromatic chord function would include chords that either contained the 4 and not the 7, or the #4. It gets ambiguous, because if we accept that, we would then say that Gbmaj7 is subdominant functioning in the key of C because it contains the #4 and 7. Perhaps it is, but it also works really well as a tonic functioning chord in the key of C. Function becomes very complicated in light of a concept of chromatic keys.

Looking at chromatic chords through these varying concepts, in the key of C, a D7 might be seen as being borrowed from C Lydian, or it could be viewed as a product of a C Ionian scale (raising the F to F#). In the latter case we derive the same note we'd get from the modal borrowing principle. If the D7 moves to G7, we see parallel motion in action. In addition, we see the beginning of a symmetrical movement involving the division of several five octaves into 12 equal parts (perfect fourths): D7-G7-C7-F7-Bb7-Eb7-Ab7-Db7-Gb7-B7-E7-A7-D7.

Twelve tone technique and serialism (partial twelve tone technique, as there may be no need to destroy tonality) can be integrated into music via these principles: (1) Any chord can have all twelve tones, and (2) Any key can have any chord.

The basic premise of jazz theory regarding chromatic tonality is that a tonal center is established by the presence of the I and V chords and either the IV or ii chord in progression. This center remains in our ears, such that we hear all chords against the primary pitch, or tonic. As long as a new key is not set, any chords can be played using any of the notes of the chromatic scale, and we hear these chords in relation to the tonic.

When we distinguish between scale and key, chromatic chords can, and do, function within the context of a tonal center, and any chord can exist within any key. In the key of C there are 12 notes that can be played in a chromatic, or half-step, pattern. In ascending order they are C, Db, D, Eb, E, F, Gb, G, Ab, A, Bb, and B. We don't count the C at the top as part of the series, because it begins a new chromatic scale an octave higher. Do we relate these 12 notes to the key center according to their position in the scale, as tonic, subdominant (or predominant), dominant, and so on?

How do these chords function in the key of C? I make a clear distinction between key or tonal center and scale. The key can be set in a number of ways or cadences, some of which are not diatonic. For example, in the progression, Abm7 -Db7 -Cmaj7, Ab-7 and Db7 don't belong to C major. However, they still establish C as the tonal center and so perhaps Ab-7 might be considered subdominant or pre-dominant in the key of C. Consider all of the chords from Gb major to understand how they function in C. Some of them can also be accessed through modal borrowing.

Working to develop chord structures within a relative chromatic harmonic structure may appear confusing. To describe it appropriately, I'm struggling to adapt my thinking to accept all the

possibilities available within the framework of chromatic chord function. Do these chords all fit within the tonic, subdominant, or dominant tonal function? Can we fit so-called secondary dominants and their related II's, tri-subs, and related II's into this idea of function? Can we fit borrowed chords into this idea of functional harmony? Czech musicologist and semiotician Jaroslav Volek (1968) developed a theory attempting to add chromatic mediants as a fourth basic function in traditional harmony structures. Volek's view might allow us to more easily categorize other chromatic chords. Do we need this fourth function, or does the common-tone tonality do a better job of analyzing these relationships? How does multi-tonic symmetrical harmony fit in? How does the use of parallel harmony fit in? The framework of a chromatic tonality is not easily understood, but it's absolutely necessary for us to consider it if we wish to move forward.

Another important distinction is between scale degree and function. Calling a note "tonic" doesn't necessarily identify it as the first note in the scale or I chord. Rather, the word refers to how the chords and notes function in the key. Functionally, tonic refers to the I-chord or any of its substitutes that share its chord tones, including III-7 and VI-7. The II-7 and IVmaj7 are subdominant functioning, whereas I consider V7 and VII-7b5 to be dominant functioning. I consider the primary subdominant chord to be II-7, even though subdominant may literally refer to the fourth degree of the scale.

Consider a series of two consecutive Major 7 intervals that create two consecutive half-steps or two consecutive Major 7 intervals in one chord, like a C chord that has a B and a Bb. These voicings allow for both the major 7 and flat 7 to exist simultaneously. The three consecutive half steps occur between Bb, B, and C per the example below of a chord played by Herbie Hancock.



You can see that there is an Eb, E, and an F. In this case, Hancock has constructed the chord with the F in the bass, the E a 7th above the F, and the Eb a 7th above the E. Remember that major sevenths are considered to be more consonant than their inverse b2s. This is what enables us to put a 10th on top of a sus7 chord. Does it sound weird? Yes! But so does a maj7#9 chord the first time you hear it.

2. Borrowed Chords, Altered Scales, and Substitutes

Long before a fully chromatic key, jazz theory already admits many “outside” chords through modal borrowing, altered scales, and tritone substitution. This chapter looks at each and asks whether these chords still function inside the original key, then closes with a borrowed chord in one of my own pieces.

Modal Borrowing

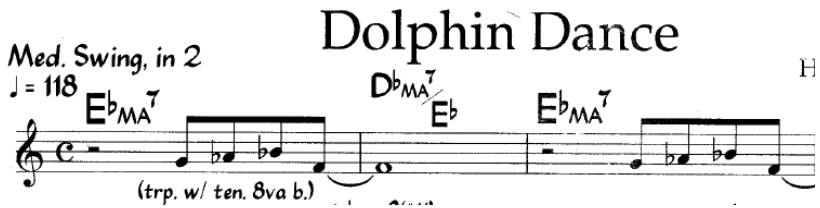
In modal borrowing, a musician “borrows” a harmony from a parallel major or minor mode. In doing so, one establishes new reference chords, thereby adding a second dimension of complexity and allowing chords previously thought of as “out.”

Modal borrowing allows for almost all possible chromatic chord movement, for example, going from Cmaj7 to Db-7. At first look, one may perceive that there is no common parallel C mode that provides a Db-7 chord. (Don’t confuse this with parallel harmony; it is a different concept.) But a closer look reveals several options available to access the Db-7 through modal borrowing: D could be our common tone, and D Mixolydian and D Dorian both allow for a Cmaj7, while D Ionian and D Lydian both allow for a Db (C#)-7. Modal borrowing from common tones E, Gb, A, and B will also allow for a Cmaj7 and Db-7 chord.

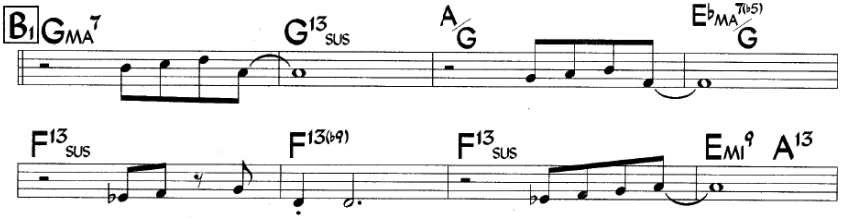
Modal borrowing can give us chromatic tones, too. The II-7b5 lends us the b6 tone in the key. The Neapolitan chord lends us the

b2 in the key. There are more chromatic chords available, as demonstrated in the chart in Appendix A.

Herbie Hancock's *Dolphin Dance* (Sher, 2005, p. 108) features harmonic twists and turns and thus provides a good opportunity to analyze modal borrowing.

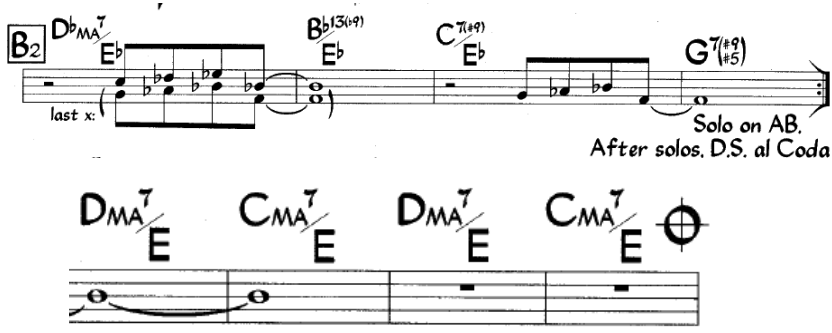


Some would describe this tune as modal or pan-tonal. Let's take a look to see where the tonal centers might be, if they exist. The melody suggests Ionian, and since there is no other information, to stay as true to center as possible, we assume Mixolydian. But if we want additional contrast, we can solo over with the same tonic and different mode, using Dorian. *Dolphin Dance* demonstrates that modal borrowing can occur as anything from Lydian or Ionian to Mixolydian or Dorian. The eight bars below illustrate modal borrowing in practice.



I could establish a reference pitch of G for the full eight bars. Or I could interpret the whole tune as in a key of Eb or C. For the sake of simplicity, I will use a reference pitch of G for the first four bars, and a reference pitch of F for the next four bars: G Ionian (as the melody states the natural 4), G Mixolydian, G Lydian, and G

Aeolian. We then proceed to F Mixolydian, F Mixolydian b9 (Bb harmonic minor), and back to F Mixolydian.



Strict diatonicism restricts us to two chords that contain the tritone: V7 and VII-7b5, both of which are dominant functioning. Modal borrowing gives us an additional 12 chords with tritones: six dominant 7th chords and six -7b5 chords. When borrowing from the parallel modes (I Ionian, I Dorian, I Phrygian, I Lydian, I Mixolydian, I Aeolian, and I Locrian), we derive the following new chords with tritones: IV7, bIII7, II7, I7, bVII7, bVI7, and VI-7b5, V-7b5, bV-7b5, III-7b5, II-7b5, and I-7b5.

Engaging in modal borrowing introduces various dominant 7th chords, including those that may be considered secondary dominant functioning. I find this interesting; I always take note when principles overlap. In this context, all the seventh chord scales are Mixolydian. This is not the case with secondary dominants.

Depending on the context, these seventh chords might be considered secondary dominant or even tonic functioning. In addition to the normal V7 chord, modal borrowing allows for a IV7 (borrowed from the parallel Dorian mode), bIII7 (borrowed from the Phrygian mode), II7 (borrowed from the Lydian mode), I7 (borrowed from the Mixolydian mode), bVII7 (borrowed from the parallel Aeolian mode), and bVI7 (borrowed from the I Locrian mode). The use of these dominant chords in the context of modal

borrowing raises larger questions: How might these dominant chords be resolved? How are they treated in our original key? What is their function in the tonal center? Can they resolve to their respective relative tonic chords? Do they have function in the original key? Where might they move to? Perhaps they can resolve to their relative tonic chords, as in: |Cmaj | F7 | Bbmaj7 | % |

This works if we start on the tonic chord, move to the IV7 borrowed from the parallel Dorian, and then resolve to its relative tonic, Bbmaj7. Although the progression doesn't sound like a resolution, it works well if we change the harmonic rhythm so that it comes to rest on our I chord:

```
|F7   | Bbmaj7 | Cmaj7  |   %    |.
```

This gives us a sense of resolution comparable to II-V-I.

Clearly, borrowed chords function inside the key they are established in, even though they contain chromatic notes. To put it another way, this IV7 does not have a dominant function in the key of I, and the Bbmaj7 does not have a tonic function in the key of C major. So the chromatic notes introduced by borrowing from the parallel Dorian function within the key of C major. The F7 adds an Eb (b3) to our key, and the Bbmaj7 adds a Bb (b7). Perhaps the b7 resolves to 7 or 6 and the b3 resolves to 3 or 2. But what function do these chords have—tonic, subdominant, or dominant? Author and educator Jim Grantham (1993) offers a rule stipulating that a dominant chord has a 4 and 7, and a subdominant chord has a 4 but not a 7. So both the IV7 and bVIImaj7 might be considered subdominant.

In the following example I use all seventh chord qualities provided for by strict diatonicism: major 7, minor 7, minor 7b5, and 7: |Cmaj7 | D7/C (C Lydian) | Cm7 (C Dorian) |Am7 (C Mixolydian) | Abmaj7 (C Aeolian) |Bb7/Ab | Cmaj7 |.

It may be useful to discuss function with regard to this progression, although it may not be clear how these chords

function in the key of C. Some would describe this progression as modal, based on an understanding that the chords don't have a clear function, but are just "colors." But there is a sort of tonic-subdominant-dominant-tonic relationship here. When we get back to C, we feel a resolution. We might be able to fit these chromatic chords into our categories of tonic, subdominant, and dominant. So let's do our best to understand these chords in terms of function.

Diatonic Scale Alteration and Tritone Substitution

Diatonic scale alteration results in chromatic notes in the key. When we create a leading tone for each diatonic scale degree, we create new scale and new chords. Examples include the harmonic and melodic minor that are used to tonicize the Aeolian mode, and the melodic minor, which can also be seen as a tonicization of the Dorian mode, as there is only a one-note difference between the melodic minor and the Dorian mode. This same process is applied to the rest of the scale degrees: Dorian, Phrygian, and Lydian, as well as Mixolydian and Locrian. The results are new scales and new chords, the secondary dominants and their related II's. In addition, tritone substitution leads to new scale possibilities and new chords that can be considered part of a tonality. This gives us a host of new chords, like –Maj7's, Maj7#5, -9b5, etc.

According to a popular explanation of chromatic chords, we can make leading tones for any of the diatonic scale degrees by altering the diatonic scale. In this way, we get the leading tone for the minor key, as illustrated in the charts in Appendix D.

Tritone Substitution

If we create an artificial leading tone like in the harmonic or melodic minor, we end up with two tritones. C harmonic minor

contains a tritone between B and F and another between D and Ab, and C melodic minor contains a tritone between B and F, and Eb, and A.

