

## **The Rhythm of English and Blues Music**

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### **Abstract**

*This paper hypothesises that early blues singers may have been influenced by the trochaic rhythm of English. English is stressed, timed, which means that there is a regular beat to the language, just like there is a beat in a blues song. This regular beat falls on important words in the sentence and unimportant ones do not get stressed. They get squeezed between the salient words to keep the rhythm. The apparent contradiction between the fundamentally trochaic rhythm of spoken English and the syncopated ternary rhythm of blues may be resolved as the stressed syllable of the trochee (a stressed-unstressed sequence) is naturally lengthened and assumes the role of one strongly and one weakly stressed syllables in a ternary rhythm. I then suggest investigating the rhythm of English and the rhythm of blues in order to bring out a number of similarities and differences between the two, and show how the linguistic rhythm of a culture can be reflected in the rhythm of its music.*

**Keywords:** English rhythm, blues, blues rhythm, trochaic, ternary, syncopation.

### **Introduction**

The idea to bring together the rhythm of English and the rhythm of blues sprang from the evidence that learning spoken English is not an easy task for French-speaking students. Rhythm and intonation constitute important features which contribute to the decoding and interpretation of utterances.

One main difficulty for learners, I argue, comes from the fact that they have no rhythmic reference on which they can rely to support their speech and stress the words or phrases that form utterances. I sometimes tell the students that the rhythm of English is the rhythm of blues (or rock and roll), insisting on the alternating pattern of strong and weak beats which characterizes this type of music. As I see it, the comparison has two main advantages. First, it shows the natural relationship between phonology and music and corroborates the linguists and musicologists' long-time suggestion that the prosody of a culture's native language should be reflected in the rhythms of its music (Lieberman 1975; Selkirk 1984; Lerdhal & Jackendoff 1983; Temperley 1999). These two forms of expression have a rhythm, a melody, a metric structure, stresses and tone. Teachers use popular songs and poems in their stress exercises. Carolyn Graham (*Jazz Chants* 2000, *Let's chant, let's sing* 2006), for example, has created songs and poems which connect the rhythm of spoken American English to the beat of jazz. On the other hand, my intuition is that blues music exhibits the same rhythmic patterns as ordinary English speech.

English is stressed, timed, which means that there is a regular beat to the language, just like there is a beat in a blues (or rock and roll) song. This regular beat falls on important words in the sentence and unimportant ones do not get stressed. They get squeezed between the salient words to keep the rhythm. Rhythm is the kind of acoustic pulsation, or lilt, or pattern produced by an alternation or a perceptible distribution of stressed and unstressed syllables. This type of alternation is not only found in poetry (and in popular songs), but it is also a feature of connected speech. The acoustic properties of speech constitute what is commonly known as prosody. It concerns intonation, rhythm and stress. In terms of acoustics, prosody involves variation in syllable length, loudness and pitch. Linguistically, prosody involves rhythm, length, and perhaps other elements which contribute to the structure of speech, such as the variation of frequencies, for example. Phonologically, prosody regards tone, intonation, rhythm, and word stress. Prosodic features are suprasegmental, they affect every segment in an utterance, words, clauses, or phrases. Clauses and phrases are grammatical concepts, but they can have their prosodic equivalents like tone groups which correspond to the syntactic units (noun phrase, utterance, etc.) intervening in the rhythm of connected speech (Patel 2003: 140) and interact with other intonation patterns (Szlamowicz 2003: 161).

All languages have a rhythm. In some languages like French, the beat falls on each successive syllable, whereas in most varieties of English, the beats roughly fall on the stressed syllables. Those tend to be lexical rather than functional items, and there are mechanisms to avoid stress clashes and stress lapses.<sup>1</sup> We have already noted that the rhythm of English is trochaic, which means that the sequences in the utterance consist of a stressed syllable alternating with zero, one or more unstressed syllables. This is called a trochaic foot, a word stress pattern involved in the rhythm of English.

Blues is based on a syncopated ternary rhythm. Each beat (represented by a quarter note: ♩) is divided into three eighth notes (to form an eighth note triplet: ♪♪♪ = ♩) and played by omitting the middle note, which obtains on three beats: ♪♪ ♪♪ ♪♪. The rest between the two eighth notes of the triplet corresponds to an eighth note value (♩ = ♪). One may also consider that the first two eighth notes of the triplet merge into a quarter note (by lengthening the onset of the triplet) as in the following sequence (still on three beats): ♪♪ ♪♪ ♪♪. The structure of traditional blues reflects the rhythm of the first blues songs which consisted of a single line repeated twice (or more), as in the collective work songs which were structured on a *call-and-response* format, for example:

Woke up this morning, feel 'round for my shoes,  
 You know 'bout that babe, had them old walkin' blues.  
 Woke up this morning, feel 'round for my shoes,  
 You know 'bout that babe, had them old walkin' blues. (R. Johnson, *Walkin' Blues*)

The singing was often accompanied by clapping or homemade instruments, but the lines followed patterns closer to a rhythmic talk than to a melody.

Early blues singers may have been influenced by the trochaic rhythm of English, and this raises the question of how the phonic system of the English language is reflected in a musical form created by the community that speaks the language, all the more so since there seems to be an apparent contradiction between the metrical structure of English (binary) and the basic ternary rhythm of blues. The adjective *trochaic* derives from the noun *trochee*, a feature of Greek and Latin prosody which is the addition of a long and a breve values (e.g. ♩). There is in this sequence an underlying triple meter as the long value (♩) can be divided into two breve ones (♩ = ♪+♪). The combination of the three (♪♪♪) may result in a ternary rhythm. The trochaic stressed-unstressed sequences in English, for example, can be regarded as being in triple time as in metrical feet containing a stressed syllable and two unstressed syllables, provided that the middle syllable is omitted. I will therefore investigate the rhythm of English and the rhythm of blues, a verbally improvised type of music that is accompanied by a rhythmic musical context, in order to highlight a number of similarities and differences between the two domains. It would then be interesting to check if the linguistic rhythm of a culture can leave an imprint on the rhythm of its music.

