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Journey to the Flat Side

dualism, subdominants, stacked fourths, pentatonics, and the ‘musical left’

A dissertation submitted in partial satisfaction of the requirements for the degree Doctor of
Philosophy in Musicology

by

Marissa Leigh Steingold

2016

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ABSTRACT OF THE DISSERTATION

Journey to the Flat Side:

dualism, subdominants, stacked fourths, pentatonics, and the ‘musical left’

by

Marissa Leigh Steingold

Doctor of Philosophy in Musicology

University of California, 2016

Professor Robert W. Fink, Chair

My dissertation examines several interconnected binaries in music theory: flat/sharp, subdominant/dominant, and minor/major. Traditional theory positions the marked member of each pair (flat, subdominant, and minor, respectively) conceptually LEFT, DOWN and OUTSIDE of the privileged term (sharp, dominant, and major), leading to further marginalization. In my theoretical, historical, analytical and aesthetic inquiry into the ‘musical left,’ I take on Riemannian dualism, mirroring, flat side transformations, stacked fourths, and the pentatonic scale.

My deconstruction of 19th century major-minor dualism reveals the surprising “Othering” of the minor mode. Mirroring—from fugues to Riemannian dualism—cannot fully integrate

with a ground-up, hierarchical practice like tonality; twentieth-century atonal musics constitute better vehicles for sustained, pure inversions.

Unlike ‘structural’ authentic cadences, the subdominant is analyzed by Schenkerians as ‘surface-level’ embellishment, but I assert that composers use autonomous applied plagals to go the ‘wrong way’ around the circle of fifths. In contrast to applied dominants, secondary subdominants—the flatted seventh double plagal, the triple plagal “backdoor” cadence, and the flatted sixth quadruple subdominant—have rarely been studied. For composers of these structures, going flat serves revolutionary ends.

Stacked fourths—commonly misinterpreted as purposeless for their tendency to “plane” non-functionally—are used by McCoy Tyner in “Blues on the Corner” to target the subdominant in what I term a “trapdoor cadence.” My taxonomy of stacked fourth chords leads to an analysis of Paul Hindemith’s ic-5 crossing over in *Mathis der Maler*. Motion in the flat direction is usually right to left—that is, it represents *tracking back* to the tonic-in-the-past, but by traveling 23 steps into the flatside, Hindemith transforms the past into the future. Quartals are the ideal vehicle for this kind of time travel, for they represent both the past (rustic antiquity) *and* the future (technological progress).

Some theorists and composers have treated the ic-5/7 pentatonic scale as ‘incomplete’ or primitive, but I present compositions, such as John Coltrane’s *A Love Supreme*, that use segmented pentatonics as building blocks for ic-5 cyclic completion. Since pentatonic melodies are commonly accompanied by non-pentatonic harmonies (the so-called “melodic-harmonic divorce”), I propose a system of melodic-harmonic differentiation, as practiced by African-

American musicians. I believe that this refusal to succumb to organic unity mimics heterophony, in which the individual stands out from the group.

The dissertation of Marissa Steingold is approved.

Dariusz Terefenko

Tamara Levitz

Mitchell B. Morris

Robert W. Fink, Committee Chair

University of California, Los Angeles

2016

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Writing a dissertation that makes for *terrible* cocktail party fodder can be alienating to those around us, but my fiancé, Tom, nodded his head encouragingly while I drew nonsensical charts, arrows, and chord symbols for him. Long after we’ve solved the riddles of subdominants and quartals, the eternal mystery of how I got lucky enough to meet this guy will remain unsolved.

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VITA

Education

- 2000 M.M., Jazz Vocals and Composition, New England Conservatory of Music
1998 B.A., High Honors, Music (Composition), Princeton University

Grants and Awards

- 2015 CUTF Fellowship, UCLA
2012 Mellon Dissertation Year Fellowship, UCLA
2009 Mellon Fellowship, UCLA
1998 Sachs prize for “most outstanding performer at Princeton University”
1998 Downbeat award for “best college small group” with Princeton University Monk/Mingus Ensemble
1988 Selected for a Greenpeace Air Pollution World Conference in U.S.S.R.

Conferences

- 2013 American Musicological Society Annual Conference
2013 EMP Conference, USC
2012 Harvard Music Technology Conference
2011 EMP Conference, UCLA

Music Industry

- 2007- Studio Vocal Contractor and Arranger for film, television, and trailers.
2002- Solo vocalist/pianist in numerous major motion pictures, television shows, national and global commercial television commercials, and trailers. Was Hilary Duff’s actual “virtuosic” classical/pop singing voice in 2004 film *Raise Your Voice* and sang featured solos in *Rendition* (2007), *Into the Wild* (2007), *Edison* (2004), *The Haunting in Connecticut* (2009), *The Blessing* (2012), *Jerusalem* (2013), *Dysfunction* (2015) and television shows *The Newsroom*, *Dexter*, *Alphas*, *Deadliest Catch*, *Day Break* and *Earthsea*.

2006- Freelanee Accompanist and choir director for churches and synagogues, including *Beit T'Shuvah* (high holidays 2008-11), *Ahavat Shalom*, Hollywood *Beth-El* and others. Accompanied and coached multiple cantors and professional singers.

2007-11 Music Director, Pasadena Christian Church

Languages

French

Swedish

Spanish (reading)

German (reading)

Professional Memberships

American Musicological Society

Society for Music Theory

AUTHOR'S NOTE

In this dissertation, I will show how conceptual metaphors for tonal structures such as LEFT/RIGHT, UP/DOWN and CONTAINER betray the pervasive sharp-side bias in nineteenth- and twentieth-century music theory. Each of the following chapters is devoted to the historical and analytical exploration of a particular tonal practice on the “flat side,” re-imagined as opposite but equal. After situating the parameters of the ‘musical left’ in the Introduction, we will perform a deconstruction of major-minor dualism and mirroring in Chapter 1. Establishing the inherent non-invertibility of tonal compositions, I suggest that oppositions of major and minor chords offer a sense of inversion without destroying tonal function. Sifting through Hugo Riemann’s multiple categories of major/minor chordal “opposites,” we investigate *dualistic klänge* and “apparent consonances.”

Doggedly maintaining the acoustic and conceptual superiority of the major over the minor and the authentic over the plagal, Schenker insisted similarly upon the superiority of man over woman. If minor is nothing but a coloration or temporary dissonance, as Schenker would have it, then why would major condescend to borrow from such a lowly structure? While the goal of Hugo Riemann and Moritz Hauptmann’s nineteenth-century dualism was the equal and opposite treatment of both major and minor scales, the dualists ironically privileged the major through illogical minor mirrorings, undertones, the awkward fifth-degree generation of the minor, and the advancement of the affective HAPPY/SAD binary. But if the dualists had succeeded in overturning the negative connotation of minor, then what expressive value, if any, would the mode have for composers or theorists?

While the jury is still out on harmonic dualism's relevance to nineteenth-century tonal compositions, Riemann's "utopian" predilection for modal mixture and inversional symmetry was realized *ex post facto* by twentieth-century composers of post- and non-tonal music. In the second part of this chapter, we consider music in which polarity and analytical mirroring techniques bear substantial fruit. Abandoning traditional tonality as an organizing force, many twentieth-century composers looked instead to tonal mirroring for structural integrity. In particular, I will argue that the music of Béla Bartók represents a modal culmination of Riemann's dualistic prescriptions.

In the various twentieth-century theories of polarity conceived by Igor Stravinsky, Arthur Berger, Joseph Straus, Ernő Lendvai, and Richard Cohn, traditional major-minor or subdominant/dominant polarity is replaced by a proliferation of polar "opposites." I invert George Russell's ic-7 generated "Lydian Chromatic Concept" to produce the dualistic Lydian/Locrian opposition found in Béla Bartók's *Mikrokosmos* 121. Finally, we reflect upon the "M Transformation," a Rosetta Stone for interval classes—but a nihilist for traditional musical meaning.

Chapter 2 focuses on subdominant functions and the plagal axis, from the Lydian mode to the triple plagal "backdoor cadence" and quadruple plagal flattened sixth. In Part I, we trace the history of the subdominant, noting how Rameau's "*sous-dominante*"—equal and opposite to the "*sur-dominante*"—was reduced to superficial embellishment by subsequent theorists such as Heinrich Schenker. This excursus prepares us for a discussion of chromatic sequences of fourths and fifths, which tend to challenge tonal hierarchy. Ascending fourth sequences that *backtrack* toward the tonic are substantially more common in extended common practice than ascending fifths, leading theorists like August Halm and Paul Scott Carter to label them "authentic,"

“clockwise,” and “progressive.” But I maintain that rising fourth figures can also be heard as a chain of subdominants, beginning on the tonic and moving deeper into the flat realm. Since flat side travel is expected to move *back* toward the tonic, it often conveys a certain notion of *déjà-vu*—even when staking out new flatside ground.

In Part II: *A Typology of the Flat Domain*, we detail the major, minor, and Dresden *Amen Cadences*, as well as “split” eleventh chords straddling subdominant and dominant functions in Antonín Dvořák’s *New World Symphony* and Bonnie Raitt’s “Nick of Time.” The Lydian scale’s gradual emancipation from temporary subdominant mode to tonic is also catalogued, from Beethoven’s “Lydian” Adagio String Quartet in A Minor, Op. 132, to Frank Loesser’s “Never Will I Marry,” Claude Debussy’s “*La Flûte de Pan*,” and television themes *The Jetsons* (Hoyt Curtin) and *The Simpsons* (Danny Elfman).

We examine blues IV7 chords, the triple plagal “backdoor” cadence, and the flatted sixth quadruple plagal in preparation for our final case studies, two songs by Elton John: “Burn Down the Mission” and “Someone Saved My Life Tonight.” I maintain that John harnesses the flatside to illustrate revolutionary “leftist” tendencies, as well as a difference of sexual orientation.

Chapter 3 will encounter transformations of stacked fourths—a manifestation of the perfect fourth (ic-5) cycle. The distinction between tertian and quartal is murky, perhaps due to the theoretical confusion surrounding the meaning of a third: is it a unit of absolute measurement (i.e. ic-3 or ic-4), or is it relevant anytime a scale skips a step? Olivier Messiaen’s asymmetrical “chord in fourths” and Alexander Skryabin’s “Mystic chord” containing perfect, augmented, and diminished fourths, could be viewed as quartals *or* non-quartals, depending on the scale of generation and the analyst’s definition of a “fourth.” For Paul Hindemith, whose system of

chordal taxonomy was inspired by medieval theory, quartals including tritones are classified differently from perfect ones.

Arnold Schoenberg discovered that a stack of perfect fourth quartals could generate all twelve tones—a useful trick for a composer with tendencies toward aggregate completion, and Nicolas Slonimsky demonstrated how the cycle of fourths—occupying twelve tones over five octaves—could be “interpolated” and “extrapolated” with extra notes.

Frustrated by inaccurate tertian interpretations of quartals, musicologist Philip Tagg recently invented a quartal taxonomy that no longer labels a fourth degree a “suspension.” A disbelief of suspensions permeates the works of Wayne Shorter and Herbie Hancock, in which cyclic quartals often masquerade as tertians. First, we consider Keith Waters’ analysis of Wayne Shorter’s “Pinocchio,” as well as jazz tendencies toward the non-triadic “color tones.” Next, we discuss Herbie Hancock’s “Maiden Voyage,” which accomplishes ic-5 cyclic completion.

While “planing” quartals, such as those in Erik Satie’s *Prélude: la Vocation: le Fils des Étoiles*, strike some theorists as aimless, I demonstrate how Satie accomplishes full cyclic closure through “out of phase” tritone segmentation. With his extensive quartals in “Blues on the Corner,” McCoy Tyner targets the subdominant in what I term a “trapdoor cadence.” We also discuss omitted quartals, culminating in a passage from Béla Bartók’s String Quartet #2: *Lento Assai*, in which telescoping quartals showcase the importance of registral contractions in cyclic works.

Hindemith’s dramatic flatward ic-5 journey in “*Grablegung*” represents the (death and) resurrection of Christ, for the uncannily extreme flatward motion suggests a crossing over from the natural death to supernatural life. Motion in the flat direction is usually right to left—that is,

it represents *tracking back* to the tonic-in-the-past, but by traveling deep into the flatside, Hindemith transforms the past into the future. Quartals are the ideal vehicle for this kind of time travel, for they can represent both the past (rustic antiquity) *and* the future (technological progress). We ultimately return to the introduction from *Star Trek*, in which ic-5 quartals align with the ic-4, or major-third cycle.

Tonal theorists have maligned the pentatonic scale—representing the first five pitches of the ic-5/7 cycle—as ‘incomplete’ and primitive, but in Chapter 4, I present compositions, such as John Coltrane’s *A Love Supreme*, that use pentatonics as ic-5 building blocks. Since pentatonic melodies are commonly accompanied by non-pentatonic harmonies (the “melodic-harmonic divorce”), I propose a system of melodic-harmonic differentiation, as practiced by African-American musicians. I believe that this refusal to succumb to organic unity mimics heterophony, in which the individual stands out from the group.

First, we discuss the supposed African origin of African-American pentatonic scales, as well as tuning considerations before moving to my system of pentatonic stratification. In the 1960’s, pentatonic modal mixtures combined the 1950’s soul feel with a darker minor sound. A closer look at three songs of the era: The Miracles’ “Shop Around” (1960), James Brown’s “Cold Sweat” (1967), and Norman Whitfield’s “I Heard it through the Grapevine” (1966) will demonstrate ways in which 1960’s songwriters bridged the gap between major and minor pentatonics, aligning with the “sweet” major gospel sound and the “sanctified” minor blues style.

In the second part of the chapter, I discuss the stratified “horizontal” approach—the combination of a static melodic scale amidst chord changes—which I liken to Amiri Baraka’s notion of the “changing same.” In Van Halen’s “Right Now,” the pentatonic is treated as a

marker of the ‘primitive,’ but in Hancock’s “Cantaloupe Island,” the pentatonic is not childish, nor does it require heptatonic completion.

To illustrate the “vertical” approach—involving melodies that shift to accommodate chord changes—we analyze Chick Corea’s tetratonic verticality in “Steps.” Finally, we delve into John Coltrane’s *A Love Supreme*, which, through tritonic segmentation and a mixed horizontal and vertical approach, achieves cyclic completion of all twelve tones. The segmentation also reflects an African partitioning of “male” and “female” voices, which, together provide a sense of completeness.

In the Conclusion, I analyze an outlier chord progression: Jimi Hendrix’s rendition of “Hey Joe,” which ascends by fifths from the quadruple subdominant to the tonic. I ask what might happen if the marginalized flat side were to become the equal of the sharp side. Musical exceptionalism suggests that the marginalized practitioners of the flat side might prefer to remain outlaws.

A note about the musical examples

In this dissertation, both popular musics—from television & film, jazz, soul, and Tin-Pan Alley—and concert musics—ranging from Bach to Bartók—will be discussed. In the twentieth century, networks of musicians were not confined to genre or nationality. Due to advances in recording technologies, information exchange and travel, musicians across the globe remained in constant contact. Therefore, I do not separate my musical examples according to genre, for I believe they all employ the common language of what theorist Dmitri Tymoczko calls the

“extended common practice.”¹ Investigating musics from multiple traditions, I intend to reveal the remarkable flexibility of these flat side structures, arguing that they are crucial for the understanding of a new, dualistic “common practice.

¹ Tymoczko writes: “Rather than focusing narrowly on the eighteenth and nineteenth centuries (the so-called “common practice period”), I attempt to identify an “extended common practice” stretching from the beginning of Western counterpoint to the music of the recent decades. The point is to retell the history of Western music in such a way that the tonal styles of the last century—including jazz, rock, and minimalism—emerge as vibrant and interesting successors to the tonal music of earlier periods.” *A Geometry of Music*, p. 4.

INTRODUCTION: THE SINISTER MUSICAL LEFT

Owing to the importance of the minor seventh in the harmonic series (B flat, note 7), it is ‘easy’ and indeed ‘defeatist’ to fall into the subdominant; quite possible to stay in the tonic, by ‘optimistically’ insisting on the major seventh (note 15) and extremely ‘difficult’ to rise into the dominant, insisting on the ‘optimistic’ version of note 11 (F sharp) against the ‘pessimistic’ version of it (F Natural) and the ‘defeatist note’ (B flat). Hence, the sharp fourth, F Sharp, acts as an accessory and more powerful major seventh on the dominant, its semitonal tension towards the dominant being alone capable of performing the heroic task of lifting us into the key of the dominant...Functioning in this way, the sharp fourth obviously expresses the same violent longing (upward semitonal tension) as the major seventh, but not in a context of finality; rather in a context of pushing outwards and upwards, aspiring toward something higher. It is significant that the use of the note in this way reached a climax with Beethoven and his intense humanistic aspirations.

By contrast, the normal fourth preserves the *status quo*, keeping the music in the tonic key.

-DERYCK COOKE, *THE LANGUAGE OF MUSIC*, 1959²

IN WESTERN MUSIC, THE “HEROIC ASCENT” INTO THE DOMINANT IS CELEBRATED, WHILE THE “DEFEATIST” SLUMP INTO THE SUBDOMINANT IS MARGINALIZED.³ THE SHARP SIDE BUILDS ITS MANIFEST DESTINY THROUGH EXPANSION TO NEW KEYS ALONG THE CIRCLE OF FIFTHS, BUT WHAT OF THE FOURTHS-GENERATED FLAT SIDE? IS IT FATED TO FALL HELPLESSLY BACK TO THE TONIC KEY, OR COULD IT STAKE OUT NEW GROUND? AND IF SO, COULD THERE BE OTHER, HEROIC VOYAGERS TO THE FLAT SIDE?

Tonal theory has, for its own reasons, focused on sharp-side dominants and their extensions, but if we were to investigate the flat side with similar vigor, reengaging with the dualistic tonal models that predate the Schenkerian turn, what secrets would be revealed? My dissertation will examine several interconnected binaries in music theory: flat/sharp,

² Deryck Cooke. *The Language of Music*. London: Clarendon Press, 1959, p. 81.

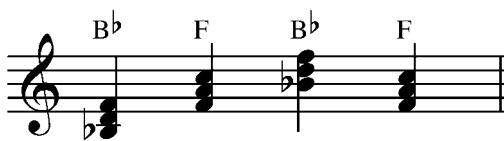
³ Robert Fink has discussed how the “subdominant collapse” in Beethoven’s Ninth signifies the failure of a “Beethoven antihero, the Faustian purveyor of sublime eroticized violence.” See “Beethoven Antihero: Sex, Violence, and the Aesthetics of Failure, or Listening to the Ninth Symphony as Postmodern Sublime.” *Beyond Structural Listening: Postmodern Modes of Hearing*, ed. Andrew Dell’Antonio, Berkeley and Los Angeles: University of California Press, 2004, p. 124 and 135.

subdominant/dominant and minor/major. In the first part of this introduction, I will show how conceptual metaphors for tonal structures like LEFT/RIGHT, UP/DOWN and CONTAINER betray the pervasive sharp-side bias in twentieth-century music theory. I will then lay out the terms of a theoretical, historical, analytical and aesthetic inquiry into the extended flat side of tonality, taking on in turn: Riemannian dualism; mirroring; flat side transformations; stacked fourths; and the pentatonic scale.

Right and wrong:

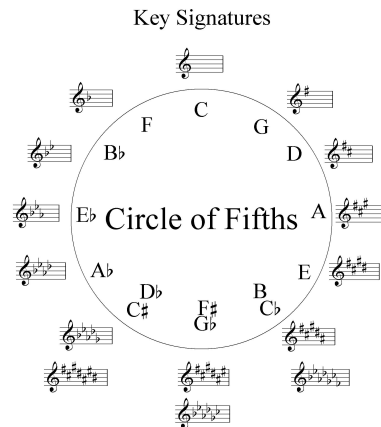
Let us begin with a thought experiment designed to introduce the basic scheme governing the way we conceptualize flats and sharps. Imagine two closely related major keys: B^b and F. How might we configure them mentally? Most musicians will first attempt to place the two chords on a high-low axis. But since we haven't specified the octave in our exercise, we cannot simply declare F major *higher* than B^b. (*ex. 1*)

Example 1: Is B^b major lower or higher than F?



Most Western-trained musicians would resort to the traditional visualization of a circle (*fig. 1*), which positions B^b “one flat” away from F. In this orientation, B^b is understood as left rather than right and counterclockwise rather than clockwise; thus, metaphorically, B^b happened *before* F, B^b is *beneath* F, and a move from F to B^b might seem *regressive*.

Figure 1: The Circle of Fifths



In *Metaphors We Live By* (1980), George Lakoff and Mark Johnson influentially argued that position-related metaphors—such as ‘the FUTURE is to the RIGHT’ and ‘UP is better than DOWN’—facilitate extensive conceptual networks and cross-domain mappings.⁴ For example, we take for granted that periodic vibration at 440 Hz is ‘higher’ than at 439 Hz, but Andrew Barker claims that this high-low spatial metaphor was not mapped onto musical pitch in ancient Greece; thus, ancient Greeks would consider 440 Hz ‘sharper’ than 439 Hz—not higher; Lawrence Zbikowski hypothesizes that the HIGH/LOW visual metaphor was a response to polyphonic development in the West beginning in the tenth century.⁵ A millennium later, it is nearly impossible to separate our concept of musical pitch from a metaphorical HIGH/LOW axis: we climb the scale; sopranos are lauded for their angelic purity, and lyrical melodies soar like birds or airplanes.

⁴ Lakoff, George & Johnson, Mark. *Metaphors We Live By*. Chicago: University of Chicago Press, 1980.

⁵ Andrew Barker, ed. “Introduction to Harmonic and Acoustic Theory.” *Greek Musical Writings* Vol. 2. Cambridge Readings in the Literature of Music. Cambridge: Cambridge University Press, 1989, p. 69. Lawrence Zbikowski. *Conceptualizing Music*. Oxford: Oxford University Press, 2002, p. 63.

Figure 2a: Piano Fingering System

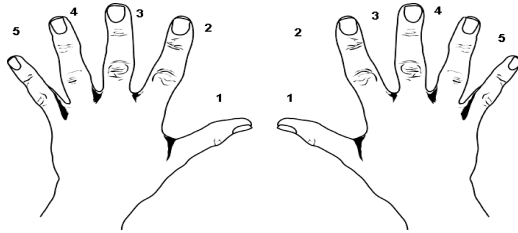
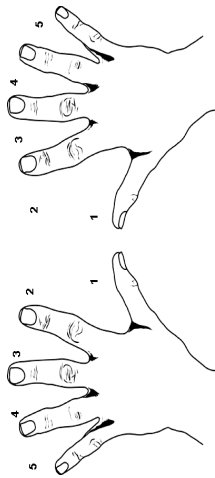


Figure 2b: Verticalization of Left-Right

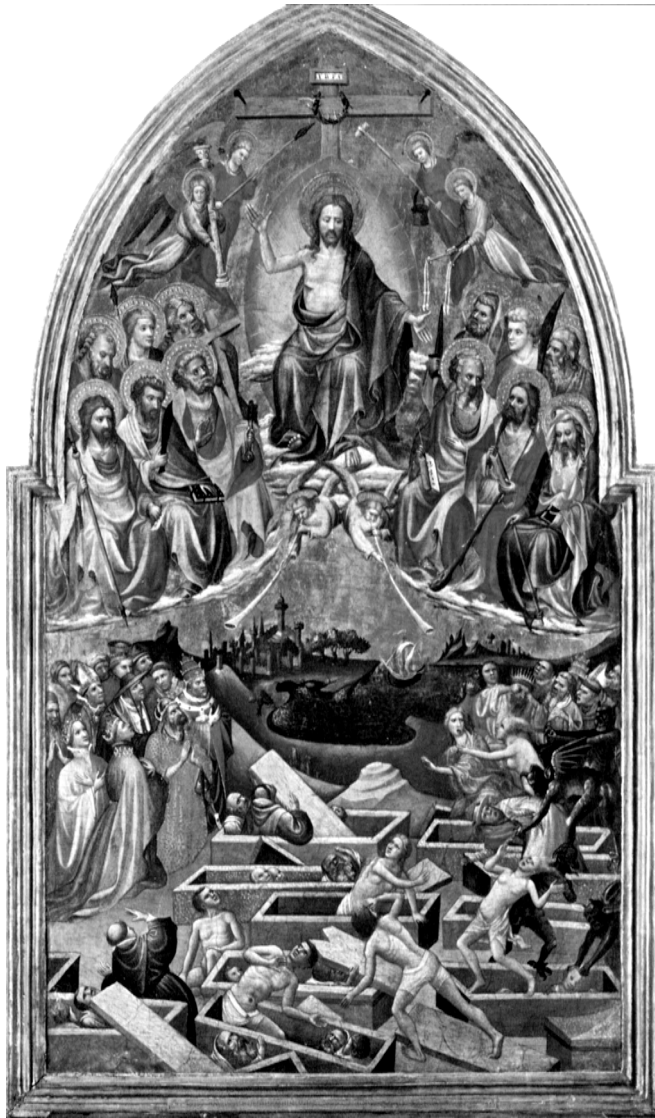


How then does ‘UP and DOWN’ become ‘LEFT and RIGHT’? Robert Hertz wrote in 1909 that “[the two] human hands are the inevitable symbols of all the fundamental dualisms underlying religious thought: good and evil, sacred and profane, the divine and the demonic,”⁶ so we need look no further than our own two hands (*fig.2a*). Rotating our hands ninety degrees counterclockwise, the left-right axis is verticalized as ‘RIGHT-over-LEFT’ (*fig.2b*). In this way, the bilateral symmetry of the body is mapped onto vertical space, exemplified by the Christian

⁶ Robert Hertz. “The Pre-eminence of the Right Hand: a study in religious polarity.” Originally published in *Revue Philosophique* 68: pp. 553–80. *Journal of Ethnographic Theory*, Vol 3 No 2, 2013. Reprint of Hertz, Robert. 1973. “The pre-eminence of the right hand.” *Right and left: Essays on dual symbolic classification*, translated by Rodney and Claudia Needham, edited by Rodney Needham, pp. 3–31. Chicago: University of Chicago Press.

iconography in which Christ raises his right hand toward heaven to represent the ascension of the elect, while lowering his left hand to “[show] the damned the gaping jaws of Hell ready to swallow them”⁷ (see fig.3, Master of the Bambino Vispo’s *The Last Judgment*).

Figure 3: Master of the Bambino Vispo, *The Last Judgment* (1422)



⁷ Hertz, “Part 3: The Characteristics of Right and Left.”

The logic of the keyboard maps the mirror operations FLAT/SHARP onto LEFT/RIGHT—the same axis Westerners use to notate time and language.⁸ The left and right hands translate the up-down pitch amplitude to a horizontal left-to-right/low-to-high axis,⁹ where both hands' fingers are numbered from the thumb (1) to the pinky (5). (*fig.2a*) In this mirrored numbering system, the left proceeds 'DOWN' or 'BACKWARD,' while the right progresses 'UP' or 'FORWARD.' Moreover, the left hand struggles to play a normative ascending scale, for it must lead with the pinky and ring finger (the two weakest fingers) in contrast to the thumb and pointer finger in the right hand (the two strongest digits). The down turning left hand enhances the perceived flat/left regression due to the 'UP is better than DOWN' metaphor privileging ascending figures in Western music.

Mark Turner's "Invariance Principle" suggests that the most effective image schemata retain correspondences between both source and target domains.¹⁰ Hence, the marriage between amplitude and pitch frequency flourishes, since both the up-down axis and pitch frequency convey a linear continuum.¹¹ The LEFT-RIGHT axis, also linear, cross-maps equally well to pitch and Western notions of time. LEFT is associated with DOWN, BACKWARD, and YESTERDAY, just as RIGHT maps to UP, FORWARD, and TOMORROW.

⁸ Note that singers don't think this way (or don't have to); wind players often have to negotiate fingerings in which the higher note is played with fingers closer to the ground; guitarists and other fretboard musicians actually play with the lowest pitched string highest off the ground. On the other hand, this confusion causes people to argue about what constitutes the "highest string". The Ancient Greek scale system assumes a lyre with the lowest string on top, perhaps so it can be played with the thumb (since the hand rotates *the other way round* to play guitar/lyre/lute type instruments); that's why Greek scales are imagined with the lowest notes "on top."

⁹ While not all Western instruments use a horizontal pitch axis, the piano is certainly the most valued theoretical tool. (see above – this glosses over a lot!)

¹⁰ Turner, "Aspects of the Invariance Hypothesis." *Cognitive Linguistics* I (1990), p. 254.

¹¹ Zbikowski, p. 71.

The heart of the wise inclines to the right, but the heart of the fool to the left

-Ecclesiastes 10:2

Left-oriented ‘backwardness,’ evil, and clumsiness seem to be inextricable cultural notions, especially in cultures that read and write from left to right. “*Sinistra*,” the Italian word for “left,” also means “sinner,” and the French use “*gauche*” to signify awkwardness. By contrast, words denoting “right,” such as “dexterity” (from the Latin “*dexter*”), “*rechts*” and “*droit*,” reflect ‘correctness.’ Perhaps this resistance to the left can be attributed to the preponderance of right-side dominance in the world, which makes left-handedness a marked minority. Hence, in most cultures, handshakes and eating are right hand tasks—leaving the left hand to fulfill baser duties.

In the Northern Hemisphere, where most ancient peoples lived, the sun’s daily east-west movement appears as left-right, and thus “clockwise.”¹² The Celts were therefore deeply suspicious of *widdershins*, or right-left counterclockwise movement “against the sun,”¹³ and during the English and American witch trials of the seventeenth century, left-handedness, *widdershins* dancing around the bonfire, and birthmarks on the left side of the body were all considered signs of witchcraft.¹⁴

Linguist Antoine Meillet finds that in most Indo-European languages, there is usually only one term for the “right,” but multiple imprecise, ever-changing euphemisms for the left.¹⁵ Most likely, the circumlocution of terms like “corky-handed” stems from left-side taboo, where

¹² Melissa Roth. *The Left Stuff: How the Left-Handed have survived and thrived in a Right-handed world*. Plymouth: Rowman & Littlefield, p. 29.

¹³ Roth, p. 29.

¹⁴ Roth, p. 30.

¹⁵ From a 1906 letter written to Hertz, quoted in Hertz, p. 18.

referring directly to the left might be considered (if you will) *sinister*, perhaps the instigator of bad luck.

Despite the hegemony of the right side, there have been numerous cults of left-side worship in Western history. For example, during the Middle Ages and early Renaissance, artists normally depicted the right side of the face (which, confusingly, appears as the left to the viewer). Since the right-handed majority could not defend themselves on their non-dominant side, the left side of the body was considered weak, and thus associated with the “weaker sex”¹⁶—a notion fueled by Eve’s supposed genesis from Adam’s left rib. But in the later Renaissance, portraits commissioned by Lorenzo di Medici, among others, featured the left side of the face, for Lorenzo and his peers cultivated the more intimate “heart side.”¹⁷ Lorenzo imagined the left hand as connected to a “heart” vein (the possible root of the Western tradition of wearing wedding rings on the left hand¹⁸):

[The left hand] originates in the heart, and so appears as a more reliable messenger and witness of my lady’s heart: this is because it is said that in the ring finger, which is next to the finger commonly called the little finger, is a vein that comes directly from the heart, as if a messenger of the heart’s intention.¹⁹

Moreover, Lorenzo’s friend, Girolamo Cardano, believed that the left hand looked and behaved “younger” than the right, explaining that “the zone on the left [side of the body] relates to the first period of life (up to thirty years of age), because it is under the jurisdiction of the

¹⁶ James Hall. *The Sinister Side: How Left-right Symbolism Shaped Western Art*. Oxford: Oxford University Press, 2008, p. 18.

¹⁷ Hall, p. 342: “Courtly Love,” pp. 217-226

¹⁸ Ancient Greeks, Romans, and Egyptians also wore rings on their left ring fingers to protect their weaker left side from witchcraft, and the ancient Etruscans also believed that the augurs came from the left side. See Hall, p. 219.

¹⁹J. W. Cook, trans. *The Autobiography of Lorenzo de’ Medici the Magnificent: A Commentary on my Sonnets*. Binghamton, 1995, p. 123, Qtd. in Hall, p. 218.

Moon, which presides over infancy.” (The right side, conversely, related to the third, and final stage of life (from 60-90 years)).²⁰ For Lorenzo and his coterie, the left side housed a primitive, inner soul, whose inherent fragility conveyed a peaceful, feminine beauty.

In the eighteenth century, the left side was linked to radical, independent politics in the French Assembly, where the Jacobins—vehemently opposed to the monarchy—sat on the left side of the room, the conservative Girondistes occupied the right, and those with more moderate views sat in the center.²¹ As the ruling government fluctuated constantly between revolutionary left and royalist/authoritarian right in nineteenth-century France, this left-right political metaphor became increasingly important. Writer and politician Victor Hugo shifted drastically from right to left over the course of his life, as evidenced by his progressive essay written during Louis Napoléon’s reign, “*le droit et la Loi*” (the right and the (legal) right), in which he explained the difference between Man’s inherent rights (*le droit*) and laws enacted by government (*la loi*).²² Since “*le droit*” also connotes the “right side,” Hugo implies that those on the right side of the political spectrum (i.e., Louis Napoléon) cannot *be* the law; the rights of the individual must be protected.

On the scientific front, Paul Broca’s neurological treatises on the lateralization of the brain²³ spawned scientific interest in handedness in the late-nineteenth century. Observing criminals and lunatics to be disproportionately left-handed, criminologist Cesare Lombroso then

²⁰ Girolamo Cardano. *Lettura della Fronte: Metoposcopia*, ed. and trans. A Arecchi, Milan 1994, p. 28. Quoted in Hall, p. 223.

²¹ Annie Smart. *Citoyennes: Women and the Ideal of Citizenship in Eighteenth-Century France*. Newark: University of Delaware Press, 2011, p. 197.

²² *Actes et Paroles I*, Part I. written between 1852-1870, published in 1875.

²³ See Paul Broca. “*Sur le principe des localisations cérébrales.*” *Bulletin de la Société d’Anthropologie* 2, 1861, pp.190–204.

claimed that left-handedness and left-sidedness indicated great moral and physical weakness and effeminacy.²⁴ In the following quotation, excerpted from his essay, “Left-Handedness and Left-Sidedness,” (1903) Lombroso discusses “primitive” left-sidedness:

Some time ago Delaunay observed that the man holds out the right arm, which the woman takes with the left; that the woman buttons her clothes from right to left, while the man does so from left to right, and that women and children, when they trace a line or turn a key, for instance, of a watch, initiate the movement from right to left, while the adult man does so always from left to right. This explains why, in early times, and still among people little civilized, such as Arabs, the writing was preferably from right to left, which is the habit of children until corrected.²⁵

Fabroso maintained that left-handedness, as well as writing from the right to the left, was a feminine, regressive behavior that must be overcome, stoking the old fears of witchcraft and *widdershins*.

As Fabroso was launching his attack on the left-handed, a substantial number of late nineteenth century Westerners embraced the alternative “Left Hand Path” and black magic. Since in the Catholic mass, the priest blessed with his right hand, blessings were given with the left in the black mass.²⁶

The left side was such a powerful symbol of independence, that *fin-du-siècle* artists often depicted themselves holding a paintbrush in their left hand (even when the artist was known to be right-handed) to depict a romantic, outlaw status.²⁷ Stimulated by Freud’s notion that writing

²⁴ Cesare Lombroso. “Left-Handedness and Left-Sidedness.” *The North American Review*, Vol. 177, No. 562, Sept. 1903, p. 441.

²⁵ Lombroso, p. 442.

²⁶ Hall, p. 342.

²⁷ *Ibid*, p. 363.

with one's left hand achieves a subconscious state involving the *id*, artists Salvador Dali and Paul Gauguin cultivated the primitive left. Right-handed artists, including Victor Hugo, drew or wrote left-handed "as a way of opening up [their] unconscious," and Pablo Picasso's depiction of a left-handed artist in *La Vie* "finger paint[ed]...from the depths of his tormented soul."²⁸

Discrimination against left-handers in Western Europe was at an all-time high between 1880 and 1920²⁹ (perhaps due to Fabrosio, as well as fears of revolutionary left-wing uprisings), but after the first World War, previously hostile public sentiment toward southpaws improved considerably—in part because battle wounds forced a substantial number of right-handed veterans to train and favor the left hand.³⁰

One of the casualties, Austrian pianist Paul Wittgenstein, commissioned Maurice Ravel to write a *Concerto for the Left Hand* (1929-30). Wittgenstein, who had previously enjoyed success as a two-handed concert pianist, had no interest in becoming a one-armed Tod Browning sideshow "freak"; rather, he hoped to accomplish with one hand what others did with two, arranging the fingers of his left hand into "left" and "right" segments to perform "double duty".³¹ And yet, in the *Concerto*, Ravel thematizes "wrong-handedness" with an unnaturally low, ominous contrabassoon solo and accompanying double bass figure of ascending fourths (E-A-D-G). The initial brooding left-hand piano theme, exploring the extreme depths of the left side of the keyboard, also features open quintals and quartals and a pentatonic scale, thus linking the left side, lowliness, and the flat side (as well as allusions to *Dies Irae* (Day of Judgment)—when

²⁸ Ibid, 338, emphasis mine.

²⁹ Ibid, p. 363.

³⁰ Ibid, pp. 363-4.

³¹ Blake Howe. "Paul Wittgenstein and the Performance of Disability." *The Journal of Musicology*, Vol. 27, No. 2, Spring 2010, pp. 141-2 and 151.

those on Christ's left side encounter the fiery gates of Hell). A concerto for left hand *might* have balanced the left and right sides of the keyboard, or even concentrated on higher pitches. But, it would seem that Ravel, under a left hand spell, intended an audible difference—low register, strange instrumentation, 'primitive' pentatonicism, constructions in fourths, and the mysterious minor mode.

As we shall see below in great detail, the 'musical left'—the set of metaphoric counterclockwise relations where LEFT equals FLAT, MINOR, and SUBDOMINANT—has consistently been marginalized by Western tonal theorists. Only the major mode was generated by the overtone system, leaving many theorists to doubt the minor's existential reality (Chapter 1). Due to negative metaphoric associations, flat side transformations sounded inferior to influential tonal theorists (Chapter 2). For Rameau, a key player in Chapters 1 and 2, the plagal cadence was as "irregular" as the authentic was "perfect." In *Structural Functions of Harmony*, Arnold Schoenberg agreed, declaring: "Plagal cadences, IV-I or II-I...are only a means of stylistic expression and are structurally of no importance."³² Although they agreed on little else, Heinrich Schenker's analytic system also ascribed greater structural depth to the dominant than to the subdominant, for the fourth-degree chord only served as temporary resting place before the authentic destination on the dominant was reached.

Unequal treatment of the subdominant stemmed from its fundamentally auxiliary usage in tonal music, as well as associations with folk, modality and antiquity—tonal worlds too 'backward' to merit serious academic inquiry. Nineteenth-century fascination with the past made pre-tonal *plagality* new again, and despite—or was it because of—the inability of

³² Arnold Schoenberg. *Structural Functions of Harmony (revised)*. New York: Norton, 1969, p.14.

traditional theory to treat minor mode and plagal progressions as equals to the major mode and the authentic cadence, nineteenth- and twentieth-century composers further developed minor-major hybridity, chains of applied subdominants, and stacked fourths. Were composers of the ‘musical left’ sending signals of primitivity, interiority, or mystery?

An emphatic “yes.” From John Coltrane to Elton John, modernist composers have colonized the flat side to promote folkish and simultaneously revolutionary agendas. For Elton John (chapter 2), single, double, triple and even quadruple plagal progressions signify a subaltern uprising in “Burn Down the Mission,” and a refusal to knuckle under to hetero-normative standards in “Someone Saved My Life Tonight”; Paul Hindemith’s stacked fourths in the anti-totalitarian *Mathis der Maler* (Chapter 3) reflect the Saviour’s supernatural ‘crossing over’ from the future to the past; and for Coltrane (Chapter 4), going flat in *A Love Supreme* empowered him to conquer all twelve pitches while communing with his African pentatonic heritage.

Dualism and Neo-Riemannian theory

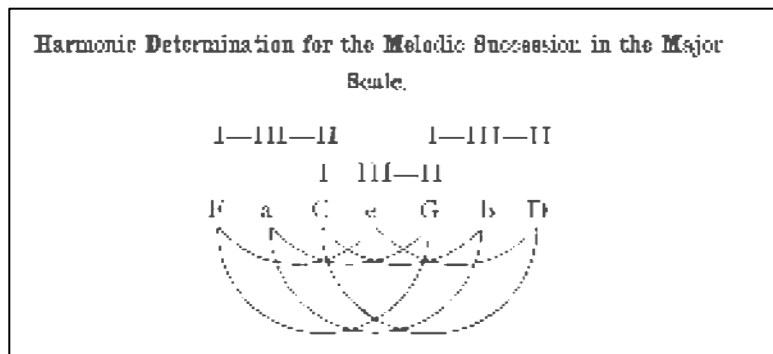
Responding to the proliferation of plagality in the nineteenth century, mid-nineteenth-century tonal theorists reclaimed the subdominant’s role in a dualist tonal system. In Moritz Hauptmann’s spatial reading, for example, the tonic is balanced *equally* between an upper fifth (the dominant) and a lower fifth (the subdominant) in an arrangement adopted by the younger Hugo Riemann and other dualists.³³ (*fig. 4*) Analogously, the subdominant side generates the minor mode, while the dominant mirror produces major. In Riemann’s formulation, the flat side is buttressed by an appeal to natural law, in the form of “undertones.”³⁴ Though dualists still

³³ Moritz Hauptmann. *The Nature of Harmony and Meter*. 1888, tr. & ed. W.E. Heathcote, p.18.

³⁴ See Riemann. “The Objective Existence of Undertones in Soundwaves,” 1875.

view minor and subdominant as a mysterious left-side musical ‘underworld,’ they relish it as the *anti-major*.

Figure 4: Hauptmann’s tonic flanked by subdominant and dominant, *The Nature of Harmony of Metre*, p. 18



Contemporary historians of theory Daniel Harrison, Brian Hyer and Alexander Rehding have resurrected nineteenth-century dualism in the analysis of nineteenth-century compositions, while the study of popular music has also been particularly welcoming to Riemannian-style analysis.³⁵ In rock ‘n’ roll, R&B, jazz and other blues-related genres, repeated plagal progressions necessitate a flat-friendly theoretical framework: Walter Everett calls the famous (^bVII-IV-I) of Paul McCartney’s “Hey Jude” a “double plagal” rather than a Mixolydian cadence, reviving Riemann’s notion of “SS” or “the subdominant’s subdominant” (*ex.2*).³⁶³⁷

³⁵ See Daniel Harrison. *Harmonic Function in Chromatic Music: A Renewed Dualist Theory and an account of its precedents*. Chicago: University of Chicago Press, 1994; Alexander Rehding. *Hugo Riemann and the Birth of Modern Musical Thought*. Cambridge: Cambridge University Press, 2003; Brian Hyer, . "Reimag(in)ing Riemann." *Journal of Music Theory*, 39/1, 1995, pp. 101–138. Dmitri Tymoczko and Guy Capuzzo have harnessed the power of tonnetz-like structures in popular analysis, and James McGowan has accomplished a similar task in jazz harmony. See Dmitri Tymoczko. *A Geometry of Music: Harmony and Counterpoint in the Extended Common Practice*. Oxford: Oxford University Press, 2011; Guy Capuzzo. "Neo-Riemannian Theory and the Analysis of Pop-Rock Music." *Music Theory Spectrum*, Vol. 26, No. 2, Fall 2004, pp. 177-200; James McGowan. "Riemann’s Functional Framework for Extended Jazz Harmony." *Intégral*, Vol. 24, Special Issue in Honor of Robert Wason, 2010, pp. 115-133.

³⁶ Everett, “Making Sense of Rock’s Tonal Systems.” *Music Theory Online*, Vol 10, No. 4, 2004, p. 11.

Analogous to applied dominants ascending the interval-class seven (ic-7) cycle (V/V), these *applied subdominants* (IV/IV) traverse the ic-5 cycle.

Example 2: “Double Plagal cadence” in “Hey Jude”

I IV/IV IV I
 F E^b B^b F

Da da da da da da da, da da da da, hey Jude!

The lure of the flat side

Eighteenth-century tonal composers explored the dominant with fervor, but by the nineteenth century, composers were eager to conquer frontier harmonic territories along the subdominant axis. Musicologist Susan McClary has written about the flat-sixth “never-never land” in Beethoven’s ninth, in which the secondary subdominant key center acts as a feminized, temporary space.³⁸ Despite nineteenth-century innovations of applied subdominants and stacked fourths, their alignment with the pre-tonal “modal” universe made them nostalgically familiar to late nineteenth- and early twentieth-century audiences. Due to the potential for modernity *and* antiquity, going flat was a precarious balancing act.

To take an infamous example: The long-running debate over the half-diminished *Tristan* chord – is it an altered dominant, or an altered subdominant? – highlights traditional tonal theory’s inability to concede the revolutionary sonority to the flat side; if it was pivotal to the opera, the chord must function, as claimed many analyses which interpreted its top note as

³⁷ Riemann explains that the subdominant of the subdominant, or SS, is analogous to the dominant of the dominant, or DD. See *Harmony Simplified: or, the theory of the tonal functions of the chords*. London: Augener, 1896, p. 101.

³⁸ Susan McClary. *Conventional Wisdom: The Content of Musical Form*. Berkeley & Los Angeles: University of California Press, 2000, p. 123.

sharped, as a dominant.³⁹ In Heinrich Schenker's model, the sharp side (via applied dominants) was the expected direction of progressive or "functional" travel, so it follows that the dominant *alone* would be found at the "deepest" level of the *Ursatz*.⁴⁰

Inner vs. outer

Perhaps Schenker had it inside out: for many, the flat side represents an inner spiritual destination, rather than a convenient stopover on the way to the dominant pole. In the introduction to *The Spiritual Basis of Musical Harmony*, for example, theosophist Graham Jackson calls the undertone-based minor triad "inwardly pensive."⁴¹ Similarly, theorist Forrest Tobey writes of the subdominant:

Always recall that we can create all the notes of the justly-tuned major scale by going up by fifths from, say C. Thus we find G, D, A, E and B, but not the F. The F can only be found by finding the reciprocal fifth of the tonic, the generating tone of the generating tone.

This imbues the entire realm ruled over by the subdominant an inward and mysterious quality. When the subdominant of the subdominant (the Bb) is added, the C triad pulls tonal music into the subdominant, which is perhaps more like moonlight to the bright sunlight of the Dominant realm.⁴²

Tobey's metaphor—SUN is to DOMINANT as MOON is to SUBDOMINANT—paints the subdominant as a powerful, untrustworthy region, akin to the minor mode. Strangely, the subdominant is

³⁹ For further reading on the Tristan debate, see Robert Bailey. *Prelude and Transfiguration from Tristan und Isolde*. Norton Critical Scores, New York: Norton, 1968.

⁴⁰ Robert Fink has written on the Schenkerian depth metaphor and its connection to bourgeois notions of the self; see. "Going Flat: Post-Hierarchical Music Theory and the Musical Surface." Cook, Nicholas and Everist, Mark, eds. *Rethinking Music*. Oxford: Oxford University Press, 1999, pp. 102-137.

⁴¹ Graham Jackson. *The Spiritual Basis of Musical Harmony*. Battered Silicon Dispatch Box Press, 2006. Emphasis mine. Accessed online @<http://www.grahamsmusic.com/book.html>. Accessed 10/11/15.

⁴² Forest Tobey. "A Feeling for Harmony." http://legacy.earlham.edu/~tobeyfo/musictheory/Book2/FFH2_CH6/6A_SecondaryDominants.html, accessed 10/12/15.

simultaneously imagined on the inside, *and* as “Other”: because it cannot be generated directly from a given fundamental by overtones, it must be acoustically related by a theoretical “trick” that turns the tonic *itself* into a dominant (see Rameau’s *double emploi*, Chapter 2). Tobey’s justification for the subdominant’s “inwardness” assumes just intonation, but this study will show that, even in an equal-tempered world, a remainder of subdominant “soul” remains, rooted in cultural conditioning rather than finely discriminated tonal ratios.

CHAPTER 1: DECONSTRUCTING DR. JEKYLL AND MR. HYDE: MIRRORING AND HARMONIC DUALISM

Noodling around on the piano always began the same way: I placed my two hands on the keyboard with both thumbs sharing middle-C, while my other fingers fanned out in mirror image. Every right hand ascent was balanced by an equivalent left hand descent, and vice versa, which allowed me to play Dr. Jekyll...and Mr. Hyde.

But as soon as I began lessons, the Lacanian mirror was shattered. I was accustomed to using my left and right hands equally, but the piano pieces I learned didn't seem to work that way. The right hand always took the melody, reducing the left hand to muddy chords and "oom pah" bass.

Some years later, my teacher introduced me to the Rachmaninoff Prelude in G[#] minor, which featured a left-handed melody. "But this thing is backward!" I exclaimed after slogging my way awkwardly through the piece. Despite my left-handedness, it felt unnatural to play a left-hand melody at this point. Amazingly, I had been indoctrinated in Western theory to the point where my dominant writing hand couldn't keep up. I had lost faith in my left hand.

Peeking through a looking glass, the young child quickly discovers that the mirror reflects her own image back toward her body, resulting in the sensation that the reflection is not the 'original,' but an imposter. Jacques Lacan insisted that the "mirror stage" proves that human nature is essentially comparative, and together, the dual selves provide an imaginary sense of wholeness.⁴³

As a child, I used the mirror metaphor to understand the interaction between my two hands on the keyboard. But unlike a true reflection, which reflects *back* toward the original image (*fig. 1-1a*), the reflection of my right hand seemed to stretch out in the *other* direction (toward the left, or down the keyboard) (*fig. 1-1b*). As a mirroring, this is phantasmic, for mirrors only simulate the experience of looking past the mirror's dividing line. If we follow the logic of

⁴³ Jacques Lacan. "The Mirror Stage as Formative of the Function of the I as Revealed in Psychoanalytic Experience." Trans. Alan Sheridan (1949). *The Norton Anthology of Theory and Criticism*. Ed. Vincent B. Leitch et al. New York: W. W. Norton, 2001, p. 506.

Figure 1-1b, then a palindromic image with a central dividing line is produced. Viewed this way, the space contained ‘inside’ the thumbs on middle-C is finite, but the spaces to the left of the left pinky and to the right of the right pinky stretch out toward infinity.

Figure 1-1a: Mirror image reflection

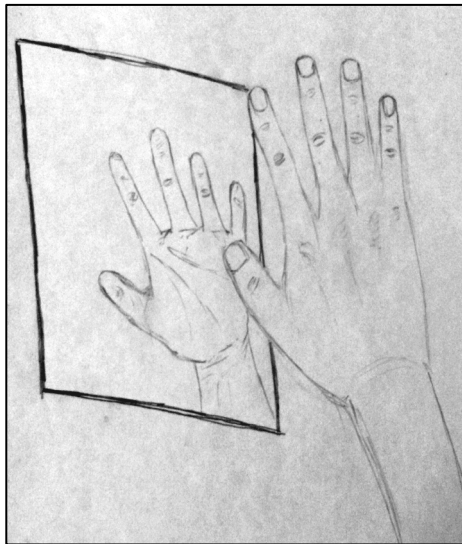
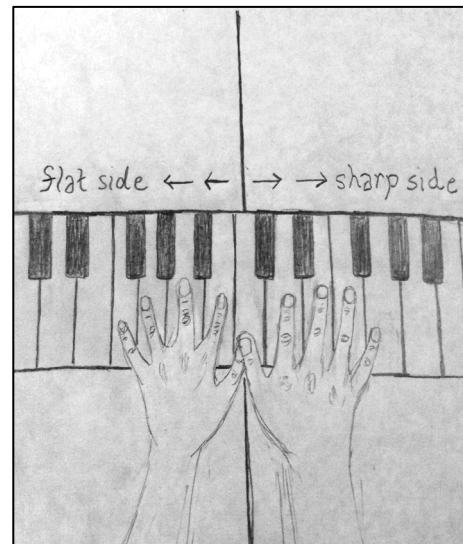


Figure 1-1b: Keyboard Mirror image phantasm



Although these two reflective schemata seem similar, their ramifications are substantially differentiated: figure 1-1a reflects back toward the original image, thus encouraging the original image’s validity; figure 1-1b, contrastingly, carves out new space—and a central middle-C *mesé*. The latter indicates an axial relation, where two equal and opposite images are set across a central point.

Musical mirrorings have taken many forms throughout the course of Western music history: canonic counterpoint, axial inversions, retrogrades, major-minor inversions, symmetric polar inversions, and others. We begin this chapter by considering imitative musical mirrorings in tonal music before turning to major-minor dualism, a late nineteenth-century theoretical school involving both palindromic and reflective inversions of the major and minor scales.

In the epilogue, we continue our narrative with examples of *non*-Riemannian dualism: twentieth-century polarity and non-tonal scalar inversions. I hope to demonstrate that mirroring—from fugues to Riemannian dualism—cannot fully integrate with a ground-up, hierarchical practice like tonality; twentieth-century atonal musics constitute better vehicles for sustained, pure inversions. At the end of the chapter, we shall discuss the culmination of equal and opposite mirrorings: the M Transformation.

That the search for symmetry in music is omnipresent in academic circles should be no surprise, for where there is symmetry, there is perceived structure. When an atonal Bartók piece is found to display inversional symmetry, for instance, it suddenly becomes knowable. Similarly, the revelation of a binary structure in Beethoven's 7th Symphony "*Scherzo-Trio-Scherzo*" imbues the piece with quasi-mystical qualities. Theorist Robert Morgan elaborates:

A symmetrical perspective enables one to see an individual musical unit not just as an isolated event, but as part of an encompassing structure generated by that unit: the part is understood as meshed in the whole, while the whole emerges as a direct outcome of the part's own structure, the consequence of a process of strict duplication.⁴⁴

Much like Lacan's dual 'wholeness,' musical symmetry makes a composition seem more complete, and therefore more plausible as a unified structure. Spatial metaphors for music allow us to divide compositions into multiple parts, producing a wide range of visual symmetries, including RIGHT/LEFT, UP/DOWN, and BLACK/WHITE (keys). These spatialized oppositions can then be aligned with philosophical ones, such as GOOD/EVIL, HERE/THERE, NOW/THEN, and US/THEM.

⁴⁴ Robert Morgan. "Symmetrical Form and Common-Practice Tonality." *Music Theory Spectrum*, Vol. 20, No. 1 (Spring, 1998), p. 2.

But implicit hierarchies complicate these “balanced” symmetries, forcing us all to play the piano “right-handed.” And while flats and sharps are supposed to be equal opposites, they rarely are, because flats are depicted left of sharps on the piano keyboard. In the following chapters, I show that musical structures conceptualized to the left, counterclockwise, and underneath seem backward, and thus, inferior, to Westerners.

In Western theory, flats are configured beneath sharps, corresponding to lower amplitude (in musical notation), and the left direction. Due to the ‘UP is better than DOWN’ metaphor, flatted structures possess diminished status as compared to sharped ones, and because the minor triad is defined by a flatted third degree, the minor chord and scale are also linked to *leftness* and *lowliness*.⁴⁵ As the “underdominant,” a fifth below or left of the tonic, the subdominant chord acquires these negative associations as well—even though the subdominant in a major key is usually a major chord (Chapter 2).

In this first chapter, we consider the two sides of musical dualism—the ‘triumphant’ major and the ‘downtrodden’ minor—in order to understand how these biases affect Riemannian thought. While *monists*, such as Heinrich Schenker, stress the supremacy of the major chord/scale as the generative force behind tonality, Hugo Riemann’s school of *dualism* utilizes both major and minor, configured as exact inversions of one another.

Of the many controversies surrounding dualism, subsequent theorists have chiefly questioned its analytical validity in nineteenth-century European music. Heinrich Schenker had little respect for Riemann as a theorist, and since he refused to elevate the minor to the level of

⁴⁵ See introduction for more on these metaphors.

the major, Schenker did not advocate modal mixture—at least, not in his mature theories.⁴⁶ Doggedly maintaining the acoustic and conceptual superiority of the major over the minor and the authentic over the plagal, Schenker insisted similarly upon the superiority of man over woman.⁴⁷ If minor is nothing but a coloration or temporary dissonance, as Schenker would have it⁴⁸, then why would major condescend to borrow from such a lowly structure?

Hugo Riemann was concerned with the acoustic and conceptual tension between major and minor, and unlike Schenker's linear approach, he used triads as his chief building blocks. By configuring major and minor triads as inverted incarnations of one another, Riemann stressed their interdependence. But even the most ingenious speculative theories do not always describe music accurately. Contemporary theorist Alexander Rehding writes that Riemann “exhibited a utopian concern with how we ought to hear music, and conversely, he argues that musical compositions ought to comply with harmonic dualism, even though the existing repertoire does not do so, or does so only partly.”⁴⁹

While the jury is still out on harmonic dualism's relevance to nineteenth-century tonal compositions (neo-Riemannian Daniel Harrison has demonstrated the usefulness of Riemannian

⁴⁶ In *Harmony*, Schenker discusses major-minor hybridity. Oswald Jonas, ed. Elizabeth Mann Borgese, trans. Chicago: University of Chicago Press, 1954, sec. 40.

⁴⁷ Schenker wrote in the preface of the first volume of *Counterpoint xix*: “We live in an era in which all values in human relationships are turned exactly upside down, by reason of false, unworthy sentimentality: those who need to be led become leaders; the woman assumes the man's role; the child is pampered as an ‘individuality’ and excused from work before even having learned to work; workers who represent mere instruments in human form consider themselves producers.” John Rothgeb and Jurgen Thym, tr. John Rothgeb, ed. New York: Schirmer Books, 1987.

⁴⁸ Schenker called the minor third an “artificial” variant of the major. See *Harmony*, pp. 45-54.

⁴⁹ Alexander Rehding, *Hugo Riemann and the Birth of Modern Musical Thought*. Cambridge: Cambridge University Press, 2003, p. 9.

dualism for the analysis of highly chromatic tonality⁵⁰), Riemann's "utopian" predilection for modal mixture and inversional symmetry was realized *ex post facto* by twentieth-century composers of post- and non-tonal music.⁵¹ In the second part of this chapter, we consider music in which polarity and analytical mirroring techniques bear substantial fruit. Abandoning traditional tonality as an organizing force, many twentieth-century composers looked instead to tonal mirroring for structural integrity. In particular, I will argue that the music of Béla Bartók represents a modal culmination of Riemann's dualistic prescriptions.

Though Riemann has recently been resurrected by contemporary theorists, this neo-Riemannian renaissance has minimized dualism, concentrating instead on multidimensional *Tonnetz* diagrams and parsing of tonal function. In the first half of the twentieth-century, music theories required validation as psychoacoustic "natural law" in order to be taken seriously, and, unfortunately for the theorist, Riemann's "undertone" experiments made him a posthumous laughing stock.⁵² While today's theorists no longer feel compelled to provide acoustic validation of their arguments, Riemann's ill-advised forays into acoustics have tainted dualism.

Notwithstanding, harmonic dualism *can* aid musical understanding. Bilateral symmetry is at the heart of much twentieth-century music, arguing that we need a general analytical model, rather than a series of compositional singularities. We need not abandon the strong explanatory power of monistic theories of tonal structure (although we may leave Schenker and his ideology behind); together, dualism and monism can provide a more balanced view.

⁵⁰ Daniel Harrison. *Harmonic Function in Chromatic Music: A Renewed Dualist Theory and an Account of its Predecessors*. Chicago: University of Chicago Press, 1994.

⁵¹ Dmitri Tymoczko. "Dualism and the Beholder's Eye: Inversional Symmetry in Chromatic Tonal Music." *The Oxford Handbook of Neo-Riemannian Music Theories*. Edward Gollin and Alexander Rehding, eds. Oxford: Oxford University Press, 2011, p. 262.

⁵² See Riemann. "Die Objektive Existenz der Untertonreihe," 1875.

As a theorist, Hugo Riemann was strongly influenced by the Hegelian dialectic, or, more specifically, German philosopher Johann Gottlieb Fichte's influential (mis)reading of Hegel.⁵³ It was Fichte who proposed the familiar system of *thesis*, *anti-thesis*, and *synthesis*, which Hauptmann and then Riemann attempted to configure musically. For Riemann, the major triad represented the *thesis*, the subdominant symbolized the *anti-thesis*, and dominant indicated *synthesis*.⁵⁴ Clearly, this arrangement is more triadic than dualistic, nor are the roles of subdominant and dominant equivalent—as they should be under strict inversion. While Rameau intended the subdominant as an *underdominant*—i.e. a dominant below—Riemann does not actually pair it with the dominant (above) conceptually. I hope to demonstrate that Riemann did not champion the flat/minor/subdominant. In fact, some of his “dualist” ideas sound strangely monist—expressing an unequal binary. For Riemann, the underdominant represents the anti-thesis, or negation of the tonic, and is clearly on a lesser footing with the other two elements. A close, deconstructive reading of Riemann will address this imbalance.

“Tracing” major and minor

It is a fundamental principle of post-structuralist theory that binary conceptual pairs may *sound* like equals, but are rarely—if ever—treated as such. From the moment a child detects her mirror image, a comparative struggle ensues between her internal and external selves. To the child, the inner-self comes first, leaving the mirrored self an imposter. This analogy extends to my childhood LEFT/RIGHT mirroring on the keyboard, for the ‘right-side-up’ right hand melody is perceived by tonal theorists as primogeniture and ‘forward-marching,’ while the descending left hand melody constitutes a ‘backward’ *doppelgänger*. In major-minor duality, similarly, the

⁵³ See Alexander Rehding. *Hugo Riemann and the Birth of Modern Musical Thought*, p. 109.

⁵⁴ Riemann. “*Musikalische Logik: ein Beitrag zur Theorie der Musik.*” *Zeitschrift für Musik*, July 5, 1872.

major scale appears as primordial in Western tonal music due to its supposed link to the system of overtones, and minor is seen as an afterthought—a preposterous notion, considering that Ionian was not even named as a mode until Glarean in 1547.⁵⁵

Deconstruction maintains that in any opposition, the purpose of the pairing is to prop up the privileged word/sign through negation of the lesser, or ‘marked’ term. For example, DARK and LIGHT are marketed as equal and opposite concepts, but the concept of light is nebulous without darkness—the *absence* of light. As the term of negation, darkness is marked by what Jacques D  rri  da famously called a “trace” of lightness.⁵⁶

As a political act, deconstruction attacks racial, and gender-based hegemony; why should we care about the imaginary power relations that underlie musical binaries like major/minor and dominant/subdominant? After all, these are only chords and scales—not subaltern subjects! But proponents of the hermeneutical “New Musicology” maintain that musical forms have indeed been treated by traditional analysts as representations of people, places, and ideas. For example, Susan McClary has demonstrated how analyses of musical structures reveal gender biases that mark them as “Others,” such as so-called “feminine cadences” on weak beats, as opposed to definitive “masculine cadences” on strong beats.⁵⁷

In “Beethoven Hero,” Scott Burnham uncovers what he believes to be a common Beethovenian narrative: the tense minor mode is necessary to establish the heroic battle, which

⁵⁵ Henricus Glareanus. *Dodecachordon*. Basel: Heinrich Petri, 1547.

⁵⁶ Jacques D  rri  da. *Speech and Phenomena: and other essays on Husserl’s theory of signs*. David Allison, trans. Evanston: Northwestern University Press, 1973, p. 156.

