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**Blues music theory and the songs of Robert Johnson:
ladder, level and chromatic cycle**

Abstract

The blues is a complex and subtle musical language that warrants careful analysis and sustained debate. There are legitimate concerns with the application of music-theoretical paradigms to blues music, but we should not allow such concerns to undermine all attempts to address the blues as a serious and coherently structured music. This article explores the notions of ladder, level and chromatic cycle as an insightful set of theoretical tools in analysing the music of Robert Johnson. Key sources in developing this analytical approach are the scholarship of Gerhard Kubik and the spatially-oriented analytical methods of neo-Riemannian theory. The notions of ladder, level and chromatic cycle are explored with close reference to Johnson's 'Kindhearted Woman' and through a more general consideration of the scale-degree content of his vocal parts.

Introduction

In 2001 Hans Weisethaunet published an article in this journal titled 'Is there such a thing as the "blue note"?' . The article poses a legitimate challenge to those scholars who attempt to theorise blues music. The central claim of Weisethaunet's argument is that 'the concept "blue note" is derived from Western musicology' (Weisethaunet 2001, p. 100). Such a derivation is seen to entail certain problems, which can be explained in terms of a number of related points. Firstly, the concept of 'blue note'

may be at odds with a notional emic theory of the blues.ⁱ Secondly, such a theory may distort the reality of blues performance because in practice ‘every note of the twelve-tone chromatic scale may appear in a blues tune’ (*ibid.*, p. 101). Thirdly, the emphasis upon structure, particularly harmonic structure, from which the notion blue note arguably derives, can be described as a ‘ruling ideology of Western musicology’ (*ibid.*, p. 100).ⁱⁱ This last point may not only distort our understanding of blues music but may also lead us to suspect that, in Weisethaunet’s words, ‘the “blue note” may have been one of many stereotypes created by the “white” to make and sell “black culture”, i.e. “the blues” as commodity of the suffering black.’ (*ibid.*, p. 113)

One of the difficulties with Weisethaunet’s challenge is that it leaves little room for manoeuvre for the music theorist wishing to engage blues music. This point is perhaps best illustrated by the way in which the theoretical portions of Weisethaunet’s own article still fall back upon standardised Western analytical terminology, such as the convention of using Roman and Arabic numerals to refer to chords and scale degrees (a practice that I also adopt in this article).ⁱⁱⁱ

The difficulties presented by Weisethaunet’s arguments go much of the way towards explaining why recent theoretical work on the blues and blues-related musics has largely ignored the issues he raises. The most important work in this regard is that of Nicholas Stoia (2010, 2013), whose thorough and rigorous work on blues music uses methods closely related to those dominating analytical approaches to music in the classical tradition.^{iv} Alongside such approaches Stoia does cite the work of ethnomusicologist’s such as David Evans and Gerhard Kubik, a fact that suggests some sensitivity to the kinds of issues highlighted by Weisethaunet. However, in its central concern to develop normalised formal types and a related concern to reduce both pitch and rhythm in the blues to the grid-like framework of Western music

theory, Stoia's work might be seen to exacerbate the issues raised by Weisethaunet as much as ameliorate them. (This is the case in spite of some outstanding scholarship, particularly in the clear handling of music-theoretical issues and the deployment of compelling examples drawn from a substantial body of recordings.)

If we are to take Weisethaunet's challenge seriously we should, perhaps, be more concerned by recent developments in rock scholarship. Walter Everett, one of the world's leading popular music analysts, in what is otherwise a compelling survey of rock's tonal systems, describes blues harmony as 'minor-pentatonic-inflected major-mode systems' where '[c]ommon-practice harmonic and voice-leading behaviours [are] not always emphasised at the surface, but may be articulated at deeper levels and/or in accompaniment' (Everett 2004, Table 1).^v Such an account subsumes the blues under the basic constructs of Western tonal theory and, it seems to me, could impair our appreciation of the blues as a distinctive practice.

In this article I too develop a theory of the blues that engages music-theoretical ideas and models that have grown out of traditional Western musicology. I also, not unlike Stoia, draw on recent developments in the analysis of classical music. One key proposal, in this regard, is that neo-Riemannian theory provides certain advantages in theorising blues harmony, giving points of contact with the work of Guy Capuzzo on pop-rock music (2004) and jazz (2006). Despite this reliance upon recent music-theoretical technologies I have endeavoured to develop an approach that pays close attention to the concerns and insights of some of the most prominent figures in blues scholarship, that is Jeff Todd Titon, David Evans and, in particular, Gerhard Kubik. All have a background in ethnomusicology and have shown a deep appreciation of the issues raised by Weisethaunet. All three have shown a willingness to engage the blues using aspects of Western notation and analysis, and their work is

carefully qualified in this regard. The work of Kubik, in particular, provides insight into ways of avoiding the rigid grid-like thinking that characterises equal temperament and Western rhythmic notion when theorising the blues, and his innovations in this area form a key point of reference for the ideas I set out. I have also drawn on Peter van der Merwe's, influential book, *The Origin of the Popular Style*. Van der Merwe's hypothesis that the blues can be fruitfully conceived in relation to a ladder of thirds, which is also picked up in Stoia's recent articles, is an important point and goes some way towards explaining the efficacy I claim for neo-Riemmanian theory in addressing the blues.^{vi}

This article focuses on a relatively small set of recordings, those of Robert Johnson made in the 1930s. Whilst it is recognised that the blues is a diverse and complex field of study that cannot be reduced to a single figure, it is also surely the case that the recordings of Robert Johnson have been some of the most influential of all blues musicians', and this alone makes his music a better candidate than most in the extrapolation of a broadly applicable theory of the blues. Furthermore, Johnson's carefully thought out arrangements and perfectionism, it has been argued, suggest an attitude to the creation and recording of music that sits more comfortably with the idea of the fixed 'work', thereby leaving his music better suited to detailed analysis – or at least less easily misrepresented.^{vii} More generally (and perhaps more personally), this article develops from a belief that the blues, in the hands of Robert Johnson, is a sophisticated and highly integrated music and that to understand it more fully we need to think in fresh ways about its music-theoretical underpinnings. Johnson's music articulates solidified approaches to formal patterns, but at the same time, has a high level of chromaticism and pitch nuance that highlights the inadequacy of certain assumptions about blues music. For these reasons Johnson's

blues recordings serve as the primary point of reference in developing the theories that follow. It is hoped that what is lost by limiting the number of blues recordings considered will, at least partly, be balanced by the insights gained into this extraordinary body of blues recordings.

Approaches to the ‘blue note’

The complexities of understanding so called ‘blue notes’ from a (Western) music-theoretical standpoint have been recognised by writers for many years. Indeed, in certain respects the issues raised by Weisethaunet have been a primary concern for blues scholarship throughout the twentieth century. It is somewhat ironic, then, that so much blues music-theoretical scholarship since Weisethaunet’s article has done so little to engage these complexities.

The complex issue of how to understand the blue note is negotiated insightfully as early as 1926 by Abe Niles in his critical commentary for Handy’s *Blues: An Anthology* (Handy [1926] 1972). Niles describes the blue note as the ‘typical slurring of the third note of the scale, which was a peculiarity of Negro folk singing generally’, noting later that the ‘seventh is similarly treated, though to a lesser extent’.^{viii} The difficulties faced by a theoretical tradition premised on the notating of music is addressed more directly when Niles states that ‘[o]ne cannot reproduce on paper what a Bessie Smith would do to this [blue third] note’ (in Handy 1926, p. 27–28). Niles’ notion of a tendency to ‘worry’ the variable third degree of the scale is also useful, albeit unhelpfully explained in terms of ‘the untrained Negro voice’.

Other key texts that provide insight into blue notes and their place in a larger scale pattern include Winthrop Sargeant’s *Jazz: Hot and Hybrid* ([1946] 1959) and

Jeff Todd Titon's *Early Downhome Blues A Musical and Cultural Analysis* ([1977] 1994). Sargeant draws on Niles and despite certain problematic racial undertones shows some sensitivity to the potential problems of a wholesale application of Western musicological models to the blues. In discussing blues notes in 'dirty' hot jazz he states that:

Notes are 'worried' and twisted from their normal intonation, and a number of purely Negroid scalar characteristics enter into the scheme. The result is a more authentically 'African' type of utterance, an utterance quite consistent in its own structural peculiarities, and one whose scalar relations may be traced [...] deeply into the well-spring of racial musical habit.

That we can speak of a purely Negroid music scale in this connection there can be no doubt. However related to European equivalents, the pentatonic, major, minor 'gypsy' [harmonic minor with an additional raised fourth] and other scales of sweet and published Negro music may be, there is no European precedent for the system of intonations to which these passages of hot jazz respond.

(Sargeant [1946] 1959, p. 158)

We begin to see here how questions concerning the inadequacy of Western music theory for the blues can become intertwined with questions as to whether and to what extent distinctive practices in the blues should be explained with reference to African models.^{ix} The interaction of these issues will be a feature of a number of the points addressed in this article.

Jeff Tod Titon's work is still some of the most systematic in the field of blues scholarship. Titon adds an additional layer of sophistication to our conception of blue notes by suggesting that it is not only the case that notes around a third, fifth or seventh above the tonic might be slurred or 'worried', but that any articulation of these scale degrees might be better conceived as one of a number of distinct possibilities. This lead Titon to propose the model in Figure 1 where we conceive the third, fifth and seventh not as single scale degrees but as three complexes of pitches. (The numbers below each note head indicate the number of times these pitches are counted within a body of blues songs analysed by Titon.)

FIGURE 1 ABOUT HERE

David Evans' study of the folk blues, *Big Road Blues*, is similar to Titon's work in the scale of its achievement. It, like Titon's, is a work of ethnomusicology and although there is a less overt engagement with the blues in music-theoretical terms, Evans offers many insights. With regard to the blues scale he gives a more flexible conception. For the variable third and seventh degrees he suggests the term *area* or *tonal area*, and encourages the notion of a neutral third to be understood in these loose terms:

Often the major, minor, and neutral third or seventh are all used in the same performance. In fact, 'neutral' probably would best represent an *area* between major and minor where notes can be sung, rather than any specific point between them [Evans' emphasis].