### Similarities between the rhythm of language and the rhythm of music

When one associates language and music, one relies on a number of similarities. As with language, musical rhythm is not only a matter of tempo, and as with language there is a sense that rhythmic segmentation or grouping is divided into phrases of equal duration and organised in a periodical succession to create a base rhythm. Rhythm is a fundamental component of both language and music which operate on similar systemic principles.

The music system (made of sounds like language) works on two axes. One is horizontal and concerns sequences, i.e. the progressive arrangement of groups of notes into phrases, the other is vertical and allows the production, selection, and availability of several notes at the same time (Benveniste 1966: 55-56), as in chords for instance. This functioning is not unlike that of language on its two syntagmatic and paradigmatic axes, with the difference that in language two sounds cannot be produced simultaneously. The musical sequence is compatible with this simultaneity, whereas the syntagmatic axis of language does not allow it. It affects the intelligibility of the message, the sound being in itself significant.

<sup>1</sup> A stress clash consists of two adjacent stressed syllables and a stress lapse is a long sequence of unstressed syllables.

Music is naturally related to speech. Some signals marking boundaries in language and music, such as duration, the lengthening of intervals, and tonic placement are comparable. These are important enough for listeners to be sensitive to and rely on them.

### **The music-speech natural link**

It is often claimed that folk music can be influenced by the rhythm of words which give the melodies a language-like rhythmic pattern. This is particularly true of Africa where the link between language and music is natural. In Ghana, for example, Northern Ewe rhythms arguably begin with gestures marked by free speech rhythm, and end with stylized gestures characterized by stylized speech rhythm (Agawu 1995: 29-30). According to Wachsmann (1971: 187), “there is hardly any music in Africa that is not rooted in speech”. Chesnoff (1979: 75) argues that African music is derived from language. Because of its African heritage blues music is in keeping with this close relationship: there are indeed similarities with African music. What has changed is the language and the rhythmic patterns can naturally be borrowed from it. Originally, songsters modelled their compositions on English folk ballads (Springer 1999: 54), and their songs bore the stamp of the prosody of the English language. But the rhythm of the melodies can also be related to the statistical learning of prosodic patterns. Statistical learning can be defined as a process or mechanism for internalizing these patterns in one’s infancy, i.e. when one starts learning one’s native language (Nazzi *et al.* 1998; Ramus 2002; Patel *et al.* 2006: 3042). For example, knowledge of the stress patterns of words, which plays an important part in the rhythmic structure of English, simply comes with language acquisition. So, as Patel suggests, when a composer writes music, linguistic rhythm is in his ear, and he is bound to reproduce it in his compositions (2007:165).

Now what is true for infants can also be true for adults. The black slaves who spoke various African dialects were surrounded by English and although they did not quite understand the language they tended to translate the rhythm and syntax of their native languages directly from English, their new idiom. What is now called *negro speech* or *jive talk* was once the accent and intonation of a foreigner trying to speak a language he did not know (Jones 1963: 22). Besides, the oral character of blues is a strong argument for its ability to reflect the prosody and rhythmic structure of English.

### **The rhythm of English**

The rhythm of English is set on what is commonly known as The Principle of Rhythmic Alternation (Schlüter 2005: 17-20). This principle refers to an ideal eurhythmic structure which alternates stressed and unstressed syllables on a regular basis as in the sequence: *a red and yellow hat*. In this phrase a strong syllable alternates with one weak syllable and form a stressed-unstressed pattern. Other forms of foot structures containing stress lapses (with more than one unstressed syllable) and stress clashes (two adjacent stressed syllables) are regarded as violations of this principle, which can be repaired by a number of compensation strategies: mainly the squeezing/lengthening of syllables and stress shifts.

Since the basic unit of the English rhythm in the metrical trochaic foot which extends from the beginning of one stressed syllable to the onset of the next, and since the recurrence of stresses is regularly patterned, it follows that syllables between stresses do not have a stable duration. In other words, the greater the number of syllables intervening in the interval, the faster the tempo, and the shorter the syllables. Then, one posits that speech is divided into fairly isochronic intervals and that beats fall on stressed syllables. Similarly, a piece of music can be divided into regular time periods, equal metric divisions which constitute a sensible basis for rhythm. The following phrases (1a-c), each containing two metrical feet, have a regular rhythm.

- (1) a. a man’s voice
- b. a woman’s voice
- c. a minister’s voice

If we beat time to the rhythm of the stressed syllables, we realize that they occur at regular intervals in all three sequences, the unstressed syllables are therefore squeezed to fit in the interval. The resulting pattern is a two-beat unit in which the beats correspond with the accented syllables.

In musical notation, our beat will be the quarter note q. Think of the beat as the stroke of a pendulum as it moves back and forth. No matter how fast or slow the motion is, it is always even. Examples (2a-c) show that linguistic rhythm and musical rhythm coincide.

(2) a.           1       2  
          a 'man's voice |  
           $\frac{2}{4}$  ♪ | ♪       ♪ |

b.           1       2  
          a | woman's voice |  
           $\frac{2}{4}$  ♪ | ♪♪       ♪ |

c.           1       2  
          a | minister's voice |  
           $\frac{2}{4}$  ♪ | ♪♪       ♪ |

(The two eighth notes n and the eighth note triplet  $\text{♩}$ , take up the same amount of time as a quarter note.)