⁵⁷ Susan McClary. *Feminine Endings: Music, Gender, and Sexuality*. Minneapolis: University of Minnesota Press, 1991, p. 9.

will ultimately be replaced by major.⁵⁸ Minor is portrayed as weak and feminized, forcing the heroic subject to break free from her evil clutches. Similarly, the subdominant function, which will be discussed more intensively in Chapter 2, is aligned with minor and the flat side in Beethovenian thought (and Riemannian theory), and is thus viewed as a feminized, pastoral Other. Nineteenth- and twentieth-century composers consistently harnessed these connotations in order to represent exotic ethnicities, moods, and sexual orientations, as did the music scholars who wrote about them. Thus, despite its prominent role in common music practice, there seems to be a built-in bias against minor. Harmonic dualists like Riemann and Hauptmann did not actually champion these marked structures; their positivism only bolstered the Hegelian dialectic, and paradoxically privileged the major scale through inconsistent and often illogical attempt to justify and “stabilize” the minor mode as a structure.

Mirroring

We begin our discussion with the bilateral form of musical symmetry known as *mirroring*, which Davorin Kempf categorizes formally as “reflection of a micro- or macro-formal structure around a vertical or a horizontal axis, as well as vertical and, horizontal axes simultaneously.”⁵⁹ Let us briefly investigate the formal implications of some basic mirroring operations. In a true *retrograde*, a composition is played backwards. Example 1-1 shows the first melodic line of the Christmas carol “Silent Night” in retrograde. Comparing retrograde to running a movie backward, Kempf warns that in tonal music, such an inversion “disturb[es] the

⁵⁸ Scott Burnham. *Beethoven Hero*. Princeton: Princeton University Press, 1995.

⁵⁹ Davorin Kempf. “What is Symmetry In Music?” *International Review of the Aesthetics and Sociology of Music*, Vol. 27, No. 2, Dec. 1996, pp. 256.

musical sense, with more or less terrible compositional and aesthetical consequences.”⁶⁰ While this particular retrograde melody sounds somewhat consonant against the original C major tonic, the *short-long* retrograde rhythms sound awkward to Western ears, and few people would recognize “Silent Night” from its retrograde.

Example 1-1: “Silent Night” (mm. 1-2) Inversion, Retrograde, and Retrograde Inversion

The image shows four staves of musical notation for the first two measures of "Silent Night" in 3/4 time. The original melody is on the first staff, with lyrics "Si - - - - lent night,". The retrograde is on the second staff, with lyrics "thgin tnel is". The inversion is on the third staff, with lyrics "Si lent night,". The retrograde inversion is on the fourth staff, with lyrics "thgin tnel is". The retrograde and retrograde inversion staves show the original melody played backwards, with the retrograde inversion also being a pitch inversion.

Inversion is mirroring around a pitch axis. In the third stave of Example 1-1, the inversion operation flips “Silent Night” over a G axis, such that every ascending interval is replaced by a descending interval of the same size. Unlike the retrograde example, which only rearranges pitches, inversion can introduce new ones (F and B^b in this example), potentially obscuring the key. *Retrograde Inversion* (bottom line of ex.1-1) both inverts the melody *and* plays it backward. In this sense, the musical line is flipped both horizontally and vertically.

Imitation as mirroring

Melodic mirroring is at the very heart of pre-tonal *counterpoint*—or *punctus contra punctum*. Contrary motion enables us to hear two lines independently, and as an imitative game between the leader (“*dux*”) and the follower (“*comes*”), the *canon* often explores inversion (“*al rovescio*”) and retrograde operations (“*canon cancrans*”). In the advanced *table canon*, the

⁶⁰ Kempf, p. 159.

comes and *dux* sit on opposite sides of a table to play the inverse *and* retrograde themes. Rules of voice leading are easily satisfied by these mirrored canons, because there can be no parallel fifths if contrary motion is a stipulation.

In the most formalistic expressions of canonic imitation, complex inversions known as *mirror fugues* occur in both *Contrapunctus XII* and *XIII* from Bach's *Art of Fugue*.⁶¹ Not only are the subjects inverted in these pieces, but other aspects of the original *rectus* are flipped as well—down to the order of vocal entrances. Authentic cadences (V-I) in the *rectus* are replaced by minor plagal ones (iv-i) in the *inversus*, and modulations to the dominant are mirrored by modulations to the subdominant. Note that entire chords are not inverted over an axis as with the melodies—only the roots and quality (swapping minor for major).

Where typical canons in contrary motion adjust intervals to preserve the mode or key (“free” inversion), Bach's mirrors are stricter—but still require some finessing. In strict intervallic inversions, the danger is that the inversion will corrupt the original mode, but Bach solves this problem in *Contrapunctus XII* by introducing the *inversus* on the fifth degree, A (*ex.1-2*). Fugal countersubjects normally operate in the dominant key area, but Bach's *inversus* only *commences* on the fifth—actually occupying tonic harmonic terrain. In a strict mirror on D, the ascending fifth from the *rectus* (D-A) would have inverted to a descending (D-G) in the *inversus*, causing the fourth degree to challenge the tonic chord. But by shifting the entire *inversus* up a fifth, Bach preserves the key of D minor and the opening fifth of (D-A). In this sense, the first two pitches of the *inversus* are a retrograde rather than an inversion. This

⁶¹ *Contrapunctus 12*. Malcolm Boyd. *Oxford Composer Companions: J.S. Bach*. Oxford University Press, 1999, p. 296.

arrangement allows Bach to mirror the ascending 7-8 authentic cadence in the *rectus* with a descending $\flat 6$ -5 plagal motion in the *inversus*.

Example 1-2a Bach, *Contrapunctus XII* from *Art of Fugue*, *rectus*



Example 1-2b: Bach, *Contrapunctus XII* from *Art of Fugue*, *inversus*



Am I suggesting that Bach was an early dualist composer? Riemann seemed to think so, but I am less convinced.⁶² For one, Bach’s mirroring does not pit minor against major in *Contrapunctus XII*; the *rectus* and *inversus* both operate in D minor. Bach does swap function in the Riemannian manner (minor subdominant for major dominant), but I do not take this as evidence of dualism. Since Bach only had two different modal options—minor and major—and two different types of harmonic motion—authentic and plagal—a certain degree of happenstance dualism was to be expected.⁶³

Tonal “fudging”

The advent of tonality, with its added scrutiny of chord structure, made inversions and retrogrades more difficult to achieve. Rameau’s “fundamental bass” treated re-orderings in the

⁶² In Riemann’s analysis of the Well-Tempered Clavier, the theorist notes that Bach has written a fugue and prelude in each of the twelve major and twelve minor keys, thus elevating minor to major’s equal. His extensive analysis of Bach’s fugal practices also showcases another important aspect of Riemannian thought: inversion. See *Analysis of J.S. Bach’s Wohltemperirtes Klavier*. J.S. Shedlock, trans. London: Augener, 1893, originally published in 1890.

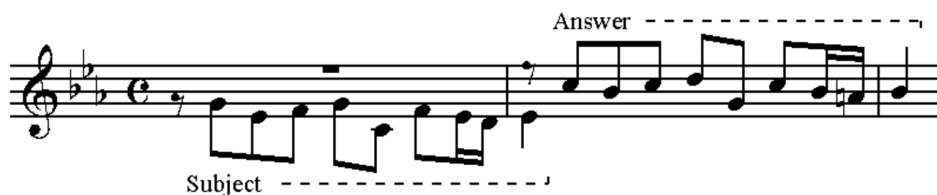
⁶³ Dmitri Tymoczko discusses “happenstance” dualism as a byproduct of compositional process in “Dualism and the Beholder’s Eye.” *The Oxford Handbook of Neo-Riemannian Music Theories*. Edward Gollin and Alexander Rehding, eds. New York: Oxford University Press, 2011.

upper voices of continuo parts as an equivalence class⁶⁴—what most contemporary musicians call “inversions” of a chord—but these chords were considered *non-invertible* around a pitch axis. Hence, inversions and retrogrades can be found in tonal music, but these mirrorings are only applied to melodic material. Thus, in Bach’s mirror canons, formal chordal mirrors do occur, but they function more like analogies, not “real” inversions around a given pitch axis.

In order to respect the primacy of tonal functionality, composers of tonal fugues were compelled to abandon strict imitative mirroring. During a fugal exposition, the *answer* to the *subject* is commonly altered if the subject commences on the fifth degree. Though a *real answer* to such a subject should begin on the supertonic (a perfect fifth up from the subject), this would obscure the key, so the shifted *tonal answer* begins instead on the more stable tonic degree.

(ex.1-3)

Example 1-3: Bach, *Fugue 2* in C minor from *WTC Book II*: Tonal Answer



If we accept that chords cannot easily be (strictly) inverted in tonality, then composers needed to find another route to chordal mirroring. But what constitutes the antithesis of a triadic progression? One might attempt a chordal *root* inversion over the tonic axis of “Silent Night,” transforming the final I-IV-I-V-I cadence into I-V-I-IV-I—a plagal chord progression with an entirely different set of rules and connotations. (ex.1-4) Or one could execute a chordal

⁶⁴ Rameau, Jean-Philippe. *Treatise on Harmony*, Paris: Ballard, 1722, trans. Philip Gossett, New York: Dover, 1971.

retrograde (*ex. 1-5*), which does not sound convincingly tonal, as there is no final cadence—only an initial one!

Example 1-4: “Silent Night” with Chordal Root Inversion

C (I)
 Si - lent night, ho - ly night,
 5 F (IV) C (I)
 all is calm, all is bright.
 9 G (V) C (I)
 'Round yon vir - gin mo - ther and child,
 13 F (IV) C (I)
 Ho - ly in - fant so ten - der and mild,
 17 F (IV) F7 (IV7) C (I)
 Sleep in heav - en - ly peace - - - -
 20 F7 (IV7) C (I)
 sleep in heav - en ly peace.

Example 1-5: Silent Night Chord Retrograde

C (I) G7 (V7) C/G (I)
 Si - lent night, ho - ly night,
 5 C (I) C (I) G7 (V7) G7 (V7)
 all is calm, all is bright.
 9 C (I) C (I) F (IV) F (IV)
 'Round yon vir - gin mo - ther and child,
 13 C (I) C (I) F (IV) F (IV)
 Ho - ly in - fant so ten - der and mild,
 17 C7 (V7/IV) C (I) G7 (V7) G7 (V7)
 Sleep in heav - en - ly peace - - - -
 21 C (I) C (I) C (I)
 sleep in heav - en ly peace.

Minor as upside-down major

In “Beyond Analysis,” Edward T. Cone cautions that tonal music cannot be strictly inverted, because the teleology would be obscured. But he also observes that modality was, starting in the nineteenth century, a field of potential inversion:

Once the convention of the tierce de Picardie was overthrown, it became a matter of the composer’s choice whether a piece in minor ended in major or minor; later on, in the nineteenth century, it became increasingly common for works in major to end in minor. In many cases it seems impossible to find adequate analytical reasons for the ending actually adopted. Think over Schubert’s *Moment Musical* No. 3 in F minor. Can you adduce any analytical evidence for the inevitability of its conclusion? Could you not rewrite the coda so that it ended convincingly in minor? Compare the C# minor *Moment Musical* No. 4 with Chopin’s *Etude* in E minor Op. 25 No. 3 and his *Nocturne* in C minor Op. 48 No. 1. All three of them move to the tonic major in the middle section, so that all have, so to speak, a motive for ending in major. Only the *Etude* does so; the *Nocturne* remains in minor; while the *Moment Musical*, after a short reference to the major section, returns to minor.⁶⁵

If a nineteenth-century composer may begin a composition in major and end in minor—or start in minor and end in major—then the reversal of these modal shifts should sound equally coherent. Within the two-mode system of Western tonality, the conceptual “opposite” of a *major* chord is a *minor* chord, so reversing the two represents a useful type of inversion.

Zarlino was the first theorist to group church modes according to the quality of third above the final,⁶⁶ and by the tonal era, major vs. minor had become codified as the primary harmonic binary; Rameau writes:

We distinguish between two types of modes. They take their names from the major or minor interval formed by the third of the sound, which, together with its octave, is the primary element of the mode.⁶⁷

⁶⁵ Edward T. Cone. “Beyond Analysis.” *Perspectives of New Music*, Vol. 6, No. 1, Autumn - Winter, 1967, p. 50.

⁶⁶ Gioseffo Zarlino. *The Art of Counterpoint*. Guy A Marco and Claude V. Palisca, trans. New Haven, Conn: Yale University Press, 1968, pp. 21-22.

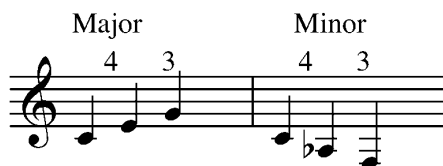
While pre-tonal composers could choose among Ionian, Dorian, Phrygian, Lydian, Mixolydian, Aeolian, and their respective *hypo* constructions, tonal composers only had major and minor. And though modal excursions—such as Beethoven’s *Adagio* in F Lydian from his String Quartet No. 15—were permitted in common practice tonality, the compositions in which they were embedded ultimately conformed to one of the two modern modes (i.e., the String Quartet in *A Minor*).⁶⁸

Nineteenth-century harmonic dualists spatialized the minor triad as a retrograde (*ex. 1-6a*) or inversion (*ex. 1-6b*) of the major. If the major triad is imagined *ascending* from the bottom root, and the minor *descending* from it, then the 4:3 ratio of major third to minor third inverts to 3:4 in the minor triad. Building on this inversive relation (*ex. 1-6b*), Riemann called the F minor triad ‘*under C klang*’, because its fifth (C) was the “root” and gateway to the tonic of C major (‘*over C klang*’).⁶⁹

Example 1-6a: Major and Minor intervallic retrograde



Example 1-6b: Major and Minor intervallic inversion



⁶⁷ Rameau. *Treatise on Harmony*. Philip Gossett, trans. New York: Dover, 1971, p. 157.

⁶⁸ See Chapter 2 for a discussion of Beethoven’s Lydian *Adagio*.

⁶⁹ Riemann. *Vereinfachte Harmonielehre*. London, 1893.

Though the major/minor binary was a familiar one in the mid-nineteenth-century, new explorations of acoustics by Hermann von Helmholtz (1863) spawned theoretical controversy over the role of the minor mode. For Helmholtz, major was the only acoustically-justified sonority, and minor nothing more than an ‘impurely’ tuned major triad.⁷⁰ In this case, modern rationalization produces an unequal hierarchy where the ‘impurity’ of minor further encourages the ‘purity’ of major (and, as we shall see later, correlates with newly scientific notions of race, gender, and sexuality, producing the same effect). Seeking scientific “proof” that minor was the equal and opposite descending version of major, harmonic dualist and acoustician Arthur von Oettingen invented a system involving shared overtones, where major triads were considered “tonically consonant” (*tonisch konsonant*), and minor chords were imagined as “phonically consonant” (*phonisch konsonant*).⁷¹ Moritz Hauptmann, conversely, was less concerned with acoustical justifications for his dualism, concentrating instead on dialectics and affective descriptions of the two modes:

The minor triad thus being of passive nature, and having its starting-point above (not its most real starting-point, yet that which is determined as unity), and forming from it downwards, there is expressed in it, not upward driving force, but downward drawing weight, dependence in the literal, as well as in the figurative sense of the word. *We therefore find in the minor chord the expression for mourning, the hanging boughs of the weeping willow as contrasted with the aspiring arbor vitae.*⁷²

Moreover, Hauptmann describes the major mode as “active,” since it “*has a Fifth and a Third,*” while the minor, “*being a fifth and a third,*” is “passive.”⁷³ Though Hauptmann sees major and

Helmholtz. *On the Sensations of Tone*. Alexander J. Ellis, trans. London: 1885, reprint New York: Dover, 1954, pp. 299-300.

⁷¹ See *Harmoniesystem in dualer Entwicklung: Studien zur Theorien der Musik*. Dorpat, Leipzig: W. Gläser, 1866, p. 5.

⁷² Hauptmann, *Nature of Harmony and Metre*, p. 17, emphasis mine.

⁷³ *Ibid*, harmony section, p. 31.

minor as dialectic equals, it is evident from his language that minor is indeed the marked form in his system, thus privileging the major mode. After all, which mode would you want as your theme song? One that represents passivity, death, and heaviness, or life-affirming ambition?

And yet, Hauptmann’s major-minor inversions only extended to affective descriptions—not the musical structures themselves.⁷⁴ Riemann, conversely, was willing to make this theoretical leap, explaining minor as an acoustical reversal of major. If overtones justified major, then “undertones” could justify the minor:

The new system of figuring chords traces back all harmony formations to the only two possible kinds of consonant chords, the Major and the Minor chord, which are opposed the one to the other, and designated according to the doctrines of the greatest theorists of the past (Zarlino, Tartini, Moritz Hauptmann): --the Major Chord as the union of a note with those notes located directly to it above (prime, upper-third, upper-fifth), and the Minor Chord as the union of a note with those notes located directly to it below (prime, under-third, under-fifth). The intervals, considered upwards, of the Major Chord, are indicated by Arabian, those, considered downwards, of the Minor Chord, by Roman Figures, for example:⁷⁵

Example 1-7: Riemann’s ascending major and descending minor, *Analysis of J.S. Bach*, preface, p. 1

The image shows two musical staves. The left staff is in treble clef with a key signature of one sharp (F#) and a 2/4 time signature. It shows an ascending major chord with notes G4, B4, and D5. To the right of the staff are the figures: 5 (Upper 5th), 3 (Upper 3rd), and 1 (Prime). The right staff is also in treble clef with a key signature of one sharp (F#) and a 2/4 time signature. It shows a descending minor chord with notes G4, F#4, and E4. To the right of the staff are the figures: I (Prime), III (Under 3rd), and V (Under 5th). The two staves are separated by the word "and".

The tribute to Zarlino is not accidental, as Riemann considered his theoretical precursor the first harmonic dualist.⁷⁶ And though Zarlino was definitely *not* a purveyor of dualist acoustic

⁷⁴ Harrison, p. 228.

⁷⁵ Riemann’s *Analysis of J.S. Bach’s Wohltemperierte Klavier (48 Preludes & Fugues) Vol. 1*. J.S. Shedlock, trans. (1893) Augener, 1893, Preface p. 1.

⁷⁶ Rehding, p. 28.

justifications for the minor⁷⁷, he noted the basic intervallic inversion required to transform a major triad into the minor: “For...when the major third is below, the harmony is gay, and when it is above, the harmony is sad.”⁷⁸ In this quotation, Zarlino introduces the OVER/UNDER and HAPPY/SAD binaries later popularized by Hauptmann and other dualists.

Undertones and upside-down chords

Riemann did eventually find an acoustic validation for his separate but equal descending minor mode. Where Helmholtz, the great empiricist, could say no more theoretically about minor than that it was a de-tuning of major,⁷⁹ Riemann hypothesized that the fifth degree of the minor scale could generate *undertones*, analogous to the overtones that generate the major scale.⁸⁰

(ex.1-8 and 1-9)

Example 1-8 Riemannian Major/Minor Duality

Example 1-9: Riemann’s Undertones on C

⁷⁷ See Dahlhaus, ‘*Was Zarlino Dualist?*’ *Die Musikforschung* 10, 1957, pp. 286-90.

⁷⁸ Zarlino. *Le istitutioni harmoniche*. Venice, 1573, p. 211. English trans. Claude V. Palisca and Giulio A. Marco as *The Art of Counterpoint*. New Haven, Conn: Yale University Press, 1968, pp. 69-70.

⁷⁹ Helmholtz, *On the Sensations of Tone*, 1885.

⁸⁰ Hugo Riemann. *Harmony Simplified*, 1896.

Most contemporary theorists consider undertones absurd, but some scholars and performers—including Harry Partch and violinist Mari Kimura—take them as gospel.⁸¹ In any case, such appeals to natural law are no longer *de rigueur* in a music theoretic world established on axiomatic logic, so, if we accept undertones as a conceptual axiom, then tonal mirroring becomes a melodic *and* harmonic possibility.

Picking up a deeply-seated metaphor in Western musical thought, twentieth-century jazz theorist George Russell writes at length about “tonal gravity,” and other scholars have attempted Newtonian analogies, such as Heinrich Schenker.⁸² In *Der Freie Satz*, Schenker invokes the metaphor ‘MUSICAL ENTITIES are parts of a BUILDING,’ suggesting that as a “structure,” music is subject to the laws of gravity.⁸³ In tertian chord theory, a generating fundamental pitch acts as the foundation of a tonal structure in which overtones, rising up from the fundamental, form tonal scaffolding. But the attractiveness and pervasiveness of this schema notwithstanding, *a chord is not a house*. It is assumed all too commonly that a single field of “tonal gravity” rests on Newtonian principles, but I see no reason why chord structures cannot also be built “down from the rafters,” as it were. Cone notes that architects are actually celebrated for building innovative structures that *defy* gravity rather than support it, so this metaphor could be turned on its head.

⁸¹ Harry Partch discusses “otonicity” (overtones) and “utonicity” (undertones) in *Genesis of A Music*. New York: Da Capo Music, 1949 and 1974, p. 69; violinist Mari Kimura has demonstrated “subharmonic” playing in Edward Rothstein’s article titled, “A Violinist Tests the Limits of Music of Her Time,” *New York Times*, April 21, 1994. <http://www.nytimes.com/1994/04/21/arts/review-recital-a-violinist-tests-limits-in-music-of-her-time.html>. Accessed 3/8/2016.

⁸² George Russell. *The Lydian Chromatic Concept of Tonal Organization*, 1953. (Fourth printing, Brookline: Concept Publishing Company, 2008).

⁸³ Lawrence Zbikowski. “Metaphor and Music Theory: Reflections from Cognitive Science.” *Music Theory Online*, Volume 4, Number 1, January 1998, 5.1-5.3; Heinrich Schenker. *der Freie Satz*. 2d ed., Oswald Jonas, ed. *Neue musikalische Theorien und Phantasien*, vol. 3, Vienna: Universal Edition, 1956; English translation from Heinrich Schenker, *Free Composition (Der Freie Satz)*, edited and translated by Ernst Oster, *New musical theories and fantasies*, vol. 3. New York: Schirmer Books, 1979, section 30, p. 50.

While overtones are indeed ‘above’ the fundamental in terms of frequency, Cone argues that this is not necessarily how we should hear musical structures; comparing musical works to abstract paintings that could be hung in various orientations, Cone asserts that only the composer should decide—according to preference, rather than scientific law—what constitutes ‘UP’ or ‘DOWN’ in a particular composition.⁸⁴

Schoenberg famously declared that in twelve-tone music, “there is no absolute down, no right or left, forward or backward.”⁸⁵ To test this theory, Cone mirrors Schoenberg’s *Klavierstück* Op. 33a, as well as the first and third movements of Webern’s *Variationen für Klavier*, Op. 27, to see whether the pieces seemed coherent.⁸⁶ Lo and behold, they did (though retrogression did not always produce equally satisfying outcomes). The (lack of) teleology in twelve-tone compositions complements such reversals, but Cone suggested that other compositions outside the twelve-tone paradigm could be mirrored as well.

Notwithstanding, most listeners are unaccustomed to hearing chords upside-down. As my own childhood experience reveals, social conditioning into a musical world dominated by Rameau’s fundamental bass may be to blame (Chapter 2). Though Riemann idolized Rameau for his identification of triads, function, and major-minor opposition, Rameau’s legacy also complicates Riemann’s agenda. Fundamental bass solidified bottom-up reading of chords, since even chordal rotations (“inversions”) were interpreted as “out-of-order” realizations of a “root position” chord named by reading from bottom to top, rather than individual sonorities. It may

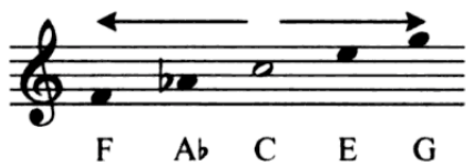
⁸⁴ Cone, p.45.

⁸⁵ Schoenberg. *Style and Idea*. New York, Philosophical Library, 1950, p. 113.

⁸⁶ Cone, p. 33.

seem obvious, but in a fundamental bass world it is worth noting: E-G-C *sounds different* than C-E-G.

Example 1-10: Riemann's *Dualistic Klang*, *Musikalische Syntaxis*, p. 9



Dualistic Klänge

In *Musikalische Syntaxis*, Riemann placed mathematically-related chords symmetrically on either side of a central tonic (*ex.1-10*).⁸⁷ If C serves as the central pitch, then two triads (overtone- and undertone-based chords, respectively) are produced, each by a chain of thirds: C-E-G ascending and C-A^b-F descending. Later, in the *Vereinfachte Harmonielehre*, Riemann elaborates that the C-major triad would be considered the major tonic (T⁺), while F minor, or “under-C,” is considered “^oS” (minor subdominant) (*ex.1-11a*). Curiously, the minor ‘flipside’ of C major is actually “under-E,” or A minor (the relative minor) (*ex.1-11b*).⁸⁸ Rehding notes the oddity of this arrangement: “If the functional concept of tonality embraces the dualistic opposite of the central triad, why does its label not reflect a tonic relation? In other words, why does ‘under-C’ fulfill subdominant function when its dual C⁺ [over-C] fulfills tonic function?”⁸⁹

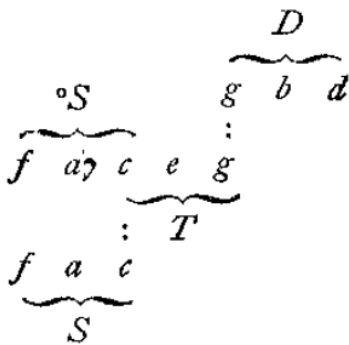
⁸⁷ Riemann. *Musikalische Syntaxis*. Leipzig: Breitkopf und Härtel, 1877, reprint Niederwalluf: Dr. Martin Sändig, 1971, p. 9.

⁸⁸ Riemann. *Vereinfachte Harmonielehre, oder die Lehre von den Totalen Funktionen der Akkorde*. (Trans. as *Harmony Simplified, or the theory of the tonal functions of chords*.) London: Augener, 1893, p. 8.

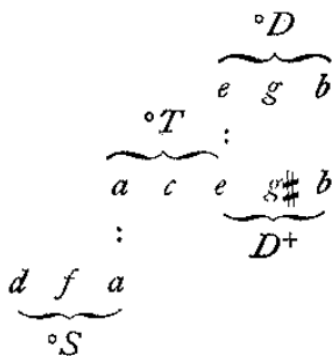
⁸⁹ Rehding, p. 52.

Rehding takes this as a sign of hidden monism rather than true dualism,⁹⁰ as do I. Though Riemann considers A minor (“under-E”) the minor counterpart to C major, these two triads are not related by mirror inversion, like the dualistic *Klänge* of C and F minor. If inversion is to be the cornerstone of Riemannian theory, the functions should line up more accurately. In a more thoroughly dualistic system, F minor (“under-C”) and C major (“over -C”) would be *co-tonics*.

Example 1-11a: Riemann’s “Over-C” complex⁹¹



Example 1-11b: Riemann’s complementary “Under-E” complex⁹²



⁹⁰ Ibid.

⁹¹ *Vereinfachte Harmonielehre*, p. 8.

⁹² Ibid.

Example 1-12b: John Barry's "Moonraker"

The image shows a musical staff in 4/4 time with a treble clef. The key signature is one flat (B-flat). The melody starts on a whole rest, then descends: G4 (quarter), F4 (quarter), E4 (quarter), D4 (quarter), C4 (half). The lyrics are: "Where are you? Why do you hide?". Above the staff, the chord "C" is written above the first measure, and "F min" is written above the second measure.

Upside-down minor scales

Riemann derives the intervals of the minor scale from a mirror inversion of the major (w-h-w-w-w-h becomes w-w-w-h-w-w-h) (*ex.1-8*). According to Riemann, $\flat 6-5$ in minor correlates to the leading tone in major. Just as the 7-8 leading tone ascends from the dominant to the root of the tonic, the 6-5 leading tone descends from the subdominant to the equivalent generating pitch of the minor tonic, scale degree 5.⁹⁷ Through the displacement of the descending minor scale to the fifth degree—which also serves as the acoustic generator of the minor scale—Riemann makes the contrary motion between major and minor “leading tones” appear perfectly inverted.⁹⁸ As Bach did in *Contrapunctus XII*, Riemann cleverly shifts the intervallic world of the minor by a fifth to achieve this illusion. In the upside-down world of Riemannian minor, the flat-6 tension allows the subdominant to operate as a “dominant,” an inversion the theorist called “*Gegenquintschritt* (contrary-fifth step),⁹⁹ since “its upward direction is contrary to the primary downward direction of the minor triad.”¹⁰⁰

⁹⁷ Riemann, *Harmony Simplified*, p. 71.

⁹⁸ The sixth degree is not normally the penultimate step in ascending minor, which is thought to *rise* to the seventh degree.

⁹⁹ For an explanation of *Gegenquintschritt*, see Riemann's “*Systematik der Harmonieschritte*” from *Skizze einer neuen Methode der Harmonielehre*, 1880. Nora Engebretsen, trans. *The Oxford Handbook of Neo-Riemannian Music Theory*. 2011, p. 367.

¹⁰⁰ David Kopp. *Chromatic Transformations in Nineteenth-Century Music*. Cambridge: Cambridge University Press, 2002, p. 69.

In dualism, only minor chords and scales are to be read top-down¹⁰¹; major should be read bottom-up, much like Rameau. But what of descending non-minor scales? Must they submit to traditional tonal gravity? Neo-Riemannian David Lewin has argued “upside-down Alberti bass arpeggios” in the major-mode “*Alla Dansa Tedesca*” from Beethoven’s String Quartet, Op. 130, for he believes that the context of the composition should determine the direction—not the mode.¹⁰²

Riemann’s major-minor and minor-major scales

Riemann also invented a “major-minor” scale, featuring a lower tetrachord from the major scale (1, 2, 3, 4) coupled with the upper tetrachord of the parallel minor scale (5, ^b6, ^b7, 1). The major-minor scale was intended as an analogy to Hauptmann’s “minor-major” scale, better known as ascending melodic minor, in which a lower *minor* tetrachord (1, 2, ^b3, 4) is set against an upper *major* tetrachord (5, [#]6, [#]7, 8).¹⁰³ As Riemann explains, “The exact counterpart to this so new idiom in the domain of major harmony is a very old one in the domain of minor harmony.”¹⁰⁴ Margaret Notley finds this major-minor scale (i.e., other church modes with flatted seventh degrees) a helpful analytical tool in Brahms’s non-diatonic passages, where plagality is more likely to flourish.¹⁰⁵ But, perhaps more significantly, here is an overtly dualistic moment of

¹⁰¹ In Arthur von Oettingen’s system, minor chords symbols texts were even written in mirror image! See *Harmoniesystem in dualer Entwicklung: Studien zur Theorie der Musik*. Dorpat & Leipzig: W. Gläser, 1866.

¹⁰² See David Lewin. “A Formal Theory of Generalized Tonal Functions.” *Journal of Music Theory* 26, 1982, p. 32, qtd. in Suzannah Clark, “Seduced by Notation: Oettingen’s topography of the major-minor system.” *Music Theory and Natural Order from the Renaissance to the early Twentieth century*. Suzannah Clark & Alexander Rehding, eds. Cambridge: Cambridge University Press, p. 179.

¹⁰³ Hauptmann, p. 40.

¹⁰⁴ Riemann, “*Einige seltsame Noten*,” p. 111, trans. Notley, p. 96.

¹⁰⁵ According to Notley, the flatted seventh degree is thought to function poorly with authenticity because this causes a cross-relation with the third degree of the dominant. See Notley, p. 103.

Riemann's theory: rather than manipulate minor to work like major—a common tactic—Riemann allows the major to behave more like *minor*.

Which minor?

Riemann's major-minor scale may well be a chimera, but it does raise a valid theoretical question: If we accept that major and minor are opposites, *which* combinations of major and minor make the best dialectical pairs? Riemann is somewhat unclear: which sonority is the *anti-tonic*? Though the subdominant is the anti-thesis of the tonic, the dualistic system of over-under *Klänge* opposes the major tonic against *both* the minor subdominant and the relative minor. Riemann's system is dualist as far as major and minor are concerned, but tonal functions are not entirely integrated with the dualist framework.¹⁰⁶

In a move that has recently regained favor as an analytical tool for late-Romantic tonal music, Riemann identified three chordal transformations that dialectically produce minor chords: the relative ("*Variante*"), the leading tone exchange ("*Leittonwechsel*"), and the parallel ("*Parallele*"). These transformations, known as "*Scheinkonsonanzen*" (illusory consonances), have the internal structure of consonant triads, but are considered structurally dissonant.¹⁰⁷ *Scheinkonsonanzen* may be explained as altered tonics, dominants, or subdominants, depending on the context. The illusory consonance may be limited to a momentary chord, or it might entail an entire transposition to a minor key.

¹⁰⁶ Brian Hyer. "What is a Function?" *The Oxford Handbook of Neo-Riemannian Music Theories*, pp. 92-139.

¹⁰⁷ Riemann. *Handbuch der Harmonielehre und Modulationslehre*. (Originally published in 1889 as *Katechismus der Harmonie-und Modulationslehre*.) Berlin: Max Hesse, 1917. Discussed in Rehding, p. 55.

In the *relative* transformation, the fifth of the C major tonic chord of “Silent Night” is replaced by an A, resulting in a rather mournful A minor dirge (*ex.1-13*). Leading tone exchange converts shifts the C major root to E, producing E Phrygian (*ex.1-14*).

Example 1-13: “Silent Night”: Relative Minor

Example 1-13 shows the relative minor transformation of "Silent Night". The music is in 3/4 time. The vocal line is in treble clef, and the bass line is in bass clef. The key signature has one flat (B-flat). The first system shows the vocal line and a bass line with an A minor chord. The second system shows the vocal line and a bass line with an A minor chord. The lyrics are "Si - lent night, ho - ly night,".

Example 1-14: “Silent Night”: Leading Tone Exchange

Example 1-14 shows the leading tone exchange transformation of "Silent Night". The music is in 3/4 time. The vocal line is in treble clef, and the bass line is in bass clef. The key signature has one flat (B-flat). The first system shows the vocal line and a bass line with an E minor chord. The second system shows the vocal line and a bass line with an E minor chord. The lyrics are "Si - lent night, ho - ly night,".

While substituting a single minor chord for a major one is not difficult, remapping an entire tonal composition from major into minor quickly becomes complex, if not tonally arbitrary. Example 1-15 shows my (somewhat labored) attempt to reconfigure “Silent Night” in the parallel minor. Note that there is no consistent “minor” scale here, nor is every major chord replaced by a minor one.

scales makes tonality appear less restrictive, but has no basis in practice. In Derridean terms, Hauptmann's multiple major scales bear a "trace" of the minor mode—much like Riemann's "major-minor" scale—thus reversing the traditional binary in which the marked minor bears a trace of the major. As a result, the tonal system is destabilized.

Neo-Riemannian Daniel Harrison also notes that other dualists, like Riemann and himself, chose instead to pare down the minor mode to just one scale: natural minor.^{109 110} The strength of a single minor scale is its 1 to 1 ratio, resulting in an "equal" binary.

The linguistic unmarked

In Western chordal notation, it is common to write "C" instead of "C Major," but always "C minor" or "C-". Because major is the privileged term, musicians from Moscow to Nashville *assume* major unless they hear (or see) otherwise.¹¹¹ Riemann tries to correct this assumption by using the terms "C⁺" and "°C."¹¹² However, he often drops the + sign, simply writing "C,"¹¹³

¹⁰⁹ Riemann. *Katechismus der Harmonie-und Modulationslehre*, 3d ed (Leipzig: Max Hesse, 1906), pp. 16-18, discussed in Harrison, p. 24.

¹¹⁰ Harrison explains the historical reduction of multiple modes into one major scale on p. 18: "A more serious objection can be raised about the propriety of modal dualism if the theory assumes major and minor to be treated equally in composition, for it is commonly held that, while major is comprehended in a single scale, minor requires three. This objection cannot now be treated in full since I blame this discrepancy not on the nature of the two modes themselves but on compositional attitudes toward the modes that have caused them to be treated differently... The duality of major and minor is a higher-order phenomenon than is its manifestation in composition and elementary theory."

¹¹¹ The SMT Jazz Interest Group recently introduced a system of codified chord symbols, including "M" for major and "m" for minor. Though the capital letter still makes major appear more privileged than lowercase minor, at least major is no longer unmarked.

¹¹² Riemann also uses this system to label major and minor functions, such as D (major dominant) and °S (minor subdominant).

¹¹³ Rehding, p. 51.

explaining that the small cross can be omitted “when no misunderstanding is to be feared.”¹¹⁴ Hence, the minor chord must always be marked, while the major is simply assumed.

Roland Barthes calls this kind of linguistic privilege “*exnomination*,” meaning that the bourgeoisie hides its name and influence by neglecting to refer to itself.¹¹⁵ Exnomination has the effect of “naturalizing” ideology and, therefore, furthering its hegemony. Riemann must have been aware of major scale privilege, but still made the mistake of allowing his readers (and, by implication, all musicians) to assume that all tonal structures are major, unless specifically marked otherwise. Dismantling this privilege would be a daunting theoretical task. The very word “minor” indexes the lesser of a conceptual pair. In German, the terms are even more socially telling, for, as we all learn in theory class, “*moll*” (soft) suggests femininity, and “*dur*” (hard) implies masculine fortitude. If minor is to equal major, it must transcend its negative, feminine associations, but this is emphatically not on the dualist theoretical agenda—even if Hauptmann, a champion of the minor mode, believes it should bear a “trace” of the major.¹¹⁶ And if minor did not connote those things, then what expressive value, if any, would it have for composers or theorists? *Of what use is a willow that does not weep?*

Gender inversion

In the eighteenth-century, the predominant view of anatomy was a single-sex model, where the male’s external sexual organs were inverted to be *inside* the female. But by the year 1800, writers, influenced by the growing prestige of the natural sciences, had become interested

¹¹⁴ Riemann, *Bach analysis*, Preface, p. III.

¹¹⁵ Barthes, *Mythologies*. Annette Lavers, trans. New York: Hill & Wang, 1972, p. 138.

¹¹⁶ Similarly, “second-wave” feminists attempted to transvalue the male-female binarism, but ended up essentializing the feminine over the masculine in a sort of reverse-discrimination. Elizabeth Grosz. *Space, time, and perversion: essays on the politics of bodies*. New York: Routledge, 1995.

in “fundamental differences” between the sexes, leading to a rather rigid two-sex system.¹¹⁷ In this new system, it was homosexuals—rather than women—who were now considered inverted.

The surprising upshot of this new belief in absolute gender difference was that women actually lost status. While an inverted male is still on some level *a male*, a female, with no connection to masculinity, might be an alien, or denied personhood altogether. As a result, some late-nineteenth and early twentieth-century accounts of women suggested that female humans might...not exist at all.

Allow me to cite an instructive but deplorable book from Riemann’s milieu, *Geschlecht und Charakter* (Sex and Character), written in 1903 by the young and somewhat imbalanced Austrian intellectual Otto Weininger. Recognizing the conceptual importance of both gender classes, Weininger laments that psychology has, thus far, been conducted *by men about men*. Maintaining that a psychology of women is required for a dialectical understanding of gender, the philosopher believed that women lacked the tools to analyze themselves: “Even if she could and would explore herself fully, it is doubtful if she could bring herself to talk about herself.” Hence, “the psychology of women will have to be written by men, ” even though “such an attempt is foredoomed to failure, inasmuch as the conclusions must be drawn from an alien sex and cannot be verified by introspection.”¹¹⁸

Thus, woman can never really be known, either by herself or man, and is doomed to eternal subaltern status:

¹¹⁷ Thomas Lacquer. *Making Sex: Body and Gender from the Greeks to Freud*. Cambridge: Harvard University Press, 1990, p. 5.

¹¹⁸ Weininger. *Geschlecht und Charakter: eine prinzipielle Untersuchung*. Wien & Leipzig: Wilhelm Braumüller Universitäts-Verlagsbuchhandlung Gesellschaft, 1903, A.L. Burt Company, trans. New York & Chicago, 1906, p. 51.

“The male lives consciously, the female lives unconsciously...The woman receives her consciousness from the man; the function to bring into consciousness what was outside it is a sexual function of the typical man with regard to the typical woman, and is a necessary part of his ideal completeness.”¹¹⁹

In Weininger’s opinion, a woman’s only role—a rather passive one—is to allow man to fill her void. As there is no female consciousness, only man can speak for her, and he, in turn, derives meaning from his active, paternalistic role. Since the two genders need each other for survival, there is still a vague sense of gender as mirror. But the sexes are mostly treated as absolute opposites; men are rational, while women are not. And, since Hegel once argued that “the real is the rational,”¹²⁰ woman, as such, does not exist.

Weininger’s debased Hegelianism makes the power relations inherent in hypostasized binary thinking brutally explicit. (He also believed that Jews like himself were inherently feminized, and could not authentically exist as “real” men, and was obsessed, like many Austrians of his generation, with music and the psychology of genius. His suicide, carried out shortly after the publication of his thesis, in the house on *Schwarzspanierstrasse* where Beethoven died, was the act of a mentally disturbed man; but it made him—and his book—famous.)

Heinrich Schenker, another (self-loathing) Austrian Jew obsessed with genius, was troubled by what he saw as the “inversion” of hierarchy in contemporary life:

We live in an era in which all values in human relationships are turned exactly upside down, by reason of false, unworthy sentimentality: those who need to be led become leaders; the woman assumes the man’s role; the child is pampered as an ‘individuality’ and excused from work before even having learned to work; workers who represent mere

¹¹⁹ Weininger, p. 61.

¹²⁰ Georg Wilhelm Friedrich Hegel. *Philosophy of Right*. SW Dyde, trans. Queen’s University Canada, 1896, Preface, p. xxvii.

instruments in human form consider themselves producers...Today even the simplest things are not understood; that everything in the world has its place and is necessary, to be sure, but that it does not follow merely from this necessity that everything is of equal value. That despite their mutual dependency—in terms of necessity of existence, they remain equal!—the man ranks above the woman, the producer is superior to the merchant or the labourer, the head prevails over the foot, the coachman is more than the wheel of the wagon he steers, the genius means more than the people who represent merely the soil from which he springs.”¹²¹

In Schenker’s “right-side up” universe, man should represent the “head,” and the woman the “foot.” Moreover, the genius composer allows nature to shape the composition organically, coherently, and in the correct order—in stark contrast to Cone’s notion of artistic free will governing ‘UP and DOWN’.¹²²

It seems especially significant that Schenker refers to these hierarchical disturbances as “inversions,” for Schenker detested Riemannian dualism. In Schenker’s unequal binary, the major mode was the “man,” and the minor was “woman,” so he stood firmly against the equalization of the two modes—as well as the subdominant/dominant.

More significantly, the theorist’s comments illustrate that these binaries, such as MAN/WOMAN, WHITE/NON-WHITE, and—yes—MAJOR/MINOR are dangerous hierarchical tools requiring structural dismantling. D  rri  da explains the necessary course of action:

On one hand, we must traverse a phase of overturning. To do justice to this necessity is to recognize that in a classical philosophical opposition we are not dealing with the peaceful coexistence of a vis-  -vis, but rather with a violent hierarchy. One of the two terms governs the other (axiologically, logically, etc.), or has the upper hand...To deconstruct the opposition, first of all, is to overturn the hierarchy at a given moment. To

¹²¹ Schenker, preface of the first volume of *Counterpoint xix*.

¹²² In 1906 Schenker wrote: “a great talent, or a man of genius, like a sleepwalker, often finds the right way, even when his instinct is thwarted by one thing or another...The superior force of Truth—of Nature, as it were—is at work mysteriously behind his consciousness, guiding his pen, without caring in the least whether the happy artist wanted to do the right thing or not.” *Harmonielehre*, pp. 76-77.

overlook this phase of overturning is to forget the conflictual and subordinating structure of opposition.¹²³

It is evident that if we persist in explaining minor as an upside-down bastardization of major, rather than on its own terms, the minor mode can never be fully explained. Therefore, minor is doomed to eternal subaltern status, strengthening major privilege. In the dualist system, the major mode generally *makes sense*. For the most part, it is presented as it always has been, as a bastion of logic. But with its illogical ‘backwards’ chord progressions, falling leading tones and upside-down chords, Riemannian minor, a confounding mirror-image, could only be understood by a devotee of “magical writing” in the tradition of Leonardo da Vinci.

Though Riemann intended to elevate minor by treating it alongside major, he encouraged its Othering. But if minor is not an inversion of major, then what meaning does it have? When anatomists started imagining women as a gender unto themselves, the initial ramifications were negative: now there was scientific justification for treating European women, like members of non-European races, as physically inferior. Still, eventually scientists—many of them *female* researchers—studied women as intelligent beings with different psychological and physical needs from men. Though Weininger could not accept an account of female psychology told by a female psychologist, we certainly can. By expanding the music theory canon to include scholars who are *not* devotees of the Schenkerian masculine, we can introduce the same plurality into music theory. I believe that the only way to rid minor of major ‘traces’ is to consider it as a unique system unto its own, both “axiologically” and “logically,” for the minor mode is complex, and we should celebrate its plurality rather than attempt to reduce it to something simpler and “more rational.” While there are appropriate analytical situations for imagining

¹²³ D errida. *Positions*. Alan Bass, trans. Chicago & London: University of Chicago Press, 1972 and 1981, pp. 41-43.

minor as an analogy to major, I do believe that speculative theory bears a responsibility to conceptualize minor as its own system independent from major—but without the essentialization of minor *over* major.

Postlude: Twentieth-Century Polarity

Riemann was greatly bothered by what he believed to be the breakdown of tonality in the early twentieth-century, but this period could also be characterized as an expansion, the arrival of new scales, or, in many cases, newly packaged older scales. While Riemann devalued the ‘primitive’ church modes for their lack of adherence to tonality,¹²⁴ he might have celebrated them, for they realized his dualist goals, just not in the way he had speculated. Using other generative scales than major and minor, composers could now produce tonal mirroring without having to make concessions to the asymmetries of the common-practice tonal system.

Polarity

Heinrich Schenker, the dominant monist of twentieth-century tonal theory, effectively steamrolled over dualism, but Riemann’s legacy can still be described in several influential twentieth-century theories of music, particularly those highlighting “polarity.” In addition to his dualist major-minor oppositions, Riemann introduced what might be called “polar” pairs in his L, P, and R transformations. Conceptually speaking, the mirror image still relates to polar opposites, but three or more poles are often conceptualized as a circle, in which axes of

¹²⁴ Riemann tended to rewrite music history according to major and minor; ascending scales were evidence of the major, and descending scales were minor prototypes. In the *Katechismus der Musikgeschichte* (1888), Riemann explains how church modes were unable to produce a complete resolution without *musica ficta*. See William Michelson. *Hugo Riemann’s Theory of Harmony*. Lincoln & London: University of Nebraska Press, 1977, pp. 40-44.

symmetry can be drawn from one point to another (see Neo-Riemannian Richard Cohn's circular hexatonic systems, *fig. 1-3*). In the nineteenth-century, the key polarities concerned major/minor and dominant/subdominant, but in the twentieth century, atonal oppositions retained traces of these tonal binaries while developing new models. Let us now explore polar theories proposed by Igor Stravinsky, Arthur Berger, Ernő Lendvai, and Richard Cohn.

Igor Stravinsky based his compositional oppositions on a wide range of axes, from tritone relationships to the black and white keys on the piano, and the following remarks on polarity inspired subsequent theorists to analyze atonal musics according to their "polar" properties:

Having reached this point beyond classical tonality, it is no less indispensable to obey, not new idols, but the eternal necessity of affirming the axis of our music and to recognize the existence of certain poles of attraction. Diatonic tonality is only one means of orienting music toward these poles. *The function of tonality is completely subordinated to the force of attraction of the pole of sonority.*¹²⁵

For Stravinsky, musical oppositions are likened to magnetism; just as the North and South Poles are attracted to each other, so too are musical forces from disparate poles. Together, opposing poles create numerous fields of "gravity" that exert more "force" than traditional tonality. I imagine that for Stravinsky, the concept of "tonal gravity" may still be applicable, but the multiplicity of symmetric poles seems substantially more varied and complex than the one-dimensional logic of traditional dominant-tonic polarity.

Arthur Berger interpreted Stravinsky's remarks as a call for non-tonal polar constructions, arguing that the octatonic scale (Berger's own supposed "discovery") provided the

¹²⁵ Igor Stravinsky. *Poetics of Music*. Knodel and Dahl, trans. Cambridge: Harvard University Press, 1947, p. 35, emphasis mine.

ideal framework for Stravinsky analysis.¹²⁶ As subsets of the symmetrical octatonic scale (0, 1, 3, 4, 6, 7, 9, 10) alternating between ic-1 and ic-2, Berger identified four potential tonal centers: (0, 3, 6, 9). Previously, *Petrouschka's Tableau* had commonly been analyzed as a bitonal configuration in C and F[#] (most notably by the composer himself¹²⁷), but Berger posits that “since the entire configuration may now be subsumed under a single collection with a single referential order, i.e., the octatonic scale, the *dubious* concept of ‘polytonality’ need no longer be invoked.”¹²⁸ For Berger, the lack of organic unity implicit in polytonal analysis signals incoherence, but he acknowledges any of the four minor-third related pitches as potential tonal centers.¹²⁹

Joseph Straus augmented Berger’s four polar tonal centers to incorporate the other four members of the ic-1/2 octatonic scale as well: (1, 4, 7, 10).¹³⁰ Since these four pitches express the same polar relationship as (0, 3, 6, 9) transposed up a semitone, Straus argues in favor of their inclusion as potential tonal centers. Therefore, in Straus’s polar constructions, there exist *eight* potential tonal centers!

Following in Berger’s footsteps, Hungarian theorist and Bartók scholar Ernő Lendvai proposed “counterpoles” on (0, 3, 6, 9), which Bartók used “for a sudden change of scene.”¹³¹

¹²⁶ Arthur Berger. “Problems of Pitch Organization in Stravinsky.” *Perspectives of New Music* 2, no. 1, Fall–Winter, 1963, pp. 11-42.

¹²⁷ Stravinsky famously decried that *Petrouschka's Tableau* was in “two keys.” See Igor Stravinsky and Robert Craft. *Expositions and Developments*. New York: Doubleday, 1962, p. 156.

¹²⁸ Berger, p. 22, emphasis mine.

¹²⁹ The four potential tonal centers of the octatonic system may be integrated, but, in a sense, Berger has expanded polytonal centrality in *Petrouschka* from two to four.

¹³⁰ Straus. “Stravinsky’s Tonal Axis.” *Journal of Music Theory* 26, 1982, pp. 261.

¹³¹ Lendvai. *Béla Bartók: An Analysis of His Music*. London: Kahn & Averill, 1971, p.12.

Thus, tritone substitution of F^\sharp for a C tonic can transform the expected G7-C (V-I) authentic cadence into G7- F^\sharp --what Lendvai terms a “Bartokean pseudo-cadence.”¹³² Because Lendvai uses the chromatic scale rather than the octatonic as the basis of generation, he includes all twelve tones in his theory, though minor thirds relationships still inform Lendvai’s “tonic” poles (0, 3, 6, 9), “subdominant” poles (2, 5, 8, 11), and “dominant” poles (1, 4, 7, 10).¹³³ Believing that tonal music is inherently “asymmetrical,” and atonal music “symmetrical,” his “pseudo-cadences” and “functional poles” link the two practices.¹³⁴

Lendvai cites a range of polar relationships, including the “counterpoles” discussed above, relatives, parallels, substitutes, and the crucial “complementary” relationship arising between a major tonic chord and the flatted six minor (I- bvi), or a minor tonic and the major chord on the natural third degree (i-III). Lendvai calls this the “1:3” or “3:1” model, defined as the unification of a major and a minor triad (the latter lying a major third lower): “In this case one triad neutralizes the other since their notes combine in an atonal 1:3 model. This is why such triads express a contrast in their *content* as well.”¹³⁵

Figure 1-2: Lendvai’s “alpha-complex”

E alpha chord: E G^\sharp B (E major) + E G B (E minor)= E G G^\sharp B

E major + C minor (3:1 ratio)= E-G (3), G- G^\sharp (1), G^\sharp -B (3), B-C (1), C- E^b (3)

¹³² Ibid, p. 13.

¹³³ Ibid, p. 14.

¹³⁴ Lendvai. *Symmetries of Music: An Introduction to Semantics of Music*. Kecskemét: Kódy Institute, 1993, p. 231.

¹³⁵ Ibid, p. 234

Let us take a moment to unpack Lendvai's terminology. By combining the 3:1 patterned major-minor chord (E-G-G[#]-B)—what he terms the “alpha chord”—with its many Riemannian parallels and relatives, Lendvai introduces a host of other chords (the “alpha complex”). (*fig. 1-2*) For example, C[#] minor, the relative minor of E major, is part of the E major-minor alpha complex—as well as *its* parallel, C[#] major. Analogously, G major, the relative major of E minor, and its parallel, G minor, are also included. C minor, the ^bvi minor of E major, forms the sixth degree of the parallel E minor in Riemannian dualism. Hence, the entire alpha complex pitch collection can be derived through Riemannian mode mixture (tonality) *or* the 3:1 ratio (atonality).

In a sense, the alpha complex is built on major-minor borrowing, but unlike Riemann's major-minor scale, which utilizes one tetrachord from major and the other from minor, an alpha chord sounds both thirds simultaneously. According to the composer himself, Bartók's inspiration relates more to folk practice than Riemannian dualism: “We can observe the simultaneous use of major and minor third even in instrumental folk music.”¹³⁶ Of course, chords containing both a minor and major third were rarely heard in concert music before the early twentieth century (save William Byrd and Henry Purcell's cross-relations), so it does not seem surprising that Riemann would not have tackled this practice.

In his analysis of *Bluebeard's Castle*, Lendvai describes the symbolic implications of Bartók's “complementary” relations:

¹³⁶ Bartók, *BBE* 1976, 1943, pp. 369–370.

The entire tonal plan of Bluebeard's Castle is built up of such complementary relations. F[#] minor is the key of 'night' and C major that of 'light'. C major can be destroyed by means of the A^b minor key. – Thus the latter is associated with 'death' symbolism.¹³⁷

Despite the innovation of the tritone relation, Lendvai's "complementary" keys representing NIGHT and LIGHT sound dualist in that the minor chord, acquiring the ghastly associations of death and annihilation, is clearly marked. Lendvai explains further: "The idea of 'annihilation' goes back to Romantic models. When Wotan in the great Monologue of the Valkyrie prophesies the Twilight of Gods, his words '*Das Ende! Das Ende!*' evoke E major and C minor – which tonally destroy each other."¹³⁸ Because in reaching C minor, every pitch of E major is transformed up or down by a minor second, Lendvai considers the relationship mutually destructive, like the acoustic interference of sound waves that cancel each other out. His description conjures yet another metaphor involving natural law: the law of conservation. As Lendvai would have it, there still exists a concept of universal balance in the atonal world.¹³⁹

Richard Cohn: Hexatonic Poles

In "Maximally Smooth Cycles, Hexatonic Systems" (1996), Richard Cohn investigates Lendvai's 'mutually destructive' E major and C minor from a neo-Riemannian perspective.¹⁴⁰ Arranging Lendvai's 3:1 ratios in a circle, Cohn treats each of the four ic-4 based cycles as separate 3:1 "hexatonic systems," locating the E major/C minor complex in the Northern system.

¹³⁷ Lendvai, *Verdi and Wagner*. Budapest: International House, 1988, p. 142.

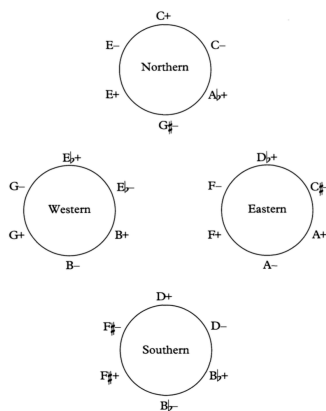
¹³⁸ Lendvai, "Symmetries of Music," p. 234.

¹³⁹ In his remarks on the related twentieth-century practice of axial symmetry, Richard Taruskin makes a similar appeal to the law of conservation: "With its pluses and minuses arranged around a stationary center, axial symmetry à la Bartok or Strauss or Webern is a 'zero sum game.'" "Chapter 7: Social Validation." *The Oxford History of Western Music*. New York: Oxford University Press, 2005. Accessed 10/29/2016. <<http://www.oxfordwesternmusic.com/view/Volume4/actrade-9780195384840-div1-007004.xml>>.

¹⁴⁰ Richard Cohn. "Maximally Smooth Cycles, Hexatonic Systems, and the Analysis of Late-Romantic Triadic Progressions." *Music Analysis* 15/1, 1996, pp. 9–40.

(fig. 1-3) In the clockwise direction, one minor second (or GIS: Generalized Interval) is required to transform C major into C minor, C minor into A^b major, and so forth. Chords located directly across the circle require three GI shifts, meaning that *each* member of the triad has been shifted by one step. Cohn calls these maximally disjunct but hexatonically compatible chords, “hexatonic poles.”¹⁴¹

Figure 1-3: Cohn’s Four Hexatonic Systems¹⁴²



Cohn declares that “more than any other triadic pairing, the hexatonic polar relation resists interpretation in terms of diatonic tonality,”¹⁴³ which should be the case, because chords with no common tone are, by definition, remote.¹⁴⁴ In a highly dissonant tonal universe like that of *Bluebeard’s Castle*, ironically, hexatonic polar relations may actually help the listener find solid ground. Despite the disorientation of the minor-sixth pivot from major to minor (or major-

¹⁴¹ Cohn, p. 20.

¹⁴² Ibid.

¹⁴³ Ibid.

¹⁴⁴ Of course, there exist other maximally disjunct relationships, such as that between C diminished (C-E^b-G^b) and E minor (E-G-B), but tonal theory interprets this relation without difficulty.

third shift from minor to major), the familiar major-minor binary may seem comforting to listeners.

Tonic vs. anti-tonic

The hexatonic polar relationship is a particularly dramatic transformation, which can be seen as an extension of Riemannian major-minor “opposites.” Another of Lendvai’s “opposite” operations—but one that diverges from dualism and three-pronged functional analysis—is a pared-down dual function model involving a tonic and its *anti-tonic*:

Of two fourth chords which are placed at a distance of a minor third (3) or major second (2) from each other, the 'tonic' model is always the one which lies a minor third lower or (which means the same) a major second higher than the other. We call one of them the 'tonic' and the other 'antitonic' model. In Fig. below, the 'tonic' model is represented by fourth-degrees C-F-B^b, and the 'antitonic' by fourth-degrees B^b-E^b-A^b. The tonic-antitonic attraction originates in the SO-RE' MI (DO-SO LA) cadence so frequent in folk melodies: the SO-RE holds the tension, while the MI corresponds to the tonic resolution...*it deserves a special attention that this time we are faced with a two-function system (and not a three-function one, as in classical harmony).*¹⁴⁵

Quartals are of particular interest to theorists of mirroring, for in root position, they are palindromic and entirely symmetrical (Chapter 3). Lendvai probably chose this fourth-based chord precisely because it is *not* a traditional tertian construction, and his invocation of a folk analogy demonstrates his desire to link this two-function system to modal folk practice (such as the Scottish folk “double-tonic” model involving a second tonic located a whole-step below the first¹⁴⁶) rather than classical harmony.

¹⁴⁵ Lendvai. “Harmonic Principles.” <http://www.mi.sanu.ac.rs/vismath/lends/ch3.htm>, also discussed in Lendvai. *Béla Bartók: An Analysis of his Music*, p. 64.

¹⁴⁶ For more on the “double-tonic,” see Matthew Gelbart. “Once More to Mendelssohn’s Scotland: The “Laws of Music, the Double Tonic, and the Sublimation of Modality.” *19th-Century Music*, Vol. 37 No. 1, Summer 2013, pp. 3-36.

I see two possible reasons for Lendvai's *anti-tonic* treatment of the second chord. Number one, the first chord will seem more tonic-like by virtue of the fact that it comes first. Additionally, the second chord is flatter than the first, and, hence, becomes the negation, or marked member of the binary pair.

Interval cycles provide a different view of these same structures, in that the two quartals (C-F-B^b and B^b-E^b-A^b) are both triadic manifestations of the ic-5 (perfect fourth) cycle. Analyzed in this way, the second chord simply extends the interval cycle (C-F-B^b-E^b-A^b) two steps in the flat direction. Because interval cycle analysis combines the two chords into a single chain of fourths, the resultant structure seems somewhat monistic. Where polar analyses are inherently dualistic, interval cycles re-brand these structures monistically. I believe that both dualist and monist models can shed light on the conceptual and architectural underpinnings of twentieth-century compositions. (Interval cycle analysis will be considered extensively in Chapters 2 and 3.)

Mirrored scales

Without the harmonic constraints of tonality, twentieth-century composers were freer to investigate symmetrical mirrorings. Russian composers had been incorporating what Oliver Messiaen would later call “scales of limited transposition”¹⁴⁷ since the early nineteenth-century, but this practice was slower to catch on in the West. By dividing the octave into two equal

¹⁴⁷ diminished, augmented, whole-tone, octatonic, etc... See Messiaen, *The technique of my musical language*. Alphonse Leduc, Paris, 1944, p.58.

tritone-sized parts rather than the unequal fourth plus fifth, composers like Skryabin and Debussy exploited tritone invariance¹⁴⁸ and interval cycles.¹⁴⁹

In this new era, the completion of interval cycles often supplanted tonality as an expression of wholeness. Among the most significant was the ic-5/7 cycle of perfect fourths/fifths, in part because it is the smallest interval capable of generating all twelve tones aside from the semitone.¹⁵⁰ During tonality's reign, the ic-5/7 cycle governed both the order of major and minor keys and modulation to the respective flat and sharp sides, and this interval cycle still retained a semblance of tonality. From the point of view of the tonic, one step in the flat direction indicates the subdominant, while one move sharp lands on dominant terrain.

Example 1-16: Lydian as sharp side ic5-7 heptatonic scale, and Locrian as flat side inversion

The image displays two musical systems, each consisting of a treble and bass staff. The first system is labeled 'Ic-7 ascending' and 'C Lydian (scalar order)'. The treble staff shows a whole rest followed by a half note G with a sharp sign, and then a whole rest. The bass staff shows a scalar sequence of notes: C, D, E, F, G, A, B, C. The second system is labeled 'Ic-7 descending' and 'C Locrian (scalar order)'. The treble staff shows a scalar sequence of notes: B, A, G, F, E, D, C, B. The bass staff shows a scalar sequence of notes: B, A, G, F, E, D, C, B, with flats under the notes A, G, F, and E.

Which scales are best suited to tonality's signature progression along the cycle of fourths/fifths? Many theorists—from Paul Hindemith to Heinrich Schenker—have used the

¹⁴⁸ The tritone is the only sub-octave interval whose inversion is itself.

¹⁴⁹ Elliot Antokoletz and Paolo Susanni. *Music and Twentieth-Century Tonality: Harmonic Progression based on Modality and the Interval Cycles*. New York & Oxfordshire: Routledge Press, 2012, p. 25.