How might this affect our ideas of function? If we use a tri-substitute for V, why not the tri-substitute for I? Surely a bVmaj7 can exist in a key, but making sense of it is a challenge, as V7 leads naturally to it. The keys of Gb and C, although thought to be distant from one another, share the same dominant chord and can be viewed as related. It would be logical to say that the dominant chords G7 or Db7 and their related IIs function in both keys equally. In other words, G7 and Db7 are dominant functioning in both the key Gb and C, and their related IIs—D-7 and Ab-7—are both subdominant functioning in the keys of Gb and C.

Following this line of thought, the inevitable conclusion is that every chord from the key of C has the same function in G-flat as it does in C. Cmaj7, Em7, Am7, Gbmaj7, Bm7, and Ebm7 are therefore all tonic chords, as they are in Absil's twelve-tone chords.

Throughout music history, tonal language was enhanced by the increased use of the harmonic series. For example, in the middle ages, music exclusively used the first four harmonics as its basis. Harmonics five and six were added during the Renaissance, allowing the use of consonances of the sixth and the third. During the Baroque period, the seventh dominant (equivalent to the seventh harmonic) was incorporated.

Many think of the Tristan chord (below) as the beginning of the end of tonality. Composer Pedro Sarmiento (1999) stated:

> By definition, atonalism is based on the idea of composing music without tonality; this is the music that breaks apart the hierarchic system of harmonic functions derived from the diatonic scales. A good example is the famous *Tristan cord (fig 2)* used by Wagner in

the opera ‘Tristan and Isolda’ in which thanks to the conduction of the voices it is possible to reach a feeling of suspension in the tonality.



Fig.2 Acorde Tristán de Wagner.

(

p. 3).

I’m not sure if the abandonment of tonality is an appropriate description. In my view, the Tristan chord is clearly in a key: A minor. The melody states an A minor cadence: a, f, e, g#, a3, b. The harmony is a II-V-I in A minor. Here, Wagner uses a related II tri-sub F-7b5 (briefly passes through F7 tri-sub for the V of V), then to V7b5. This technique is common in jazz today. From my perspective, it isn’t close to being atonal.

In Practice

“Punjab Brown”

I used three guitars. The main guitar is played through the dotted-eighth delay to mimic “chicken picking,” a guitar style made popular by country players. A rhythm guitar provides the bass and chord structure as it moves through a blues form. A third guitar mimics the sound of a pedal steel, and a tabla sample loops underneath. The Punjab Brown is a breed of chicken native to India; the mix of “chicken picking” and tabla inspired the title. Instead of going to the IV7 chord in the ninth measure, I go to the bVII7.

3. Parallel and Symmetrical Harmony

Parallel and symmetrical harmony move chords through the chromatic scale by structure rather than by key. This chapter traces the theory, follows it into the music of guitarist Ben Monder, and then into two of my own pieces, “Ouch” and “Trio.”

Parallel Harmony

Parallel harmony, also known as constant structure, or planing, refers to a chord progression that uses the same vertical structure. Parallel harmony provides a framework for moving chords around in a chromatic environment, in or out of the key. The order provided by the constant structure allows the ear to follow that structure through any and all possible options offered by the chromatic scale. This concept of chromatic tonality impacts our notions of function with regard to how these chords are related tonally. Anytime we see a chord of a certain quality move to another chord of the same quality, we can say this is parallel harmony (e.g., Cmaj7-Dmaj7).

We can use constant structure/parallel harmony to move through all of our modes while keeping the same chord structure, as demonstrated below. (The parallel modes from which I borrowed the chords are in parentheses.)

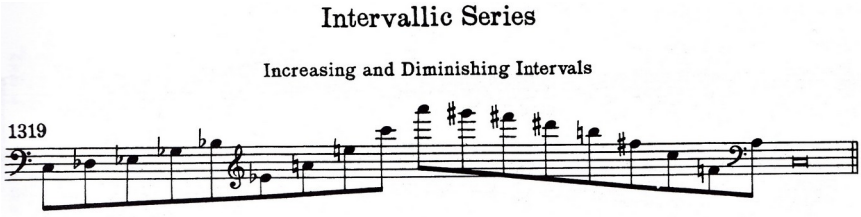
```
| Cmaj7  | Bbmaj7 (C Dorian)| Abmaj7 (C Phrygian)| Gmaj7 (C
Lydian)| Fmaj7 (C Mixolydian)| Ebmaj7 (C Aeolian)| Dbmaj7 (C
Locrian)|
```

The parallel vertical movement gives our ear a point of reference throughout the movement. Preserving the key center is not necessary.

Here's an example of how constant structure can be used to maintain order outside a key:



Here, I used parallel motion to harmonize an escalating scale pattern, inspired by the following Slonimsky "scale" (1978, p. 186) example.



This "scale" demonstrates increasing and diminishing intervals. Ascending or descending, each movement increases a half step. The first movement is a half-step, the second a whole step, the third a minor third, etc. I used this idea to construct the foregoing example of parallel harmony, so my root movement was: C, Db, Eb, Gb, Bb, Eb, A, E, C, A, G, Gb. Coincidentally, this is an octatonic scale, starting with a half-step. The following demonstrates the scale: C, Db, Eb, E, Gb, G, A, B. I harmonized this escalating "scale" pattern using parallel m9th chords.

Symmetrical Harmony

Techniques of symmetrical harmony give further structure to parallel harmonic movement. In the mid-20th century, both Joseph Schillinger and Nicolas Slonimsky recognized and wrote about the system of symmetrical movement. Each divided octaves and multiple octaves into symmetrically equal parts, and used this symmetry to develop new "synthetic" scales. Some of these scales are contained within one octave and others span many octaves before repeating.

Jazz musicians have employed symmetrical harmony, multi-tonic key systems to great effect. The technique can be heard on the bridge of *Have You Met Miss Jones* (Hart, L. and Rodgers, R., 1937), as well as the bridge of *Seven Steps to Heaven* (Davis and Feldman, 1963). Contemporary musician Ben Monder provides a strong example in his tune *Oceana*, which is explored later in this book. It's also evident in such John Coltrane compositions as *Giant Steps*, *Count Down*, and *Central Park West*, and is the basis for the well-known "Trane" II-V. It's common knowledge that Slonimsky's work had a big impact on Coltrane.

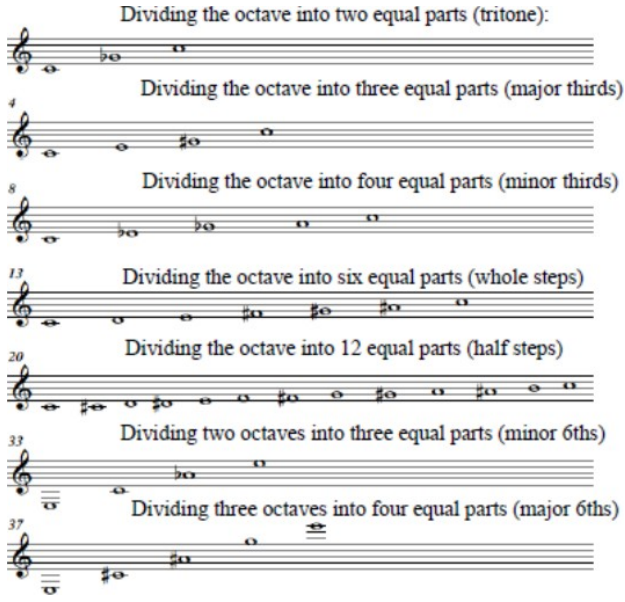
The structure of symmetry is said to provide order in the absence of a key center. But do commonly employed methods of using symmetrical harmony, multi-tonic key centers allow for actual polytonality? Let's explore whether more than one key center can exist simultaneously.

Symmetrical harmony gives order to parallel harmony by providing symmetrical movement in the octave or octaves. The ear can follow the symmetry of the movement, whether it takes place in major thirds or minor thirds. Our idea about multi-tonic key centers comes into question. Are there multiple key centers or is there only one? Typically a tune like *Giant Steps* is said to move through three keys. Indeed, it moves through three scales. But in light of a chromatic tonality, perhaps *Giant Steps* is in the

key of Eb, and all the other chords should be seen as revolving around this tone. When the root of any parallel harmonic structure moves in symmetrical increments, whether dividing one octave into equal parts or multiple octaves into equal parts, it can be considered to be symmetrical harmony (e.g, Cmaj7-Gbmaj7-Cmaj7, Cmaj7-Emaj7-Abmaj7-Cmaj7, Cmaj7-Ebmaj7-Gbmaj7-Amaj7-Cmaj7, etc.) Although this concept in its most basic form dictates that we complete the symmetry, starting and ending on the same chord, in practice we sometimes encounter partial or incomplete symmetrical movement (e.g., Cmaj7-Ebmaj-Gbmaj7-Amaj7). Grantham (1993, p. 51) explained that at times the symmetry is hidden via the use of chord substitutions. Tonic chords can substitute for each other, as can subdominant and dominant chords. Examples follow.

Well-established chords that function in the key of C: Cmaj7 (tonic)-Dm7 (subdominant)-Em7 (tonic)-Fmaj7 (subdominant)-G7 (dominant)-Am7 (tonic)-Bm7b5 (dominant). Tonic chord symmetry with substitutions: Am7 (Cmaj7)-Bbm7 (Gbmaj7)-Em7 (Cmaj7). Subdominant chord symmetry with substitutions: Fmaj#11 (Dm7)-Abm7 (Abm7)-G7sus (Dm7). (Note: the G7sus function is subdominant in the key of C, like the Dm7.) Dominant chord symmetry with substitutions: G7 (G7)-Fm7b5 (Db7)-Bm7b5 (G7).

Examples of symmetry follow:



In the same way, you can divide five octaves into 12 equal parts at intervals of perfect fourths, divide seven octaves into 12 equal parts at intervals of a perfect fifths, divide 10 octaves into six equal parts at intervals of minor sevenths, and divide 11 octaves into 12 equal parts at intervals of major sevenths.

You can mix symmetrical movement and use any and all symmetrical intervals when integrating mixed symmetry. I encountered this idea in a paper on symmetrical harmony written by educator and composer Shai Cohen (2001), and it makes perfect sense. The key is to start and end on the same chord, and to complete the symmetrical motion of every interval. In other words: if using two-tonic symmetry, you must make three chord changes, from C to Gb, and back to C. If you want to mix the two-tonic symmetrical system with the three-tonic symmetrical system, it would look like this: Cmaj7-Gbmaj-Bbmaj7-Emaj-Abmaj7-Dmaj7-F#maj7-Cmaj7.

We start and end on C. And we complete the symmetry in both directions—tritones (two-tonic symmetrical system) and major thirds (three-tonic symmetrical system).

C	Ab	E	**C**
A	**F**	**Db**	A
F#	**D**	**Bb**	F#
Eb	**B**	**G**	Eb
C	Ab	E	**C**

Shai Cohen (2001, “Walking up and down” section) mixed major thirds and minor thirds, which he outlined in a chart he calls a “chord succession matrix,” presented below:

This kind of symmetry can exist within one key. Cmaj–Emaj7–G#maj7–Cmaj7, for example, can be played in the key of C, and the C stays in our ear throughout the progression. That raises the question: what is the function of the Emaj7 and G#maj7? Are they tonic, subdominant, or dominant? Perhaps they should be considered chromatic mediants. I use the term chromatic mediant not only to describe the note’s position relative to C, but also to define its function. The question of the chromatic mediant as a possible fourth function is taken up later in this book. Note the common tones among all of these chords.

I’ve noticed that these types of symmetrical cycles can act as a single entity or as a unit, serving as a device that needs to resolve, as if the cycle itself is a subdominant or dominant function system. For example, in the case of: Bmaj7-Dmaj7-Gmaj-Bmaj, resolve to Abmaj7, the Ab is the tonic and the symmetrical system

holds the tension. Conventional thought says that these symmetrical systems should be considered multi-tonic or polytonal, having more than one tonal center.

While it's generally taught that symmetrical harmony employs the use of multiple tonal centers, an awareness of modal borrowing and the options it offers provides the perspective that the so-called key centers are related, suggesting the possibility of only one tonal center. Moving between Cmaj7 to Gbmaj7 and back to Cmaj7 is an example of symmetrical harmony using two tonal centers. This movement can also be seen as modal borrowing, using the C-Ionian mode and then borrowing from the C-Locrian mode to derive our Gbmaj7. This technique can be seen in many of the symmetrical harmonic-based compositions.

Ben Monder Biography

Ben Monder is a contemporary figure of the progressive jazz scene whose work is relevant to this discussion. Monder composes, performs, and conducts workshops internationally. He has performed on more than 100 albums as a sideman, and as a band leader has released four CDs: *Oceana* (Sunnyside, 2005), *Excavation* (Arabesque, 2000), *Dust* (Arabesque, 1997), and *Flux* (Songlines, 1995). He has performed with the Maria Schneider Jazz Orchestra, the Paul Motian Octet, Jack McDuff, Theo Bleckmann, Marc Johnson, Bill McHenry, Lee Konitz, George Garzone, Tim Berne, and Kenny Wheeler. He served on the faculty of the New England Conservatory from 2002-2005.

As a child Monder took up guitar after first trying the violin. Growing up in suburban New York, he listened to The Beatles, Jimi Hendrix, Jeff Beck, Eric Clapton, and Jim Hall. He names his greatest influences as modern classical music, Bach, Coltrane, all major guitarists, Ralph Towner, and Egberto Gismonti. He honors his first guitar instructor, John Stowell, for "playing…mysterious

shapes and sounds" (Di Pietro, 2006) and recalls Lorn Leber's unique "linear concept," which he learned at the Berklee summer jazz camp. As an educator, he applied the jazz harmony method he learned as a student of Chuck Wayne.