Similarly, a sentence containing three metrical feet falls into a three-beat unit known as a triple meter (the waltz type):

(3)           1       2       3  
          I'll | see you again tomorrow |  
           $\frac{3}{4}$  ♪ | ♪♪       ♪       ♪ |

If we add *night* after *tomorrow*, it will constitute the first beat of the next measure:

(4)           1       2       3       1  
          I'll | see you again tomorrow | night  
           $\frac{3}{4}$  ♪ | ♪♪       ♪       ♪ | ♪

Examples (3) and (4) clearly show that foot structures coincide with beat units (the quarter notes) and that divisions between metrical feet are irrespective of word boundaries: we have the following feet: 'see you a-', '-gain to-', '-morrow', 'night'.

Furthermore, in order to keep a steady beat, the pronunciation of the binary feet (containing two syllables) will be influenced by that of the first metrical foot which contains three syllables and will imprint a ternary rhythm on the sequence. This can be obtained by lengthening the first eighth note of each beamed pair into a triplet feel.

Thus the binary rhythm can be reinterpreted. To avoid stress clashes, for instance, the triple rhythm appears to be softer in connected speech. During a concert, the musician and rock and roll singer Chuck Berry told the audience about the origin of his famous song *No Particular Place to Go* as follows:

« ... and again, I 'drive a'long... in my ,automo'bile, I 'got my 'little 'girl in the 'front 'seat, you 'know, and I 'didn't 'have 'any 'place to 'go, and... ah, it comes to me, 'no par'ticular 'place to 'go. »

The stress marks indicate the rhythmic units in sentences in bold. These patterns alternate stressed and unstressed syllables in a binary or ternary rhythm whose divisions are given in (5):

(5) I |'drive a |'long in my |,automo |'bile

I |'got my |'little |'girl in the |'front |'seat you |'know  
 I |'didn't |'have |'any |'place to |'go  
 |'no par |'ticular |'place to |'go

No doubt that this type of rhythm (though it may present stress clashes), especially the last line *no particular place to go*, has influenced the ternary rhythm of the song. Here is the first verse:

- (6) 'Riding a'long in my 'automo,bile  
 My 'baby be'side me 'at the 'wheel  
 I 'stole a 'kiss at the 'turn of a 'mile  
 My ,curi'osity 'running 'wild  
 'Cruising and 'playing the 'radi,o  
 With 'no par'ticular 'place to 'go.

Note that an extra beat is added on the typically unstressed preposition *at* ('*at the 'wheel*) to repair a stress lapse, thus avoiding a series of three unstressed syllables and keep a steady alternating rhythm.<sup>2</sup> Also note that stress tends to lengthen the relative duration of accented syllables (Pierrehumbert 2003:123).

Furthermore, the southern American accent, best known as *southern drawl* that breaks lax vowels (e.g. /i/, /æ/, /e/, /θ/, etc.) into diphthongs (e.g. *kiss* /kis/ and *little* /litl/ are pronounced respectively /kijəs/ and /lijətɪ/, *have* /hæv/ and *dog* /dɒg/ exhibit the oral forms /hæjəv/ and /dɒjəg/), and which changes tense vowels, particularly diphthongs, into long monophthongized vowels (e.g. *ride* /raid/ becomes /ra:d/, *mile* /mail/ becomes /ma:l/), emphasizes the tendency.

The resulting effect of that is the ternary rhythm of the trochees. Musically, the pairs of eighth notes representing them will be played or sung as triplets: ♪ = ♪♪ (the middle eighth note being omitted), or to account for the lengthening of the accented vowel: ♪ = ♪♪ in a syncopated ternary rhythm.

### Beat and stress alignment

Blues is first and foremost a text, and the traditional blues singer must be regarded as a teller rather than a musician (Springer 1999: 18). This means that the words in a blues song are of prime importance and therefore take precedence over the music.

Generally speaking, setting words to music largely depends on the rhythm of the lines to compose the melody, for, text or music, it is the first element that serves as a reference to the other. In the opposite case, the melodic line will guide the cadence. A song is the combination of two independent components: text and music. Textsetting, therefore, requires a constant interplay between the two. On the one hand, musical and linguistic groups must match, and on the other hand stressed syllables must fall on strong beats (Dell & Halle 2005: 1-2).

Temperley (1999: 24-25) argues that 'in inferring a metrical structure from a vocal melody we prefer a structure in which stressed syllables and strong beats are aligned'. A language like English, whose sentences alternate stressed and unstressed syllables, naturally establishes a close relationship between syllabic stress patterns and the rhythmic structure of music. The head of a time-span may, for example, exhibit the first syllable in an utterance with the note which is in a relative strong metrical position, like the first beat in a measure (Lerdahl & Jackendoff 1983). Recall that when composers write their music they, consciously or unconsciously, rely on the rhythmic patterns of their native language, and blues singers are no exception. Their music comes straight down from the long plaintive utterances sung by the black slaves working in corn or cotton fields, and they endeavour to imitate the tones of the human voice and of the language in the strains of their music. The melodies and the tempo of blues music, as it were, sound like those of field hollers with long glissandi broken with complaints and doleful cries. Those high-pitched sounds are likely to modify the rhythmic patterns of a melodic line by emphasizing certain elements irregularly.

<sup>2</sup> It may be contended that this is a musical demand although it is a function word.

### Syncopation

In a melody salient tones are perceived as stressed, which may modify the rhythm either by reinforcing or contradicting the tempo. Thus, a high-pitched note played or sung in an off-beat position may provide a sense of syncopation in a musical phrase (Patel 2007: 194) as in (7):

(7)



Here, the circled note will be perceived as stressed although it appears in a weak position, the second half of the beat.