¹⁵⁰ Schoenberg was particularly excited about this potential.

perfect fifth to generate a divinely-inspired *ur* scale, usually Ionian (see Schenker's major scale in Chapter 2). But if the perfect fifth (ic-7) is used repeatedly as the generating impetus for a sharp-side heptatonic scale, then the result is actually *Lydian* rather than Ionian: (*ex. 1-16*)

Climbing seven steps up the ladder of perfect fifths and reordering the pitches, the C Lydian scale emerges, and this logic forms the basis for jazz theorist George Russell's *Chromatic Lydian Concept*.¹⁵¹ Russell adds: "The major scale resolves to its tonic chord; the Lydian scale is the sound of its tonic chord."¹⁵² Put differently, Lydian is the scale that best complements a major triad—not Ionian. In Ionian, the fourth degree is an "avoid note," since it cannot be added to the major tonic chord without clashing with the third degree. While I would not deny Ionian's role in tonal musics, Lydian often supplants Ionian as the primary "major scale"—or sharp side ic5-7 heptatonic collection—in many late nineteenth- and twentieth-century compositions by Debussy, Ravel, Stravinsky, and Bartók. For example, in Bartók's *Music for Strings, Percussion, and Celesta*, both scalar and perfect-fifth orderings of the A-Lydian mode are utilized. Where the opening theme unfolds in ic-7 order (A-E-B-F[#]-C[#]-G[#]-D[#]), the final movement expresses the Lydian scalar ordering (A-B-C[#]-D[#]-E-F[#]-G[#]).¹⁵³

As a Lydian monist, George Russell used Lydian to generate church and melodic minor modes—but *out of order* from most tonal theorists' perspectives. Like Ionian-based monists, Russell suffered from a similar tunnel vision; hopelessly fixated on the supremacy of the Lydian scale, Russell never considered the validity of other scales. And while Lydian is indeed a

¹⁵¹ George Russell. *The Lydian Chromatic Concept of Tonal Organization*, 1953, (fourth printing, Brookline: Concept Publishing Company, 2008).

¹⁵² Russell, iv.

¹⁵³ Antokoletz, p. 52.

prominent scale in mid-century jazz, I would argue that flat-side constructions are equally, if not more significant in African-American chord progressions. Unfortunately, Russell's *Lydian Concept* requires too many convoluted steps to analyze even a simple minor pentatonic blues solo, for he considers any scale involving a natural fourth degree "horizontal," owing to its tendency to cadence *back* to the Lydian parent scale.¹⁵⁴ Allowing inversion might usefully have broadened Russell's fifth-generated model. From the sharp-side Lydian scale, a mirror image scale can be generated of ascending perfect fourths/descending perfect fifths—rearranged as Locrian (*ex. 1-16*).

The first five pitches of this ic-5 mirror scale (C-F-B^b-E^b-A^b) translate to the minor pentatonic (C minor pentatonic: C-E^b-F-G-B^b), a central scale in the blues, jazz, and Rhythm & Blues, among other musical traditions. If Russell had incorporated this five-pitch inversion in equal temperament, the minor pentatonic scale would have appeared as a "first order" manifestation of the scale as opposed to an "eleventh order" one.

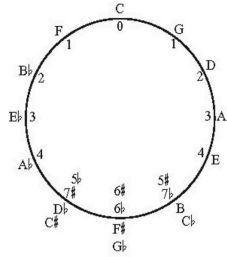
In the ascending ic-7 scale, the first five pitches (C-G-D-A-E) produce C major pentatonic (C major pentatonic: C-D-E-G-A). For an example of this ordering, Elliott Antokoletz & Paolo Susanni have brilliantly detailed Maurice Ravel's ic-7 perfect fifth-ordered introduction of the major pentatonic in *Ma Mère L'Oyé*.¹⁵⁵ Under equal temperament, the twelve tones can also be arranged in a circle, or ic-5/7 interval cycle. In this arrangement, *flat* and *sharp* only

¹⁵⁴ See Russell, pp. 18-19. It seems odd that the 7-8 leading tone found in the Parent Lydian Scale should be "vertical," while the fourth degree leading tone behaves "horizontally." In a sense, this demotion of the natural fourth degree also demotes most modal music, for Mixolydian, Phrygian, Aeolian, Melodic Minor, Minor Pentatonic, and most Blues scales—in addition to Ionian—are downgraded to "horizontal" status.

¹⁵⁵ See Antokoletz & Susanni's analysis, pp. 109-111.

indicate directions, meaning that the flat and sharp sides are just different orderings of the same structures. (fig. 1-4)

Figure 1-4: Ic-5/7 interval cycle



In heptatonic configurations of ic-5/7, Lydian and Locrian form a complementary pair, constituting the ordered scalar opposition for the interval cycle generated by fifths or fourths. Where Lydian’s bright, *major-esque* colors evoke the *carnavale* (Chapter 2), Locrian, a highly flatted *minor* scale, has been used in metal explorations of bondage and imprisonment.¹⁵⁶ The only shared pitches are the tonic (C), and the tritone (G^b or F[#]), which allows for bifurcation of the octave. Together, C Lydian and C Locrian produce all twelve tones.

Example 1-17: Bartok, Mikrokosmos No. 121: “Two Part Study,” mm.1-3



In Bartók’s *Mikrokosmos* #121: “Two Part Study,” (ex. 1-17) the initial sequences operate in D Lydian, but hint at the supertonic on E Lydian or E Ionian. The mirrored left hand on the

¹⁵⁶ For an example of Locrian “unblack” Metal, see Norwegian band Antestor’s “The Return,” from *The Return of the Black Death* (1998).

first beat of measure 2 is displaced a minor tenth, with the right hand commencing at B and the left on G[#], the tritone pole of D. Since the Lydian scale is already bisected evenly at the tritone, such polar relations do not upset the integrity of the mode.

If the left hand mirror had begun on the B, as in the melody, then a D Locrian scale would have emerged, but the inversion is displaced by a minor tenth, exchanging the ascending minor third from B to D in the right hand for a descending *major* third. Through this sleight of hand, Bartok allows the left hand to emphasize D and E Lydian as well.

Example 1-18: Bartok, *Mikrokosmos* No. 121, mm. 8-11



When the opening D is transposed down a semitone to C[#] starting at measure 8, we might have expected the original D Lydian right-hand melody to downshift to C[#] Lydian as well. Instead, Bartók inverts C[#] Lydian to form C[#] Locrian (with some chromatic passing tones) (*ex. 1-18*). Unlike the freely inflected left-hand mirrors in measure 2, C[#] Lydian and C[#] Locrian are true inversions.

With the exception of Dorian—which inverts to itself—all major modes possess an inversional modal complement: Lydian/Locrian, Ionian/Phrygian, and Mixolydian/Aeolian. In *Cantata Profunda*, Bartók inverts Ionian/Phrygian, among others, “fitt[ing] the modes together in

this way, like cogwheels...in the interest of bringing about chromatism naturally.”¹⁵⁷ Bartók picks a scale or intervallic ratio, then mirrors it to create another—resulting in a symmetrical (but strongly dissonant) bimodality.

The M Transformation

Now that we have established some of the ways in which mirroring triumphed after the breakdown of tonality, let us discuss an additional twentieth-century inversive breakthrough. In his Harvard Lectures of 1943, Bartók revealed “a new device” he had discovered while working on *Music for Strings, Percussion, and Celesta*, in which “the succession of chromatic degrees is extended by leveling them out over a diatonic terrain.”¹⁵⁸ As an extension of this technique, known as “intervallic expansion,” Bartók *stretches* the opening chromatic tetrachord (C[#]-D-D[#]-E) of the Third String Quartet to (C[#]-G[#]-D[#]-A[#]) at the piece’s conclusion.¹⁵⁹ If re-imagined as set class numbers, then Bartók has transformed the ic-1 cycle into the ic-7 through a process of multiplication—what set theorists now refer to as “M7” Multiplication (for ic-7).¹⁶⁰

Serial composer and theorist Ernst Krenek (1937) was the first to transform the chromatic scale into the perfect fourth and fifth scales¹⁶¹, but it was Herbert Eimert (1950) who explained these transformations as multiplications of numerical pitch classes.¹⁶² First, Eimert

¹⁵⁷ János Kárpáti. *Bartók’s Chamber Music*. Fred Macnicol and Mária Steiner, trans. Stuyvesant: Pendragon Press, 1976, p. 181.

¹⁵⁸ Béla Bartók. *Bartók Essays*. Benjamin Suchoff, ed. London: Faber & Faber, 1976, p. 381.

¹⁵⁹ Michiel Schuijjer. *Analyzing Atonal Music: Pitch-class Set Theory and Its Contexts*. Rochester: University of Rochester Press, 2008, p. 78.

¹⁶⁰ For more on the M transformation and pitch set theory, see Robert Morris. *Composition with Pitch Classes: a theory of compositional design*. New Haven: Yale University Press, 1987.

¹⁶¹ See Krenek. *Über neue Musik*. Vienna: Ringbuchlandling, 1937.

¹⁶² See Eimert. *Lehrbuch der Zwölftontechnik*. Wiesbaden: Breitkopf & Härtel, 1950.

imagined the chromatic, perfect fourth, and perfect fifth (and all other intervals) as *cycles*, where one “step” indicated a semitone in the chromatic cycle, five semitones in the perfect fourth cycle, and seven in the perfect fifth cycle.¹⁶³ (*ex. I-19*).

Example 1-19: Eimert (1950): “Steps” of the Chromatic, Fourth, and Fifth Cycles, p. 77



Having converted an interval scale “step” to a numerical value, Eimert could now multiply intervals with ease:

In general, the procedure is like this: to transform G [Grundreihe, i.e., the prime series-form] into IV [cycle-of-fourths-transform] or V [cycle-of-fifths-transform], one multiplies the interval numbers with 5 and 7, respectively. When the products are larger than 12..., their difference with the next-smaller number in the multiplication table of 12 should be determined.¹⁶⁴

Eimert discussed the “eight modes” of the twelve-tone series as permutations of mirrorings: “inversion” produces a horizontal mirroring, “retrograde” a vertical reflection, “retrograde-inverse” a horizontal *and* vertical mirror, and “*Quartverwandlung*” (circle-of-fourths-transform) and “*Quintverwandlung*” (circle-of-fifths-transform) a *slanted* mirror.¹⁶⁵

Princeton theorist Hubert S. Howe (1965) piggybacked on Eimert, declaring that

¹⁶³ Eimert, 1950. Michiel Schuijjer, trans. p. 71.

¹⁶⁴ Ibid, Michiel Schuijjer, trans. p. 81.

¹⁶⁵ Ibid.

inversions were simply multiplications.¹⁶⁶ For Howe, the M11 transform indicated “inversion,” while its complement, M1, stood for “identity.”¹⁶⁷ Since multiplying any number by 1 equals the original number, the M1 process cleverly disguises the fact that *the original pitch is unchanged*.

Since interval cycles could now be aligned, the M Transformation became a Rosetta Stone for translating diatonicism, interval cycles, and chromaticism. For example, a descending major second from C to B^b reflects *two* rising fourths (C-F-B^b); a rising minor third from C to E^b is equivalent to *three* rising fourths (C-F-B^b-E^b); the major third transformation from C to A^b can be configured as *four* fourths (C-F-B^b-E^b-A^b).

Returning briefly to sharps and flats, the ascending sharpward semitone transformation from a tonic of C to C[#] is treated differently in tonality from the descending flatward motion from a C tonic to B; B is the seventh degree of the C major scale, but C[#] is remote from C major. For this reason, the ascending semitone to C[#] seems *farther away* than B—because conceptually, it is. According to the cycle of fifths, B is closer to C as well, since it only requires five steps to transform C to B: (C-G-D-A-E-B), but seven steps to C[#]: (C-G-D-A-E-B-F[#]-C[#]).

But by referring to musical pitches as *integers*, the distinction between the sharp and flat sides vanishes, because only direction—not tonal function—is preserved. Thus, the transformation from a starting pitch of C to C[#] is equal and opposite to that of the descending C to B. In pitch set theory, all semitonal motion is equalized: accidentals are reduced to a number (1), where a semitone up is one step, and a semitone down indicates one step in the descending direction (or eleven steps in the ascending direction). Flats are no longer “*moll*,” nor are sharps

¹⁶⁶ Howe. "Some Combinatorial Properties of Pitch Structures." *Perspectives of New Music* 4, no. 1, 1965, p. 50.

¹⁶⁷ See Discussion in Schuijjer, p. 82.

“*dur*,” for these structures are just *numbers*. And since Eimert reduces intervals larger than the octave, distances are not preserved accurately either. Therefore, up and down become relative equals—validating Schoenberg’s claim of a musical universe without “up or down.”

As we have seen in this chapter, musical structures are often imagined as representations of philosophical ideas, or anthropomorphisms. The major scale has been used to represent positive concepts, from MASCULINITY to LIGHT, while the minor scale is often relegated to the DOWNTRODDEN, WOMEN, or DARKNESS. Dualism relied on these associations, but by reducing music to numerical values, pitch set theory eradicates them. Instead of discussing subdominants and leading tones, pitch set theorists catalogue common operations, labeled with letters and numbers—which ironically takes on an affective tinge itself. Could it be argued that the Z-relation represents Hungarian nationalism, or Communism, or femininity in Bartók? Unlikely, but I suppose it could. But what makes the Z-relation different from tonal structures is that we don’t have hundreds of years of affective associations to color our opinions.

Even though Lendvai analyzed highly chromatic, atonal musics by Bartók and Kódaly, his affective descriptions of “night” and “light” polarity seemed rooted in the romantic tradition. By contrast, pitch set theory was the ideal system to dismantle unequal binaries, but in doing so, it dismantled practically all musical structure. And because it seems clinical, many music scholars outside of the serial school avoid it altogether, preferring to work with more evocative language—more precisely, the linguistic structures that Derrida considered dangerous. The difficulty is that most everyone—even music scholars—finds binary oppositions comforting. Inversions help us make sense of musical abstractions, and we only have to memorize half as many structures! Rather than commit two separate scales to memory—major and minor—

Riemann asks us to learn just one...and then invert it, chop it up into two tetrachords, and mix and match operations.

The other takeaway is that interval cycles—that is, scales composed of a single interval—encourage analysis of musical structures as a continuum. Earlier in the chapter, I explained how Lendvai's two quartal triads can be analyzed as a single chain of ic-5 intervals. What was previously analyzed as a duality (i.e., two different chords) could now be viewed as one.

Confusion surrounding oppositions and unities haunted Riemann. At times, he argued for the recognition of two separate scales, but more often than not, he configured major and minor as two different views of one central generative pitch. But if there were only one central pitch, then would it really be a dualist system? Riemann's insistence upon undertones and overtones implied that major and minor were two separate structures, but their common fundamental suggested a single meta-structure. But does this mean that Schenker was right all along?

Before we attempt to answer this question, we must conduct further investigations into another significant tonal binary. Schenker's linear system hinges on the authentic cadence alone, but Riemann stressed both authenticity and plagality as equal and opposite harmonic realms. In Chapter 2, I discuss the plagal domain, which, in Riemannian dualism, is closely associated with the minor mode and all things flat. Let us now turn to the marginalized *flat side*.

CHAPTER 2: THE SUBDOMINANT AND ITS PLAGAL AXIS

As a teenager, I loved Nat King Cole’s stylish performance of “Route 66,” Bobby Troup’s blues commemorating the now-superseded American highway (ex.2-1). For most jazz musicians, Cole’s version, with its third “shout chorus” and a subdominant in the second measure of the form, exemplifies the song’s standard changes.

One day after school, a friend played me Bing Crosby’s version of “Route 66” on his father’s old turntable (ex.2-2). Suffice it to say, I wasn’t impressed. What bothered me most was Crosby’s omission of the subdominant chord over the second bar. As a jazz snob, I insisted that Crosby—a pop crooner—didn’t know the right chords.

But when I got home later that day, I plunked out Crosby’s changes only to discover that omitting the second measure four chord didn’t impact the song; that subdominant chord wasn’t necessary after all. This led to my general belief that the subdominant was just a nonessential chord that didn’t really matter.

Example 2-1: “Route 66,” by Bobby Troup (1946): Nat King Cole’s Changes

Example 2-1: “Route 66,” by Bobby Troup (1946): Nat King Cole’s Changes

Chords: G7, C9, G7, C9, G7, Amin9, Ab9, G7

Lyrics: If you ev - er plan to mo - tor west, Tra-vel
my way, take the high-way, that's the best, Get your
kicks on Route six - ty six!

Example 2-2: “Route 66,” Bing Crosby’s changes (transposed from D to G)

Example 2-2: “Route 66,” Bing Crosby’s changes (transposed from D to G)

Chords: G7, C7, G7, Amin7, D7, G

Lyrics: If you should e - ver mo - tor west, Tra vel
my way take the high-way that's the best, Get your
kicks on Route six - ty six!

A surprising number of theorists have come to a similar conclusion, deeming certain instantiations of the subdominant chord optional, or insignificant. Followers of Heinrich Schenker, for instance, hear the subdominant as a contrapuntal prolongation of the tonic. Thus, theorist Steven Laitz demotes the subdominant to an “embellishing chord,” since the tonic controls the basic cadential motion:

The plagal cadence is much weaker than the authentic cadence because the motion of IV to I is not nearly as goal directed as the motion from V to I heard in the authentic cadence. Whereas the authentic cadence contains the tonally defining descending-fifth root motion coupled with the equally strong melodic resolution of 7 to 1, the plagal cadence has only a descending fourth in the bass and a static common tone above, 1. Therefore, IV is peripheral to the harmonic motion and instead extends the tonic through double upper-neighbor motion.¹⁶⁸
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In Laitz’s view, the common tonic tone in the subdominant produces a 4-3 suspension rather than a proper chord change.

Is there a structural subdominant?

Let us now turn our attention to the other subdominant in “Route 66,” occurring at the fifth bar. Every recording I have ever listened to, including Nat King Cole’s (*ex.2-1*) and Bing Crosby’s (*ex.2-2*), moves to the subdominant at this exact spot. Unlike the earlier ‘optional’ subdominant, this chord absolutely *has* to be there. In my own experience performing and teaching 12-bar blues progressions, practically every listener, no matter how untutored, senses the subdominant arrival on bar five instinctively, for it is not a mere auxiliary chord “preparing” for the authentic cadence; rather, it is a crucial cadential event leading directly back to the tonic.

¹⁶⁸ Steven Laitz. *The Complete Musician: An Integrated Approach to Theory, Analysis, and Listening*. Oxford & New York: Oxford University Press, 2011, p. 336.

¹⁶⁹ When Laitz discusses the “plagal cadence,” he indicates a *major subdominant* in a major key. As we learned from Hugo Riemann in Chapter 1, the *minor subdominant* possesses semitonal b6-5 descending linear motion that is analogous to the major leading tone—a *strong* motion indeed. Notwithstanding, all subdominants seem to get lumped into this “weak” pile.

Based on *Route 66*, it would appear that some subdominants are “filler,” while others are “structural.” Somewhere along the line, tonal theorists got the idea that *all* subdominants were just prolongations, embellishments, or “helping” chords. In *Route 66*, for instance, a functional theorist would still label the all-important subdominant at measure 5 a preparation for the dominant.

Now consider the Rolling Stones’ recording of *Route 66*, the typical harmonization of the blues diagrammed in *fig.2-1*. The Stones’ ordering of the three chords is V-IV-I, so that the dominant leads to the subdominant rather than the other way around. Perhaps it would be more accurate to label the blues dominant a “pre-plagal” or “pre-subdominantal” auxiliary chord then, for it prepares a plagal cadence. In the twelve-bar blues, there are two structural moves: I to IV at bar 5 and then IV to I (arriving on the tonic at measure 11). The dominant at measure 10 only sets up the chain of events leading to a plagal cadence, so what is normally termed ‘authentic’ seems auxiliary, and what is normally construed as plagal seems rather authentic to the blues.

Figure 2-1: Final Cadences in “Route 66”

Nat King Cole:	V/V	V7 (or a tritone sub)	I
Bing Crosby:	IV	V7	I
Rolling Stones:	V7	IV7	I

Hugo Riemann considered the V-IV-I cadence naturalized in minor, an inversion of the IV-V-I motion of major,¹⁷⁰ and though blues tonics can be either major or minor, the scale most commonly used over either blues mode is a variant of the minor pentatonic (chapter 4). From the Western perspective, the melodic content of blues exists in a minor mode, fulfilling Riemann’s prescription that minor should cadence V-IV-I. Though Riemann’s ideas on inverted minor

¹⁷⁰ Hugo Riemann. “*Musikalische Logik: Ein Beitrag zur Theorie der Musik,*” *Zeitschrift für Musik*, 1872.

plagality never fully meshed with European tonal minor practice, they work oddly well in the blues, which relies heavily on plagal cadences.

The trouble with Schenker

Heinrich Schenker was not a fan—to say the least—of American jazz.¹⁷¹ But while he denigrated music outside the Germanic tonal paradigm, he did intend his theories to be universal. Subsequent Schenkerian scholars have extended the *Urfinie* to the study of popular music, but only employ some of Schenker's tenets. For instance, Henry Martin urges the modification of Schenkerian methods in the analysis of jazz, since added sixths and other non-triadic tones operate more structurally in jazz than in the common practice.¹⁷² Thus, he retains the sixth degree in the background, even though orthodox Schenkerian analysis reduces it out. James McGowan alters the system similarly, maintaining that the concluding added sixth of "Mack the Knife" "sounds in addition to the 5th, and it functions independently of the 5th in voice leading."¹⁷³

Though Schenkerian analysts of popular music tend to argue that his thought can be applied to all music, some aspects of the *Urfinie* cannot easily be harmonized with Afro-diasporic styles. For one, organic unity is rarely claimed for African-American music, which often displays a bifurcation of melody and harmony (see Chapter 4: the "melodic-harmonic divorce"). Linear analysis is problematic in popular music, for structural change may be

¹⁷¹ See Heinrich Schenker. *Free Composition*. Ernst Oster, trans and ed. New York: Longman, 1979, Appendix 4b, p. 159.

¹⁷² Henry Martin. "From Classical Dissonance to Jazz Consonance: The Added Sixth Chord." (Unpublished article), an expanded version of Martin's earlier paper, "Early Dissonance Into Jazz Consonance: The Added Sixth Chord." Presented at the 2003 Society for Music Theory annual meeting.

¹⁷³ James McGowan. "Consonance in Tonal Jazz: A Critical Survey of its Semantic History." *Jazz Perspectives* 2, No. 1, 2008, p. 93.

signaled by harmony alone (rather than the harmony *and* melody in tandem). Since repetitive “horizontal” popular melodies (i.e., *riffs*) do not necessarily shift when chords change, we should not expect to confirm a cadence with 5-4-3-2-1 melodic descents.

Plagal otherness

It might be said that both traditional scale-step theory and Schenkerian voice-leading theory devalued plagal structures. And yet, even within the common practice, plagality flourished in the nineteenth and twentieth centuries. In her history of nineteenth-century subdominant expansion, Deborah Stein demonstrates Schenker’s inability to fully grasp the autonomous plagal structures of Hugo Wolf’s *Lieder*, among other late-nineteenth-century compositions.¹⁷⁴ Hugo Riemann, writing at the *fin de siècle*, attempted a speculative theory incorporating major, minor, dominant, *and* subdominant.¹⁷⁵ Though I postulated in Chapter 1 that Riemann may not have accurately reflected nineteenth-century tonal practice, he was responding to a real proliferation of plagality in the nineteenth century. The subdominant, long tainted by “Otherness,”¹⁷⁶ gradually became celebrated for exactly that association. And as exoticism and “local color” (Dahlhaus)¹⁷⁷ replaced (neo)classical rhetoric, the plagal domain became increasingly relevant.

¹⁷⁴ See Deborah Stein. “The Expansion of the Subdominant in the Late Nineteenth Century.” *Journal of Music Theory*, Vol. 27, No. 2, Autumn, 1983, pp. 153-180.

¹⁷⁵ See Riemann. *Die Natur der Harmonik*, 1882, and *Vereinfachte Harmonielehre oder die Lehre von den Tonalen Functionen der Akkorden*, 1893.

¹⁷⁶ Margaret Notley. “Plagal Harmony as Other: Asymmetrical Dualism and Instrumental Music by Brahms.” *The Journal of Musicology*, Vol. 22, No. 1, Winter 2005, p. 130.

¹⁷⁷ Carl Dahlhaus, *Nineteenth-Century Music*. J Bradford Robinson, trans. Berkeley, Los Angeles, & London: University of California Press, 1980 and 1989, p. 354.

The development of popular analysis has gone hand in hand with the study of Romantic tonal plagality by practitioners of Neo-Riemannian theory (NRT). Daniel Harrison, a major proponent of NRT, has also written extensively on the Beach Boys; Dmitri Tymoczko has compared jazz to Debussy; guitarist and theorist Guy Capuzzo, author of “Neo-Riemannian Theory and the analysis of pop-rock music,” is a scholar of jazz, pop, and Elliott Carter.¹⁷⁸ My own familiarity with blues, jazz, and pop makes this seem like a natural pairing, for it has taught me that subdominant chords and scales can indeed be structural.

While theorists provide NRT analyses of nineteenth-century subdominant functionality, musicologists investigate the plagal “affect.” Raymond Knapp explains how Beethoven used subdominant-based modulation to represent a subjunctive “conditional tense” expressing dreams rather than reality; in her evocative comments about Beethoven’s Ninth Symphony, Susan McClary has labeled the flatted sixth degree as a “never-neverland”—a mysterious, feminized space that can never be stabilized; according to Richard Taruskin, the flatted submediant degree in Schubert’s String Quintet reflects the fundamental Enlightenment worship of *Innigkeit* (interiority).¹⁷⁹

These three all view the flat side as the *dark* side: a mysterious, non-heteronormative, Othered tonal destination, in which quotidian reality is suspended. Like Taruskin, scholars and laypeople alike often conceptualize flat-side transformation as moving *inward*. The plagal

¹⁷⁸ Harrison. *Harmonic Function in Chromatic Music: a Renewed Dualist Theory and an Account of its Precedents*. Chicago: University of Chicago Press, 1994, and “After Sundown: The Beach Boys’ Experimental Music.” In J. Cobach & J.M. Boone, eds, *Understanding Rock: Essays in Music Analysis*. New York: Oxford University Press, pp. 37-57; Dmitri Tymoczko. “The Consecutive-Semitone Constraint on Scalar Structure: A Link Between Impressionism and Jazz.” *Integral 11*, 1997, pp. 135-179; Guy Capuzzo. “Neo-Riemannian Theory and the Analysis of Pop-Rock Music.” *Music Theory Spectrum*, Vol. 26, No. 2, Fall 2004, pp. 177-200, and *Elliott Carter’s What Next?: Communication, Cooperation, and Separation*. Rochester: University of Rochester Press, 2012.

¹⁷⁹ Raymond Knapp. “Reading Gender in Late Beethoven: *An die Freude* and *an die Ferne Geliebte*.” *Acta Musicologica* Vol. 75, [Fasc.] 1, 2003, pp. 45-63; Susan McClary. *Conventional Wisdom: The Content of Musical Form*. Berkeley & Los Angeles: University of California Press, 2000, p. 123; See Richard Taruskin. “Chapter 2: The Music Trance.” *The Oxford History of Western Music*. New York: Oxford University Press, 2005.

harmonic language of “soulful” Negro Spirituals, gospel, soul, and jazz seems related, for “soulfulness” and “inwardness” are strongly correlated.

The interiority of plagal “soul” simply doesn’t jibe with Schenkerian theory; Schenker construed the subdominant as a superficial “embellishment,” logically exterior to the tonic-dominant polarity at the structural heart of the *Ursatz*. Yes, the subdominant, and its associated plagal chords, were pushed to the margins of common practice tonality. But this very marginality became alluring to nineteenth and twentieth-century composers:

One point of semi-autonomous plagal harmony seems to be that it lies beyond what can be analyzed through a conventional approach to tonal music, and this again suggests the need for methodological flexibility, for a willingness and an ability to draw on a variety of approaches. Doing justice to plagal otherness requires an awareness of the binary oppositions that make it sound different, of the understated power that comes with its lesser position, and of the possibility that a method devised to clarify moments of formal significance might obscure other, perhaps more important kinds of significance.¹⁸⁰

In Margaret Notley’s “semi-autonomous” plagality, the second, fourth, and sixth degrees function not just as auxiliary chords, but as independent structural entities in their own right.

The opposition between sharp-side authenticity and flat-side plagality inherently marginalizes the plagal axis—which, we must recall, was, for Riemann, an extension of the equally marginalized minor mode. We considered a similar opposition between major and minor that Otherved the minor mode in Chapter 1, and in order to understand this manifestation of the flat side, we must re-engage the fundamental flat-sharp binary that underlies them both.

In this chapter, I will first detail the historical marginalization of chords built on the fourth scale degree. If Rameau, the father of tonal theory, intended the subdominant as an equal counterweight to the dominant, then why was it reduced to contrapuntal “embellishment” and auxiliary function by subsequent theorists?

¹⁸⁰ Notley, p.130.

Next, we shall discuss different types of “fourth degree” constructions—from Lydian to Melodic minor. Theorists often treat the subdominant as a single structure, but there are many subdominantal incarnations. Working through a typology of fourth degree tonal phenomena, we will investigate *Amen* cadences and eleventh chords, followed by semi-autonomous and autonomous Lydian structures that break away from their fourth degree roots. We will then concentrate on other, more specialized plagal structures: the “double plagal” chord built on the flatted seventh degree, the “triple plagal” flatted third degree associated with the “backdoor” cadence, and finally the “quadruple plagal” flat sixth, subject of so many gendered and racial hermeneutic excursions. In the following chapter, we will continue our journey to the flat side with chords constructed of stacked fourths.

Ultimately, we’ll ask: *what are the affective advantages of journeying to this marginalized space?* One way to tell the story of Afro-diasporic music notes that, once the sharp side of tonality had been claimed by colonializing Europeans, “trickster” Africans occupied and re-colonized the system’s marginalized flat side. African-Americans staked out their own plagal ground, with complementary African-American horizontal melodic structures and repurposed *Amen* cadences. Due to the widespread success of twentieth-century African-American musics, other marginalized groups later appropriated African-American-style plagality. In our discussion of Elton John, we will also learn how the Englishman used African-American imagery and plagality to embody an alternate path for male sexuality.

Part I: The Fourth Degree in Tonal Theory

In his 1726 *Nouveau système de musique théorique*, Jean Philippe Rameau counterpoised two triads, one located a fifth above the tonic (“*sur*”) and one below it (“*sous*”). In this

symmetrical arrangement, the tonic was imagined as flanked by two equally important supporting chords.¹⁸¹ While Rameau was able to assert mathematically the validity of the perfect fifth—representing the “*sur*” (super) dominant—he could not find acoustic justification for the fourth, or “*sous*” (sub) dominant.¹⁸² As Leonard Meyer explains, “Rameau was evidently enough of an empiricist to recognize that a natural explanation would not do, and enough of a rationalist to admit the possibility that the progression from subdominant to dominant involved learning.”¹⁸³ This became a sticking point in Rameau’s theory, for the speculation did not match the science, nor did it match Rameau’s musical experience. Rameau was a composer first and foremost, so he clearly knew that in eighteenth-century practice the subdominant was not at all analogous to the dominant.¹⁸⁴

In Rameau’s full analysis of bass motion and chord progressions, the authentic cadence is indeed privileged. Rameau believed that the fourth is not generated by the overtone system; it is only the inversion of the fifth.¹⁸⁵ The relationship is complementary:

The fifth, however, should be considered the interval best suited to the bass; in fact we never hear a final cadence or the end of a piece in which this progression is not the primary element...What we say about the fifth should also be understood to apply to the fourth, which always represents it. Those whose

¹⁸¹ *Nouveau système de musique théorique*. Paris: Ballard, 1726, p. 38; translated in Glenn B. Chandler, “Rameau's *Nouveau système de musique théorique*: An Annotated Translation with Commentary.” Ph.D. diss., Indiana University, 1975, p. 270.

¹⁸² On p. 36 of *Nouveau système*, Rameau writes: “The major system cannot begin on unity or any other number that doubles it since its fourth cannot be found in these numbers.” Hence, Rameau rejected his prior claim from the *Traité* that “unity is both source and generator.” Discussed in Thomas Christensen, *Rameau and Musical Thought in the Enlightenment*. Cambridge: Cambridge University Press, 1993, p. 184.

¹⁸³ Leonard B. Meyer. *Style and Music*. Pennsylvania: University of Pennsylvania Press, 1989, p. 275.

¹⁸⁴ Meyer writes, “Indeed, the very notion of a subdominant was derived from an acoustical account of the nature of musical relationships. And though Rameau eventually recognized that the subdominant could not be explained on acoustical grounds, it was his original formulation, together with his terminology that persisted.” See Cohen. “Rameau, Jean-Philippe: Theoretical Writings.” *The New Grove Dictionary*, ed. Stanley Sadie, 15; p. 569.

¹⁸⁵ Rameau, *Treatise on Harmony*: Book One, Article IV, p. 13 in Gossett.

voices are deep enough naturally descend a fifth at endings, while those who cannot do so ascend a fourth...The fifth is always preferred whenever the voice allows, but nothing is destroyed by substituting the fourth for it.¹⁸⁶

Rameau allows the fourth at a final cadence only as the ascending inversion of a falling fifth. A plagal cadence, involving a falling fourth (or an ascending fifth) would not be final enough, for Rameau believed that only the dominant chord's leading tone can lead to a "real" key-establishing cadence; its absence results in a tonic that cannot be confirmed.¹⁸⁷

Rameau's "Irregular cadence"

Rameau called an added sixth chord over the fourth degree (C-E-G-A in the key of G major) a "subdominant," or an "irregular cadence," which, if rearranged, could be interpreted as an Amin7 chord.¹⁸⁸ In *Génération Harmonique* (1737), Rameau explained that these same four pitches could be rearranged over either the second or fourth degrees, implying two different fundamental basses. If the chords progress from I-IV⁶-I, then the fundamental bass ascends a perfect fifth from IV to I, but if the progression is I-ii-V, then the bass ascends a fourth from ii-V. Rameau famously called this dual potential the "*double emploi*," implying that such chordal analysis is dependent on context.¹⁸⁹

Anticipating Riemann and other dualist theorists of tonality, Rameau concluded that this irregular cadence from the fourth degree to the tonic is analogous to the perfect cadence from

¹⁸⁶ Rameau, *Treatise on Harmony*: Book Two, p. 60 in Gossett.

¹⁸⁷ Rameau, *Génération Harmonique*, p. 173.

¹⁸⁸ Rameau, *Treatise*, p. 73 in Gossett.

¹⁸⁹ Rameau, *Génération Harmonique*. 1737, Deborah Hayes, trans. Stanford University Dissertation, 1971, Chapter 9, p. 71.

dominant to tonic.¹⁹⁰ As the sixth degree of the irregular chord ascends to the third degree of the tonic, it inversionally mirrors the seventh degree of the dominant chord's falling resolution to that same mediant. But why, if analogous to the 'regular' dominant, is this altered subdominant cadence called "irregular"? Later realizing that the "irregular" cadence over the subdominant was indeed normative, Rameau renamed the structure "*imparfaite*" (imperfect) in *Génération Harmonique*.¹⁹¹ Thomas Christensen believes that the "imperfect" title puts it on equal footing with the "perfect" cadence,¹⁹² but I feel that its updated moniker still signals a failure to cadence definitively, much like the French *imparfait* verb tense.¹⁹³ Despite the overwhelming popularity of Rameau's scale-step theory, his formulation of the irregular or imperfect cadence was ignored by subsequent theorists. Insisting that a descending fifth bass was paramount, Anton Reicha abandoned Rameau's irregular cadence altogether. Theorist David Kopp summarizes: "He [Reicha] simply chronicles the chord of the dominant in its role in the perfect and half-cadences; and consistent with his devaluation of the subdominant, he does not even mention the plagal cadence as a separate class."¹⁹⁴

Unlike Reicha, Anton Bruckner was at least willing to discuss the subdominant, but believed the IV⁶ to be "artificial." Due to the stepwise neighbor note motion between the IV and

¹⁹⁰ *Traité de l'harmonie, Book II*, Chapter 7, p. 65.

¹⁹¹ Christensen notes that Rameau reverted to "irrégulière" in the *Code de musique pratique*, p. 38. See Christensen, p. 184.

¹⁹² *Ibid.*

¹⁹³ In the French language, the *imparfait* verb tense refers to ongoing or "incomplete" actions, while the *passé composé* reflects more definitive completion.

¹⁹⁴ David Kopp, *Chromatic Transformations in the Nineteenth Century*, p. 39. Anton Reicha, *Cours de Composition Musicale, ou Traité Complet et Raisonné d'Harmonie Pratique*. Paris: Gambaro, 1818, p. 9.

V, he often registered no change in fundamental.¹⁹⁵ Bruckner treats the fourth degree chord as a nonfunctional entity dependent on the dominant.

The irregular cadence had to wait until dualist theory re-invigorated the discourse around the subdominant in the mid-nineteenth century. Not only did Hugo Riemann adopt Rameau's *over-under* arrangement of subdominant and dominant, and the notion that the irregular cadence is analogous to the perfect cadence—he also appropriated the French theorist's argument that the dominant and subdominant are distinguished from the tonic by what Riemann called their “characteristic dissonances”: the dominant's characteristic dissonance was the minor seventh, and for the subdominant it was either an added sixth above (*sixte ajoutée*) or a third below the root.¹⁹⁶ In the *Geschichte der Musiktheorie*, Riemann quoted Rameau: “But if the dissonance is added, to make the mode more definite, then instead of one sound, there will be three in common... Thus [in G], D, as the dominant of the major mode, receives the seventh, C; and A, as the subdominant of the minor mode, receives the major sixth, F[#].”¹⁹⁷ Rehding makes a strong case that Riemann misread this quotation: Rameau is referring to the minor subdominant of the *relative* minor (in G major, IV of E minor is A minor, in which case the added sixth is F[#]), while Riemann is interested in the *parallel* minor subdominant (IV of G minor is C minor, in which case the added sixth is A).¹⁹⁸ (Riemann sought to promote the parallel minor subdominant as the dualist inversion of the major dominant—not the relative minor subdominant.)

¹⁹⁵ Part of the issue was that stepwise bass motion confounded theorists of the time—particularly an ascending major second. Bruckner's manuscript entitled “*Chromatische Anmerkungen*.” New York Public Library Music Division. MNZ-Toscanini Memorial Collection. See discussion in Wason, p. 82.

¹⁹⁶ Rameau, *Génération*, pp. 111-113, Rehding, p. 94.

¹⁹⁷ Rameau, *Génération*, pp. 78 and 142. Cited in Riemann, *Geschichte*, p. 511n.

¹⁹⁸ Rehding, p. 95.

Riemann also insisted that the major and minor subdominants functioned differently, based on “the 6-5 of the fourth scale-degree in the major mode, and the sub-posed third for the triad of the fourth scale-degree in the minor mode,”¹⁹⁹ though Rehding sees no evidence that Rameau heard the “characteristic dissonance” of the minor subdominant as the added major sixth.²⁰⁰

For Rameau, the “root” position of the subdominant added-sixth chord was a first inversion (five-six) orientation, suggesting that he was probably thinking of ii-V-I rather than IV-V-I. This apparently irked Riemann enough to write that Rameau “kept peeking over to the seventh chord of the second scale degree as the actual basis” of the progression.²⁰¹

Example 2-3: Rehding’s reading of Rameau’s ‘Characteristic dissonances’, p. 96.



Rehding’s depiction of Rameau’s “Characteristic dissonances” (*ex.2-3*) demonstrates that the ascending minor third between the fifth and seventh of the dominant (D to F) is reciprocated by the descending minor third from F to the D in the subdominant. But if the two chords are read top-to-bottom, the subdominant looks like a second-degree chord rather than a fourth-degree chord—confirming Riemann’s sneaking suspicion about Rameau. This illustrates one of

¹⁹⁹ Rehding p. 79. Riemann, *Geschichte*, p. 511.

²⁰⁰ Rehding, pp. 95-6.

²⁰¹ Riemann, *Geschichte*, p. 488. Quoted in Rehding, p. 95.

the basic epistemological problems with dualism, for Rameau's "fundamental bass" reads BOTTOM-UP, while minor reads TOP-DOWN and BACKWARDS in the Riemannian system.²⁰²

Sub- or pre- substitutes for the subdominant

The *double emploi* of Rameau's irregular cadence leads him to the position that the second and fourth degree triads are related to each other by inversion. Rameau held that the ii, IV and vi chords—whose roots are all related by third—were, more or less, interchangeable.²⁰³ Even though the triads on ii, IV, and vi may *sound* different (two are minor and one is major), they are grouped together in Rameau according to their inversional similarities, and by subsequent theorists for their related auxiliary function. But if these three chords' primary function is indeed dominant preparation, then IV must be seen as the weakest of the predominant chords due to its potential for parallel fifths when shifting to V. Hence, the supertonic eventually became the preferred predominant, due to strong root movement up the circle of fourths from ii-V-I.²⁰⁴ And unlike IV, which can function without V in the plagal cadence, the diatonic supertonic is almost always auxiliary to the dominant (the ii-I progression is highly unusual).

Rameau also theorized that the dominant chord could be replaced by the seventh-degree diminished chord (B^b-C[#]-E-G for A-C[#]-E-G).²⁰⁵ While the C[#], E, and G are easily explained as

²⁰² If a triad like G-B-D is inverted over the axis G, then the new inverted chord would read G-E^b-C or C-E^b-G, which Riemann called "under-G." If Riemann were consistent about structuring 'upside-down' chords, then this would be no problem, but he often takes the shortcut of calling this chord "C minor" instead. If a seventh degree is added to the first chord, forming G-B-D-F, then the new "under-G" chord will be A-C-E^b-G, suggesting A as the the root, not C.

²⁰³ Rameau demonstrates how the seventh chord on the second scale degree transforms to the fourth, and sixth via a change of bass in "Carte generale de la basse fondamentale," *Mercur de France*, September, 1731; CTW VI, p. 64.

²⁰⁴ See Stefan Kostka & Dorothy Paine. *Tonal Harmony, with an introduction to twentieth-century music*. New York: Alfred A. Knopf, 2000.

²⁰⁵ *Traité*, p. 43, Gossett, p. 50.

constituents of the fifth-degree dominant chord (A7), the B^b—or so-called “flatted ninth degree”—must be “borrowed” (*empruntez*), for the real fundamental of the chord is A.²⁰⁶

Though Rameau’s dominant and subdominant substitutes are intended analogously, they serve different ends. Substitutes for the dominant have always seemed inferior to theorists, thereby strengthening the dominant’s structural status. But the major triad on the fourth scale degree as *sous-dominante* was only one of several options, with voice-leading restrictions complicating each use. In a plagal (IV-I) cadence, voice-leading is not problematic, but that is not how Rameau imagined the subdominant when grouped with the supertonic and mediant as predominant.

Viennese theorist and composer Simon Sechter also believed in chordal “substitutes” (*Stellvertreter*), adopting Rameau’s interchangeable ii, IV, and vi chords.²⁰⁷ Moreover, Sechter also felt that the seventh-degree diminished chord could serve as a substitute for V7 in a cadential progression.²⁰⁸ In the latter case, a “concealed root” allowed Sechter to fabricate the missing fifth-degree fundamental bass.²⁰⁹

As compared to Sechter, Schenker was less keen on dominant substitution (or any kind of substitution, for that matter). In Schenker’s mind, the major mode was primary—never the minor—and he accepted no substitutes for its all-important fifth-degree major dominant.

²⁰⁶ Ibid, and see Christensen, p. 100 for a discussion of the diminished seventh.

²⁰⁷ Simon Sechter, *Die Grundsätze der musikalischen Komposition*. Leipzig: Breitkop und Härtel, 1853-4.

²⁰⁸ Ibid, p. 49.

²⁰⁹ Ibid. Robert Wason discusses this in detail in *Viennese Harmonic Theory from Albrechtsberger to Schenker and Schoenberg*. Ann Arbor: UMI Research Press, 1982, p. 40.

Though he recognized the functional similarity of the diminished chord on VII, Schenker deemed it “incomplete.”²¹⁰

From Sechter’s “concealed root” sprang Karl Mayrberger’s theory of the “harmonic ellipsis,” in which the resolution of certain dissonances can be understood rather than clearly stated.²¹¹ This elliptical model inspired Hans Keller’s clever “functional analyses” (performances of recompositions, mostly) of Mozart, Schoenberg, and other famous works, in which Keller added the elided functional resolutions back to the compositions—demonstrating how a few measures would balloon into dozens.²¹²

Harmonic ellipsis also underpins Mayrberger’s theoretical discussion of Wagner’s tonality-stretching *Tristan* overture, but Robert Wason finds it a little *too* imaginative:

This notion serves conveniently to explain away a multitude of harmonic freedoms, such as unresolved sevenths. And if resolution can be elided, Mayrberger reasons, why not whole chords as well? This is precisely the way in which he accounts for troublesome chromatic root progressions: the motion of C major to D^b major, for example, is explained by interpolating an imaginary Cdim7 between the two chords, proving once again the versatility—if not the usefulness—of this time-worn idea.²¹³

Ernst Kurth famously complained that Mayrberger heard seven modulations in eight bars of the *Liebtestod*,²¹⁴ and if practically every chord change requires a modulation, should this music even be considered tonal?

²¹⁰ Schenker, Heinrich. *Harmony*. Oswald Jonas, ed. Elisabeth Mann-Borgese, trans. Chicago: University of Chicago Press, 1954, p. 192.

²¹¹ Mayrberger, *Die Harmonik Richard Wagner’s*, p. 5.

²¹² Since these were performances, not many of these “Functional Analyses” survive in print. See Hans Keller. “Functional Analysis: its pure application.” *Music Review*, 18:3, pp. 202-6, and “FA No. 1: Mozart, K. 421,” *The Score* 22, February 1958, pp. 58-64.

²¹³ Mayrberger, p. 12 and 23. Wason, p. 93.

²¹⁴ Ernst Kurth. *Romantische Harmonik und ihre Krise in Wagners "Tristan"*. Bern: Paul Haupt; Berlin: Max Hesses Verlag, 1920.

Over-reliance on “harmonic ellipsis” tends to banish self-standing plagality, for if the quintessential tonal path is I-IV-V7-I, then all I-IV-I progressions will seem to be “missing” a V7. Early twentieth-century reductionism also privileged the dominant in this way, with the *Tristan* chord, for instance, explained by Ernst Kurth and Hugo Distler as an altered “double dominant” (B7 in A minor), its heavily-stressed G[#] explained away as a non-structural *appoggiatura* or grace note.²¹⁵

Is the subdominant inherently minor?

In Chapter 1, we discussed Riemann’s minor scale as an ‘upside-down’ instantiation of the major, descending from its fifth degree. Consequent to this inversion, functional progressions transform into their retrogrades, with I-IV-V-I becoming i-v-iv-i in the minor, and the ascending 7-8 leading tone in the authentic major resolution mirrored by the descending ^b6-5 in the minor plagal cadence. In this way, authenticity and plagality are deeply, and, it seems, equally, entrenched. But because the *minor* subdominant is mirrored in the major dominant, it is weirdly privileged over the *major* subdominant. Unlike most of his Viennese contemporaries, Sechter believed that the subdominant’s role was not limited to auxiliary preparation of the dominant; the fourth degree chord could stand alone in an autonomous plagal cadence, but only if certain rules were satisfied.²¹⁶ In a progression from I-V-I or I-IV-I, for instance, Sechter concluded that V *must* be major and IV minor, a decision related to the theorist’s obsession with diatonicism (in

²¹⁵ Ernst Kurth, *Romantische Harmonik und ihre Krise in Wagners Tristan.* Berlin and Leipzig: Max Hesses Verlag, 1920, repr. Hildesheim, 1985. Partial translation in *Ernst Kurth, selected writings.* Lee Allen Rothfarb, ed. and trans. New York: Cambridge University Press, 1991, pp. 97-147. Hugo Distler. *Funktionelle Harmonielehre.* Basel: Bärenreiter-Verlag., 1940, p. 281.

²¹⁶ Sechter explains that the 1st, 4th, and 5th degree chords were the most important, and that they “may enter free and unprepared.” *Die Grundsätze.* C.C. Müller, trans. as *The Correct Order of Fundamental Harmonies.* New York: W.M. A. Pond & Co, 1880, p. 21, and he explains that the subdominant may return directly to the tonic, p. 41. Also, see Wason, p. 35.

both the major and minor modes).²¹⁷ Though not an overt dualist, Sechter maintained that the minor subdominant plagal cadence (i-iv-i)—as the minor analog to the major dominant (I-V-I)—was the “true” subdominant.²¹⁸ In the major progression, Riemann analogized the ^b6-5 “leading tone” of the minor subdominant to the half-step progression 7-8 outlined by the dominant and tonic in a major key²¹⁹; he therefore considered it more structurally important than the 4-3 voice leading created by the major subdominant, but was never one to outlaw chordal combinations. Rather, Riemann generally explained unusual pairings as “substitutions” and “hybrids.”

Despite a similar preference for diatonicism, early nineteenth-century theorist Abbé Vogler outlawed all-minor progressions, such as i-iv-i, or i-v-i, positing that three or more minor triads in a row were “not decisive” (*nicht entscheiden*).²²⁰ The minor mode was problematic for common-practice era diatonicists like Vogler and Sechter, for tonal minor regularly shifts scale—from Aeolian to Melodic and Harmonic—and yet the dominant in a minor key is almost always a major triad. Still, there was no comparable restriction on all-major progressions, in part because diatonicism is more clear-cut in major—the generative scale for most theorists.

A monist, organicist thinker, Schenker distanced himself from Riemannian minor-major dualism, seeking to eradicate “the rigid separation of major and minor.”²²¹ He refused to grant any autonomy to the minor subdominant, and practically dispensed with the subdominant function altogether by the end of his career—insisting that it was always explainable as

²¹⁷ See *Grundsätze*, Müller, pp. 90-95, and Wason, p. 52.

²¹⁸ Sechter, p. 90.

²¹⁹ Riemann. *Geschichte der Musiktheorie*. 2nd edn. Berlin: Max Hesse, 1921; reprint Hildesheim, George Olms, 1990, p. 511.

²²⁰ Abbé George Joseph Vogler. *Handbuch zur Harmonielehre und für den Generalbas nach den Grundsätzen der Mannheimer Tonschule*. Prague, 1882, 44ff (Wason’s translation), qtd. in Wason, p. 150.

²²¹ Wason, p. 139.

prolongational counterpoint. Because the fourth degree was not part of the 1-3-5 triadic arpeggiation that ruled bass progression, chords built on it possessed none of the structural indispensability of the fifth-degree dominant.²²²

The Lydian Chromatic Concept

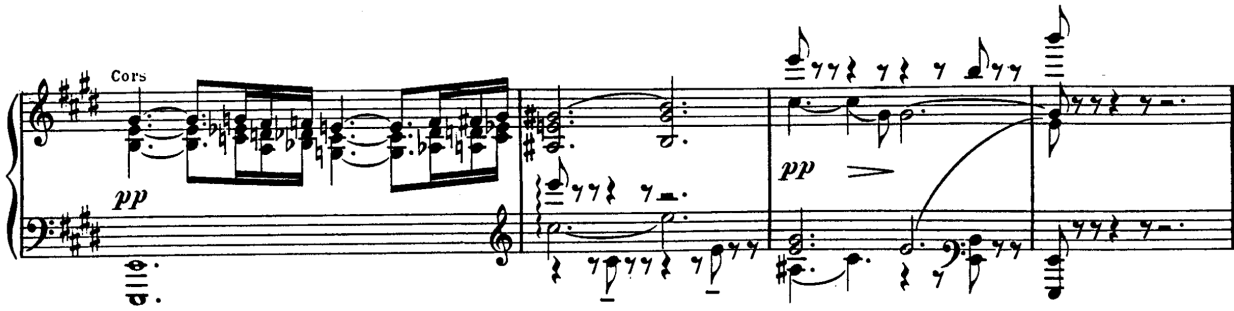
Jazz theorist and composer George Russell developed his pro-Lydian theory just as Miles Davis, Bill Evans, Dave Brubeck, and other “cool jazz” musicians were exploring church modes. In effect, Russell’s *Lydian Chromatic Concept* revolves around Lydian—rather than Ionian—as the generator of modes. Though a Lydian-based tonal system could lionize the subdominant, Lydian actually serves as the tonic mode in the *Concept*. As I explained in the previous chapter, the *Concept* is so ic-7-centric that it complicates the analysis of flat side structures like the subdominant—even though Russell intended it for jazz scholarship.

Russell assumes that Lydian-based modal musics should remain diatonic, much like tonal compositions in Ionian. In Claude Debussy’s *Prélude à l’après-midi d’un faune*, a half-diminished chord on the raised fourth degree (A[#] in the key of E) suggests Riemann’s “altered subdominant.”²²³ This chord, diatonic to E Lydian rather than E Ionian, implies that Lydian functions structurally in the prelude (*ex. 2-4*). But the raised fourth degree can be unstable as a subdominant chord root (particularly in longer modal tonicizations as opposed to transient chords), so Lydian tonics often pivot to a non-diatonic subdominant, as we shall see in our examination of Debussy’s “*La Flûte de Pan*.”

²²² Schenker, Heinrich, *Der Freie Satz*, pp. 10-11.

²²³ Riemann refers to raised fourth degree roots as altered subdominants in the *Handbuch der Harmonie= und Modulationslehre (Praktische und Unleitung zum mehrstimmigen Tonsatz)*. Berlin: Max Hesses Verlag, 1917, p. 102. See Matthew Brown’s discussion in “Tonality and Form in Debussy’s *Prélude à l’après-midi d’un faune*.” *Music Theory Spectrum*, Vol. 15, No. 2, p. 131. I am indebted to Dariusz Terefenko for pointing this out.

Example 2-4: Debussy, *Prélude à l'après-midi d'un faune*, conclusion



Secondary structures

Secondary structures are an effective means of re-interpreting non-diatonic music diatonically. For example, a D^7 chord is not diatonic to C major, but when analyzed as V^7/V —a recognizable tonal structure from a parallel key—then the diatonic system is preserved, requiring no alterations or adjustments to the seven-step format. Therefore, it is not surprising that Sechter, a diatonicist, considered secondary structures—such as ii^7-V^7-I of a related key—“compound progressions.”²²⁴

The privilege of generating secondary structures was not equally distributed in early nineteenth-century tonal theory. While V/V , the “double dominant,” was a common and unremarkable progression, theorists like Sechter never broach autonomous secondary subdominants, like IV/IV . It was Riemann who invented this clever corollary to the dominant’s dominant,²²⁵ but he was largely ignored until neo-Riemannian theorists of popular music recently resuscitated the “double plagal.”²²⁶ In my own studies at Princeton and the New England

²²⁴ Sechter, pp. 129-132.

²²⁵ Riemann usually called this operation, “SS.” See Riemann’s analysis of Beethoven’s ‘Waldstein’ Sonata, from *L. Van Beethovens sämtliche Klavier-Solo Sonaten*, vol. 3.

²²⁶ Mark J. Steedman. “A Generative Grammar for Jazz Chord Sequences.” *Music Perception* 2/1, 1984, p. 74; Walter Everett. “The Beatles as Composers: The Genesis of *Abbey Road*, Side Two.” *Concert Music, Rock, and Jazz*

Conservatory, I was taught to apply dominants to every scale degree, but never how to construct secondary subdominants, presumably because the subdominant function itself was not deemed structural enough.

Another, later Viennese theorist also privileged *Stufentheorie* (scale-step analysis), but Arnold Schoenberg was by no means a pure diatonicist. For example, he explained the appearance of D7 in C major not as “five of five,” but as an altered chord on the *second* degree.²²⁷ Rather than acknowledge D7’s circle-of-fifth relationship to G major, Schoenberg paid closer attention to its second-degree root, suggesting that non-diatonic chords can still “belong” to the world of C major. His “Chart of the Regions” attempted to explain far-flung tonal relationships, emphasizing further that every chord and scale can occur in C major, despite varying degrees of proximity (*fig.2-2*).²²⁸ In this arrangement, the fourth degree and its associated plagal structures—such as the flatted sixth and the Neapolitan—are treated as “regions” rather than incomplete cadences. There are few applied dominants in the “Chart,” for Schoenberg had little interest in relegating commonly used chords to another key; his goal was to establish commonality between the tonic and its associated “regions.” Still, what he labeled the “*flat mediant major’s dominant*,” could have been called, more simply, the “*major flatted seventh degree*” or even the “*subdominant of the subdominant*.” His complex label was probably meant to showcase his reasoning for its placement, but it also reveals a stubborn reliance on authentic circle-of-fifth relations. And despite his labeling of the major and minor subdominant regions, there are no secondary subdominants on the list—even though there is at least one

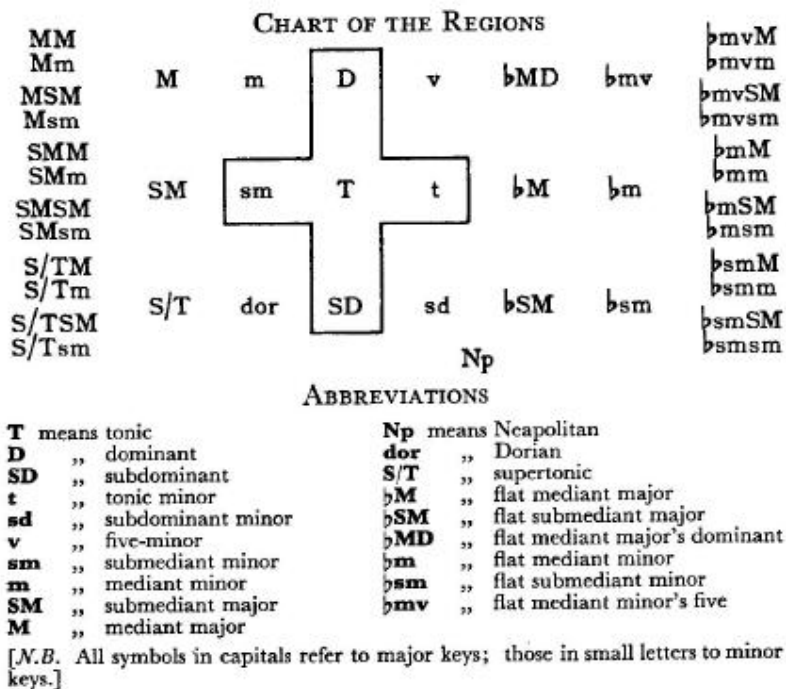
since 1945: *Essays and Analytical Studies*. Elizabeth West Marvin and Richard Hermann, eds. Rochester: University of Rochester Press, 1995, pp. 219 n. 30; and Naphtali Wagner. “Fixing a Hole in the Scale: Suppressed Notes in the Beatles’ Songs.” *Popular Music* 23/3, 2004, pp. 257–69).

²²⁷ Schoenberg. *Structural Functions of Harmony*. New York & London: Norton, 1954, p. 16

²²⁸ *Ibid*, p. 20.

applied dominant present. (Most of the “applied” functions are third-related; in this, Schoenberg demonstrates Riemann’s influence.) Most likely, Schoenberg aspired toward independence from traditional function, but old habits may have diluted his effort. Though his discussion of major tonality contains almost no mention of secondary plagals, he does examine the minor subdominant in greater detail. Schoenberg calls the minor iv/iv “one of the most remote harmonies,” explaining that “the successive use of too many harmonies derived from **sd** [the minor subdominant] can obscure the tonality” due to the excessive flatness of the region.²²⁹

Figure 2-2: Schoenberg’s “Chart of the Regions” for a major key, p.20



Sequences

Chromatic sequences of fifths are controversial for tonal theorists, since they both exemplify and upset tonal hierarchy (Chapter 1). But we are forced to rationalize them, since non-diatonic circle-of-fifths progressions do occur in the most celebrated compositions by

²²⁹ Ibid, p. 54. In the key of C minor, iv/iv is Bb minor, which adds two extra flats.

Mozart and Beethoven. Ascending fifth progressions, which are relatively uncommon in tonal music, are particularly problematic, for they challenge tonal order more so than descending fifth progressions. To make chromatic ascending fifth progressions more tonally compatible, many composers have tempered them by inserting secondary dominants before each new ascending fifth. So, instead of the purely ascending fifth sequence in Figure 2-3a, the progressions in Figure 2-3b and Example 2-5 are more typical in the common practice era. In Figure 2-3b, the inserted dominants prepare the unsettling sequence, making it sound more convincingly tonal, and in Example 2-5, extracted from Franz Liszt's *Gnomes*, a first position inversion produces a more palatable chromatic ascending bass.

Figure 2-3a: Ascending Fifth Sequence (Chromatic)

I V II VI

Figure 2-3b: Ascending Fifth Sequence with inserted secondary dominants

I (V/V) V (V/II) II (V/VI) VI

Example 2-5: Liszt, *Gnomes*

The musical score for Example 2-5, Liszt's *Gnomes*, consists of two systems of piano accompaniment. The first system shows a chromatic ascending bass line with chords marked as V, V/V, V, V/II, V, and V/VI. The second system continues the chromatic ascending bass line with chords marked as V, V/V, V, V/II, V, and V/VI. The score includes dynamic markings like 'ff' and 'cresc.'

But even with these adjustments, root progressions involving ascending whole steps still cause analytical headaches. Johann Georg Albrechtsberger—and later, Sechter—interpreted the ascending whole step progression as a two-step transformation involving a rising fourth and a

descending third.²³⁰ Always a champion of the fifth, Schenker heard the rising whole step progression as *two* ascending fifths.²³¹

By comparison, sequences of ascending fourths moving in the flat direction (both chromatic and diatonic) are normative in classical music. But in explaining secondary chord progressions, it is moving *sharp* that is normalized, not going flat, for theorists recognize and label V/V rather than IV/IV. So the question is: should we consider ascending fourth sequences *plagal* or *authentic*? Due to the *double emploi*, a root progression from C to F could either express a I-IV tonic to subdominant *or* a V-I dominant to tonic relationship.

Many theorists, such as Rudolf Louis & Ludvig Thuille, August Halm, Nicolas Meeus, and Paul Scott Carter, consider motions of sharp-moving ascending fifths “plagal”—including the ascending fifth in the cadential IV-I—and flat-moving descending fifths “authentic”—as in the cadential V-I.²³² But in my mind, the plagal domain should be defined by the initial ascending fourth transformation from the tonic to the subdominant.

As I see it, there are at least two competing ways to define the plagal “space”: as a fixed *location* (up one or more fourths from the tonic)—in the tradition of Schoenberg’s “Regions”—or as a path, a *way of returning home* that ends on the tonic (by way of ascending fourth). As part of his “transformational” theory (distances from chord to chord rather than the chords themselves), Neo-Riemannian theorist David Lewin attempted to define the dominant function

²³⁰ Albrechtsberger. “*Kurzgefasste Methode den Generalbass zu erlernen.*” Wien: Artaria, n.d. [listed by Thomson as 1793], “Examples of All Intervals (*Beispiele über alle Intervallen*), p. 17ff.

²³¹ Schenker, *Harmony*, p. 237ff.

²³² Rudolf Louis & Ludvig Thuille. *Harmonielehre*. Stuttgart: Carl Grüniger, 1907, p. 107; August Halm’s ‘*Von zwei Kulturen der Musik*’ (1913): A Translation and introductory Essay.” Laura Lynn Kelley, Dissertation, UT at Austin, 2008, pp. 45-6; Nicolas Meeus. “Toward a Post-Schoenbergian Grammar of Tonal and Pre-tonal Harmonic Progressions.” *Music Theory Online*, Vol. 6, No. 1, January 2000, pp. 7-13; Paul Scott Carter, *Retrospective Harmonic Motion as Structural and Stylistic Characteristic of Pop-Rock Music*. University of Cincinnati, Dissertation, 2005, p. 43.