In an interview (Di Pietro, 2006), Monder shared a powerful image that could serve as a metaphor for man's relationship to the world of sound. In an old movie, he saw a whale hunter, "dragged helplessly through the water by the whale." This childhood memory may provide insight into one of Monder's fundamental influences.

Analysis of Ben Monder's Oceana

My premise is that all traditional chords can exist in any key, that all 12 tones can be a part of any chord, and that both of these phenomena can occur in and out of tonality. Ben Monder's work supports this premise, particularly in terms of its constant structure, i.e., planing, or parallel motion; symmetrical harmony; or multi-tonic harmony; and other techniques that involve chromaticism in a chord and from chord-to-chord in a key.

A successful example is Monder's *Oceana*, a clear case of symmetrical harmony. Appendix E presents an excerpt of this work, notated with my analysis.

Here the octave is split into four equal parts, creating what might be viewed as four tonal centers: A, C, Eb, and F#. But are there actually four tonics, or does one stand out as the main tonic or tonal center? Consider the bass movement, from a modal borrowing perspective. Since it ends on C, let's use that as a reference pitch. The chord quality is also worth considering. Monder uses what he calls a –maj7 with a b9, creating two consecutive half steps. Observe how he switches between #11 and b13, and moves through the tonics, in particular his voicing for a C–maj7b9b13/G G, C, Ab, Db, Eb, B, and his voicing for the Eb–

maj7b9#11/Gb, Gb, Cb, E, A, D, Bb. What scale can be played over these chords? How does he handle the b9s? Can anything be said about over-tones? Maybe a two-octave scale is a better approach for this sort of chord. Or maybe we can consider them to be polychords and separate two distinct chords from each voicing.

Monder's O.K. *Chorale* (Monder, 2008, p. 168), shown in part in Appendix F, is also instructive. Of particular interest is the Ab/C chord. Notice how the top voice begins on Db (a note that wouldn't typically be considered part of this chord), then resolves to C, the third. What makes this interesting is that the third is already being played in the bass note. So we have a case of the 3rd and the 4th being played simultaneously, with the 4th above the 3rd.

I've mentioned the b9 interval many times. I'm curious how it works so well in certain voicings. In many cases, adding notes can actually create consonance. Monder's voicing of this Ab/C is C, skip an octave, Eb, Ab, Db. It isn't the most consonant voicing, but the stacked fourths Eb, Ab, Db provide a sense of order. The Db quickly resolves to C, then moves to the next note of the next chord, which ironically also has a b9. With the Eb2/D, his voicing is D, skip an octave, Eb, F, Bb. In light of this, I'm not convinced my theory on overtones and chord voicing has merit. Still, this chord works well because the Eb(b9) is stabilized by the Bb. The Eb's first different overtone is Bb. I believe this Bb, which is consonant with the other chord tones D and F, helps the Eb to be heard in this voicing.

Listening through the first eight bars of the tune, it is clear that Ab is the tonic. Given that I hear Ab as the tonic, what can I say about all of these chords? This is a clear example of how a tonic can be set without a specific scale being implied. In other words, the Ab comes out strong as the tonic, but we don't necessarily associate any particular diatonic scale with the Ab, since the

chords are quite chromatic. Both Ab major and Ab minor chords are used. All 12 tones are used in these first eight bars. It would be hard to specify that it is in Ab major or Ab minor, or even that it is in Ab Lydian or Phrygian. This is a clear example of the key Ab "chromatic."

I'm excited about Monder's use of numeric symbols above the 13th. Consider the Emaj713(#15): 15 is the root two octaves up, and #15 indicates a sharp 1 two octaves up. This is the first time I've heard anyone other than myself do this; I feel validated.

In Practice

"Ouch"

"Ouch" reminds me of guitarists Frank Zappa and Steve Vai. It also reminds me a little of Steve Coleman's M-base music. And, of course, Slonimsky. The meters constantly change, as does the harmonic rhythm. "Ouch" is a twist on symmetrical chord movement, using tonic, subdominant, and dominant functioning chords from each of the symmetrical targets.

Before the drums come in, I use an extended technique to create harmonics: I pull off and hammer on the G string with my left hand while running my right index finger lightly across the same string to catch all the available harmonics. Rock guitarists made this technique popular. Harmonically, I use "multi-tonic" symmetrical key-center movement, here through D major, Gb major, and Bb major. My basic model was the progression II-7b5, V7#9, Imaj7. What I heard was a change of "key" center with every chord: I started on the II chord of D major (E-9b5), went to the V chord of Gb major (Db7#9), then to the I chord of Bb major (Bbmaj7), and finally to the I chord of D major (Dmaj7).

The key centers move like this:

```
||:D          |  Gb       | Bb       | D          |
```

```
|Gb          | Bb        | D        | Gb       |
|Bb           | D          |Gb       | Bb       |
|D            | Gb        | Bb      | D        |
```

The chords move like this:

```
||: II-9b5     | V7#9      | I         | I          :||
```

The complete chord cycle:

```
||: E-9b5     | Db7#9      | Bbmaj7    | Dmaj     |
|Ab-9b5   | F7#5         | Dmaj7      |Gbmaj    |
|C-9b5     | A7#9        | Gbmaj7     | Bbmaj7 |
|E-9         |Db7#9       | Bbmaj7     | Dmaj7   :||
```

"Trio" (Score in Appendix I)

This composition moves through diatonic scales and complex polyrhythmic meters, using key signatures to mark the changes of scale. The intro and outro are built on symmetrical intervals. In measure 3, I start with the tritone C–Gb (F#), which divides the octave into two equal parts. The order of the intervals is predetermined: I begin with the fundamental, then divide the octave into two equal parts (a tritone), three equal parts (major thirds), four equal parts (minor thirds), and so on. The resulting tone series is C, Gb, C, C, Ab, E, C, C, Eb, A, C, etc. Every symmetrical movement begins and ends on the fundamental.

You can visualize it as follows:

C, Gb, C

C, E, A, C

C, Eb, Gb, A, C

In the 5th and 6th measures, I use C, E, Ab, and C (major thirds).

In the 7th and 8th measures, I use C, Eb, Gb, A, and C (minor thirds).

In the 11th and 12th measures, I use whole steps.

Because each symmetrical movement begins and ends on C, the series often has repeated Cs from part to part and measure to measure. In measure 7, for example, one C ends the previous symmetry and the other begins the next: one closes the major-third sequence, and the other opens the whole-tone sequence. The outro was composed the same way.

The bulk of the piece follows a very specific rhythmic sequence, using groups of four, five, six, and seven quarter notes. The meters change according to the least common subdivision shared by the flute and trombone. If the trombone plays groups of six quarter notes (dotted whole notes) and the flute plays groups of four (whole notes), the measure might contain three whole notes or two dotted whole notes, giving a meter of 12/4. I could also have called it 3/1 or 4/1.5. The key signatures move with the same symmetrical motion. Starting at rehearsal letter B, I use a C key signature, then Gb, then C again; then key signatures in major-third symmetry, C, E, Ab, and C. The whole piece moves this way. Rehearsal letter A can be considered to have no key signature. Over the course of the piece, the key signatures cycle through every symmetry possible within one octave of the chromatic scale: the tritone, major thirds, minor thirds, whole tones, and half steps. Quarter-note groupings from three to five are also explored.

In general, I feel rhythm as kick, snare, and hi-hat. The tambourine part realizes this idea: tambourine palm for what I would normally feel as the kick, tambourine normale for the hi-hat, and tambourine accent for what I hear as the snare.

4. All Twelve Tones

If any note can belong to any chord, every chord can in principle hold all twelve tones. This chapter looks at twelve-tone chords, the overtone series, and serialism, and then at the scores where I put these ideas to work.

Twelve-Tone Chords

Pat Metheny suggests that all twelve tones can be a part of any chord, as upper extensions. When looking at the overtone series of each note of a chord we quickly see how this is possible. The implication is that all chords are related to one another, as they share the same notes. In other words: since all twelve tones can be a part of any chord, all chords are identical. All chords have the same notes. All chords have every tone in common. The main difference is the order of notes from the root, or bass note. An A-7 may have a G# many octaves above the root, whereas a G#maj7 has the G# in the bass. But both these chords share the same notes, and differ only by virtue of the distance between each note and the root. Likewise, all keys are related for this same reason. All keys have every note, because all of the chords in that key can have all twelve tones. Therefore all chords in every key have all twelve tones, and all keys have all chords. Basic diatonic chords—Maj7, m7, dominant 7, -7b5—can exist on any of the 12 notes of the chromatic scale in relation to a key's center.

A Pat Metheny lesson (Metheny, n.d., p. 3) from the Internet provides an example of how it's possible to hear all 12 tones in relationship to any chord, as part of the structure of that chord. A

student asked Metheny about chromatic sidestepping or side-slipping, similar to the playing of Michael Brecker. Metheny responded:

It's taken me a long time, but with the exception of the major 7 or minor 7 chord, I can hear any note as a part of any chord. If I play a note I hear all the notes leading up to that note. Chords have all the notes in the upper structure way up high. I hear them and just play them down in the regular register.

What Metheny played, appended with my observations, is presented in Appendix C.

In the first two bars, Metheny plays an F# and B against a C tonic. He shows us how his ear relates to these notes as a part of a D major triad in the Key of C. In the fourth system he shows us how his ear accesses several notes that might not be considered C7. Also of note is the B, the 7 against the C7. He hides the B at the bottom of a B major 7 arpeggio, starting on A# (Bb). In the 6th system he shows us how he hears upper extensions against a C7#5. He plays 1, 3, #5 (b6), 8 (1), b12 (b5), 13 (6), 15 (1), 18 (4), and b17 (b3). Against a C7#5, he hears all of these notes as being part of that chord – 1, b3, 3, 4, b5, #5, 6 – not to mention the b7, which he played when he sounded the chord. Metheny then takes those upper extensions and plays them lower down in the register. In the last system against the C7#5, he is able to hear 1, b2, b3, 4, b5, 5b5, b7, and the 3, which was sounded in the chord.

If we accept Metheny's statement that every note belongs to every chord, the 4 has its place somewhere in the structure of a Imaj7 chord. Traditionally, we wouldn't think of the 4 as part of the Imaj7 and in fact, it is commonly taught to be considered an "avoid" note. But the 4 may belong to the upper structure of the I-major chord, at least two octaves up. It might be more appropriate to consider these "incomplete" dominants and sub-dominants, because they contain the 4 of the key.

Musician and composer Richard Niles has known Metheny for more than 30 years and has compiled 20 years of interviews he's conducted with Metheny (Niles, 2009). In an online interview with Niles, (R. Niles, personal communication, April 12, 2012). I asked how Metheny is able to hear and incorporate any note as part of any chord. Niles stated that Metheny's ears are incredibly sensitive and accurate. He's able to hear overtones that most of us cannot.

Overtones

Overtones are tones that sound along with a fundamental frequency. They are produced by positive interference; nodes in the sound wave will peak higher as a vibration returns along a string or through a column of air. The most prominent peaks occur at simple ratios of frequencies and represent the tones most easily heard above the fundamental. When one pitch is sounded, consider all the notes from the series being sounded also. Listening closely, one can hear overtones along with the fundamental.

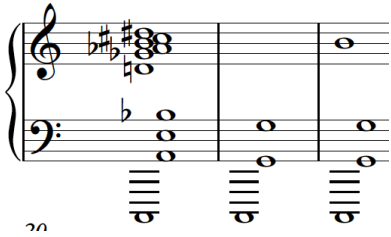
The overtone series enables any note to be part of any chord. Look at the overtone series as a vertical structure, with its accompanying diatonic notes. Consider the possibilities when a major scale is played: What other notes are being sounded as we play a major scale? Consider Gbmaj7 in relation to a C tonic: What can be said about C's overtone series, Cmaj13's overtone series, and C-maj7's overtone series?

Composer Arnold Schoenberg (1978) wrote that C's closest cousin is G, because the G is the first different note in C's overtones series. If I understand him correctly, for this reason G is C's closest cousin. And F is C's close relative, because C is the first different overtone of F. Schoenberg (1978) believes these relationships lay the foundation for the diatonic scale. The first

different overtones of C are E and G. The first different overtones of F are A and C. The first different overtones of G are B and D. (So c, e, g, b, d, f, and a, or rearranged c, d, e, f, g, a, and b.) He considers C to pull towards and be dependent on G, and for C to pull towards and be dependent on F. He believes C is stuck in the middle, pulled in both directions:

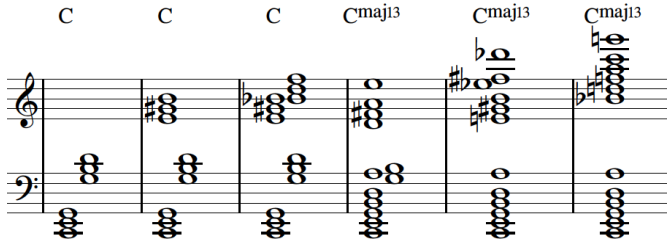
A chord is a composite sound consisting of at least three different tones, hence, a, also of four, five, six, etc. This 'etc.' however, does not hold; for theory hardly acknowledges five tones—even the ninth chords arouse 'doubt in the hearts' of the theorist, instead of thought in their brains (pp. 23-24).

Below is an illustration of overtones which are sounded when a pitch is created.



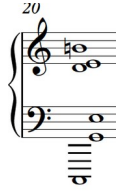
The first measure shows all the tones that are sounded against a pitch. The second measure shows where in the overtone series a triad comes from, and how the fundamental and first two different overtones make a major triad. The third measure demonstrates what register is sounded by the overtone series of a major 7 chord, the fundamental. The third overtone is the perfect 5th, the 5th overtone is the major 17th (3rd), and the 15th overtone is the 21st (major 7th).