In the intonation of English high-pitched stressed syllables represent a second rhythmic layer above the stressed syllables and contribute in the rhythm of the utterance to separate strong beats so that they do not fall too close to each other and produce stress clashes (Bolinger 1981). When that happens, the duration of the accented objects is lengthened (Pierrehumbert 2003), thus creating a break in the rhythm. These more or less sudden changes are called syncopations.

Syncopation, or syncope, in phonology means the loss of a sound, letter, unstressed vowel, or syllable within a word, for example: *over* > *o'er*, *heaven* > *heav'n*, etc. Such forms as *don't* (*do not*), *gonna* (*going to*), *wanna* (*want to*), *ain't* (*is/are/has/have not*), commonly called contractions, can also be regarded as syncopes, some of which affect the rhythm of the utterance. In example (8), the form *gonna* which contains a stressed syllable and an unstressed syllable, instead of *going to* which exhibits two weak syllables following the initial strong syllable, helps to keep a eurhythmic structure alternating stressed and unstressed syllables.

(8) I be'lieve you 'gonna 'lose your 'mind (Tommy McClennan, *Whiskey-Headed Woman*)

In addition, the use of a negation or of a negative contraction reflects the speaker's choice in his production, which means that forms like *don't* and *ain't*, for instance, systematically receive a beat (Huard 2002: 44-45). In (9), *ain't* is stressed and so is the first syllable of *drivin'*.

(9) I 'ain't 'drivin' no nail (Lonnie Johnson, *Broken Levee Blues*)

The resulting clash is repaired by the syncope which marks out a break, a pause, with a decline of the voice, which acts as a weak beat between the two conflicting syllables (Attridge 1982: 172-175).

In music, a syncopated rhythm is a rhythm that displaces the usual accent away from a strong beat into a weak beat, or a subdivision of a weak beat:

(10) ♩ ♩ ♩ ♩

In example (10), the second beat of the first measure is prolonged to the onset (its strong part) of the third beat, causing a rhythmic break. The fourth beat of the same measure is carried into the downbeat of the following measure, a usually strong beat (the strongest in the measure) which becomes weak. It may be said that syncopation is a conflict between accent and meter: emphasis is put on default weak beats in the measure. As a consequence, the rhythm is disrupted, broken into a new, more expressive, swinging beat.

Take the first two measures of *St Louis Blues* by W.C. Handy:

(11)



The stressed syllables in the first measure should fall on the strong beats and the unstressed syllables on the weak beats. *Hate*, for instance, should coincide with a stronger beat (or the onset of a stronger beat) than *I* or *to*. If things are left unchanged, the syllables will all have the same strength: the unstressed syllables will fall on strong beats and the stressed syllables are usually strong. Now, if *hate* is displaced forward by half a beat, it will fall on a beat and be stronger than *to*. The syncopated effect produced by the high-pitched note on *hate* can be analyzed as follows: shift the binary rhythm of the first measure into a ternary rhythm. Then the stressed syllables which initially fall on the second part of the beat are prolonged to the first part of the next more accented beat:

(12)  $\overset{4}{\text{♩}} \overset{\text{♩}}{\text{♩}} \overset{\text{♩}}{\text{♩}} \rightarrow \overset{\text{♩}}{\text{♩}} \overset{\text{♩}}{\text{♩}} \overset{\text{♩}}{\text{♩}}$   
 I hate to see I hate to see

The stressed syllables are therefore construed as falling on the onset of the next beats which are also stressed:

(13)  $\overset{1}{\overset{4}{\text{♩}}} \overset{2}{\text{♩}} \overset{3}{\text{♩}} \overset{4}{\text{♩}}$   
 I hate → to → see →

In (13) the arrows indicate the shifts of *hate* into the onset of the second beat in the measure which is accented and of the particle *to* into the second part of the beat which is weak. The verb *see* is displaced and falls on the third strong beat represented by a half note.

This process displaces syllables onward so that strong beats and stressed syllables are aligned. The pronoun *I*, therefore, will be perceived as less accented despite its initial position. As can be seen in example (14), the resulting rhythmic structure of this syncopated movement has been improved: before all the syllables have the same strength and after rhythmic alternation is naturally restored:

(14) x x x x x x  
 I hate to see → I hate to see

The second bar of our blues song (11) exhibits that pattern; the onset of the first beat is a rest (eighth note rest:  $\overset{7}{\text{♩}}$ ).

(15)  $\overset{1}{\overset{4}{\text{♩}}} \overset{2}{\text{♩}} \overset{3}{\text{♩}} \overset{4}{\text{♩}} \overset{1}{\text{♩}}$   
 $\overset{7}{\text{♩}} \overset{\text{♩}}{\text{♩}} \overset{\text{♩}}{\text{♩}} \overset{\text{♩}}{\text{♩}} \overset{\text{♩}}{\text{♩}} | \overset{\text{♩}}{\text{♩}}$   
 the ev'ning sun go down  
 x x x x  
 the ev' ning sun go down

In this measure, the stressed syllables of the line and the onset of the beat are aligned; the stress clash between *go* and *down* is compensated in that *go* receives a secondary stress and *down* a primary stress as phrasal verbs usually do.

Syncopation, therefore, applies at the metrical level: the strong beat is displaced into the second beat of the measure instead of the usual first beat, and at the level of time division, in the shift from binary into triple rhythm. Note that the relatively long beats fall on stress-lengthened syllables. Reinterpretation of the binary rhythm of (15) as ternary will not change the rhythmic alternation, but the triple rhythm in (16) is softer and likely to avoid clashes: the lapse of time between the stressed syllables *sun* and *go* is longer.