(“DOM”) as the conversion of any chord into a dominant. Hence, Lewin’s DOM of C major is F major—for C is the dominant of F.²³³ But F is also the subdominant of C! Lewin’s formula seems counter-intuitive, for the DOM of C major should be, by rights, G major, the dominant of C. So for Lewin, the interval of a perfect fourth represents the V-I authentic relationship rather than the plagal I-IV.

Despite defining “double plagality” in the same way I have here—as a chordal *region* located two fourths up from the tonic—contemporary theorist Paul Scott Carter deems progressions of ascending fourths “authentic,” “progressive,” and conceptualizes them as moving “clockwise.”²³⁴ Conversely, he calls ascending fifth “plagal” progressions “retrogressive” and “counterclockwise,” and (not surprisingly) he links plagality to retrogression.²³⁵ In Carter’s view, the authentic I-IV-V-I is “pure,” while the plagal progressions found so commonly in popular music signal backwardness.²³⁶ The implications of this statement are troublesome, for if we assume that the plagality in pop and rock stems from African-American musics, then Carter sounds somewhat colonialist. Why, one might ask, is “backwardness” so desirable in this music?

Ascending fourth progressions could be analyzed either as subdominant sequences (as in the “double plagal”) or dominant ones, though I would caution against *only* hearing them authentically. Early twentieth-century theorist August Halm heard ascending fourths as inherently authentic:

If C-F is the most natural chord progression, then it would also be natural to begin on the chord that was achieved, F, and repeat the same falling fifth to yield

²³³ David Lewin, “A Formal Theory of Generalized Tonal Functions.” *Journal of Music Theory* 26.1, 1982, pp. 23-60.

²³⁴ Paul Scott Carter, p. 43.

²³⁵ *Ibid.*, p. 46.

²³⁶ *Ibid.*, p. 71.

the chord progression F-B^b, and to continue in the same manner so that each resultant chord is reinterpreted as an initial chord, or dominant, according to its goal. We can go all the way back to the C in this manner, thus around the circle...As in the theoretical spiral of fifths [mentioned above], following the practical circle of fifths means that there is a continuous change in tonality in which each goal is negated as attained, for each new tonic is transformed into the dominant of the new key.²³⁷

For Halm, rising fourths (*ex.2-6a*) signal a 5-8 dominant-to-tonic relationship, where each new tonic becomes the next dominant, and so forth (*ex.2-6b*). He claimed an authentic “harmonic ellipse” in this case, for despite the subdominant and dominant’s supposed equality, the dominant is closer to the tonic than the subdominant due to the leading tone.²³⁸

Example 2-6a: rising fourths

C F B^b

The musical notation shows three chords on a treble clef staff. The first chord is C major (C-E-G), the second is F major (F-A-C), and the third is Bb major (Bb-D-F). Each chord is represented by a vertical line with three dots indicating the notes.

Example 2-6b: August Halm’s rising fourths with elliptical dominants

C (C7) F (F7) B^b

V/V V7/V V V7 I

The musical notation shows five chords on a treble clef staff. The first chord is C major (V/V), the second is C7 (V7/V), the third is F major (V), the fourth is F7 (V7), and the fifth is Bb major (I). Each chord is represented by a vertical line with three dots indicating the notes.

Example 2-6c: plagal rising fourths

C F B^b

I IV IV/IV

The musical notation shows three chords on a treble clef staff. The first chord is C major (I), the second is F major (IV), and the third is Bb major (IV/IV). Each chord is represented by a vertical line with three dots indicating the notes.

²³⁷ August Halm, pp. 45-6.

²³⁸ Ibid, p. 47.

Figure 2-4a: Backtracking toward the tonic from V/V

IV/IV	IV	I	V	V/V
		Bb ←	F ←	C

Figure 2-4b: Flatside motion to Double plagal

IV/IV	IV	I	V	V/V
Bb ←	F ←	C		

But could not the same rising fourth figure be heard as a chain of subdominants beginning on the tonic and moving into the flat realm?²³⁹ Comparing the “authentic” reading in figure 2-4a to the “double plagal” one in 2-4b, both still move in the normalized flat direction (ascending fourths), but figure 2-4a *backtracks* toward the tonic from two steps sharp (V/V). The double plagal, on the other hand, begins at the tonic, but moves two steps to the flat side (IV/IV) (*fig.2-4b*). Since most analysts are more familiar with secondary dominants than secondary subdominants, they tend to privilege *backtracking* toward the tonic rather than deep plunges to the flat side. In this way, the sharp side is seen as the region of exploration, followed by travel homeward in the flat direction. It seems that going flat *as a direction* is normalized—as long as the trip brings us back home—yet explorations of the flat side *as a region* are not recognized by many theorists.

Since flat side travel is expected to move *back* toward the tonic, it often conveys a certain notion of *déjà-vu*. While progression-as-progress occurs on the farthest reaches of the sharp side, most theorists only hear retrogression on the flat side. For example, Schenker believed that the major scale could be understood as a cycle of fifths unfolding in the sharp direction: C-G-D-

A-B.²⁴⁰ However, in order to obtain the seventh member of the scale (F, the subdominant) a regression had to occur:

The system of the tone C, then, represents a community consisting of that root tone and five other root tones whose locations are determined by the rising fifth-relationship. *One more root tone, the subdominant fifth, was added to this community and represents, so to speak, its link with the past.*²⁴¹

Ostensibly, Schenker could have begun his series of rising fifths on F to avoid reversing direction, but rather than place the subdominant at the center of his system, he treats it as a relic from the past.

Schenker probably heard flat side structures as old-fashioned, because plagal cadences were associated with historical styles of “pre-tonal” music during the common practice era. But starting in the nineteenth century, some composers began using subdominant-based structures progressively. Rather than restrict the rising fourth to the backtrack from dominant to tonic, modern plagal structures, ascending fourth sequences, and quartal stacks journeyed to the farthest reaches of the flat side. What might this mean affectively, and how might such progressions be analyzed, without turning them into retrogressions? We will investigate further in Chapters 3 and 4, but first we must delve into the world of functional and quasi-functional subdominants.

Part II: A typology of the plagal domain

Chords vs. tonicizations

When theorists speak of the “subdominant,” do they mean a *chord* or a *modulation*? Let us be clear: fourth-degree chords are not necessarily accompanied by a traditional (authentic)

²⁴⁰ Schenker. *Harmony*. Chicago and London: University of Chicago Press, 1954, p. 39.

²⁴¹ *Ibid*, p. 39, emphasis mine.

tonicization of the fourth degree. A chord is a momentary sojourn, but a tonicization indicates changing key, if only momentarily. If we were to begin the C major scale in example 2-6 on the fourth degree without changing the pitch collection, the newly ordered scale would define F Lydian. To complete this modal shift, the bass only need move to F. If enough time is spent over the F bass, then F Lydian will seem to become the new tonic (modal tonicization). Note that the leading tone of F is indeed part of the F Lydian scale, as is the dominant triad of F (C-E-G). Though the C triad (without a flatted seventh degree) can be made to sound like the fifth degree of F in a Lydian modal tonicization, the dominant seventh, B^b, is not available. (As Example 2-7 shows, an Ionian tonicization of the fourth degree will include B^b in the new scale, as well as the B^b in its preparatory C7 dominant.)

Example 2-7: Lydian Modal tonicization vs. traditional Ionian tonicization

The musical notation consists of a grand staff with a treble clef and a bass clef, both in 4/4 time. It is divided into four measures. Measure i is labeled 'i: C major' and shows the C major scale in the treble clef and a C major chord in the bass. Measure ii is labeled 'ii: F Lydian' and shows the F Lydian scale in the treble clef and an F major chord in the bass. Measure iii is labeled 'iii: F major' and shows the F major scale in the treble clef and an F major chord in the bass. Measure (C7) F shows the F major scale in the treble clef with a B^b in the melody and a C7 chord in the bass.

In the following discussions, I will do my best to distinguish fourth-degree chords, modal, and Ionian tonicizations. Composers of extended tonal musics often used this kind of modal ambiguity to their advantage, and perhaps theorists blurred the distinction because composers did the same.

Another caveat: in what follows, I will describe a veritable litany of “subdominant” operations. But because this is a dissertation rather than a theory textbook, I will not attempt to describe *every* subdominant situation, instead concentrating on some commonly misunderstood chords and scales.

The subdominant “Amen” Cadence

Let us begin with the best-known point on the plagal axis: the fourth-degree subdominant. In traditional tonal analysis, most activities occurring on the fourth degree are lumped together as if they were all realizations of a single “predominant” deep structure. But subdominants can do more than prepare for the arrival of the dominant. What is the possibility for autonomous subdominant progression?

Example 2-8: Plagal Leading Tone Cadence

C(I) F(IV) C(I)

Jeremy Day-O’Connell has traced the historical link between the subdominant and the pentatonic collection.²⁴² Starting in the pretonal era, the sixth degree of the plagal leading tone cadence was commonly harmonized by a subdominant chord, producing an “*Amen Cadence*” (ex.2-8). Since the plagal *Amen* cadence is often just the final blessing after an authentic cadence, William Caplin considers it a cadential afterthought:

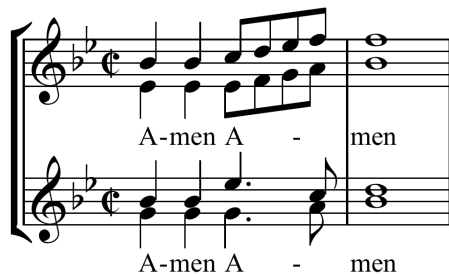
Inasmuch as the progression IV–I cannot confirm a tonality (it lacks any leading-tone resolution), it cannot articulate formal closure...Rather, this progression is normally part of a tonic prolongation serving a variety of formal functions – not, however a cadential one. *Most examples of plagal cadences given in textbooks actually represent a postcadential codetta function: that is, the IV–I progression follows an authentic cadence but does not itself create genuine cadential closure.*²⁴³

²⁴² Jeremy Day O’Connell. *Pentatonicism from the Eighteenth Century to Debussy*. University of Rochester Press, 2007, p. 40.

²⁴³ William E. Caplin. *Classical Form: A Theory of Formal Functions for the Instrumental Music of Haydn, Mozart and Beethoven*. New York: Oxford University Press, 1998, pp. 43–45, emphasis mine.

At the Dresden chapel, Johann Gottlieb Naumann refashioned this IV-I plagal cadence as the authentic IV-V-I in his elaborate choral arrangement of the *Amen* (ex.2-9). Felix Mendelssohn borrowed this progression in the first movement of his 5th Symphony, as did Richard Wagner (who had served as the Dresden *Kapellmeister* in the 1840's) for *Parsifal*. In the Dresden *Amen*, the parallel stepwise ascent in the top voices involves a 4-5-6-7-8 climb in the second voice, and the lowest part also sings 6-7-8, which eradicates the 6-8 pentatonic gap. Since the *Amen* is usually performed at a slow tempo, the sheer length of the cadence probably encouraged Naumann to conclude authentically, for when an *Amen* becomes its own section of a composition rather than an afterthought, tonal composers are inclined to cadence authentically to support a more traditionally 'satisfying' conclusion.

Example 2-9: *Dresden Amen*, Johann Gottlieb Naumann (1741-1801)



In contemporary American Jewish practice, the *Amen* is generally sung (6-7-8) and accompanied by a dominant chord. The *Shabbat Kiddush* Blessing, for example, harmonizes the *Amen* 6-7-8 with vi-V⁷-I or ii-V⁷-I (ex.2-10). Since modern Jewish worship music is substantially younger than the pre-tonal plagal leading-tone cadence, I assume that nineteenth- and twentieth-century Ashkenazic Jews—with their affinity for Germanic concert music—simply *filled in* what they heard as an elliptical leading tone and dominant. As in the *Dresden Amen*, the *Kiddush* is sung so slowly that congregations may have felt obliged to conclude with an authentic cadence.

Eleventh chords: “Americanisms” and functional mixture

The harmonization of pentatonic melodies not only blurs the distinction between major and minor, but also causes functional collisions between subdominant and dominant. The eleventh chord with a fourth degree root has one foot planted in the subdominant lair and another in the realm of the dominant, and as such, its taxonomy has proved mystifying. Musicologist Philip Tagg notes Dvořák’s cadential use of the eleventh chord in the second movement of the “New World” Symphony, explaining that (A^b11-D^b) is an uncommon voicing of an authentic cadence in Euroclassical music (*ex.2-12*):

It was how Dvořák solved the problem of harmonizing his famous doh-pentatonic tune and its ‘missing’ major 7 for a concert-hall audience in 1893. In tertial terms, the solution was to treat the upper parts, including the melody as the ‘subdominant’ ingredient (involving 2, 4 and 6) in a plagal cadence (IV-I) while assigning the bass part its usual role as V in a V-I ‘perfect’ cadence.²⁴⁴

Example 2-12: Dvořák, “New World Symphony” II, Largo (1893)²⁴⁵

The musical score for Example 2-12 is presented in a piano arrangement. It features a melody in the right hand and a bass line in the left hand, both in 4/4 time. The key signature is three flats (B-flat major/C minor). The melody consists of a sequence of notes: D-flat, A-flat, B-flat, D-flat, A-flat, D-flat, A-flat, D-flat. The bass line consists of a sequence of notes: D-flat, A-flat, B-flat, D-flat, A-flat, D-flat, A-flat, D-flat. The score is annotated with chord symbols: D-flat, A-flat/C, B-flat minor, D-flat/A-flat, A-flat11, D-flat, A-flat11, D-flat.

In the plagal leading tone cadence, the 6-8 melody is usually harmonized by the fourth degree subdominant, but Dvořák required more traditional closure. Thus, the eleventh chord satisfied both melodic and harmonic dimensions simultaneously.

²⁴⁴ Philip Tagg. *Everyday Tonality II: Towards a tonal theory of what most people hear*. New York and Huddersfield: Mass Media Scholars Press, 2014, p. 307.

²⁴⁵ Ex. 208 in Tagg, p. 307.

Example 2-13: Bonnie Raitt, “Nick of Time”

The musical score is presented in a system of six staves. The first two staves show the piano accompaniment in 4/4 time, with a treble and bass clef. The first staff includes the following chords: D min7, C/E, Fmaj7, G, A min7, D min7, D min7/G, and D min7. The second staff includes: C/E, Fmaj7, G, A min7, D min7, D min7/G, and C. The third staff is the vocal melody in 7/8 time, with lyrics: "A friend of mine, she cries at night, and she calls me on the phone." The fourth staff continues the vocal melody with lyrics: "Sees ba-bies e-very - where she goes, and she wants one of her own." The fifth staff continues with lyrics: "She's wai-ted long e-nough she says, and still he can't de-cide." The sixth staff concludes with lyrics: "Pretty soon she'll have to choose and it tears her up in - side. She's scared, scared to run out - of time." The sixth staff includes the following chords: D min7, D min7, D min7/G, and C.

Bonnie Raitt has made a career out of singing pentatonic blues scales with gusto, and yet, not all her pentatonic melodies are accompanied by blues progressions. In “Nick of Time,” the title track from her 1991 album, Raitt sings a C-major pentatonic melody throughout (*ex.2-13*). In this process she suppresses leading tones, and cadences with Dmin7 over the G rather than a

traditional dominant chord. Since she is coming down to the tonic along a 3-2-1 melodic line at measure 28, as opposed to Dvořák's ascending 6-1, she could easily have harmonized it with a perfect authentic cadence, but she chooses a gospel-inflected pentatonic voicing instead.

Such plagal/dominant combinations are particularly useful in repetitive popular music—especially early in a song—for authentic cadences often signal the *end* of a piece, and plagal cadences may sound too *Amen*-like. In Raitt and Dvořák, the eleventh chords were overdetermined: Dvořák was matching his melody, and Raitt held a Dmin7 voicing over a changing bass. But in pop music, no harmonic or melodic explanation is necessary, because melody and harmony may not be unified. Pop melodies don't always 'match'—at least, not in the traditional way; they need only complement each other through stratification (Chapter 4).

While labeling eleventh chords as dominant substitutes might be appropriate in Dvořák and Bonnie Raitt, one must be on guard against overly reductive, either-or analysis. Kevin Swinden's functionally mixed "subdominant-dominant collision" (ii/V or IV/V chord) offers one useful way out. Swinden intended his combination to function as a hybrid of Schenkerian linearity and Riemannian verticality,²⁴⁶ but it also accords with the way pop and jazz musicians think, for such musicians typically identify it as a "slash" chords—a simple triad over a non-harmonic bass, written with a forward slash, meaning this *over* that—where a traditional theorist might identify complex eleventh chords (i.e., Dmin/G instead of G11). Swinden would label Dvořák's cadential eleventh chord "Ds(5)," as it contains a *dominant* bass with a fourth degree

²⁴⁶ Swinden. "When Functions Collide: Aspects of Plural Function in Chromatic Music." *Music Theory Spectrum*, Vol. 27, No. 2, Fall 2005, p. 252.

subdominant treble.²⁴⁷ Bonnie Raitt’s ii/V chord would also be classified as a Ds(5) in Swinden’s system, reasonably enough, considering the similarity between ii/V and IV/V.

Swinden does not mention the $^bVII/I$, involving the same whole-step relation between bass and treble, but acknowledges that bVII sometimes operates as a flat-leaning IV/IV rather than a dominant substitute.²⁴⁸ For instance, the “double plagal” $^bVII/I$ at the opening of Martha and the Vandellas’ “Dancing in the Street” (1964), which Tagg calls a “mixolydian shuffle ($E^b/F-F$),²⁴⁹ could thus be labeled “T(S) bVII ” or “T(SS)IV/IV” (ex. 2-14). Eyton Agmon believes that the bVII possesses “dual citizenship,” expressing either dominant or a subdominant function²⁵⁰, but the $^bVII/I$ also behaves like a tonic (or what theorist Christopher Doll might call a pre-tonic, since it prepares the tonic).²⁵¹

Example 2-14: Martha & the Vandellas, “Dancing in the Street” (introduction)



A rarer eleventh chord located on $^bIII/IV$ used by Elton John in “Burn Down the Mission” (ex.2-30) must also be analyzed as a hybrid, for the chord is, in one sense, an

²⁴⁷ Ibid, p. 260.

²⁴⁸ Ibid, p. 255.

²⁴⁹ Tagg, p. 308.

²⁵⁰ Eyton Agmon. “Functional Harmony Revisited: A Prototype-Theoretic Approach.” *Music Theory Spectrum*, Vol. 17, No. 2, Autumn, 1995, p. 202.

²⁵¹ Christopher Doll. “Listening to Rock Harmony.” Ph.D. diss., Columbia, 2007, p. 40.

embellished subdominant, but in another, the bVII or IV/IV of that subdominant: that is, a *triple plagal IV/IV/IV* (see analysis at the end of this chapter).

Modal IV vs. Lydian tonic: fourth degree as its own mode

In a purely modal context, tertian stacks built on the fourth degree will be Lydian constructions: $IVmaj^7$, $IVmaj^9$, or even, $IVmaj^{9\#11}$. The only difference between the F Lydian subdominant scale and the C Ionian tonic scale is the location of the root, and for many improvising jazz musicians, this distinction is barely salient. Thus, the only ‘flatness’ in modal IV is bass motion from I to IV and melodic reorientation to the Lydian fourth degree mode. In fact, the sharpened fourth and seventh degrees of the Lydian mode (as understood by twentieth-century musicians) rarely strike listeners as ‘flat’ sounding; exemplified by the themes to *The Jetsons* and *The Simpsons*, Lydian brightness has been used to connote the circus and kaleidoscopes of colors.

Modal IV is usually a momentary digression in tonal music that leads to tonicization of the fourth degree or some other cadence, but nineteenth-century composers often extended the Modal IV to the point where its Lydian nature became more apparent.

Example 2-15: Beethoven, String Quartet in A minor, *molto adagio*

The image displays two systems of musical notation for a string quartet. The first system consists of two staves: the upper staff is in treble clef and the lower staff is in bass clef. The time signature is 4/4. The melody in the treble clef begins with a quarter rest, followed by a dotted quarter note, and then a series of eighth and sixteenth notes. The bass line starts with a half note chord, followed by a quarter rest, and then a series of quarter notes. The second system continues the melodic line in the treble clef with a half note, followed by a quarter note, and then a series of eighth and sixteenth notes. The bass line continues with a series of quarter notes.

In the *adagio* of the String Quartet in A Minor, op. 132, which Beethoven named “*Heiliger Dankgesang eines Genesenen an die Gottheit, in der lydischen Tonart*” (Holy Song of Thanksgiving of a Convalescent to the Deity, in the Lydian Mode), a contemplative sojourn takes place in F Lydian (ex.2-15). While in this “white key” mode, beginning and concluding on F, Beethoven shifts to C Ionian (V), D Dorian (vi) and A Aeolian (iii), establishing a mood of *stile antico* prayerfulness. Simply by moving the bass, a subtle shift in centricity (modal tonicization) is achieved without changing pitch collection.

However, the pre-tonal A Aeolian converts to tonal A minor (via A major) in the following *Alla Marcia*, for a tonal composition must eventually return to the authentic mode of its tonic. As Susan McClary might say, F is only a secondary “feminine” key area, which must be conquered and assimilated by the imperialistic tonic of A minor.²⁵² Thus, the Lydian trip to *adagio*-land feels particularly luxurious, for we know that it can never be a permanent resting place.

Example 2-16: Frank Loesser, “Never Will I Marry” (1960)

The musical score for "Never Will I Marry" is presented in four staves. The key signature is three flats (B-flat, E-flat, A-flat) and the time signature is 4/4. Chord symbols are placed above the notes. The lyrics are written below the notes.

Staff 1: Chords: A^bmaj7, G min7, C7, A^bmaj7, E^bmaj7, A^b7. Lyrics: Ne - ver ne ver, — will I ma rry, — Ne ver ne ver — will I wed.

Staff 2: Chords: D^bmaj7, D min7b5, G7alt, A^bmaj7, A min7, D7, Gmaj7, A min7D7, Gmaj7. Lyrics: Born to wan der so li ta ry, — Wide my world, na rrow my bed, Ne ver

Staff 3: Chords: A^bmaj7, G min7, C7, F min7, B^b7, E^b6. Lyrics: ne ver ne ver — will I ma - rry, Born to wan der till I die!

Staff 4: Chords: A^bmaj7, E^bmaj7/G, A^bmaj7, E^bmaj7/G, C min7. Lyrics: No burdens to bear, — No conscious, no care, No memries to mourn, No turning, For I was

Additional markings: "Fine" above the final note of the third staff, and "D.S. al Fine" above the final note of the fourth staff.

²⁵² See McClary. *Feminine Endings: Music, Gender, and Sexuality*. Minneapolis: University of Minnesota Press, 1991.

The Lydian “leaning tone”: “Never Will I Marry,” Frank Loesser (1960)

Frank Loesser’s “Never Will I Marry” (*ex.2-16*) pushes Lydian modal tonicization to the next level. Since the piece starts on A^bmaj7, only later contextualized as the fourth degree of E^b, its Lydian quality is amplified, for A^b Lydian serves as the first tonal center of the song (unlike Beethoven’s *adagio*, in which the alternate F Lydian tonic is only introduced in the third movement). Though the first melodic D natural is resolved up to E^b (the eventual tonic, but here five of A^b), the second one (measure 2) persists without resolution, suggesting that A^b Lydian, rather than E^b major, might be the governing scale of the region. Sustained this way, the sharp fourth degree—which also represents the leading tone of the eventual E^b tonic—sounds bittersweet, belying the decisiveness of the declaratory “*Never*” it sets.

The second phrase shifts to D^bmaj7, the subdominant of A^b. With this IV/IV, the harmony moves another step in the flat direction, a parallel Lydian transformation. An attempt to cadence on C minor through a jazz standard ii-V progression is foiled by a now deceptive A^bmaj7; the singer looks for love, only to find herself stuck again, alone, in A^b Lydian. Finally, an authentic cadence to E^b6 at measure 24 provides some relief—*or does it?* While the music suggests closure, the lyric (“Born to wander till I’m dead”) certainly does not. Normally, the authentic cadence would represent sexual fulfillment, a crucial aspect of the marriage bond. But here, the *little death* is replaced by *literal* death.

Despite the E^b-major key signature, closer modal analysis reveals two tonal centers vying for power. Most of the song argues in A^b Lydian, the area of loneliness and negativity, where lyrics like “*never*,” “*no*” and “*solitary*” reign. The “real” tonic of E^b stands for the place one is *supposed* to go, toward coupling, children, and normative heterosexual life. But A^b Lydian is

more relevant to the singer, who spends most of her time in that negative headspace. A contrast is set up between the ‘real’ (the tonic) and its unreal *doppelgänger* (the subdominant).

One might compare this opposition to what Raymond Knapp calls Beethoven’s “subjunctive subdominant.”²⁵³ Knapp discusses minor subdominant tonicization, quite a different sound from the Lydian major subdominant mode, but in both a similar quality of incompleteness or unreality lingers. As a non-key, Lydian can’t *really* be the tonal center—at least, not in mainstream tonal compositions. But as a temporary tonal space, it often makes room for a kind of unchecked desire.

McClary has written about the problematics of heteronormative desire in seventeenth-century music, as well as subsequent tonal musics, in which the leading tone is “harnessed...in order to create extended trajectories of desire.”²⁵⁴ If authentic resolution of D-E^b represents for Loesser a socially acceptable direction for desire, the Lydian subdominant (occurring in both A^b and then D^b in this composition) might represent a different kind of yearning. Over the subdominant, that same leading tone (D) dangles dissonantly without resolution—as a *leaning* tone. But what, exactly, does “leaning” lead to? Toward the end of this chapter, we will conduct an inquiry into subdominant desire in a famous gay anthem by Elton John, in which traditional resolution is thwarted by an “escape hatch,” or, rather, a trap door that opens under the under-dominant fourth scale degree.

²⁵³ Knapp, p. 52.

²⁵⁴ McClary. “Towards a History of Harmonic Tonality.” *Towards Tonality: Aspects of Baroque Music Theory*. Leuven: Leuven University Press, 2007, p. 94.

Example 2-17: Debussy, "La Flûte de Pan," mm. 1-12

Lent et sans rigueur de rythme

CHANT

PIANO

pp

Doux et soutenu

p

Pour le jour des Hy-a - cin - thies, — il m'a don - né u - ne sy -

-rinx fai - te de ro - seaux b.en tail - lés, u - nis a -

avec la blan - che ci - re qui est douce à mes lè - vres com - me le miel.

Ritenu

Il m'apprend à jou - er, as - si - se sursesge - noux; mais je suis un peu trem -

p

- blan - te. Il en joue a - près moi, si dou - ce - ment que je l'en - tends à

pp

Très dim.

pei - ne. Nous n'avons

pp

Rit.

a Tempo 1^o

Example 2-18: Lydian Supertonic “Little Mermaid” in B

C#/B (C# Ionian over B bass)

The emancipation of the Lydian?

In “*La Flûte de Pan*,” the first of Claude Debussy’s *Trois Chansons De Bilitis*, the Lydian mode demonstrates more independence than in “Never Will I Marry”; here the Lydian mode *is* the tonic. And yet even this Lydian tonic has not entirely shed its subdominant associations. As Deborah Stein explains, the major tonic-to-subdominant relationship (I-IV) can pivot to a dominant-to-tonic one (V-I), the back-and-forth nature of plagality allowing for significant harmonic ambiguity.²⁵⁵ In Debussy, the techniques differ from the chromatic nineteenth-century material Stein analyses, but the outcome is similar: an elaborate *double emploi*, where Debussy skillfully merges tonic and subdominant.

The beginning of the “*La Flûte*” operates in B Lydian (*ex.2-17*); while B is clearly the tonic, the Lydian scale still gives the *fin de siècle* listener the *sound* of the fourth-degree scale. Despite a setup related to that of “Never Will I Marry,” “*La Flûte*” never moves to an anticipated “real” tonic on F# Ionian. Debussy hints at an F# tonic: at measure 2, the (C# major – G# minor – C# major) cadence seems like a (V-ii-V) progression that will cadence to F#, but instead pivots back in Lydian fashion to a B-major triad, over which the quondam leading tone *leans* toward F# without ever getting there.

²⁵⁵ Stein, p. 161.

The C[#] to B Lydian progression is an example of what one might call, in homage to Disney heroine Ariel’s famous leitmotif, the “*Little Mermaid* (supertonic) Lydian” (ex.2-18). The B Lydian pitch collection, consisting of (B, C[#], D[#], E[#], F[#], G[#]), makes both II (C[#] major) and vi (G[#] minor) triads diatonic, just as they would be in F[#] Ionian (ex.2-18). But compared to F[#] Ionian, functions in B Lydian don’t “lead” where we think. The tonic of B Lydian may still *feel* like a fourth degree due to our own major/minor-based expectations. Many functional elements tonality are present—but jangled and progressing in the “wrong” directions.

Example 2-19: B Lydian as a generating “Key”

The image displays seven musical staves, each representing a mode of the B Lydian scale. The notes are written in treble clef on a five-line staff. The modes are labeled as follows:

- I: B Lydian: B, C[#], D[#], E[#], F[#], G[#]
- II: C[#] Mixolydian: C[#], D[#], E[#], F[#], G[#], B
- III: D[#] Aeolian: D[#], E[#], F[#], G[#], A[#], B
- (#)IV: E[#] Locrian: E[#], F[#], G[#], A[#], B, C[#]
- V: F[#] Ionian: F[#], G[#], A[#], B, C[#], D[#]
- VI: G[#] Dorian: G[#], A[#], B, C[#], D[#], E[#]
- VII: A[#] Phrygian: A[#], B, C[#], D[#], E[#], F[#]

If “*La Flûte de Pan*” had been a pure B-Lydian construction, we would expect to see a fourth degree chord on the sharped fourth degree, E[#] (ex-2-20). But Debussy chooses the natural fourth degree (E) instead—which may seem like a traditional subdominant, but is actually achieved through a minor third transposition of the C[#] major triad. Once again, Debussy’s tonal functionality is only a phantasm.

At measure 4, a superimposition of F[#] major above the E bass produces a parallel Little Mermaid Lydian cadence now up a fourth from the original. Though the natural fourth degree would have suggested a normalization of function (B Ionian to E Lydian), it constitutes a parallel

transposition rather than a functional shift to the subdominant.²⁵⁶ On the second beat of measure 13, an A Lydian-based chord with a sharpened fourth degree in the melody, constitutes yet another Lydian transposition in the flat direction from B Lydian, E Lydian to A Lydian.

Example 2-20: Debussy, “La Flûte de Pan,” m. 13

Is this evidence that Debussy’s composition is “in” Lydian? The song’s tonic provides a Lydian *sound*, but we cannot perform a George Russell-style Lydian scale-step analysis with any realistic expectations of understanding this song. In his *Lydian Chromatic Concept*, Russell imagines a diatonic universe where Lydian replaces Ionian, but twentieth-century compositions ‘in the key of B Lydian’ rarely operate exclusively in the home scale. For one, Debussy regularly modulates his Lydian structures to parallel locations *outside* the mode—furthering the common transformational practice that earlier tonal composers only applied to the major and minor modes. Moreover, Debussy’s Lydian functionality *mixes* with Ionian functionality, melodic minor, thirds-based transformations, and other scales and interval cycles.

²⁵⁶ For another example of a similar arrangement, consult Béla Bartók’s sixth *Romanian Dance*, which contains an analogous “Little Mermaid” moment in D Lydian (E/D) followed by a parallel transformation to G Lydian.

The Jetsons vs. The Simpsons

By the end of the twentieth century, jazzy Lydian inflections had generated a self-referential tonal system, from Steely Dan's "Aja" to the classic-sitcom stylings of Danny Elfman's theme music for *The Simpsons*. Lydian was no longer relegated to the fourth degree, operating as both the tonic scale and generator of a set of functional scale degrees. Unlike the old Lydian mode, modern Lydian makes no special demands for resolution of the sharped fourth degree, nor does it require authentic cadences for completion.

In Hoyt Curtin's jazzy *Jetsons* theme (1962), the iconic melody with a raised fourth appoggiatura initially appears in E Lydian (*ex. 2-21*). After moving to a traditional dominant seventh on B (diatonic to E rather than E Lydian), the dominant shifts up a semitone to C7, modulating to F for the vocal entrance. Another semitone slide reaches D^b7 as V7, of G^b ("His boy, Elroy"), followed by another ascent to D7 and G Lydian to introduce "Daughter Judy." At this point, the presence of the flatted seventh degree is emphasized in a very adult trumpet solo, along with a sharped ninth "blue note," for Judy's adolescent attractiveness is sexualized through the blues. Another shift up a semitone lands on A^b Lydian ("Jane, his wife"), but is interrupted by the "Chopsticks" theme in A^b major, followed by a quick Neapolitan swing to A and home, via E^b as dominant, to A^b. The jazzy flatted second-degree Neapolitan works particularly well here, for the tritone-related bass swap between A and E^b outlines the A-Lydian mode.

Example 2-21: Hoyt Curtin, *The Jetsons* Theme (1962)

5
12
16
20
24
29

E B7 B7
E E B7 B7 C7
F F7 F F dim F D7
Gb Gb7 Gb Gb dim Gb Gb Gb dim Gb D7
G (trumpet) G G dim G G7 (trumpet) Eb7
Ab Ab7 Eb7 Ab Eb7
F dim Ab A7 Eb7 Ab

Meet George Jet-son!
His boy El - roy!
Daugh-ter Ju - dy!
Jane, his wife!

Although the raised fourth in the melody is unmistakably Lydian, analysis reveals a series of functional Ionian modulations, stacked up for rising energy, Hollywood-style. The “exotic” Lydian sound of *The Jetsons* is thus only skin-deep. This bait-and-switch mirrors the cartoon’s setting, since the Jetsons live in an exoticized future but represent the traditional nuclear family.

Though George Jetson may commute to work in three-dimensional space, he is still a two-dimensional 1950's Dad with the requisite stay-at-home wife and matched set of children.

A loving homage to *The Jetsons*, Danny Elfman's *Simpsons* music also features the Lydian scale (ex. 2-22). But as compared to *The Jetsons*' predictable ascending semitonal shifts, modulations in *The Simpsons* are substantially more volatile. The tune opens in C Lydian, then pivots to C Lydian dominant with an oscillating C-F[#] bass. Since F[#] replaces the traditional dominant in the "oompah" bass, this sharpened fourth degree behaves like a quasi 'dominant' of B Lydian—the next tonal center. As with the initial C Lydian-C Lydian dominant sequence, B Lydian quickly moves into B Lydian dominant territory, utilizing the B-E[#] tritone "oompah" seesaw. From B Lydian dominant (B, C[#], D[#], E[#], F[#], G[#], A), a pivot into whole tone (B, C[#], D[#], E[#], G, A) is easily accomplished through the transformation of G[#] to G. At measure 20, a near-authentic cadence from a B dominant (with whole tone scale) leads to E6. Though this major sixth chord sounds more like traditional big band fare, it is still contained within the parent Lydian scale. But the tonal shifts that follow—to C Lydian/ Lydian Dominant (m. 26), E^b Lydian Dominant (m. 32), B Lydian/Lydian Dominant (m. 34), back to C Lydian/Lydian Dominant (m. 42), back to E^b Lydian/Lydian Dominant (m. 46), and finally to D^b Lydian (m. 54)—become increasingly erratic. While *The Jetsons* ascends predictably by semitones via functional dominants, modulations in *The Simpsons* are not generally functional, and follow no discernible pattern.

Example 2-22: Danny Elfman, Theme to *The Simpsons* (1987)

The musical score is written in 4/4 time and consists of five systems of music. The first system (measures 1-6) features a piano accompaniment with chords labeled C, C dim C 6, and (C Lydian). A vocal line enters in measure 2 with the lyrics "Choir: The Simp - sons!". The second system (measures 7-10) continues the piano accompaniment. The third system (measures 11-13) includes chords labeled (C Lydian Dominant) C7#4, B, and (B Lydian Dominant) B7#4. The fourth system (measures 14-16) features a piano accompaniment with chords labeled (Whole-tone 2) and (B Lyd Dom). The fifth system (measures 17-19) continues the piano accompaniment with a (Whole-tone 2) chord.

44 (C Lyd Dom) Eb

49 (Whole-Tone 2) (Eb Lyd) (Whole-tone 2)

53 (Db Lyd) (Whole-tone 2)

57 (Db Lyd) (Db Lyd (Db Lyd Aug))

The image displays four systems of musical notation for piano. Each system consists of a grand staff with a treble and bass clef. The first system (measures 44-48) features block chords in the right hand and a simple bass line in the left hand, with an annotation '(C Lyd Dom)' and a key signature change to E-flat. The second system (measures 49-52) shows a more active right hand with sixteenth-note patterns and a steady bass line, annotated with '(Whole-Tone 2)', '(Eb Lyd)', and '(Whole-tone 2)'. The third system (measures 53-56) continues with similar textures, annotated with '(Db Lyd)' and '(Whole-tone 2)'. The fourth system (measures 57-60) concludes with block chords and a bass line, annotated with '(Db Lyd)' and '(Db Lyd (Db Lyd Aug))'.

Lydian has long been associated with the circus—an unreal, childish, often grotesque place; so, what better fit for a satirical cartoon?²⁵⁷ In the opening sequence of *The Simpsons*, a heavenly choir singing over a cottony cloud formation suggests utopia, but as we descend to earth, familiar scenes of cartoon chaos ensue, mickey-moused by the seesawing tritone between tonic and sharp four. Unlike the smoothly rising V-I progressions that power the orderly world

²⁵⁷ This Lydian circus association can be traced at least to Julius Fucik’s “Entry of the Gladiators” (1897), which features sharpened fourth degrees, among other chromaticisms. Moreover, American marches often exhibited a Lydian quality—especially over the *Trio* section, which normally occurred in the subdominant key (either tonicized or remaining in the modal Lydian key). For example, John Philip Sousa’s “Washington Post” (1889), sounds Lydian across the A section due to the repeated sharpened fourth degrees (C[#] in the key of G major), and then shifts to the subdominant over the *Trio* section with almost constant sharpened fourth degrees (F[#]) over that tonic as well.

of the *Jetsons*, constant Lydian (dominant) modulations signal the lack of progress; despite constant commotion, nothing will ever be resolved. One of the longest-running television shows in history, *The Simpsons* has managed to freeze time: the Simpsons remain eternally dysfunctional, the town politicians are reliably corrupt, and racial stereotypes never change.

The Lydian of the *Simpsons* retains an air of subdominant “Never-Neverland.” Even the utopian clouds are a satirical nod to the optimism of the Atomic Age, in which the slanted “googie” roofs of moderne-styled airports, diners, and gas stations framed the (friendly) skies. In *The Jetsons*, there were two levels of fantasy: about the future and, more importantly, *about the present*. The nihilistic *Simpsons* theme—an exaggerated portrait of bourgeois society as nasty, brutish, and short—gazes back at the now retro-futuristic *Jetsons* theme in tonal disbelief. Perhaps that is why Elfman’s disjointed, *divisi* take is so hectic. While the *Jetsons*’ social life only required a few key changes, transformations in the *Simpsons* occur at an impossible rate.

The blues as double emploi: IV⁷

The Lydian Dominant is just one of many pitch collections that complements a dominant seventh chord on the fourth scale degree.²⁵⁸ Let us now discuss the IV^{dom7}, or *blues IV⁷*, an especially flat-leaning subdominant. Observe that IV⁷ also functions as the dominant seventh of the “double plagal” ^bVII, and thus points *two* steps flat from a major tonic. While it could be argued that the chord tones of IV⁷ are diatonic to a “blues scale,” few African-American scales

involve the simultaneous use of $\flat 3$, 4, 6, and 1. Rather, the chord is often used in contexts where the melody does not entirely ‘match’ the harmony (Chapter 4).

The IV7 chord occurs regularly in blues contexts, where the tonic is an identical dominant seventh chord (I7). In many blues constructs, only two or three structural sonorities exist: I7–IV7 or I7–IV7–V7, and since all three are often dominant sevenths, they each *point* to a new potential tonic chord a perfect fourth up (*ex. 2-23*). But the C7 chord in example 2-23 is not actually V^7/IV , and the F7 is not $V^7/\flat VII$; both seventh chords are completely stable as tonic and subdominant, respectively. Notwithstanding, the tonic may pivot to the fourth degree chord in a *double emploi*, and the subdominant to *its* subdominant (IV/IV or $\flat VII$).

Example 2-23: circular blues “pointing”

The image shows three chords on a single staff in treble clef with a key signature of one flat (B-flat). The first chord is I7 (C7), the second is IV7 (F7), and the third is V7 (G7). Above each chord is a label: 'I7: points to IV', 'IV7: points to $\flat VII$ ', and 'V7: points to I'. The chords are represented by their constituent notes: C7 (C, E, G, Bb), F7 (F, Ab, C, Eb), and G7 (G, B, D, F).

Even given its refusal to settle harmonically, the blues is a closed, circular progression. A characteristic feature of this cycle is the melodic blues/pentatonic scale, which remains static over changing chords, reminiscent of Amiri Baraka’s “changing same” (Chapter 4). Fatalist lyrics may be the calling card of the blues, but it is the basic melodic and harmonic structure that enforces the sensation of hopelessness.

In Big Mama Thornton’s “Ball and Chain,” the singer waits longingly by the window, trapped in the purgatory of the blues structure (*ex.2-24*). Due to the *double emploi*, the I7 tonic gives way to IV7 in the second measure, but immediately retreats to I7. The IV7 in measure 5 offers another chance for redemption, but, once again, falls back hopelessly to the tonic. When something “grabs” Thornton at the dominant chord, newfound hope replaces depression—until

the bleak realization that it's just the old “ball and chain.” Since we have not yet heard the dominant chord, it temporarily raises the mood, but by slumping back down to IV7, the sharp-side dominant “charge” (as Daniel Harrison would call it²⁵⁹) is sucked up back into the defeatism of the flat side.

Example 2-24: Big Mama Thornton, “Ball and Chain”

Sitt - in' by my win-dow, Big Ma - ma was si-tin there look-in' at the rain.

Sitt - in' by my window, babe, I was look - in' out at the rain - .

You know something's grabbed me honey, Grabbed on-to me Like a ball and chain.

The IV7 flat-side blues subdominant also figures prominently soul music—even without the scaffolding of a twelve-bar blues progression. A chain of subdominant reorientations underpins Ray Charles’s 1985 reinvention of “Santa Claus is Coming to Town” (*ex.2-25b*). After an introductory statement of the theme in B^b, Charles modulates permanently to E^b. But the new tonic E^b still *sounds* like the subdominant of B^b. Then, within the new key, Charles replaces the tonic with I7 (E^b7), IV with IV7 (A^b7) and a jazzy ^bVII⁷ (D^b7). With each new chord, Charles drops further in the flat direction; by the time D^b7 rolls around, he has shifted a total of four steps flat (*fig.2-5*). By dialing up the flatness, Charles “African-Americanizes” the song while preserving its original contours. But in “Santa Claus,” as well as “Route 66,” the depression of “Ball and Chain” is replaced by a party atmosphere; in the blues, a counterintuitive connection

²⁵⁹ For a discussion of the accumulation of dominant and subdominant “charge,” see Harrison, p. 155.

exists between nihilism and hedonism,²⁶⁰ where the failure of salvation becomes an excuse for self-destructive drinking, sex, and drug use.

Example 2-25a: John Frederick Coots & Haven Gillespie: “Santa Claus is Coming to Town,” original changes

E^b (I) A^b (IV) E^b (I) A^b (IV)

You'd be-tter watch out, you'd be-tter not cry, you'd be-tter not pout, I'm te-llin' you why.

Example 2-25b: “Santa Claus is Coming to Town,” Ray Charles’ reharmonizations (1985)

(Intro in B^b) E^b7 (I7) A^b7 (IV7) E^b7 (I7) A^b7 (IV7) D^b7 (IV7/IV)

You'd be-tter watch out, you'd be-tter not cry, you'd be-tter not pout, I'm te-llin' you why.

Figure 2-5: Flat side transformations, Ray Charles’ “Santa Claus is Coming to Town”

B ^b - E ^b 7= 2 new flats (A ^b , D ^b)	E ^b 7 - A ^b 7= 1 new flat (G ^b)
A ^b 7 - D ^b = 1 flat (C ^b)	
Total flat side “drift” =4	

The flat seventh scale degree and extreme plagality

At the end of the previous chapter, we encountered a theoretical M transformation that could align multiple interval cycles. But long before the M transformation was conceptualized, Schenker had deduced that two ascending fifths are equivalent to a rising whole step,²⁶¹ thus aligning the fifth and whole-step cycles. In the descending flat direction, the ic-2 (whole-tone)

²⁶⁰ Theosophus Smith. *Conjuring Culture: Biblical Formations of Black America*. New York & Oxford: Oxford University Press, 1994, pp. 121-124.

²⁶¹ Schenker, *Harmony*, p. 237ff.

cycle corresponds to two steps flat on the ic-5 cycle (*ex.2-26a*). By the same logic, the ascending minor third reflects three steps flat (*ex.2-26b*), and the ascending minor sixth (or descending major third) indicates four steps flat (*ex.2-26c*).

Example 2-26a: ic-5 alignment with ic-2

The image shows two staves of music. The top staff, labeled 'Ic-5', contains a sequence of notes: C, D, E-flat, F, G-flat, A-flat, B-flat, C, D, E-flat, F, G-flat, A-flat, B-flat, C. The bottom staff, labeled 'Ic-2', contains notes: C, D-flat, E-flat, F, G-flat, A-flat, B-flat, C. A dashed line labeled '8^{va}' spans the top staff from the 10th note (A-flat) to the 14th note (B-flat).

Example 2-26b: ic-5 alignment with ic-3

The image shows two staves of music. The top staff, labeled 'Ic-5', contains the same sequence of notes as in Example 2-26a. The bottom staff, labeled 'Ic-3', contains notes: C, D-flat, E-flat, F, G-flat, A-flat, B-flat, C. A dashed line labeled '8^{va}' spans the top staff from the 10th note (A-flat) to the 14th note (B-flat).

Example 2-26c: ic-5 alignment with ic-4

The image shows two staves of music. The top staff, labeled 'Ic-5', contains the same sequence of notes as in Example 2-26a. The bottom staff, labeled 'Ic-4', contains notes: C, D-flat, E-flat, F, G-flat, A-flat, B-flat, C. A dashed line labeled '8^{va}' spans the top staff from the 10th note (A-flat) to the 14th note (B-flat). A '12' is written above the first note of the bottom staff.

These alignments give rise to extreme plagality, for the flatted subtonic (^bVII) also represents a two-step leap along the ic-5 cycle (the double plagal), the minor-third-related triple plagal represents three ic-5 steps, and a major third transformation could be explained as a vertiginous “quadruple plagal” progression, an instantaneous drop of four flats. However, I would not claim that all flatted seventh, flatted third, and flatted sixth degree chords behave as

double, triple, and quadruple plagals, respectively, for substitutions from the minor or chromatic alterations may also produce these sonorities, but we will soon examine an Elton John composition involving all three.

The “backdoor” cadence and triple plagals

Rather than cadence through the front door—along the cycle of fifths—jazz performers often choose to go the “backdoor” route, replacing the authentic ii-V-I with some variant of iv7-^bVII7-Imaj7.²⁶² Because iv7-^bVII7 is also a ii7-V7 to the flatted third degree (^bIII)—that is, the parallel minor key located *three flats away*—the “backdoor cadence” can also be considered a *triple plagal*.

Example 2-27: Tadd Dameron’s “Lady Bird,” backdoor cadence

(I)	(ii7/ ^b III)	(V7/ ^b III)	(I)
Cmaj7	Fmin7	B ^b 7	Cmaj7

Tadd Dameron employed the (iv-^bVII-I) minor plagal backdoor cadence in the opening phrase of his 1938 composition, “Lady Bird” (*ex.2-27*). While the (Fmin7-B^b7) clearly outlines (ii-V7) in ^bIII, it leads *not* to the flatted mediant but directly back to the tonic. This progression thus suggests a triple plagal relationship, for the “missing” ^bIII chord is not just a minor third above the tonic; it represents the *subdominant of the subdominant’s subdominant*.

This “backdoor cadence,” which I consider an African-Americanization of the authentic cadence, signifies on actual “backdoor” entrances that black musicians had to use in the Jim

²⁶² Jerry Coker. *Elements of the Jazz Language for the Developing Improviser*, Alfred Music, 1997, p.82. Shelly Berg also calls the ii/iii-V/iii-I (F[#]dim⁷-B⁷-C) a “backdoor cadence.” Through leading-tone exchange, the iii is replaced by the tonic. While there is an argument to make for its “backwardness,” most others call this a “deceptive cadence.” *Alfred’s Essentials of Jazz Theory*, Alfred Publishing, 2005, p. 105.

Crow era. Sometimes, as in blues like Willie Dixon's "Back Door Man" (recorded by Howlin' Wolf in 1960) and Sara Martin's "Strange Loving Blues" (1925), the singer boasts about being his woman's "backdoor man":

When everybody trying to sleep, I'm somewhere making my midnight creep
Every morning the rooster crow, something tell me I got to go
I am a back door man.²⁶³

The "backdoor" cadence, like the "back door man," slips in behind the owner's back like a trickster, instead of being forced to use the "servant's entrance" by an oppressor. Do it right, and the people who use the front door will be cuckolded and therefore emasculated.

Much like the underground railroad, a covert conduit to freedom, the backdoor was chosen by African Americans as their *own* secret path. Mid-century jazz musicians played lots of Tin Pan Alley standards, in which progressions typically adhered to tonality. But composers, arrangers, and soloists like Tadd Dameron discovered uniquely African-American techniques—such as the "backdoor cadence"—to bypass and thus *signify on* the white man's authentic cadence.

Starting in the 1950's and 1960's, however, jazz composers like Miles Davis and John Coltrane abandoned Tin Pan Alley changes in favor of a new modal approach to jazz harmony, one in which, to push a metaphor as far as it will go, all doors were equal. In the following two chapters, we will encounter jazz quartals and pentatonics, which place "backdoor" plagality at the front and center.

Flat six and the (plagal) sublime

We finish our survey by considering the plagal implications of the flatted sixth degree, which can be arrived at from a variety of operations. In a minor key, the flatted sixth is

²⁶³ Willie Dixon, "Back door Man."

analogous to the fourth degree in the relative major, also resulting in the Lydian mode. For example, in the key of C minor, the diatonic scale over A^b is A^b Lydian (A^b, B^b, C, D, E^b, F, G), corresponding to the fourth degree of E^b major. For the most part, traditional tonal theory has interpreted flat six in a major key as a ‘borrowed chord’ from the parallel minor, analogous to the fourth degree’s minor subdominant. In Riemann’s dualistic *Klang*, the flat-sixth degree’s role is further cemented as the closest third below the tonic, and in the *Musikalische Syntaxis*, Riemann concludes that the resulting augmented thirds are simply a substitution for normal fifth relations.”²⁶⁴ But as we shall see, there is another way of deriving the flatted-sixth degree: as a *quadruple* plagal.

The Flat Sixth “Never-Neverland”

Susan McClary characterizes Beethoven’s use of the flat submediant as leading to a feminized yet utopian “never-never-land”:

If the first two movements are monomaniacal, the Adagio is dialogic. It stands strangely aloof from the striving narrative of the other movements: perched as it is on the never-never-land degree of flat-six, it may be arcadian recollection, the imaginary sublime, or a dream of utopia. It offers the image of a world in which pleasure is attainable without thrusting desire, where tenderness and vulnerability are virtues rather than fatal flaws. But it can never be reality, as its infinite regress through a spiral of flat-six relationships indicates. And its seductive lure must finally be resisted. The return to the real world at the outset of the final movement quashes the alterity of the Adagio with starting violence—violence that might seem excessive, if we did not understand culturally that to linger in that pleasurable, semiotically and structurally feminine zone would be an act of intolerable transgression.²⁶⁵

²⁶⁴ Riemann. *Musikalische Syntaxis: Grundriss Harmonischen Satzbildungslehre*, Breitkopf und Härtel, 1877, in Rehding, p. 48.

²⁶⁵ McClary, *Conventional Wisdom*, pp. 128-9.

As it was imperative that Beethoven satisfy the demands of tonality, he could not remain in the flat submediant Garden of Eden indeterminately; ultimately, he was required to return to the “real world” tonic. As I explained earlier, Raymond Knapp posits that in Beethoven, the flat sixth—and other areas of the plagal axis—often represents the dreamy “subjunctive tense.” This juxtaposition between dreams and reality is only made possible by tonality, for it is tonality that established these boundaries in the first place. And what is supernaturalism without naturalism?

Stephen Downes calls the flatted sixth in a major-key piece “doomed, ephemeral, and unstable,” arguing that “Wagner’s flat-sixth-dominated opening [of *Tristan and Isolde*] became something of a musical addiction for the decadent generation, a drug of delirium in chromatic tones.”²⁶⁶ When used as part of an augmented cycle, the flat sixth no longer functions as a pre-dominant, for it “is also liberated from the semiotic associations of the descending Aeolian ^b6-5 “lament bass,” which, as Carl Schachter put it, ‘has had an age-old association with ideas of death, grief, and lamentation.’”²⁶⁷ Thus, the major-third oscillation between flatted sixth and tonic sounds otherworldly in Wagner, and nothing like the drooping ^b6-5 ‘sigh.’

Example 2-28: Elton John, “Burn Down the Mission” (1970)

²⁶⁶ Stephen Downes. *Music and Decadence in European Modernism: The Case of Central and Eastern Europe*. Cambridge: Cambridge University Press, 2010, p. 102.

²⁶⁷ Downes, p. 103, and Carl Schachter, “Motive and Text in Four Schubert Songs.” David Beach, ed. *Aspects of Schenkerian Theory*. New Haven: Yale University Press, 1986, pp. 1-2.

5 G B^b/C E^b G/D C[#]min7b5 C/D

tell me about an an - gel in your tree - . Did he say he'd come to call on me - ?

9 G E min7 B^b/C C[#]min7b5 G/D D

For things are getting des-perate in our home, li-vin' in the pa - rish of the rest-less folks I

12 C G/BG F C

know - . Ev' ry-bo-dy now-, bring your fam-ily down to the ri-ver-side,

15 F C G G7/B C

Look to theeast to see where the fat stock hide . Be hind four walls of stone, the rich man

18 G C/G B^b/C

sleeps. It's time we put the flame torch to their keep - .

22 D^b A^b G^b D^b A^b

Burn down the mi-ssion if we're gonna stay a-live - , Watch the blacksmoke fly to hea-ven, see the

25 G^b E^b/B^b B^b A^b

red - flame light the sky - . Burn down the mi-ssion, burn it down to stay a li - ve, it's your

28 E^b/B^b B^b A^b D^b B^b/C

on-ly chance of li-vin, take all you need - to live - in-side.

very fast

32 F5 E^b/F B^b/F F E^b/F E^b/F B^b/F F5 E^b/F B^b/F F

39 E^b B^b/D $Cmin11$ B^b F/A B^b F5 E^b B^b/D $Cmin11$ B^b F/A B^b

42 G5 F C/E Dmin11 C G/B C G5

45 F C/E Dmin11 C G/B C B^b/C D^b E^b

48 F B^b/E G2 E min7 B^b/C

Quadruple Plagals in “Burn Down the Mission”

But what is the affect of a flatted-sixth quadruple plagal? It might sound “otherworldly” when unprepared, or “droopy” when approached by the flatted-seventh degree. But when prepared by intermediary plagals, the flatted sixth may still sound exceedingly flat due to its remote location four flats away from the tonic—but not incoherent. In the final case studies for this chapter, we shall examine two Elton John songs, which rely heavily on double, triple, and quadruple plagal progressions. Earlier in the chapter, we discussed Dvořák’s split-bass eleventh chord, usually limited in popular music to IV/V (what Swinden calls S(D)5), or $^bVII/I$

(“T(SS)IV/IV”). In “Burn down the Mission,” however, John uses these slash chords over IV/IV, ^bVII/I, and even ^bIII/IV to facilitate double, triple, and quadruple plagal shifts to the far-flung flat side. “Burn Down the Mission” commences diatonically in G major (*ex.* 2-28), shifting to Emin7 (vi), but the following B^b/C (^bIII/IV) split chord is harmonically complex: the C bass (the fourth degree) suggests a plagal orientation, for C is the subdominant of G, but the B^b—which is also the flatted third degree—here represents the *subdominant of the subdominant of the subdominant* (G-C-F-B^b), and therefore shifts the harmony three steps flatward toward B^b major. Extending the plagal chain, the following chord is E^b, which functions here not as a scalar flatted sixth degree, but as the subdominant of B^b, or the *subdominant of the subdominant of the subdominant of the subdominant*. Though we could analyze the pivotal “slash” chord in relation to B^b (IV/IV/IV) or C (IV), it is B^b that sets up the quadruple plagal E^b (IV/IV/IV/IV). While the C bass may seem powerless in this progression, it still serves as a crucial diatonic link to the original key of G major, and when the B^b/C chord returns in measure 10, allows for semitonal voice leading to the gospel-inspired diminished passing chord on C[#] (Riemann’s altered [#]IV^o) at measure 11.

In order to return to the G tonic, the split C/D in measure 6 acts as a cadential S(D)5—combining the treble of the subdominant with a dominant bass. But rather than stabilize in diatonic G major, the song moves to a double plagal F major chord at the prechorus, and then backtracks to the subdominant (C) and the tonic (G) by ascending fifth. Though we haven’t heard F (IV/IV or ^bVII) until this point, our prior exposure to IV (C), IV/IV/IV (B^b), and IV/IV/IV/IV (E^b) prepares its arrival.

Amazingly enough, in the chorus, John shifts unexpectedly to the key of D^b, an exotic sonority we can only read here as ^bII/IV! A tritone away from the tonic, D^b could be interpreted

as flat *or* sharp, but the extreme plagality of the preceding section suggests the flat side, for E^b (the farthest flat John had yet gone) was only two flats away from D^b.²⁶⁸ In order to return to G, John must then begin a long, long haul back sharpside—amazingly, achieved without the aid of any authentic progressions.²⁶⁹

John’s gradual build-up of triple and quadruple plagals anchors his harmony in the gospel tradition, and in gospel keyboard technique, slash chords with heavy emphasis on the “non-functional” bass—often plagal—heighten the drama by increasing tension between the outer voices of the harmony.²⁷⁰ Bernie Taupin’s folkish lyric advocating a violent peasant uprising is also strongly gospel-tinged:

Everybody now, bring your family down to the riverside.
Look to the east to see where the fat stock hide.
Behind four walls of stone the rich man sleeps
It's time we put the flame torch to their keep.

The “mission” itself seems to represent some oppressive, colonial government or religious institution. Hence, Taupin mimics the political messages of Negro Spirituals, such as “Down by the Riverside” and “The Gospel Train”—sacred music with covert, practical instructions for slaves’ escape via the Underground Railroad.

The split chords—constantly hovering on the edge between two functions or tonalities—reveal great instability. Rather than employ normalized or *Amen* cadences between sections, John’s split chords are unsettling—befitting the revolutionary mood. That the flat side motion

²⁶⁸ The B^b/C-D^b progression also mimics the B^b/C-C^{#0} shift from measures 10-11, but here the chord on D^b/C[#] sounds like the Neapolitan of C (i.e., ^bII, an even more extreme plagal relationship than ^bVI). With this progression (D^b-A^b-G^b), the unordered sequence of interlocking flatside motion is extended: G-C-F-B^b-E^b-**Ab-Db-Gb**.

²⁶⁹ First he transposes the I-V-IV double plagal chorus progression up a whole tone (two steps sharp) as E^b(I)-B^b(V)-A^b(IV), then he doubles back to D^b, leaps up again to B^b/C (the same pivot chord as at the top of the chorus), and ultimately resolves the C in the bass, so powerless before, authentically to F. In F, he performs the original double plagal progression, this time starting on the tonic: (I-IV/IV-IV-I), but rather than cadence plagally back to F, John drops a minor third from B^b as subdominant of F to the original tonic of G.

²⁷⁰ This practice probably stems from church organ pedals, and was mimicked by pianists.

moves so far afield from the initial G major tonality is violence done to the original tonic; if G is the oppressive force of the missionary position, then the *subdominant of the subdominant of the subdominant of the subdominant* must be the subaltern rising from the deepest trenches with torch in hand.

But exactly what oppression are Taupin and John worried about *as white English men*? For starters, John was struggling with his sexual identity, which, as we shall see in “Someone Saved My Life Tonight,” nearly destroyed him, and for another, neither John nor Taupin was born with a silver spoon in his mouth (John’s mother married a house painter, and Taupin was from a lower-class Jewish agricultural family). Though John won a scholarship to the elite Royal Academy of Music (never to graduate), his love for rock ‘n’ roll undermined his mission to the classics,²⁷¹ while Taupin dropped out of school altogether at the age of fifteen. In the UK, have-nots have tended to commiserate with African-Americans, from “mods” obsessed with rhythm & blues rebelling against traditional English class-consciousness, to the Irish underclass, for whom “blackness becomes a foil for the Irish to express their experience of colonial oppression, to define a transnational antiracist, anticolonial identity.”²⁷² Moreover, the generational crisis between the “Greatest Generation” and the “Baby Boomers” resulted in a feeling of disenfranchisement among young people in the late 1960’s and early 1970’s.

²⁷¹ Elizabeth Rosenthal. *His Song: The Musical Journey of Elton John*. New York: Billboard Books, 2001, p. 5.

²⁷² Lauren Onkey. *Blackness and Transatlantic Irish Identity: Celtic Soul Brothers*. New York & Abingdon: Routledge, 2010, p. 2.

Example 2-29a: "Someone Saved My Life Tonight," piano introduction

Piano introduction for "Someone Saved My Life Tonight." The music is in G major, 4/4 time, and consists of two measures. The first measure has a G/D chord and the second has a C chord. The right hand plays a series of chords (G, D, G, D, G, D, G, D) and the left hand plays a rhythmic accompaniment of eighth notes.

Example 2-29b: "Someone Saved My Life Tonight," First Verse and Chorus

First Verse and Chorus for "Someone Saved My Life Tonight." The music is in G major, 4/4 time, and consists of 25 measures. The lyrics are: "When I think of those east end lights, mu-ggy nights, the cur-tains drawn in that li-ttle room down - stairs, Pri-ma-do-nna, Lord you rea-ly should have been there, Si-ting like a princess perched in her e-lec - tric chair. And it's one more beer, and I don't hear you a - ny - more, we've all gone cra-zy la - tely, my friends out there ro-llin' round the base-ment floor. And some-one saved my life to - night, su - gar bear. You al-most had your hooks in me, didn't you dear? You near-ly had me roped and tied, Al tar bound, hy-pno - tized sweet free-dom whispered in my ear, you're a bu-tter-fly, and bu-tter-flies are free to fly, fly a way! high a-way, bye bye!"

Chords: G/D, C, G, C, G, F, C, F, G, G, C, C min, A, C, A/C#, G/D, D7, C, G/B, A min7, C, G/B, C, A7/C#, G/D, A/E, C, A7/C#, G/D, B7 3, C, G/B, A min7, F, G/D, C, (C/F).

“Someone Saved My Life Tonight” (1975)

In “Someone Saved My Life Tonight,” John presents another narrator with mental health struggles: *himself*. Taupin’s lyric for this song was inspired by Elton John’s agonizing 1969 break-up with his fiancée, Linda Woodrow, in which John was so conflicted about marrying a woman he didn’t love that he strongly contemplated suicide.²⁷³ At the urging of his close friend John Baldry, an openly gay British singer, John left Woodrow; the decision never to marry thus saving his life. (As it turns out, John *did* eventually get married, to a man—but that is another story.) In gospel, the figure who normally saves is *Jesus*, but John’s redemption is more...secular.