The following figure demonstrates overtones and chords.

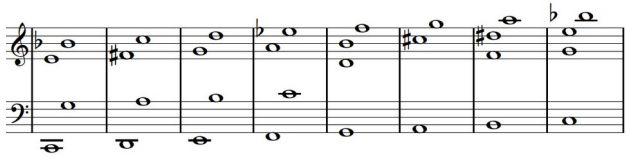


The first measure shows what is sounded when a fundamental triad is played; the second, the first two different triads that are sounded when a fundamental triad is played, and the third shows the three triads sounded when a fundamental triad is played. Results are measured based on the first overtones being sounded with a Cmaj13. Measure 4 resolves from the first and second overtones. Measure 5 results from the fundamental and the first three different overtones.

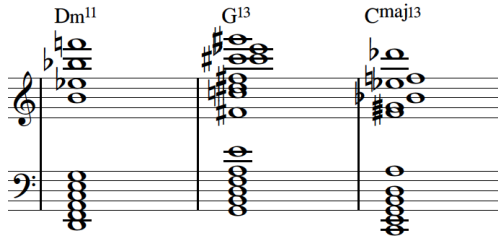
The figure below shows the diatonic notes that come from a fundamental pitch going up to 15 overtones.



The figure below shows all the tones that are sounded when a major scale is played, taking into consideration only the first three different overtones. Note that when playing a major scale every note from the chromatic scale is sounded, with just the first three different overtones.

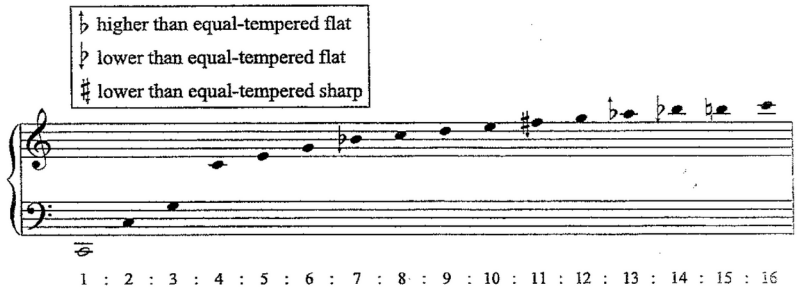


The figure below demonstrates a II-V-I, pitches sounded with the first three overtones.



Overtones can provide the natural basis for intervallic relationships. Using them, one can create modes with stacked fifths, as shown in The *Walden School Musicianship Manual* (Carroll, et al, 2002, p. 30):

Example 9. Overtone series up to the 16th partial



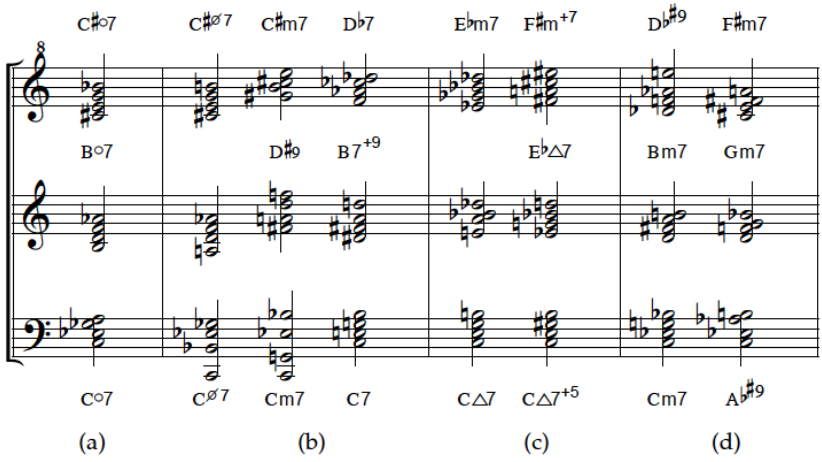
The perfect fifth is an obvious first choice for this method as it is the simplest, most consonant relationship that will yield a new note combination. Starting from C, a stacked series of fifths will yield C-G-D-A-E-B-F#, which spans 7 octaves and gives us the Lydian mode. This mode's 1 and 5 occur in the first octave, its 2 and 6 in the second, its 3 and 7 in the third, and its 4 in the fourth octave. If we continue stacking fifths through seven octaves we can derive the chromatic scale: C-G-D-A-E-B-F#C#-G#-D#-A#-E#-B# (C).

When a fundamental sounds, many other tones sound along with it because of the overtone series. Depending on how many steps of the series we are willing to recognize, a single tone contains almost a complete diatonic scale and almost the complete chromatic scale. If we play a major scale and take into account only the first three different overtones, we already have a completely chromatic environment. When we play a II-V-I cadence, the first three different overtones are sounding, whether we hear them or not, so each chord is completely chromatic: the Imaj7 contains all 12 tones, the II-7 contains all 12 tones, and so does the V7. The difference in function among these chords, whether tonic, subdominant, or dominant, may therefore depend less on which notes each chord contains than on the order of its notes and each note's distance from the root. The overtone series shows that every chord does in fact contain all 12 tones. It also shows that many of these so-called key centers are more closely related than we might first think, since chords may share more common tones than is generally assumed.

Developing 12-tone chord structures requires minimizing tension, and educator F. G. J. Absil (2007) developed rules to do so:

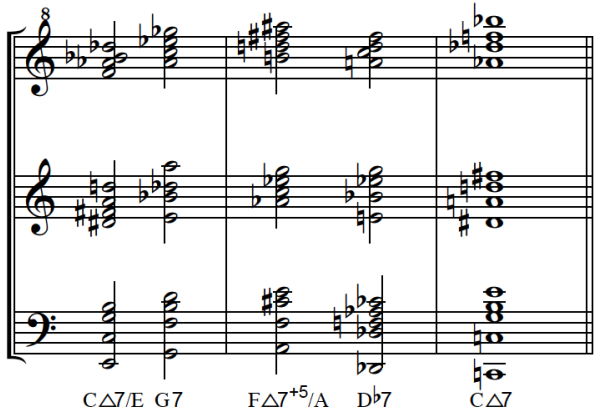
Rule 1: Use 4-part chords from the basic set presented in Table 1 or Fig. 1 in each layer.

Rule 2: Prevent or minimize the total number of intervals of the minor 9th between the pitches in adjacent layers (p. 2).



Twelve-tone chord structures. (a): Group 1, identical chords in three layers, (b):Group 2, identical chords in two layers, (c): Group 3, different chords in all layers, (d): Different vertical ordering of Group 2 solution (Absil, 2007, p. 3).

Absil (2007, p. 6) also demonstrated a twelve tone chord progression:



Tone Rows and Serialism

The use of tone rows and serialism in composition are most often associated with Schoenberg. Schoenberg's work has shaped and

informed my concept of tonality and chromaticism. Although he is famous for tone rows and Serialism, he also made brilliant observations about functional harmony and tonality. His theory of tonal function states that a tonal work's function, both specific and general, is related to the central tonality of the whole work, which in turn is represented by his principle of monotonality. This principle states that "every digression from the tonic is considered to be still within the tonality whether directly or indirectly, closely or remotely related … There is only one tonality in a piece" (Schoenberg, 1989, p. 19). My acceptance of all pitches in tonality is derived from Schoenberg's work.

Twelve-tone technique became very popular amongst twentieth century composers. Stravinsky began using it towards the end of his career. Schoenberg's disciples, including Webern, carried it well into the century. Schoenberg himself wasn't at all opposed to using triadic structure, although it seemed that its main purpose was to avoid tonality at all costs. It eventually became conventional to avoid triads and any sort of traditional harmony.

Alexander Graham (2005, pp. 48-49) attempted to use tone row to play over "All the Things You Are." (See Appendix G.) In doing so, Graham provided the following useful guidelines:

Three basic principles are employed in an attempt to justify prevailing tonality within the tonal confines of the chord changes…:

1. Justifying the notes through the existing chords,

2. Justifying the notes through implied chord substitutions, and

3. Justifying the notes through use of target or "goal" notes that fit into smaller or larger "goal note" or guide-tone sequences. (p. 26)

Graham felt these steps were the most effective because:

…[T]hey allow for the true character of the twelve-tone sound to be expressed without being dulled by the traditional rules of harmony. Instead of using implied chord changes or even upper-extensions to justify the notes, the construction of the row acts as its own justification and in the best examples, this is apparent to the listener. Instead of creating dissonance by using substitution chords to embellish the V-I relationship, these rows use patterns that create a kind of linear dissonance.

Graham cites rows # 6, 9, 13, 22 and 25. “These leaps create a unique sound and tension that is not commonly found in improvised jazz solos which tend to lean on scales and patterns of thirds, fourths and sixths for the majority of its material.” (p. 28). Graham further wrote that this approach allows notes that are completely outside of the chord (e.g., a major 7 on a dominant chord) to be effectively used without relying on the traditional use of non-harmonic notes. When these phrases are prepared and concluded properly, they do not sound ‘free’ or ‘out’ just for the sake of being so, but complete a tonal resolution. (pp. 27-28).

I have incorporated twelve-tone technique into my playing and writing. Besides using tone rows to incorporate melodies as pre-existing chord changes, one could also use the rows to write chord changes, using, for example, tone row in the bass or root movement of a chord progression, or as the melody note (each note gets its own chord). A good starting place might be to use parallel movement to give structure to your tone row harmonies.

Twelve-tone technique and serialism force composers to concentrate on structures other than tonality. Without the glue that tonality provides, composers must look for more interesting things to do with rhythm, texture, timbre, density, and space.

Eventually music theory must develop a profound way to talk about this music. The theory should define and analyze music ranging in diversity from Charlie Parker to Cecil Taylor, from

Steve Coleman to Sun Ra, applying to each the same system, method, and vocabulary.

Scores and Harmonic Studies

“Harmony”



This example comes from my research into seven-note chords. Eventually, I'd like a language of twelve-note chords defined by the order of their pitches; if every chord contains all twelve notes, order is what distinguishes them. In "Harmony," I harmonized a diatonic scale so that each chord contains every pitch of the scale, and function is determined by pitch order. The example is in C major. It starts on the IV chord and moves through the cycle of fourths until it finally resolves on the I chord. Every chord contains all the diatonic pitches, but the order of the pitches from the bass up determines chord quality and function. Even though every chord has the same seven pitches, I assert that the IV chord functions as subdominant, the VII as dominant, the III as tonic, the VI as tonic, the II as subdominant, the V as dominant, and the I as tonic.

"7-Note Diatonic Chord, Cycle of Fourths"

For this song, I appropriated the drum sounds from Lorde's "Royals." I tracked three guitars: two play the chords, and the third plays through a dotted-eighth delay. These are what I consider functional seven-note chords in the cycle of fourths:

```
| Cmaj7/Fmaj7   Fmaj7/B-7b5  | B-7b5/E-7    E-7/A-7 |
| A-7/D-7           D-7/G7           | G7/Cmaj7                  ||
```

"-77maj7" (Score in Appendix H)

About my composition "-77maj7," suffice it to say that I used what I consider the primary subdominant, dominant, and tonic chords: II-7 (ii -7/5/3), V7 (V -7/5/3), and Imaj7 (I -7/5/3). I move these chord qualities around in chromatic, nondiatonic, or irregular ways; for example, D-7 (D, F, A, C) moves to Eb7 (Eb, G, Bb, Db) and "resolves" to Gbmaj7 (Gb, Bb, Db, F). And although the pulse is regular, the harmonic rhythm is irregular and unpredictable. Composing "-77maj7" led me to some successful ideas that I want to explore further.

“String Quartet”

Below the score is a harmonic analysis of a short piece I wrote. The piece itself is “cheesy,” but its use of harmony and harmonic rhythm is relevant to my music and to this book.



String Quartet analysis:

1st measure: C7/Bb.

2nd measure: D13sus. This chord carries over through the first beat of the third measure. Note the shifting harmonic rhythm.

3rd measure, 2nd beat: A-11b5 (with a 9 as well), which carries over into the next measure for a dotted quarter.

4th measure, beat 1.5: B/Gmaj7

5th Measure, beat 1.5: G#maj7#11

6th Measure, beat 1.5: C9/Bb

7th Measure, beat 2: E/D

7th Measure, last eighth note: Bbmaj7/D

8th Measure, second beat: D6

9th measure: beat 1, Bb/D; beat 2, E7/D; beat 3, incomplete chord E7b5/D

10th Measure - E7/D

11th measure, second beat, from the bass up: D, F#, C#, E, Ab (G#), and C. Note the use of C, C#, and D. I could call this C#minmaj7/Dmaj9.

12th Measure: Bb-9

13th Measure, beat 1: Amin7

13th Measure, beat 3: Abmaj9

14th measure, beat 2: Gmaj7 or Gmaj13 (enharmonic spelling; I could have written the Gb as F#)

15th measure, beat 1: Note the quarter-note anticipation of the last chord. From the bass up, this chord is Gb, F, Bb, and C, and could be called Gbmaj7#11.

Harmony in Succession:

C7/Bb - D13sus - Amin11b5(9) - B/Gmaj7- G#maj7#11- C9/Bb - E/D -Bbmaj7/D -D6 - Bb/D-E7/D -E7b5/D- E7/D -

C#minmaj7/Dmaj9- Bbmin9 -Amin7 -Abmaj9 -Gmaj13 -Gbmaj7#11

What can be said about these chords?

What can be said about the movement between these chords?

What style of harmony is this?

“Brass”

“Brass” is another demonstration of my musical interest in chromatic harmony and shifting harmonic rhythms.