(16)  $\overset{1}{\overset{4}{\text{♩}}} \overset{2}{\text{♩}} \overset{3}{\text{♩}} \overset{4}{\text{♩}} \overset{1}{\text{♩}}$   
 $\overset{7}{\text{♩}} \overset{\text{♩}}{\text{♩}} \overset{\text{♩}}{\text{♩}} \overset{\text{♩}}{\text{♩}} | \overset{\text{♩}}{\text{♩}}$   
 the ev'ning sun go down

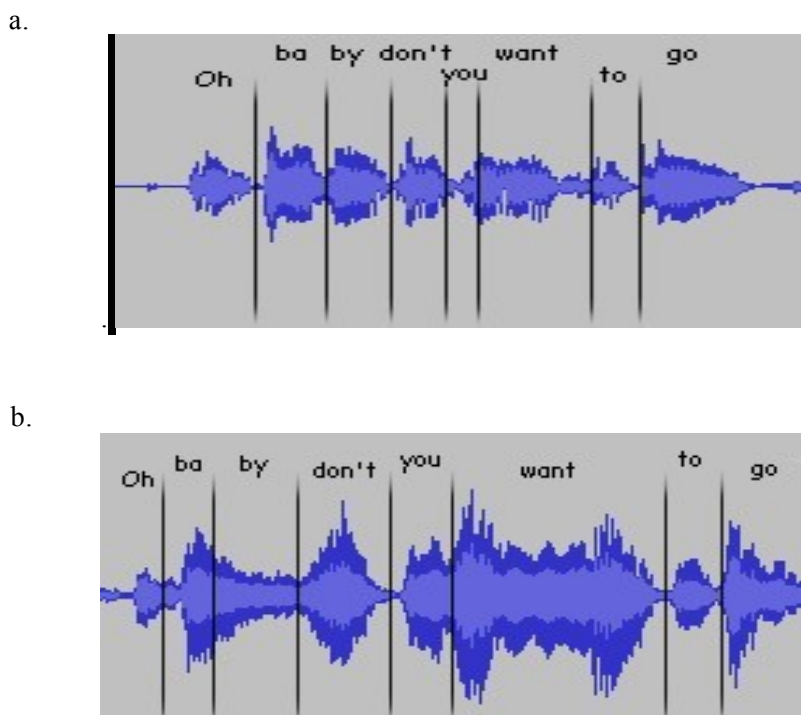
Yet, it is hard to estimate the impact of the rhythm and intonation of English speech on the rhythm of blues music, for the rhythmic and intonation patterns are so to speak stylized by the melody rather than subject to it.

### Rhythmic and intonation patterns

At this point, it remains to be seen whether 1) the division of the sentence into syllables and metrical feet is comparable with the grouping of tones in musical phrases, and 2) if the principle of rhythmic alternation applies in the same way to both domains, linguistic and musical.

The current study uses acoustic waveforms of utterances taken from blues songs to examine aspects of the patterning of rhythm and intonation. Consider, for example, Figure 1 which shows the sentence *Oh baby don't you want to go*, pronounced by a British speaker, and as it is sung by Robert Johnson.

In this first example, the rhythm of the melody coincides with the syncopated ternary back beat, which means that the strong part of the beats (i.e. the first eighth note or the quarter note of the syncopated triplet:  $\frac{1}{8}\frac{1}{8}\frac{1}{8}$   $\frac{1}{4}$   $\frac{1}{8}\frac{1}{8}\frac{1}{8}$ ) and the stressed syllables are aligned. Syllable boundaries in the waveforms of both productions are marked by thin vertical lines. The markings may vary according to one's perception, but what matters here is to show the different forms a syllable can have and not to determine exactly where it begins and where it ends. In most cases syllables are closely connected to one another, especially when they are sung, and it is sometimes uneasy to divide them.



**Figure 1.** A sentence taken from the blues song *Sweet Home Chicago*. Top (a): Waveform with syllable boundaries marked by vertical lines, pronounced by a British speaker. Bottom (b): Waveform of the sentence sung by its composer, Robert Johnson (Note that this is the first line of the song repeated several times).

Grouping is certainly incidental to prosody, namely to intonation. Intonation is linked to stress timing and plays a role in determining tone groups (or intonation groups) in the sentence. A tone group is a sequence of syllables marked by pitch events in the intonation contour. Sentence 1a has two tone groups. The first unit contains *Oh baby* and its right boundary is marked by the lengthening of its unstressed final syllable. The second tone group terminates at the end of the sentence. It is marked by a strongly accented syllable and its gradual extinction. The waveform in Figure 1a shows a regular alternation of stressed and unstressed syllables with salient peaks at the onset of the stressed syllables (*baby*, *don't*, *want*, *go*). The syllable *you*, for instance, which is squeezed between *don't* and *want* is almost 'swallowed' or attached to *don't* so as to form one disyllabic word (cf. *dontcha* in loose



spoken English) stressed on the first syllable. The duration of the periods between syllables is variable as can be seen in Figure 1a. The stressed syllables are lengthened, particularly *want* which is the predicate in the sentence, and *go* which is the tonic syllable marking the end of the second tone group and of the sentence. Note that the strongly stressed syllables are high-pitched (*baby, don't, go*) and/or lengthened (*want*). Also note the conical form of the last syllable, *go*, which terminates the sentence and reflects a falling intonation characteristic of English speech.

The waveform of the musical version (Fig. 1b) of our sentence shows longer intervals (probably due to the influence of the music) and stronger impacts on beats. This waveform, however, appears to have the same overall features as those of the spoken sentence (Fig. 1a). Apart from the tone groups, the stressed and unstressed syllables alternate regularly. The beats which are aligned with the stressed syllables are very clearly marked (high peaks).