(Evans 1982, p. 24)

Evans also accepts that there may be an area around the fifth scale degree but notes further that he has heard ‘several folk singers regularly use pitches between the major sixth and minor seventh and between the major second and the minor third.’ (*ibid.* p. 25).^x Similarly, Evans makes a case for a more flexible conception of the number of degrees in a blues scale. The blues scale could be regarded as pentatonic, hexatonic, heptatonic or octatonic depending on what is left in or out in any performance and on how one conceives the tonal areas. This leads Evans to call for a pluralistic understanding, suggesting that ‘there is no single “blues scale” but many blues scales’ (*ibid.*).

Evans work provides, I think, one of the most useful accounts of variable pitch content in the blues and gives some indication of the melodic tendencies of blues scale components – although this is more thoroughly worked through in Titon’s study. The theories I develop in the next two sections of this article pay close attention to the variability of pitch content in the blues system whilst proposing further ways of understanding its coherence and logic.

Ladder and level

The work of Evans and Titon is insightful and important, but both writers have stopped short of proposing a systematic means of rethinking the theoretical underpinning of the blues. There are, of course, advantages to such an approach and Evans' pragmatic but subtle way of addressing theoretical questions is clearly a virtue. In this article, however, I will build more directly on the work of two scholars who do offer a more fundamental rethinking of music-theoretical models for the blues. These are Gerhard Kubik and Peter van der Merwe.^{xi}

Kubik's book *Africa and the Blues* contains a fascinating chapter concerning the blues system.^{xii} In it, Kubik considers how the blues scale might relate to practices he observed in the west central Sudanic belt in which two Kutin musicians performed on two double bells. Kubik argues that the bells had been manufactured so that each reflects one of two adjoining ranges a fifth apart. If for the first double bell the lowest note were C this would give the range C up to F and, directly above that, the range G up to C for the second double bell. When these ranges are articulated by voices (possibly male and female respectively) they may be filled out, in accordance with the harmonic series, with E \flat and B \flat respectively (see Figure 2).

FIGURE 2 ABOUT HERE

Further filling out of notes derived from the harmonic series gives the notes (F-C)-F-A-C-E \flat -F-G for the first range and for the second (C-G)-C-E-G-B \flat -C-D (see Figure 3). The combination of these two ranges gives what Kubik terms an integrated model that 'encompasses the melodic repertoire of the blues'. A further important

point is that Kubik insists we recognise a fundamental difference between equally-tempered instances of these pitches and instances derived from the harmonic series, which involves considerable discrepancies that he indicates by cents – a practice adopted in places in this article.^{xiii}

FIGURE 3 ABOUT HERE

The scalar model Kubik posits is not unlike that of other theorists, but the amount of detail given and his means of explaining its development is original and compelling. His notion of two ranges also has important harmonic implications. Kubik suggests that each range has a different fundamental: F and C in the example diagrammed above. The upper range is given greater primacy by Kubik with the lower range being conceived as a transposition, down a fifth, of the upper range. This gives us a quite different way of conceiving harmonic contrast in the blues. Rather than thinking in terms of contrasting major triads we have the notion of two contrasting ranges that overlap/interlock. This approach to the blues leads Kubik to give an explanation for the importance of the subdominant in the blues. In listing the benefits of his model he notes that it explains ‘why in many blues accompanied with Western chords, the progression from tonic to subdominant is taken with ease, but the dominant is often avoided, circumscribed, or totally neglected’ (Kubik 1999, p. 142). In what follows I suggest that what is usually termed chord V *is* important in the music of Robert Johnson, but I will theorise this notion of chord to bring it into closer accord with Kubik’s contrasting ranges

Kubik’s notion of overlapping and interlocking ranges can be usefully compared with the claim of Peter van der Merwe, in *Origins of the Popular Style*,

that the blues system is based around a ladder of thirds^{xiv}, and indeed in presenting his related notion of *levels* van der Merwe cites Kubik's work on the 'Harp Music of the Azande' (van der Merwe, p. 209 n. 6).

In outlining the ladder of thirds van der Merwe first emphasises the importance of the minor third in forming the basis of the blues system. However, he goes on to point out that this third can vary between a minor and a neutral third (an interval that can, in this context, be taken to be approximately half way between an equally-tempered major and minor third). One way to map this out is to assume that a note a fifth above the tonic note will be very close to that found in equally-tempered systems, a point suggested by van der Merwe's notation. I have attempted to formalise van der Merwe's model in Figure 4.

FIGURE 4 ABOUT HERE

The question marks and parentheses in Figure 4 indicate certain ambiguities in van der Merwe's description of the ladder of thirds. The parenthesised 300-350, for example, indicates the uncertainty around this interval because if the G in the model were approximately a perfect fifth (equally tempered or justly intoned) above the tonic (C in this instance), then both the interval between C and E and the interval between E and G would need to be around 350 cents. Neither interval could drop below this (towards the interval of a minor third) in the manner van der Merwe suggests without the other interval becoming greater than a neutral third^{xv}. It is also unclear whether the D at the top of the ladder occurs or whether a return to C is intended as the ladder extends. I would suggest the latter as van der Merwe considers

notes between these thirds as passing notes and C is unlikely to be regarded as a passing note in this context.

These points are addressed if we devise a model that takes account of the use of intervals derived from the harmonic series as in Kubik's work. This model is given in Figure 5. Whereas van der Merwe suggests an interval of a third somewhere between a minor third (300 cents) and neutral third (350 cents) another model that retains the notion of a ladder of thirds might outline a basic patterning that involves a gradually reducing interval between each third in line with the intervals proposed in Kubik's integrated model of the melodic repertoire of the blues. The use of Kubik's model, in this way, means that the underlying logic of the model derives from the harmonic series, and involves, therefore, an increase by the same number of Hz each time you move up the ladder.^{xvi}

FIGURE 5 ABOUT HERE

The logic of narrowing thirds needs to be conceived flexibly in relation to melodic practice because the tendency to articulate intervals close to 300 cents (the equally tempered minor third), highlighted by van der Merwe, is common. Or, to put this in Kubik's terms, the interval between G and B \flat in Figure 5 when transposed down a fifth forms a far narrower interval between C and E \flat .^{xvii} For Kubik the 'E-386 and E[b]-267 constitute a frame. They are marginal values. The blue note will fluctuate with more frequency between these two borderline values' (Kubik 1999, p. 139). Further insight on this point is found in Titon because his account of the preponderance of melodic pitches in the blues suggests that while $\flat 3$ (E \flat) and 7 (B) do occur, the more common pitches are 3 (E) and $\flat 7$ (B \flat).^{xviii} Another significant point

with the model in Figure 5 is that the interval of 233 cents between B \flat and the C above it can be conceived as a species of third that has a logical relationship with the other rungs of the ladder because it shares an identical value when measured in Hz.

For the purposes of this section of this article, the more vital point to derive from van der Merwe's ladder of thirds, adapted here in line with Kubik's insights on cent values, is that it allows us to conceive the harmonic resources of the blues without resorting to the logic of the extended Western triad. The seventh of the chord can now be conceived as part of the basic framework of the blues and not as a colouring or extension of Western primary chords. Similarly the notion of levels found in both Kubik and van der Merwe helps us to rethink the idea of a progression involving chords I, IV and V (Figure 6).^{xix}

FIGURE 6 ABOUT HERE

The changes in the blues can be thought of as changes of level. The ladder of thirds can be transposed/extended downwards to form what is usually construed as IV7 or transposed/extended upward to form what is usually construed as V7. Important here is the interchangeability of the notions of transposition and extension. The reconfiguring of the pattern of thirds, such that the wider-to-narrower patterning is reapplied, creates a shift close to the Western notion of transposition. However, the variability of notes within the ladder of thirds at any given point (despite the wider-to-narrower tendency) means that any such transposition can also be construed as an extension of the same ladder.

This last point goes a considerable way towards explaining why the melody and harmony of the blues are often construed as somehow independent of one another. A shift in level is, in some ways, more fundamental than a chord progression because it implies the transposition of the microtonal framework in Figure 5. However, the flexibility of this framework also allows for extensive overlap between levels so that levels I and IV, in particular, will often be articulated with/through the same melodic material – a point to be considered in more detail later.

The move towards conceiving the blues system as governed by ladders of variable but generally decreasing third-like intervals will provide a useful means to approach the music of Robert Johnson. Similarly important, if not more important, however, for an understanding of Johnson's music is the role of chromaticism, and it is to this area that we now turn.

Chromatic cycle

Chromatic, stepwise, descending melodic motion is very common in much blues music. As we will see, it is an important feature of Robert Johnson's songs. It is also important in the music of blues artists who began recording before Johnson such as Leroy Carr and Kokomo Arnold. These chromatic motions and the harmonies they create or imply are often taken to be rooted in Western harmonic practices despite their importance in African American musics. This assumption is perhaps reinforced further by the role of descending chromatic motions in articulating one of the most characteristic features of ragtime: the so-called ragtime progression (see Example 1), because it appears to articulate more clearly than other African American idioms a

goal directed motion through the cycle of fifths. We will begin by looking at ragtime before focusing upon a related African American tradition that might be said to feed into the blues.

EXAMPLE 1 ABOUT HERE

In *Origin of the Popular Style*, Van der Merwe handles this area in a chapter titled 'Parlour harmony' and begins with a somewhat extreme claim that, whilst veiled with a modicum of rhetorical distance, highlights the kinds of problems that are liable to arise when assuming a predominantly European origin, especially when framed as 'high-cultured' European origin, for important aspects of vernacular musics:

The old libel about popular composers using worn-out cast-offs of their musical betters comes closest to the truth with harmony. In the nineteenth and early twentieth centuries, at any rate, popular harmony is usually an echo of what serious composers had been doing several decades before. The lush Romantic chromaticism of the years between 1830 and 1850 took half a century to reappear in parlour ballads of the 80s and 90s, just as in the next century, Impressionist harmonies turn up a few decades later in jazz.^{xx}

(van der Merwe 1989, p. 243)

Van der Merwe goes on to cite the beginning of Liszt's 'Liebestraum', no. III, which is structured around the cycle of fifths progression (III7 – VI7 – II7 – V7 – I, i.e. the progression outlined in Example 1), and appears to view this work as evidence

for the claim above in stating that this pattern ‘was to become a great favourite in the popular music of about half a century later, not only in the parlour style but in ragtime as well.’ (van de Merwe 1989, p. 251).^{xxi} This point, that ragtime is demonstrably derived from European traditions, is not easily dismissed. Stearns view on this matter is not entirely implausible despite, what I would read as, some problematic racial undertones:

Ragtime represents a deeper and more complete blending of West African and European musical elements, with a greater borrowing from the European, than anything that had gone before. It is no accident that ragtime originated in the Midwest and not in New Orleans, and that there were first-class white as well as Negro composers and performers. The greatest of them all, Scott Joplin, who happened to be a Negro, studied classical music long and well, as the form of ragtime attests.

