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*Subliminal Dissonance or "Consonance"? Two Views of Jazz Meter**

STEFAN CARIS LOVE

In many styles of jazz, performances follow a pre-determined metrical *scheme*, with very little room for spontaneous alteration. Compared to common-practice music, the metrical hierarchy in jazz is extremely deep and rigid. This top-down convention affects the metrical perception of the experienced listener, but cannot completely overcome limitations to the bottom-up mechanism of metrical perception. I illustrate the interaction of metrical convention and perception with several examples of *metrical shift* in the solo recordings of Bill Evans, in which an apparently irregular surface conceals underlying fidelity to the metrical scheme.

Keywords: Bill Evans, displacement, jazz, meter, metrical dissonance, metrical shift, realization, scheme

INTRODUCTION

In many styles of jazz, especially bebop and its descendants, performance is based on two elements: a pre-determined *scheme*—the meter, harmonies, and melody such as might be notated in a lead sheet—and the *realization* of the scheme in performance, which almost always involves a degree of improvisation. Compared to the melody and harmony, the schematic meter is highly resistant to spontaneous modification in the realization: only the lowest levels may be modified, within strict limits. This framework affects the experienced listener's perception of jazz meter. Deviations from this rule only emerged in the 1950s, becoming more common in the 1960s and later (Giddins and DeVeaux [2009], 445 ff.; Gridley [2006], 16). They remain almost unheard of in straight-ahead, bebop-derived jazz performance, jazz's *lingua franca*.[1] (Throughout this paper, I use "jazz" to refer only to this style.)

From one perspective, the metrical hierarchy, comprising superimposed levels of regularly spaced beats, represents the schematic meter very well (as described in Lerdahl and Jackendoff [1983], Yeston [1974], and others). Jazz's metrical hierarchy is determined in advance by the scheme, with the chorus—a single repetition of the scheme—being the highest metrical level. (At this level, the downbeat of each chorus is a beat.) But this top-down view of jazz meter comes into conflict with recent theories grounded in perception (Hasty [1997], London [2004], and Mirka [2009]). Prior knowledge of jazz's metrical regularity affects hearing, but cannot override the listener's perceptual limitations.

In this paper, I explore this conflict via several examples from solo performances by pianist Bill Evans. Harald Krebs's theory of metrical dissonance (1999) might depict these as instances of metrical displacement against the schematic meter. However, it is nearly impossible to perceive the examples in this way. Rather, the displaced passages *sound* consonant, because all evidence of the schematic meter disappears; only the transitions to and from the state of displacement are dissonant. I call this a metrical shift to distinguish it from displacements in which the schematic meter remains perceptible.[2] I adapt the approach of Danuta Mirka (2009) to clarify my perception of these passages. During these episodes, Evans appears to break from metrical convention by adding or subtracting beats but actually preserves the schematic metrical hierarchy.

Many authors have discussed metrical dissonance in jazz. Benadon (2006, 2009a and b) and Schull (2002) examine microrhythmic inflection—conflicts between scheme and realization at a very low level. Downs (2000/2001), Folio (1995), Larson (1997, 2006), and Waters (1996) discuss a range of metrical conflicts, chiefly grouping dissonance (or "polyrhythm") but also some examples of displacement. Hodson and Buehrer (2004) have even applied Krebs's methodology to jazz. The present study uses examples of metrical shift, an unrecognized phenomenon, to animate broader claims about the nature of jazz meter.

My claims about jazz are based not only on careful observation of live and recorded performances but also my own experience as a performer. If I occasionally speculate about performers' thoughts or intentions the reader may assume that I am speaking from personal experience. Furthermore, the perception of meter, especially during ambiguous passages, can be highly subjective. My analyses represent my hearing but should not be taken to discount other hearings, especially at the transitions into and out of metrically shifted passages.

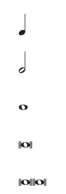
METER IN JAZZ

The view of meter as a passive receptacle for rhythm does a good job of describing metrical convention and the metrical

* This paper originated in a presentation given at the annual meeting of the Society for Music Theory, Montréal, 28 October–1 November 2009 (Love [2009]).