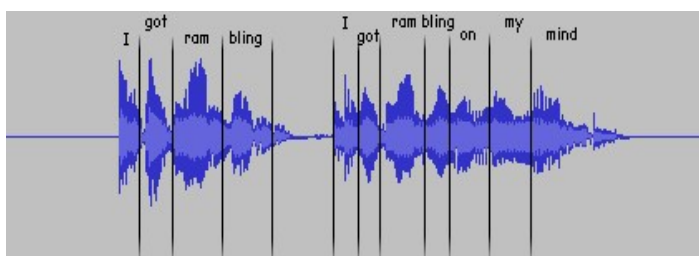
The pronoun *you* is a syllable in the waveform, *want* and *go* have forms which look like those of Figure 1a. As in sentence 1a, the main stress on *want* lengthens its vowel which is shaped like a 'spool', a hole lengthwise between two salient rims which can be seen in 1a as well as in 1b, even if in 1a the form is less marked. The last syllable of the sentence (*go*) displays in 1b a strong impact in onset position and gradually phases out. Note that in the waveforms of Figure 1 (a-b), the successive periods differ in duration, but the two versions show more or less similar periodic variability.

### The duration of alternating periods

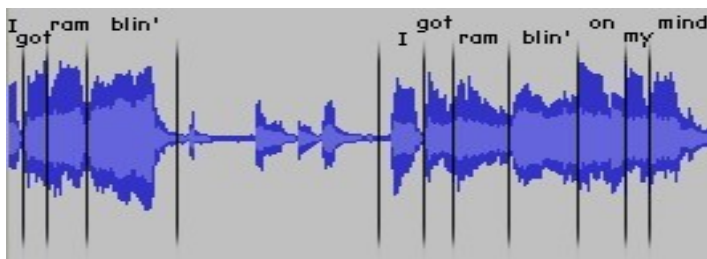
As discussed above, default stressed syllables are generally aligned with strong beats or the strong part of beats. We have said that there are compensation strategies to repair violations of the Principle of Rhythmic Alternation. Thus, stress clashes are avoided by separating the adjacent stresses from each other as in *after'noon tea* which becomes *'after,noon tea* (stress shift). Similarly, a long series of unstressed syllables, creating a stress lapse will be disrupted by adding an intervening stressed syllable or by stressing one (generally the middle one) of the unstressed syllables in the sequence (stress addition).

Figure 2 shows the sung and spoken waveforms of the line *I got ramblin', I got ramblin' on my mind* taken from the famous blues song *Ramblin' on my Mind* by Robert Johnson.

a.



b.



**Figure 2.** A sentence taken from *Ramblin' on my Mind* by R. Johnson. Top (a): Waveform divided into syllables of the sentence uttered by a British speaker. Bottom (b): Waveform of the sentence sung by R. Johnson.

In this extract, we can easily distinguish two tone groups. One group consists of *I got ramblin'* and a second group which repeats and completes the first: *I got ramblin' on my mind*. The final unstressed syllable of the tone

group, (*ram*)*blin*’, is lengthened, thus marking its boundary, the waveform gradually phases out; the extinction is more abrupt in 2b. Notice that the alternation of stressed and unstressed syllables is uneven in the two versions; both waveforms exhibit salient peaks on almost every syllable. However, syllable durations vary. The initial stressed syllable of *ramblin*’, for instance, is longer than the syllable *got*. It bears a stronger stress: *ramblin*’ is in fact the lexical item in the sentence which provides the main information. The lengthening of this syllable is repeated in Figure 2b. As a consequence *got* is overshadowed and will be perceived as having a secondary stress. Another consequence of this is that the default unstressed pronoun *I* is accented. This phenomenon also operates in the second tone group: *got* is clearly downgraded relative to *ramblin*’ which bears a higher degree of stress. In the second tone group, the stress lapse between the first syllable of *ramblin*’ and the word *mind*, which are strongly stressed, is marked by less prominent impacts in onset position. The syllables are lengthened, which means that the vowels are stretched as if we had a syllable-timed grouping of the segment.

Note, however, that the preposition *on* is more stressed than its neighbors (*-blin*’ and *my*) as if to interrupt a series of three unstressed syllables and repair a stress lapse.

The waveform of the musical version mirrors the trochaic rhythm of English as it alternates long and breve values. As in the spoken version the syllable *on* shows a more salient impact and its vowel is longer than that of *my*. Thus, the same characteristics appear in both waveforms. These features are inherent in the way words are used by people when they speak or sing their language. But there are differences too, namely with the unstressed syllables which exhibit more prominent impacts in the musical version.