(Stearns 1956, p. 140–1)

It may be, then, that there are clear factors pointing to the importance of a European tradition in the formation of ragtime, furthermore the ragtime progression itself may indeed map quite comfortably onto a progression commonly deployed in the classical tradition since the baroque era. However, more recent scholarship has suggested that the role of the piano and the classical tradition may have been overemphasised in the development of ragtime. Gage Avril, in his authoritative work in this area, begins to suggest a somewhat different picture when he states that ‘[c]ontrary to the Joplincentric theories of a few years back, ragtime was probably very much a vocal as well as an instrumental form, developing in the “sporting”

districts of Mississippi River cities' (Averill 2003, p. 54).^{xxii} It seems fair, then, to develop an understanding of the chromaticism of this progression from another perspective, one which emphasises the importance of African American musics in its formation and logic.^{xxiii}

Averill's study concerns barbershop harmony and it is work in this area that I will consider in exploring the African American origins of chromatic blues harmony. Following Lynn Abbott's groundbreaking article of 1992 titled "Play that barber shop chord": a case for the African American origin of barbershop harmony', some interest has developed in recognising the African American origins of barbershop harmonic patterns, which, of course, are often characterised by chromatic motions, including the ragtime progression. In 2000 Jim Henry completed a PhD thesis on barbershop that looked to map the detail of early barbershop recordings and arrangements onto African American idioms. The thesis contains a plethora of useful examples, and, in addressing the assumption that the ragtime progression is fundamentally European, invites a less essentialist and more syncretic account of barbershop harmony in relation to African American musical practices.

An important initial point here is that the so-called 'barbershop seventh' can be understood to be approximated in equal temperament by a dominant seventh chord, which, in this context, is probably better termed a major minor seventh chord. As Averill notes, barbershop singers have (at least since the 1940s) self consciously tuned major minor seventh chord to achieve a highly resonant effect, a practice known as 'ringing' chords. This barbershop seventh or 'meat 'n' taters chord' is formed when the fundamental of each voice is an integer multiple of a given frequency, thereby reflecting the logic of the harmonic series (Averill 2003, p. 163–64).^{xxiv} This is precisely the logic of each of the levels outlined in Figure 6. The

apparent complexity of the different cent values belies the fact that each pitch, in the case of say level I, will be consistently 65 Hz (this number is rounded down slightly) above the note below it in that level. This point may lead us to doubt whether the use of major minor seventh chords is necessarily or even primarily the result of European influence.

Of course, in the ragtime progression it is not *only* the deployment of major minor seventh chords that might lead us to assume a European origin; it is the root movements of a fifth, in particular, that seem to derive from European models. But if we consider Figure 6 again in the context of Kubik's claims concerning fifth related regions, could not this root movement be adequately explained from an African American perspective? Henry suggests some useful backup in this area when he points out that although there are many examples of the ragtime progression in barbershop, the progression IV7 – I7 is also very common, as is the tendency to conclude the ragtime progression with I7 (Henry 2000, pp.179ff.).^{xxv} Such harmonic patterns are not at all common within the classical European tradition but might be considered a logical outcome from the notions of level and ladder developed in this article.

It would, of course, be wrong to suggest that chromatic motions articulating a cycle of fifths do not draw on European habits at all. Equal temperament, it seems to me, has played an important role in the development of African American musics and ragtime, in particular, often exhibits the pull of tritone action that is particularly characteristic of Western tonal discourse. Having said this, recent scholarship on barbershop and the notions of ladder, level and cycle explored here may help us recognize more fully the syncretic origins of African American harmonic practices.^{xxvi}

We perhaps need to consider a reversal of emphasis that is comparable to that suggested by Kubik with regard to blue notes and the notion of inflection:

In the literature blue notes have been described as a ‘microtonal lowering of the 3rd, 7th and (to a lesser extent) 5th scale degrees’ [...], and various theories for their origin have been proposed ... all proceeding from the standpoint that the blue notes are ‘derivations’ or ‘inflections’ of *the* standard pitches (i.e. diatonicism). [... .]

However, we who have worked in African cultures with the most diverse tonal systems cannot help but see the ‘inflections’ on the other side.

(Kubik 1999, p. 118)

Just as blue notes can be taken as an integrated and logical extension of African musics, it strikes me that the manipulation of tonal space articulated in certain chromatic motions can be considered an integrated and logical extension of the African American musics that developed through the nineteenth century. To develop this point further, consider the network formed by the levels introduced earlier in Figure 6 as they appear in Figure 7.

FIGURE 7 ABOUT HERE

The pitches given in Figure 7 are conceived in closer accord with equal temperament. Thus, each level is not so readily bound by the logic of interval increases of a fixed number of Hz and a diminishing number of cents (as was the case in Figure 6). Instead, the logic of equal temperament has become more conspicuous

and the majority of intervals now conform to a fixed number of cents – 300 cents or an equally-tempered minor third. This results in the addition of a minor ninth above, what we might term, the root of the level and generates a matrix of possible chromatic motions when moving between levels I, IV and V (e.g. Bb – A – Ab when moving down through the notes on the far right of the network).

Similarly, common chromatic progressions can be discerned from this network, such as the descending diminished chords that are characteristic of barbershop, the music of Johnson and, what van der Merwe terms, parlour music.

EXAMPLE 2 ABOUT HERE

The chromatic motion of the chord E-G-Bb moving through two other diminished chords to C-E-G in the last bar of Example 2 can be diagrammed on the notated network as shown in Figure 8.^{xxvii} Note also the way in which level V cycles back to level I.

FIGURE 8 ABOUT HERE

Now that equal-temperament has become a governing principal of this network it seems a reasonable step to bring it in line with a network that has come to dominate much thinking around triadic but chromatic music, that is the Tonnetz, so often encountered in neo-Riemannian theory. This allows us to explain more readily further chromatic motions. Figure 9 presents a portion of the Tonnetz. It is the same pitch network given in Figure 8 but the minor ninth above the root now appears in

each level. When it appears it is given next to the ‘root’ of the ladder to indicate the way in which an ambiguity is formed around these points of the ladder on each level. That is to say, the sense of ladder is maintained on each level but, in order to achieve a fit between equal-temperament and the basic ladder model with narrowing interval structure outlined in Figure 5, the ‘root’ and minor ninth above it can be construed as two possible options in articulating a single rung of the ladder.

FIGURE 9 ABOUT HERE

Removing the roots from the network in Figure 9 gives the full chromatic^{xxviii}, where each diagonal can be conceived as forming a circle. Thus the diagonal for each level (South East to North West) constitutes a diminished seventh chord cycle, and the each cycle running between levels (South West to North East) constitutes an augmented chord.

The so-called ragtime progression can now be explained by shifting the root/minor ninth ambiguity to a different rung of the ladder as shown in Figure 10.

FIGURE 10 ABOUT HERE

The line running diagonally through the middle of the network indicates the way in which the levels loop back on themselves to articulate a cycling motion. Thus the progression III7–VI7–II7–V7–I7 can be construed as running through levels V, I and IV, back around to V and then closing on I. Cycling in this direction around the network is common, but, it is important to note that the standard blues chord changes

puts as much emphasis upon cycling in the opposite direction, and to note again Henry's observation that IV7 to I7 is similarly common in the closely related musical tradition of barbershop.

The theory of a shifting root/minor ninth ambiguity also helps us to explain other chromatic motions found in the blues such as that sounding at the end of each verse of Robert Johnson's 'Drunken Hearted Man', where a major minor seventh on VI simply slips down by half steps, through bVI7, to V7. A simple harmonic idea, but one that sounds thoroughly integrated with Johnson's harmonic palette as a whole – see Example 3 and Figure 11.

EXAMPLE 3 ABOUT HERE

FIGURE 11 ABOUT HERE

Viewed in terms of a cycling around a network derived directly from the ladder levels of the blues, chromatic motions no longer appear as a European superimposition on 'more African' aspects of blues practices. Instead these chromatic cycles can be understood as a logical outgrowth from African and African American traditions. Such growth, it seems to me, derives in part from the use of equally tempered instruments and the kinds of musical thinking this entails but it is also a growth that has its own internal logic and recognising this point helps us to appreciate more fully the integrity and sophistication of this rich and highly-influential music.

The notions of level, ladder and chromatic cycle developed in this survey of blues theory will allow us further insight into the music of Robert Johnson.

The music of Robert Johnson

The first sounds committed to record by Robert Johnson form a series of diminished seventh chords performed effortlessly by shifting a fixed hand shape down the guitar fretboard (Example 4, bars 1 and 2). This use of a ‘moveable fingering position’ is highlighted by David Evans as a ‘particularly interesting’ feature of the music of Mott Willis (Evans 1982, p. 204), and Evans goes on to point out its use by a number of other prominent folk blues musicians, such as Charley Patton, Tommy Johnson, Willie Brown as well as Robert Johnson (*ibid.* p. 248).