1 The term used by both Thomas Owens (1995, 4) and Giddins and DeVeaux (2009, 607) connoting the "jam session" style familiar to performers.

2 Hatten (2002) makes a similar distinction between "syncopation," which fits comfortably within a metrical grid, and true "displacement," which does not (276).



EXAMPLE 1. *A depiction of the metrical hierarchy as a metrical grid, in 4/4 time (after Lerdahl and Jackendoff [1983]).*

hierarchy in jazz, but it runs into trouble when taken too literally as a model for perception.[3] I discuss the hierarchic and perceptual approaches in turn.

Lerdahl and Jackendoff (1983) provide the most influential description of the metrical hierarchy (many aspects also appear in Yeston [1974]). They argue that the "interaction of different levels of beats (or the regular alternation of strong and weak beats) . . . produces the sensation of meter" (68). They note that strong beats at one level carry over to the next-highest level, and that beats at any level must also be beats at all smaller levels (19–20). They also develop the familiar dot notation for the metrical hierarchy, shown in Example 1, often called a metrical grid.

Lerdahl and Jackendoff also explain how the hierarchy emerges from a musical surface. They distinguish three types of accent: 1) phenomenal, resulting from "any event at the musical surface that gives emphasis or stress to a moment in the musical flow"; 2) structural, "caused by the melodic/harmonic points of gravity"; and 3) metrical, "any beat that is relatively strong in its metrical context" (17). Phenomenal accent acts as a "perceptual input" to meter (17). The listener unconsciously applies a series of rules to the musical surface, incorporating phenomenal accents and other factors, in order to determine the most logical meter (72–101). Metrical accents are the result.

Most jazz performances follow a common basic plan often compared to a theme and variations (as in Tirro [1967], 317). What I call the "scheme" is analogous to the "theme": a harmonic sequence of determinate metrical length (most often thirty-two measures). The scheme's metrical hierarchy determines that of the realization. While its most concrete form is as a notated lead sheet, the scheme is best understood as an abstract entity that exists only in the mind of the player or listener as an amalgam of all past performances. A performance consists of one or more cycles of the scheme; each cycle is called a chorus. A typical realization is as follows:

1. One chorus of the complete scheme, including the composed melody (if present); this cycle establishes the scheme for subsequent choruses;
2. A number of choruses that adhere less closely to the scheme: the schematic melody may be varied or ignored and the schematic harmony may be altered slightly, but the meter will be strictly maintained;[4]
3. A closing cycle of the complete scheme.

Performances sometimes include an introduction, coda, or interludes between choruses. These sections make themselves known through texture and harmony and are usually easy to distinguish from the familiar portions of the scheme.[5]

A particular realization might modify the schematic meter in a consistent way in each chorus. For example, while a scheme might originally have been entirely in 4/4, in a realization every chorus might feature a shift in the B-section from 4/4 to 3/4. These changes become part of the scheme for that particular performance. The possible range of *spontaneous* metrical modifications is strictly limited by convention, as I discuss in more detail below.[6]

Before a performance, a knowledgeable listener assumes that a fixed metrical hierarchy, up to the level of the chorus, will persist throughout. The first chorus of the performance establishes this structure. Metrical processing involves the weighing of perceptual input against knowledge of jazz's metrical conventions.[7] This knowledge operates at two levels: familiarity with specific schemes and scheme-types and familiarity with the broader demand of metrical regularity. Nearly all performances will fall into one of the following categories (listed in order of increasing cognitive demand):

1. A familiar scheme (one that is recognized by the listener), realized . . .
   a. . . . without additions (introduction, interludes, etc.) or revisions;
   b. . . . with additions, but no revisions;
   c. . . . with revisions, introduced in the opening theme and retained in the variations;
   d. . . . with two metrical schemes, one for the theme and one for the variations, requiring that the listener use the first variation chorus as a metrical scheme for subsequent choruses;
2. An unfamiliar scheme . . .
   a. . . . with the same scheme in theme and variations, and no additions;
   b. . . . with the same scheme in theme and variations, and additions;