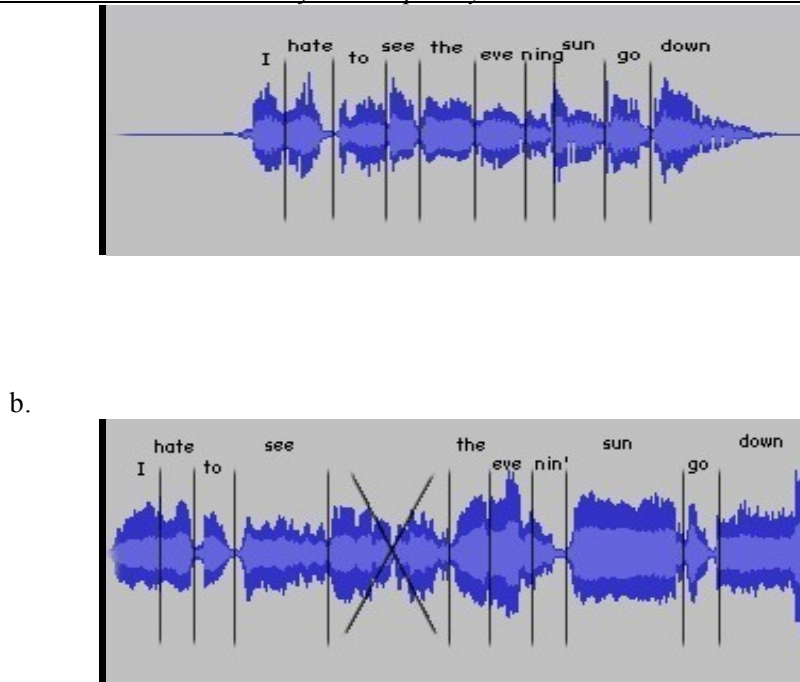
### The differences

We have already noted some differences which may appear at the level of syllable duration, the variability of which can be seen when we compare the musical and spoken versions of the same utterance. Figure 3 shows the waveforms of the first line of W.C. Handy’s *St Louis Blues* uttered by a British speaker and sung by Bessie Smith.

In the spoken form (Figure 3a) there are irregular events. Of course, we can tell stressed syllables from unstressed syllables by more salient peaks, and say that globally stressed syllables alternate with unstressed ones. But the phrase *the evening*, for instance, is an exception. The vowel of the determiner has its full form because it appears close to the next syllable which begins with a vowel (empty onset). Indeed *the* is pronounced /ði:/ or /ði/ before *evening*, which may explain a longer form of the syllable perceived as stressed. Furthermore, they belong to the same noun phrase, *the evening sun* whose head noun is *sun* which is strongly stressed and somehow overshadows the stressed syllable of *evening*. The waveform also shows that the sequence *sun go down* exhibits a stress clash, the three syllables being stressed (they have important impacts). We can observe, however, that the form of *go* is not as stretched as the adjacent syllables *sun* and *down*, which can be construed as prosodic compensation. The strongly stressed particle *down*, which is a tonic syllable, has a downgrading effect on the stress level of *go*. This is reflected in the waveform (greater impact). In Figure 3b, the stressed syllables have more important impacts in onset position, probably because of the influence of the music. The differences with the spoken waveform appear more clearly. The initial syllable of *evening*, for instance, is more strongly stressed, and the reduction in length of *go* relative to the neighboring syllables compensates for the clash in the sequence *sun go down*.

The analysis of Figure 3 (a-b) shows that rhythmic alternation is not as regular as it first appears. Indeed, the stressed syllables are clearly cut in the two waveforms, but apart from the fact that there is no strict isochrony between syllables, it appears that downbeats are stronger in the musical version relative to weak beats, which could be construed as an influence of the music on the language. Musical rhythm complies with a principle of temporal periodicity which is lacking in speech rhythm (Patel 2007: 176-177). However, judging from the sung waveform, it is hard to find the underlying rhythm that characterizes classical blues, and which translates the trochaic rhythm of English: the syllables are stretched and reflect some aspects of syllable-timed rhythm in which each syllable is clearly articulated. Finally, in Figure 3b the Principle of Rhythmic Alternation is respected in the second part of the line, a principle that is not always easy to apply.

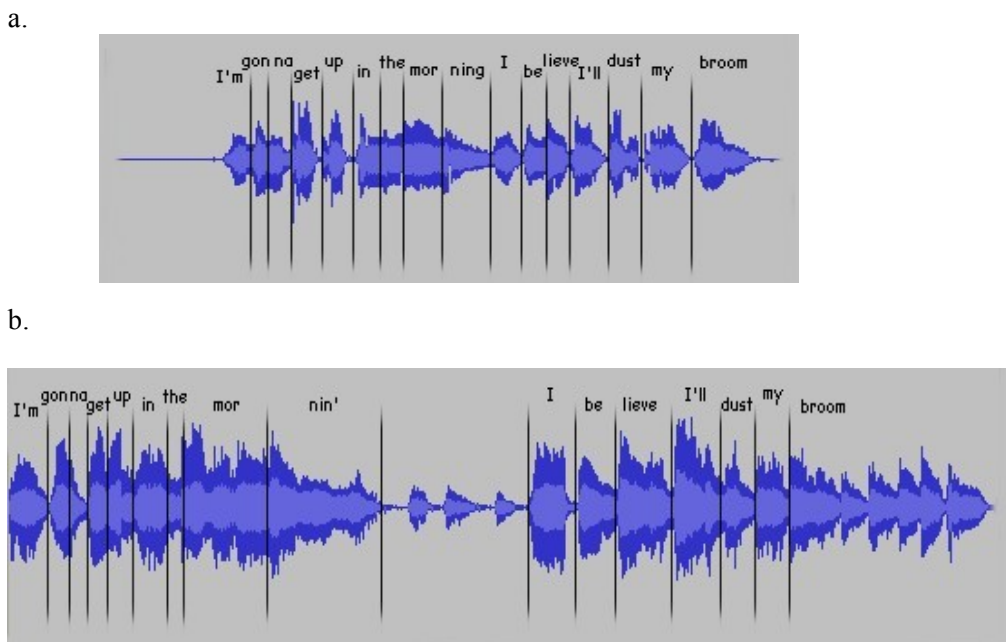
a.



**Figure 3.** First line of W.C. Handy’s *St Louis Blues*. Top (a): Waveform of the sentence uttered by a British speaker with syllable boundaries marked by vertical lines. Bottom (b): Waveform of the line sung by Bessie Smith. (Note that the crossed-out middle part of the waveform corresponds to music only.)

**Variable alternation**

Regular alternation means placing regular beats in connected speech. These beats can be marked out in such an utterance as *I’m gonna get up in the morning, I believe I’ll dust my broom*. The sentence happens to be the first line of the blues song *Dust My Broom* by Robert Johnson. Figure 4 shows the waveform of the line uttered by a British speaker and sung by the composer.