The refusal to cadence authentically in Loesser’s “Never Will I Marry” signaled a rejection of traditional romantic closure. For Loesser, the subdominant operates as an alternative space where hetero-normative desire could be sidestepped, and similarly, in Elton John’s “Someone Saved My Life Tonight,” the subdominant is used as an escape hatch.

To highlight the colossal significance of being “saved,” John commences his piano introduction with a majestic gospel-style pedaled G tonic over a D bass (I/V) (*ex.2-29a*). The second-inversion tonic chord usually prepares the dominant chord (D7), which in this case never arrives. Instead, the bass shifts down a whole step to C. While masquerading as a parallel transformation downward of the previous second inversion chord, this next sonority is actually a root position C major chord. The rising bass line outlines a transformation to F—the subdominant of C major (IV/IV).

When vocals enter over the tonic (measure 4), a pedaled D bass persists, making the following subdominant-esque chord (C/D) sound more like a IV/IV or ^bVII in the key of D (*ex.2-*

²⁷³ Rosenthal, p. 15.

29b). But in the following measure, the D pedal vanishes, recontextualizing the C chord as the subdominant of G. Due to the introduction of the F-G-C progression at measure 7, C is then temporarily tonicized (outlining IV-V-I in C major)—shifting its function yet again. In a *triple emploi*, C major has operated as ^bVII, IV, and I all in the span of a few measures! Ultimately, C is converted to C minor in measure 12, after which a surprising A major chord enters.

Let us briefly shift gears to linear considerations. In the melody, John initiates a stepwise ascent up to the leading tone (F[#]), which falls just short of the G tonic. As with “Never will I marry,” the leading tone functions as a Lydian “leaning tone” over the subdominant, one that is never resolved by ascending to the tonic over the ‘correct’ authentic cadential chords. Assuming a Mixolydian scale over the A major chord, then the upper G might have served as the flatted seventh degree of A, but John lets the unsettling major sixth dangle instead. Finally, he ascends to G on the next measure, but it’s not a triumphant authentic cadence, for the harmony is not aligned; the progression moves deceptively to the C major subdominant rather than the tonic. After more flirtation with the leading tone, John falls to D on measure 16. Ultimately, the A chords are recontextualized as V/V, leading to D7.

On the cusp of an authentic cadence, the D7 leads not to G but to C at the beginning of the chorus, quickly descending stepwise back down to the tonic in a gospel-style IV-I/III-ii-I “Let it Be” progression. After another impotent stab at authentic closure, a last-ditch effort to cadence authentically via A7/C[#] (V7/V) at “Fly away” bypasses D7 and moves straight to G, but does not settle there. Instead, a B major chord provides a semitonal escape route to C, the subdominant—a sort of backdoor cadence, where B7, the dominant of E minor, arrives at C through leading-tone exchange. Though the dominant chord suggests an authentic cadence (this time to E), through sleight of hand, it actually arrives at the subdominant.

Musically speaking, this song explores a number of *near-misses*, or authentic cadences that seem imminent but never happen, for whenever the authentic cadence is forthcoming, the subdominant swoops in and “saves” the day. If hetero-normative male desire in tonal music is usually expressed as a quest for the authentic cadence, then the authentic cadence in “Someone Saved my life tonight” probably represents marriage (the little death)—and physical death (the *big death*) both. But John evades the authentic cadence repeatedly; how should we interpret this non-event?

For some insight, consider Susan McClary’s analysis of Franz Schubert’s *Unfinished Symphony*, which wanders ambiguously without establishing firm boundaries between key areas. In McClary’s view, this non goal-oriented style may indicate Schubert’s alternative masculinity:

Schubert tends to disdain goal-oriented desire per se for the sake of a sustained image of pleasure and an open, flexible sense of self—both of which are quite alien to the constructions of masculinity then being adopted as natural, and also to the premises of musical form as they were commonly construed at the time.²⁷⁴

While McClary does not claim that sexual orientation can be heard outright in every composer’s music, some composers—like Schubert—chose to advertise their differences musically. Though many theorists have read Schubert’s ambiguity and pleasure-driven pivots as “weak” or “feminine,” McClary maintains that this is not weakness: just “a gentle yet firm refusal to submit to narrative conventions that would have achieved closure only at the expense of his integrity.”²⁷⁵

²⁷⁴ McClary. “Constructions of Subjectivity in Schubert’s Music.” *Queering the Pitch: The New Gay and Lesbian Musicology*, 2nd edition. Philip Brett, Elizabeth Wood, and Gary C. Thomas, eds. New York: Routledge, 2006, p. 223.

²⁷⁵ *Ibid*, p. 227.

Another uncanny similarity is seen in the life of Pyotr Ilyich Tchaikovsky, a known homosexual who married due to family pressure in 1877, and then promptly attempted suicide.²⁷⁶ In the Fourth Symphony (written the same year of Tchaikovsky's doomed nuptials), McClary notes that the principal masculine, "appoggiatura-laden, limping theme is hypersensitive, vulnerable, indecisive," and "marked with yearning,"²⁷⁷ prompting Carl Dahlhaus to declare it "[unsuitable], at least by Beethovenian standards, for establishing a symphonic movement spanning hundreds of measures."²⁷⁸ But Tchaikovsky was not trying to emulate Beethoven; he was breaking the traditional symphonic narrative mold with his protagonist "victimized both by patriarchal expectations and by sensual feminine entrapment."²⁷⁹

While we can only speculate about this autobiographical connection to Tchaikovsky's Fourth Symphony, we know more definitively that "Someone Saved My Life Tonight" expressly concerns John's refusal to live a hetero-normative life. Much like the trickster "backdoor cadence," which provides an alternate escape hatch to the authentic cadence, the subdominant (and the backdoor cadence *to* the subdominant) is John's saving grace. In general, this song expresses a different kind of male desire—not a hetero-normative one, but not a feminine one either.

Does this mean that plagality is code for "gay" in Elton John? While I hesitate to ascribe sexual orientation to a chord progression, I assume that the subdominant represents some kind of

²⁷⁶ See Alexander Poznansky. "Tchaikovsky's Suicide: Myth and Reality." *19th-Century Music* 11, no. 3, Spring 1988, pp. 199-220; and McClary, *Feminine Endings*, p. 77.

²⁷⁷ McClary, *Feminine Endings*, p. 71.

²⁷⁸ Dahlhaus. *Nineteenth-Century Music*. J. Bradford Robinson, trans. Berkeley: University of California Press, 1989, p. 266, qtd. in McClary, *Feminine Endings*, p. 76.

²⁷⁹ McClary, *Feminine Endings*, pp. 76-77.

Other to John (probably African-Americanized and gospel) and as such, provides an alternative to the normative path. For Schubert and Tchaikovsky, plagality also would have also been Othered, but probably as the “feminine.”

Despite gospel music’s plagal *Amens* and subdominant-leaning slash chords, being “saved” is usually represented by the authentic cadence from V7-I—correlating to the hetero-normative male sex drive in soul music.²⁸⁰ But in “Someone Saved”—a necessary corruption of the gospel trope—redemption comes from *refusing* to submit to hetero-normative standards. Schenkerians might view these near-misses as ‘unrequited’ authenticity, and I do think that authenticity—like hetero-normativity—functions in this song as a specter whose influence is exerted, but not ultimately triumphant.

The real story is in the ever-changing, but omnipresent subdominant, whose back door becomes a front door to a new life. But to put it in Derridean terms, there is no back door without a front door. Homosexuality is only scandalous when there is an expectation of heterosexuality, and plagality only seems ‘counterfeit’ in the authentic universe.

In real life, homosexuality was not just a way out for John—it was the path to life. John eventually got his life back on track, kicked his drug habit and is now happily married (to a man) with two young children. Today, marriage is no longer the exclusive domain of heterosexuals, which alters the legacy of “Someone saved my life tonight.”²⁸¹ If homosexuals can marry, then evading marriage seems less about sexual orientation, and more about the typical reasons why

²⁸⁰ See Ray Charles, “This little girl of mine,” for an example of the authentic cadential male “release” in gospel-tinged soul.

²⁸¹ Recently, British soul singer Sam Smith redefined the gospel-sex trope with his video and single, “Lay Me Down” (2012). Featuring that age-old double entendre of sex and death, the new spin is that both can now take place in a state-sanctioned gay relationship. In the video for “Lay Me Down,” scenes of the joyful marriage celebration followed by the crushing funeral of Smith’s fictional husband remind us that contemporary homosexual men now experience what used to be the sole domain of married heterosexual couples: public displays of their love in church weddings and funerals.

anyone—heterosexual or homosexual—might fear marriage.²⁸²²⁸³ Convert homosexual marriage to a “front door” institution, and the semiotic signs seem to misfire in this song.

In this chapter I have attempted to demonstrate the autonomous ways in which subdominant chords and their derivatives can function. However, they often function in the shadow of authenticity: exoticized Lydian excursions in “Never will I marry” and “The Jetsons” are ultimately replaced by traditional dominant-to-tonic closure (and the major scale). In “Someone Saved My Life Tonight,” John does go the subdominant route, but the elliptical dominant looms large as a feminine temptress (in a curious reversal of the hetero-normative feminized subdominant and masculinized dominant); the dualist subdominant/dominant binary—and its associated Othering—persists.

Authenticity plays no discernible role in the vertiginously plagal “Burn Down the Mission”—perhaps because the song attempts to reflect a distinctly subaltern perspective. But that’s not normative for gospel either, since most gospel songs—including “Down by the Riverside” and “Gospel Train”—cadence authentically in order to enact the sacred crossing over the River Jordan. In African-American music, it is the blues—not gospel—whose godless secularity makes no demands of authentic redemption, shows no way to “get over.”²⁸⁴ “Someone Saved My Life Tonight” is emphatically not a blues, for it broadcasts a gospel message of life-

²⁸² Radical feminist Claudia Card fears that gay marriage would encourage homosexuals to behave more like heterosexuals. See “Against marriage.” *Same sex: Debating the ethics, science, and culture of homosexuality*. John Corvino, ed. Lanham: Rowman & Littlefield, 1997, pp. 325-326.

²⁸³ Feminists have expressed their concern over gay marriage, since (heterosexual) marriage is thought to oppress the needs of the individual, and women in particular. In 2004, Judith Butler worried that gay marriage might “discipline” gays and lesbians into two diametrically opposed groups: socially acceptable gay spouses, and single, “deviant” Others. See *Undoing Gender*. New York: Routledge, 2004, pp. 105-106.

²⁸⁴ For more on the Saturday night/Sunday morning blues/gospel dichotomy, see Albert Murray. *Stomping the Blues*. Cambridge: Da Capo Press, 1976 and 2000.

affirming salvation. Through John's mis-appropriation of gospel, he breathes new life into the trope—deconstructing the subdominant, and harnessing its power for a different kind of redemption.

CHAPTER 3: A TAXONOMY FOR STACKED FOURTHS

Space: the final frontier...

Example 3-1: Alexander Courage, Theme to *Star Trek*, introduction (1966)²⁸⁵

Star Trek inspired a lot of children to become astronauts, but I was struck by the show's introductory music by Alexander Courage.

The harmonies sounded exactly like space should: hollow, spooky, and definitely not earthbound. But what was that mysterious music?

After struggling at the piano, I finally realized that many of the pitch combinations were comprised of fourths stacked upon fourths—which to me felt like singing “Here comes the bride” many times over. I could generate the first four pitches (A-E-G-B) by stacking fourths up from B-E-A-D-G.²⁸⁶

This was a revelation to me. Just plain old fourths! I wondered what would happen if I continued to add fourths to B-E-A-D-G: B-E-A-D-G-C-F-B^b-E^b-A^b-D^b-G^b-C^b. After playing twelve fourths in a row, I was finally back to my starting pitch. I had solved the riddle of modern music!

At that moment I became hooked on quartals. I played, wrote, and sang them every chance I got, and in my jazz studies, I was delighted to find stacked fourths in the music of Bill Evans, McCoy Tyner, Chick Corea, and Herbie Hancock. Fourths loomed large in every other type of music I listened to as well, it seemed: concert (Paul Hindemith,

²⁸⁵ In some versions of this piece, measures 8 and 9 are omitted.

²⁸⁶ Though the D was missing in the first measure, it showed up in the second measure with the quartal A-D-G to complete the fourths cycle.

Arnold Schoenberg, Claude Debussy), rock (Joni Mitchell, King Crimson, Emerson, Lake & Palmer), and of course, film music (John Williams, Miklós Rózsa, and Alexander Courage). I loved the way fourths could sound simultaneously medieval and modern.

Stacked fourths are omnipresent in twentieth-century musics, and yet, no official chord symbols exist for them. In post-bop jazz—a genre in which quartals are played nearly as often as tertian ones—lead sheets either employ an inaccurate tertian formula to interpret quartals, or simply write out the voicing without offering *any* chord symbol. For an example of a tertian label, the quartal stack D-A-D-G-C-F at measure 13 of Herbie Hancock’s “Canteloupe Island” is marked as “Dmin7sus” in *The All Jazz Real-Book*—a flawed reading, since the third *and* fourth degrees are present in this four-stack quartal that begins on D and ends on F (with a doubled D).²⁸⁷ (ex. 3-2) Moreover, the third degree is not “suspended” or “omitted”; it is simply generated *later* in the ascending quartal ic-5 cycle than the fourth. Even an improved tertian label, like “Dmin11, omit 5,” would still fail to highlight the basic structural principle, nor would it explain the rationale behind the missing fifth degree. We need a system of taxonomy that recognizes quartals as they are—not as elaborate and phantom transformations of tertian sonorities. Example 3-2: Herbie Hancock’s piano quartal from “Canteloupe Island,” m. 13



Tertian vs. quartal

The distinction between “tertian” and “quartal” chords is murky, probably due to theoretical confusion surrounding the meaning of a “third”: is it a unit of absolute measurement (i.e. ic-3 or ic-4), or is it relevant anytime a scale skips a step? Heptatonic scalar skips are

²⁸⁷ Larry Dunlop, ed. Petaluma: Sher Music, 2001, p. 76.

crucial for tonality; they form the basis of triads. In tonal music, we are accustomed to two unaltered thirds, major and minor, as well as their respective diminutions and augmentations. Even though diminished minor thirds and augmented major thirds are no longer ic-3 or ic-4 “thirds,” they still outline conceptual scalar *skips*. The fourth, conversely, represents three steps of the major scale, which is only triadic when it outlines an authentic 5-8 dyad. In the diatonic scale, there exist two types of fourths: perfect and augmented (more commonly referred to as a “tritone”). The flatted or diminished fourth, however, is not a commonly employed interval in tonal music. Since it is not available in the major mode (the major-third occupies this pitch space), Romantic composers have avoided it—even in the minor mode.²⁸⁸

Example 3-3: Claude Debussy, “La Fille aux Cheveux de Lin,” mm. 35-6



In the ic-5 pentatonic scale, the unequal ‘steps’ are composed of major seconds and minor thirds, implying that skipping a pentatonic scale step would culminate in either a perfect fourth *or* a major third. But if a pentatonic ‘skip’ translates to a third or a fourth, then would such a construction be considered tertian or quartal? Tymoczko calls these leaps “pentatonic

²⁸⁸ Dmitri Tymoczko writes, “This chord [the flatted-fourth] is extremely rare, perhaps because Romantic composers regarded the minor mode as the dual or shadow of the major. (That is: since the lowered fourth scale degree is not available in major, composers may have shied away from it in minor.)” See *A Geometry Of Music: Harmony and Counterpoint in the Extended Common Practice*. Oxford & New York: Oxford University Press, 2011, p. lxxv.

thirds,” as evidenced in measure 35 of Claude Debussy’s “*La Fille aux cheveux de lin*” (ex.3-3), since they all skip exactly one pentatonic scale degree.²⁸⁹

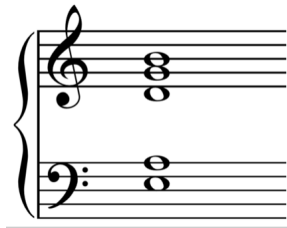
With his “pentatonic thirds,” Tymoczko reminds us that ‘steps’ are measured differently by non-heptatonic scales. The “circle of fourths” generates the five pitches of the reordered pentatonic scale, but is also a twelve *pitch* scale in its own right, where each step is a perfect fourth (5 semitones), two scalar steps outline a minor seventh (10 semitones), and three steps are equivalent to an octave plus a minor third (15 semitones). In pitch space, the “tertian” minor tenth is equivalent to three perfect fourths; tertian *is* quartal.

Ascertaining a quartal ‘root’

The tertian and quartal worlds collide again when verticalities are rotated (that is, inverted). For example, Bill Evans’ “So What” chord looks like a three-stack quartal with a major third on top (E-A-D-G-B; see ex.3-4); but if the highest pitch is rotated to the bass, a four-stack quartal in ‘root’ position reveals itself as B-E-A-D-G. How should the analyst descry the root of such a chord? Should we reconfigure the chord as the more recognizable tertian stack E-G-B-D-A (Emin11), the ii chord in the “key” of D Dorian? One might equally assume B as the root, since B-E-A-D-G exposes a chain of ascending fourths. I believe a case could be made for either of these interpretations, depending on the analytical process, and we are well-advised to be flexible, for quartals do not usually exist in exclusively quartal environments, which are rare in tonal music; they mix and match with tertian chords, functional harmony, and other interval cycles.

²⁸⁹ Tymoczko. “Scale Networks and Debussy.” *Journal of Music Theory*, Fall 2004 48 (2), p. 230.

Example 3-4: Bill Evans' "So What" chord



Modernist composer and theorist Paul Hindemith rejected the interpretation of stacked fourths as appoggiaturas, suspensions, or substitutes decorating tertian chords, and since his main goal in establishing a chordal taxonomy was to banish ambiguous interpretations, Hindemith maintained that the 'root' of a stacked fourth chord was unknowable, dependent on the context.²⁹⁰

For Hindemith, quartal roots could not be ascertained, because each pitch of a quartal is spaced equally. The pitch set of "C fully diminished" is identical to E^b, G^b, or A fully diminished, and thus C-F-B^b-E^b seems to be no more a "C" chord than it is F, B^b, or E^b (*ex. 3-5a*).

Example 3-5a: Rotations of a C-E^b-G^b-A



Example 3-5b: Rotations of C-F-B^b-E^b



²⁹⁰ Hindemith. *The Craft of Musical Composition: Book 1—Theoretical Part*. Arthur Mendel, trans. London and New York: Schott & Co; New York: Associated Music Publishers, 1942, p.101.

Figure 3-1: Rotations of 12-stack quartal

<p>C-F-B^b-E^b-A^b-D^b-G^b-C^b-F^b-B^{bb}-E^{bb}-A^{bb}</p> <p>F-B^b-E^b-A^b-D^b-G^b-C^b-F^b-B^{bb}-E^{bb}-A^{bb}-C</p> <p>B^b-E^b-A^b-D^b-G^b-C^b-F^b-B^{bb}-E^{bb}-A^{bb}-C-F</p> <p>E^b-A^b-D^b-G^b-C^b-F^b-B^{bb}-E^{bb}-A^{bb}-C-F-B^b</p> <p>A^b-D^b-G^b-C^b-F^b-B^{bb}-E^{bb}-A^{bb}-C-F-B^b-E^b</p> <p>D^b-G^b-C^b-F^b-B^{bb}-E^{bb}-A^{bb}-C-F-B^b-E^b-A^b</p> <p>G^b-C^b-F^b-B^{bb}-E^{bb}-A^{bb}-C-F-B^b-E^b-A^b-D^b</p> <p>C^b-F^b-B^{bb}-E^{bb}-A^{bb}-C-F-B^b-E^b-A^b-D^b-G^b</p> <p>F^b-B^{bb}-E^{bb}-A^{bb}-C-F-B^b-E^b-A^b-D^b-G^b-C^b</p> <p>B^{bb}-E^{bb}-A^{bb}-C-F-B^b-E^b-A^b-D^b-G^b-C^b-F^b</p> <p>E^{bb}-A^{bb}-C-F-B^b-E^b-A^b-D^b-G^b-C^b-F^b-B^{bb}</p> <p>A^{bb}-C-F-B^b-E^b-A^b-D^b-G^b-C^b-F^b-B^{bb}-E^{bb}</p>

But diminished chords and quartals differ in at least one respect. The minor third cycle (ic-3) that generates C-E^b-G^b-A is completed with those four pitches, such that rotations of a fully diminished chord are identical transpositions of the ‘root position’ chord: E^b-G^b-A-C, G^b-A-C-E^b, and A-C-E^b-G^b (ex.3-5a). The ordered perfect fourth cycle including the pitches C-F-B^b-E^b, however, must traverse eight additional pitches (A^b-D^b-G^b-C^b-F^b-A-D-G-C) before it repeats (ex.3-5b). Therefore, ordered rotations of a four-stack perfect fourth quartal are not identical transpositions of the ‘root position’ chord, for there is one major sixth interval in each rotation: F-B^b-E^b-C, B^b-E^b-C-F, E^b-C-F-B^b. Only a twelve pitch quartal stack, such as C-F-B^b-E^b-A^b-D^b-G^b-C^b-F^b-A-D-G, appears identical in its eleven rotations, since every interval is a perfect fourth (fig.3-1). Therefore, I feel that quartals are not, technically speaking, what Oliver

Messiaen called “modes of limited transposition”²⁹¹; like cycles of fifths, they generate all twelve tones and are differentiated in their rotations. Hence, we can identify a quartal ‘root position’ in any quartal stack of eleven or less, but we still have not decided which of those pitches serves as the *root*.

A tonal interpretation of quartals

Quartals are not generally associated with tonal musics, but let us investigate a tonal interpretation. To tonal theorists, a fourth dyad is potentially dissonant, because a 1-4 dyad—in which most listeners will hear the top pitch as the tonic—challenges the supremacy of the original “root.” Conversely, most listeners will hear the bottom pitch of a 1-5 dyad as the root, thereby strengthening the tonic. The perfect fourth from 5-8, however, signals an authentic cadence, and therefore adheres to tonal expectations. Tonal theorists thus prefer to analyze fourth dyads as 5-8 dominant-to-tonic structures.

As we learned in Chapter 2, theorist August Halm interpreted ascending fourth sequences as authentic, with “elliptical” dominants.²⁹² Halm’s theory can be extended to simultaneous quartal sonorities; according to Halm’s logic, B^b must be the root of C-F-B^b, for C7 is the dominant of F, and F7 is the dominant of B^b.

Such an interpretation suggests that C-F-B^b is not in root position, and that the voicing B^b-F-C—a quintal stack—or perhaps B^b-C-F—an open ninth chord, would be. But couldn’t C-F-B^b also be considered a *C-based* quartal?

²⁹¹ Messiaen, p. 58.

²⁹² August Halm’s ‘*Von zwei Kulturen der Musik*’ (1913): A Translation and introductory Essay.” Laura Lynn Kelley, Dissertation, UT at Austin, 2008, pp. 45-6.

Absolutely. But why stop there? C-F-B^b could also be construed as *descending* from its top B^b, or even as a simultaneous ascending *and* descending sonority from the middle F. In chapter 1 we noted the existence of mirrored and ‘upside-down’ chords, and now we continue that inquiry with quartals. In this chapter, I shall review the (rather limited) scholarship on quartals, including Arnold Schoenberg, Paul Hindemith, Olivier Messiaen, Nicolas Slonimsky, Elliott Antokoletz & Paolo Suzanni, Philip Tagg, and jazz pedagogue Alan Brown. Next, I present my own system of quartal taxonomy, inspired by Tagg’s recent chapter on quartals. I will discuss “planing” quartals—a technique of parallel motion—“hollow” quartals, mirroring, and the mid-century “sus[uspended] chord imperative,” under which post-bop jazz artists replaced many dominants with quartal subdominants. The chapter will conclude with case studies: Herbie Hancock’s “Maiden Voyage,” which masquerades as a tonal compositions with “sus” chords; a passage from Béla Bartók’s Second String Quartet, in which quartals mirror over a central axis; and finally, “*Grablegung*” from Paul Hindemith’s *Mathis der Maler*, where powerful flat side quartal motion allows the painter to ‘cross over’ to the left “heart side.” In the conclusion, we will return to our discussion of *Star Trek*.

Arnold Schoenberg’s 12-pitch quartals

Arnold Schoenberg demonstrated an early interest in quartal constructions as a composer and a theorist, referring to stacked fourths as tonally independent and symmetric “vagrant chords,” whose roots were ambiguous.²⁹³ In Schoenberg’s view, quartal stacking first began as an “impressionist” device in Wagner and Debussy, only later evolving into a system. He maintained that he was the first composer to use quartals structurally—first in the symphonic

²⁹³ Schoenberg, *Theory of Harmony*, p. 195.

poem *Pelleas und Melissande* (1903), and in a more developed fashion in his First Chamber Symphony (1906).²⁹⁴ While crediting Debussy and Dukas for their “impressionist” quartal achievements, Schoenberg detected only surface-level quartal voicings in their compositions, concentrating instead on Beethoven and Wagner as forerunners.²⁹⁵ In the following quotation, he argues that the opening horn theme of his Chamber Symphony can be seen as an expansion of Beethoven and Wagner’s horn fourths and fifths:

Here the fourths, springing from an entirely different expressive urge (stormy jubilation), shape themselves into a definite horn theme, spread themselves out architectonically over the whole piece, and place their stamp on everything that happens. *Thus it turns out that they do not appear here merely as melody or as a purely impressionistic chord effect; their character permeates the total harmonic structure, and they are chords like all others.* I shall have to be pardoned for dealing so particularly with my own work. I have to do so, for I do not know whether any composer before me ever used these chords in this sense, in this harmonic sense.²⁹⁶

Schoenberg was particularly intrigued by the chromatic possibilities of stacking multiple fourths, and moved deep into the ic-5 cycle in *Kammersymphonie*, using stacks of fourths nearly encompassing all twelve tones. Whereas minor and major third cycles only generate four and three pitches respectively, the single cycle of fourths includes *all* twelve tones—a useful trick for a composer with tendencies toward aggregate completion.²⁹⁷

²⁹⁴ Ibid, p. 406.

²⁹⁵ As Debussy was a competitor from the French school, I doubt Schoenberg *wanted* to find structural evidence in Debussy, but theorists such as Roy Howat, Dmitri Tymoczko, and Jeremy Day O’Connell have demonstrated Debussy’s commitment to pentatonics, ic-5 cycles, and non-tertian constructions.

²⁹⁶ Schoenberg, *Theory of Harmony*, p. 406.

²⁹⁷ Ibid, p. 406.

Schoenberg was particularly fascinated by the possibility of deriving tertian sonorities from quartals.²⁹⁸ For example, in the full stack beginning on C, pitches C (1), F (2), E^b (4) and A (10 flat or 4 sharp) together produce a dominant seventh chord. (Because the chordal pitches are out of ic-5 scalar order, the quartal quality may not be immediately detectable.) Note that we cannot use tertian stacks to reverse-engineer a large stack of fourths, for ic-3, ic-4 produce “modes of limited transposition.”²⁹⁹

Schoenberg also showcased the voice leading commonalities between quartal stacks and the tertian system (a process vaguely reminiscent of Riemannian Tonnetz transformation). For example, a 6-3 major chord like F-A^b-D^b-A^b can easily transform into the four-pitch quartal E-A-D-G via semitones, and a minor chord voiced with a bottom open fifth—such as E^b-B^b-E^b-G^b—easily glides to E-A-D-G.³⁰⁰ The four-stack quartal A-D-G-C, Schoenberg believed, could “substitute” for the dominant B^b-E^b-G-D^b from which it is derived by parsimonious voiceleading.³⁰¹ Schoenberg’s point is not that quartals are *really* tertian chords—simply that they may coexist side by side in the same composition.

Noting the close voice-leading relationship between the six-stack quartal and the whole-tone scale, Schoenberg demonstrates how the two cycles can be aligned (*ex.3-6*).³⁰² Curiously, he does not observe that the ic-2 and ic-5 cycles are also related by multiplication: ic-2 x ic-5=ic-

²⁹⁸ Ibid, p. 407.

²⁹⁹ To generate all twelve tones from major and minor thirds alone, ic-3 and ic-4 would have to mix in a ratio of 3;4 (C E^b G B^b D F A C E G B D F[#] A C[#] E G[#] B) or 4;3 (C E G B D F[#] A C[#] E G[#] B D[#] F[#] A[#] C[#] E[#]) to simulate a composite ic-7 cycle.

³⁰⁰ Schoenberg, *Theory of Harmony*, p. 405.

³⁰¹ Ibid, p. 405.

³⁰² Ibid, p. 406.

10, although more systematic theorists Herbert Eimert, Roger Sessions, and Robert Morris would soon reach this very conclusion (Chapter 1). But Schoenberg was the first to establish parsimonious voice-leading connections between the three different “tonal” systems, each based on a single interval-class cycle, currently in use at the turn of century. This discovery was vital to the development of twentieth-century modernism, for quartals rarely exist in a vacuum; composers mix and match them with traditional tonal chords, chromaticisms, and other interval cycles.

Example 3-6: Schoenberg’s voice-leading between six-part whole-tone chord and six-stack quartal³⁰³



Schoenberg concluded his discussion of quartals by explaining that they were still too new to be fully theorized:

However much it seems, then, as if the most talented of our young composers are tending to go in this direction, toward the use of such chords, there would be little value in formulating a system right now; for our lack of distance from these events gives us only a bewildering view of them.³⁰⁴

Over one hundred years later, a system for quartals is still lacking, despite the proliferation of stacked fourths in the second half of the twentieth century. Perhaps most theorists simply wrote them off as ‘atonal’—refusing to interact with them. “Atonal” is a convenient label for music

³⁰³ Ibid, p. 406.

³⁰⁴ Ibid, p. 407.

that resists interpretation, but stacked fourths often indicate cyclic activity, rather than aimlessness.

Paul Hindemith's tritone-free quartals

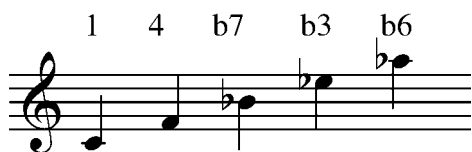
Paul Hindemith, the German modernist, was compelled to write a new system of harmony as a response to the myriad failures of traditional harmony. First, he rejected the notion that chords should be tertian. Thirdless constructions like stacked fourths are commonly interpreted by tonal theorists as appoggiaturas, suspensions of tertian harmonies, or dominant substitutes (Schoenberg), but Hindemith believed that in contemporary music, these chords should be treated as “independent entities rather than substitutes for other, more familiar chords.”³⁰⁵ For a fourth to be independent, Hindemith maintained that “the third must be subordinated by rhythmic means, or omitted altogether”³⁰⁶ and can be rendered “harmless” if used to reinforce the fourth as a preceding neighbor tone.³⁰⁷ As unorthodox as this statement may sound, it still exposes Hindemith’s reliance on triads. Schoenberg’s generative quartal system implies that thirds are simply a product of multiple quartals: the minor third is produced by the ascending four-pitch quartal: C-F-B^b-E^b, while the descending five-pitch quartal (or ascending quintal) generates the major third: C-G-D-A-E. But in neither case does the third challenge the supremacy of the fourth, because they are not ‘neighbors’ along the ic-5 cycle; the minor third’s scalar neighbors are the flatted seventh on the sharp side and the flatted sixth on the flat side—not the third (ex.3-7).

³⁰⁵ Hindemith, p. 90.

³⁰⁶ Ibid, p. 191.

³⁰⁷ Ibid.

Example 3-7: ic-5 ‘neighbors’



To ascertain a chord's root, the student of the *Craft* must locate the “best” interval in descending order of “Series II” (perfect fifth, perfect fourth, thirds, sixths, seconds, sevenths, and finally tritone). When the strongest interval is a fifth, third, or seventh, then the root is the lower pitch, but if the best interval is a fourth, sixth, or second, then the upper pitch is the root. In a chord with two “best” intervals (as in C–G–D), the root is the dominant pitch of the lowest dominant interval (in C–G–D: C). Hence, for a chord containing two fourths (C–F–B^b), the favored intervals are both perfect fourths (from C to F and F to B^b), so perhaps F should be the root. However, Hindemith calls this chord “indeterminate.”³⁰⁸ As in an augmented or diminished triad (chords of “limited transposition”) he finds no obvious root in C–F–B^b—only a “root representative”. For stacked fourths and augmented triads, Hindemith posited that “the interpretation depends on the context,”³⁰⁹ which, as I mentioned earlier, seems odd in a taxonomy designed to banish ambiguity. Strangely, Hindemith believed that a four-pitch quartal (C–F–B^b–E^b) *does* have a root (the root of the lowest fourth,³¹⁰ or F in this case).

Hindemith's insistence upon categorizing tritone-rich chords as more unstable (or less “pure,” as he calls them³¹¹) than tritone-less sonorities is a major point of departure from

³⁰⁸ Ibid, p. 101.

³⁰⁹ Ibid, p. 101.

³¹⁰ Ibid, p. 104.

³¹¹ Ibid, p. 96

Schoenberg. Most likely, Hindemith's position relates to his personal interest in medieval and early Renaissance musics—back when the tritone represented the fearful "*Diabolus in Musica*" (Devil in Music). As the leading tone dyad of the dominant seventh chord, tritones had always been considered unstable in tonal music, but the role of the tritone was extended in the early twentieth century—as the bisector of the octave in compositions by Claude Debussy, Igor Stravinsky, and Alexander Skryabin. As a result, tritone-rich scales and chords became relatively stable entities in the early twentieth century. Though he was not a composer of tonal music, Hindemith pushed back against this line of thinking. For Hindemith, the tritone-rich chord should serve as a means of pseudo-development, for he believed that every good composition should fluctuate from high-ranking, "noble" chords (chords with the "best" intervals, like fourths and fifths, corresponding to his categories I.1 and I.2) to more intense chords (indeterminate chords from groups IV, V, and VI like stacked fourths, and chords with tritones) before concluding with stable sonorities (usually I.1, indicating major and minor).³¹² Hindemith explains: "These noblest of all chords [the major and the minor triads] constitute a section among themselves. They alone are completely independent, capable of being used for conclusions."³¹³ Openings and conclusions in Hindemith's system, therefore, are tidy bookends—with a whole lot of sound and fury in between.

Hindemith's position on augmented fourths colored his view of quartals. For Hindemith, a quartal stack of perfect fourths is less "pure" than a quartal containing augmented fourths, because the perfect fourth is considered more consonant. While Schoenberg, Scriabin, and Satie allow such "near-fourths" in their quartals, Hindemith's antiquarian approach only allows

³¹² Ibid, pp. 115-121.

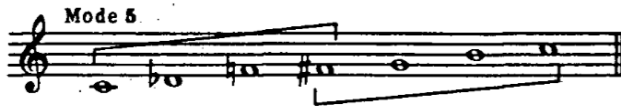
³¹³ Ibid, p. 102

augmented fourths during tense moments located in the middle of a composition.

Hindemith prefers to conclude practically every composition with the most stable chord: a tertian major triad. But if we are to end a piece with a major triad, then we cannot have a quartal tonic. And if perfect fourth quartals are less stable than major triads, then is the reign of tonality really over? In Hindemith's post-tonal system, quartals only serve the development of a piece, but third-stacks provide the "noble" resolution. Analogously, traditional tonal music tolerates dominant seventh chords, but only as temporary dominants—not as the stable tonic chords found in blues.

Example 3-8: Messiaen's fifth scale of "Limited transposition"

(a.) Mode 5, *Technique*, vol. 2, ex. #347.



Example 3-9: Messiaen's "Chord in Fourths"



Olivier Messiaen's modes of limited transposition and Alexander Skryabin's Mystic Chord

Olivier Messiaen's non-tonal formulae involved symmetric scales, or what he termed "modes of limited transposition." He explained the potential for quartals in his *Technique of My Musical Language*:

Let us forget the classic chords of superimposed thirds to use a chord of augmented and perfect fourths...It contains all of the notes of the fifth mode of limited transposition.”³¹⁴

The fifth mode of limited transposition alternates between minor seconds and major thirds in a (1:4:1:1:4) ratio (*ex.3-8*), and thus Messiaen’s symmetrical hexatonic “Chord in Fourths” (with a central axis of D[#]/E^b) alternates between perfect fourths and augmented ones (*ex.3-9*). Messiaen’s nomenclature follows the diatonic system, in which perfect and augmented fourths are both “fourths,” but these are not all “fourths” from a Mode 5 scalar perspective, for they do not all represent “three steps” within Mode 5 of Limited Transposition: D^b to G spans three (from D^b to F, F[#], and then G), G to C spans two (G to B^b, then C), C to F[#] spans three (C to D^b, F, then F[#]), F[#] to B two (F[#] to G, then B), and B to F again three (B to C, D^b, and F). Much like Tymoczko’s uneven “pentatonic thirds,” Messiaen demonstrates that “fourths” are a fluid notion—symbolizing more than traditional species of tone-tone-semitone.

Alexander Skryabin’s asymmetrical “Mystic Chord”³¹⁵ is also generally spelled in fourths, including all three types: perfect, augmented, and the uncommon diminished fourth. As an expression of the Lydian Dominant, “acoustic,” or “French sixth” scale, the sonority represents diatonic “fourth” steps, though Richard Taruskin envisions it as a bridge between the octatonic and whole-tone.³¹⁶ While a symmetrical quartal composed exclusively of augmented

³¹⁴ *The Technique of My Musical Language*. John Satterfield, trans. Paris: Alphonse Leduc, 1944, 1956, pp. 50-51, example 213.

³¹⁵ Leonid Sabaneyev invented the term “Mystic” or “Prometheus” Chord as a label for the sonority depicted in example 3-10, used extensively in Alexander Skryabin’s *Prometheus: Poem of Fire*, Op. 60. See Roy J. Guenther, “Varvara Dernova’s System of Analysis of the Music of Skryabin,” in *Russian Theoretical Thought in Music*. ed. Gordon D. McQuere. Ann Arbor: UMI Research Press, 1983, p.171, 214.

³¹⁶ All pitches but the B^b are contained within the tone-semitone octatonic scale starting on G^b/F[#], and all tones but F are contained within the whole-tone scale beginning on F[#]/G^b. The shared notes (G^b, D, A^b, and C) together form a French-Sixth chord, and, like all French Sixths, can be partitioned into two tritone segments separated by a major second. See Richard Taruskin. Review of James M. Baker. *The Music of Alexander Scriabin*. New Haven: Yale University Press, 1986, and Boris de Schloezer. *Scriabin: Artist and Mystic*. Nicolas Slonimsky, trans. Berkeley: University of California Press, 1987. *Music Theory Spectrum* 10, Spring 1988, p. 160.

or diminished fourths will be subject to limited transposition (the augmented fourth quartal only contains two pitch classes, and the diminished fourth just three), an asymmetrical sonority like Skryabin's could generate all twelve tones,³¹⁷ According to Simon Morrison, Skryabin intended to use the Mystic complex to produce all twelve tones in the unfinished *Mysterium*.³¹⁸

Example 3-10: Alexander Skryabin's "Mystic Chord"



Skryabin termed the Mystic Chord the “chord of the pleroma,” and Taruskin interprets its “magical stillness” as “a mystical or Gnostic intimation of a hidden otherness,”³¹⁹ signaling the “strip[ping] away of the egoistic tyranny of desire.”³²⁰ But before we write off this ‘laziness,’ George Perle urges that the collections of four major seventh chords separated by a minor third contain all twelve tones, and the French sixth chords inspired by the Mystic Chord complex in the *Preparatory Sketches* complete the cycle of all twelve tones. Perle adds:

Scriabin's evolution...leads him not into ‘atonality,’ but rather into a new kind of ‘tonality’ in which the symmetrical partitionings of the semitonal scale by means of interval cycles generate new, totally consistent harmonic referential structures.”³²¹

Taruskin laments how so-called “atonal” music is labeled with Forte numbers and then promptly

³¹⁷ As an expression of the Lydian Dominant, only one further fourth would be generated: the G, which does often show up as an upper extension of the chord.

³¹⁸ See Simon Morrison. *Russian Opera and the Symbolist Movement*. Berkeley, Los Angeles, and London: University of California Press, 2002, pp. 229-230.

³¹⁹ Richard Taruskin. *Music in the Early Twentieth Century: The Oxford History of Western Music*. Oxford: Oxford University Press, 2010, p. 216.

³²⁰ Taruskin, “Scriabin and the Superhuman.” In *Defining Russia Musically: Historical and Hermeneutical Essays*. Princeton and Oxford: Princeton University Press, 1997, p. 329.

³²¹ George Perle. “Scriabin's Self-Analyses.” *Music Analysis*, Vol. 3, No. 2, July 1984, p. 116.

filed away without further discussion of structural organization or purpose,³²² but Skryabin's music was intended as a full-fledged system, much like tonality itself.

Nicolas Slonimsky: Fourths transformation vs. transformation of fourths

Composer, conductor, and theorist Nicolas Slonimsky hyper-organized scales and melodic “patterns” in a cyclic fashion in his *Thesaurus of Scales and Melodic Patterns* (1947).³²³ An hypostasization of the St. Petersburg School of cyclically generated symmetrical scales—in which, to take the most famous example, an octave's division into four minor thirds and subsequent infilling gives rise to the octatonic scale—his cyclical system is organized by systematically dividing single and then multiple octaves into two to twelve equal parts, after which gap-filling operations are deployed with equal persistence, including “interpolation” (the insertion of one, two, or three pitches between the “principal tones” of the cycle), “infrapolation” (the addition of a note below the principal), “ultrapolation” (the addition of pitches above the next principal), and combinations such as “infra-ultrapolation.”³²⁴

In the “Diataresson Progression,” the equal division of five octaves into twelve equal parts, the ic-5 transposition rules. (Slonimsky purposefully eschews the perhaps too-tonal term “perfect fourth” in favor of the pseudo-Greek *diatessaron*.)³²⁵ Though Slonimsky organizes his patterns around the ic-5 cycle, he does not fully theorize the infrapolated and ultrapolated notes. For example, in pattern #842, the first ultrapolated note after the C and before the F is B^b, also

³²² Taruskin, Review of James M. Baker, p. 161.

³²³ New York: Charles Scribner & Sons, 1947.

³²⁴ Slonimsky, ii.

³²⁵ *Ibid*, i.

representing the third pitch of the principal ic-5 cycle (*ex.3-11*).³²⁶ But rather than acknowledge the extension of the ic-5 cycle, Slonimsky just labels it an outlier “ultrapolation” rather than a “principal” tone.

As for Messaiean’s Mode 5, Slonimsky lists it (transposed up a semitone) as the “Tritone Progression: Equal Division of the Octave into two parts,” Interpolation of two notes number 5 (*ex.3-12*).³²⁷ He configures it as a tritone-based cycle (with principal tones C and F[#]), in which extra interpolations are inserted chromatically above each principal tone: C-D^b-D-F[#]-G-A^b. While Slonimsky recognizes the limited two-pitch tritone cycle—cleverly linking the worlds of stacked thirds and stacked fourths—he does not explain the specific roles of the *other* pitches in the pattern. What kind of relationship do the interpolated notes have with the principal tritones?

In Slonimsky’s systematic approach, only the transformation—according to division of the octave—is systematized—but not the structure *being* transformed. So while Slonimsky provides a wonderful resource for musicians (John Coltrane purportedly practiced Slonimsky’s patterns everyday³²⁸), he does not fully explain the intersection between multiple cycles.

Example 3-11: Slonimsky’s “*Diatessaron: Division of Five Octaves into Equal Parts: Ultrapolation of one note,*” No. 842, p.114



³²⁶ Ibid, p. 114.

³²⁷ Ibid, p. 2.

³²⁸ See. J. C. Thomas’s account of a private practice session with Coltrane, in Michael Budds. *Jazz in the Sixties: The Expansion of Musical Resources and Techniques*. Iowa City: University of Iowa Press, 1978, p. 50.

Example 3-12: Slonimsky's "Tritone Progression: Equal Division of One Octave into Two Parts, Interpolation of Two Notes," No. 5, p. 2



Ic-5 Interval cycle theory

Fortunately, other theorists have accomplished what Slonimsky could not. In Chapter 1, we considered systematic explanations of multiple tonal cycles, from Herbert Eimert to the “M Transformation.” This may be a helpful way to approach quartals and quintals, since such cyclic structures are often combined with *other* cycles and systems.

Though a number of theorists have worked on interval cycles³²⁹, a recent publication by Elliott Antokoletz and Paolo Suzanni seems particularly edifying with respect to the ic-5 cycle. In their *Music and Twentieth-century Tonality: Harmonic Progression based on Modality and the Interval Cycles*, Antokoletz and Suzanni write that “the perfect fourth cycle (5/7) is unique in that it does not generate a cycle that subdivides the octave symmetrically because it must pass through several octaves before reaching the initial pitch class.”³³⁰ After demonstrating how symmetric chords can be transformed through voice leading into tertian chords (à la

³²⁹David Headlam. *The Music of Alban Berg*. New Haven: Yale University, 1996; Arthur Berger. “Problems of Pitch Organization in Stravinsky.” *Perspectives of New Music*, Vol. 2, No. 1, Autumn - Winter, 1963, pp. 11-42; Pieter van den Toorn. New Haven & London: Yale University Press, 1983; Richard Taruskin. “Chez Pétouchka-Harmony and Tonality “chez” Stravinsky.” *19th-Century Music* 10, no. 3, Spring, Special Issue: Resolutions I, 1987, pp. 265-86; J. Philip Lambert. “Interval Cycles as Compositional Resources in the Music of Charles Ives.” *Music Theory Spectrum*, Vol. 12, No. 1, Spring, 1990, pp. 43-82.

³³⁰New York & London: Routledge, 2012, p. 21.

Schoenberg), they tackle the commonality between interval cycles. Since the ic-5 and ic-7 cycles are the only sub-octave intervals to generate all twelve tones outside the semitone, they can, in turn, generate all other interval cycles as well. In Figure 3-2, extracted from their book, Susanni and Antokoletz illustrate how the ic-2 whole-tone cycle order (the “Interval-2/10 cycle”) is generated by *every other* pitch in the ic-5/7 cycle (“Interval-7/5 cycle”) and the chromatic cycle (“Interval-1/11 cycle”). For this reason, they call the whole-tone cycles the “gateway between diatonic and chromatic spheres of music.”³³¹

Figure 3-2: Susanni and Antokoletz’s Aligned Interval Cycles³³²

Interval-1/11 cycle	C—C#—D—D#—E—F—F#—G—	G#—A—A#—B				
	↓	↓				
Interval-2/10 cycle	C	D	E	F#	G#	A#
	↑	↑	↑	↑	↑	↑
Interval-7/5 cycle	C—G—D—A—	E—B—F#—C#—G#—D#—A#—E#				

Susanni and Antokoletz also discuss “planing,” a technique of moving parallelisms of chords by steps or skips. In their analysis of Claude Debussy’s “*La Cathédrale engloutie*,” they express frustration over other other theorists’ refusal to deal with planing on a more structural level:

The chords of the opening measure consist entirely of perfect fifths and fourths moving in parallel motion that contravene all rules of traditional tonal function. This technique is often referred to as planing. *While this term accurately describes the musical motion it says nothing about the pitch relations that generate tonal progression.* If the perfect fifth chords of the right hand [G-D, A-E, and E-B] were to be written out horizontally, a symmetrical sequence or chain of perfect fifths [G-D-A-E-B] would result...While at first this may seem meaningful, further inspection reveals that this cyclic segment

³³¹Antokoletz & Susanni, p. 27.

³³² Ibid, p. 27.

generates the first complete scalar collection of the piece, that is, the G pentatonic scale [G-A-B-D-E,] unfolded horizontally by the right-hand chords.³³³

In typical descriptions of planing, like the following by Justin Rubin, the parallel motion is described as tensionless, and without direction:

Parallel Motion: After voicing this initial chord, we can transpose it and place each statement of the same sonority in succession. Although this may appear to produce what visually looks like a chord progression, *in effect there is no creation of tension (being that all of the chords are of the same quality) and thus no need for release.*³³⁴

Susanni and Antokoletz dispel this myth, for they believe that the goal of “*La Cathédrale*” is cyclic, that is, the “Linear unfolding of the Pentatonic Scale.”³³⁵ Because Debussy’s preludes are non-tonal, planing is often mistaken for a lack of teleology, but here it serves to complete a cycle.

Philip Tagg’s quartal chord symbols

Musicologist Philip Tagg is also dissatisfied with the treatment of plagality and quartals in music scholarship. In a chapter of his recent publication, *Everyday Tonality II*, entirely devoted to quartal harmony, he laments the lack of proper chord symbols for quartals, which are often labeled incorrectly as suspended and omitted chords:

‘Sus-s’ and ‘omits’ aren’t just clumsy: they’re also wrong in a quartal harmony context. That’s because *if there’s nothing suspended, added or omitted about a chord, it’s perverse to designate it as if there were.*³³⁶

³³³ Ibid, p. 6, emphasis mine.

³³⁴ Justin Rubin, “Nonfunctional Harmony.” <https://www.d.umn.edu/~jrubin1/JHR%20Nonfunc1.htm>, accessed August 9, 2016, emphasis mine.

³³⁵ Antokoletz & Susanni, p. 6.

³³⁶ Tagg. *Everyday Tonality II: Towards a tonal theory of what most people hear*. New York and Huddersfield: Mass Media Scholars Press, 2014, p. 293.

Tagg proposes a taxonomy of quartals and quintals in which open fourths and fifths are not ‘missing’ a third. For the heavy metal power chord consisting of an open fifth dyad C-G, Tagg uses the symbol “C5,” and the open fourth dyad C-F is simply labeled “C4.” For larger stacks, such as G-C-F, he uses the term G4↑ up arrow, or C4↑↓, or even F4↓ down arrow. Thus, a three-stack quartal can be seen to possess *any* of the three roots. When necessary, a superscripted numeral can also be added to the chord to show a larger stack. Tagg asks,

Why can the same simple quartal triad have a different ‘root’ when its notes are inverted while tertial common triads have the same root note, however they’re inverted? It’s better to ask why tertial common triads do have the same root note when inverted. It all has to do with the asymmetry of the tertial common triad and with tertial directionality as opposed to quartal key-clock neighborhoods.³³⁷

Because a typical tertian chord is asymmetrical, Tagg believes that the pitch hierarchy is more apparent in its rotations, while the quartal stack is equidistant in root position, making its rotations sound more independent. But I might point out that the tertian triad—as a series of scalar skips—is symmetrical in reference to the diatonic scale, for C-E and E-G are both thirds, or diatonic thirds.³³⁸ In my view, tertian triads and quartal “triads” should be treated similarly in this respect, and we should examine *all* chords both as inversions of other chords *and* “root position” chords in their own right.

Tagg considers the most common quartals in pop, rock, and folk music: 2, 3, and occasionally 4-pitch quartal stacks. But in 10, 11, and 12-pitch quartal cycles (which admittedly occur less frequently in popular musics outside of jazz), I believe that the inverted chord symbol would look too confusing without a reference to the ‘root position’ quartal. How might one

³³⁷ Ibid, pp. 295-6.

³³⁸ In my own anecdotal experience as a vocal and piano instructor, I have observed that many students cannot hear the difference between a major and minor third, but almost always appreciate scalar skips versus steps.

label F-B^b-E^b-A^b-D^b-G^b-C^b-F^b-A-C if it is to be an F-based chord? Surely, F-B^b-E^b-A^b-D^b-G^b-C^b-F^b-A-C would be easier to fathom as a 10-pitch quartal stack beginning on C but rotated over F, rather than F13^b1311[#]11[#]9^b9! As we shall see in the next two chapters, McCoy Tyner and John Coltrane cycle through ten, eleven, and sometimes all twelve tones of ic-5, as do Béla Bartók and Paul Hindemith. We need a system that allows for this complexity.

The semiotics of quartals

In his superlative case studies, Tagg explains how quartals have been used on various news programs (ABC's *World News Tonight*), television themes (*Kojak*), and jingles (*Intel*) to represent technological advances—a development he attributes to Aaron Copland's innovative hybrid chords, such as IV/V and V/I.³³⁹

Quartals are triggered to alert users to state-of-the-art electronic devices that a message has arrived, that battery power is low, that a download has finished, that a fatal error has occurred, etc. Did the TECHNOLOGICAL MODERNITY aspect of those sounds come from their use in modern technology, or did modern technology use those sounds because they already seemed to signal technological optimism and positive modernity? There's no room here to investigate that etymophony, but it's more likely that a connection already existed between quartal harmony and positive modernity before the global spread of home computers. It may have come from Copland-influenced film music...or from its use by other twentieth-century composers..., or from its use by certain post-bop jazz artists...*Whatever the case it can seem paradoxical that tonal polyphony associated today with positive modernity was once linked with negative or nostalgic notions of archaic backwardness.*³⁴⁰

Tagg notes that “open-fifth drones were often used as a genre synecdoche connoting the simplicity of rural life.” Such ‘backward’ techniques ended up crossing over into the realm of the modern, while retaining a hint of their primitive connotations. Unlike other inaccessible modernist structures, such as pointillism, this pentatonic/folksy/antique association allows

³³⁹ Tagg, p. 310-11.

³⁴⁰ Ibid, p. 315, emphasis mine.

stacked fourths to sound more relatable. But as with most music lacking triadic thirds, quartals *can* also sound cold—especially when presented systematically. Thus, quartals are also used to symbolize machines, technological progress, and modernity.

Let us return briefly to William Shatner’s iconic voiceover, “Space: the final frontier.” Having earned a reputation in Hollywood as writer of the successful Western program, *Have Gun—Will Travel*, Gene Roddenberry originally pitched *Star Trek* in 1964 as a “Wagon Train to the Stars”—what he termed a “Space Western.” Undoubtedly, Roddenberry’s inspiration was rooted in John F. Kennedy’s 1960 DNC Address, in which the democratic nominee spoke of a “New Frontier” to “unchartered areas of science and space,”³⁴¹ suggesting that space exploration represented a new Manifest Destiny akin to the settling of the American West.³⁴² Consequently, the “rural,” “archaic” tropes of the Western³⁴³—including stacked fourths—appear in science fiction, where space, computers, and “high tech” coexist.

I suspect that fourth stacks also sound aspirational due to the sensation of a rising tonic. In the ic-5 sequence C-F-B^b, August Halm claimed that C gives rise to F (via an omitted C7), and F points toward B^b (via an omitted F7).³⁴⁴ So from a tonal perspective, a quartal’s tonal center seems to *rise*. By assembling ascending ladders of fourths, going flat seems upwardly mobile, and while flats are normally conceptualized as descending, here they rise optimistically—

³⁴¹ Delivered 15 July 1960, Memorial Coliseum, Los Angeles.

³⁴² See Paul Arthur Cantor. *The Invisible Hand in Popular Culture: Liberty vs. Authority in American Film and Tv*. Lexington: University Press of Kentucky, 2012, p. 62

³⁴³ See Beth Levy. *Frontier Figures: American Music and the Mythology of the American West*. Berkeley & Los Angeles: University of California Press, 2012.

³⁴⁴ August Halm’s ‘*Von zwei Kulturen der Musik*’ (1913): A Translation and introductory Essay.” Laura Lynn Kelley, Dissertation, UT at Austin, 2008, pp. 45-6.

complementing Captain Kirk’s “can do” attitude. (Descending fifths still give rise to the same ascending tonic, but they do not ascend registrally, and therefore sound less self-assured.)

We learned in Chapter 2 that in traditional tonality, flatward motion generally *backtracks* toward the tonic from the plagal domain. But in ascending quartals from the tonic, the ic-5 movement lands substantially flat of the tonic. In the case studies that follow, we shall examine quartals as a means of flatward travel—sometimes to far-flung flat locations, or in a twelve-pitch ic-5 circle back to the tonic.

A quartal taxonomy

Hindemith believed that the root of a quartal depended on the context, and I tend to agree. For the three-pitch quartal in ‘root position’ (a stack of perfect fourths), such as C-F-B^b, *any* of the three pitches could serve as root. Incorporating Schoenberg’s modernist vision of a 12-pitch quartal and Philip Tagg’s quartal taxonomy, I call an ascending quartal of cardinality “n” (n≥1) from pitch “x”=“x4[↑]n,” where n refers to the number of pitches in the quartal, and the [↑] sign refers to an ascending quartal.³⁴⁵³⁴⁶ Hence, the quartal C-F-B^b could be labeled C4[↑]3 (*ex.3-13a*). An ascending quintal of cardinality “n” from pitch “x” would be labeled “x5[↑]n,” so B^b-F-C=B^b5[↑]3. While the two chords C4[↑]3 and B^b5[↑]3 contain the same pitch *classes*, in their quartal and quintal ‘root positions,’ they do not and cannot include the exact same *pitches*. Just as I avoid labeling a quartal chord “tertian,” I do not wish to make the same mistake by labeling a quartal chord “quintal,” or vice versa.

³⁴⁵ Paul Rinzler labels a triad of p4ths with a C root “CQ7” and four p4ths “CQ10.” *Quartal Jazz Piano Voicings*. Hal Leonard, 2002, p. 37.

³⁴⁶ Schoenberg, *Theory of Harmony*, 406.

Example 3-13a: Ascending quartals and quintals

$C4^{\uparrow 3}$ $B^b5^{\uparrow 3}$



Though it may sound redundant, I would like to extend the taxonomy to include *descending* quartals and quintals, for sometimes it is helpful to configure cycles in the other direction, such as $B^b4^{\downarrow 3}$ moving sharpside, or the flatside moving $C5^{\downarrow 3}$ (*ex.3-13b*). (Note that these are the same two sonorities from example 3-13a.)

Example 3-13b: Descending quartals and quintals

$B^b4^{\downarrow 3}$ $C5^{\downarrow 3}$



We might imagine yet another label for the same C-F-B^b quartal, whose central pitch, F, functions as a *mese*, or central axis. This center-out arrangement is common in compositions by Béla Bartók, who tends to mirror his quartals over a central axis. Following Tagg, we could therefore show both descending and ascending directions *simultaneously*, such as $F4^{\uparrow\downarrow}$ in a palindromic quartal, and $F5^{\uparrow\downarrow}$ in a palindromic quintal (*ex.3-13c*). The four-stack quartal $C4^{\uparrow 4}$ could also be labeled as a simultaneously ascending and descending ‘lopsided’ $F4^{\uparrow 3\downarrow}$, $B^b4^{\uparrow\downarrow 3}$, or the purely descending quartal $E^b4^{\downarrow 4}$ (*ex.3-13d*).

Example 3-13c: Palindromic quartals and quintals



Example 3-13d: C4^{↑4}, F4^{↑3↓}, B^b4^{↑↓3}, or E^b4^{↓4}



I will also examine several *near-quartals*, such as the “So What Chord,” which consists of an E4 plus a major third (ic-4). Since “So What” is also an inverted B4^{↑5} (B-E-A-D-G/E), we could also call it “B4^{↑5}r1” (where “r” stands for rotation) but in keeping with jazz split chord theory (and ease of reading), it is probably best to write: “B4^{↑5}/E” (*ex.3-14*).³⁴⁷ This way, one can quickly compute any split quartal voicing that seems awkward to write out cyclically, such as B4^{↑5}/F.³⁴⁸ In figure 3-3, I have written out quartal rotations for three, four, five, and six stacks, but in equal temperament, stacks can approach all 12 tones—and in non-tempered tunings, stacks can be infinite!

³⁴⁷ For rotated quartals of four or more pitches, inversions can be difficult to read.

³⁴⁸ This chord can be explained as through the ic-5 cycle. B4^{↑7}: B-E-A-D-G-C-F, and the only pitch left out of B4^{↑5} is the C. So, we could write “B4^{↑7}omit6/F” or “B4^{↑7}omit6 r6,” but it is a lot to take in on the bandstand!

Example 3-14: Bill Evans' "So What" chord as a quartal $B4^{\uparrow 5}r1$ or $B4^{\uparrow 5}/E$



Figure 3-3: Quartal Stacks Rotations

C4

Root:	C-F	
Rot 1:	F-C	F5 or C4/F

C4^{↑3}

Root:	C-F-B ^b	
Rot 1:	F-B ^b -C	C4 ^{↑3} /F
Rot 2:	B ^b -C-F	C4 ^{↑3} /B ^b

C4^{↑4}

Root:	C-F-B ^b -E ^b	
Rot 1:	F-B ^b -E ^b -C	C4 ^{↑4} /F
Rot 2:	B ^b -E ^b -C-F	C4 ^{↑4} /B ^b
Rot 3:	E ^b -C-F-B ^b	C4 ^{↑4} /E ^b

C4^{↑5}

Root:	C-F-B ^b -E ^b -A ^b	
Rot 1:	F-B ^b -E ^b -A ^b -C	C4 ^{↑5} /F ("So What" Chord)
Rot 2:	B ^b -E ^b -A ^b -C-F	C4 ^{↑5} /B ^b
Rot 3:	E ^b -A ^b -C-F-B ^b	C4 ^{↑5} /B ^b
Rot 4:	A ^b -C-F-B ^b -E ^b	C4 ^{↑5} /A ^b

Near quartals

We might also consider a stack of quartals including an augmented fourth, such as C-F-B^b-E^b-A. Such a chord could be imagined as a long chain of perfect fourths with multiple omissions: A-(D)-(G)-C-F-B^b-E^b or C-F-B^b-E^b-(A^b)-(D^b)-(G^b)-(C^b)-(F^b)-**B^{bb}**, but this is cumbersome to write out. To demonstrate the quartal voicing of the chord, we can use the much simpler chord symbol C4^{↑4↑+}, where “+” refers to an augmented fourth.³⁴⁹ This bright sonority is common in the music of Chick Corea (*ex.3-15*). Similarly, a perfect quartal with a tritone below is also common in post-bop jazz. In the same Corea example, the chord containing E^b-A-D-G-C could be labeled E^b4^{↑+↑3} or A4^{↑4↓+}.³⁵⁰³⁵¹

Example 3-15: Chick Corea, quartal and near-quartal comping

A4^{↑5} G4^{↑5} E^b4^{↑+↑3} C4^{↑4↑+} C4^{↑5} G4^{↑5} E^b4^{↑+↑3}

³⁴⁹ Any “+” sign refers to just one augmented fourth, for two augmented fourths represent a doubling of the same pitch.

³⁵⁰ Theoretically, this system also allows for a flatted fourth quartal “-“ such as C-F-B^b-E^b-G, but the problem is that the G, or flatted fourth, could also be viewed as a rotated perfect fourth from the root position perfect fourth quartal G-C-F-B^b-E^b. In the chord C-F-B^b-D, the D could also be interpreted as a rotated pitch from the root position quartal D-G-C-F-B^b-D, but because there is no G present, it might be useful to call it a flatted fourth in this voicing, or C4^{↑3-}.

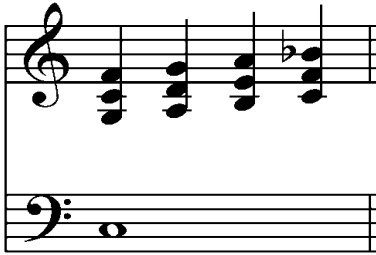
³⁵¹ Note that more than one augmented quartal will be an octave doubling, so we can assume that there is only one. Still, it is possible to write a quartal with two or more augmented fourths, such as C-F-B^b-E-B^b, or C4^{↑3↑++}, but this is somewhat redundant. This should not be confused from C4^{↑3↑+2}, or C-F-B^b-E-A, where the “2” refers to a perfect fourth dyad.