EXAMPLE 4 ABOUT HERE

This figure appears in seven of Johnson’s twenty-nine recordings. The harmonic patterning it exhibits is precisely that already cited in the last bar of Example 2 (‘Ain’t You Coming Back to Old New Hampshire’) and explicated in terms of ladder, level and cycle in Figure 8. The harmonic process instantiated in this succession of chords is also suggested by an even more common figure in Johnson’s recordings, the figure shown in bar 3 of Example 4. This figure, with slight variation, is deployed in all of Johnson’s recordings with the exception of ‘They’re Red Hot’, a song that is formed around the ragtime progression and is not, as such, a blues.^{xxix}

It is important, I think, to emphasise the sense of cycling that the opening harmonic succession articulates in relation to the tonal space of equal temperament. This point is addressed by considering the way in which the diagonals in Figure 9 loop around to form rings. We can diagram this more explicitly if we present the chromatic network as points on a hypertorus. In Figure 12, the diagonals of Figure 9 have become rings with the diagonal for each level (the diminished seventh chords) on the horizontal plane and the diagonal running between levels (the augmented triads) on the vertical plane. Letter names for notes are now replaced by scale-degree numbers as Example 4 is in A. The succession that opens 'Kindhearted Woman' can now be diagrammed so as to demonstrate the way it cycles around on both planes simultaneously. This is indicated by the fuzzy black semi-circular lines in Figure 12. The diagram presents the succession as starting at the top of the hypertorus, it then cycles around 180 degrees on the horizontal plane and, simultaneously 120 degrees on the vertical plane to give the line on the outer surface of the torus. The same cycling process then gives the line on the inner surface of the torus.

FIGURE 12 ABOUT HERE

Elijah Wald, in discussing the recurrent use of such figures in Johnson's music, suggests that their ubiquity may have had a commercial function comparable to a 'similar mannerism' in the music of Peetie Wheatstraw. The use of the same idea at the beginning of different songs meant that 'fans could instantly recognise his records, and this would have obvious advantages when it came to selling new material' (Wald 2004, p.141).

Wald is probably right on this point, but I think it also important to recognise the function of this idea in relation to musical structure. Johnson deploys two musical ideas at the beginning of ‘Kindhearted Woman’ and other tracks as a means of mapping out tonal space. The declamatory manner in which Johnson executes this mapping at the start of his songs is significant, as is his command of a sophisticated treatment of tonal space that, as I have demonstrated, is deeply rooted in African American musical traditions.

The large-scale harmonic structure in Johnson’s blues songs follow, more or less closely, the 12-bar blues pattern that became one of the most common (if not the most common) in the decades that followed . It differs a little from the pattern Stoia gives as the ‘Standard 12-bar Blues’ in that Bar 12 is articulated by level V and bar 10 is articulated by level IV (Stoia 2010, para 3), Johnson will sometimes substitute I for IV in bar 2 as he does in the first verse, but not subsequent verses of ‘Kindhearted Woman’.^{xxx} The most common succession for Johnson is given in Figure 13:

FIGURE 13 ABOUT HERE

In conceiving, what are usually termed the ‘chords of the blues’ as levels, we are better equipped to recognise the cycling quality of the structure as a whole. Once we understand the circular patterning of both the levels themselves and the way in which they relate to each other (a point drawn out in Figure 12) we can recognise the balanced cycling pattern of the large-scale structure Johnson favours in his blues recordings.

Representing this cycling pattern using a single hypertorus, as in Figure 12, is difficult to achieve. A simpler two-dimensional approach is appropriate here. Figure

14 presents each level on a circle with the levels themselves also arranged in a circle. Johnson's most common approach to the 12-bar pattern can now be seen to involve a balanced set of movements back, forth and around tonal space.

FIGURE 14 ABOUT HERE

The levels of the blues interlock to form a network (Figures 9, 10 and 11) and overlap to form a series (Figures 8 and 15). The former reflects an emphasis on equal temperament, with greater fixation of pitch allowing chromatic movement between levels, while the latter reflects an emphasis on the harmonic series with differing pitches between levels resulting in a framing of tonal areas around $\flat 3/3$, $\flat 5/5$ and $\flat 7/7$.^{xxx} I will draw on Titon's terminology in calling these areas the 3 complex, the 5 complex and the $\flat 7$ complex.

FIGURE 15 ABOUT HERE

Whereas the network of interlocking levels of the blues is more pertinent to a theory of Robert Johnson's blues accompaniments, particularly those accompaniments that do not use slide guitar, the series of overlapping levels is more useful to an understanding of the vocal melodies of Johnson's recordings.

Table 1 outlines the scale degrees used in the first verse of all of Johnson's blues recordings that follow more or less closely the pattern of level changes set out in Figure 13. The scale degree in all cases is a simplified representation of the micro-tonally detailed workings of Johnson's voice. When I have found it impossible to

summarise a given vocal articulation I have resorted to showing the general direction of travel of the voice using ‘/’ for motion generally upwards and ‘\’ for motion generally downwards. When Johnson’s voice is pitched such that it is particularly difficult to decide between two scale degrees I have given both degrees e.g. $\flat 5/5$. Neutral thirds above the tonic are given as ‘n3’ and the one scale degree I analyse in terms of neutral third above the dominant is given as n7. Parenthesised scale degrees indicate an anacrusic rhythmic quality. Songs that do not follow a 12-bar blues pattern of some sort have not been detailed and alternative takes are also not included.

It is often claimed that the melody and accompaniment of the blues tend towards independence.^{xxxii} There is undoubtedly some truth in this claim. Stoa has highlighted a good number of blues recordings where vocal and accompaniment can be usefully theorised as articulating contrasting levels simultaneously or, to use Stoa’s preferred term, as articulating contrasting *modes* simultaneously. However, in understanding Robert Johnson’s music Middleton’s point that ‘[b]lues melody *is* harmonically conscious to the extent that it usually fits the chord when it is first sounded’ should be given special emphasis and perhaps even expanded, because, in the music of Johnson at least, there is usually a sense of a single level for both voice and guitar at any given point in his songs (Middleton 1972, p. 36).

A tendency to hear and conceive blues melodic and harmonic material as independent comes, primarily, from a tendency for blues musicians to derive the second four-bar phrase of the vocal from the first. In articulating these two phrases Johnson most commonly deploys scale degrees that comfortably overlap between the levels, that is scale degrees 1, $\flat 3$, n3 and 3. The data in Table 1 suggests that 1 appears slightly more often than the 3 complex, and that within that complex $\flat 3$ occurs a little more often than 3. n3 is less common, although such labels are not straightforward to

apply as much depends on how one summarises and differentiates the pitch motions within a given complex.

The next most common occurrence is the 5 complex with 5 far more common than $\flat 5$ and $\sharp 4$.^{xxxiii} This complex can still be considered part of level IV, however, when scale degrees are subjected to what might be described as the loosening effect of level overlap. Consider, for example, the first phrase of ‘Kindhearted Woman’, which begins with 5 (discarding anacrusic elements). When a shift of level occurs in the fifth bar of the verse (bar 8 of Example 4) we can recognise a process whereby melody and harmony articulate level IV with the level slightly reconfigured to accommodate the reuse of 5 in the vocal melody, thereby forming the ladder 6, 1, $\flat 3$ 5, instead of the 1, $\flat 3$, $\flat 5$ (with 6 implied) that is heard in bar 1.^{xxxiv} It is notable that this prominent use of 5 in the opening of both phrases one and two is not representative of Johnson’s recordings. The vast majority of first verses with closely related first and second phrases, start with 1 or the 3 complex – the two entities that sit most comfortably within levels I and IV. Despite this stretching of level IV in ‘Kindhearted Woman’ there other points in that song when the vocal melody and accompaniment clearly articulate level IV as it is outlined in Figure 9. This is the case in the second bar of the first verse of ‘Kind-Hearted Woman’ (bar 6 of Example 4), with the scale degrees 4, 6, 1, $\flat 3$ and $\flat 5$ all articulated.

TABLE 1 ABOUT HERE

$\flat 7$ is also a common occurrence during the first two lines of Johnson’s 12-bar recordings and like 5 this scale degree might be considered to lie outside level IV.

However, when $\flat 7$ is sounded over level IV it might be conceived as a further extension of this level. Such an argument might be taken to stretch level IV so far across the ladder of thirds that the distinction between levels is drawn into question, but before rejecting this proposal altogether consider a number of related points regarding the use of $\flat 7$. Firstly $\flat 7$ is rarely given a structurally prominent position over level IV. Table 1 shows three verses that begin with $\flat 7$ (ignoring anacrusic melodic elements), but in these verses the second line is usually altered so that a scale degree that sits more comfortably within level IV is deployed ('Cross Road Blues' and 'Stop Breakin' Down Blues'). Johnson's 'Honeymoon Blues' does begin lines one and two with what might be interpreted as $\flat 7$, but it is notable that this scale degree, when articulated over IV for the second line, is characterised by a glissando up and gives the impression of straining to 1, thus Ainslee and Whitehall's very careful transcriptions of Johnson's melody give 1 as the first structurally significant scale degree of phrase two (Ainslee and Whitehall 1992, p. 113). Similarly, when, in Johnson's recordings, $\flat 7$ occurs over I for the first phrase it may be reinterpreted as 6, as is the case for the anacrusis of phrases one and two of 'I Believe I'll Dust my Broom' and 'Rambling on my Mind'. This interchangeability of 6 and $\flat 7$ does not only derive from the differing harmonic contexts, it is also part of a broader tendency in the blues to use interchangeably the different third intervals outlined in Figure 5 as well as gradations between these. This is not only the case between 1 and the rung of the ladder above it, but also between 1 and the rung below it as well as other third intervals (e.g. 5 to $\flat 7$). The narrowest third in Figure 5 is actually closest to an equally-tempered major second and thus, when equal temperament becomes a factor

(as it does in most instrumentally accompanied songs) the interval between $\flat 7$ and 1 can be conceived as a narrower version of the interval between 6 and 1.

When 6 and $\flat 7$ are conceived as two versions of the same rung of the ladder, and the 5 complex is recognised as an extension of level IV, we can stipulate the ladder in Figure 16. This accounts for almost all of the vocal material in phrases one and two of the songs outlined in Table 1.

FIGURE 16 ABOUT HERE

It is important to note that this theoretical ladder does not allow any note to be considered part of any level. 2 occurs over level I only as what might be termed a passing note or a neighbour note. 4 also occurs over I only as a passing note and as a neighbour note. 4 can occur as a more structurally significant note over IV as in the second phrase of the first verse of Cross Road Blues.