Brass 1

Subtitle

Composer

C Score



“Woodwind”

woodwind

#2

Khalil Doak-Anthony





2

“Orchestration” (Score in Appendix J)

Another example of my musical framework.

5. Recording as Composition

Most of my music is made with recording software rather than on paper. This chapter describes that method and the recorded pieces built from it: studies in rhythm, tempo, chance, and borrowed material.

A) General Working Methods

The computer is my main tool for creating music. Although I use notation and improvisation, much of my work, like that of many musicians, is "recording-created" in a multitrack software program. My pieces come together much the way a pop or hip-hop track might. This way of working makes the old debates about improvisation versus composition somewhat outdated, because it involves both real-time creation and audio editing.

One example of how I combine improvisation, composition, and technology is my recent collaboration with the phenomenal singer Parris Lane, whom I met a year ago, during my second semester at Mills. At our most recent rehearsal, we used a full paper score with parts for piano and choir, along with a laptop connected to the Internet that held several versions of the song recorded by others. The computer also recorded our rehearsal. As we worked through the song, sometimes performing along with the recordings and sometimes reading from the score, we essentially improvised our way through it, changing its rhythms, harmonies, phrase lengths, and melody. After several passes, our own tendencies with the material gradually settled in. The score and the recordings guided our creative expression, serving as

road maps from which our own arrangement developed through repeated improvisation.

Improvisation and composition are mirror images; each contains an element of the other. Improvisation, as Roscoe Mitchell says, “is composition in real time.” I would add that composition is frozen improvisation. Compositions are not necessarily created with notation. Previously composed music is often performed from memory; many rappers, for instance, memorize lyrics that were never written down. Oral musical traditions rely on this kind of memorized composition to pass on their pieces, and pop, street, and folk music rely on it heavily too. As in the telephone game, a composition changes as it passes from musician to musician, from generation to generation, and from one village, street corner, and country to another.

This is a small sample of my work. I have hundreds of video and audio recordings; making them is the main way I spend my time, almost a daily practice. It is how I practice. Here I present 31 audio recordings, five videos, and seven scores. With a few exceptions, everything here was created in the last year.

Rhythm and Pulse

“1/16 Triplets”

I improvised using a sixteenth-note triplet rhythm marked by a metronome. The other instruments are triggered from my guitar improvisation.

“16ths”

I often focus on rhythm when I practice. Here I decided that everything I improvised would be in a sixteenth-note relationship to the pulse. I recorded it on an acoustic guitar using the Mac’s cheap built-in microphone. You can hear kids playing in the

background, which I find very satisfying and real. Various instruments are triggered by the guitar.

“1/8 Notes”

Here I explore only eighth-note rhythms against the pulse, using multiple guitars panned to different places in the stereo field.

“Polyrhythmical”

This song explores multiple simultaneous rhythms with many guitars in a fully chromatic environment. Each guitar plays its own subdivision grouping, 2, 3, 4, 5, 6, or 7, as a loop. Over them I try to solo with a lead guitar, bringing the looped polyrhythmic guitars in and out.

“Looping #5”

Here I use a dotted-sixteenth delay: I play sixteenth notes, but thirty-second notes sound. A second guitar, run through a harmonizer, solos over that. Then very disjunct rhythmic guitars and chords enter, followed by a wah-wah guitar and a standard fusion solo guitar. I often play arpeggios and scales without intending them to relate literally to the underlying harmony. I also use a dotted-eighth delay so that sixteenth notes sound while I play eighth notes.

“Noodle Factory”

The title refers to all the “noodling” I do here. I used the drum-doubling plug-in to trigger slap bass, drums, and percussion, and recorded two guitar tracks.

Tempo and Time

"March 24th"

This is one of my more successful demonstrations of tempo change. George Lewis suggested the idea of using software to change the tempo of a recording; before that, I would never have done it. I had always resisted it because I didn't want to mislead listeners into thinking I had more "chops" than I actually do. Experimenting with post-recording tempo changes has led me into a world that isn't concerned with how many chops I have. It's about the sound of the finished product, not about my ability to play the guitar. I use tempo edits because the sound is great and it's a rich area of exploration, not to "cheat."

"Blah Blah"

"Blah Blah" was inspired by a conversation with George Lewis. I played with speeding up and slowing down my takes, and I used the drum-doubling plug-in in Logic.

"Abstraction"

I used organ and drum sounds, and also played with the speed of the recorded guitar.

This piece was inspired by the idea of gestures, timbres, and rhythms that act or sound like traditional forms of music without directly imitating them. Key centers are obscured or absent altogether, the rhythms exist in a meterless environment, and the tempo is in constant flux.

"Art Music XX"

Thinking about the term "art music" inspired "Art Music XX." Art music is considered high art, and its practitioners often see themselves as more sophisticated than pop, street, or folk

musicians. Yet nothing in the piece refers directly to art music or to any other form of music. In general, I'm constantly thinking about how genres are used in music and asking myself what role elitism plays. Beyond those thoughts, this is another piece in which I explore tempo changes.

Chance

"Chance Harmony"

In "Chance Harmony," I let chance dictate the harmony: I played a rhythm track, then recorded a solo without listening to the chords I had improvised.

"El Rey I of II"

In this song, I play my El Rey 2 through a Pod HD500X that simulates a "high-gain" guitar amp; that's how I get the rock guitar tone of Hendrix, Holdsworth, and others. I added a shaker sample, a track of guitar chords, and a virtual bass with randomly assigned pitch, velocity, and duration, programming each duration to fall between zero and a maximum I set for the track. I also mapped MIDI from my guitar part and used several digital effects, including delay and tremolo. (I have been able to let go of two-hand tapping since I was a kid.) The piece was inspired by Eddie Van Halen. It uses the dotted-eighth delay I often use, not to be confused with the delay on the main rock guitar. The harmony and harmonic rhythm are improvised on the guitar, but since the bass pitches are randomly assigned, the harmony here is also a kind of "chance harmony."

"Improv-1"

This is an unstructured improvisation with multiple guitar takes. One thing I'm working on is controlling density when many

instruments play at once; I practice it by layering many takes while trying to keep the texture clear.

“Ballad”

I was thinking about what it means to play a ballad, so I set out on an improvisation with the goal of playing one.

Borrowed Material

“Dot”

“Dot” is a cover of Stevie Wonder’s “As” and John Legend’s “All of Me.” The rhythms and harmonic rhythms are displaced, and the harmonic rhythms are improvised. I mapped a virtual drum instrument to double my guitar takes.

“Slayor”

For this piece, I appropriated the drum beat from Lorde’s “Royals,” whose title is spelled backward in mine. I played guitar with an octave plug-in and used drum doubling to trigger a virtual bass and percussion that match my guitar attacks.

“El Rey Freestyle”

I had played an Ibanez PM100 (Pat Metheny’s signature model) for at least 10 years before trading it in for an Eastman El Rey 2; this song was recorded on the Eastman. I used the drum-doubling plug-in to trigger a jazz drum kit. The piece quotes several jazz tunes, including “A Night in Tunisia” and Brubeck’s “In Your Own Sweet Way.”

“2014 July 4th, El Rey”

This song was inspired by our nation’s Independence Day and by my own independence from the Pat Metheny guitar. Here a funk

loop triggers virtual organ and drums. The loop itself isn't heard; it only provides a MIDI sequence for the virtual instruments.

"Playing With Ave Maria"

This is a multitrack recording of the first part of "Ave Maria." I looped it and improvised over the chord changes. It ends up sounding African or West Indian.

"What the Fuck Is Glitch Hop?" (video)

This video shows me using the dotted-eighth or sixteenth-note delay I so often use, playing along with an appropriated beat. Glitch hop is a new genre that young people are listening to; this was an attempt to explore it and find a guitar style that works within it.

6. The Open Sound Field

Recording also changed what counts as musical sound. This chapter covers environmental sound, extended guitar techniques, and the pieces that explore them.

B) Opening of the Sound Field and Extended Techniques

Along with the working methods described above, I use environmental sounds as music and explore extended techniques on the guitar. Lately I have been listening to the harmony of traffic and other sounds of the city. I often record myself with a room microphone, which captures the sounds of the environment at the same time: my family talking to me, traffic, the nearby school. Instead of trying to create a sterile recording environment, I accept any sound that enters the recording as music. Likewise, in live performance I accept every sound as part of the piece, including audience noise and mistakes made by me or the other performers. Accepting all sound as music opens up many possibilities on the guitar, and I try to explore different ways of producing sound on it, such as harmonics, tremolo picking, and slap-bass technique.

The incorporation of environmental sounds and extended techniques reflects the aesthetics of post-postmodernism, post-millennialism, or metamodernism, which has been described as oscillating between modernism and postmodernism while finding a voice of its own (Vermeulen and van den Akker, 2010). These approaches seek a middle ground between extended tonality on

one side and timbre, gesture, environmental sound, and chance on the other.

Extended Techniques in Practice

"Slap Guitar"

Slap bass has become a standard technique in our music, but it is used less often on guitar, and I would classify it there as an extended technique. It's as much about percussive sound and timbre as about pitch; often the pitches aren't even audible. I use the guitar attacks to trigger virtual instruments. My seven-year-old son can be heard talking to me during the recording as he tries to figure out how the iPad works. That sound is part of my reality, and therefore part of the music; and because his voice was recorded, it triggers virtual instruments too.

"Tremolo Picking"

I used tremolo picking to trigger the virtual instruments, here virtual piano and upright bass, which made for a very aggressive piece.

"Guitar Trio"

I feel this song as a heavy funk groove. It uses slap guitar, a lead guitar, and virtual bass; note the two-hand tapping.

"OK"

The title is arbitrary. Here I explore various extended guitar techniques, from harmonics to percussive articulations like slap guitar. Many virtual instruments were triggered by the single guitar take I recorded: virtual bass, something labeled "Asian drums," hip-hop drums, string pizzicato, and piano, along with two-hand tapping, legato playing, double-stop bends, and tremolo picking. The piece has a bebop sensibility, both rhythmically and

harmonically. My chord vocabulary is rooted in jazz voicings: I use many tertian harmonies with extensions, and I also play quartal harmonies (stacked fourths) and often include seconds in my voicings.

“Free Metal”

With “Free Metal,” I wanted to approach heavy-metal “shredding” in a truly “free” way, with no thought of meter or scales. I play to a pulse with atonal note choices. The song features power chords, high gain, and a pitch-bending pedal that mimics the whammy bar as it was used in the 1980s. I also use sidechain dynamics, which open up the guitar tracks whenever the drums strike. As George Lewis recommended, the song experiments with speed changes, along with a harmonizer. By the end, there are at least three guitars.

“Autotune Blues II”

In “Autotune Blues II,” I use Auto-Tune, an effect designed to help singers sing in tune, on a bluesy lead guitar. When I bend notes, you can clearly hear the Auto-Tune, which I find a very interesting use of the effect. I added the kick and snare sampled from Eminem and a virtual synth bass.

7. Race, Appropriation, and Memory

Popular American music cannot be separated from the history of race in America. These pieces use appropriation, found footage, and ancestral memory to work through that history.

I think there is a new way of thinking about race, for example: we can acknowledge that racism and issues of race are powerful forces in our reality while also recognizing that race may not exist in any complete sense. The same is true of sex and gender. Sexism is very real, and issues of gender and sexual orientation are on our minds; we acknowledge all of them while remaining aware that the classification of gender is ambiguous and partly constructed, and that sexual orientation is not an either-or.

"1 Minute"

In "1 Minute," I appropriated Barack Obama's 2004 DNC speech. Obama would later become the first African American President. Obama states, "My presence on this stage is highly unlikely." He continues, "If there is an Arab American family being rounded up without benefit of an attorney or due process, that threatens my civil liberties." Toward the end of my piece, Obama says, "For alongside our famous individualism, there is another ingredient in the American saga: the belief that we're all connected as one people … e pluribus unum, out of many, one."

I strung together the songs that were at the top of the charts the week I made this. I used a kick and snare that I appropriated from

the Eminem track “Cinderella Man.” Finally, I played guitar over all of this using the dotted eighth-note delay.

“Ancestral Memory”

In this song, I play with the idea of genetic or ancestral memory. I have been lucky to play many times with African musicians, and although I know very little about this music, I find it incredibly easy to play, even though I’m never certain where the pulse is. “Ancestral Memory” celebrates those encounters. I also explore notes that wouldn’t usually be considered part of the “key” or scale. The piece could be described as being in 9/4, but since each beat is subdivided into triplets, it could also be considered 27/8.

“Out African Jazz”

“Out” is a term jazz musicians use for notes that aren’t in the scale or chord. Here I explore playing out over a more African-style rhythm.

“The 3 Great American Guitarists” (video)

Before anyone knew him, Tommy Hilfiger put up a billboard in the middle of Times Square that placed his name among the most famous American fashion designers. Borrowing his idea, in my video “The 3 Great American Guitarists,” I placed myself alongside the two great American guitar icons, Jimi Hendrix and Eddie Van Halen.

“Nigger” (video)

I constructed “Nigger” as a kind of pseudo-PSA. It is my only piece without “music.” I wanted to call attention to the word without taking a clear stance. I regularly hear people use it, and I also know people who would never use it. I find it a little ironic that the people most condemned for using the word are exactly the

people with whom its condemnation originated. I hear both sides of the argument, and I think both are valid. Listen to the word "nigger." I wanted to look at the word without judging how or why it is used, or whether it should be used at all.