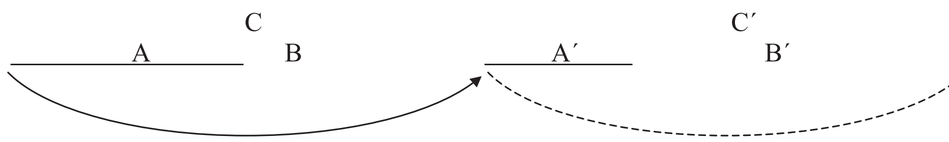
3 Hasty (1997) negatively portrays the view that meter is a "receptacle for events" (7).

4 Martin (1988) and Terefenko (2009) discuss the ways in which schematic harmonies are often altered.

5 These elements—introduction, coda, etc.—can themselves become schematic through inclusion in multiple performances. Consider, for example, the introduction to "Take the A Train," which is an expected part of the performance.

6 In fact, I speculate that the format described above, especially the strict preservation of meter and harmony, evolved to facilitate ensemble improvisation. A shared understanding of this format, combined with a well-known standard repertoire, allows musicians who have never played together to negotiate a coherent and seemingly well-planned performance during the act of performance itself.

7 Knowledge of metrical convention informs the perception of the experienced listener in any style, not just jazz.



Example 2. *Projection (Hasty [1997], Example 7.1, p. 84).*

c. . . . with a different scheme in theme and variations (see 1d).

The cognitive demands of an unfamiliar scheme are lessened if the scheme conforms to a typical form such as thirty-two-measure AABA or ABAC or twelve-bar blues.

It is hard to overstate the power of these conventions. Consider a hypothetical drum solo during a realization of a thirty-two-measure scheme. After a ninety-six-measure (three-chorus) solo, in which the drummer indulges in wild syncopations and cross-rhythms, the remainder of the ensemble, tacet for the duration of the solo, will enter in perfect unison on the downbeat of the ninety-seventh measure. If a member of the ensemble should enter a beat or measure early or late, a savvy listener recognizes this as a mistake. The rigidity of the metrical hierarchy and the conservatism of the experienced listener allow meter to become a true foil for rhythm.[8]

Christopher Hasty (1997) offers an alternative view, radically opposed to this view of meter as static framework. His theory, which unites meter and rhythm, is based on the notion of *projection* in time: "Projective potential is the potential for a present event's duration to be reproduced for a successor. This potential is realized if and when there is a new beginning whose durational potential is determined by the now past first event" (84). Example 2 shows the projective process. The labels A and B respectively designate an event—a sounding note, for example—and the silence that follows. The onset of a second event, A′, demarcates the end of the first duration, C, comprising the event A and silence B. At the onset of A′, the past actual duration C creates the potential duration C′, which is not yet past. The solid arrow indicates a completed duration, while the dotted line indicates an expected duration yet to be realized. In simple terms, we might say that the experience of the duration C creates an expectation of parallelism for the duration of C′.

Hasty's theory influences the recent work of Danuta Mirka (2009) who combines it with more traditional views of the metrical hierarchy. Mirka divides the act of metrical perception into "finding" and "monitoring" meter.[9] She uses projection to depict the initial determination of meter or negotiation of metrically challenging events, while the metrical grid depicts an established meter. On this basis, she claims, "All of the analyses presented in [Hasty (1997)] are designed to reveal *intermediary stages* of [metrical] processing by bringing to light the projections of which it consists" (29; my emphasis).[10] In other words, Hasty shows only one portion of the act of metrical processing.

In her belief that finding meter and monitoring meter are qualitatively distinct, Mirka echoes Justin London's synthesis of research on metrical cognition (2004). London depicts the perception of meter as a process of entrainment. Meter is the "anticipatory schema that is the result of our inherent abilities to entrain to periodic stimuli in our environment" (12). Listeners have an innate sensitivity to regularity and can learn to anticipate future events on the basis of past regularity. The phase of monitoring meter is marked by the perception of metrical accent, a consequence of entrained anticipation: "A metrical accent occurs when a metrically entrained listener projects a sense of both temporal location and relatively greater salience onto a musical event" (London, 23). The *expectation* of accent itself creates an accent in listener's mind, no matter what event ultimately coincides with the accent. Metrical accents are qualitatively distinct from phenomenal. They arise only in the phase of monitoring meter, the phase that London and Mirka think Hasty overlooks.