These points regarding the melody and harmony in the first and second phrases of Johnson's blues recordings suggest that while similar melodic resources can occur over both levels I and IV, this can be explained as much in terms of the overlap between levels as a tendency towards independence. Furthermore, these two explanations – melodic/harmonic relative independence on the one hand and overlapping levels with variable tonal areas on the other – are not necessarily contradictory and taken together may offer a fuller insight into the language of the blues.

Considering Johnson's vocal material over level V as summarised in the fifth column of Table 1 also helps us to gain a fuller understanding of vocal practices in the blues. In the first verse of 'Kindhearted Woman' (Example 4), for example, the voice

articulates a chromatic ascent from 2 to 5. This ascent echoes the chromatic motions of the accompaniment but it also articulates 2 and 5 as structurally significant over level V. ‘Little Queen of Spades’ articulates level V more clearly in the vocal with the sounding of degrees 2 – 7 – 5 and 4. More generally, by simply scanning down the ‘Phrase 3’ column of Table 1 it is clear that 2 is a far more common pitch over level V than it is over level I or IV.

4 is also a common degree over level V in Johnson’s music with Table 1 suggesting that it is more common in this context than 1. $\flat 7$ also occurs regularly over level V, because just as 3 and $\flat 3$ have an interchangeability over I, 7 and $\flat 7$ have interchangeability over V. A pitch somewhere between these also occurs, as one might expect. The phrase over V in ‘Hellhound on My Trail’, for example, is summarised in Table 1 as 2-n7-5 that is as articulating the lower portion of level V but with a neutral 7 (note that this is a summary of the pitch – as with the majority of Johnson’s pitching this scale degree is dynamic in the sense that it involves sliding quickly around the tonal area in question but n7 is given as the best summary of this note).

There are instances where Johnson articulates a portion of the ladder of thirds (taken as a whole as in Figure 15) that indicates quite a strong deviation from the tendency, identified here, for voice and guitar to articulate the same level at a given point. However, the only clear instances of such a deviation, to my mind, are ‘Honeymoon Blues’ and ‘From Four Till Late’. These examples support Stoia’s point that differing levels, what he terms modes, can be articulated simultaneously by melody and accompaniment (Stoia 2010, para 10). The general tendency in Johnson’s music, however, is for voice and guitar to articulate level V together when it occurs at the first half of the third phrase of his blues recordings.

Ladder, level and cycle, then, are not only relevant to the guitar parts of Johnson's music. His vocal parts are similarly important in articulating and elaborating the complex structural patterns of his songs. This results not only from the importance of level in Johnson's vocal parts but also through the echoing of the chromatic motions that invariably open his songs through sliding with his voice within and around the tonal areas or pitch complexes that form the structural ladders of his music. Furthermore, by emphasising the overlap, rather than the interlock, of levels Johnson's voice articulates a further dimension of pitch-space organisation that enriches his music whilst retaining an intense sense of integration and sophistication.

Conclusion

Ladder level and cycle when conceived flexibly, in accordance with Kubik's insights on microtonal structure, provide, I think, a more convincing theory of blues music. From the interlocking potentiality of levels we can recognise a chromatic network that maps onto a portion of the Tonnetz and that provides important insights into the chromatic and large-scale structure of Robert Johnson's songs. The potentiality of this network to be reconfigured as a series also provides an important means of theorising the subtle and complex organisation of blues melody without resorting to misleading conceptions of inflection of, or deviation from, a major-mode structural underpinning.^{xxxv}

The arguments I have developed in pursuing these points have drawn on some complex music theoretical ideas that may be alienating for some readers who look to understand the blues. But whilst I would want to defend the need for sophisticated theory in understanding blues music it is worth noting too that the ideas discussed in

this article are based on a quite simple conviction that the music of Robert Johnson sounds highly integrated. His music in no sense has the sound of a simple diatonic structure decorated by pitch inflection or chromatic passing notes. The chromaticism that almost invariably begins a song by Robert Johnson sets out a sophisticated understanding of musical space, and the intricate vocal lines and guitar voicings that follow explore and elaborate this space such that a strikingly balanced and integrated larger-scale structure is formed. Recognition of these points can be addressed, at least in part, through a judicious use of analytical technologies as long as these technologies have sufficient flexibility and subtlety to avoid misleading reductions or generalisations.

Similarly, I would suggest that such technologies should not be taken to run contrary to the culturally informed insights of ethnographic research. By drawing certain insights from Kubik's work into a neo-Riemannian framework I hope to have gone some way towards demonstrating the complementary potential of 'hard' analytical and ethnomusicological approaches. It is perhaps by such means that we may yet address the issues raised by Weisethaunet without leaving ourselves unable to comment upon the details of musical structure. Music analysis certainly has the potential to misconstrue the blues but carefully qualified music-theoretical work may yet allow us to understand and appreciate this extraordinary musical tradition more fully.

Endnotes

ⁱ This point is neatly summarised by Kubik in a recent chapter when he describes how he ‘eventually arrived at the sacrilegious conclusion that the blue note as a concept had no cognitional reality in the communities concerned but that they were a Western construct, reflecting a Western cognitive problem in the encounter with African-American music’ (Kubik 2008: 15).

ⁱⁱ A remarkably clear and insightful account of this issue as it manifests itself in what can be fairly described as the mainstream of popular musicology, i.e. music-theoretical approaches to rock, and progressive rock in particular, can be found in Cook (1995-96).

ⁱⁱⁱ The use of these standardised theoretical elements do receive some qualification in Weisethaunet’s article, but this qualification is not particularly direct. The reference to scale degrees by way of Arabic numbers, in particular, indicates a certain reliance on the concept of a normalised heptatonic grid and Weisethaunet even deploys the now standard approach of describing blues pitches with reference to the major mode. However, Weisethaunet does make it clear that the blues system should not necessarily be conceived in terms of deviation from a scale and his article as a whole shows great sensitivity to the complex issues encountered in attempting to theorize blues music with reference to standard analytical tools.

^{iv} In two recent articles Stoia draws on the work of key figures in the analysis of music in the classical tradition such as William Rothstein, William Caplin and Robert Gjerdingen (Stoia 2010, 2013).

^v This approach to theorising the blues is also reflected in Everett’s subsequent work on rock harmony (Everett 2008 and 2009). There is perhaps a case to be made here that Everett’s observations are not subject to such criticism because he is concerned with blues-based rock and not folk blues. However, in ‘Making sense of rock’s tonal systems’ Everett, in discussing blues-based rock, refers to the music of Robert Johnson for one of his key examples, and therefore, seems not to draw a clear line between the practices of rock and the folk blues (Everett 2004, para 16).

^{vi} Although his work is not discussed at length, I would like to mention the seminal work of Elijah Wald as an important inspiration for the writing of this article, particularly his detailed and compelling account of Johnson’s life and music in *Escaping the Delta: Robert Johnson and the Invention of the*

Blues (Wald 2004). I would also like to acknowledge the guidance afforded me by Ainslie and Whitehill's excellent transcriptions of Johnson's recordings (Ainslie and Whitehill 1992).

^{vii} In 'For-the-record aesthetics and Robert Johnson's blues style as a product of record culture' (Rothenbuhler 2007) it is argued that this influence can be explained in terms of Johnson's attitude to creating songs. Johnson's perfectionism, Rothenbuhler argues, sat well with the aesthetics ensuing from recording technologies because carefully composed and rehearsed songs accorded with the process of fixing a 'work' on disc. Such an approach to the blues lends weight to the argument that Johnson's music warrants detailed analysis.

^{viii} Borneman cites a considerably earlier reference to blue notes from Thoma Fenner's *Cabin and Plantation Songs as Sung by Hampton Students*: 'tones are frequently employed which we have no music characters to present. Such, for example, is that which I have indicated as nearly as possible by the flat seventh in 'Great Camp Meetin', 'Hard Trials' and others. These tones are variable in pitch, ranging through an entire interval' (in Bourneman 1970, p. 58).

^{ix} For a summary of scholarship concerning African retentions in the blues see the introduction of Evans (2008). Evans identifies the work of Oliver (1970) and Kubik (1999) as the key texts in this area of scholarship.

^x On the point of notes between the major second and the minor third, it is useful to compare Kubik's assertion that a 'blue note below the "minor third" (300 cents) is found in the blues, but it is rare' (Kubik 1999, p.139).

^{xi} It is notable that van der Merwe in *Origins of the Popular Style* draws on Kubik for the key notion of level in looking to reconceive the traditional notion of chord (van der Merwe 1989, p. 209 n.).

^{xii} Kubik's theoretical approach is presented again and, in certain respects, elaborated further, in 'Bourdon, Blue Notes, and Pentatonicism in the Blues: An Africanist Perspective' (Kubik 2008).

^{xiii} In considering the blues the salient points here are that the partial a third above the fundamental (the fifth harmonic) is 14 cents lower than its equally-tempered counterpart and the partial a minor seventh above the fundamental (the seventh harmonic) is 31 cents lower than its equally tempered counterpart. The importance of the harmonic series in the language of the blues is also approached in relation to barbershop harmony later in this article.

^{xiv} A connection could possibly be drawn here with the emphasis on third relations in the work of

certain 18th and 19th century music theorists. For a detailed account see Kopp (1995).

^{xv} I have opted to classify the neutral third as an interval half way between an equally tempered minor and a major third. Kubik's definition of the neutral third aligns with that of the equiheptatonic third, which is given as 342.8 cents. This interval is calculated by dividing the octave into seven equal intervals and multiplying this interval by 2 (i.e. $1200 \text{ cents} \div 7 = 171.4 \text{ cents}$, $\times 2 = 342.8 \text{ cents}$). (See Kubik 1999, p. 120 n.)

^{xvi} The narrowing interval aligns to the harmonic series such that the interval between each rung of the ladder of thirds is, in the case of Figure 5, consistently 65 Hz. If we take C as 261 Hz, then, the approximate pitches in Hz would be 261, 326, 391, 456 and 521. I return to this point in relation to barbershop harmony.