Planing & Targeting

In perfect fourth chromatic planing, quartals will remain constant (*ex.3-16a*), but in diatonic or “near fourth” planing, augmented fourths are allowed (*ex.3-16b*). In example 3-16b, quartals ascend stepwise, but the fourth quartal beginning on C ($C4^{\uparrow\uparrow\uparrow}$) contains a tritone. Despite this contrasting interval, the entire sequence in 3-16b is diatonic to C Ionian, and therefore sounds smooth.

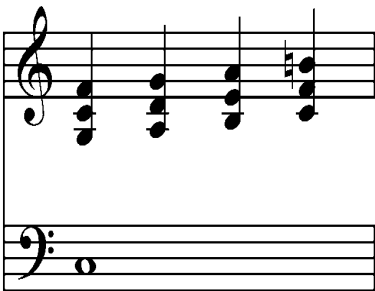
Example 3-16a: Chromatic Quartal Planing

$G4^{\uparrow^3} A4^{\uparrow^3} B4^{\uparrow^3} C4^{\uparrow^3}$



Example 3-16b: Diatonic Quartal Planing

$G4^{\uparrow^3} A4^{\uparrow^3} B4^{\uparrow^3} C4^{\uparrow\uparrow\uparrow}$



Example 3-17: Erik Satie, *Prélude: la Vocation: le Fils des Étoiles*, opening (1892)

F4^{↑4↑+2} G4^{↑4↑+2} B^b4^{↑4↑+2} C4^{↑4↑+2} D4^{↑4↑+2} F4^{↑4↑+2}

Erik Satie planed quartals in his “*Musique D’Ameublement*” (Furniture Music), intended as ‘background’ music (*ex.3-17*). The planing in *Le Fils*—marked “*En blanc et immobile*” (In white and unmoving)—is consistent and chromatic, but the quartal F-B^b-E^b-A^b-D-G includes two pitches connected by a tritone to the lower four pitches (beginning on F4^{↑4↑+2}). The next chord, G4^{↑4↑+2}, is a chromatic transposition, as is the following chord, B^b4^{↑4↑+2}, up a minor third. The span of transformation is a perfect fourth, so when the entire sequence is repeated down a perfect fourth from the original, the ending chord, F4^{↑4↑+2}, is equivalent to the initial quartal: C4^{↑4↑+2}, D4^{↑4↑+2}, and then back to F4^{↑4↑+2}. Hence, the first six chords form a closed loop—which can be interpreted in two ways: 1) as ultimately ‘motionless’ (since the structure returns to its starting point), or 2) as achieving complete cyclic closure. In the former interpretation, planing seems somewhat futile—confirming the Rubin’s view of tensionless parallel motion—but in the latter, parallel motion is seen as highly directional.

The tritone provides some contrast to the eleven-pitch ic-5 cycle, and in a sense, allows for the unfolding of two simultaneous perfect fourth cycles, which together generate eleven out of twelve pitches (*fig.3-4*). If the quartals are separated into a top dyad and a lower tritone-related four-pitch quartal, then the bottom portion begins with F-B^b-E^b-A^b, continuing to G-C-F-B^b (adding two steps in the sharp direction), then B^b-E^b-A^b-D^b (adding one flat to the first chord),

back down to C-F-B^b-E^b (like the first chord, but shifted one step sharp), D-G-C-F (two steps sharpward), and finally F-B^b-E^b-A^b (the first chord of the sequence). In total, the lower quartal span is D-G-C-F-B^b-E^b-A^b-D^b.

Figure 3-4: Tritone segmentation in *le Fils des Étoiles*

	$F4^{\sharp\sharp\sharp+2}$	$G4^{\sharp\sharp+2}$	$Bb4^{\sharp\sharp+2}$	$C4^{\sharp\sharp+2}$	$D4^{\sharp\sharp+2}$	$F4^{\sharp\sharp\sharp+2}$
lower:	F-B ^b -E ^b -A ^b	G-C-F-B ^b	B ^b -E ^b -A ^b -D ^b	C-F-B ^b -E ^b	D-G-C-F	F-B ^b -E ^b -A ^b
lower:	a total span of D-G-C-F-B ^b -E ^b -A ^b -D ^b					
upper:	D-G	E-A	G-C	A-D	B-E	D-G
upper:	a total span of: B-E-A-D-G-C					
Together,	a total span of B-E-A-D-G-C-F-B^b-E^b-A^b-D^b					

The top dyad follows the same trajectory: D-G is shifted two steps sharp to E-A, then G-C takes the original dyad one step in the flat direction. Next, the dyad moves to A-D (one new step sharpward), B-E (one step sharpward), and finally back to the original D-G. The total span is: B-E-A-D-G-C. Together, the two cycles overlap on D-G-C, but still produce 11 out of 12 tones: B-E-A-D-G-C-F-B^b-E^b-A^b-D^b. (In the second chord of the following sequence, the upper F[#] completes the 12-pitch cycle.) In essence, the two segments reflect *out-of-phase* quartal cycles, such that the top segment appears to be “ahead” of the bottom in terms of sharpward pitch generation, but “behind” the bottom segment in the flat direction.

Targeting in post-bop jazz

While the modal jazz of Bill Evans and Miles Davis (*Kind of Blue*) aspired to a Satie-influenced West Coast cool aesthetic, I do not feel that all modal jazz was intended as tonally

static *jazz d'ameublement*. As we have seen, parallel motion of quartals may be more directed; by completing the ic-5 cycle, planing chords acquire a goal, and thus *direction*.

In his “*Quartals and Pentatonics: a Practical Guide for Jazz Piano*,” Alan Brown defines targeting as “using a sequence or pattern to get from one chord section to another, irrespective of the original harmony. ...The blues are an ideal form for this, and quartals/pentatonics are well-suited to create a strong harmonic sequence.”³⁵² Brown never explains why the blues are preferable for targeting, but since, in contemporary practice, the subdominant appears like clockwork on the fifth bar of the form, improvisers often “target” that arrival. Additionally, Brown believes that 32-bar AABA jazz standards are also fodder for extreme targeting:

Jazz standards are also good for this [extreme targeting], as they are often 32-bar AABA type forms, and so the entire A section could be seen as a way to target the B section. At this extreme level, both on an entire blues as well as a section, using purely quartals and pentatonics can sound contrived and lose the impact of this harmonic approach. Combining various chordal and scalar techniques works better. In any case, freeing up the harmony in this way can be liberating.”³⁵³

I would hazard a guess that Brown’s judgmental remark concerning “contrived” quartal and pentatonic targeting relates to Jamey Aebersold’s pedagogic exercises—often reproduced awkwardly by beginning students of jazz—in which ii-V-I and twelve-bar blues progressions are systematically targeted through octatonic, whole-tone, and altered scales. But systematic targeting in the hands of an expert musician often produces impressive results, so let us now turn to pianist McCoy Tyner’s composition, “Blues on the Corner.”

³⁵² Auckland Brown. *Blue Train Limited*, 2009, p. 28.

³⁵³ Brown, p. 32.

McCoy Tyner's "trapdoor" cadence

Tyner moves a succession of $4^{\sharp 4}$ quartals down by whole steps as his targeted transition from I7 to IV7 in "Blues on the Corner"(1967): $C4^{\sharp 4}$, $Bb4^{\sharp 4}$, $Ab4^{\sharp 4}$, $Gb4^{\sharp 4}$, and $Fb4^{\sharp 4}$ (ex.3-18). These descending quartals disguise a pure ic-5 cycle in the flat direction: $C4^{\sharp 4}=3$ flats down from C, $Bb4^{\sharp 4}=5$ flats down from C, $Ab4^{\sharp 4}=7$ down flats from C, $Gb4^{\sharp 4}=9$ steps flat from C, and $Fb4^{\sharp 4}=11$ total steps flat from C—a complete ic-5 cycle (fig.3-5). The progression, descending from II-I-^bVII-^bVI-^bV-^bIV to arrive at IV, forms an extreme flat side backdoor or "trapdoor" cadence to the subdominant (IV7), such that the progression must reverse direction from the flatted fourth degree quartal ($F^b4^{\sharp 4}$), before landing on the subdominant. At the last moment, the descending whole-step sequence falls into the subdominant 'crack.' With its 'backward' ic-2 motion, McCoy's "trapdoor" is reminiscent of the backdoor cadence (Chapter 2), in which African-American musicians found a flat side alternative to the authentic cadence. Perhaps, McCoy's "corner" is more than just a quotidian backdrop for urban folk life; the shift from regular blues to systematic quartal sequence to subdominant feels like a turning a series of "blind" corners and ending up, Kafka-like, in a completely new 'hood. The larger implication of Tyner's "trapdoor" is that this is no cool-jazz perambulation; his chromatic quartal planing moves systematically to target the subdominant.

Example 3-18: McCoy Tyner, “Blues on the Corner,” *The Real McCoy* (1967), mm. 1-5

Bb7(I) Eb7 (IV)

Bb7 (I) C4^{♯4} B^b4[♯] A^b4^{♯4} G^b4^{♯4} F^b4^{♯4} Eb7 (IV)

Figure 3-5: Descending Quartals in “Blues on the Corner”

- C4^{♯4}: (C, F, Bb, Eb) =3 steps flat of C
- B^b4^{♯4}: (Bb, Eb, Ab, Db) =5 total steps flat of C
- A^b4^{♯4}: (Ab, Db, Gb, Cb) =7 total steps flat of C
- G^b4^{♯4}: (Gb, Cb, Fb, Bbb) =9 total steps flat of C
- F^b4^{♯4}: (Fb, Bbb, Ebb, Abb) =11 total steps flat of C
- (C, F, B^b, E^b, A^b, D^b, G^b, C^b, F^b, B^{bb}, E^{bb}, A^{bb}) = a span of C4^{♯12}, or a complete ic-5 cycle

Going “out” vs. going “in”: McCoy Tyner’s “Passion Dance”

It seems that in some jazz compositions, quartals facilitate more than mere planes of voicings; their ordered succession reflects a cyclic quartal tonal system. In the compositions of McCoy Tyner, including “Blues on the Corner” and “Passion Dance,” Tyner did not create

altered ‘voicings’ of tertian chords; presumably, the quartals came before the chord signs, which were only added later by music editors.³⁵⁴

A structurally quartal composition usually employs a stable “quartal tonic” chord, such as Tyner’s $F4^{\uparrow 3}$ (F-B^b-E^b) in “Passion Dance” (ex.3-19). Though August Halm would call the root of this chord E^b, Tyner actually uses it as a sonority based on F, and the fourth and flatted seventh degrees above the bass are treated as stable ‘chord tones.’ Hammering that low F-C dyad with his left hand, Tyner ensures that its bottom note is heard as the tonic, not some kind of inverted “undertone” to E^b or B^b. Tyner often doubles the lower F root at the fifth, but not necessarily because fifths are more structurally important to him than fourths: smaller intervals like thirds and fourths sound too muddy in the lower registers, whereas—it would seem—the fifth is just gritty enough.

Example 3-19: Tyner’s left-hand chord, “Passion Dance”



The changes of “Passion Dance” operate mainly in F Mixolydian, shift to B^b Aeolian/F Phrygian in the B section, stay flatter over the solos, and return to Mixolydian for the out-head. In the outer sections, Tyner avoids ascending four-stack quartals over the tonic, since the A^b in $F4^{\uparrow 4}$ would form a cross-relation with the A natural in F Mixolydian.

³⁵⁴ Chord symbols are already problematic in modal jazz, so in Miles Davis’s “Flamenco Sketches,” the improvisers used scale markings like “E^b Dorian” rather than “E^b min7.” See Ashley Kahn. *Kind of Blue: the Making of the Miles Davis Masterpiece*. New York: Da Capo Press, 2000, p. 70.

In a sense, the motion from F Mixolydian to F Phrygian is not so much a scalar change as a ramification of extending the ic-5 cycle *flatward*. The composition simply moves farther into the ic-5 cycle, forming larger and larger ic-5 chains. Some analysts call Tyner’s ‘out’ playing “chromatic,”³⁵⁵ but it is often cyclic, as exemplified by the trapdoor cadence in “Blues on the Corner.”³⁵⁶

Example 3-20: McCoy Tyner, “Passion Dance”: mm. 5-12

Though the melodic F major *arpeggio* at the beginning of the composition sounds tertian, it is accompanied by various rotations of C4³ (C-F-B^b). In the A section, six out of seven pitches of F Mixolydian are used, shown in ic-5 order: A-(omit D)-G-C-F-B^b-E^b.³⁵⁷ But in the B section, three more pitches extend the ic-5 cycle three steps in the flat direction: A-(omit D)-G-

³⁵⁵ For example, tjpiano calls Tyner’s playing “chromatic” in the tutorial: <https://www.youtube.com/watch?v=M66jmp4F818>

³⁵⁶ Also, see my analysis of John Coltrane’s *A Love Supreme* in Chapter 4 for more evidence of ic-5 cyclical activity.

³⁵⁷ The D is eventually introduced.

C-F-B^b-E^b-A^b-D^b-G^b. Typical post-bop solos typically “go “out” gradually, but in the head of “Passion Dance,” Tyner *already* moves systematically further and further to the flat side. His solos only extend that process.

In general, “going out” allows jazz improvisers to demonstrate their intellectual command of the full chromatic, but the “out” zone also serves as passageway to a trance-like state. In 1967, rock musicians such as Janis Joplin, The Doors, and The Grateful Dead were playing long, often modal jams, trying to “break on through to the other side.” Facilitated by LSD and readings of psychedelic literature, they sought to achieve communal *sacra*, allowing concertgoers to coexist without ego or hierarchy.³⁵⁸ I suspect that McCoy Tyner sought to achieve a similar mood in “Passion Dance,” which the pianist likened to an “American Indian dance...evok[ing] ritual and trance-like states.”³⁵⁹

But (to push a metaphor), flat side “going out” for African-Americans also represents a kind of “going *inside*.” In the introduction to this dissertation, we encountered the Renaissance theory that the left or “heart side” linked directly to the inner “heart vein.” Accordingly, Tyner’s playing often moves substantially flat of the tonic—deep into the mysterious musical heart side ‘interior.’

In the 1960’s, the cultivation of interiority was a central pursuit for African-American artists, especially those influenced by the Black Arts Movement, led by Amiri Baraka and Larry Neal. Elizabeth Alexander explains that “the black interior is not an inscrutable zone, nor colonial fantasy. Rather, I see it an “inner space in which black artists have found selves that go

³⁵⁸ See Victor Turner. “Liminality and Communitas.” *The Ritual Process: Structure and Anti-Structure*. New Brunswick: Aldine Transaction Press, 2008, pp. 358-274.

³⁵⁹ McCoy Tyner. From the liner notes by Nat Henkoff to *The Real McCoy* (1967), Blue Note.

far, far beyond the limited expectations of what black is, isn't or should be."³⁶⁰ According to Fred Moten, African-American performance involves the public outing of inner expression ("public privacy"), thus constituting a radical act of "interiority."³⁶¹ In the Black Arts movement, essentialized, primitive African-American explorations of blackness sought no external validation from the white man. Since African-Americans had already claimed the flat side as the black realm—cultivated through gospel, spirituals, and African-inspired pentatonic singing—it was the logical direction for further development of uniquely African-American interior techniques eschewing the white man's sharp-leaning tonal system. Though flat motion is traditionally *domestic* (i.e., headed for the tonic), McCoy Tyner, Herbie Hancock, and John Coltrane use flatward travel to move far beyond those domestic expectations, thus "outing" the flat side in an act of "public privacy."

The disbelief of suspension

In "Passion Dance," quartals are used cyclically, but tertian sonorities are also prominent; how should we understand their interaction? Let us return to the discussion of mixed-function eleventh chords in Chapter 2. When written as a split-bass chord (IV/V), the mixed function is particularly apparent, but when read as an integrated sonority over the fifth degree, this chord is usually considered *Vsus9*, where the C constitutes a fourth-degree suspension. Since Tagg believes that quartal fourths are not "suspended," he would prefer to label this an eleventh chord. In an all-quartal composition, fourths are indeed chord members rather than neighbor-tone "suspensions," but post-bop jazz often walks the line between triadic and quartal tonality.

³⁶⁰ Elizabeth Alexander. *The Black Interior: Essays*. Minneapolis: Graywolf Press, 2004, p. 5.

³⁶¹ Fred Moten. *In the Break: The Aesthetics of the Black Radical Tradition*. Minneapolis & London: Regents of the University of Minnesota, 2003, p. 241. Also, see Marvin McAllister. *Whiting Up: Whiteface Minstrels and Stage Europeans in African-American Performance*. Chapel Hill: University of North Carolina Press, 2011, p. 163.

Example 3-21: Wayne Shorter, “Pinocchio”

To address this disbelief in suspensions, let us turn to Keith Waters’ analysis of saxophonist Wayne Shorter’s “Pinocchio,” in which parallelisms and substitutions stand in for traditional functional relationships.³⁶² Waters argues that the pseudo-tonal shift from Amin9 to E^bmin69 (measures 2-3) and the analogous move from Bmin9 to E^bmin69 (measures 10-11) are made possible via two levels of substitution. On the first level, the Amin7—as the ii7 of G—replaces D13—the V7 of G, just as B-9 substitutes for E13. The second level of substitution is a standard dominant tritone substitution: D13 for A^b7 (or A^b13) and E13 for B^b7 (or B^b13).³⁶³ Though the substitution of ii for V might seem odd given the functional implications, Waters notes a general subdominant orientation in music of the era:

The substitution of a ii chord for a V chord may be considered as arising from a ‘sus chord’ imperative that emerged during the 1960s, one that suppressed the active and directed chordal thirds or sevenths of harmonies. Such substitutions retain function vestiges but curtail the tonal direction...

³⁶² Keith Waters. “Giant Steps and the ic-4 Legacy.” *Intégral*, Vol. 24, Special Issue in Honor of Robert Wason, 2010, p. 157.

³⁶³ *Ibid.*, pp. 157-158.

These sorts of harmonic substitutions, such as the ii replacing the V of a ii-V pair, suppress some aspects of the functional progressions by omitting the third or seventh normally heard in the V harmony. Such weakly functional progressions appear in any number of compositions performed by the Miles Davis Quintet of 1965-6... We might understand the absence of the leading tone in these progressions as suppressing unqualified dominant function and invoking subdominant function.³⁶⁴

In this nebulous harmonic world, a dominant chord is too tonally directional, but a minor seventh chord is pleasingly ambiguous, for it can act as tonic, or fulfill any number of subdominant chords (second degree, fourth, sixth, etc...). What Waters does not mention is that modal jazz musicians already view Amin9 and D13 as modally equivalent, for they are both generated from the same G Ionian parent scale. In this sense, any chord derived from G Ionian (such as Gmaj7, Amin7, Bmin7, Cmaj7, Emin7, or F#dim7) could function as a modal substitute for the D13 dominant.

In my own jazz studies, I learned that avoiding all triadic chord tones—not just the third—was desirable. The “upper extensions” and “color tones” (9, 11, 13, etc...) seemed preferable to triadic tones, precisely because they outlined *another* chord—in essence, “going outside” the chord modally (but not chromatically). Since Miles Davis’s groundbreaking album “Kind of Blue,” jazz musicians have utilized altered modes and color tones to declare independence from triadic hierarchy; quartal voicings represent a similar process.

For an example of “going outside” the chord modally, William Thomson interprets Miles Davis’s D Dorian solo in “So What” as “unrequited C major,”³⁶⁵ but I believe that Davis simply emphasized the brighter color tones of D Dorian—C, E, and G (*ex. 3-22*). That Davis ‘resolves’

³⁶⁴ Ibid, p. 157.

³⁶⁵ Thomson. “On Miles and the Modes.” *College Music Symposium*, Vol. 38, 1998, p. 25.

these tones with D minor triadic tones does suggest a superimposed chord progression of $^bVII-I$ (or C Ionian-D Dorian), but one that ultimately rests on D Dorian.

Example 3-22: Miles Davis, solo, “So What,” mm. 31-43



“Maiden Voyage”: “sus” tonality vs. ic-5 cycle completion

Let us now consider suspended and split chords in a more quartal milieu. Pianist and composer Herbie Hancock, who first played with Wayne Shorter in Miles Davis’s “Second Great Quintet,” has sustained a life-long association with the saxophonist, and the two share a tendency toward quartals that masquerade as suspensions. Historian Ted Gioia notes how, in Hancock’s expansive composition, “Maiden Voyage,” all four chords *sound* like suspensions:

The economy of means is striking. *Relying on only four suspended chords* and a melody consisting mostly of held high notes, the song conveys a floating, unresolved quality that is countered by an urgent rhythmic figure that provides the hook for the whole endeavor.³⁶⁶

In the A section, a sonority variously labeled as “C/D,” “Dsus9,” or “Amin7/D” (depending on the publication) alternates with “E^b/F,” “Fsus9,” or “Cmin7/F (ex.3-23).”³⁶⁷ (Clearly, the fluctuating chord labels for these structures demonstrates the need for codified quartal analytical language.) Arranging these pitches in ic-5 order, we can see that Hancock’s first chord, D-A-G-

³⁶⁶ Gioia. *The Jazz Standards: A Guide to the Repertoire*. New York: Oxford University Press, 2012, p. 255, emphasis mine.

³⁶⁷ The B section is usually written out as D^b/E^b (E^bsus9) followed by C^b/D^b (D^bsus9), but Hancock usually plays A^bmin7/D^b here.

C-E-G, contains the five pitches of the ic-5 cycle E-A-D-G-C (or as we could now write it, $C4^{\flat 5}/D$), though the voicing is more tertian. Similarly, the second chord is a rotated G-C-F-B^b-E^b, or $E^b4^{\flat 5}/F$. As a transformation of an ascending minor third, the second chord extends the cycle three steps in the flat direction: to E^b . Neither chord has a third degree, which would have shifted the cycle one and then two pitches in the sharp direction. However, the A—the third degree of the second chord $E^b4^{\flat 5}/F$ —is a member of the first $C4^{\flat 5}/D$ chord (and the melody), still echoing over the $E^b4^{\flat 5}/F$. Hence, $E^b4^{\flat 5}/F$ —with the third degree of F (A) still ringing in the ears—sounds somewhat more tertian than $C4^{\flat 5}/D$. Of course, this is not the ‘correct’ resolution of a suspended chord; if the first chord were to resolve its 4-3 suspension traditionally, the second chord should be a D major triad with a third degree of F^\sharp . Yet, the root of Hancock’s second chord is F natural!

Over the B section, the same quartal construction is projected down by a whole-step, extending the ic-5 cycle flatward again by two steps: G-C-F-B^b-E^b-A^b-D^b, or $D^b4^{\flat 5}/E^b$. The following chord is often written as a parallel transposition over Db ($Cb4^{\flat 5}/Db$), but Hancock actually plays $D^b\text{min}11$, which extends the cycle farther to the flat side: $E^b-A^b-D^b$ -G^b-C^b-F^b. The flatted third degree of the D^b (F^b) serves as the thirteenth note in a now completed ic-5 cycle. This chord is followed by the original $C4^{\flat 5}/D$, reinterpreting the F^b as the original E. At this point, Hancock has traveled all the way around the circle of fourths, back to E-A-D-G-C. With only four chords, he has generated all twelve tones needed to cycle through the ic-5 scale in the flat direction, making the composition structurally “complete.”

Example 3-23: Herbie Hancock, "Maiden Voyage"

The first system of music for "Maiden Voyage" is in 4/4 time. The top staff (treble clef) begins with a melodic phrase: a quarter note G4, a quarter note A4, followed by a repeat sign, then a half note B4, a half note C5, a half note D5, and a quarter note E5. The middle and bottom staves (treble and bass clefs) provide a complex harmonic accompaniment consisting of dense, multi-measure chords.

The second system of music continues the piece. The top staff features a melodic line with a first ending (marked '1.') and a second ending (marked '2.'). The middle and bottom staves continue with the intricate chordal accompaniment. The key signature changes to one flat (Bb) in this system.

The third system of music shows further development of the melodic and harmonic themes. The top staff has a melodic line with a first ending and a second ending. The middle and bottom staves continue with the complex chordal accompaniment. The key signature remains one flat (Bb).

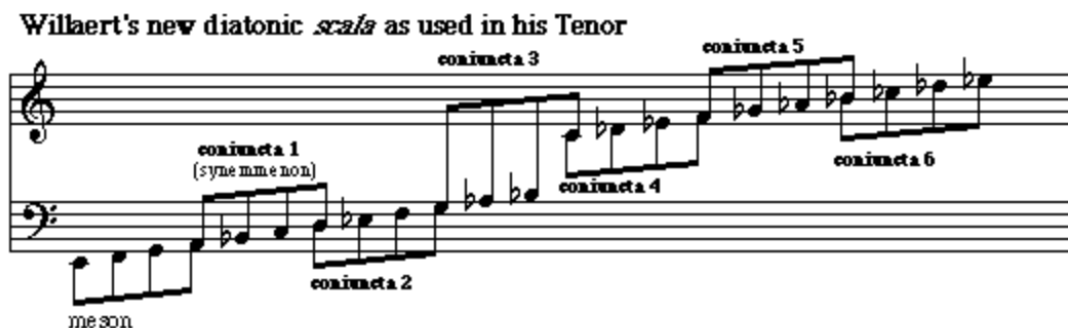
In more rootsy (and rooted) musics, split chords like C/D often operate as IV/V or ${}^bVII/I$, but not in “Maiden Voyage.” Unlike Miles Davis, Hancock never resolves the split chords in the head of “Maiden Voyage” (unless we count the solos, where heptatonics are ‘filled in’). Rather, the quartals each serve as temporary tonal centers, and despite their plagal sound, they seem to act as *quartal tonics*.

In a “recursive” $I-IV-I$ or $I-{}^bVII-I$ plagal progression, flat side motion *away* from tonic is balanced by sharp side motion *back* to the tonic, but “Maiden Voyage” never changes direction.

Hancock tricks us with an uncanny tonal “double”: the “sus” chords *look* like tertian, tonal chords, but actually operate by a completely different ic-5 quartal logic. In this way, Hancock brilliantly redirects the semiotics of suspension itself. The first *sus*-like chords represent the beginning of a recognizable 4-3 recursive journey, but this maiden voyage *never turns back home* (i.e., sharp). Rather, Hancock circumnavigates the globe exclusively in the flat direction.

Long before Hancock’s “Maiden Voyage” set sail, Adrien Willaert managed a similar feat in his *Quid non ebrietas designat* from 1519, in which the tenor line circumnavigated the entire Guidonian hand through twelve flat-moving hexachords.³⁶⁸ Roger Wibberley explains that the conjoined tetrachords “form a series of overlapping pairs, each of which spans a heptachord, and each successive one adds a further flat in the series.”³⁶⁹

Example 3-24: Wibberley’s conjoined tetrachords in *Quid non Ebrietas*?



³⁶⁸ Rob Wegman, "Musica Ficta." *Companion to Medieval and Renaissance Music*. T. Knighton and D. Fallows, eds. Berkeley and Los Angeles: University of California Press, 1992, pp. 270-1.

³⁶⁹ Wibberley continues: Each extra flat asserts that the note which lies a semitone below functions as a *synaphe*, and the consequent assertion of each new point of conjunction (“coniuncta”) is indicated in the graphic by a number from 1-6. The purpose of each new flat, then, is to convert an expected point of disjunction into a new point of conjunction. First, the disjuncta D-E (within the tetrachord matrix A-D/E-A, including the B-flat) is converted to a new coniuncta by the arrival of E-flat (now causing a heptachordal disposition of the tetrachords A-D-D-G, including the previous B-flat and now the new E-flat). This process accumulates as each new flat in the series is created by each new coniuncta. Roger Wibberley. “*Quid non ebrietas designat?* Willaert's didactic demonstration of Syntonic tuning.” *Music Theory Online*, Vol. 10, No. 1, February 2004, pp. 9-10.

Edward Lowinsky hears Willaert's flatward trip around the circle of fifths as a harbinger of tonality:

It is a coincidence of symbolic significance that in the year 1519 - in which Ferdinand Magellan undertook the first circumnavigation of the globe in human history - Adrian Willaert composed a piece which, for the first time in the history of music, proceeded from d to e-double flat (= d) through the complete circle of fifths; it thus circumnavigated the whole tonal space, always proceeding in the direction of the lower fifth...It was the same spirit of adventure, the same desire to open new and unexplored spaces, that lured the sailors across the sea and beckoned the musicians to their discoveries of remote and distant keys and new harmonic conquests. And it was the same concept of the unity and the complete accessibility of all parts of global as well as of tonal space that made possible the ventures of Ferdinand Magellan and Adrian Willaert in the same year.³⁷⁰

While I am less certain that Willaert intended the motet in equal temperament (Lowinsky considers this circumnavigation proof that Willaert discovered tonality), *Quid non ebrietas designat* journeys around the Guidonian hand, landing back on the original tonic through synctonic tuning—or perhaps loose, ‘singerly’ tuning inspired by the inebriated text, “What cannot be accomplished through drinking?” If *Quid non ebrietas* had been a keyboard piece, wolf tones would have tainted the effect, but singers can compensate for tuning. The systematic modulations reveal Willaert's tonal magic trick, proving that one need not fall off the edge of the earth by going too far flat.³⁷¹

Hancock also demonstrates that in equal temperament, excursions to the flat side will eventually return to the tonic. And yet, tonal music does not normally work that way, for journeys to the flat side are expected to return via the sharp direction (i.e. authentic cadences). Traveling exclusively around the circle-of-fourths, therefore, amounts to backdoor cadence-style trickery.

³⁷⁰ Lowinsky. “The Concept of Physical and Musical Space.” *Papers of the American Musicological Society*, Annual Meeting, p.194.

³⁷¹ For more on Willaert's motet, see Peter Lawson's recent dissertation: *Ritual, Myth, and Humanism in the Origins of the Venetian Style*. UCLA, 2015.

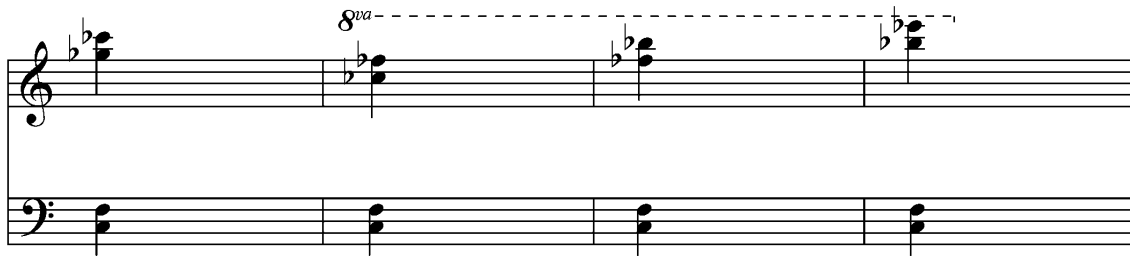
Hollow quartals: ic-5 cycles with omitted pitches

In “Maiden Voyage,” Hancock’s quartals are not usually expressed in root position, but as *faux* tertian suspensions. Notwithstanding, they function as quartals by facilitating systematic movement along the ic-5 cycle. If we subscribe to the notion that any chord can be derived by the ic-5 cycle, then we can use the same cycle to interpret sonorities composed of two perfect fourth dyads spaced apart by an interval *other* than a perfect fourth—like the upper and lower segmentation in Satie’s “*Le fils des étoiles*.” Because higher order quartals generate more dissonance, dyads separated by a greater number of ic-5 omissions will generally sound more dissonant—up until the halfway point is reached between the flat and sharp sides, when the dyads start to sound more consonant again with respect to the first pitch (*ex.3-25*). Moreover, the dissonance will be intensified by an octave *contraction*. For example, in the rather ‘crunchy’ sounding chord C-C[#]-G^b-G (a C4^{↑9} with five ic-5 omissions: C, F, [B^b, E^b, A^b, D^b, and G^b omitted] C^b-F^b), two octaves have been contracted, causing jarring dissonance.

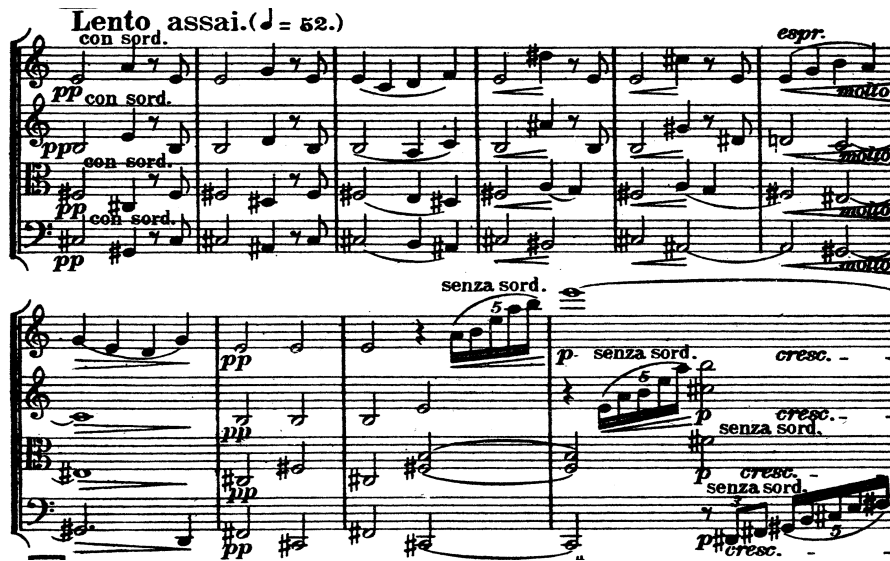
Example 3-25: Omitted Quartals

C4^{↑4} C4^{↑5}(omit 3) C4^{↑6}(omit 3,4) C4^{↑7}(omit 3, 4, 5)

C4^{♯8} (om 3, 4, 5, 6) C4^{♯9} (om 3, 4, 5, 6, 7) C4^{♯10} (om 3, 4, 5, 6, 7, 8) C4^{♯11} (om 3, 4, 5, 6, 7, 8)



Example 3-26: Bartok, String Quartet #2: *Lento assai*, mm. 1-10



In our next case study, excerpted from Béla Bartók’s *Second String Quartet, Lento*, a mirrored quartal configuration forms the tonal ‘center,’ expanding to hollow quartals with omissions. At the top of the movement, quartals telescope out in mirror image. First a C[♯]4^{♯4} (C[♯]-F[♯]-B-E) with *mese* or axis of symmetry of G[♯]/A balloons out to (G[♯]-C[♯]-E-A) on the third beat of measure 1. This second chord has expanded equally in the flat and sharp direction to form a quartal that *would* be a G[♯]4^{♯6} (G[♯]-C[♯]-F[♯]-B-E-A) if it contained the original (F[♯]-B), hence my label G[♯]4^{♯6}, *omit 3, 4*. Bartók preserves the original octaves in this second quartal, so the omissions are detectable. After returning to the original quartal, C[♯]4^{♯4}, the top two strings

ascend a minor third while the bottom two strings descend a minor third (A[#]-D[#]-D-G), leaving the central *mese* of G[#]/A intact (third beat of measure 2). Since the voices only step out by a minor third, this third chord *sounds* like a “closer” move registrally and intervallically, but simultaneously constitutes an extreme telescoping of the quartal cycle, which has also been contracted by two octaves. The quartal has now extended out from G[#]-C[#]-F[#]-B-E-A to **A[#]-D[#]-G[#]-C[#]-F[#]-B-E-A-D-G**. Thus, Bartók conceals ic-5 expansion with the appearance of contraction.

In measure 3, the first violin extends the cycle up to C—in the ‘wrong’ octave. Like the preceding chord, this is both a registral *contraction* and an ic-5 pitch class *expansion*. On the third beat of measure 3, the bottom three instruments descend a major second to form a B4^{♯4}. This chord sounds vaguely familiar, because we have already heard these pitch classes—but not in this octave or as a unified chord. The first violin’s F on beat 4 completes the 12 pitch quartal cycle, as it is both one fourth higher than the C and a fourth lower than the cello’s lowest A[#]. Finally, a sonic *doppelgänger* of the original C[#]4^{♯4} occurs in measure 8, composed of (F[#]-C[#]-B-E). This octave-displaced inversion of the original chord could be considered a registral expansion but a static move from an ic-5 perspective. As if to showcase the sonic qualities of each voicing, the viola and cello exchange the C[#] and F[#] several times.

Bartók illustrates the importance of register in quartal activity. For the most part, pitch set theory does not acknowledge register, for it reduces C to pitch class “0”—whether a booming C1 or a birdlike C8.³⁷² But in ic-5 cycles, we must consider the registral pitch as well as the pitch class, for Slonimsky’s lengthy patterns remind us that the complete cycle occupies a span

³⁷² In a conversation with Mitchell Morris dated 11/18/2016, he noted that octave equivalence is a modern convention. In the *gamut*, which was inspired by a singer’s vocal range rather than a piano keyboard, the G below middle-C was not treated as the equal of the G above it. Just as a vocalist might conceptualize a “low G” and a “high G,” medieval theory treated these pitches differently. While I am not advocating a return to medieval theory, we would be well-advised to consider register.

of five octaves. Pure stacks of fourths sound spacious, but registral contractions of an octave or more will tend to sound ‘crunchier.’ In Bartók, this is doubly important, for his mirroring technique relies on register.

There are inherent issues concerning the *mese* that I should acknowledge. Though I labeled the first chord of the section $C^{\#}4^{\uparrow 4}$ ($C^{\#}$ - $F^{\#}$ - B - E), this chord symbol does not recognize the $G^{\#}/A$ *mese*, the fulcrum of the chord. One solution is to insist upon $G^{\#}/A$ as the root of the chord, but $G^{\#}/A$ is not *actually* a member of the chord—nor is it a pitch that can be played on the piano. We could write ($G^{\#}/A$) in parenthesis to show that it does not actually sound, but there is a more pressing issue: the chord is not a quartal with respect to the $G^{\#}/A$, for $G^{\#}/A$ subdivides the fourth.

For any quartal stack containing an even number of fourths, such as $C^{\#}4^{\uparrow 4}$ ($C^{\#}$ - $F^{\#}$ - B - E), or $C^{\#}4^{\uparrow 6}$ ($C^{\#}$ - $F^{\#}$ - B - E - A - D), the *mese* would fall *between* the two central pitches ($G^{\#}/A$ in the former and $C^{\#}/D$ in the latter). Because the *mese* is not played, it is probably overkill in a jazz *Realbook* anyway, but could be of value to the analyst. Perhaps the best way to demonstrate the *mese* is by writing “*mese* = $G^{\#}/A$ ” next to the chord symbol $C^{\#}4^{\uparrow 4}$.

Mathis der Maler, “*Grablegung*”: *crossing over*

Now we turn to our final case study, *Mathis der Maler* (1933-4), Paul Hindemith’s operatic re-enactment of the *Isenheim Altarpiece*, in which the lives of Jesus Christ and *Altarpiece* painter Matthias Grünewald—purportedly a supporter of the peasants in the German Peasant Wars in 1524-5—amalgamate with Hindemith’s own struggles against the Nazi regime. Hindemith’s allegory does little to mask its critique of right-wing practices given that the opera’s justification of freedom of expression correlates only too well to Hindemith’s personal

difficulties with the Third Reich (culminating in the “Hindemith Affair” of 1934, in which the Nazis banned the premiere of *Mathis der Maler*³⁷³). Cleverly, Hindemith looks to the distant past, contemporary Nazi repression, and through the depiction of Mathis’s death, contemplates his own artistic future.

Mathis der Maler heaves with quartals—a logical ramification of Hindemith’s system of “harmonic flux.” Hindemith believed that chords without tritones were more stable and suitable for introductory and concluding segments,³⁷⁴ since, as a practitioner of *viola d’amore* and director of the Yale Early Music Ensemble, Hindemith was inspired by the tritone-free constructions of Medieval and early Renaissance musics, such as the fourth-driven *fauxbourdon*.³⁷⁵ In conjunction with contrapuntal textures and progressions resembling pre-tonal Andalusian cadences, Hindemith’s tritone-less quartals and quintals complement the sixteenth-century setting.

³⁷³ Nazi officials banned the premiere of *Mathis*, most likely due to Hindemith’s continued associations with Jewish musicians (not to mention his own Jewish wife). See Elizabeth Janik. *Recomposing German Music: Politics And Musical Tradition in Cold War Berlin*. Leiden and Boston: Brill, 2005, pp. 71-72.

³⁷⁴ Hindemith, p. 118.

³⁷⁵ The anonymous *Musica Enchiriadis* from the ninth to tenth century describes the *organum* practice of singing in parallel fourths and fifths carried out by Pérotin at Notre Dame. Treatises by Guido d’Arezzo (*Micrologus*, 1026?) and later, Jacques de Liège (, *Speculum Musicae*, 1425) stress the importance of both fourths and fifths as stable intervals in “perfect” consonances in medieval musics. For example, the 8/5 (as in G-D-G) and 8/4 (G-C-G) were considered the most stable trines, and Liège posited that the 7/4 trine (a stack of three fourths, such as G-C-F) produced a pleasing but mildly unstable sound that was normally resolved by parallel movement of the top two fourths (ex 3-27). In order to avoid tritones and resolutions involving thirds, these parallel fourth ascensions were promoted.

Example 3-27: Medieval Resolution of stacked fourths



Example 3-28: Paul Hindemith, “Grablegung,” mm. 1-8

Example 3-29: Wolfgang Amadeus Mozart, *Symphony 41*, *molto allegro*, mm. 1-4

The opening of “Grablegung” (Entombment) employs a progression vaguely reminiscent of the fourth movement of Mozart’s “Jupiter” *Symphony 41* in C major. In the fourth measure of the Mozart, the suspended melody (C-D-F) first skips over the tonic chord tone E, but when it finally resolves to the E in measure 4, the accompaniment instead outlines a deceptive cadence to A minor (ex.3-29). In the first measure of *Grablegung* (ex.3-28), the second violin similarly skips over E in its leap from D to F, sublimating the third. Though the E is played on the last eighth note of the measure, it constitutes a passing tone on the way down to D as opposed to a traditional C major resolution, and a quartal consisting of B-E-A also acts as a deceptive cadence.

While the first violin outlines an authentic cadence (G to C) in its heroic ascent up the C *diatessaron* (measure 2), the accompanying hollow quartal A4^{4 (om 3)} does not confirm the cadence. The following planing from C-B^b-A (in the first violin) suggests a pre-tonal Phrygian Cadence. Next, the viola descends to B, A, G, and finally E, loosely outlining chordal shifts to Aminor (vi), G (V), and E major (V/vi)—an archaic Andalusian cadence.³⁷⁶ (Not surprisingly, Hindemith’s framework outlines plagal and antiquated progressions rather than authentic ones.)

Figure 3-6: ic-5 activity in “*Grablegung*,” measures 1-6

Meas.	1	2	3	4	5	6
Bbb/A				A		
Fb/E				E		
Cb/B				()	B	B
Gb/F#			F#	F#	()	()
Db/C#			C#	C#	()	()
Ab/G#			G#	G#	G#	G#
Eb/D#			D#	D#	D#	D#
Bb/A#			Bb	A#		A#
F		F	()		F	F
C	C	C	C	C	C	C
G	G	G	G	G	G	G
D		D	(D)	D	D	D
A		A	A	A		()
E		E		E		()
B		B		B		B
F#						F#

Let us examine the ic-5 implications of “*Grablegung*.” Between measures 1 and 8, the majority of chords are quartal, facilitating gradual ‘stepwise’ motion along the ic-5 scale. In figure 3-6 I have attempted to plot the ic-5 movement for measures 1-6, where flat movement is conceptualized

³⁷⁶ The *Andalusian* progression, which was popular in Grünewald’s era, descended from older voice leading conventions like the *Passamezzo Antico* and the *Phrygian Cadence*.

as rising, and sharp as falling.³⁷⁷ The graph reveals that almost all motion is stepwise and balanced along the ic-5 scale. For example, the original C-G dyad picks up a D (C-D-G) on the second beat of the first measure, which extends the ic-5 cycle one step in the sharp direction (**D**-G-C), and the next chord, C-F-G, shifts the harmony one step in the flat direction (G-C-**F**). This stepwise ic-5 motion allows the quartal activity to sound ‘smooth’ and stable—representing the stateliness and certainty of entombment. All sharpward motion is balanced by a flatward response (and visa versa), culminating in the return of the original C-G tonic dyad at measure 6.³⁷⁸

Quartals also allow Hindemith to pivot seamlessly from the flatter side of a particular tonal center to a sharper one. In ic-5 modality, shifts and extensions between the flatter and sharper areas of the spectrum sound less jarring when they involve ‘neighbors’—that is, the closest members of the ic-5 cycle. For example, at measure 16, a bass pedal on C[#] establishes the tonal center (*ex.3-30*). The first quartal sequence (D[#]-G[#]-C[#]-F[#]) reveals itself in cyclic order, adding B and E (the flatted third degree of C[#]) from the flat side (D[#]-G[#]-C[#]-F[#]-**B-E**) in measure 17. But in measure 19, the E natural is supplanted by E sharp, the natural third degree, and A[#], the natural sixth. These two pitches extend the ic-5 cycle instead in the sharp direction: (**E[#]-A[#]**-D[#]-G[#]-C[#]-F[#]). When the bass moves to D[#] in the following sequence, the melody remains the same, reframing the E natural as a flatted second degree.

At the movement’s apex, the ic-5 shifts occur more rapidly, while retaining the trustworthy ic-5 “stepwise” neighbor motion. In the overwhelmingly quartal passage between measures 23 and 33, steady stepwise ic-5 motion in the flat direction leads to a dramatic restatement of the original theme in B^b. Because most chords in the sequence are quartals, many of them introduce more than one new

³⁷⁷ I am attempting to reverse the normative conceptualizations of flatside (falling) and sharpside (rising).

³⁷⁸ The transition into measure 6 is slightly jumpy, probably because Hindemith withholds the C—the missing stepwise link between G and F—until the final C-G dyad.

flat-side pitch, but no new pitches are ic-5 ‘skips’ (fig.3-7). Amazingly, the flat side travel amounts to *more* than twelve tones—closer to 23—meaning that Hindemith has completed almost two entire cycles! But why does the composer wish to go so far flat? To shed light on this question, let us return to our discussion of the “*Grablegung*” panel of the *Altarpiece*.

Example 3-30: *Grablegung*, mm. 16-33

The musical score for Example 3-30, "Grablegung", mm. 16-33, is presented in five systems. The first system (mm. 16-18) begins with a piano (*pp*) dynamic and features a melodic line with triplets and a bass line with chords. The second system (mm. 19-21) includes a mezzo-forte (*mf*) dynamic marking and continues the melodic and harmonic development. The third system (mm. 22-24) shows a change in tempo and meter to 2/4, with a forte (*f*) dynamic. The fourth system (mm. 25-27) continues in 2/4 with a forte (*f*) dynamic. The fifth system (mm. 28-33) concludes with a fortissimo (*ff*) dynamic and a final cadence. The score includes various musical notations such as slurs, triplets, and dynamic markings.

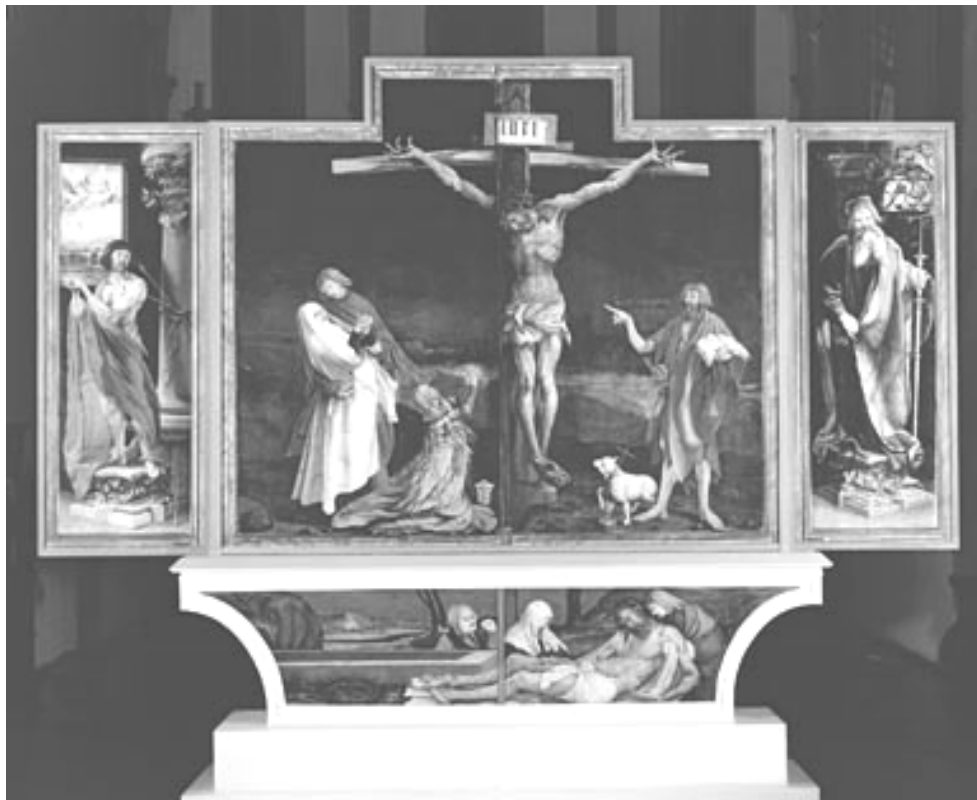
Figure 3-7: “Grablegung” ic-5 movement, m. 22 (3rd beat) to m. 28

Meas.	22	23	24	25	26	27	28
Ab							Ab
Eb							Eb Eb
Bb						Bb	Bb Bb
F						F	F F
C					C	C	C C C
G					G	G	G G G
D					D	D	D D
Bbb/A					A	A	A
DFb/E					E	E	E E
Cb/B					B	B	F#
Gb/F#					F#	F#	F#
Db/C#					Db	C#	C#
Ab/G#				Ab	Ab	G#	
Eb/D#				Eb Eb	()	D#	
Bb/A#				Bb Bb	Bb		
F/E#				F F	F		
C/B#			C	C C	C		
G			G	G G			
D	D		D	D			
A	()		A				
E/Fb	()	E	E				
B/Cb	B	B					
F#/Gb	F#	()					
C#/Db		C#					

Art historian James Hall notes a left-orientation in the exterior panels of the *Altarpiece*, in which the cross and crucified Christ are painted noticeably left of center (*fig. 3-8*). In the *Entombment* panel just below, Christ is set even farther to the left, so that the Christ on the cross

appears to gaze *to the left* at his soon-to-be dead self.³⁷⁹ Crossing over, the left side comes to signify the future rather than the past, so that Christ is (to invert a metaphor) “right behind.”

Figure 3-8: Grünewald’s *Crucifixion* and *Entombment* panels, Isenheim Altarpiece (1512-1516)



While the Western time x-y graph plots the past on the left side and the future on the right side, there are occasions where Jesus’s supernatural powers allow him to “cross over.” In the medieval “crossing over” ceremony outlined by Jacobus de Voragine, a cross is drawn (in a large X) “to signify that he who at first was on the right has gone over to the left, and that he who was

³⁷⁹ Hall, p. 187.

at the head has been put at the tail, and vice versa.”³⁸⁰ To demonstrate Christ’s transformational powers, Grünewald prominently displayed Christ’s left or “heart” side.

I suspect that Hindemith’s dramatic flatward ic-5 journey in “*Grablegung*” represents the (death and) resurrection of Christ (and, thereby, Grünewald, and, eventually Hindemith also!), for the uncannily extreme flatward motion suggests a crossing over from the natural death to supernatural life. Motion in the flat direction is usually right to left—that is, it represents *tracking back* to the tonic-in-the-past, but by traveling deep into the flatside, Hindemith transforms the past into the future. Quartals are the ideal vehicle for this kind of time travel, for as we learned from Philip Tagg, they can represent both the past (rustic antiquity) *and* the future (technological progress).

We discussed ic-5 completeness in Herbie Hancock and McCoy Tyner, achieved through twelve pitches over four octaves, but how about ic-5 cycles involving *more* than twelve pitches? Despite Hindemith’s medieval-inspired tritone-avoidance and the sixteenth-century setting, the composer did not write *Mathis der Maler* for period instruments and non-tempered tuning³⁸¹, but for modern orchestra in equal temperament. Unlike Willaert’s controversial circle-of-fourths ‘spiral,’ Hindemith’s crossing of the tempered twelve-pitch starting point allows for a rebirth, or resurrection—a second chance to experience the cycle (of life). To complement Jesus’ stately resurrection, the ic-5 flatside motion is stepwise and fluid. *Slowly but surely He rises.*

³⁸⁰ Ibid, p. 171.

³⁸¹ In favor of equal temperament, Hindemith wrote: “Purity must be neglected or the possibility of unhindered polyphony sacrificed.” *The Craft*, p. 28.

Ic-5 leaps: Going where no man has gone

And yet, in contrast to Jesus’s constant slope, other musical situations warrant disconnected ic-5 skips and leaps. Let us return briefly to the introduction to *Star Trek*, in which the quartal planing shifts by ascending major thirds (ex.3-31). Where *Grablegung* inches along the ic-5 axis, Courage’s quartals shift by dramatic leaps. Onscreen, each of the ic-4 transformations is matched by the entrance of a new spaceship whirring by. Thus, the bold ic-4 leaps are required to signal onscreen motion, near the speed of light.

Example 3-31: Alexander Courage, *Star Trek* Theme

The musical score for the *Star Trek* Theme introduction is presented in five staves. The first three staves show the melody with overlapping quartal chords. The fourth staff shows the harmonic accompaniment with chords: B^bmaj7, G^b13, B^bmaj7, E^b13#11, and D7#9. The fifth staff shows the harmonic accompaniment with chords: E^b, E^bmin6, D min, G7b9#5, C min11, E^b/F, and B^b. The score includes measure numbers 1, 4, 7, 11, and 19.

Figure 3-9: Ic-4 Quartal overlapping in *Star Trek* introduction

m. 1	(sharp side) ← B -E-A-(D)-G → (flat side)
m. 4	D[#] -G [#] -C [#] -(F [#])- B
m. 7	G-C-F-(B ^b)- E^b

Using the M Transformation, we see that the ic-4 cycle aligns with the ic-5 cycle every 20 semitones (occupying the flat thirteenth from B to G in the first chord). Therefore, the sharpest member of each five-pitch quartal (B in the first chord, D[#] in the second) overlaps with the flattest member of the subsequent chord (*fig.3-9*), indicating commonality between the ic-4 related quartal sequences.

But after the third chord, the cycle is broken; an F bass accompanied by the other-worldly whole-tone scale (measure 10) shifts up a fourth to tonicize B^b major. Following the initial minor seventh vocal ascent from F-E^b (*two* fourths), a jubilant octave from F to F vanquishes the quartals—symbolizing Captain Kirk’s triumphs over Kling-ons, Romulans, and other alien foes. From this point, it’s all normative jazzy 1960’s television music, where slippery chromaticisms hint at sleazy alien encounters, and only a few traces remain of the introductory quartal world.³⁸² Hence, *Star Trek*’s exoticized quartals are vanquished—much like *The Jetsons*, in which an exoticized Lydian modal exterior belies an underlying functional tonal structure and a traditional nuclear family (Chapter 2). *Star Trek* and *The Jetsons* demonstrated that good old-fashioned American values could indeed triumph in the face of alien threats and destabilizing futuristic technological progress in the 1960’s.

Perhaps Hindemith proves a related point in his conclusion of *Grablegung*. After that tantalizing quartal resurrection, an F[#] major chord magically appears—and a C[#] major chord emerges out of chaos at the movement’s conclusion—as if to illustrate Jesus turning *water* (quartals, and other indeterminate chords) into *wine* (the major triad). As I explained earlier,

³⁸² Such as the descending minor seventh at measure 23, and the eleventh chords at measure 23 and 24.

Hindemith preferred the final “nobility” of major and minor triads. But by refusing to conclude with a quartal, Hindemith (and Courage) perpetuates a glass ceiling for these modern structures.

Quartal tonics?

Perhaps we should not judge a composer’s unorthodoxy by the outlandish sonorities she uses in developments or transitional moments, but by the chords she is willing to call *home*. In my view, Hindemith commits the ultimate act of hypocrisy, for he has devised a system where chords no longer relate to each other tonally, but, in many ways, nothing has changed. It’s the same old narrative: Mathis’s Christ-like decision to pursue artistic freedom above the love of a woman is mirrored by the “noble” major triad vanquishing indeterminate quartals. Moreover, the right-to-left quartals only showcase an exceptional event. I’ll bet that at the conclusion of Voragine’s right-to-left crossing-over ceremony, the attendees returned to their everyday Christian left-phobia, for the ritual only *temporarily* inverts the rules (much like the Sadie Hawkins or “reverse” dance, an annual event where girls invite boys). Once Jesus’s extraordinary *widdershin* is complete, Hindemith reverts to more traditional resolution: the major triad.

In Tyner and Hancock’s harmonic worlds, however, quartals can indeed serve as final tonics. Hindemith and Courage³⁸³ construct traditional narratives of redemption, where heroes triumph over unscurrilous foes (Kling-ons, German aristocracy, Nazis, etc.), so perhaps they felt compelled to conclude on major triads. But post-bop jazz musicians need not contend with stock characters, conventional narratives, or symphonic form; they are, for the most part, freer to explore more experimental moods.

³⁸³ Courage graduated from Eastman in 1941, and was acquainted with concert music, both tonal and modernist.

Modernists like Satie and post-bop jazz musicians invented a musical universe where quartals and other “indeterminates” can exist autonomously. But if the major mode represents the hero, and minor the villain, then what is the character of a *quartal* tonic? In *Star Trek*, quartals are not personified in the Beethovenian sense, but tend toward the architectonic—representing open spaces (in the tradition of Aaron Copland); the quartals in Satie’s quartals “*musique d’ameublement*” signify inanimate objects lacking subjectivity; Hancock explores the sensation of being out at sea, rather than a *Sturm und Drang* symphony depicting “*one man circumnavigating the globe.*” Ergo, these works might be described as “anti-teleological,” a term invented by Leonard Meyer to describe mid-century avant-garde:

Underlying this new aesthetic is a conception of man and the universe, which is almost the opposite of the view that has dominated Western thought since its beginnings...Man is no longer to be the measure of all things, the center of the universe.³⁸⁴

In contrast to classical tonality’s phallic goal-orientation, Renata Selaci declares that the “ultimate aim of these ‘closed circuits’ is simply to reproduce itself as drive, to return to its circular path, to continue its path to and from the goal.”³⁸⁵³⁸⁶ But in a sense, “anti-teleological” is just *telos* on repeat, for ‘closed circuits’ still achieve cyclic completion (over and over).

Another modernist, Igor Stravinsky, refused to look for meaning in his own compositions: “the form is everything. He can say nothing whatever about meanings”³⁸⁷ The attractiveness of this notion notwithstanding, Stravinsky does composers a disservice, for he

³⁸⁴ Leonard Meyer. *Music, the Arts, and Ideas*. Chicago: University of Chicago Press, 1967, p. 83. Discussed in Robert Fink. *Repeating Ourselves: American Minimal Music as Cultural Practice*. Berkeley and Los Angeles: University of California Press, 2005, p. 32.

³⁸⁵ Renata Salecl. *(Per)versions of Love and Hate*. London: Verso, 1998, p. 63. Discussed in Fink, p. 38.

³⁸⁶ Admittedly, the free will of improvised jazz solos complicates this anti-teleology to a certain extent.

³⁸⁷ Stravinsky, with Robert Craft. *Expositions and Developments*. New York: Doubleday, 1962, p. 115.

insinuates that such compositions *are* vapid. But Stravinsky also reminds us that modernist music does not always possess Beethoven's goal-oriented imperialism; Satie's abstract moods often hover in a closed circuit, but in this sense, they're still *doing something*.

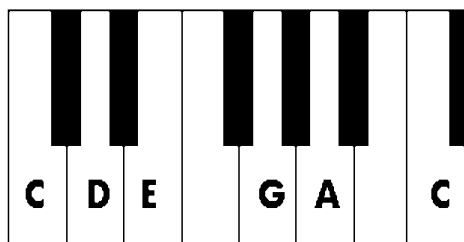
In the final chapter, we shift toward African-American pentatonicism, commonly lambasted as "primitive" due to a failure to employ all seven heptatonic tones, or "match" the accompanying harmony. I hope to demonstrate that, much like planing quartals, such music is not lacking in design, but simply realizes different goals than Schenkerian organic unity and linearity. We must examine these musics without judging them according to the rules of traditional or Schenkerian theory, asking not why they fail as tonal structures, but how they achieve *other* goals.

CHAPTER 4: PENTATONICS AND MELODIC-HARMONIC DIFFERENTIATION

*As a six-year-old, I sat at the piano for hours twisting my fingers into pleasing shapes. Among my most prized discoveries was one that Irving Berlin had made a half-century before me: you could approximate almost any popular music style by playing **just** the black notes. No matter which order I played them, the black keys sounded reliably euphonious—exotic but strangely familiar. Once I realized that these same five black keys were responsible for almost all the popular melodies I listened to on the radio, this became my shortcut to sounding soulful. My music teachers told me that the white keys of C major were the most “natural” scale and, therefore, a better starting point, but I preferred the black notes, which were outnumbered and surrounded by the white notes.*

The five black notes made a strong conceptual “anti-diatonic” collection, but transposing them looked odd to me. Starting on C produced C D E G A, but what about F and B? Was I supposed to pretend that those two other white notes didn’t exist? In my mind, trained musicians were supposed to add pitches to their musical vocabulary—not subtract them. In all that folksy Chinese and Scottish music I had heard on Public Broadcasting, F and B seemed to be missing, which seemed like a defect to me. Someone should teach these people about the two other notes, I thought.

Figure 4-1: C Major Pentatonic Scale ‘missing’ F and B



Theorist Heinrich Schenker arrived at a similar conclusion about pentatonicism, writing: “Those exotic people [Asians, African-Americans and Celts] still lack diatony, and that is the reason for the irrational character of their music.”³⁸⁸ The racism inherent in this quotation warrants discussion, but let us concentrate on Schenker’s issue with pentatonics. Since his own system relied heavily on authentic cadences, Schenker discounted scales devoid of leading tones.

³⁸⁸ Schenker, Heinrich. *Counterpoint: Book I. Cantus Firmus and Two-Voice Counterpoint*. John Rothgeb, ed. and trans. New York: Schirmer, 1910, p. 22.

The strong subdominant connection to ic-5/7 pentatonic scales would have also been problematic, as Schenker considered subdominant activity superficial. But why couldn't Schenker appreciate a scale that "lacks" the other two diatonic pitches?

Schenker's offhand remark demonstrates the public relations problem of the pentatonic: it is seen as *less* than whole. And yet, diatonic music—postulated by tonal theorists as a closed and complete system—only uses seven out of twelve chromatic pitches with regularity. Other twentieth-century pedagogues thought pentatonics might indeed be better suited to 'primitives,' or to children. During their experimental forays into childhood music education, practitioners of the Kodály method noticed that children struggled to sing heptatonic scales. The culprit? The semitones located after the third and seventh degrees in the major scale. Kodály's exercises were therefore revised so that beginning instruction was pentatonic.³⁸⁹ Carl Orff also treated the pentatonic scale as a stepping stone to the diatonic, teaching young students pentatonics before heptatonics.³⁹⁰

Is pentatony inherently childish?