According to Mirka, the initial events of a piece enter a "parallel multiple-choice processor" which unconsciously compares possible interpretations of the meter.[11] A potential metrical analysis enters consciousness only after it has passed a certain threshold of regularity (19). The end result is a "projective hierarchy," as reproduced in Example 3, and the comparatively easy task of monitoring meter, in which metrical accents arise from the expectation of continued projective confirmation (ibid.). Notice how Example 3 combines aspects of Examples 1 and 2. When meter departs from expectations, the parallel processor "wake[s] up" and unconsciously compares possible analyses once again: the process of "finding meter" begins anew (23). This phenomenon has particular relevance for the examples of metrical dissonance discussed below.

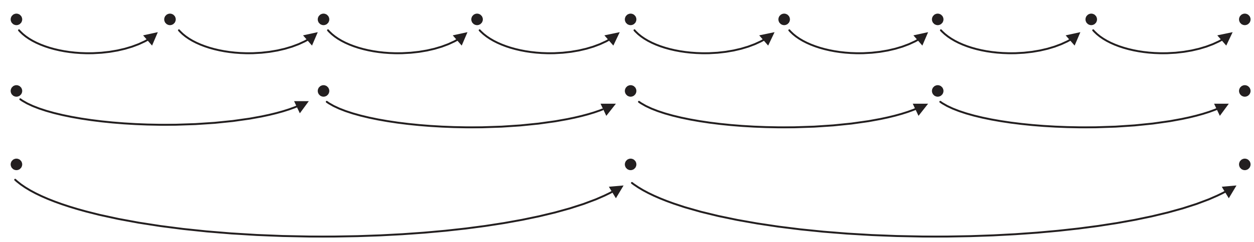
In jazz, to an even greater extent than common-practice music, the listener has a clear picture of several likely projective

8 Andrew Imbrie (1973) introduces the conservative/radical dichotomy of metrical perception. A conservative listener works hard to maintain an established meter, while a radical listener quickly abandons an established meter at the appearance of conflicting evidence. Jazz listeners are therefore conservative. Temperley (2000) notes a related difference between African and Western auditors' interpretations of African rhythms, claiming that "the Western perception involves shifting the metrical structure in order to better fit the phenomenal accents, while the African perception favors maintaining a regular structure even if it means a high degree of syncopation" (79).

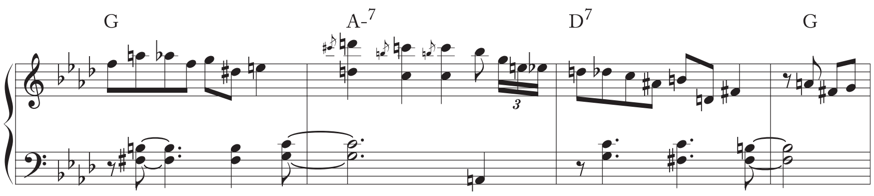
9 For a critique of this view, see Temperley (2009, 310–11).

10 This echoes an earlier critique in London (1999): "Hasty's analyses . . . can be readily understood as fine-grained explanations of metric recognition," i.e. the early part of metrical processing only (265–66).

11 Mirka (2009, 17–18): the "parallel multiple-analysis model" is first posited in Jackendoff (1991).



EXAMPLE 3. *A projective hierarchy (Mirka [2009], Example 1.12, p. 19).*



EXAMPLE 4. *Anticipation of harmony by an eighth-note in "All the Things You Are," beginning at 0:11.*

hierarchies even before the piece begins. If the listener loses track of meter during the performance, knowledge of the metrical scheme will aid the recovery of a sense of the meter. If the listener recognizes a scheme from the first few notes, as often happens, the listener might begin to perceive the highest levels of the meter even after a single measure.