^{xvii} This point helps explain Evan's observation cited above that 'several folk singers regularly use pitches between the major sixth and minor seventh and between the major second and the minor third.' (Evans 1982, p. 24). The interval 267 cents above the dominant and tonic is just above halfway between 6 and $\flat 7$, and 2 and $\flat 3$ respectively.

^{xviii} Titon's observation that the $\flat 3$ above the higher C diagrammed in Figure 5 is more common than 3 in the same range also sits quite comfortably with the notion of narrowing thirds (see Titon 1977, p. 154).

^{xix} It is notable also that this approach to conceiving chords in the blues may cast some doubt on Everett's claims concerning the instability of non-triad tones in rock (Everett 2008, p. 147).

^{xx} van der Merwe's study contains many striking and often fascinating hypotheses, but it is, in my view, somewhat marred by a number of statements that resuscitate problematic assumptions around music, culture and value, as is the case here. Such problems are reflected in van de Merwe's insistence on retaining the notion of 'primitive music' – a particularly unhelpful concept, I would suggest, when attempting to understand African American musics.

^{xxi} As Henry notes, this progression is found in the classical tradition in music as early as J. S. Bach's. (See Henry 2000, p. 163, ex. 4.143).

^{xxii} See also Abbott and Seroff (2008, p. 51) on this point.

^{xxiii} It is also, of course, important to note that the ease with which the chromatic lines of the ragtime progression can be sung, as this is also an important factor in their ubiquity.

^{xxiv} It should be noted here that Averill indicates that he has ‘not found early accounts describing this phenomenon’, however, he goes on to point out that ‘perhaps early close-harmony singers would occasionally ring chords but lacked a vocabulary with which to name this effect’ (Averill 2003, p. 164). Given the importance of African American musicians in the development of barbershop and the overlap with Kubik’s conception of the blues system it seems to me unthinkable that this was not the case. Indeed chords that ring (or are intended to ring) may have been the norm suggesting something of a reversal in our thinking in relation to equal temperament and overtone-driven musical logic.

^{xxv} This point is also highlighted in the blues, of course, where the cadence-like progression IV7 – I7 is just as common as, if not more common than, V7 – I. Similarly, the chord I7 is a very common closing sonority in the blues. This is particularly true of Johnson’s music where the addition of a seventh becomes a sign of closure – a point that, for me, casts considerable doubt on Everett’s claim that non-triadic tones should not be considered stable (Everett 2008, p. 147). The emphasis on sevenths at the end of songs in Johnson’s recordings align more comfortably with the idea of rung chords – I hear them as overtly saturating chord I or, preferably, level I at the close of the song and certainly not as destabilising it.

^{xxvi} Averill provides a useful summary of the apparent syncretism of barbershop harmony when he notes that ‘[d]etermining with precision the cultural origins of elements of barbershop singing has proven vexing for musicologists. [...]. The elastic rhythm of barber-shop singing, its secondary dominant progressions, the verse-chorus structure, the exaggerated portamento, and tags all have European prototypes but also seem to respond to deeply traditional aspects of African American performance practice.’ (Averill 2003, p. 48).

^{xxvii} Example 2 is taken from van de Merwe (1989, p. 250). The song ‘Sweet Adeline’ is also particularly readily associated with this progression. Tagg terms this progression an ‘Adeline slide’ because of the words it sets in this context (Tagg 2000, p. 209). I would like to express my thanks to Philip Tagg for instigating much of my research in this area following my presentation of an early draft of this article.

^{xxviii} This is a term used by Guy Capuzzo in ‘Pat Martino’s *The Nature of the Guitar*: an intersection of jazz theory and neo-Riemannian theory’ (Capuzzo 2006, p. 5). Capuzzo’s exploration of this network in relation to jazz provides a useful point of comparison.

^{xxix} Evidence for the point that the single chromatic descent in bar 3 of Example 4 can be viewed as implying the three-voice chromatic descent in bars 1–2 is given by the song ‘Hellhound on My Trail’ where the single line $\flat 7-6-\flat 6-5$ is heard against the vocal melody singing $5-\flat 5-4-(\flat 3-1)$ – see Table 1.

^{xxx} It is important to note that the chromatic cycling that occurs in bar 11 of the 12-bar pattern of ‘Kind-Hearted Woman’ and many other of Johnson’s songs whilst suggesting a cycling through levels I, IV and V, can be construed as articulating level I on a larger-scale structural plane.

^{xxxi} Both $\flat 6$ and $\flat 2$ are uncommon in Johnson’s music. An analysis of his first verses uncovers no strong instances of $\flat 6$ and only two songs that contain $\flat 2$ (see Table 1). Evans’ has noted that $\flat 6$ is quite common in the work of other blues artists (Evans 1982, p. 24). Titon excludes both $\flat 2$ and $\flat 6$ from his downhome blues scale.

^{xxxii} See, for example, Middleton (1977, p. 36), Temperley (2007, p. 329 ff.) and Stoia (2010, para 10).

^{xxxiii} These are distinguished primarily in terms of subsequent melodic motion: $\sharp 4$ moves up; $\flat 5$ moves down.

^{xxxiv} This diminished chord configuration is not used to suggest level IV elsewhere in ‘Kindhearted Woman’, but it is used to do so in other songs in the ‘Kindhearted Woman’ mould, usually so as to imply level IV in the second bar of the twelve-bar blues. This occurs in ‘Phonograph Blues’, ‘Little Queen of Spades’ and ‘Honeymoon Blues’.

^{xxxv} The logic of the major mode and that of blues, I would suggest, are fundamentally different. If we run with the ideas developed in this article we might go so far as suggesting that the blues derives from a loose application of the logic of the 4th, 5th, 6th and 7th partials of the harmonic series in contrast to the major mode which derives from a slight adjusting of the perfect fifth (2nd and 3rd partials) such that it can determine a heptatonic scale.

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Figure 1. Jeff Todd Titon's downhome blues scale (Titon 1977 [1994], p. 154)

The image shows a musical staff in treble clef representing the downhome blues scale. The notes are: E2 (open), G2 (3rd fret), A2 (5th fret), Bb2 (6th fret), B2 (7th fret), C3 (8th fret), D3 (10th fret), E3 (12th fret), F3 (14th fret), G3 (15th fret), A3 (17th fret), Bb3 (19th fret), B3 (21st fret), C4 (24th fret), D4 (27th fret), E4 (30th fret), F4 (32nd fret), G4 (34th fret), A4 (37th fret), Bb4 (40th fret), B4 (42nd fret), C5 (44th fret), D5 (47th fret), E5 (50th fret). The scale is divided into four sections labeled 'E complex', 'G complex', 'B[b] complex', and 'E' complex'. Below the staff, fret numbers are listed for each note. Brackets below the fret numbers group notes into four complexes: E complex (346), G complex (471), B[b] complex (108), and E' complex (204). The notes in the E' complex (108, 37, 12, 47) have arrows pointing to them, indicating a specific fingering or technique.

Figure 2. Kubik's simple model of harmonics-based scalar patterns that provide a framework for much solo vocal music in west central Sudan.

'Female range'
 partials-based scalar pattern
 (over hidden fundamental C)

represents partials no.	8	7	6
speech-tones:	high	med	low

is transposed to 'Male range'
 (over hidden fundamental F)

represents partials no.	8	7	6
speech-tones:	high	med	low

Figure 3. Kubik's more detailed model of partial-based scalar patterns

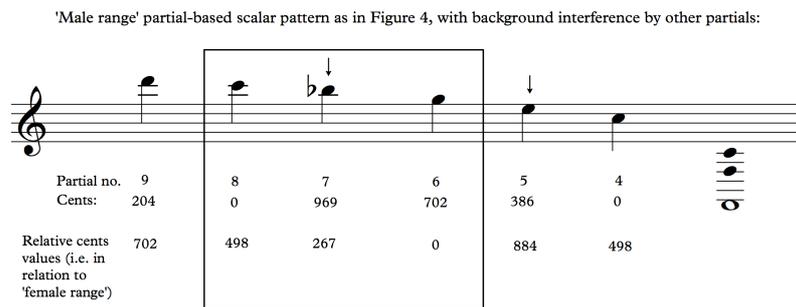
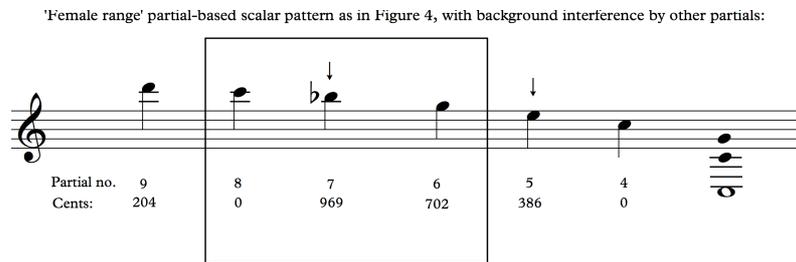


Figure 4. Diagrammatic account of van de Merwe's model notion of the ladder of thirds in blues music.