"It's Our Party" (video)

I made "It's Our Party" from found footage of Miley Cyrus singing an a cappella version of her hit "We Can't Stop." I edited the footage, programmed drums, and played guitar to it, and I also used found footage of myself. My intention was to insert myself into the middle of the controversy surrounding Cyrus. The video upset some of my classmates. Some felt it was racist because Cyrus appropriates Black culture; others felt it was sexist because of the sexuality she displays in the footage I chose. Some also objected to seeing a white woman in the center of a Brady Bunch–style grid surrounded by Black men: racist, said some, because Cyrus was at the center; sexist, said others, because men surrounded her. Nonetheless, I'm very proud of the video.

"Out Of Time" (video)

In this video piece, I used found footage of krumping, a form of hip-hop dance that grew out of the earlier clowning style in Los Angeles. The documentary *Rize* (LaChapelle, 2005) shows that clowning and krumping look almost identical to some traditional African dance forms. It's fascinating that the descendants of a people would re-create the dances of their ancestors without any direct exposure to that culture, as if drawing on genetic memory.

In "Out of Time," I played an acoustic guitar in rubato, then converted the attacks of my improvised parts to MIDI. I randomized the pitch, duration, and velocity and assigned the result to a MIDI instrument. The other instruments are an African drum kit, an African vocal effect, and a MIDI bass. All four MIDI tracks share the attacks, or rhythm, of my guitar playing, but each

has its own pitch, duration, and velocity assignments. I've started using this technique a lot: I record my audio track, then use Logic's drum replacement/doubling function. That function was clearly designed to replace or double drum sounds and is often used in pop production. Where a producer might double or replace a live kick or snare, I use it to reinforce the "rhythms" and attacks of my guitar. One real audio track and three MIDI tracks, each acting on its own with unique attributes and all acting together with shared ones, make up the piece.

The guitar was played out of time, while the dance clips were performed in time, so the connection between them is essentially random. Yet our brains make the connection as if the random pairing were intentional. People who see the video often say, "You did a really good job of editing the music and dance together." In reality, I paid no attention to that.

8. Signal Flow: “White Like Me”

The last piece here is a live one: my Signal Flow performance at Mills, followed by notes on criticism and expectation.

“White Like Me” was my Signal Flow piece, performed live in Littlefield Concert Hall for my MFA in music performance at Mills. As it played out, the piece could be considered part of the improvised music scene of players like Wayne Krantz. It is based on groove and expanded tonality, using shifting pulse, meter, and subdivision along with the chromatic scale. Its phrasing is rooted in post-bebop and draws on funk, but with displaced beats.

The title “White Like Me” comes from Tim Wise’s book *White Like Me: Reflections on Race from a Privileged Son* (2005), a personal account of white privilege and racism in America whose own title borrows from John Howard Griffin’s *Black Like Me*.

Wayne Krantz said, “If we can agree on something in one moment ….playing bebop is affirming a tradition that’s a little different than improvising. We all know what good bebop is, so when we play bebop we are affirming a tradition…”

I’ve spent most of my life rehearsing and practicing. Rehearsing is standard when preparing for a gig, even though at many gigs the music is set by a shared repertoire. For this performance, I didn’t want that, which is why I was happy no rehearsal happened. The music was truly about that moment, good or bad, and about the anxiety and confusion of dealing with it.

Concert tradition is funny to me. The audience sits still and listens to the people on stage… I was happy that Tara yelled out “Go,

Khalil!" That's all I really wanted: to connect with my musicians and the audience. In a way, Tara really made it for me; she made it complete.

She broke the barrier between performers and audience. I want performance to be a group activity, with yelling, dancing, and so on, not unlike Oliveros's Deep Listening performances.

Nothing about this piece was discussed or rehearsed. I hired musicians based on my experience playing with them; they had never met each other. Valentino and I sang rhythmic ideas to each other for about five minutes before the performance. The piece received mixed reviews. Some thought it suffered from a lack of rehearsal, some found it meandering and too wide-ranging, and others felt it was too traditional. For Valentino and me, a real truth and connection evolved over the course of the performance, as we confirmed to each other afterward. Michael felt a little uncomfortable, but anxiety is a beautiful thing. I had played with both of them in a variety of settings and styles, and I chose them for Signal Flow for a specific reason. I had mixed feelings about rehearsing and was glad that scheduling conflicts prevented it. For this piece, I didn't want anything getting in the way of the truth of that moment: that moment, in that space, with that audience. A game plan might have produced a more "structured" or "successful" piece, but for me that would have been a failure. The piece was about being myself on stage for what was supposed to be 20 minutes. I later learned that the lighting technician hadn't followed my instructions, which were to kill the lights abruptly after twenty minutes. Instead, he waited 25 minutes and slowly faded them out; he felt uncomfortable cutting the lights while we were still playing. I had wanted a bold, subversive gesture to shut us up. But intention must always be sacrificed. Intention has to be played by the music, shaped, reborn, and dictated by it. How quickly can you let go of intention, as a

listener and as a player? How quickly can you let go of judgment and expectation?

On Criticism

“your opinion of me is none of my business” –Tiffany Austin

Paraphrasing Pat Metheny (Pryor, 2002): There are times when people love my work, and times when they don’t… I’m always happy if they enjoy it. But none of that has anything to do with my process; I’m my own worst critic. I’m not going to try to guess what you want to hear or what others might like. That would be dishonest. All I can do is satisfy the music fan inside of me. Metheny has said that he follows one compass only, the fan and listener that lives inside of him: “It is really important to stay to the fan that is within you” (Pryor, 2002).

Satisfying the music fan inside of me is my measure of success.

I enjoy reading negative criticism of well established musicians

Cecil Taylor has been criticized by people on youtube

https://www.youtube.com/watch?v=cP5L8tjnB6w.

andifyouhadtwocoats -“makes about as much sense as a wet fart”

Another internet troll about a Cecil Taylor piece “all those people who liked this must be on some serious drugs.. if this thing is a masterpiece, than i am the zombified corpse of jimi hendrix, just resting here and laughing at this asshole”

Professor Roscoe Mitchell has also received internet criticism

“ He needs to learn how to play the saxophone”

I expect to be criticized.

Someone once said, “Your opinion of me is none of my business.”

Conclusion

A lot of possibilities exist for new harmonic movement. Departing from strict diatonicism and embracing the options presented by modal borrowing, we can allow for the existence of multiple tritones in a key. Tritone substitution might be seen as the first hint at symmetrical harmony or multi-tonic tonality.

Who organizes chromatic harmony into a complete system? Is it accomplished by examining all possible modal borrowing and symmetrical options? I spend a lot of time thinking about music theory, particularly the possibility of a twelve-tone tonality, finding irregular chord changes that appeal to me. But how can these concepts be explained to the lay person, and what is their greater meaning?

Currently, the popular way to refer to chord changes references tonality. For example, II m7-V7-Imaj, or I-IIm-IIIm-IV-V-VIm-VIIm7b5—all directly reference the major scale. A new chromatic language would offer the harmonic possibilities of all twelve tones —

(I(C)-II(C#)-III (D)-IV (D#)-V(E)-VI(F)-VII(F#)-VIII(G)-IX(G#)-X(A)-XI(A#)-XII(B)). In this system a two-five-one would be stated as: IIIm7(Dmin7)-VIII7(G7)-Imaj7.

Making a clear distinction between tonal center and scale, I accept Schoenberg's idea that there should be 12 chromatic keys rather than 12 major and 12 minor keys. Chords like Db-9, Eb-9, and Gmaj7, for example, should be considered part of the key of C. Secondary dominants and their related II chords, tritone

substitutes and their related II chords, and the full use of modal borrowing together make it possible to maintain any key center through any chord built on any note of the chromatic scale. These secondary dominants, tritone substitutes, and related II chords should therefore be examined in relation to the key in which they actually occur. As it stands, they are treated as chords that don't belong to their key, and that understanding limits the ways they can function. They don't need to resolve to their "target" chords; they can be used in ways that involve no tonicization or "mini-modulation."

As Pat Metheny suggests, any note can be part of any chord, and the strongest evidence for this comes from the overtone series. Consider a Cmaj13 chord, with the tones C, E, G, B, D, and A. The strongest and most prominent feature of each tone is its perfect fifth, the first different tone of the overtone series. When we play a Cmaj13, each of those tones sounds its own perfect fifth, so C, E, G, B, D, and A also give us G, F#, D, A, and E. If we consider the next different note of the overtone series, the major third, our original chord of C, E, G, B, D, and A also gives us E, G#, B, Eb, F#, and Db. So when we sound a Cmaj13, we are in fact hearing C, E, G, B, D, A, F#, Db, and Eb. In this way we can expand our Cmaj13 to include all twelve tones. We could also examine the third different overtone of each pitch. The b7 would give us more chromatic tones, and we could play in our Cmaj13 some of the tones implied by the original pitches, such as the F#, which is the first different overtone of B and the second of D. If we play the F#, its first different overtone is Db, and its second is Bb. That brings the b7 (Bb) into our Cmaj13 chord.

The music of Ben Monder further exemplifies the theories I have discussed in these pages. Monder stands at the avant-garde of 21st century music, a music we have only begun to explore.

My own contribution to this exploration is the attempt to uncover the function of every chromatic chord within a key, and to fully work out the existing understanding of how chromatic pitches function in tonality. Which pitches point to dominant function, and which to subdominant and tonic function? In our fully chromatic world, which chords substitute for the II, which for the V, and which for the I? I believe we have to reexamine our notions of function in order to describe current and historical practice, the music as it actually sounds, accurately, and to clear a path for future methods not yet realized.

I like the concept of imaginary numbers: numbers that don't exist but result from operations on very real numbers. "An imaginary number is a number that can be written as a real number multiplied by the imaginary unit i, which is defined by its property $i2 = -1$. The square of an imaginary number bi is $-b2$" (Wikipedia).

Some things can't be seen, but we know they exist by observing other particles. In music and art, what came before us is a glimpse of the whole: something we can see that tells us something we can't see is there.

In the same way, tonality and tonal theory can be viewed as constructs that point to an order we don't yet understand. We know this order exists, but we know it only through our tonality and our concepts of tonality. As we evolve, so do our concepts; in each moment we see more and learn more about what we can't see. In early views of tonality, chromaticism is a small part of something larger, or a tool that helps us understand that there is a larger order.

One theory of gravity suggests that gravity affects other dimensions. We can't see those dimensions, but we think they exist because gravity appears to be weaker in our dimension than it should be.

An interesting experiment, first done in the 1800s, showed that people find a composite of many faces more attractive than any single real face. The experiment was repeated more recently by computer: when an average face is blended from many faces, people are generally more attracted to that fictional composite than to any specific real face.

In Haiti, enslaved people from different regions of Africa were mixed together. As a result, they created depictions of spirits that were composites of the spirits of every tribe, so that all could relate to the images and no tribe's spirituality was favored over another's.

The "wisdom of the crowd" shows the same phenomenon. A bowl of jelly beans sits at the front of a class, and each student guesses how many jelly beans are in it. Time and again, the average of all the guesses is more accurate than the individual guesses.

I'm just one version of a mixed-ethnicity man, born in Berkeley, California, in 1973, who took up the guitar at 13 and has been playing ever since. We are versions of people existing through time and space. Pat Metheny has said that the musicians he responds to most "show something about who they are, where they're from, what they love in music" (Reed, 2018), and that is what we are. But we are also variations of one another, each with our own role: separate individuals who form a not-so-separate collective, tempering individualism with a more communal appreciation. File sharing, sharing on the Internet, sharing ideas with people around the world, access to enormous amounts of information across time and space. I believe that art matters, that all artists matter, and that all artists are connected. I believe that a community of artists spanning space and time gives rise to great work. We all know Picasso painted his works as an individual, but it is our collective that is truly responsible for that work and all work: each of us exploring, developing, practicing, and creating

year after year, not just to express our individualism but to express our collectivism.

As Roscoe Mitchell put it: “We are dealing with a situation where something that is true in one environment is not true in another.” Are there universal truths? Can two conflicting realities be reconciled?

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Appendix A

Chromatic chords available via modal borrowing:

	I	**bII**	**II**	**bIII**	**III**	**IV**	**bV**	**V**	**bVI**	**VI**	**bVII**	**VII**
I	Imaj7 Ionian		II-7		III-7	IVmaj7		V7		VI-7		VII-7b5
II	I-7 Dorian		II-7	bIIImaj7		IV7		V-7		VI-7b5	bVIImaj7	
III	I-7 Phrygian	bIImaj7		bIII7		IV-7		V-7b5	bVImaj7		bVII-7	
IV	Imaj7 Lydian		II7		III-7		bV-7b5	Vmaj7		VI-7		VII-7
V	I7 Mixolydian		II-7		III-7b5	IVmaj7		V-7		VI-7	bVIImaj7	
VI	I-7 Aeolian		II-7b5	bIIImaj7		IV-7		V-7	bVImaj7		bVII7	
VII	I-7b5 Locrian	bIImaj7		bIII-7		IV-7	bVmaj7		bVI7		bVII-7	

Appendix B

Schoenberg's theory of chromatic tonality and its evolution:

...[We might] base our thought, not on the seven tones of major scale, rather, on the twelve of the chromatic scale. Such a theory could begin as follows.
I. The raw material of all forms produced by connecting of tones is a series of twelve notes. (That there are twenty-one note names here, and that their presentation begins with c, is consistent with and derives from our imperfect notation; a more adequate notation will recognize only twelve note names and give an independent symbol for each.)
II. From these twelve tones, different scales may be formed...:

twelve times seven church modes;

twelve major and twelve minor

a number of exotic modes (and the like) that are not used in the European art music, or very rarely at least; it is best to include here also the two whole-tone scales, which can refer to any of the twelve tones as fundamental;

twelve chromatic modes;

one chromatic mode

III. For the sake of stylistic and formal completeness, the characteristics that derive from the conditions peculiar to each scale are clearly worked out: Laws of tonality.
IV. Tonality is extended as follows:

a) through imitating and copying from each other, the keys become more similar to one another;

similar things are considered related and are under certain conditions treated as identical (for example, chords over the same root).