London writes, "One may characterize meters in terms of their hierarchic depth—that is, whether a meter involves a rich hierarchy of expectation on many levels at once, or only a limited set of expectation as to when things are going to occur" (2004, 25). Jazz's schematic meter is exceptionally deep. In a sense, even choruses are hypermeasures: they are recurring *metrical* units. Thirty-two-measure schemes also include sixteen- and eight-measure hypermeasures.[12] This is in sharp contrast to common-practice music, in which hypermeter tends to be shallow.

Cognitive limits on beat perception suggest that meter is not perceived in the same way at all levels: as metrical units grow larger, meter blurs into form. According to London, "Metric entrainment can only occur with respect to periodicities in a range from about 100 ms to about 5 or 6 seconds" (2004, 46). At a tempo of 120 beats per minute, a four-measure hypermeasure lasts eight seconds. I speculate that one perceives the regularity of such time-spans through the learned skill of unconscious accumulation of smaller spans.[13] Metrical accents at higher levels still feel stronger than those at lower levels; however, an eight-measure downbeat receives its metrical accent not by projection from the previous eight-measure downbeat but from the accumulation of lower-level beats and foreknowledge of the scheme.

Jazz's treatment of lower metrical levels is also distinctive. The *tactus* is a primary metrical level, the "level of beats that is conducted and with which one most naturally coordinates foot-tapping and dance steps" (Lerdahl and Jackendoff [1983], 71). The standard tactus in jazz is the quarter-note; at very fast tempos, the half-note takes over. While the tactus level is usually metronomic, establishing jazz's characteristic groove, the level below the tactus is treated very loosely. Consider the incredible variety possible in swing articulation of eighth-notes. Duple, triple, and even quadruple division of the tactus are all common, and may be freely intermixed and inflected. The schematic meter extends only to the tactus-level.

In light of the tactus's status as lowest regular level, certain metrically dissonant events in jazz pose no real threat to the meter. Consider left-hand anticipation of harmony by an eighth-note, as shown in Example 4.[14] Leading into the second measure, the left hand implies Am7 harmony one eighth-note early; the same occurs leading into the fourth measure, on Gmaj7. Such anticipations are so common as to be a cliché of left-hand accompaniment style and are easily understood within the schematic metrical grid partly because of their ubiquity. Since the quarter-note level is so regular compared to the eighth-note level it is almost inconceivable that a listener would

12 Waters (1996) extends the concept of hypermeter to the sectional level but not quite the chorus: "For analysis of jazz, hypermeter is an attractive concept. The notion represents clearly the larger formal divisions within the 32-bar standard tune form and the 12-bar blues" (23). The "larger formal divisions" of thirty-two-measure tunes are generally sixteen- and eight-measure units.

13 Gridley (2006) writes, "Each musician is silently counting the beats and thinking of the chords that are progressing while he is not playing" (14). This may describe the experience of beginning players, but experienced musicians only bother to count consciously when realizing a scheme with an unusual meter; for most schemes one simply feels the hypermetrical units.

14 In Example 4 and throughout this paper, chord symbols show where harmonic changes occur according to the scheme, not necessarily where Evans places them.

EXAMPLE 5. *Grouping and displacement dissonance. Left: G3/4 grouping dissonance; right: D2+1 displacement dissonance (after Krebs [1999]).*

mistake a weak eighth-note for a strong eighth-note. (Displacements at the quarter-note level pose a much greater threat to the established meter, as in the examples below.) About similar displacements in rock, Temperley (1999) writes, "Syncopated rhythms often seem to reinforce the meter of a song rather than conflicting with it" (26). He argues that in a syncopated vocal line, "We understand certain syllables as 'belonging' on beats other than the ones they fall on" (22). In the same way, I claim we understand syncopated left-hand attacks as belonging on the subsequent quarter-note. Temperley focuses on vocal prosody and the intuition that strong syllables fall on strong beats, while I rely on the intuition that chord changes fall on strong beats.