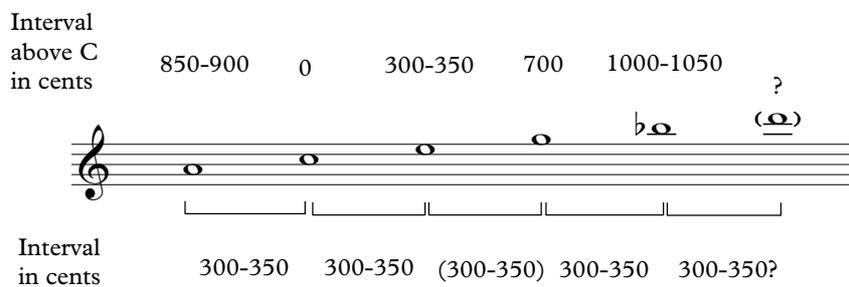
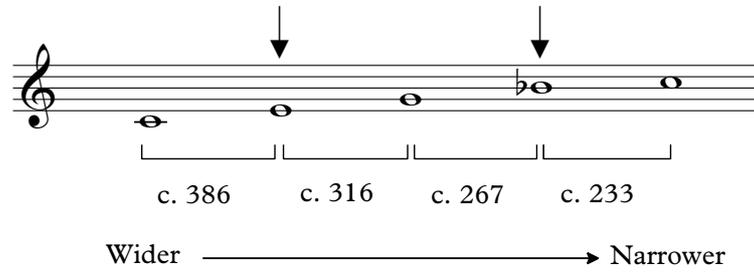


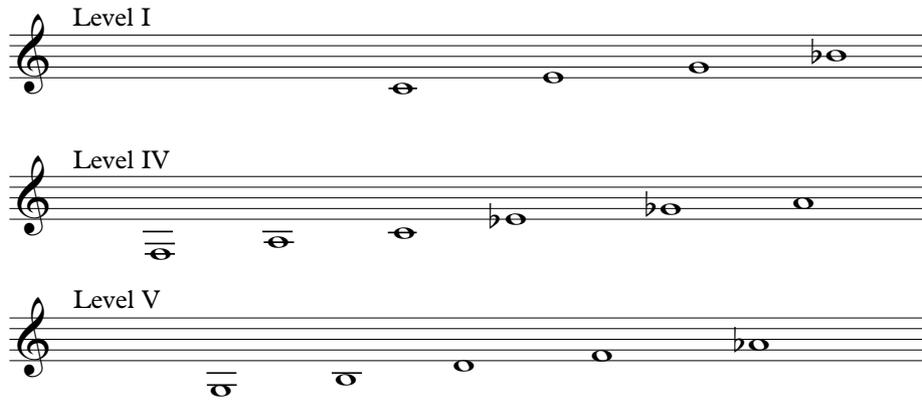
Figure 5. The ladder of thirds adapted in accordance with Kubik's partial-based model bringing it in line with the logic of the harmonic series. Arrows indicate flatness in relation to equal temperament.



Example 1. The 'ragtime' progression in C

The musical notation shows a five-measure progression in C major, 4/4 time. The treble clef staff contains chords: C major (C4, E4, G4), F major (F4, A4, C5), G major (G4, B4, D5), F major (F4, A4, C5), and C major (C4, E4, G4). The bass clef staff contains a steady bass line of quarter notes: C3, F2, G2, F2, C3.

Figure 7. Simple notated pitch network of levels I, IV and V



Example 2. 'Ain't You Coming Back to Old New Hampshire'

Moderato

mf

The image shows a musical score for a piece titled 'Ain't You Coming Back to Old New Hampshire'. The tempo is marked 'Moderato'. The score is written on a single staff in treble clef with a common time signature (C). It begins with a mezzo-forte (*mf*) dynamic. The melody consists of eighth and sixteenth notes, often beamed together. The accompaniment is a steady eighth-note bass line. The piece concludes with a final cadence marked by a double bar line and repeat dots.

Figure 8. Simple notated pitch network of levels I, IV and V with dotted arrows to indicate chromatic motions between levels.

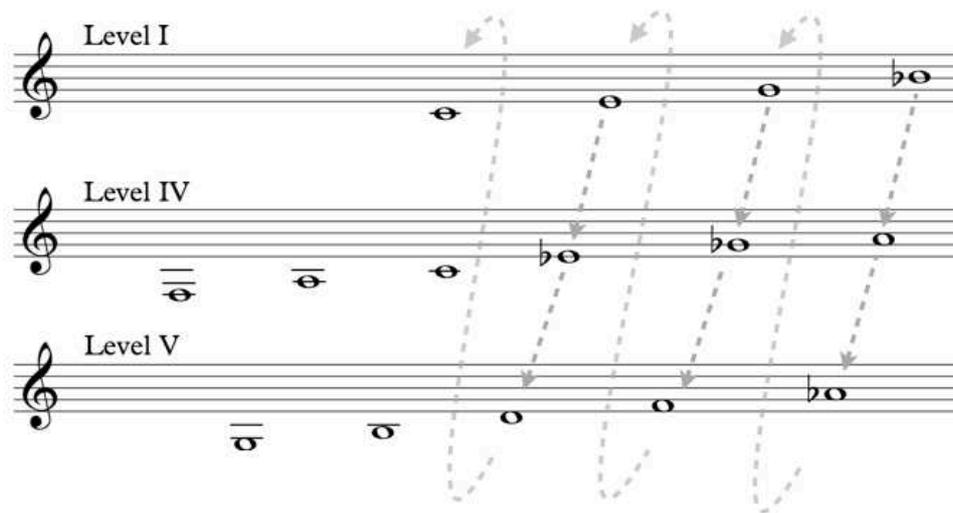


Figure 9. Pitch network of levels I, IV and V now presented in accordance with the patterning of the Tonnetz with root/minor ninth given as interchangeable options in each level.

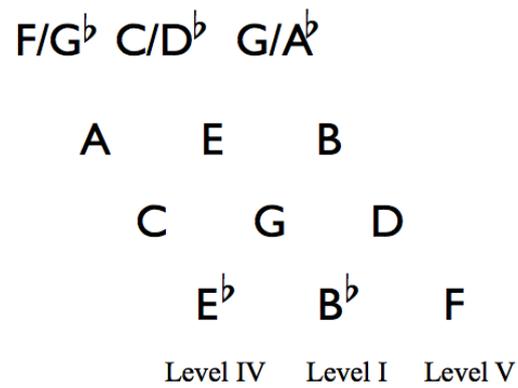
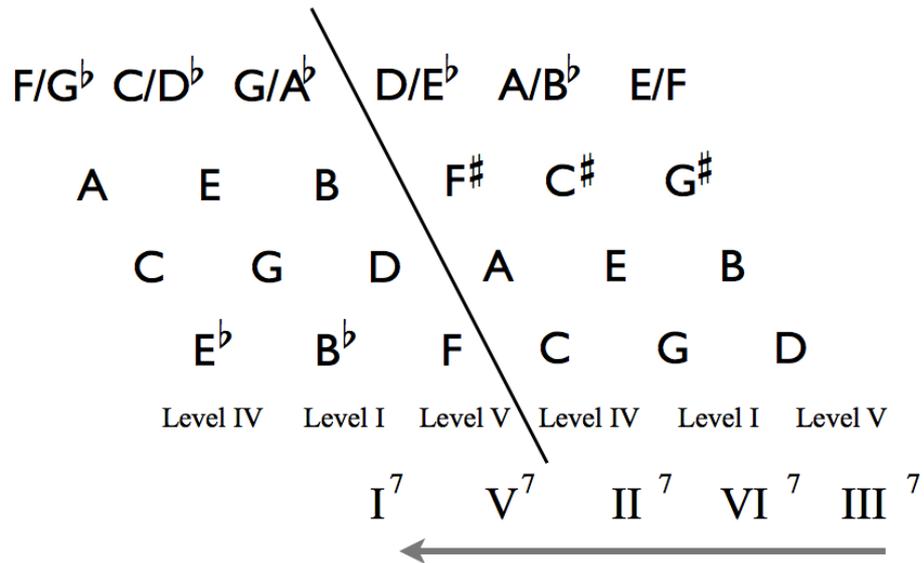


Figure 10. The ragtime progression as a consequence of movement through the pitch network in which minor-ninth/root substitution is shifted systematically.



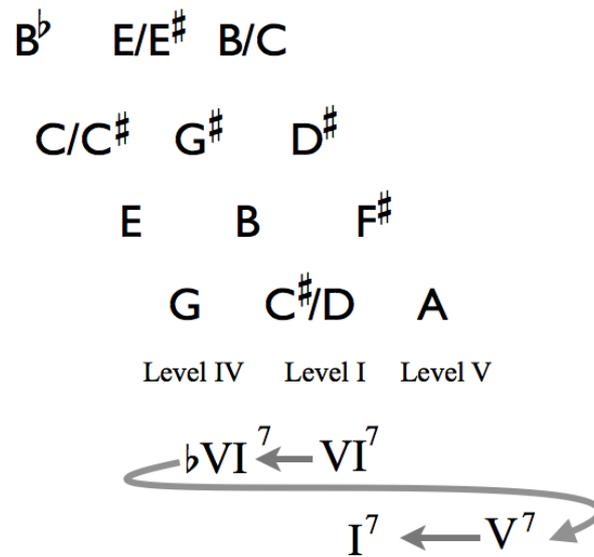
Example 3. Transcription of Robert Johnson's 'Drunken Hearted Man', end of verse 1

And if I could change my way of li - vin' it would

mean so much to me

VI⁷ bVI⁷ V⁷ → I⁷

Figure 11. The chromatic progression at the end of each verse of 'Drunken Hearted Man' as cycling motion through the pitch network, now in E



Example 4. Transcription of Robert Johnson's 'Kindhearted Woman' (version originally released),

introduction and verse 1

Swung

The musical score is presented in two systems, each with a vocal line on a treble clef staff and a piano accompaniment on a bass clef staff. The key signature is G major (one sharp) and the time signature is 4/4. The tempo/style is marked 'Swung'. The score includes measure numbers 1, 5, 9, 12, and 14. The lyrics are: 'I got a kind hearted wo man [do]a-ny thing this world for me I got a Kind heart-ed wo man [do]a-ny thing this world for me But these ev- - il hear - ted wo - men man they will not let me be'. The piano accompaniment features a steady bass line with chords and triplets in the right hand. The vocal line includes triplets and rests.