V. The reduction of the eighty-four church modes to twenty-four major and minor keys and the development of the relationship of these twenty-four keys to one another takes place as follows:
1. Horizontally
a) Relationship, resting on identically and similarly constituted chords, divides the church modes into those like major and those like minor.
b) The mutual imitation of cadences allows the major to incorporate everything from the major-like church modes and the minor everything from the minor-like church modes, and later also allows major and minor to approach one another so closely that they resemble one another from beginning to end.
c) Of the seven times eighty-four, i.e. 588, triads of the church modes, in part different, in part just differently related, a great many duplicate one another, hence are referred to a smaller number of keys, whereby seven times twelve, i.e eighty-four, chords are left, chords referred to two types of key (major and minor); each chord, however, is found in several major and minor keys;
d) the chord relationships mentioned under (a) and
e) that through common roots bring about closer ties with the keys that lie one, three, and four steps away in the circle of fifths;
f) by virtue of the smaller number of boundaries and the simplified character of the keys; by virtue of the multiple meaning of chords and scale segments and the extensive implications of this ambiguity; by virtue of the diminished triads that emerged from the necessities of the scale together with the corresponding seventh chord (free imitation of the natural triad) and their

imitation on other degrees— by virtue of all that the more remote keys are also made more accessible (those two, five, and six steps removed from the cycle of fifths).
2. Vertically: The vertical aspect assumes some of the burden of the horizontal by the use of four- and five-part chords. A seventh chord, since it introduces four tones of the scale, contributes a third more to the key definition than a triad, a ninth chord, two-thirds more.
VI. Transition from twelve major and twelve minor keys to twelve chromatic keys. This transition is fully accomplished in the music of Wagner, the harmonic significance of which has not yet by any means been theoretically formulated.
VII. The polytonal chromatic scale. (pp. 387-389)

Appendix C

Music reference to Pat Metheny's Internet lesson:



Appendix D

Melodic Minor starting on the II chord, using Dorian as a basis for its derivation, followed by parallel modes of melodic minor:

	I	**bII**	**II**	**bIII**	**III**	**IV**	**bV**	**V**	**bVI**	**VI**	**bVII**	**VII**
I		bII-7b5	II-M7		III-7	IVmaj7#5		V7		VI7		VII-7b5
II	I-7b5	bII-M7		bIII-7	IIImaj#5		bV7		bVI7		bVII-7b5	
III	I-M7		II-7	bIIImaj7#5		IV7		V7		VI-7b5		VII-7b5
IV		bII-7	IImaj7#5		III7		bV7		bVi-7b5		VII-7b5	VII-M7
V	I-7	bIImaj7#5		bIII7		IV7		V-7b5		VI-7b5	bVII-M7	
VI	Imaj7#5		II7		III7		bV-7b5		bVi-7b5	VI-M7		VII-7
VII		bII7		bIII7		IV-7b5		V-7b5	bVI-M7		bVII-7	VIImaj7#5

Harmonic Minor built on the VI chord and its parallel modes

	I	bII	II	bIII	III	IV	bV	V	bVI	VI	bVII	VII
I	Imaj7#5		II-7		III7	IVmaj7			bVIdim7	VI-M7		VII-7b5
II		bII-7		bIII7	IIImaj7			Vdim7	bVI-M7		bVII-7b5	VIImaj7#5
III	I-7		II7	bIII7			bVdim7	V-M7		VI-7b5	bVIImaj7#5	
IV		bII7	IImaj7			IVdim	bV-M7		bVI-7b5	VImaj7#5		VII-7
V	I7	bIImaj7			IIIdim7	IV-M7		V-7b5	bVImaj7#5		bVII-7	
VI	Imaj7			bIIIdim7	III-M7		bV-7b5	Vmaj7#5		VI-7		VII7
VII			IIdim7	bIII-M7		IV-7b5	bVmaj7#5		bVI-7		bVII7	VIImaj7

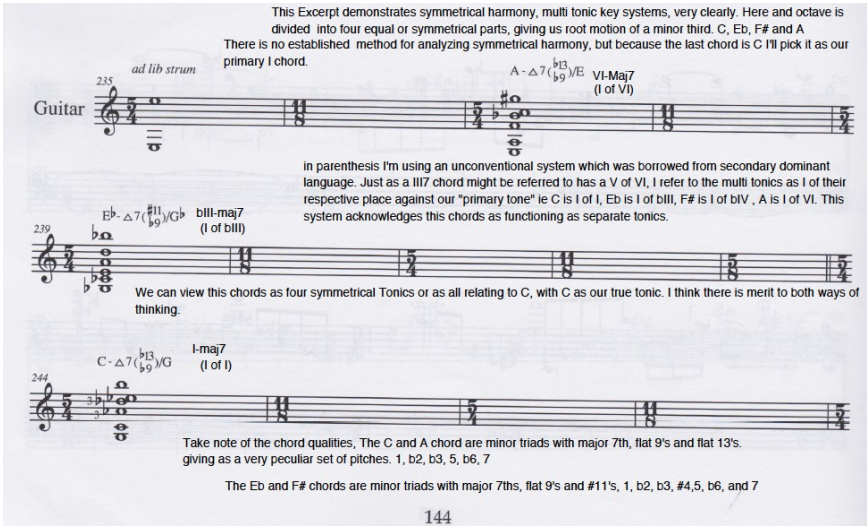
Altering the diatonic scale by lowering notes:

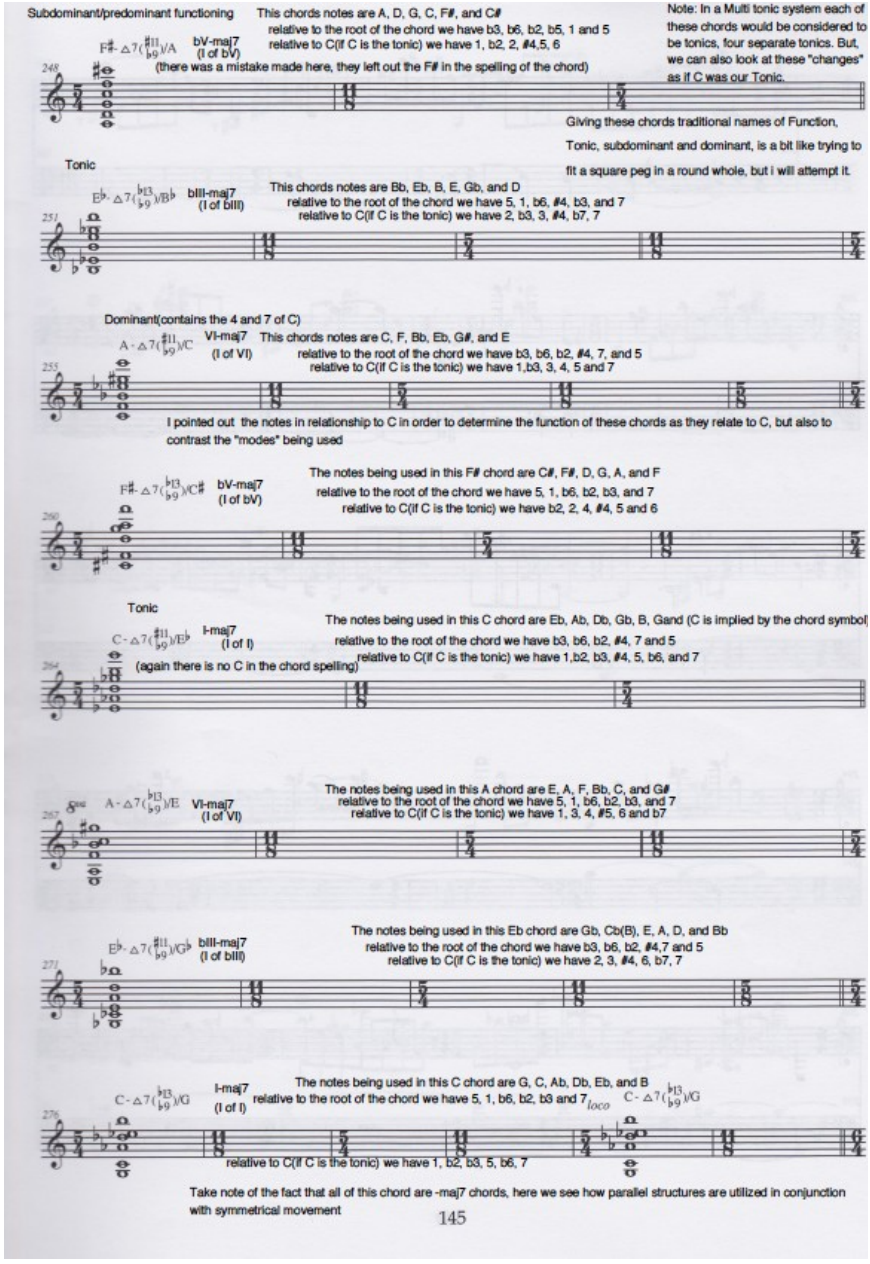
	I	bII	II	bIII	III	IV	bV	V	bVI	VI	bVII	VII
1 raised note												
	Imaj7		II-7		III-7	IVmaj7		V7		VI-7		VII-7b5
		#Ialt	II-7	bIIImaj7		IV7		V-7		VI-7b5	bVIImaj7	
	Imaj#11			bIII7		IV-7		V-7b5	bVImaj7		bVII-7	
	Iionian#5		II7		III-7		bV-7b5	Vmaj7		VI-7		VII-7
1 lowered note												

	I melodic Min		II-7		III-7b5	IVmaj7		V-7		VI-7	bVIImaj7	
	Iionianb6		II-7b5	bIIImaj7		IV-7		V-7	bVImaj7		bVII-7	
2 raised notes												
		#I7b9b#9b13		bIII-7		IV-7	bVmaj7		bVI7		bVII-7	
	Lydian #5											
2 lowered notes												
	I-M7b5											
	I harmonic minor											

Appendix E

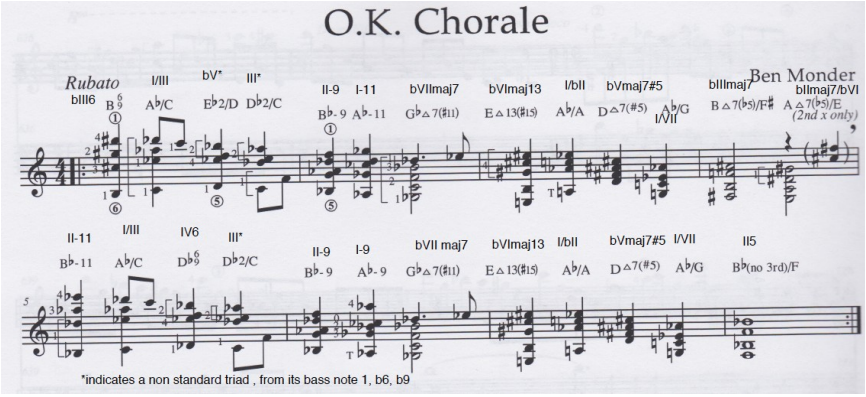
An excerpt from Ben Monder's *Oceana* (Monder, 2008, pp. 144-145):




Subdominant/predominant functioning
This chords notes are A, D, G, C, F#, and C#
relative to the root of the chord we have b3, b6, b2, b5, 1 and 5
relative to C(if C is the tonic) we have 1, b2, 2, #4,5, 6
(there was a mistake made here, they left out the F# in the spelling of the chord)
bV-maj7
(I of bV)
Note: In a Multi tonic system each of these chords would be considered to be tonics, four separate tonics. But, we can also look at these "changes" as if C was our Tonic.
Giving these chords traditional names of Function,
Tonic, subdominant and dominant, is a bit like trying to
fit a square peg in a round whole, but i will attempt it.
Tonic
bIII-maj7
(I of bIII)
This chords notes are Bb, Eb, B, E, Gb, and D
relative to the root of the chord we have 5, 1, b6, #4, b3, and 7
relative to C(if C is the tonic) we have 2, b3, 3, #4, b7, 7
Dominant(contains the 4 and 7 of C)
VI-maj7
(I of VI)
This chords notes are C, F, Bb, Eb, G#, and E
relative to the root of the chord we have b3, b6, b2, #4, 7, and 5
relative to C(if C is the tonic) we have 1,b3, 3, 4, 5 and 7
I pointed out the notes in relationship to C in order to determine the function of these chords as they relate to C, but also to contrast the "modes" being used
bV-maj7
(I of bV)
The notes being used in this F# chord are C#, F#, D, G, A, and F
relative to the root of the chord we have 5, 1, b6, b2, b3, and 7
relative to C(if C is the tonic) we have b2, 2, 4, #4, 5 and 6
Tonic
I-maj7
(I of I)
The notes being used in this C chord are Eb, Ab, Db, Gb, B, Gand (C is implied by the chord symbol)
relative to the root of the chord we have b3, b6, b2, #4, 7 and 5
relative to C(if C is the tonic) we have 1,b2, b3, #4, 5, b6, and 7
(again there is no C in the chord spelling)
VI-maj7
(I of VI)
The notes being used in this A chord are E, A, F, Bb, C, and G#
relative to the root of the chord we have 5, 1, b6, b2, b3, and 7
relative to C(if C is the tonic) we have 1, 3, 4, #5, 6 and b7
bIII-maj7
(I of bIII)
The notes being used in this Eb chord are Gb, Cb(B), E, A, D, and Bb
relative to the root of the chord we have b3, b6, b2, #4,7 and 5
relative to C(if C is the tonic) we have 2, 3, #4, 6, b7, 7
I-maj7
(I of I)
The notes being used in this C chord are G, C, Ab, Db, Eb, and B
relative to the root of the chord we have 5, 1, b6, b2, b3 and 7
loco
relative to C(if C is the tonic) we have 1, b2, b3, 5, b6, 7
Take note of the fact that all of this chord are -maj7 chords, here we see how parallel structures are utilized in conjunction with symmetrical movement
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Appendix F

Excerpt from Ben Monder's *OK Chorale* (Monder, p. 168)



Appendix G

Alexander Graham's rendition of *All the Things You Are*.