**Figure 4.** A line taken from *Dust my Broom* by Robert Johnson. Top (a): Waveform of the sentence uttered by a British speaker divided into syllables by thin vertical lines. Bottom (b): Waveform of the sentence sung by Robert Johnson himself (syllable boundaries are also marked by vertical lines).

If we divide the sentence (Fig. 1a) into metrical feet, we notice in the first tone group what appears to be a stress clash between *get* and *up* which are both stressed. The sequence *get up in the morning* consists of three feet, '*get*', '*up in the*' and '*morning*', and the clash occurs between the feet '*get*' and '*up in the*'. In this case the particle receives less stress to avoid a stress clash between two monosyllable words. It follows that a stronger intonation on the default unstressed preposition *in* is likely to compensate for a stress lapse between '*get*' and '*morning*'. This is marked in the waveform by an important impact in onset position to interrupt a series of three weak syllables.

What we have said for the spoken version is more or less reflected in the musical version of the sentence (Fig. 4b).

We can notice that in the phrase *get up*, *get* carries more stress than the particle: peaks on *up* are not so salient and the preposition *in* is longer than the adjacent *the*. Thus, we can say that for this sequence both waveforms follow the same pattern. Things are a little different in the second tone group, especially in the second part which alternates stressed and unstressed syllable in Figure 4a, in a trochaic rhythm, whereas in 4b the second foot following *believe* consists of a stressed (*I'll*) and two unstressed syllables (*dust my*). This may be regarded as abnormal considering that the verb *dust* is supposed to be typically stressed; and we have a stress clash between (*be*)*lieve* and *I'll*.

We can also consider that the default unstressed syllable *I'll* belongs with the preceding stressed syllable to the same metrical foot '*lieve I'll*' (recall that divisions between metrical feet do not necessarily coincide with word boundaries). In the waveform *I'll* appears to be stressed because the syllable is 'suspended' as in the line of the famous song by Pink Floyd, *The Wall: All in all you're just a.... nother brick in the wall*, in which the feet are, among others, '*justa*' and '*nother*'. The pause intervenes between the two feet. The musical notation of our utterance, *I'll believe I'll dust my broom*, confirms our hypothesis:

(17)

Example (17) rightly shows that the syllables (*be*)*lieve* and *I'll* belong to the same grouping and that they fall on the strong part and the weak part of the beat respectively. *I'll*, moreover, would be a weak syllable in a ternary rhythm (♩ = ♪♪). Conversely, *dust* is aligned with the strong part of the second beat which is a weak beat.<sup>3</sup> It nevertheless exhibits prominent peaks which indicate that the syllable is stressed.

Although metrical feet have a trochaic constitution, they do not make strictly equal intervals and this is mirrored in the music. Consequently, the prosody of the metrical foot formed by '*lieve I'll*' can be syncopated and vary between two values: ♩ = ♪♪ and ♩ = ♪♪, given that the first syllable (the first note) which falls on the downbeat or the strong part of the downbeat (i.e. the first part of it) will always bear a stronger stress than the following syllables. In our example the accepted rhythm for (*be*)*lieve I'll* (cf. Fig. 4b) is ♩ = ♪♪ which is iambic and creates a syncopated beat.

By and large, rhythmic (and more generally prosodic) irregularities of the language are reflected in the music, with of course variations like the pause intervening between two feet (Fig. 4b) or the lengthening of syllables, but always with a preference for alternating strong and weak beats.

<sup>3</sup> This may explain why in the waveform the syllable carries less stress.

### Conclusion

A blues song is not “primarily conceived as music, but as a verbalization of deeper felt personal meanings. This verbalization is sung” (Coulander 1992: 145). The rhythmic patterns which result from that verbalization are reflected in the prosodic possibilities of the English language. The trochaic rhythm permits the division into relatively short sequences and the predominantly monosyllabic (sometimes disyllabic) structure of popular speech makes it an ideal guide for rhythmical music. From that point of view, English is a choice language for traditional oral folk music and the regular beats that give rhythm to it are widely subject to its influence. The rhythmic stability of blues rests on an underlying syncopated ternary rhythm which accompanies the melody, and that has been translated from the trochaic rhythm of English which, with the lengthened stressed syllables of the trochees, acquires a triplet feel. The surface, on the other hand, as shown in the waveforms, exhibits irregular occurrences, breaks, periods of unequal length, stress clashes and lapses. But other features of both domains are significantly similar, like the oral aspect, the verbalization, the prosody related to emotion, and the songster’s freedom of interpretation.

There are also vowels in syllables and music notes which function on the same axis and combine to form phrases. If in music there are units that cannot be compared to linguistic signs (Benveniste 1974: 55), there are, however, modulations and intonations in both domains. Again, we can speak about linguistic and musical prosody. This mostly concerns relations of quantity and intensity between beats and syllables, as can be seen in the waveforms.

Yet, some features are distinct and peculiar to each domain. Let us first mention meter which contributes to the division of the musical phrase into recurrent isochronic intervals and which form a sensible base for rhythm. Then, the linguistic and musical syntaxes have different and specific representations in the two respective domains. There may be an organisation which in the language correlates with a number of grammatical principles governing the functions of markers in a proposition (think for instance of agreement rules), but music has a system which permits the simultaneity of sounds to form chords. Chords have a harmonic function and contribute to the beat of a piece of music. Things are not as clear-cut as they may seem. However, there is evidence that the linguistic rhythm can leave an imprint on the musical rhythm which occurs at the level of the melody, that is at the level of the features shared by the two domains: not only the features which are identical, but also those that are similar. Melodic rhythms closely reflect the cadence of the lines of the text. On that aspect the influence of one upon the other can actually operate.

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