1 I got a

5 kind hearted wo man [do]a-ny thing this world for me I got a

9 Kind heart-ed wo man [do]a-ny thing this world for me

12 But these ev- - il hear - ted wo - men

14 man they will not let me be

Figure 12. Chromatic pitch network forming a hypertorus with cycling process of diminished chords that open 'Kindhearted Woman' indicated by fuzzy black semi-circular lines

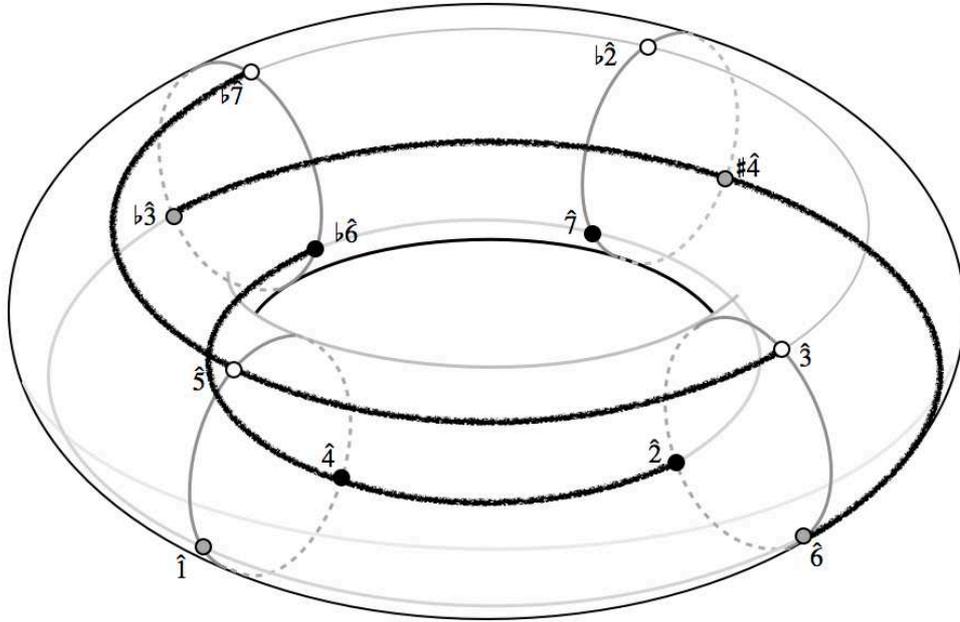


Figure 13. The large-scale harmonic structure favoured by Johnson in most of his blues recordings.

I	I	I	I
IV	IV	I	I
V	IV	I	V

Figure 14. Diagram of large-scale structure of 12-bar blues succession favoured by Johnson with two-dimensional circles indicating planes of the hypertorus.

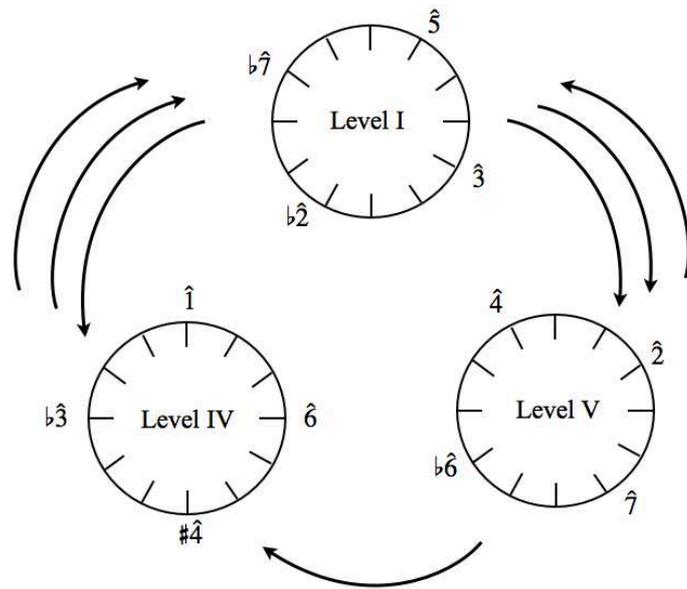


Table 1. Scale degrees used in the first verse of Johnson's 12-bar blues recordings

Level (unless otherwise stated)	I	I	IV	IV – I	See annotations	IV – I
Phrase	Phrase 1	Phrase 1 end	Phrase 2	Phrase 2 end	Phrase 3	Phrase 3 end
Kindhearted Woman Blues	(b3-3-4) 5-4-b5-3-1-b7 IV: 7-1-b3-1-b5-4	IV: b5-1	(3-4-b5) 5-4-b3-1 b7-1-b3-1-5	4-1	V: 2-b3-3 3-4-#4-5 IV: b7-1-3-1-b5-3	4-1
I Believe I'll Dust My Broom	(b7-1) b3-1 (6-1) b3-1-5	5-1	(6-1) 2/b3-1-2/b3-1 (6-1) b3-5-4	3-1	V: (5)2-5-4 IV: b7-b3-1	4/3-1
Sweet Home Chicago	1 IV: b3-1-b7-5	b3-1	1 b3-2-1-b7-5	b3-1	V: (3-4-#4) #4-5	I: (7)-b3-1
Ramblin' on My Mind	(b7-1) b3-1 (b7-1) b3-1-6/b7	b7-1	(6-1) b3-1-b7 (b7-1) b3-1-6/b7	b7-1	V: (2-1) b3-2-1-6-5 IV: (4-1) b3-1-5	4/3-1
When You Got a Good Friend	(5-1) b3-1 (b7-1) b3-1	b3-1	(6-b7-1) b3-1-b7 (b7-1) b3-1	b3-1	V: (6-b7) 1-7-5 IV: b3/2-1-5	n3-1
Come On in My Kitchen	–	–	–	–	–	–
Terraplane Blues	(b7)1-b3-1-5 (5) b7-5	b3-1	(b7)1-b3-1-5 (5) b7-5	b3-1	I: (b7) b3-4-#4-1 I: (b3) #4-1-b7-1	I: b3-1
Phonograph Blues	(3-4) b5/5-4-3-n3-1 (b7) b3-1-b7-3	b7-3	(3-4) b5-n3-1-b7 (b7) b3-1-b7-3	5-3	V: (2) b3-2-1-6-5 IV: (6-1) b3-2-1-6-5	6-1
32-20 Blues	(1) b3-2-1 b3-1-b7-3	b7-3	(1) b3-2-1 b3-1-b7-3	b7-3	V: (1) 2-b3-2-1-b7 IV: b3-2-1	5/#4-1
They're Red Hot	–	–	–	–	–	–
Dead Shrimp Blues	(/) b5-b3-1-b7 IV: (7-1) b3-1	4-1	(3-4) b5-1 (b7-1) b3-1	4-1	V: (/) 5-b7-5 IV: (b7-1) b3-1	4-1
Cross Road Blues	(b7) b7-b3-1 b7-5- / -b3	3-1	(b3-3-4) 4-#4-4-b3-1 b7-5- / -b3	3-1	NC: b3-1 #4 /	n3-1
Walkin' Blues	1-3-b3-1-5-3-b7-1 1-b7-1-1-b7-1-5-4	n3-1	(b3)1-3-b3-1-5-3-b7-1 1	b7-1	IV: (1-b3) #4-4-b3-1 V: / #4-b3-4-3	b3-1
Last Fair Deal Gone Down	–	–	–	–	–	–
Preaching Blues	–	–	–	–	–	–
If I Had Possession Over Judgment Day	(#4-/) 1-5 1-b7	5-b3-3	(#4-/) 1-5 b7-1	b3-1	V: 3-4-#4-4-5-3 IV: 4-b3-4	b3-1
Stones in My Passway	(5-6/b7) 1-b3-3-1-5 (3-5) b7- \ -4-3-1	3-1	(5-b7) 1-b3-3-1-5/#4 (4-5) b7- \ -4-3-1	b3-1	NC: 1-b3-3-4-5-4 b7-1-b3-1	#4-1

I'm a Steady Rollin' Man	(/) #4/5-4-3 b3-4-3	1	(/) #4/5-3-1 (\) 3-#4-1	1-5	V: (b7-7) 1-b3-4-3-5 IV: (\) b3-1-b7-1-b3-1	b7-3
From Four Till Late	(3) 5-6-5-5-3 IV: (#5-6) 1-2-1	6-5	(6) 1-2-1-6 (#5-6) b3-2-1	6-5	II: (5-6) 1-6-5-n3 V: (#5-6) 1-6-5-3	b3-1
Hellhound on My Trail	(/) b3-1 V: 2-b2-5 2-b2-2 5-b5-4	b3-1	I: 1-b3-1 b3-2-1-2-1 5-b5-4	b3-1	V: (/) 2-n7-5 I: (b7-1) b3-1-b7-1 b3-1-b7-1	b3-1
Little Queen of Spades	(b7) 1-b3-3-4-b5/5-1-b7 IV: 4-#4-1-b7-b3-3	b3-3	\ -b3-b5-4-b3-1 /-5 - \ -1-b7-3	5-3	V: b2-2-7-5-4 IV: \ b3-1	b3-1
Malted Milk	1-b7-5-3 IV: b7-1-5-4	3-1	7-1-b7-5-3 b7-1-5-4	3-1	V: b7(3-4-5) b7-5-b7-5-4 IV: (4) 5-4	3-1
Drunken Hearted Man	5-4-3 IV: 5-1-b7-5-4	3-1	(b7-7) 7-1-5-b5-1 b7-1-b7-5-4	3-1	V: 5-b6-6-b7-6-5-b7-6-5 IV: (b6) 6-b6-5-6	3-1
Me and the Devil Blues	/ 4-n3-1 / 4-n3-1	b3-1	/ b5-1 / 4	b3-1-b7	V: 2-b3-4-5-b7-5 IV: b3-3-4-b5-b3-3-1	4/b5-3
Stop Breakin' Down Blues	(6) b7-b5-b3-1-b3-1 b7-5	b7	(b5-4-b5) 1 b7-b5-4-b3-1	b3-1	V: 4-3-4-3-4-3-b5 IV: 1-2-1	b3-1
Traveling Riverside Blues	IV: (5) 1-b3-1 I: 1-b7-5-4-3	4-3	(5) 1-b3-4-b5-1 1-b7-5-4-3	4-3	IV: (1-3) b5-4-b5-4-b5-1 4-3-4	n3-1
Honeymoon Blues	(/) b7-3-1 6/b7-1-b7-b5/5	b3-1	(/) b7-b3-1-b7 1-b3-1-b7-6-5	b7-1	V: 1-2/b3-1-b3-1-b7-5 IV: 1-n3-1	#4-4
Love in Vain	1-b3-3 1-2-1	3-1	#4/5-1 7-1-b7-6	b7-6	II: (/) 6-5-4-1-3 V: 1-5-1-2-1	2-1
Milkcow's Calf Blues	1-b3-1-5 5-b7-5-4-n3-1	b3-1	1-b3-1-5 5-b7-5-4	n3-1	NC: 1-b3-3-4-b5 1-b5-1	1

Figure 16. Level I and IV with ambiguity between 6 and $b7$ now emphasised