METRICAL DISTURBANCES IN JAZZ

I divide meter-disturbing events into three categories: expressive variation, dissonance, and alteration. London defines expressive variation as "subtle nuances involving compressions and extensions of otherwise deadpan rhythms" (2004, 28), an aspect of jazz as much as common-practice performance. Benadon (2009a) interprets jazz soloists' microrhythmic accelerations, decelerations, and fluctuations as "transformations" of underlying rhythms, by tracking how certain passages depart from regularity. These variations challenge the metrical hierarchy "from the outside": they involve clock time and could not be shown with only a metrical grid.

The other challenges to meter, dissonance and alteration, come from within the metrical hierarchy. Krebs (1999) presents a valuable taxonomy of metrical dissonance. As Krebs defines it, a "series of approximately equally spaced pulses" creates a "layer of motion," while conflicts between layers generate metrical dissonance (22). The *pulse layer* is a background layer by which other layers are measured: it is "the most quickly moving *pervasive* series of pulses . . . arising from a more or less constant series of attacks on the musical surface" (23). *Interpretive layers* result from regular accentuation of certain pulses: "A succession of accents occurring at regular intervals—that is, the highlighting of every nth member of the pulse layer—results in the establishment of an interpretive layer of cardinality n" (ibid.). Interpretive layers organize the pulse layer into larger groupings. For example, in a texture with attacks on every eighth-note and accents on every third attack, the eighth-notes constitute the pulse layer and the accents create a "3-layer." In a review of Krebs (1999), Robert Hatten observes that Krebs is not entirely clear about whether all layers of motion are metrical, or whether that constitutes a distinct class (2002, 276). In jazz, however, the metrical layers are the schematic layers, and any other layer is by definition dissonant.

Within this framework, Krebs delineates two forms of metrical dissonance. *Grouping dissonance* results from the interaction of layers of different and indivisible cardinality. *Displacement dissonance* results from the interaction of layers of like or divisible cardinality whose attacks are offset from one another.[15] Example 5 depicts these states. Krebs labels dissonances using a particular notation illustrated in the example. Grouping dissonances are "labeled with a 'G' followed by a ratio of the cardinalities of the layers involved" (31). With displacement dissonances, the first number indicates the two layers' shared cardinality—in this case, two quarter notes—and the second number indicates the amount and direction of displacement—in this case, one quarter-note beat.

Krebs says that dissonance arises not only from the simultaneous presence of dissonant layers but also "indirectly" and "subliminally." Indirect dissonance results from the "juxtaposition" of dissonant layers as when triplet division of the beat replaces duple division (45). Subliminal dissonance occurs when the musical surface is consonant but the context implies the presence of a dissonant layer. Krebs provides this example: "If in a work in three-four time there appears a passage in which no musical features support the primary metrical layer [the 3-layer implied by the time signature], but many features express a nonaligned 3-layer, then there exists a state of subliminal displacement dissonance" (46).

In metrical alteration, the third type of metrical disturbance, one or more levels of the metrical hierarchy are altered through the addition, subtraction, or re-division of beats, sometimes resulting in indirect or subliminal dissonance. As I discuss above, a particular realization can incorporate pre-planned alterations to a familiar scheme. For example, there might be metrical modulations at certain points or the addition of beats or measures. Such alterations become part of the scheme for that performance, even if they are known in advance only to the performers. I distinguish these cases from spontaneous metrical alterations, those that occur with no prior planning or discussion and that would require only non-verbal communication from one performer to another to initiate.[16]

15 The terms originate in Kaminsky (1989).

16 Dunn (2009) discusses how musicians suggest metrical dissonances and alterations to one another through musical cues.

example 6. *Hypermetrical analysis of Haydn, Symphony no. 104, first movement, Allegro (Temperley [2008], Example 1, p. 307).*