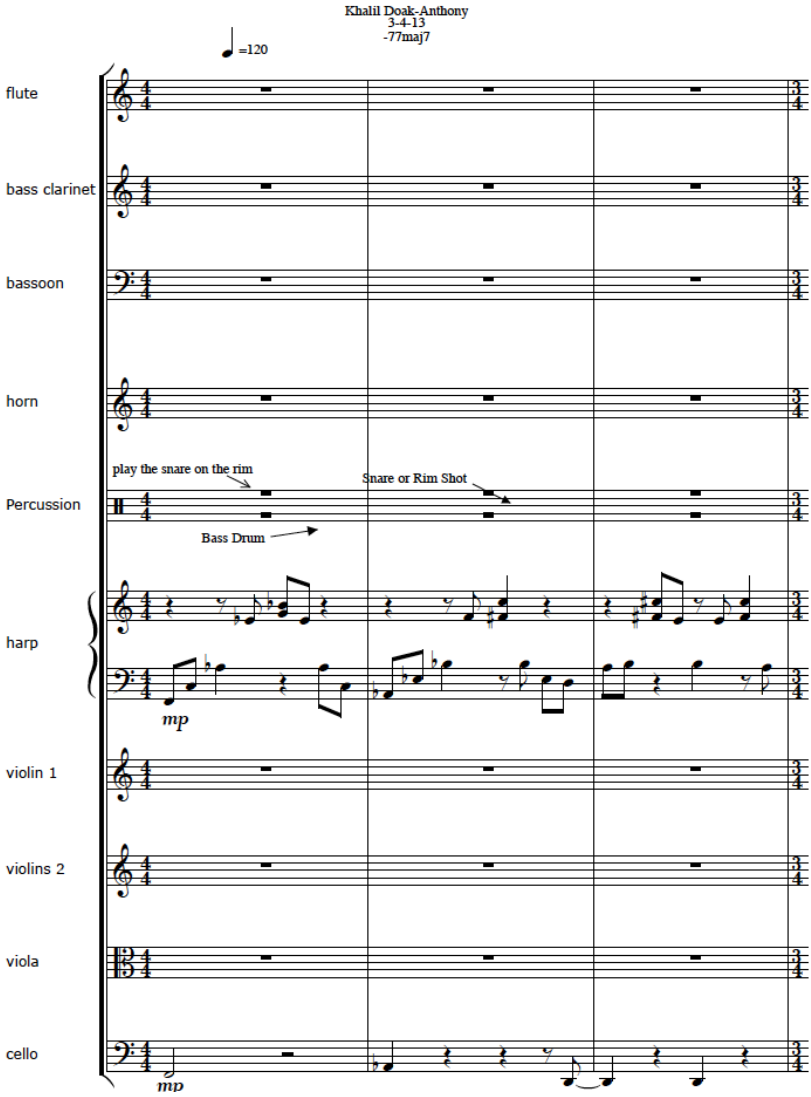

All the Tones You Are
#4/ Graham (Derived from 4th hour)
#1236b/ Slonimsky (diverging whole-tone spiral)
#5/ Graham (9th hour)
#1236b/ Slonimsky (diverging whole-tone spiral)
#1299/ Slonimsky (combines 9th hour and 2nd hour)
#6/ Graham (consecutive 4ths)
#1290/ Slonimsky
#7/ Graham (dimished tetrachords)
3rd chorus
#734/ Slonimsky
#8/ Graham
#9/ Graham (inspired by Slonimsky #754)


CMAJ7
C-7
F-7
#417/ Slonimsky
Bb7(b9)
80
EbMAJ7
AbMAJ7
A-7
D7
GMAJ7
#508/ Slonimsky
84
GMAJ7
A-7
#370/ Slonimsky
D7
88
GMAJ7
F#-7
#415/ Sloinimsky
B7
92
EMAJ7
C7#5
F-7
Bb-7
96
Eb7(b9)
AbMAJ7
DbMAJ7
Db-7
Scale #12, Pattern #1 with complimentary scale/ Slonimsky
99
#1229a/ Slonimsky (variation)
B°IM7
Bb-7
Eb7
103
#10/ Graham (3 major and 1 minor triad)
AbMAJ7
GM7(b5)
C7(b9)
F-7
FINE
107

Appendix H

“-77maj7”

(First six pages of a 40-page score. The harmony repeats over and over, but the harmonic rhythm changes.)


Khalil Doak-Anthony
3-4-13
-77maj7
=120
flute
bass clarinet
bassoon
horn
play the snare on the rim
Snare or Rim Shot
Percussion
Bass Drum
harp
mp
violin 1
violins 2
viola
cello
mp



2



3



3


mf
mf
Rim Shot
mf
mf
mf
4



5



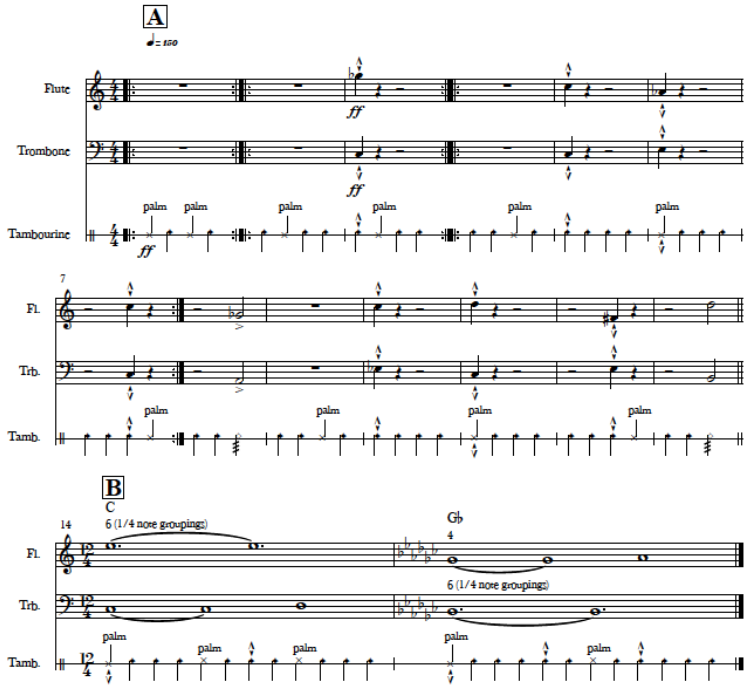
6

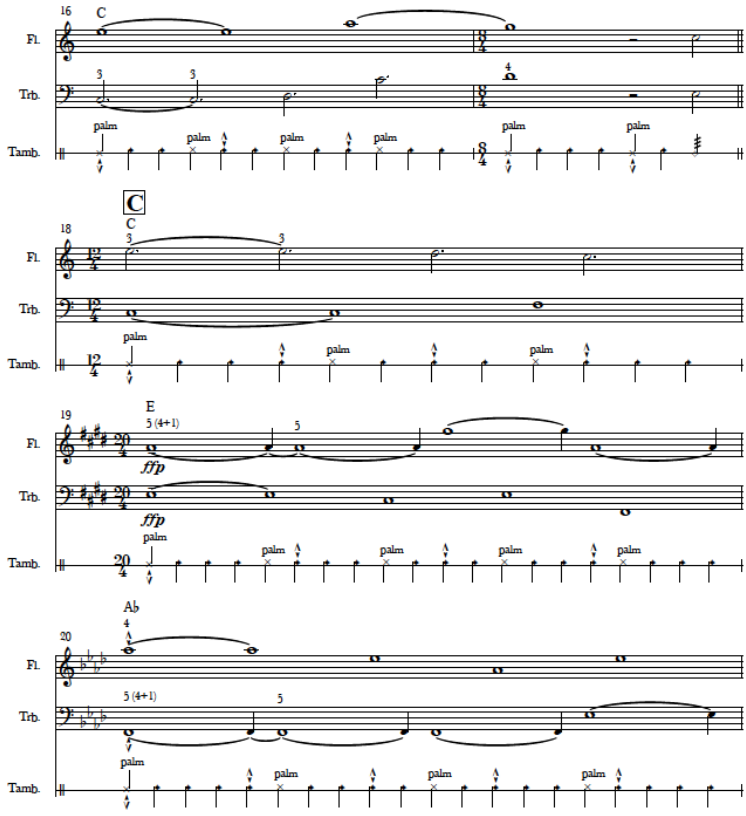
Appendix I

“Trio”

Trio

Khalil Doak-Anthony

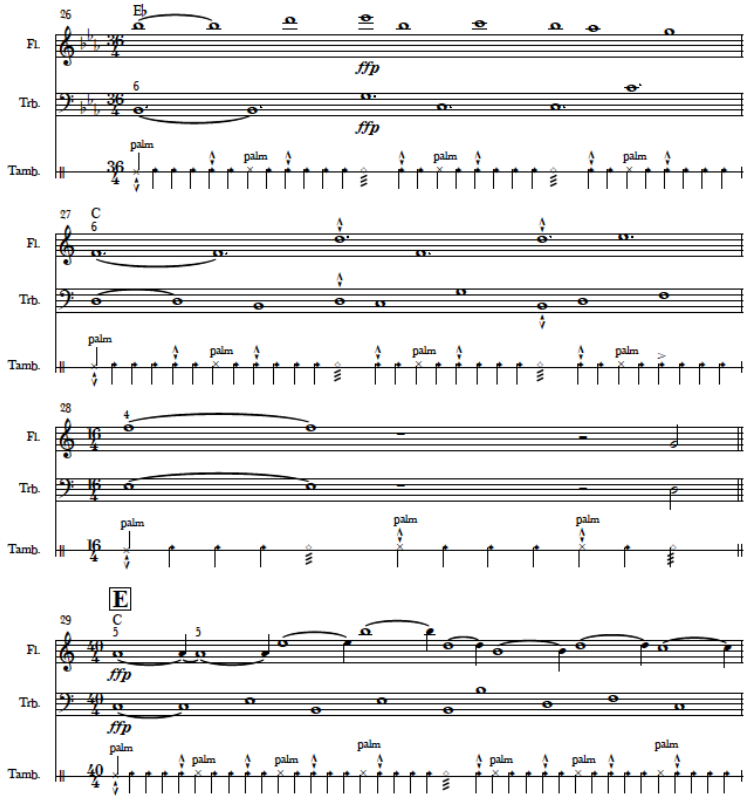




2



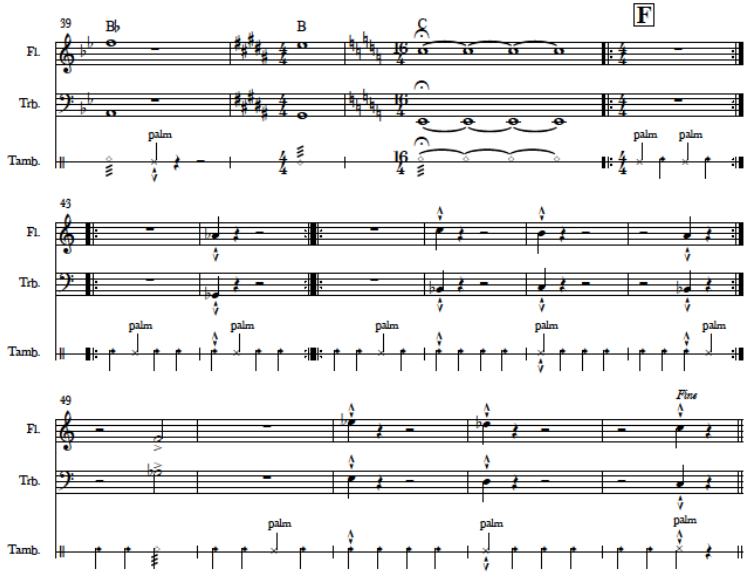
3



4



5



6

Appendix J

“Orchestration”

Orchestration

Subtitle

Khalil Doak-Anthony




B
11
Fl.
Vln. I
Vln. II
Vla.
Cell.
mf
p
fff
fff
pizz.
f
16
mf
22
5
mf



3


39
Fl.
Vln. I
Vln. II
Vla.
Cell.
f
pp pp f
p
pp
46
mf
vib.
D
53
5
sul ponc.
sul pont.


58
Fl.
Vln. I
Vln. II
Vla.
Cell.
64
Fl.
Vln. I
Vln. II
Vla.
Cell.
col legno
mf
col legno
mf

5


E
69
♩= 153
flutter-tongue
normale
flutter-tongue
Fl.
Vln. I
Vln. II
Vla.
Cell.
pizz.
74

6


79
normale
flutter-tongue
5
Fine
Fl.
Vln. I
Vln. II
Vla.
Cell.
p
fff
f
mf
fff

TONAL GRAVITY

The Unseen Order



Khalil Doak-Anthony

Artwork by Doris Neidl