While some singers may find semitone-rich scales more difficult to tune than anhemitonic five-note scales, I hope to show that pentatonic tuning—as practiced by mid-century soul musicians—is surprisingly complex. From a structural standpoint, compositions exhibiting pentatonicism are rarely 'easy' to perform or analyze. For one thing, the lack of semitones thwarts the easy establishment of major or minor tonality. Paolo Susanni and Elliott Antokoletz

³⁸⁹ Lois Choksy. *The Kodály Method I: Comprehensive Music Education*. Upper Saddle River, New Jersey: Prentice-Hall, 1999.

³⁹⁰ Beth Landis and Polly Carder. *The eclectic curriculum in American music education: contributions of Dalcroze, Kodaly, and Orff*. Washington D.C.: Music Educators National Conference, 1972, p. 82.

assert that pentatonic ambiguity allows “any of the five tones [to] be asserted,” and as we shall see, many composers and performers take advantage of this fact with considerable ingenuity.³⁹¹ Although pentatonic scales might be understood to contain less melodic information than heptatonics *on their own*, in sounding music they usually operate as part of a complex framework involving other scales. Throughout the chapter, I will track ways in which the pentatonic collides with heptatonic, exploring tuning, the pentatonic-subdominant link, pentatonic superimpositions, bluesy combinations, and ic-5 cycles, all of which combine to produce a more sophisticated harmonic approach than Schenker might have thought possible with “only” five notes.

Our inquiry will begin with a formal definition of the ic-5/7 pentatonic scale and its rotations, followed by an investigation of pentatonic tuning practices. This basic data will allow us to tackle the so-called “melodic-harmonic divorce” in popular music practice. In order to fully grasp the resulting dissonance, I propose a theory of melodic-harmonic stratification, which will lead to a discussion of various pentatonic rotation mixtures in mid-century soul music. I believe that melodic-harmonic stratification is significant in African-American musical expression, relating to a desire to *stand out* from the crowd (i.e., the band or the congregation).

In the second part of the chapter, we consider the “horizontal” and “vertical” melodic approaches to pentatonics. The chapter culminates in an investigation of John Coltrane’s exploration of pentatonic reorientation, *A Love Supreme*. In some of the pieces analyzed in this chapter—such as Van Halen’s “Right Now”—the pentatonic is configured as an incomplete scale requiring heptatonic for completion, but in the music of Coltrane, the pentatonic collection exists on its own terms.

³⁹¹ Susanni and Antokoletz. *Music and Twentieth-Century Tonality: Harmonic Progression based on Modality and the Interval Cycles*. New York & Oxfordshire: Routledge Press, 2012, p. 84.

Part I: The Pentatonic System

Pentatonic rotations

The pentatonic collection can be derived in several ways, but perhaps the most common one consists of a five-step ascending ladder of perfect fifths: C-G-D-A-E=C major pentatonic. (*fig. 4-2a*) Rearranged, we note the pentatonic scalar order (C-D-E-G-A). On instruments already tuned in fifths—like violin and mandolin—these quintal pentatonics are easily configured.

Figure 4-2a: Pentatonic Rotations on C (sharp direction)

(<i>Ic-7 order</i>)	C-G-D-A-E	(1:1:1:1:1)
Root <i>On 1:</i>	C-D-E-G-A	1, 2, 3, 5, 6 (2:2:3:2:3) “ <i>major</i> ”
Rot 1 <i>On 2:</i>	D-E-G-A-C	1, 2, 4, 5, ^b 7 (2:3:2:3:2) “ <i>r�</i> ”
Rot 2 <i>On 3:</i>	E-G-A-C-D	1, ^b 3, 4, ^b 6, ^b 7 (3:2:3:2:2) “ <i>mi</i> ”
Rot 3 <i>On 5:</i>	G-A-C-D-E	1, 2, 4, 5, 6 (2:3:2:2:3) “ <i>sol</i> ”
Rot 4 <i>On 6:</i>	A-C-D-E-G	1, ^b 3, 4, 5, ^b 7 (3:2:2:3:2) “ <i>minor</i> ”

For instruments tuned like the bass (tuning: E-A-D-G) and guitar (tuning: E-A-D-G-B-E), rising fourths are particularly idiomatic. Hence, the pentatonic is more easily derived via *ic-5*, producing a flat side reflection: a ladder of ascending fourths (C-F-B^b-E^b-A^b) which rearranges to (C-E^b-F-A^b-B^b), or *rotated* A^b major pentatonic (or C minor pentatonic) (*fig. 4-2b*). Since major and minor pentatonics can be derived from each other by shifting four *ic-5* steps in either direction, we see immediately that pentatonics are inherently no more flat than they are sharp.

Figure 4-2b: Pentatonic Rotations on C (flat direction)

(<i>Ic-5 order</i>)	C-F-B ^b -E ^b -A ^b	(1:1:1:1:1)
Root <i>On 1</i> :	C-E ^b -F-A ^b -B ^b	1, ^b 3, 4, ^b 6, ^b 7 (3:2:3:2:2) “ <i>mi</i> ”
Rot 1 <i>On ^b3</i> :	E ^b -F-A ^b -B ^b -C	1, 2, 4, 5, 6 (2:3:2:2:3) “ <i>sol</i> ”
Rot 2 <i>On 4</i> :	F-A ^b -B ^b -C-E ^b	1, ^b 3, 4, 5, ^b 7 (3:2:2:3:2) “ <i>minor</i> ”
Rot 3 <i>On ^b6</i> :	A ^b -B ^b -C-E ^b -F	1, 2, 3, 5, 6 (2:2:3:2:3) “ <i>major</i> ”
Rot 4 <i>On ^b7</i> :	B ^b -C-E ^b -F-A ^b	1, 2, 4, 5, ^b 7 (2:3:2:3:2) “ <i>ré</i> ”

Of the five rotations, the best known resemble major and minor modes: the *ic-7* root rotation (“major”) and the *ic-7* rotation commencing on 6 (“minor”). Since these two rotations contain third and fifth degrees, they can be used melodically over triadic harmony. That’s not to say that other rotations aren’t employed. The thirdless second rotation—often called the “*Ré Pentatonic*”—is particularly common in Anglo-American folk musics and modal jazz. In the *Ré* rotation, a lacuna exists between the second and fourth degrees, producing an identity crisis of *majorness* or *minorness* with respect to tonality.

Figure 4-3: C Major Pentatonic Scale steps in Mod-12, Mod-7, and Mod-5

System	(C-D)	(D-E)	(E-G)	(G-A)	(A-C)
Mod-12 (chromatic) steps:	2	2	3	2	3
Mod-7 (diatonic) steps:	1	1	2	1	2
Mod-5 (pentatonic) steps	1	1	1	1	1

Though the pentatonic is imagined in heptatonic terms as “gapped,” we must remember that the diatonic scale itself constitutes an incomplete, asymmetrical subset of the chromatic scale. In *mod-5 pentatonic* (*fig. 4-3*), each interval of the pentatonic scale is treated as one step,

though some of those steps are ic-2 and others are ic-3. Thus, the pentatonic becomes a fully-functioning stepwise scale rather than an incomplete diatonic scale.

Pentatonic tuning

Another genre where minor and major pentatonic scales dominate is the blues. Here issues of derivation take on a political cast, since African retention continues to be a controversial matter. Twentieth-century German musicologist and ethnologist Alfons M. Dauer noted the use of pentatonic scales in Africa, insisting that both African and African-American musics were still undergoing an evolutionary process of “outgrowing” the pentatonic, in which the modern blues scale had *filled in* pentatonic gaps.³⁹² Ethnomusicologist Hugh Tracey takes a more democratic stance, maintaining that pentatonic tribes are no musically gifted than their hexatonic or heptatonic neighbors.³⁹³ This important point dispels the racist comparative myth echoed by Dauer and Schenker, that pentatonic-makers are ignorant of more ‘complex’ scales.

Having spent multiple decades researching African musics, Gerhard Kubik posits that many African pentatonic scales are *equipentatonic* or *equiheptatonic*, and that these scales are tuned differently all over Africa.³⁹⁴ In the central Sudanic belt, vocal tones have given rise to a system of interlocking pentatonic scales: the “female range” (C-B^b-G), and then the male range a fifth down from (F-E^b-C), and when combined with upper partials 9 (D) and 5 (E), the blues scale emerges.³⁹⁵ Kubik cautions against attempting to categorize equi-tuned scales according to Western temperament, noting that the third of this integrated scale falls flat of the tempered

³⁹² Dauer. “*Gruntlagen und Entwicklung des Jazz.*” *Jazz Podium*, 4, 1955, p. 78.

³⁹³ Hugh Tracey. “Toward and assessment of African Scales.” *African Music*, Vol. 2, No. 1, 1958, p. 17.

³⁹⁴ See Kubik. *Africa and the Blues*. Jackson: University Press of Mississippi, 1999, pp. 206-213.

³⁹⁵ *Ibid*, pp. 235-6.

major third, and, correspondingly, the seventh degree falls just flat of the tempered minor seventh.³⁹⁶ Hence, when Westerners hear these African scales, they perceive these particular pitches as “blue” deviations, even though Africans probably hear them as *regular* members of the scale.³⁹⁷ Kubik suggests that “blue” notes were invented by Westerners to explain what they heard as pitch discrepancies between the African system and their own tempered heptatonic system.³⁹⁸ If minor pentatonic is a generative scale, however, flatted thirds and sevenths aren’t *blue*—they are as scalar as the tones around them.

Musicologist Hans Weisethaunet also considers blue notes a musicological invention. Noting that all twelve tones can occur in the blues, he insists that only some of those alterations will sound blue since “microtonality, attack, and timbre variation are such essential parts of blues expression.”³⁹⁹ I would add that individual pitches of pentatonic scales sound “in” or “out” (in jazz terms) depending on harmony. For instance, the third degree of minor pentatonic sounds “in” against a minor chord but “out” or “blue” or against a dominant chord with a major third.

South African music historian Pieter Van der Merwe has argued that neutrally-tuned third degrees and scale degree “complexes” are not just characteristic of African-American singing; they are also sung in English folk musics—which, he believes, contributed greatly to the development of the blues.⁴⁰⁰ He cites the common cross-relation between the major and minor seventh found in pre-tonal English compositions by Henry Purcell as evidence of “blue” notes in

³⁹⁶ Ibid, p. 241.

³⁹⁷ Ibid, p. 236.

³⁹⁸ Ibid.

³⁹⁹ Weisethaunet. “Is there such a thing as the ‘blue note’?” *Popular Music*, Volume 20/1, 2001, p. 101.

⁴⁰⁰ Van der Merwe. *Origins of the Popular Style: The Antecedents of Twentieth-Century Popular Music*. Oxford: Clarendon Press, 1989, p. 171.

the English tradition.⁴⁰¹ Taking issue with Van der Merwe's assessment, Kubik insists that the blues descended almost entirely from Africa, where a third degree might be raised in one direction and lowered in the other. But despite these pitch shifts, contemporary Africans still consider the altered pitch part of the same scalar degree "complex."⁴⁰²

Since Westerners do not easily comprehend scale degree flexibility⁴⁰³ (even though orchestral tuning can be surprisingly variable), they have consistently added scale degrees to African-American singing practices—despite the fact that Sub-Saharan African pitch collections never contain more than seven official degrees.⁴⁰⁴ Rather than hear a flexible third degree, Westerners often hear a minor *and* a major third—or, even more abstractly, a sharped second/ninth and a major third. Hence, scales in jazz blues include the sharped ninth and major third as separate entities. Blues pianists had no choice but to play in equal temperament, so their approximations of blue notes—"crushed" notes, hammer-ons, and additional scale degrees—have contributed to these new scalar configurations. Because the African equitemporal complex could never be fully assimilated into the tonal world, African practices combined with a Western (mis)understanding of African theory to form African-American hybrid musics.

A different tuning mystery concerns the flatted fifth, a common blues alteration. Kubik hears this pitch as a raised fourth degree, tracing its use to Arabic/Islamic modes that survive

⁴⁰¹ Ibid, pp. 174-5.

⁴⁰² Kubik, p. 216.

⁴⁰³ See Kubik's discussion of flexible pitch areas, pp. 123-129.

⁴⁰⁴ Kubik writes on p. 239: "In all the scalar mental templates that we know from Sub-Saharan Africa, the maximum notes within one octave is *seven*."

today in Mauritania, among other African regions.⁴⁰⁵ Contrastingly, David Evans notes that the flatted fifth can be justified as the “*blue note of the blue note*,” but offers no explanation.⁴⁰⁶

Figure 4-4: Rotations of the flatted third in the ic-7 pentatonic

Root	<i>On 1:</i>	C-D-(E ^b /E)-G-A	1, 2, (^b)3, 5, 6
Rot 1	<i>On 2:</i>	D-(E ^b /E)-G-A-C	1, (^b)2, 4, 5, ^b 7
Rot 2	<i>On 3:</i>	(E ^b /E)-G-A-C-D	(^b)1, ^b 3, 4, ^b 6, ^b 7
Rot 3	<i>On 5:</i>	G-A-C-D-(E ^b /E)	1, 2, 4, 5, (^b)6
Rot 4	<i>On 6:</i>	A-C-D-(E ^b /E)-G	1, ^b 3, 4, (^b)5, ^b 7

While pentatonic “blue” notes do sometimes sound as sharpened fourth degrees when the perfect fifth is also present,⁴⁰⁷ I feel there is a better theoretical case to be made for Evans’ flatted fifth as the *flatted third of the flatted third*. For a derivation of this alternate tuning, consider the major pentatonic “root” rotation again: (1, 2, **3**, 5, 6). Over doo wop-style changes—usually some variant of (I-vi-IV-V)—singers commonly improvise using the same major pentatonic scale throughout. Over the second doo-wop chord (vi), the original pentatonic scale rotates to minor pentatonic: (1, 2, **3**, 5, 6) becomes (1, ^b3, 4, **5**, 6). But if the vocalist implements the common practice of lowering the third degree over the first chord (1, (^b)**3**, 4, 5, 6), then that flatted third will translate to a flatted *fifth* (1, ^b3, 4, (^b)**5**, ^b7) over the relative minor (*fig. 4-4*). In the Isley Brothers’ “Shout,” (1959) which alternates between the two chords I and vi, this is precisely what happens: lead vocalist Rudolph Isley shifts from clean major thirds (corresponding to the perfect fifth of the minor rotation) to flatter thirds (corresponding to the

⁴⁰⁵ Ibid, pp. 249-53.

⁴⁰⁶ As told to in Kubik, p. 147.

⁴⁰⁷ For instance, the blue note in Aretha Franklin’s “Chain of Fools” is clearly a sharpened fourth.

flatted fifth of the minor rotation) and quarter-tones located somewhere between the two pitches. Isley sings the identical lick over both chords (*ex. 4-1*), demonstrating the flatted third over the first chord and the flatted fifth over the second chord.

Example 4-1: Isley Brothers, “Shout” lead vocal (2:50)

F: b3 2 2 1 1 D: b5 4 4 b3 b3

F D min

Come — on - now, Come — on - now,

At other points in the song, however, the A^b is tuned closer to A—functioning as the third degree of F major and the fifth degree of D minor. This demonstrates the tuning flexibility of the fifth-degree complex. Though it may only represent one scalar degree, there are infinite possible fifth degree pitches in “Shout.”

In light of these tuning complications, it would be misguided to claim that pentatonic singing is easier to tune than heptatonic, for if we count flexible scalar “complexes,” there are many more than five anhemitonic pitches in the pentatonic scale. Moreover, ‘authentic’ soul tuning requires substantially more skill than simply memorizing and reproducing those pitches. I have tried (in vain) to imitate the Isley Brothers thirds on “Shout,” only to find that each third is tuned and attacked differently, a unique combination of scooped, bent, half-whispered or growled. The growl is particularly difficult to imitate, because much like guitar distortion, it generates additional overtones. Though today’s auto-tune software would try to correct the Isley Brothers’ microtones, they never sing ‘out of tune’ from a stylistic perspective.

Melodic-harmonic divorce

Once I began to accept pentatonics as proper scales, I noticed how ubiquitous they were in popular and folk musics. For instance, “Amazing Grace” features an entirely pentatonic melody (ex.4-2). But it cheats, in a sense, because the standard accompaniment contains chords on the fourth and fifth scale degree—both of which utilize tones foreign to the pentatonic (V/IV brings b7, IV brings 4 and V7 brings 7 and 4). Can we call these tunes “pentatonic” if only the melody sticks to the mode?

David Temperley has used the term “*melodic-harmonic divorce*” to refer to blues-rock compositions in which melody and harmony follow different rules.⁴⁰⁸ In contrast to the Platonic ideal of organic unity, this divorce suggests a lack of coordination between melody and harmony.

After 50 years of octatonic and hexatonic analyses, in which musical structures previously interpreted as modulations or multiple scales were reduced to unities, Temperley’s attention to smaller pitch collections and the difference between melody and harmony seem refreshing. But we might question how securely popular melodies and harmonies were ever married in the first place. Considering that pentatonic melodies and non-pentatonic harmonies usually work in tandem, I prefer to call the relationship one of *melodic-harmonic differentiation*.⁴⁰⁹

Having identified the disconnect between rock melody and harmony, Temperley never addresses its origins. In my view, melodic-harmonic differentiation can be traced back (at least) to the nineteenth century, and is inevitable when combining a pentatonic melody with chords of almost any kind. Let us look at a famous pentatonic melody and its various harmonizations.

⁴⁰⁸ David Temperley. “The melodic-harmonic ‘divorce’ in rock.” *Popular Music*, Volume 26/2. 2007, p. 323.

⁴⁰⁹ Drew Nobile also suggests that melody and harmony do indeed work together in rock, and outlines three different types of contrapuntal relationships: “hierarchy divorce,” “loop divorce,” and “syntax divorce.” See “Counterpoint in Rock: Unpacking the Melodic-Harmonic Divorce.” *Music Theory Spectrum*. Vol. 37, Issue 2, 2015, pp. 189-203.

“Amazing Grace” started off as a simple tune with no accompaniment, leaving the earliest performers to provide their own instrumental or vocal harmony. In nineteenth-century American churches, the hymn “Amazing Grace,” was eventually set to an existing folk melody, “New Britain,” (itself a composite of two earlier tunes).⁴¹⁰ Melodic-harmonic differentiation here is understandable, since the composers of melody and chords never met!

The marriage of John Newton’s text to “New Britain” was first harmonized with shape notes in William Walker’s *Southern Harmony* in 1847 (ex.4-2).

Example 4-2: “New Britain” from William Walker, *The Southern Harmony* (1847)

NEW BRITAIN. C. M. Baptist Harmony, p. 123.

1 Amazing grace! (how sweet the sound) That saved a wretch like me! I once was lost, but now am found, Was blind, but now I see.

2 'Twas grace that taught my heart to fear, And grace my fears relieved: How precious did that grace appear, The hour I first believed!

3 Through many dangers, toils, and snares, I have already come; 'Tis grace has brought me safe thus far, And grace will lead me home.

4 The Lord has promised good to me, His word my hope secures; He will my shield and portion be, As long as life endures.

5 Yes, when this flesh and heart shall fail, And mortal life shall cease, I shall possess, within the veil, A life of joy and peace.

6 The earth shall soon dissolve like snow, The sun forbear to shine; But God, who call'd me here below, Will be for ever mine.

In this arrangement, the tenor carries the melody, as is customary in the Sacred Harp tradition, while the other two parts harmonize almost exclusively in the same pentatonic scale. Though some of the voice leading might sound “jumpy” to tonal-centric ears, the soprano’s E-G-E-D-E’s and alto’s E-D-C-A-G should all be considered *stepwise* mod-5 pentatonic motion. The only non-pentatonic tone is an incidentally passing fourth scale degree in the soprano part in measure 7.

⁴¹⁰ “New Britain” combined “Gallaher” and “St. Mary.” William Walker combined “New Britain” and “Amazing Grace” in *Southern Harmony* and *Musical Companion*, 1835 and 1847.

Vertical analysis of the all-pentatonic shape-note vocal arrangement reveals relatively consonant, familiar chords. In the fifth measure, we detect the outline of a thirdless dominant chord, and in measure 14 a thirdless predominant chord on A followed by another hollow G chord preface the return to C major. With all-pentatonic accompaniment, the limited options are to play the tonic, the minor vi, or to *gesture* at other crucial chords like the dominant and subdominant by playing two out of three chord tones. In the all-pentatonic universe, there should be melodic-harmonic unity, but Sacred Harp performances are usually heterophonic, and due to differing vocal inflections and rhythms, the marriage of pentatonic melody to pentatonic harmony would have therefore been strained. Since Sacred Harp heterophonic performances were purposefully jagged, there was still probably vocal differentiation despite an all-pentatonic melody and harmony.

Example 4-3: Amazing Grace (harmonization found in modern hymnals)⁴¹¹

non-pentatonic harmonic notes: F
C F C C

A - ma - zing grace, how sweet the sound, that saved a wretch like

non-pent: B G C non-pent: F F

7 me! I once was lost, but now I'm

12 C A min C/G G7 C

found, was blind, but now I see.

⁴¹¹ In Edwin O. Excell's arrangement, written in the gender-neutral singing key of G major, there is a vi chord for the first two beats of m. 3 and in m. 13.

Many early accompanists of “Amazing Grace” would have sat at the keys of a piano, harmonium, or organ, so let us consider the C major pentatonic scale as a keyboard player’s resource in “Amazing Grace.” Though the black note pentatonic scale may be highly idiomatic to some, as I quickly discovered in my youth, C major pentatonic is not the most obvious structure on the keyboard. When harmonizing a C major pentatonic melody, it’s hard to (remember to) *forget* two notes; one tends to use *all* the white notes of the C major heptatonic scale. In the common I-V/IV-IV-I harmonization of “Amazing Grace,” therefore, all triads are composed of *white* notes in the key of C major (*ex.4-3*), demonstrating that even the most traditional keyboard accompaniment in C major of a pentatonic tune was more likely heptatonic than pentatonic.⁴¹²

Melodic-harmonic differentiation also occurs in nineteenth-century songs whose melody and keyboard harmony were composed simultaneously—such as Stephen Foster’s “Oh Susanna” (1848)—which marries an introductory pentatonic melody to the tonic and dominant chords. (*ex.4-4*) In this minstrel song narrated by an imaginary *Zip Coon* figure, Foster stratifies his ‘primitive’ pentatonic melody against European parlor-style chromatic harmony. The dominant chord contains the leading tone (F[#]), which is foreign to the pentatonic, and at measure 19, the V7/V (A7/G) involves another non-pentatonic tone: C[#]. At the final cadence (measure 22), a parlor-inspired diminished chord (C[#]dim) differentiates the harmony further from the pentatonic melody with the non-pentatonic B^b.

⁴¹² The same is *not* true of guitar accompaniment, where pentatonic scales fall much more regularly under the fingers than the diatonic. But most guitar methods and techniques before the late nineteenth century treated the instrument as a substitute for the harpsichord or piano, and retraced the keyboard’s digital pathways.

Example 4-4: Stephen Foster, “Oh Susanna,” mm. 17-22

Voice: G
 It rained all night the day I left, the
 Piano:
 19 $A7/E$ D G
 wea - ther it was dry. The sun so hot I
 22 $C\#dim$ G/D $D7$ G
 froze to death, Su - sa - nna don't you cry!

Similar stratification was used in Harry Burleigh’s popular arrangements of Negro Spirituals. Burleigh explained, “My desire was to preserve [these Negro Spirituals] in harmonies that belong to modern methods of tonal progression without robbing the melodies of their *racial flavor*.”⁴¹³ While Foster is clearly exploiting the primitive in his compositions—as minstrelsy, they are intended to play off “otherness”—not so with Harry Burleigh, who sought to elevate these former slave songs to sacred “classics.”

In Burleigh’s arrangement of “Nobody Knows,” published in 1917, the original A^b pentatonic melody remains untouched in order to retain “racial flavor,” but is sharply differentiated from the colorful reharmonizations. (ex.4-5). Leading up to the final cadence,

⁴¹³ *New York World*, October 25, 1924, quoted in Eileen Southern. *Music of Black Americans*. New York: Norton, 1983, p. 268, emphasis mine.

none of the chords in Burleigh’s accompaniment is entirely contained by the A^b-major pentatonic scale except the tonic. A sudden ic-4 shift to the major submediant in measure 22 explores the sharp side; the repeated melodic C is the common pitch between the C major triad (V/VI) and the A^b major pentatonic (fig.4-5). In fact, this is probably the only member of A^b major pentatonic that Burleigh could have safely juxtaposed against the C major triad. (Of course, Burleigh was harmonizing an existing melody, but it is worth inverting the process as a learning exercise.) The only other melodic possibility was B^b, but that would transform the C major triad into a dominant, robbing the surprise of the next chord, F major.

Example 4-5: “Nobody Knows,” arranged by Harry Burleigh, mm. 21-24

The image shows a musical score for the song "Nobody Knows" in 4/4 time, arranged by Harry Burleigh. It consists of two systems of music. The first system is for measures 21-22, and the second system is for measures 23-24. Each system includes a voice line and a piano accompaniment. Chord annotations are provided above the notes in both systems.

System 1 (Measures 21-22):

- Measure 21: Chord A^b (I) above the note A^b.
- Measure 22: Chord D^b (IV) above the note D^b.
- Measure 23: Chord C (V/VI) above the note C.
- Measure 24: Chord F (VI) above the note F.

System 2 (Measures 23-24):

- Measure 23: Chord A^b/G^b (I/(b)VII) above the notes A^b and G^b.
- Measure 24: Chord A^b/F (vi) above the notes A^b and F.
- Measure 25: Chord B^b (V/V) above the note B^b.
- Measure 26: Chord C min/E^b (iii) above the notes C and E^b.
- Measure 27: Chord A^b (I) above the note A^b.
- Measure 28: Chord D^b min (iv) above the notes D^b and F.
- Measure 29: Chord A^b (I) above the note A^b.

Figure 4-5: A^b major pentatonic differentiated from C major triad

- C major (III): C, E, G
- A^b: (^b6) dissonant
- B^b: (^b7) consonant sometimes
- C (1) consonant and a chord tone**
- E^b ([#]9) dissonant
- F (4) dissonant

Though Burleigh’s chords are startling, the local melody is never really dissonant against them, for the melody note is always part of the accompanying chord. However, the passage reveals a preference for combinations with few additional common pitches, which serves to heighten the drama.

Marvin Gaye, Yesterday

Burleigh links the melody to the chords through a common tone, but an improvising singer does have another, albeit riskier option: to embrace fully the dissonance caused by melodic-harmonic stratification. As a vocalist with spectacular improvisational skills, Marvin Gaye is able to stand his pentatonic ground against rather hostile chord changes. Consider his improvisatory rendition of the Beatles’ “Yesterday.” By erasing all scalar shifts, Gaye produces intense dissonance against the chords. For reference, example 4-6a shows Paul McCartney’s verse (transposed to the key of C for comparative purposes):

Example 4-6a: Beatles, “Yesterday” (verse 2)

C B min E7 A min

Yes - ter - day, Love was such an ea - sy game to play ___

And Marvin Gaye’s version of the same line (*ex. 4-6b*):

Example 4-6b: Marvin Gaye, “Yesterday”

C B min7b5 E7 A min

Oh - oh, talk-ing bout yes-ter-day, Love, love, ___ love, ___ such an ea - sy game to play

In the original Beatles rendition, the B minor followed by the E dominant outlines a ii-V-I progression to A major, causing the A minor chord to sound surprisingly dark, and the raised F[#]'s and G[#]'s in McCartney's melody also brighten the vocal line. By contrast, Gaye sings *nothing but* the C major pentatonic (C, D, E, G, A) over this chord progression, sounding mild over the C chord but more dissonant during the transition to A minor (Bmin7^{b5}-E7). Reharmonizing B minor as the jazzier—but more traditional—B half-diminished seventh (iidim7/vi), Gaye can continue to sing C major pentatonic tones without worrying about the potential clash with the F[#]. Through his altered melody and harmony, Gaye also negates the “sharping” effect of the F[#] in the original chords. Over the Bmin7^{b5} Gaye sings an E (4) and then a rather “blue” sounding G natural (a tense ^b6 which becomes the [#]9 over the E7). Of the four chord tones, only two (E and D) are part of the scale. The G should be the note to avoid, but that's the one Gaye uses repeatedly—a bluesy sharp 9.

Gaye's pentatonic scale augments perceived bluesiness through consistent horizontality and flattened pitches. In many ways, the lyrics of “Yesterday” describe a blues theme about growing older, feeling regret, and longing for real love. Gaye's tensions showcase that desire, and unlike McCartney's satisfying authentic cadence at the end of the chorus, Gaye's pentatonic provides no such relief.

Based on these two analyses, there are two basic considerations when performing melodic-harmonic stratification: 1) the general degree of overlap between chord tones and the pentatonic collection, and 2) the specific degree of dissonance between melody notes and chords. In Burleigh, the underlying chords contain few tones common to the pentatonic scale above, but the actual melodic tones are still consonant with those chords. Marvin Gaye's approach, which uses all five pentatonic pitches regularly, permits more dissonance *against* the chords.

Figure 4-6a displays common chords in a major key, revealing tones common to the corresponding major pentatonic. Pitches common to the melodic scale are shown in normal type, where foreign tones are printed in bold. (These are fairly conservative forms of stratification, but I will consider more chromatic stratification in the second part of the chapter.)

Figure 4-6a: Major Pentatonic in a Major Key (common harmonizations)

All pitches are pentatonic

3-note chords 4+ note chords

I: 1, 3, 5 I69: 1, 3, 5, 6, 9
 V sus: 5, 1, 2
 vi: 6, 1, 3 vi7: 6, 1, 3, 5

One non-pentatonic pitch

3-note chords 4+ note chords

Imaj7: 1, 3, 5, 7
 I7: 1, 3, 5, **b7**
bii^o: **b2**, 3, 5
 ii: 2, **4**, 6 ii7: 2, **4**, 6, 1
 II7: 2, **#4**, 6, 1
 iii: 3, 5, 7 iii7: 3, 5, 7, 2
 IV: **4**, 6, 1 IVmaj7: **4**, 6, 1, 3
 V: 5, 7, 2 VI7: 6, **#1**, 3, 5

Two non-pentatonic pitches

3-note chords 4+ note chords

bIII: **b3**, 5, **b7**
 III: 3, **#5**, 7 (Burleigh, “Nobody Knows”)
 III7: 3, **#5**, 7, 2
 V7: 5, 7, 2, 4

bVI: **b6**, 1, **b3**

bVII: **b7**, 2, 4

vii^o: 7, 2, 4 vii^o7: 7, 2, **4**, 6 (Gaye, “Yesterday”)

vii: 7, 2, **#4**

Three or more non-pentatonic pitches

3-note chords 4+ note chords

bII: **b2**, 4, **b6**
bIII7: **b3**, 5, **b7**, **b2**
bV: **b5**, **b7**, **b2**
 V7^{b9}: 5, 7, 2, 4, **b9**
bVII7: **b7**, 2, 4, **b6**
 VII: 7, **#2**, **#4** VII7: 7, **#2**, **#4**, 6

Type 0: Pentatonic over Pentatonic: Married?

Of all diatonic triads in a major key (*fig. 4-6a*), only I and vi are entirely contained by the major pentatonic scale. This all-pentatonic progression (I-vi) is indeed a common one in American popular music, exemplified by the Isley Brothers' "Shout" (1959). Does this mean that the melody and harmony are *happily married* in "Shout"? Not exactly, because as we learned earlier in the chapter, the Isley Brothers tend to favor neutrally-tuned thirds that fall just flat of major (or fully-flatted ones). Therefore, there is still tension in "Shout" between the flatter third degrees (A^b) in the melody and sharper thirds in the accompaniment (A natural). This tuning differential provides a similar sonic tension to melodic-harmonic scalar differentiation. Without this dissonance, the all-pentatonic "Shout" might sound more like a pastoral "Whisper."

Type 1a: Major Pentatonic over (Diatonic) Major

In a major pentatonic scale over a major key, diatonic chords ii, iii, IV, V and vii only lack one out of the three triadic tones. Therefore, a pentatonic melody can still *gesture* toward these chord changes without using all three chord tones. In the pentatonic Sacred Harp arrangement of "Amazing Grace," the singers outline a G dominant chord with just a G-D dyad, but in "Oh Susanna," the third of the dominant chord—the leading tone of the tonic key—is 'filled in.' Though foreign to the major pentatonic, the seventh degree of the dominant chord sounds relatively consonant in the stratified pentatonic style, because it falls between the gapped 6 and 1 of the major pentatonic scale. In an all-pentatonic world, the pentatonic scale has no "gaps," but introducing non-pentatonic accompaniment diatonicizes the scale and reveals the holes.

On the other hand, the sharpened ninth/ major third cross-relation caused by the major pentatonic over sharp-leaning *non-diatonic* chords in Marvin Gaye’s “Yesterday” involves more dissonant melodic-harmonic stratification (Type 1a). Because the chords of “Yesterday” do not remain diatonic to C major, the dissonance—though still desirable—is substantially more intense. Still, such bluesy cross-relations do not usually threaten the integrity of the melodic pentatonic mode.

Figure 4-6b: Minor Pentatonic in a Minor Key (common harmonizations)

All pitches are pentatonic

3-note chords 4+ note chords

i: 1, ^b3, 5 i7: 1, ^b3, 5, ^b7

^bIII: ^b3, 5, ^b7

One non-pentatonic pitch

3-note chords 4+ note chords

iminmaj7: 1, ^b3, 5, 7

^bIIIImaj7: ^b3, 5, ^b7, 2

^bIII7: ^b3, 5, ^b7, ^b2

iv: 4, ^b6, 1

iv7: 4, ^b6, 1, ^b3

IV: 4, 6, 1

IV7: 4, 6, 1, ^b3

^bVI: ^b6, 1, ^b3

^bVIImaj7: ^b6, 1, ^b3, 5

^bVII: ^b7, 2, 4

Two non-pentatonic pitches

3-note chords 4+ note chords

ii^o: 2, 4, ^b6

ii: 2, 4, 6

V: 5, 7, 2

V7: 5, 7, 2, 4

VI: 6, [#]1, 3

VI7: 6, [#]1, 3, 5

^bVII7: ^b7, 2, 4, ^b6

Three or more non-pentatonic pitches

3-note chords 4+ note chords

ii^o7: 2, 4, ^b6, 1

V7/V: 2, [#]4, 6, 1

V7/vi: 3, [#]5, 7, 2

V7^b9: 5, 7, 2, 4, ^b9

vii^o: 7, 2, 4

vii: 7, 2, [#]4

VII7: 7, [#]2, [#]4, 6

Type 1b: Minor pentatonic over minor

Figure 4-6b shows the minor pentatonic scale over a minor key. Now the two wholly pentatonic triads are the tonic and the third degrees (i-^bIII)—a re-ordering of the “Shout” changes—and the root of the subdominant is also now part of the melodic scale. Minor blues-inspired songs with this type of stratification include Marvin Gaye’s “Inner City Blues,” Stevie Wonder’s “Superstition” and Bill Withers’ “Use Me.” The stratification of minor pentatonic over minor key is not unlike that of major pentatonic over a major key, with one crucial distinction. In tonal minor, the commonly raised seventh degree of the ascending form will challenge the minor pentatonic, forming a cross-relation with the flatted seventh degree of the minor pentatonic. The resultant dissonance over the dominant chord is sometimes embraced, or avoided by using a chord containing the flatted seventh degree—like the minor fifth (v7) or the altered dominant (V^{alt}7).

Figure 4-6c: Minor Pentatonic in a Major Key (common harmonizations)

One non-pentatonic pitch

<u>3-note chords</u>	<u>4+ note chords</u>
I: 1, 3 , 5	I7: 1, 3 , 5, ^b 7
	^b III7: ^b 3, 5, ^b 7, ^b 2
IV: 4, 6 , 1	
^b VII: ^b 7, 2 , 4	

Two non-pentatonic pitches

<u>3-note chords</u>	<u>4+ note chords</u>
	Imaj7: 1, 3 , 5, 7
iii: 3 , 5, 7	
#IV: # 4 , # 6 , # 1	
V: 5, 7 , 2	V7: 5, 7 , 2 , 4
vi: 6 , 1, 3	vi7: 6 , 1, 3 , 5
	^b VII7: ^b 7, 2 , 4, ^b 6
vii: 7 , 2 , 4	

Three or more non-pentatonic pitches

<u>3-note chords</u>	<u>4+ note chords</u>
ii: 2 , 4 , 6	ii7: 2 , 4 , 6 , 7
	II7: 2 , # 4 , 6 , 1
	iii7: 3 , 5, 7 , 2
	III7: 3 , # 5 , 7 , 2
	IVmaj7: 4, 6 , 1, 3
	IV7: 4, 6 , 1, b3
	V7 ^{b9} : 5, 7 , 2 , 4, ^b 9
	VI7: 6 , # 1 , 3 , 5
	VII7: 7 , # 2 , # 4 , 6
	vii7: 7 , 2 , 4, 6

Type 2a: Minor Pentatonic over Major

Additionally, the minor pentatonic can be used over major key harmony (blues-type dominant changes or tonal major), resulting in a heavily stratified structure (*fig.4-6c*).⁴¹⁴ In fact, there are no diatonic major chords entirely contained by the minor pentatonic. But why would anyone consider such a structure? In my view, *the intense stratification is exactly the point*, for the risks associated with singing minor pentatonic over major produce an exhilarating sensation of emancipation from the chords. Ray Charles and Aretha Franklin regularly pitted minor

⁴¹⁴ Flatted fifth/sharped fourth degrees are in parenthesis, since this is a common alteration to minor pentatonic.

pentatonic against major, but tended to eschew major diatonic structures for gospel and blues-inspired chords like I7, IV7, and ^bVII.⁴¹⁵

Type 2b: Major Pentatonic over Minor

At conservatory, I was taught that, in jazz, the minor pentatonic could be sung over major, in which case the minor third was interpreted as a sharped ninth. A major third over a minor chord, however, was not in the rule book (*fig.4-6d*). In fact, I can't find a single mention of it in any blues, pop, or jazz instructional book. But Stevie Wonder sings a major third over a minor tonic in "Living For the City" (1974), and Marvin Gaye accomplishes the same feat in "I Heard it Through the Grapevine" (1968) (see "Grapevine" analysis later in this chapter). Major over minor is the ultimate expression of stratified dissonance in blues-inspired practices, but cannot easily be explained by *extra* scale degrees like sharped ninths, as in the case of minor over major. Though I would not claim that a major third over a minor chord is inherently more dissonant than a minor third over a major chord, it is somewhat less common in African-American popular music—making it all the more shocking when it does occur. Generally speaking, theorists interpret blues scales as tuned flat, complementing the depressing, low-energy genre,⁴¹⁶ but the major third sung over a minor chord produces a sharp sting.

⁴¹⁵ See Aretha Franklin's "I Ain't Never Loved a Man" for an example of minor pentatonic over major changes. Also, see Chapter 2 for more on secondary plagal chords.

⁴¹⁶ Of course, the blues can be energetic and uptempo, but our perceptions of the genre tend toward the morose.

Figure 4-6d: Major Pentatonic in a Minor Key (common harmonizations)

One non-pentatonic pitch

3-note chords 4+ note chords

i: 1, **^b3**, 5

ii: 2, **4**, 6

v: 5, **^b7**, 2

vi^o: 6, 1, **^b3**

ii7: 2, **4**, 6, 1

Three or more non-pentatonic pitches

3-note chords 4+ note chords

^bIII7: **^b3**, 5, **^b7**, **^b2**

iv7: **4**, **^b6**, 1, **^b3**

vmin7: 5, **^b7**, 2, **4**

^bVI7: **^b6**, 1, **^b3**, **^b5**

^bVII7: **^b7**, 2, **4**, **^b6**

Two non-pentatonic pitches

3-note chords 4+ note chords

i7: 1, **^b3**, 5, **^b7**

ii^o7: 2, **4**, **^b6**

^bIII: **^b3**, 5, **^b7**

iv: **4**, **^b6**, 1

^bVI: **^b6**, 1, **^b3**

^bVII: **^b7**, 2, **4**

vii^o: 7, 2, **4**

ii^o7: 2, **4**, **^b6**, 1

^bIIImaj7: **^b3**, 5, **^b7**, 2

^bVI^o7: **^b6**, 1, **^b3**, 5

Modular Pentatonic Rotation Mixtures

Much soul music of the 1950's and early 1960's features Type 1a major pentatonic over major changes—from Ben E. King's "Stand by Me" to The Temptations' "My Girl"—but harder-edged bluesy Type 1b minor pentatonic/minor changes (Marvin Gaye, "Inner City Blues," Stevie Wonder, "Superstition," Bill Withers "Use Me") and Type 2 blues-inspired minor pentatonic/major (Aretha Franklin, "I Never Loved A Man") dominate the later 60's and 70's.

In the 1960's, pentatonic modal mixtures combined the 1950's soul feel with a darker minor sound. A closer look at three songs of the era: The Miracles' "Shop Around" (1960), James Brown's "Cold Sweat" (1967), and Norman Whitfield's "I Heard it through the Grapevine" (1966) will demonstrate ways in which 1960's songwriters bridged the gap between major and minor pentatonics.

Example 4-7: The Miracles, "Shop Around" (1960)

The image shows a musical score for the song "Shop Around" by The Miracles. It consists of seven staves of music in G major, 4/4 time. The lyrics are written below the notes. Chords are indicated by letters above the staff. The score includes a vocal line with lyrics and guitar chords. The lyrics are: "When I be-came of age my moth-er called me to her side, she said, 'Son, you're grow-ing up now, pre-tty soon you'll take a bride, and then she said, 'Just be-cause you've be-come a young man now, There's still some things that I want you to know now. Be-fore you ask some girl for her hand now - - Keep your free-dom for as long as you can now.'" My ma-mma told me, 'You bett-er shop a-round!' Oh, yearh, you be-tter-shop a-round!"

When I be-came of age my moth-er called me to her side, she said,
 "Son, you're grow-ing up now, pre-tty soon you'll take a bride, and then she
 said, "Just be-cause you've be-come a young man now, There's still some things that I
 want you to know now. Be-fore you ask some girl for her hand now -
 - - Keep your free-dom for as long as you can now." My ma-mma told
 me, "You bett-er shop a-round!" Oh,
 yearh, you be-tter-shop a-round!

Major and Minor pentatonic combinations: "Shop Around"

The gimmick in "Shop Around," written by the Miracles' lead singer Smokey Robinson and Motown founder Berry Gordy, is a characteristic Motown records plot reversal from the introduction to the verse (*ex. 4-7*). In the sweet-sounding introduction, Robinson sings: "When I became of age my mother called me to her side/she said, "Son, you're growing up now, pretty soon you'll take a bride." To complement the wedding theme, the music is hymn-like: a rising G major pentatonic melody over a standard gospel-type chord progression: G-C-A-D7 (I-IV-V/V-V). But rather than cadence in a standard fashion, Robinson suddenly dips down low to croon "*and then she said...*" His mother's capitalistic "Shop Around" theme follows, and at this point, the verse becomes substantially bluesier: the chord progression is basically a G dominant blues, and now Smokey sings a falling G minor pentatonic melody.

Analysis of melodic-harmonic interaction reveals type 1a stratification in the introduction, consisting of major pentatonic over major chords. When the V7/V (A7) and V7 (D7) enter, the major pentatonic melody concentrates on fairly consonant scale degrees: 1, 2, and 3 (G, A, B). Over the verse, the combination of minor pentatonic over bluesy major chords reveals heavier Type 2a stratification, posing few problems until the same sharp side V/V-V7 at the cadence. Since the V/V (A7) in measure 13 is too sharp-leaning to complement any member of the minor pentatonic except the tonic, Robinson is forced to alter his scale. Over the following V7, he is back on track with the minor pentatonic, but his flatted seventh degree (F) clashes with the leading tone (F[#]) in a jarring sharpened ninth. This is the moment where two worlds collide—the bluesy minor pentatonic and the gospel authentic cadence—and it is *not* a happy marriage.

While other composers set up oppositions between pentatonic and heptatonic melodies, Robinson pits the major pentatonic against the minor—an African-Americanization of the major/minor heptatonic scale dialectic glorified by the Riemannian school (Chapter 1). The associations of gospel with major pentatonic, and blues with minor pentatonic spawn a uniquely African-American riff on the major/minor binary. The major pentatonic—commonly associated with the subdominant in Western concert music—maintains its feminine, hymn-like character, while the minor pentatonic is marked as worldly, masculine and more than a little sleazy.

James Brown, “Cold Sweat” (1967): So What?

In the 1967 recording of “Cold Sweat,” co-written by James Brown and his bandleader, Alfred Ellis, Brown sings a primarily D-minor pentatonic melody over the A section. Brown has stated that “Cold Sweat” was greatly influenced by Miles Davis’s “So What”—particularly in the repetitive horn lines⁴¹⁷ (*ex.4-8*). Additionally, there is another *key* similarity: “So What” is also in D minor, albeit the Dorian variant. Throughout the song, Brown hints at the “So What” Dorian framework, using modular major and minor pentatonic phrases.

In the Dorian mode, the fourth degree chord is major (G major in D Dorian), so this diatonic i-IV-i structure forms the “response” in “So What.” Though “Cold Sweat” features the same i-IV-i Dorian figure, Brown’s melody is somewhat differentiated from the Dorian scale. As the chord cycles IV-i, the 6-5 (B-A) is heard prominently in the horns, forming an occasional clash between Brown’s bluesy flatted fifth degrees (A^b). But at the end of measure 17, Brown sings the natural fifth degree (A), perhaps due to the aural influence of the 6-5 horn figure. In

⁴¹⁷ “James Brown’s Musicians Reflect On His Legacy.” *Down Beat*, February 15, 2007.

general, the fifth degree scalar “complex” is flexible in “Cold Sweat,” sometimes raised and sometimes lowered.

Example 4-8: James Brown, “Cold Sweat”

D7#9 (G) (Dmin)

I don't

5
care - - - (ha uh!) a-bout your past, I just

9
want - - - - (aw) our love to last (ergh!) I don't

13
care, dar ling, a bout your thoughts, (ha) (uh) I just

17

want to sat-is - fy your thoughts. Oh!

21

C7 F7 C7 F7

When you kiss me, When you miss me!

25

C7 F7 C7 F7

me! Hold my hand, Make me un

29

C7 F7 G7

der stand, I wake up in a cold sweat!

For the most part, Brown sticks to the D minor pentatonic scale (with or without the flattened fifth) over the verse, throwing in a few major pentatonic licks. For example, Brown swoops down to the lower 1-6-5 or 2-6-5 at measure 6, which sounds stylistically appropriate due to the accompanying gospel i-IV-i chord progression.

It is tempting to extend the analogy to “So What” even further. While a singer could combine the 1, 2, 5 and 6 of major pentatonic with the 1, ^b3, 4, (^b)5 and ^b7 of the (altered) minor pentatonic scale, calling it *D Funky Dorian* or perhaps *D Dorian flat 5*, I don’t believe that accurately describes what Brown is doing. Sometimes the sum of parts does not equal the whole; the seven Dorian tones are never presented simultaneously or in a stepwise pattern. In Brown’s construction, the lower major pentatonic lick (2-6-5) forms a response to his minor pentatonic call (7-(^b)5-4-^b3-4-5), suggesting that Brown’s melody is composed of two modular collections with their own individual sounds and symbolism. Moreover, I would speculate that melodic-harmonic differentiation is a goal for Brown, since he preferred rhythmically differentiated instrumental and vocal parts as well.⁴¹⁸ It could be said that the Dorian mode’s characteristic colors are achieved by the natural sixth and second degrees, which, in contrast to Phrygian and Aeolian, imbue Dorian with a more “hopeful” quality. Hence, Brown’s 2-1-6-5 licks—also a subset of the major pentatonic—produce the Dorian *gestalt* without committing fully to the mode.

Over the C7-F7 progression, Brown modulates to C minor pentatonic—an entirely parallel melodic transformation promoting the new tonal center of C. In “So What,” the B section modulation from D Dorian to E^b Dorian also functions as a parallel modal transformation. The only pitch of Brown’s B section melody that does not belong to C minor pentatonic is the D natural *échappée* at “When you miss me”—the second degree of the minor scale, sounding unusually expressive in this context.⁴¹⁹ At that moment, Brown is singing about

Consistent with African interlocking textures, each instrumental and vocal part was differentiated rhythmically in Brown’s performances.

⁴¹⁹ Every transcription of this piece had this pitch incorrectly labeled as E^b—the minor 3rd degree—which seems telling. Minor pentatonic is synonymous with soul music.

his lover’s feelings rather than his own, so the second degree reflects the woman’s point of view. Much like Smokey Robinson, James Brown often uses these major pentatonic licks (doubling as a Dorianism here) to reflect “softer” or “feminine” moods.⁴²⁰

Theorist Deryck Cooke explains that the major second, common to both major and minor scales, is analogous to the major sixth in a major key; likewise, the minor second, descended from the old Phrygian mode, functions like the minor sixth in the minor.⁴²¹ But despite the major second’s commonality to both major and minor, Cooke still links it to the major mode, for the major second’s brightness suggests the *do-re-mi* of major.

In the major-minor pentatonic binary, however, there is no such confusion, for the minor pentatonic rotation contains no second-degree pitch. Therefore, Brown’s second degrees are probably indicative of the major pentatonic.

Figure 4-7: James Brown, “Cold Sweat” chord analysis

A Section	B Section	A Section
D7 ^{#9} G/D D7 ^{#9}	C7 F7 G7	D7 ^{#9} G/D D7 ^{#9}
D: I IV I	D: V/IV IV7 IV7	D: I IV I
	C: I IV V7	C: V/V V V/V

After a long pause on G7, the dominant of C, the band performs the startling modulation back to the D-centered A section (*fig. 4-7*). In terms of the D tonic, the move from G7 back to D7 is plagal (since G is the 4th degree of D, and D7 is the usual IV7 chord in a D blues). But in the key of C, the D7 functions as V/V and, as such, sounds intensely sharp. Therefore, this *double emploi* causes a radical reinterpretation of the tonic as the sharp-leaning V/V. Through

⁴²⁰ Brown accomplishes a similar effect in “Superbad”—also in D minor—crooning major pentatonic in cerebral or dreamy moments while reserving the minor pentatonic for authoritative displays of masculine “badness.”

⁴²¹ Deryck Cooke. *The Language of Music*. London: Clarendon Press, 1959, p. 78.

the repetition of the I-IV-I (D7-G/D-D7) structure in the key of D, however, D7 eventually reclaims its original tonic stronghold.

Example 4-9a: Marvin Gaye, “I Heard it Through the Grapevine,” verse through chorus

The musical score is written in 4/4 time with a key signature of three flats (Bb, Eb, Ab). The melody is on a single staff in treble clef. Chord symbols are placed above the staff. The lyrics are written below the staff.

Chord symbols: Ebmin, Ab/Eb, Ebmin Ebmin, Ab/Gb, Ebmin, Bb7, Bb7, Ab9, Ebmin, Ab/Gb, Ebmin, Bb7, Bb7, Ab9, Cmin, Eb7, Ab9, Ab9, Eb7, Ab9, Eb7, Eb7, Ab7, Eb7, Ab7, Eb7, Ab7, Eb7, Eb7, Ab7, Ab7, Ebmin, Ebmin.

Lyrics: Ooh - I bet you're won-derin how I knew bout your plans to make me blue, with some oth-er guy you knew be-fore, be-tween the two of us guys, you know I love you more. It took me by sur - prise I must say, when I found out yes-terday, Don't you know that I heard it through the grape-vine, not much long - er would you be mine. Oh, I heard - it through the grape-vine, Ooh, I'm just a - bout to lose my mind, ho - ney ho - ney, well.

Minor-major and major-minor stratification: Marvin Gaye, “I Heard it through the grapevine” (1966)

The Holland brothers and Smokey Robinson dominated Motown in the earlier 60’s, but Norman Whitfield’s harder-edged soul defined the late 60’s. Perhaps the most noticeable distinction between the two eras is the increasing use of minor pentatonic. “I Heard it through the Grapevine” is a particularly sublime example of Whitfield’s mastery of pentatonic pivots.

In this breakup song, Marvin Gaye sings a *mostly* E^b minor pentatonic melody but deftly mixes in other pitch collections (*ex. 4-9a*). He begins by concentrating on the chord tones E^b-G^b but moves to the brighter F-E^b-F-C-E^b, extracted from E^b major/C major pentatonic, in the third measure of the verse. At “make me blue,” the second degree (F) is harmonized by the dominant chord (B^b), but the C-E^b (6-1) is accompanied by an A^b9 chord—a blues-style fourth degree subdominant with a flatted 7 (G^b).

Over the rather *surprising* C minor chord (vi) at the words: “It took me by surprise I must say,” we might have also expected a melody involving C minor chord tones. But in keeping with blues stratification, Gaye lowers the G closer to G^b before pivoting back into the original E^b minor pentatonic at “found out yesterday.” This G^b functions as a flatted fifth degree in C minor (or the third degree of the E^b minor pentatonic).

The flexible third degree “complex” allows for another clever trick: the almost imperceptible harmonic shift from tonic minor (E^b minor) in the verse to tonic dominant (E^b7) in the chorus. Because minor pentatonic scale can be used over either minor *or* dominant, the transition is seamless from Type 1b (minor over minor) to Type 2a (minor over major) stratification. These constant modal shifts showcase the emotional rollercoaster of a cuckolded man who “can’t hold his tears inside.” As Gaye gradually progresses from rage to sadness to disillusionment, the stratification increases.

While the harmony shifts between minor and dominant, Gaye is steadfast in his G^b’s—until the end of the song. As the song is fading out, he is heard singing a G natural over the E^b minor tonic at “I heard it through the grapevine,” (*ex. 4-9b*). This biting type 2b stratification (major over minor) implies that even though the song is receding from our ears, the narrator’s

confusion is only intensifying. In tonal music, the major third normally brings cathartic release, but over a minor chord, ecstasy turns to agony.

Example 4-9b: Marvin Gaye, “I Heard it Through the Grapevine,” out-chorus

23

$E^{\flat} \text{min}$ (A \flat 7) $E^{\flat} \text{min}$

Said I heard it through the grape-vine, Ooh ooh, I heard it through the grape-vine

In these three songs, modulations from one scale to another may not always be a complete upheaval; singers often borrow riffs from another pentatonic scale without committing fully to that new scale. When writing pop melodies, these *pentatonic paraphrases* are useful, for memorable soul melodies tend to exploit repetitive phrases. Working with modular phrase units allows for shifts of context while maintaining a constant motive or riff.

In his analysis of James Brown’s lyrics, David Brackett invokes Henry Gates’ notion of “intertextuality,” referring to “creative use in oral narration of ‘formulaic phrases’ rather than the creation of novel content.”⁴²² Following this model of “intertextuality,” Brown’s musical cells are repeated and recycled within a piece (and even amongst multiple pieces)—but to different ends. Brackett notes that James Brown used the key of D over and over, probably because he liked the *tessitura* in his voice,⁴²³ suggesting that Brown’s muscle memory in D allowed him to recycle identical licks in multiple songs.

⁴²² “James Brown’s ‘Superbad’ and the double-voiced utterance.” *Popular Music*, Vol. 22, No. 3, Oct., 1992, p. 311. See Henry Gates, Jr. *The Signifying Monkey: A Theory of African-American Literary Criticism*. New York: Oxford University Press, 1988.

⁴²³ Brackett, p. 318.

“Sweet” Major Gospel vs. “Sanctified” Minor Blues

James Brown, Smokey Robinson, Marvin Gaye, Berry Gordy and Norman Whitfield all lived through the 1950’s, when doo woppers and soul singers like Jackie Wilson dominated the R&B and Billboard charts with their (mostly) major pentatonic hits. Although the minor pentatonic sound became more desirable in the later 1960’s, none of these musicians lost the connection with their gospel-infused major pentatonic pasts.⁴²⁴

In the gospel tradition, there are at least two differing vocal styles. “Sweet” gospel, characterized by a smoothness of tone and four-part harmonies with Type 0 or 1 stratification, entered popular music via crossover artists like the Orioles. Smokey Robinson and a younger Marvin Gaye tended to sing this way—especially over romantic subject matter. Having descended from “Sanctified” or “Holiness” evangelical churches, the rougher “sanctified” or “hard” gospel sound became the hallmark of 1960’s soul singers James Brown and Marvin Gaye in *unromantic* songs like “I Heard it Through the Grapevine.”⁴²⁵ While it is possible to holler “sanctified” over any scale, it is more commonly sung with minor pentatonic or altered major pentatonic,⁴²⁶ often with type 2 stratification, because the resulting dissonance sounds edgier.

Vocals in the blues and R&B often involve a rough timbre as well—not unlike the sanctified gospel style, and in (codified forms of) the blues, minor pentatonic-inspired scales are also normative. Therefore, the difference between blues singing and sanctified gospel vocals is not particularly pronounced—particularly in mid-century soul music, which is already a blend of

⁴²⁴ I am not suggesting that gospel music is limited to the major pentatonic; all modal mixtures can occur in gospel.

⁴²⁵ Horace Clarence Boyer identifies “sweet” and “hard” gospel styles in *The Golden Age of Gospel*. Urbana and Chicago: University of Illinois Press, 1995, p. 204.

⁴²⁶ Such as major pentatonic with a neutral third.

sacred and secular African-American genres.⁴²⁷ Most of my undergraduate students are shocked to learn that gruff sanctified singing was originally sacred. For these (mostly non-black) students, a “pure” vocal style is synonymous with church singing, so they naturally assumed that James Brown’s scratchy, wild sound was inherited from popular musics like the blues.

In the 1950’s and early 1960’s, soul was co-opted by whites imitating the sweet gospel sound, though the sanctified sound was apparently too marked (or perhaps too difficult musically) for white performers to adopt *en masse*.⁴²⁸ Hence, sanctified vocals remained firmly rooted in “blackness.” Consequently, the gospel/blues binary had realigned slightly by the late 1960’s—with “sweet” gospel and major pentatonic on one side and sanctified and minor/altere d pentatonic on the other.

As a response to the mainstream successes of doo wop and Motown, a more ‘authentic,’ raw aesthetic emerged out of southern labels such as Memphis-based Stax Records and Alabama’s Muscle Shoals in the second half of the 1960’s (leading to Whitfield’s edgier reinvention of Motown). One Stax fan and blogger sums it up, “Motown is sweet and smooth...Stax is raw and gritty.”⁴²⁹ Despite the unmistakable influence of the church in Stax and Muscle Shoals recordings, the song forms are looser, and the orchestrations less symphonic—contributing to a perceived ‘bluesiness.’ Thus, this soul reorientation (in addition to gospel and blues’ interdependence from the start) may be to blame for Americans’ confusion between blues and gospel influences in popular music.

⁴²⁷ Thomas A. Dorsey, known as the “father of gospel music,” began his musical career as “Georgia Tom,” a secular R&B singer.

⁴²⁸ When Janis Joplin began singing in the sanctified style in the mid-1960’s, she was accused of singing “black.”

⁴²⁹ Joel Francis, “Stax vs. Motown, Part one.” *The Daily Record*. <https://joelfrancis.com/2008/08/19/stax-vs-motown-part-one/>

Blues and R&B have always been secular—and therefore perceived as ‘earthly’ and ‘base’—while gospel signified purer ‘heavenly’ pursuits (at least back in the 1960’s, when most soul musicians had backgrounds in the church). Hence, Smokey Robinson’s initial major pentatonic gospel introduction juxtaposed against the bluesy minor pentatonic possesses recognizable symbolism, for tonal major is already associated with the virtuous and minor with evildoers. “Shop Around” begins in the feminine garden of Eden but quickly moves into the world of big, bad adult males.

The gospel-blues binary—all but forgotten today—was a crucial one in mid-century African-American culture. Like the virtue-sinner dichotomy it represents, the two are inseparable; without gospel, blues do not exist, and vice versa. When Ray Charles famously mixed the two genres, most audiences could appreciate the heresy of “a dialogue between himself [Charles] and his backing singers that began in church and ended in the bedroom.”⁴³⁰ But more than a half-century later, soul music has lost its immediate connection with the holy-profane juxtaposition that originally defined it. What isn’t lost on contemporary audiences, however, is the major-minor binary.

Part II: Horizontal vs. Vertical approaches

When I was a teenager, I was a bargain basement Mariah Carey, improvising gaudy melismas over every pop song I heard. (Today, American Idol contestants achieve something similarly excessive.) What I had figured out was that pentatonic scales—minor, major or major with a neutral third—were the easiest ways to navigate chord changes, and I could usually sing the same pentatonic scale forever without clashing too drastically with the chords. But while this approach was magical when it came to soul

⁴³⁰ Tony Russell, Obituary, 6/11/2004, “Ray Charles: Musical Giant who drew together blues, gospel, soul and jazz,” in the *Guardian*, <http://www.theguardian.com/news/2004/jun/12/guardianobituaries.artsobituaries>

hits of the 60's, I crashed and burned on practically every bebop tune. For some reason, Charlie Parker's chord changes weren't as conducive to static pentatonic melodies as James Brown's drones.

Many musicians assume that *horizontal* improvisation, a static melodic scale over changing chords, is less sophisticated than the *vertical* technique, in which the improviser shifts scale with each new chord. One frustrated jazz enthusiast writes:

I recently got a new saxophone teacher who seems to believe very strictly in vertical playing. He said that I should play by the chords and so that others could actually hear what chords I'm playing, even without an accompaniment. I feel that playing that way is a bit too restrictive and doesn't allow me to play notes that I'd want to play even if they weren't exactly a note in the chord of the measure I was playing in.⁴³¹

To the saxophone instructor, vertical improvisation proves that the musician knows the changes, but in horizontal improvisation, where chords cannot always be heard from the melody, it may be unclear whether the improviser registers each chord of the progression.

Consider the song "Yesterday" once again. In Paul McCartney's first line, the pivot from the tonic to V7/vi requires a change of scale (*ex.4-6a*). Hence, McCartney shifts from C major to E mixolydian in a *vertical* motion. In Marvin Gaye's *horizontal* version, however, there is no scalar change; he continues to sing C major pentatonic throughout (*ex.4-6b*).

Which approach is simpler? McCartney's verticality that 'goes' with the chords or Gaye's static, dissonant pentatonic? In my young mind, the horizontal method seemed like a shortcut to improvisation, but horizontal approaches are not always so simple. Marvin Gaye's horizontalisms *look* elementary on paper but showcase intense dissonance when combined with the chords.

⁴³¹ Forum: Saxontheweb, 6/02/2005. <http://forum.saxontheweb.net/showthread.php?23644-Vertical-vs-Horizontal-Improvising>.

i) Horizontal approach: “the changing same”

As the granddaddy of pentatonic melodic-harmonic separation, the blues genre traditionally exhibits a horizontal pentatonic (or near-pentatonic) melodic line over shifting chords. As the chords change, the melodic scalar degrees are re-imagined. I liken this process to Amiri Baraka’s notion of “the changing same,” for Baraka believed that African-American music should look to the past (i.e., Africa and the blues), while constantly adapting to modernity.⁴³² Horizontal blues scales accomplish something similar, for the repetitive melodies indicate a link to the past, while “changing” harmonies provide a new understanding of the “same” melodies. The scales used most commonly in a C major blues are C minor pentatonic (C, E^b, F, G, B^b) or closely related collections like C “blues” (C, E^b, F, G^b, G, B^b).⁴³³ Since the fifth degree is often flattened in the minor pentatonic, it might be helpful to conceptualize the basic blues scale as minor pentatonic + the flatted 5th.

I do not mean to suggest that blues *always* involve a static pentatonic scale—certainly, some Hokum and bebop blues exemplify a more vertical approach—but this is how a great deal of Mississippi River Delta and rock blues function. Though this horizontal approach might seem less complicated than changing scale with every chord, the improviser still needs to track the changing functions of each pitch and select a pitch set that will work for all chord changes to come. Because horizontality focuses on the global musical structure rather than one chord at a time, horizontal improvisers must conduct long-range planning.

⁴³² “The Blues impulse transferred...containing a race, and its expression. Primal (mixtures...transfers...and imitations). Through its many changes, it remained the exact replication of the Black Man in the West.” “The Changing Same: R&B and New Black Music.” *Black Music*. New York: Da Capo, 1968, p. 205.

⁴³³ Practically any scale can be used in the blues genre, but pentatonic derivatives are particularly common.

Example 4-10: Charley Patton, “Moon Goin’ Down” (1930)

C7

In a house o-ver yon-der pain-ted ov-er green,

5 F7 C7

In a house o-ver yon-der pain-ted all ov-er green, Lord there's

10 G7 F7 C7

lot a young wo-men, Lord man most e-ver - seen,

In example 4-10, I have transcribed a verse of Charley Patton’s “Moon Going Down,” a typical C minor pentatonic horizontal blues. The pitches C, E^b and B^b begin as scale degrees 1, ^b3/[#]9 and ^b7 of a C dominant 7 tonic, but operate as 5, ^b7 and 4 of the F7 subdominant, and ultimately, 4, [#]5/^b6 and ^b3/[#]9 of the dominant, G7. Over the dominant, the B^b, C, and E^b sound particularly dissonant, but are justified through constant repetition. With every new chord, each melodic pitch is re-imagined in a new light, producing “the changing same.”

Horizontal pentatonic stratification

While 1940’s and 1950’s beboppers were more interested in “playing the changes” vertically, 1960’s hard boppers returned to horizontal melodic approaches—often involving pentatonicism. However, this new form of horizontalism did not always function like traditional blues. For one, musicians like Herbie Hancock used complex blues chord substitutions that placed pentatonic scales in potentially “out” contexts. Additionally, chromatic or cyclic root motion often complicated the harmonic context.

Example 4-11: Horizontal Pentatonic Scale: C major/A minor pentatonic

The musical notation for Example 4-11 is as follows:

- Row 1:**
 - Measure 1: C major pentatonic (1 2 3 5 6)
 - Measure 2: C pent / C# (1) b2 b3 b5 b6 #7
 - Measure 3: C pent / D (1 2 4 5 b7)
 - Measure 4: C pent / Eb (1) 2 3 #4 6 #7
- Row 2:**
 - Measure 1: C pent / E (1 b3 4 b6 b7)
 - Measure 2: C pent / F (1) 2 3 5 6 #7
 - Measure 3: C pent / F# (1) b2 b3 b5 b6 b7
 - Measure 4: C pent / G (1 2 4 5 6)
- Row 3:**
 - Measure 1: C pent / Ab (1) b2 3 #4 b6 #7
 - Measure 2: C pent / A (1 b3 4 5 b7)
 - Measure 3: C pent / Bb (1) 2 3 #4 6 #7
 - Measure 4: C pent / B (1) b2 b3 4 b6 b7

In example 4-11, a C major/A minor pentatonic melodic scale is fixed, while the bass line moves chromatically. Note that in situations where the new bass is contained by the C pentatonic scale (C pent, C pent/D, C pent/E, C pent/G and C pent/A), the resultant scale is pentatonic, while tones foreign to C pentatonic produce a hexatonic scale (C pent/C[#], C pent/E^b, C pent/F, C pent/G^b, C pent/A^b, C pent/B^b and C pent/B). In the case of C pentatonic/B, for example, which produces a highly altered scale, any chord quality could be used, but the musical style will dictate propriety (B_{sus}7 or B7 against C pentatonic might sound spectacular in a modal jazz context but inappropriate elsewhere). The foreign roots are in parentheses, because modal jazz often exhibits differentiation between the pentatonic treble and the bass (the sense of superimposition is lost when the pitch sets are combined, as is the melodic pentatony).

The next two case studies concern horizontal arrangements of pentatonic scales. In Van Halen's "Right Now," a horizontal pentatonic melody is stratified over a changing bass. But by

‘filling in’ the melodic pentatonic gaps with heptatonic, Van Halen diverges from the African-American pentatonic tradition. Contrastingly, Herbie Hancock’s “Cantaloupe Island” does not require heptatonic for growth; Hancock harnesses the power of parallel modulations.

‘Primitive’ Pentatonic in Van Halen, “Right Now” (1991)

The instrumental introduction to Van Halen’s “Right Now” is a textbook illustration of a static pentatonic melody with a moving bass line (*ex.4-12*). An unadorned D minor pentatonic piano ostinato leads to a dramatic bass entrance of B^b rather than the expected D. Any tone other than D would have been surprising, but B^b is not even part of D minor pentatonic. As the flatted sixth degree of heptatonic D minor, the B^b throws the song into a ^bVI-i Wagnerian tailspin. This reorientation suggests that the song could easily be heard in B^b major: B^b: D(3), F(5), G(maj6), A(maj7), C(2) (1, 2, 3, 5, 6, maj7). When D finally comes two long measures later, there is some relief. Over C (m. 14), the D minor pentatonic sounds less disorienting, because C is the seventh degree of D minor pentatonic—a pitch already introduced in the piano theme.

Over the smoldering verse in D minor (*ex.4-13*), the second degree (E) is introduced as the third degree of the C chord, signaling the Lydian mode over the B^b chord. This E forms the final pitch of D Aeolian, which has been built up in stages. Next, a fifth degree dominant chord (A7) signifies the ultimate shift into authentic heptatonic tonality.

Example 4-12: Van Halen, “Right Now”: piano introduction leading up to verse

5

9

13

16

Cadd9 C Csus C B \flat D min C F G B \flat C

D min D sus D min

Example 4-13: Van Halen, “Right Now,” verse, pre-chorus and chorus

The musical score is written in 4/4 time with a key signature of one flat (Bb). It consists of seven staves of music with lyrics and guitar chords. The chords are: D min, C, Bb, A5, D min, C, Bb, A5, Bb, C, F, G, Bb, C, D min, Bb, F, F, G, Bb, C, Asus, A, C, F, F/A, Bb, C7sus, C7, F, F/A, Bb, C7sus, C, Bb2, D min.

Don't wa - nna wait till to - mo - rrow, Why put it off a - no - ther day?
 One by one, girl, prob - lems build up and stand in our way. Oh!
 One step a - head, one step be - hind it. Now, you go - tta run to get e - ven.
 Make fu - ture plans, don't live a - bout yes - ter - day, hey! Come on, turn,
 turn this thing a - round. Right now! Hey, it's your to - mo - rrow. Right
 now! Come on, it's e - - very - thing! Right now! Catch your ma - gic mo - ment,
 do it right here and now It means e - - very - thing. (piano)

There exists a marked contrast between the stark nakedness of the introductory D minor pentatonic and the heptatonic D minor with authentic cadence at the end of the verse, for the ‘primitive’ pentatonic is filled in by the heptatonic and made *complete*. To encourage the idea that the instrumental keyboard introduction is in a nascent state, the bass notes are seemingly in slow motion, there are no drums or vocals, and the wet reverb produces a womblike

environment.⁴³⁴ But once the B^b is introduced (Eve picks the apple), the song is catapulted from the Garden of Even into the ‘adult’ world of Aeolian. At the top of the verse, the groove and scale start to come together. The reverberent new-age style piano from the introduction has dried out, as Sammy Hagar sings, “Don’t wanna wait till tomorrow, why put it off another day?” An opposition between the old (yesterday) and the new (tomorrow) is set up, but where does the present fit in? Hagar wants the future to start *now*.

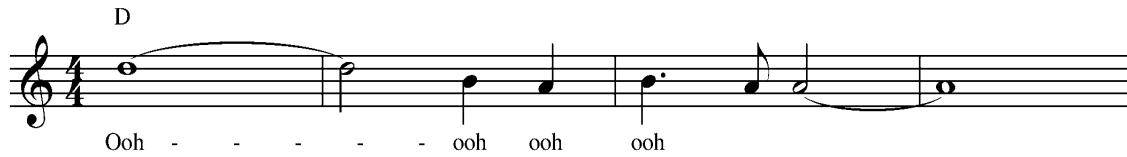
In the pre-chorus, the G chord including a sudden B natural brings release. Hagar croons, “Make future plans, don’t dream about yesterday/C’mon turn turn this thing around.” Hence, the song transforms D minor into F major—a striking modulation to the relative major key.

There are basically three temporalities in this song: the past—symbolized by the pentatonic introduction—today by the Aeolian verse, and the future—the F major chorus. Turning today into tomorrow is the key message of the song. Out with the old, in with the new.

Pentatonic in this song is relegated to notions of antiquity, and reverb is also central to this effect. Just as echo produces the sensation of a *far-away* performance, it can also simulate temporal distance. For another example of this technique, consider Bono’s iconic “*oohs*” toward the end of U2’s “With or Without You” (*ex.4-14*). The pentatonic scale here takes on a Celtic quality, and the falsetto, reverb, and static bass serve to distance this moment from the rest of the song. This is the last vocal statement of “With or Without You,” and it seems that Bono is already far away, and most likely without his love. There is also a sense that Bono’s wordless croon is beyond lyrics and explanation: it’s coming deep from the soul.

⁴³⁴ For more on reverb in soundscapes, see Peter Doyle. “From ‘My Blue Heaven’ to ‘Race with the Devil’: Echo, Reverb and (Dis)ordered Space in Early Popular Music Recording.” *Popular Music*, Vol. 23, No. 1, Jan. 2004, pp. 31-49.

Example 4-14: U2, “With or Without You” vocals (3:47)



The association of pentatonicism and primitivism is a long-standing one. In Claude Debussy’s 1910 piano prelude, “*La Fille aux cheveux de lin*,” a Scottish folk-like pentatonic theme is eventually ‘filled in’ by heptatonic. Thus, Debussy plays Henry Higgins to the young maiden, exposing her to an array of sophisticated colors.

Jeremy Day-O’Connell claims that pentatonicism generated a range of significations during the common practice period, from the pastoral, religious, Celtic, Chinese, Turkish, to naturalistic hunting calls.⁴³⁵ Because Europeans were just as likely to hear pentatonicism domestically (particularly as folk music from the British Isles) as they were to hear it exotically, composers used it to signify “pastoral exoticism.”⁴³⁶ As compared to Orientalized chromatic exoticisms, which Ralph P. Locke described as “diabolical and threatening” in Saint-Saëns’ *Samson et Dalila*,⁴³⁷ “pentatonicism thus emerges as the innocent, pastoral half of the exotic duality.”⁴³⁸ It was also highly useful as a nineteenth- and twentieth-century tool of nationalism on account of its perceived folksiness.

⁴³⁵ See Day O’Connell, p. 47-142.

⁴³⁶ Ibid, p. 92.

⁴³⁷ Locke. “Cutthroats and Casbah Dancers, Muezzins and Timeless Sands: Musical Images of the Middle East.” *The Exotic in Western Music*. Jonathan Bellman ed. Boston: Northeastern University Press, 1998, p. 107.

⁴³⁸ Day O’Connell, p. 92-95.

Example 4-15: Herbie Hancock, “Cantaloupe Island” (1964)

The musical score for "Cantaloupe Island" is presented in four systems. The key signature is F major (three flats) and the time signature is 4/4. The melody in the right hand is a static F minor pentatonic scale (F, A♭, B♭, C, D♭) repeated across all systems. The bass line in the left hand is highly modified, featuring a steady eighth-note pattern with various chordal textures. Chord changes are indicated above the staff: F min (measures 1-4), F min (measures 5-8), D♭7 (measures 9-12), and D♭7 (measures 13-16). The piece concludes with a double bar line at measure 16.

Pentatonic on its own terms: Herbie Hancock, “Cantaloupe Island,” (1964)

Pentatonic scales are central to Herbie Hancock’s world-view in the 1960’s and 1970’s, for despite his progressive tactics, pentatonics allowed him to retain a down-home bluesiness. Still signifying folksiness, they are not ‘childish’ for Hancock, nor do they require heptatonic ‘completion.’⁴³⁹ His swinging composition “Cantaloupe Island” from *Empyrean Isles* features a completely static F minor pentatonic melody over highly modified blues changes (*ex.4-15*).

⁴³⁹ In his 1968 album, *Speak Like a Child*, not a single head features a pentatonic melody. Hancock’s only ‘childish’ pentatonic composition is “Tell me a Bedtime Story” from *Mwandishi* (1971).

Herbie's repetitive piano accompaniment, an F minor *montuno*, is *not* pentatonic but F minor Dorian, using the 5, natural 6, and ^b7 (C, D, E^b) over the tonic chord, then altering to D^b Mixolydian over the second chord: ^b5, ^b6, ^b7 (C^b, D^b, E^b) (or in D^b: ^b7, 1, 2). But because it utilizes a repetitive motive, the piano accompaniment creates a similarly static sensation to blues pentatonics: a *Latinization* of the horizontal blues. Over the second chord built on the ^b6 root, the C in the melody sounds dissonant, and as the piano *montuno* shifts to D^b Mixolydian, the melody remains insistent upon F minor pentatonic. The C/C^b cross-relation sounds strangely appropriate, functioning as an exaggeration of the type of melodic-harmonic stratification made popular in American song over 100 years earlier. In figure 4-8, F minor pentatonic is shown against D^b Mixolydian.

Figure 4-8: D^b Mixolydian vs. F minor pentatonic

D ^b Mixolydian:	D ^b	E ^b	F	G ^b	A ^b	B ^b	C ^b
F minor pentatonic:	E ^b	F		A ^b	B ^b		C

The Mixolydian D^b7 could be analyzed as an augmented sixth chord, as this ^bVI7 dominant chord is commonly played in the ninth bar of the blues as a predominant delaying tactic before moving to the dominant. However, the D^b7 here is played between the fifth and eighth bars of this 12 bar blues form—in the traditional subdominant section—and as I explained in Chapter 2, blues subdominants do not prepare the dominant. Rather than return to the tonic on bars 7 and 8, Hancock remains on D^b7 for four bars as a subdominant substitute. But if the D^b7 were an augmented sixth, then we would expect it to resolve down to the dominant (C7). At measure 9, there is no C7, but the D Quartal (D-A-G-C-F, or D4^{↑4↓}) seems to occupy the blues dominant zone. Despite the D bass, the quartal is closer to the C dominant chord than one might

Hancock's name). Hancock writes, "We started wearing dashikis and African talismans, and I began to feel more connected than ever to the civil rights movement and to our shared, collective past as black musicians."⁴⁴⁰

Hancock also assigns new signification to quartals, which had been part of jazz lexicon since Dizzy Gillespie and Mario Bauza's "Tanga" back in 1943, and later immortalized by Miles Davis and Bill Evans in "So What." In Hancock's "Baraka" from his 1969 Album *Kawaida*, the initial quartals are surprising in a song intended to commemorate Amiri Baraka, né Leroi Jones, the black nationalist poet and activist who famously called for "black poems that kill."⁴⁴¹ Hancock, who had probably originally learned quartals from his two favorite musicians, Bill Evans (a white jazz pianist) and Maurice Ravel (a white, French "legit" composer), now employs them as a McCoy Tyner-style hard bop idiom that conjures black power.⁴⁴² Because pentatonics and quartals are both derived from the same ic-5 interval cycle, the hard bop bluesy reinvention of quartals seems justified.

ii) Vertical approach

If pentatonics at their *bluesiest* are associated with a folksy horizontality, then what is the significance of verticalized pentatonics? To demonstrate a level of sophistication on par with classical musicians, beboppers superimposed extra chord changes over the blues form that were often compatible with pentatonic but might also use other scales. Beboppers became obsessed

⁴⁴⁰ *Possibilities*, with Lisa Dickey. NYC: Viking Penguin, 2014.

⁴⁴¹ Baraka, "Black Art."

⁴⁴² When asked about Maurice Ravel and Bill Evans' influence on his "Herbie chords," Hancock responded, "I was definitely influenced by Bill Evans, and one of the reasons is because I had been listening to Ravel since before I had even heard of Bill Evans. I was already influenced by Ravel." In an interview with David Yaffe entitled "Herbie Hancock Holds Forth." *Jazz Titan*, 11/08/14, <http://www.thedailybeast.com/articles/2014/11/08/herbie-hancock-holds-forth.html>

with vertical “playing the changes,” and pentatonic was just one of many plausible scales, including whole-tone, major modes, minor modes, octatonics, hexatonics and others.

In the hard bop era, there was a return to overt bluesiness, which often manifested in horizontalism—as in “Cantaloupe Island.” But toward the end of the 1960’s, John Coltrane, his pianist McCoy Tyner, and pianist Chick Corea developed a more verticalized form of modal jazz while simultaneously paying homage to the blues-infused pentatonic scale. The result in many cases was verticalized pentatonic scales.

Example 4-17 shows superimposed pentatonics over an unchanging root. Though this is a vertical method, the pitch class sets are identical to those in Situation 1 (inverted modally and transposed down a semitone).

Figure 4-17: Vertical Pentatonic Motion

Example 4-18: Chick Corea, “Steps,” *Now He Sings, Now He Sobs* (1968)

The image displays two systems of musical notation for the piece "Steps" by Chick Corea. Each system consists of a treble clef staff and a bass clef staff, both in 4/4 time and the key of B-flat major (two flats). The first system shows a melodic line in the treble staff starting with a quarter rest, followed by eighth notes G4, A4, Bb4, and C5. The bass staff provides accompaniment with chords: a Bb4-F4 dyad, a Bb4-F4-D4 triad, and a Bb4-F4-D4 triad. The second system, starting at measure 4, continues the melodic line with eighth notes C5, Bb4, A4, and G4. The bass staff accompaniment includes chords: a Bb4-F4-D4 triad, a Bb4-F4-D4 triad, and a Bb4-F4-D4 triad.

Tetratonic verticality: Chick Corea's "Steps"

Like many of his post-bop contemporaries, Chick Corea regularly works with four-note melodic figures in his improvisations. Just as pentatonics provide more flexibility than heptatonics, tetratonics are still more useful in this regard, and four-pitch eighth note motives also fit neatly into common time. In “Steps,” Corea uses a variety of 4-note motives that, in most cases, are also subsets of pentatonics. For example, in the seventeenth chorus, which begins on a C minor chord, Corea plays G-F-D-C in the right hand against a C4^{♯3} chord in the left (*ex. 4-18*). These four right-hand pitches could signal a variety of scales, but the additional B^b in the left hand completes the B^b major pentatonic—rotated over C in the first rotation (C *Ré* pentatonic). The *Ré* pentatonic rotation is characteristic of Corea’s right hand improvisations, as he tends toward brighter colors without the trappings of thirds. While the expected scale over a C^{♯3} chord is usually C minor pentatonic, Corea steers clear of that characteristically hard-bop sound in this chorus.

When Corea repeats the identical right-hand figure in the following measure, he moves the bass down a whole tone to $B^b4^{\uparrow 3}$: $B^b-E^b-A^b$. If we imagine the B^b pentatonic as a chain of fourths— $D-G-C-F-B^b$ —then the left-hand quartal of $B^b-E^b-A^b$ adds two steps toward the flat side: $D-G-C-F-B^b-E^b-A^b$. Note that the right-hand remains equally sharp (and horizontal), while the left hand drifts flatward. This is how Corea manages to sound bright in a minor key.

Next, Chick transposes his original right-hand figure down a semitone to $B-C^{\#}-E-F^{\#}$, indicating A major pentatonic (in the B *Ré* pentatonic rotation). While he might have used the original left-hand $C4^{\uparrow 3}$ chord transposed down a semitone ($B4^{\uparrow 3}=B-E-A$), Corea retains the structure of the second chord ($B^b4^{\uparrow 3}$), which now becomes $A4^{\uparrow 3}=A-D-G$. He then moves back to his original $C-D-F-G/C4^{\uparrow 3}$ construction before moving both hands up a semitone ($D^b-E^b-G^b-A^b / D^b4^{\uparrow 3}$), and then up an additional semitone to $D-E-G-A$. Curiously, Corea does not move the bass up a semitone again below the $D-E-G-A$ as might be expected, but shifts it back down to $C4^{\uparrow 3}$. In this case, the right-hand $D-E-G-A$ might suggest a parallel move to C major pentatonic or D *Ré* pentatonic, but the $C4^{\uparrow 3}$ moves the harmony flatward. The chain of fourths now becomes $E4^{\uparrow 6}$: $E-A-D-G-C-F-B^b$. Additionally, the $C4^{\uparrow 3}$ is also the first chord of the form, so including $C4^{\uparrow 3}$ (a subset of $E4^{\uparrow 6}$) brings him full circle.

Tritonic Segmentation: John Coltrane, A Love Supreme (1965)

Back when Coltrane was playing with Miles Davis in the 1950's, he developed a vertical style of superimposing his own chords—often ic-4-based—over the existing changes of the tune. But in *A Love Supreme* (1965), Coltrane uses drone basses to develop his cyclic ideas more radically. Where ic-4 transformations were integral to his *Giant Steps* phase, Coltrane concentrates on ic-3 and ic-5 in *A Love Supreme*. I can only speculate as to the reasons for this

shift, but it seems more than coincidence that pentatonic, blues, ic-3, and ic-5—musical structures with a natural affinity for each other—would be his tools of choice in the mid-60’s black power era.⁴⁴³

Coltrane utilizes a clever pentatonic construction in “Acknowledgement” that merits sustained analysis. He begins the piece with two fourth “cells” which share an F: (C, E^b, F and F, A^b, B^b).⁴⁴⁴ Together, the five pitches form the F minor pentatonic collection. When assembled together with the C cell on bottom and the F cell on top, there is an interval ratio of 3:2:3:2: (ex.4-19)

Example 4-19: Interval Ratio 3:2:3:2 in “Acknowledgement” (1965)



Coltrane retains spacial separation between the two cells joined by the *mese* pivot pitch of F, but eventually clones the motive with ratio intact (3:2:3:2:3:2). By doing so, he propels himself farther and farther in the flat direction. In the pickup to measure 67, Coltrane changes direction and delays the entrance but essentially travels five steps along the ic-5 scale. The advantage of transforming an already ic-5-oriented scale up the ic-5 ladder is its general seamlessness. Assuming octave equivalency, each ending note becomes the starting pitch of the next cycle. (ex.4-20)

⁴⁴³ Ic-3 indicates cyclic movement by minor thirds, which is quite common in the blues—especially between the tonic and flatted third degree, or from the flatted third to the flatted fifth (“the blue note of the blue note”).

⁴⁴⁴ For a discussion of conjunct and disjunct fourth cells, see Lewis Porter, “John Coltrane’s “A Love Supreme: Jazz Improvisation as Composition.” *Journal of the American Musicological Society*, Vol. 38, No. 3, Autumn, 1985, p. 233.

Example 4-20: Interval Ratio 3:2:3:2:3:2:3:2 in “Acknowledgement”



Though it may seem counterintuitive, moving from C to E^b indicates a three flat transformation along the ic-5 cycle (C-F-B^b-E^b); E^b may be registrally *higher* than C, but it is also three steps *flatter*. Due to the conjunct *mese*, the first pitch of the new clone is always the ending pitch of the last. This allows a seamless stream of notes that both ascends in pitch and gradually moves farther into the flat realm.

According to David Demsey, Coltrane’s enthusiasm for Nicolas Slonimsky’s *Musical Thesaurus* culminated in the saxophonist’s pilfering of Slonimsky’s “Ditone Progression” in “Giant Steps.”⁴⁴⁵ What has not been established is Slonimsky’s connection in *A Love Supreme*. Coltrane’s ic-5 cycle in “Acknowledgement” is clearly related to Slonimsky’s pattern #832, entitled “Minor Polytetrachord,” from “Equal Progression of Five Octaves into Twelve Parts”⁴⁴⁶ (*ex.4-21*):

Example 4-21: Nicolas Slonimsky’s pattern #832, Minor Polytetrachord, from *Thesaurus of Scales and Musical Patterns* (1947).



⁴⁴⁵ David Demsey. “Chromatic Thirds Relations in the Music of John Coltrane.” *Annual Review of Jazz Studies* 5, 1991, 156.

⁴⁴⁶ Nicolas Slonimsky. *Thesaurus of Scales and Melodic Patterns*. New York: Charles Scribner’s Sons, 1947, p. 110.

Since Coltrane confines himself to the minor pentatonic, he omits the second degree of Slonimsky's "Minor Polytetrachord," but the similarity is unmistakable—even the starting pitch of C is common to both patterns. In some ways, Coltrane's pattern expresses more organic unity, for the minor pentatonic and flatward ic-5 motion are inherently aligned. Additionally, Coltrane's cycles are not as regularized as Slonimsky's entirely systematic approach, but his live improvisations were meant to sound somewhat organic. Back in 1959 Coltrane conquered all 12 tones in "Giant Steps" with ic-4 hexatonic poles (also learned from Slonimsky), but by 1965 he was playing 12 tones over five octaves via ic-5 flat side travel. This Slonimsky technique is crucial to understanding Coltrane's aims, for Slonimsky does not treat the diatonic as the end goal of a musical thought; Slonimsky's exercises seek to complete a specific cycle—in this case, flatside ic-5. In Coltrane's arrangement, pentatonic is not treated as an incomplete subset of diatonic either; it is the building block capable of erecting a 12-pitch temple. Coltrane's notion of completeness concerns cyclic domination—ic-4 in "Giant Steps" and now ic-5 in *A Love Supreme*.

But what can be said about his minor pentatonics? Of course, Coltrane was trying to sound African-American—or, more likely, *African*. But does Coltrane incorporate a real African music tradition? Earlier in the chapter, I introduced Kubik's theory of central-west Sudanic equipentatonic stratification of two cells: the "feminine" range, corresponding to the descending pitches (C, B^b, G), and the "masculine" range, occupying (F, E^b, C). When the two ranges are combined, they form a conjunct pentatonic scale sharing the C *mese*: (F, E^b, C, B^b, G).⁴⁴⁷ Since men speak and sing lower than women, Kubik theorizes that male singers might naturally select pitches a perfect fifth below women. He continues to theorize that in the New World, this scalar

⁴⁴⁷ Kubik, p. 229.

duality may have been re-imagined by solo blues artists as repetition in the AAB blues: the first A may express the “feminine” range, while its repetition down a fifth indicates the “masculine.”⁴⁴⁸

Coltrane’s conjunct pentatonic cells in “Acknowledgement” are eerily similar to Kubik’s description of the “masculine” and “feminine” cells. Whether Coltrane had any exposure to these African tonal-melodic ideas is unclear (the saxophonist would have welcomed any similarity to actual African musics). What we do know is that Coltrane figured out a clever way to organize pentatonic ideas, and like the people of the Sudanic belt, he expresses them as a *duality*. In “Acknowledgement,” the two pentatonic cells are treated as two interlocked ideas in constant dialogue.⁴⁴⁹ Though Coltrane is a solo instrumentalist, there seem to be two dueling Coltranes here, which goes beyond traditional “call and response.”

The pentatonic cells also form the basis for the third track of the album. In “Pursuance” Coltrane uses the same *untransposed* melodic motive from “Acknowledgement” including the conjunct cells (C-E^b-F and F-A^b-B^b), but the surrounding harmonies have shifted flat—to B^b minor, the subdominant of the F minor mode from “Acknowledgement” (*ex. 4-22*). In “Acknowledgement” there was already potential for hearing the harmony upside down—in B^b rather than F, and “Pursuance” confirms this alternatively flat hearing. To augment the ambiguity, the conjunct cells, which together spell F minor or A^b major pentatonic, are presented in the *Ré* Pentatonic rotation over the B^b. In the head, Coltrane sets up a similar ic-5 modulatory pattern using the conjunct cells. Beginning with C-E^b-F, he repeats the 3:2 pattern starting on F,

⁴⁴⁸ Ibid, p. 242.

⁴⁴⁹ Porter, p. 599.

resulting in F-A^b-B^b (measure 2). Over the subdominant chord, E^b minor, he modulates flatward once more from B^b-D^b-E^b (measure 5-6).

Example 4-22: “Pursuance,” mm. 1-6



In the final track, “Psalm,” the C-E^b-F from “Acknowledgement” has been expanded to include G (with F as an occasional neighbor). Back in “Acknowledgement,” G was treated as the neighbor note to F, but now it operates more structurally as the fifth degree of the C minor drone. (ex.4-23) A new pitch, the B natural leading tone also makes an appearance, most notably at measure 18. However, before we make the assumption that Coltrane’s conversion is also a tonal one, there is no authentic cadence from the prolonged B natural to C. Instead, Coltrane bypasses the tonic, traveling a tritone up to the E^b—and then back down to C. Rather than an authentic cadence, it is the minor third from E^b down to C (^b3-1) that establishes cadential closure. In the following phrases, Coltrane returns to the minor pentatonic with a ^b7-1 and another ^b3-1 cadence.

According to Louis Porter, “Psalm” was intended as a recitation whose inspiration came from “formulaic procedures used by preachers in black churches.”⁴⁵⁰ Coltrane’s entire solo is a sort of reverse *vocalise*, where he wordlessly “plays” the text of an original devotional chant written in the liner notes of the album. Ethnomusicologist Jeff Titon explains that in African-American intonational chant, preachers begin their recitation on the fifth degree above the

⁴⁵⁰ See Porter, pp. 613-617.

tonic.⁴⁵¹ As tension builds, recitations include the minor seventh and finally the octave. Porter imagines Coltrane’s initial perfect fifths as adhering to this practice, as well as his subsequent climax.⁴⁵² If Porter is correct, then the perfect fifth is not a restoration of tonal order but an invocation of African-American preaching from Coltrane’s own religious past.

Example 4-23: “Psalm,” mm. 1-21



In *A Love Supreme*, the basic pentatonic scale is subdivided into two conjoined cells, showcasing the particular qualities of the pentatonic: that the five-pitch scale, with its repeating ratio of 3:2 is capable of rotation—of reorientation, reinvention and reincarnation. In Chick

⁴⁵¹ “Reverend C. L. Franklin and the Afro-American Folk Preaching Tradition.” *Folklife Annual*, 1987. Washington: American Folklife Center, Library of Congress, 1988.

⁴⁵² Porter, p. 616.

Corea, tetratonics derived from pentatonics were the building blocks, and in Coltrane, two groups of three pitches linked by a central *mese* do the heavy lifting.

Twentieth-century music theory has put forth a narrative where the presence of *longer* scales suggested greater musical complexity. Using the modernist octatonic scale as an example of a longer, ‘complex’ scale, we see that composers of octatonic compositions tend to partition the scale into *smaller* segments. And while it is possible to use the eight-pitch collections less systematically, scholars have concentrated on its cyclic use, showcasing octatonic ‘rationality’ and integrated structural design. In “Coronation Bells” from Modest Mussorgsky’s *Boris Godunov*, Richard Taruskin identifies an octatonic scale composed of two dominant seventh chords with roots a tritone apart⁴⁵³; Ernő Lendvai partitions the octatonic into two diminished chords a whole-step apart into Béla Bartók’s common formation known as the “Alpha Complex”⁴⁵⁴; in Maurice Ravel’s *chanson*, “*Un Grand Sommeil noir*,” Steven Baur detects symmetrical relationships involving ic-3 modulations.⁴⁵⁵

Shorter subsets of these larger collections can result in great complexity, for fewer scalar members often translate to increased harmonic freedom. When a composer or performer juggles just three, four, or five scale degrees, she is light on her feet. Much like ever-shrinking cell phones and computer chips, no one guessed that shorter scalar fragments would be the future, for the ‘MORE IS BETTER’ metaphor discourages Westerners from thinking smaller.⁴⁵⁶

⁴⁵³ Taruskin, *Stravinsky and the Russian Traditions*. Oxford and New York: Oxford University Press, 1996, p. 283.

⁴⁵⁴ Lendvai. *Béla Bartók: An Analysis of his Music*. Introd. By Alan Bush. London: Kahn & Averill, 1971.

⁴⁵⁵ Baur. “Ravel’s “Russian Period: Octatonicism in His Early Works, 1893-1908.” *Journal of the American Musicological Society*, Vol. 52, No. 3, Autumn, 1999, p. 543

⁴⁵⁶ George Lakoff and Mark Johnson. *Metaphors We Live By*. Chicago: Chicago University Press, 1980 and 2003.

But if shorter scales are so useful, then why aren't there more tritonic or tetratonic compositions on the radio? Jeremy Day O'Connell hypothesizes that a five-note scale is probably the smallest useful melodic collection in Western music:

But should pop-rock composers ever grow tired of the blues-based pentatonic scales that have served these genres for half a century, a stripping down to a *sub*-pentatonic structure would seem unlikely. Five notes may be a lower limit (or at least a significant threshold) for melodic interest and variety.⁴⁵⁷

Day O'Connell makes a valid point, for Coltrane does not use the pentatonic *just* because it contains five pitches; it is a culturally significant African-American convention (as compared to tritonic scales, which are not marked in the same way). Perhaps this is why Coltrane's hypnotic tritonic bass line at the beginning of "Acknowledgment" still *sounds* like the African-American pentatonic, even though it only uses three tones. Similarly, James Brown paraphrased the major and minor pentatonic scales, while still signifying them. Thus, it is unclear whether "Acknowledgement" should be considered "tritonic" or "pentatonic," because tritonic and tetratonic scales often seem to express a pentatonic affect, even without the other two notes. But this is a slippery slope, for if tritonics represent pentatonics, then it could also be said that the pentatonic *is* the heptatonic with two omissions. Perceptions of scales are deeply cultural, so when we hear incomplete musical structures with similarities to more recognizable ones, we tend to supply the elliptical information in our minds.

'Completion' in pentatonic musics

I must acknowledge that Schenker was correct in some ways, for the pentatonic is incapable of generating tonal music on its own—that is, as a closed Type 0 system. But in American popular music, pentatonic rarely exists in isolation. Even though the all-pentatonic

⁴⁵⁷ Day O'Connell, p. 184.

chords and melody of “Shout” *seem* self-contained, the Isley Brothers alter the third/fifth to provide tension. In African-American music, the unadulterated pentatonic scale is not sufficient, for some element of contrast is necessary to break through the sameness. That required element, however, does not concern the completion of the heptatonic scale; differentiated accompaniment, altered tuning, and modal mixture accomplish this task. “Shout” demonstrates that melodic-harmonic stratification is a crucial component of African-American musical practice rather than something that “accidentally” happens due to ignorance, for it allows the soloist to be heard over the chords.

For one final example of melodic-harmonic differentiation, jazz saxophonist Jackie McLean was habitually accused of playing so sharp as to sound out of tune. However, there is considerable evidence suggesting that he only played sharp to “cut through” the band.⁴⁵⁸ McLean explained his approach to tuning in a 1996 interview with Ken Burns:

Even my first recordings, as hard as I tried to sound like him [Charlie Parker], I still had another quality to my tone that I still have today, which is kind of original—it’s mine, you know. *And that’s another great thing about this music: it’s very democratic; everyone can have their own sound, you know.* A classical saxophone player, most of the time, they have to get a pitch that is tuned up perfectly to the piano.⁴⁵⁹

Whether McLean’s unusual tuning stemmed from some technical or aural deficiency, I could not say, but McLean believed strongly in the individualization of tone. In “democratic” African-American music, *every* voice should be heard—even sharp ones.

This refusal to ‘blend in’ with the band must relate to the African-American practice of *heterophony*—group singing involving simultaneous variation. Heterophony expresses “a

⁴⁵⁸ Saxophonist Eugene Cantera reported this. <http://uebergreifen.blogspot.com/2014/08/jackie-mclean-tone-intonation.html>

⁴⁵⁹ Jackie McLean in an interview with Ken Burns for his PBS documentary, 1996, p. 4-5, <https://web.archive.org/web/20160113154306/http://www-tc.pbs.org/jazz/about/pdfs/McLean.pdf>, emphasis mine.

tendency towards rhythmic non-redundancy,” encouraging interlocking rhythms, as well as timing and tuning discrepancies between musicians.⁴⁶⁰ While white/European singers accustomed to singing in perfect unison often interpret heterophony as ‘sloppiness,’ they misunderstand that heterophony is superior to homophony in at least one respect: singing as one achieves community at the expense of the individual, but heterophony allows simultaneous communal singing *and* individual expression. And in African-American music, both the individual (the soloist or preacher) and the community (the band, congregation, or audience) contribute to music-making. Zora Neale Hurston elaborates on heterophony in early Sanctified churches:

The jagged harmony is what makes it, and it ceases to be what it was when this is absent...The harmony of the true spiritual is not regular. The dissonances are important and not to be ironed out by the trained musician. The various parts break in at any old time...Moreover, each singing of the piece is a new creation. The congregation is bound by no rules...The real Negro singer cares nothing about pitch. The first notes just burst out and the rest of the church join in—fired by the same inner urge. Every man trying to express himself through song. Every man for himself. Hence the harmony and disharmony, the shifting keys and broken time that make up the spiritual.⁴⁶¹

According to Hurston, even the voices of untrained singers should be heard in the church. Unlike Caucasian churches, in which the congregation is expected to blend in anonymously, each African-American churchgoer expresses her *own* subjectivity that will never get lost in the crowd. For Hurston, pitch is insignificant, but I disagree with this assessment, for Jackie McLean demonstrates that pitch is indeed a crucial marker of individuality.

⁴⁶⁰ William Bauer. “Expressiveness in Music Performance.” *Expressiveness in Music Performance: Empirical approaches across styles and cultures*. Dorottya Fabian, Renee Timmers, and Emery Schubert, eds. Oxford: Oxford University Press, 2014, p. 140.

⁴⁶¹ Hurston. “Spirituals and Neo-Spirituals.” *Negro: An Anthology*, ed. Nancy Cunard, 1934; reprint, New York: Continuum, 1993, p. 223.

Eileen Southern maintains that in African-American music, there is little separation between performer and audience, for the audience influences the performers.⁴⁶² Employing the individual/group dichotomy, Albert Murray explains in *Stomping the Blues* that invention and convention work together in African-American music.⁴⁶³ While Westerners tend to celebrate individual acts of genius (soloists), Murray insists that African-American invention utilizes *existing* musical ideas (the collective).⁴⁶⁴

In *A Love Supreme*, John Coltrane harnesses the power of the age-old pentatonic to colonize all twelve-tones via the flatside ic-5 cycle. Therefore, invention and convention coexist in Coltrane, which is also what Amiri Baraka envisioned for black arts in “The Changing Same.” Coltrane never loses the connection with his heritage; he strips the pentatonic blues down to the atomic level (the 3:2 ratio), then builds that structure back up in a novel, yet strangely familiar way. For Baraka, it is this combination of tradition and metamorphosis that signals musical completeness. Black art should maintain its link to African-American tradition, but its “primitive” content (meaning “original”—not “childish”) and form are always transforming. Through evolution, what is old is new again.

But the content of the New Music, or the New Black Music, is toward change. It is change. It wants to change forms...

African sounds, too: the beginnings of our sensibility. The new, the “primitive,” meaning *first*, new. Just as Picasso’s borrowings were Western Avant-Garde, and “the new” from centuries ago, and Stravinsky’s borrowings were new and “savage,” centuries old and brand new.

⁴⁶² Southern, 1983, p. 202.

⁴⁶³ Albert Murray. *Stomping the Blues*. Boston: Da Capo Press, 1976 and 2000.

⁴⁶⁴ *Ibid*, p. 252.

The black musicians who know about the European tempered scale (Mind) no longer want it, if only just to be contemporary. That changed. The other Black musicians never wanted it, anyway.

Change

Freedom

And finally, Spirit

- Amiri Baraka⁴⁶⁵

⁴⁶⁵ Baraka, p. 225.

POSTLUDE: FLATSIDE PRIVILEGE?

Mr. Russell told me to sing an extended middle-C while he played a sequence of chords on the piano. First he moved in the sharp direction: C-G-D-A-E (ex.4). The C sounded awkward as a natural fourth degree over G—biting and harsh—and the dissonance only grew. Each step in the sharp direction felt more alienating and “wrong” than the last. But when we switched to the flat direction, C-F-B^b-E^b-A^b, my middle-C maintained its consonance (ex.5). With each step flatward, I felt a warming sensation. At first, going flat seemed strangely familiar, but eventually we drifted to a remote and dissonant place deep in the earth’s core. Just when the dissonance was becoming unbearable, I popped back up at the tonic; I had dug a hole to China and emerged once again after 12 tones.

Example 4: sharp side motion against a starting pitch of C

Example 4: sharp side motion against a starting pitch of C. The notation shows a sequence of notes and chords: C, G, D, A, E, B, F#, C#, G#, D#, A#, F, C. The scale degrees above the notes are: (1), (4), (b7), (b3), (b6), (#7), (#4), (b2), (3), (6), (2), (5), (1).

Example 5: Flat side motion against a starting pitch of C

Example 5: flat side motion against a starting pitch of C. The notation shows a sequence of notes and chords: C, F, B^b, E^b, A^b, D^b, G^b, B, E, A, D, G, C. The scale degrees above the notes are: (1), (5), (2), (6), (3), (#7), (#4), (b2), (b6), (b3), (b7), (4), (1).

In my (many) years of music education, George Russell was the only one ever to talk about the flat side, giving the sole demonstration of how it *felt* to go there. The actual purpose of his exercise was to dramatize the dissonance of the natural fourth degree, which he believed should be replaced by the Lydian sharpened fourth. But Russell also illustrated why rising fourths sequences (falling) are more common than fifths (rising), and why we hear flattening as moving toward some “inner” zone.

Russell’s own *Lydian Chromatic Concept* does not privilege going flat, instead lionizing sharp side movement guided by the Lydian scale. But the problem with ascending fifths is that they don’t complement Afro-diasporic melodies with repeated intonational gestures or riffs, because they are *immediately* hostile to the tonic. I haven’t yet discussed any popular compositions that rise by multiple fifths—just as in classical music, they are rare—but Jimi Hendrix’s rendition of “Hey Joe” is one such outlier (*ex. 6*).

Example 6: Billy Roberts, “Hey Joe,” mm.1-7 (as sung by Jimi Hendrix, 1966)

The musical score for "Hey Joe" is presented in two systems. The first system covers measures 1-4. The melody (treble clef) begins with a quarter note E4, followed by a quarter rest, then a quarter note G4, a quarter note A4, and a quarter note B4. The bass line (bass clef) starts with a quarter note G2, followed by a quarter note B2, then a quarter note C3, a quarter note D3, and a quarter note E3. The lyrics "Hey Joe," are written under the melody. The second system covers measures 5-7. The melody starts with a quarter note C5, followed by a quarter note B4, a quarter note A4, and a quarter note G4. The bass line starts with a quarter note F3, followed by a quarter note E3, a quarter note D3, and a quarter note C3. The lyrics "uh where you go-in' with that gun in your hand?" are written under the melody. Chord symbols E7, C, G, D, A, E, and E7 are placed above the staff.

Because the progression of “Hey Joe” backtracks to the tonic in the sharp direction from a remote quadruple subdominant location, Hendrix is challenged to employ a major pentatonic melody based on the first chord, as he does in “All Along the Watchtower” and “Little Wing.” Rather than hold onto the initial C over the following G chord, Hendrix moves directly to B-natural, a 4-3 resolution linking subdominant to tonic. He then uses a tritone construction to target the E tonic (an incomplete E minor pentatonic: E-G-A-B, answered by the guitar riff with the missing D from the E minor pentatonic: B-D-B-D-E). By targeting E minor pentatonic in this manner, he can then sing horizontally all the way from the triple subdominant (G) to the

tonic (E). Despite this long-range planning, the melody has an off-the-cuff quality that does not immediately reveal his motive.

Example 7: Jimi Hendrix, “Hey Joe,” mm. 20-22

Hendrix shifts to a higher register in measure 20, descending stepwise from E-D-C[#] (ex.7). The D to C[#] suspension occurs over the A chord, thus superimposing a delayed 4-3 cadence over that chord as well. By verticalizing the *Amen*, Hendrix coaxes its plagal quality out of the sequence.

Paul Scott Carter refers to the song’s ascending fifths as “retrogressive,” since the chord sequence moves in the opposite direction from the norm, approaching the tonic from the flat side).⁴⁶⁶ While other rock songs might venture a step or two toward the flat side (to the IV and ^bVII), Hendrix starts with a vertiginous drop of *four* steps, to the quadruple subdominant (C = IV/IV/IV/IV/E maj). Unlike Elton John’s gradual descent toward the flat side in “Burn Down the Mission” (Chapter 2), Hendrix leaps directly flat, but it is the ascending fifth spiral back to the tonic that seems particularly unsettling.⁴⁶⁷

The “retrogression” in “Hey Joe” is also evident in its lyrics:

⁴⁶⁶ Paul Scott Carter. *Retrogressive Harmonic Motion as Structural and Stylistic Characteristic of Pop-Rock Music*. Dissertation, University of Cincinnati, 2005, pp. 192-196.

⁴⁶⁷ Another issue is the key signature of one sharp, indicating E minor (or G major). This reflects the targeted E minor melody, but in this bluesy melodic-harmonic split, the final chord is E major. The E minor/G major pentatonic melody also complicates the ascending fifth sharpward climb, because it is three steps flatter than E major—like G major (the triple subdominant of E). This dissonance only intensifies the violence in this murderous song.

Hey Joe! Where you going with that gun in your hand?
'I'm goin' down to shoot my old lady,
You know I caught her messin' with another man.'

Before the song begins, the adultery has already been committed, and cuckolded Joe—well on his way to revenge—weaves a tangled web of subdominants that unfold systematically in the *wrong* direction. (The technique is reminiscent of 'backwards' storytelling, exemplified by Christopher Nolan's *Memento* (2000), in which an unjust crime—causing amnesia in the innocent protagonist—prompts a filmic retrogression.⁴⁶⁸) But is this what lies deep in the underbelly of the flatside—sinister rage?⁴⁶⁹

Flatside exceptionalism

What would a world look like where this “backwards” tonal progression was the norm, not the exception? Elton John and Jimi Hendrix do manage to climb out of the quadruple subdominant gravity well, but few popular musicians attempt such a feat. While double plagals are common in rock, pop, and jazz, quadruple plagals are not. C.K. Ladzekpo refers to the playing of complex African cross-rhythms as building “intrepidness” in the Anlo-Ewe community, for such an achievement allows “ordinary people to become heroes.”⁴⁷⁰ Perhaps the same logic might apply to harmonic acts of bravery: the Beethovenian hero generally fights off

⁴⁶⁸ The first scene of the film is literally played backwards, and the rest of the film alternates between chronological scenes (in black and white) and scenes in reverse (in color) until the two finally synch when justice prevails. See Stefano Ghislotti. “Backwards: Memory and Fabula Construction in “Memento” by Christopher Nolan.” *Film Anthology*, 2003, http://dinamico2.unibg.it/fa/fa_mem01.html.

⁴⁶⁹ Amidst mid-60's Civil Rights struggles, the song takes on additional meaning; Hendrix's 1969 performance of “Hey Joe,” the finale of the Woodstock festival weekend, received a standing ovation, and I assume that audiences heard it as commentary on police brutality, 1960's domestic violence, or perhaps the war in Vietnam.

⁴⁷⁰ See Ladzekpo. “The Myth of Cross-Rhythm.” 1995, <http://www.richardhodes.com/ladzekpo/Myth.html>

demons on the sharp side, so when Beethoven unsuccessfully attempts a modulation from F major to D major via German sixth in the infamous recapitulation of the Ninth Symphony, his triple plagal fall back to D implies harmonic *collapse*.⁴⁷¹ Contrastingly, John, Hendrix, and Coltrane’s journeys to the flat side are not “failures”; they go flat to thwart societal expectations, employ trickery, and assert their individuality.

Part of the mystery surrounding the extreme flat side is that *not many artists go there*, nor do many theorists. But, imagine a world in which flat side structures are taught alongside the tonic-dominant polarity at conservatories, and more musicians learn to navigate in a fully dualistic tonal system. How might this affect the cultural legacy of the flat side? If plagals become more “normal,” Elton John’s alternative path (Chapter 2) will sound substantially *less* different. Is this what John and other flat side voyagers desire—to be just like everyone else?

Allow me to deconstruct handedness to illustrate this brand of exceptionalism. Despite one misguided elementary school teacher’s efforts to ‘cure’ me of left-hand writing, I knew that being left-handed made me a member of a special club. OK, there were “sinister” derelicts and perverts⁴⁷², but lots of geniuses were also left-handed (like Albert Einstein and my hero, Jimi Hendrix), not to mention my entire immediate family, an outlier band of creative “exceptionals.”

But what would happen if, suddenly, half of the population were made left-handed? Lefties would no longer be institutionally marginalized (just try to buy a guitar or sit in a tightly packed booth at a diner), but we might also lose out on some perks. Left-handed tennis players

⁴⁷¹ Robert Fink compares the *Gloria* to the Ninth: “And, just as in the Ninth, we realize retroactively that the big D-major chord at this climax was not a tonic, but a dominant. By allowing B^b and E^b to reassert themselves, Beethoven turns the omnipotent D into a somewhat querulous V⁹/gm—and we fall back to the flat side again.” “Beethoven Antihero: Sex, Violence, and the Aesthetics of Failure, or Listening to the Ninth Symphony as Postmodern Sublime.” *Beyond Structural Listening: Postmodern Modes of Hearing*. Andrew Dell’Antonio, ed. Berkeley and Los Angeles: University of California Press, 2004, p. 132.

⁴⁷² See my discussion of Cesare Fabro in the introduction, pp. x-xi.

are thought to enjoy a slight advantage over their right-handed competitors due to their scarcity; only 10-11% of Americans are left-handed, but left-handedness in professional tennis runs about 20%, or double the national average.⁴⁷³ With a sudden influx of lefties, left-handedness would cease to be an advantage, because players would eventually learn how to field down-the-line backhands on the *add court* side.⁴⁷⁴

In boxing, lefties were discouraged from fighting with the unorthodox “Southpaw” stance until the later twentieth century, which allowed the few “Southpaw” fighters to effectively outwit their opponents with “wrongsided” jabs and hooks. According to Charlotte Faurie and Michel Raymond (2004), fighting and left-handedness are correlated, since left-handed people are pre-disposed to violence.⁴⁷⁵ In the unlikely event that Faurie and Raymond’s theory holds water, then the addition of lefties to our society would not only result in more “Southpaws” in boxing, but more violence in general. Still, one wonders whether researchers would think to conduct such a study in an ambidextrous world; such attempts to link left-handedness and violence, homosexuality, schizophrenia, or other “deviant” behaviors seem rooted in left marginality.

At the opening of this study, I asked what might happen to the minor mode if elevated to the “equal” of the major: *of what use is a willow that does not weep?* Today, the minor mode is indeed used to convey a variety of moods that transcend its traditional “moll”-ish character—from upbeat hip-hop dance music to soothing *Muzak* in the spa. I once played the Western minor scale for a Persian student, who exclaimed, “That’s my favorite scale for festive parties!”—a

⁴⁷³ Chris McManus. *Right Hand, Left Hand: the origins of asymmetry in Brains, Bodies, Atoms, and Cultures*. London: Weidenfeld & Nicholson, 2002, p. 281.

⁴⁷⁴ Ibid.

⁴⁷⁵ Or perhaps they are more prone to *effective* violence. See Charlotte Faurie and Michel Raymond. “Handedness frequency over more than ten thousand years.” *Proceedings of the Royal Society of London B* 271, S43-S45 (2004).

reminder that Helmholtz's "impure," somber third is a cultural belief, not hard-wired in all societies. But despite a new range of associations for the minor mode in contemporary life, Westerners' deep metaphor in which MINOR is the DOWNTRODDEN mode persists, as witness the self-reflexive calling out of vi and IV chords in Leonard Cohens's "Hallelujah" (1984) as "*the minor fall, the major lift.*"

It seems the major over minor binary is alive and well—but what about dominant over subdominant and sharp over flat? Recent rock music theory scholarship⁴⁷⁶ has demonstrated so much double plagal and Mixolydian influence in pop-rock that Allan Moore wonders whether the flatted seventh degree should even be considered non-diatonic.⁴⁷⁷ In an analysis of *Rolling Stone* magazine's "Top 500 Rock Songs of All Time," David Temperley found that the most common chord, after the tonic, subdominant, and dominant, was flat seven, occurring 11.9% of the time.⁴⁷⁸ Plagal progressions were substantially more normative than authentic ones in these canonic songs, even in final cadences.⁴⁷⁹

Americans listen to rock, soul, and hip-hop more than Beethoven and Brahms, so, in a sense, the flat side has won. Why then, are pentatonic and plagal structures still "Othered"? Perhaps the real issue is that Afro-diasporic migrants as a group are still marked, thus tainting African-American musical devices. For even if the mainstream culture were filled with

⁴⁷⁶ Drew Nobile. "Harmonic Function in Rock Music: A Syntactical Approach." *Journal of Music Theory*, vol. 60, no. 2, Fall 2016, forthcoming; Nicole Biamonte. "Triadic Modal and Pentatonic Patterns in Rock Music." *Music Theory Spectrum* Vol. 32, No. 2, Fall 2010, pp. 95-110; Christopher Doll. "Listening to Rock Harmony." *Dissertation*, Columbia University, 2007; Paul Scott Carter. "Retgressive Harmonic Motion as Structural and Stylistic Characteristic of Pop-Rock Music. *Dissertation*, University of Cincinnati, 2005.

⁴⁷⁷ Allan Moore. "The So-Called 'Flattened Seventh' in Rock." *Popular Music*, Vol. 14, No. 2, May, 1995, pp. 185-201.

⁴⁷⁸ David Temperley. "The Cadential IV in rock." *Music Theory Online*, Volume 17, Number 1, April 2011 Copyright, 3.3.

⁴⁷⁹ Which may relate to the blues: Temperley, "The Cadential IV in Rock," 3.9.

signifiers of blackness, those signifiers would still be consumed as marginal. And could it be that flat side composers and consumers *want* their music to remain Othered? Margaret Notley believed that nineteenth-century composers were attracted to plagality precisely because it was marginalized,⁴⁸⁰ and I have suggested Elton John may have employed plagality to illustrate his alternative sexual orientation.

To understand the pursuit of musical exceptionalism, let us briefly examine so-called “Alternative” or “Indie” Rock, whose 1980’s and early 1990’s fans relished its obscurity (e.g. Jon Fine’s mantra: “*Your band sucks*”⁴⁸¹). In the mid-1990’s, “Alternative” music was co-opted by major record labels, thus harnessing the “Indie” genre to the mainstream. But despite corporate control, the genre continued to be labeled “Alternative” on radio stations and in record stores. Before the shift, Alt-rock’s small group of die-hard fans struggled to collect this obscure music in hole-in-the-wall record stores, but once the genre became mass-produced and easily accessible, the “alternative” association seemed laughable—even oxymoronic—leading youths to call contemporary Alt-rock “a meaningless brand.”⁴⁸² As D  rri  da might say, the genre’s moniker bears a “trace” of the historical rock underground, and while no longer applicable to modern-day Alt-rock, still reminds audiences of *how exclusive it used to be*.

Theodor Adorno relentlessly attacked the mid-20th-century “Culture Industry” for its “standardized” fare intended to narcotize the masses (as opposed to the woke individuals who listened to classical music), insisting that certain types of “pseudo-individualistic” popular

⁴⁸⁰ Margaret Notley. “Plagal Harmony as Other: Asymmetrical Dualism and Instrumental Music by Brahms.” *The Journal of Musicology*, Vol. 22, No. 1, Winter 2005, p. 130.

⁴⁸¹ See Jon Fine. *Your Band Sucks: What I saw at Indie Rock’s Failed Revolution (But can no longer hear)*. New York: Penguin Random House, 2015.

⁴⁸² Jude Rogers. “Smells like Indie Spirit,” *The Observer*, 7/7/2007, <https://www.theguardian.com/music/2007/jul/08/popandrock>, accessed 8/25/2016.

music promoted the “illusion” of choice.⁴⁸³ Adorno’s world is long gone, but research does show that music consumers (and the artists themselves) are often driven by a need to differentiate themselves from the pack.⁴⁸⁴ We listen to music to fit in with the cool kids, *and* to stand out from the crowd. Carl Wilson explains:

Distinction might also demystify Kant’s claim that taste always desires others’ agreement. Your love of hip-hop or hatred for Céline Dion (or vice-versa) is part of your cultural capital, but it only gains value in the competition for distinction if it is legitimated in the contexts that matter to you. Unlike Kant, though, Bourdieu would say that last thing you want is that agreement be universal: you want your taste affirmed by your peers and those you admire, but it’s just as vital that your redneck uncle thinks you’re an idiot to like that rap shit. It proves you’ve distinguished yourself from him successfully, and can bask in righteous satisfaction.⁴⁸⁵

Pierre Bourdieu maintained that the lowest classes simply accept mainstream, “low-brow” culture, consuming it for entertainment purposes only.⁴⁸⁶ But for members of the middle and upper classes, taste demonstrates values and status. Since “tastes are foremost distastes,” all but the lowest classes tend to experience “disgust, provoked by horror, or visceral intolerance (‘feeling sick’) of the tastes of others.”⁴⁸⁷

Today, soulful flat side crooning is ubiquitous: James Blake’s dark and brooding pentatonic, minor mode odyssey is aptly named “Retrograde” (2013), and Macklemore, Bon Iver, and Sam Smith have used (and overused) gospel tropes to similarly retro-sensitive ends.

⁴⁸³ Theodor Adorno. “On Popular Music.” *Studies in Philosophy and Social Science*. New York: Institute of Social Research, 1941, IX, p. 14, 26.

⁴⁸⁴ See Beth Bryson. “Anything but Heavy Metal: Symbolic Exclusion and Musical Dislikes.” *American Sociological Review*, Vol. 61 No. 5, Oct. 1996, pp. 884-889; Jennifer Lena and Richard Peterson. “Classification as Culture: Types and Trajectories of Music Cultures.” *American Sociological Review*, Vol. 73, No. 5, Oct. 2008, pp. 697-718.

⁴⁸⁵ Carl Wilson. *Let’s Talk about Love: A Journey to the End of Taste*. New York and London: Continuum, 2007, p. 95.

⁴⁸⁶ Pierre Bourdieu. *Distinction: A Social Critique of the Judgment of Taste*. Richard Nice, trans. Cambridge: Harvard University Press, 1984, “I: The Aristocracy of Culture,” pp. 11-96.

⁴⁸⁷ Bourdieu, p. 56.

“Dark, brooding gospel” is well on its way to becoming codified, just as loud electric blues once was, as a culturally subversive style for Caucasians like Blake, Macklemore, and Justin Vernon (Bon Iver), who use tropes of “extreme” blackness to signify difference from the white mainstream.⁴⁸⁸ George Lipsitz has called this type of blackface “discursive transcoding,” (borrowed from film theorists Douglas Kellner and Michael Ryan⁴⁸⁹), involving hiding one’s subjectivities to “articulate desires and subject positions” that are not possible in their own voices.⁴⁹⁰ White jazz musicians like Bix Biederbecke, Johnny Otis, and Larry Harlow, with Mediterranean or Jewish ancestry, Lipsitz asserts, found that “black music provided them with a powerful critique of mainstream middle-class Anglo-Saxon America, as with an elaborate vocabulary for airing feelings of marginalization and contestation.”⁴⁹¹

Dark, brooding, and subversive are musical tropes deeply-rooted in the flat side—just as the pursuit of a dark and brooding image has resulted in a plethora of modern-day James Dean lookalikes with full sleeves of tattoos (I suspect). Until recently, there were *just* enough tatted James Dean lookalikes to constitute a recognizable “type,” but they have now proliferated to the point where “alternative” or “subversive” has given way to “trendy”—the tipping point where the alternative signifiers stop working, and “hip” becomes “hipster.”⁴⁹²

⁴⁸⁸ Dale Cockrell has discussed how blackface in the eighteenth and nineteenth centuries used black signifiers to express their own struggles. See *Demons of Disorder: Early Blackface Minstrels and their world*. Cambridge: Cambridge University Press, 1997.

⁴⁸⁹ Douglas Kellner and Michael Ryan. *Camera Politica: The Politics and Ideology of Contemporary Hollywood Film*. Bloomington: Indiana University Press, 1988, pp. 12-13.

⁴⁹⁰ George Lipsitz. *Dangerous Crossroads: Popular Music, Postmodernism and the Poetics of Place*. New York: Verso, 1994, p. 53. For a discussion of blackface, see Eric Lott. *Love and Theft: Blackface minstrelsy an the American Working Class*. Oxford: Oxford University Press, 1993.

⁴⁹¹ Lipsitz, p. 55.

⁴⁹² Ned Polsky defined a hipster as “mannered show off regarding his hipness.” See *Hustlers, Beats, and Others*. Chicago: Aldine Publishing, 1967, p. 149.

Dick Hebdige maintains that a popular subculture ultimately experiences two possible trajectories: incorporation into the mainstream, or transformation into something “explicable and meaningless in the classrooms, courts and media...stripped of its unwholesome connotations,” and ultimately “fit for public consumption.”⁴⁹³ The truly hip jump ship long before these events occur, making those still participating afterwards appear as suckers, or adherents of mass culture. According to Phil Ford, hip consciousness “is a binary that maps the world into hip and square, somewhere and nowhere, with the hipster stuck in nowhere but always remapping it within the (imagined) frame of somewhere.”⁴⁹⁴

In this dissertation, I have assumed that *going flat* is tantamount to defying expectation, going “in through the out door,” as one musical nonconformist put it. But if *everyone* goes that way, Adorno’s illusion of distinction dissipates, leaving the pseudo-differentiation of popular music open to harsh self-critique. Currently, heavy plagality—which occurs more frequently in pop music than tonic-dominant authenticity—is still racially and culturally differentiated as soul-tinged, but if overused, might end up as hackneyed as Elvis or oxymoronic as Nickelback and Creed.

The deeper truth of the flat side is that it *is* normative in some contexts: ascending by fourths constitutes the normative direction for progressing toward the tonic; subdominants occur more than dominants in rock music; the minor mode is used constantly and without affective limitations in popular *and* Germanic concert musics; the pentatonic scale is the hallmark of American popular music. Binary oppositions placing the flat side below the sharp side still haunt these structures, but perhaps this “injustice” actually works to Elton John, John Coltrane, and

⁴⁹³ Dick Hebdige. *Subculture: the meaning of style*. London and New York: Routledge, 1979, p. 130.

⁴⁹⁴ Phil Ford. *Dig: Sound and Music in Hip Culture*. New York: Oxford University Press, 2013, p. 5.

Jimi Hendrix’s advantage. Daring the extreme flat side makes them heroic and subversive voyagers; and mainstream artists like Blake and Macklemore, who employ more typical flat side strategies, can still, for now, cultivate meaningful difference through discursive transcoding.

Deconstructing major-minor dualism (Chapter 1) revealed that Hugo Riemann and Moritz Hauptmann marginalized the flat side, and Schenker, the most influential tonal theorist of the twentieth century, pushed sharp side authentic dominance to the limit. But Schenker’s grip on academia is eroding. Recent Neo-Riemannian forays into rock and pop analysis—which tend to deemphasize problematic Hegelian dialectical oppositions (and dualism in general)—have already begun the process of normalizing the flat side, which may ultimately render it “explicable and meaningless” (Hebdige). For now, the secrets of the flat side are safe, but an identity crisis may lie ahead.

He who strays from the customary becomes a sacrifice to the extraordinary; he who keeps to the customary becomes its slave. He is condemned to perish in either case.

— Friedrich Nietzsche⁴⁹⁵

⁴⁹⁵ *Human, All-too human: A Book for Free Spirits*. “Man Alone with Himself,” Chemnitz: Ernst Schmeltzner, 1878. Helen Zimmern, trans. 1909, p. 552.

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