All spontaneous metrical alterations in jazz must be comprehensible as subliminal grouping dissonances that preserve some higher metrical level. Typical examples involve the replacement of duple with triple division at some level with the next-highest level held constant. Consider a measure-preserving metrical modulation from 4/4 to 6/8 (half-note = dotted quarter-note).[17] This replaces duple division of the half-measure with triple division. However, the flow of beats at the half-measure level continues uninterrupted through the modulation, as do all higher levels; no matter how long the modulation persists, it *could* be understood and heard as a subliminal dissonance against the scheme's 4/4.[18] To suggest this alteration to the rhythm section, a soloist could persistently employ triple division of the half-note. Skilled accompanists will quickly react to the change. Even if the accompanists do not acknowledge the change, or if it takes them several measures to perceive it, the ensemble will continue progressing through the scheme in parallel due to the synchronization of higher metrical levels.

Compare this modulation with an invalid alternative, a *tactus*-preserving modulation from 4/4 to 3/4 (quarter note remains constant). After this modulation, each chorus will last ninety-six quarter-notes, not 128, and the harmonic rhythm of the 3/4 scheme will have accelerated relative to the 4/4. This alteration cannot be understood as the re-division of a higher metrical level or a subliminal grouping dissonance. Furthermore, if a soloist attempted to make this alteration unilaterally, without prior planning, the rhythm section would probably mistake the alteration for mere G3/4 dissonance and retain the 4/4 scheme. Unless the rhythm section immediately responded to the soloist, the two parts would decouple and progress through the scheme at different rates.

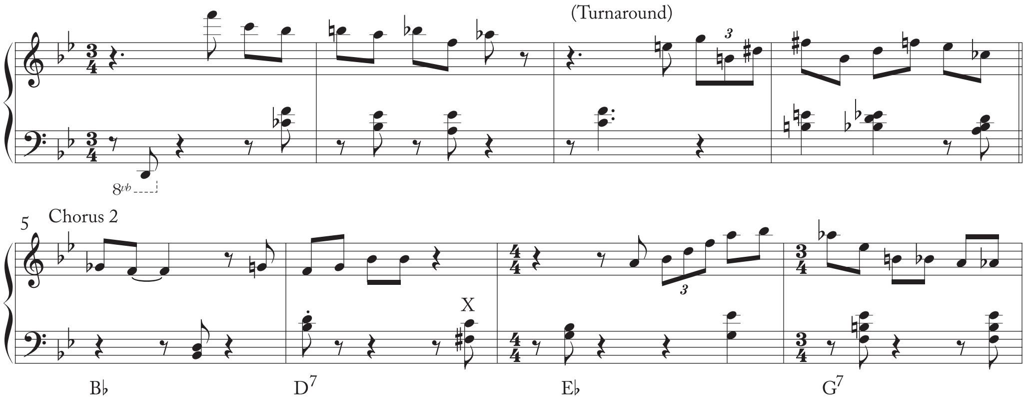
Hypermetrical alteration is ubiquitous in common-practice music and impossible in jazz, since it cannot be understood through a higher metrical level. Example 6, taken from Temperley (2008), shows a "metrical reinterpretation." Here, the two-measure level and any potential four-measure level are disrupted by the unexpected strong downbeat in m. 16. There is consistency only at the next-lowest metrical level, not the next-highest.

Alterations that violate this rule may safely be interpreted as mistakes. Consider Example 7. In this example, the Bill Evans Trio inserts an extra beat in a 3/4 context, resulting in a single measure of 4/4. Just before m. 7, as marked with an "X," Evans continues the harmony D7, implying that D7 continues through the downbeat of m. 7. This is a distortion of the rhythmic cliché described above in which the left-hand anticipates subsequent harmonies by an eighth-note. Similarly, the harmonic change to E♭ on beat one-and of m. 7 suggests that beat *two* is a downbeat. In consequence, the rhythm section inserts an extra beat in the following measure. I suspect the bassist and drummer mistakenly believed that Evans had accidentally added a beat, and they attempted to compensate.[19] Several examples below illustrate

17 Waters (1996) distinguishes measure-preserving from tactus-preserving polymeter based on whether the downbeat-level or the tactus-level is common to both of the dissonant metrical layers. The same distinction may be made between metrical modulations based on the note value that is held constant.

18 Fred Hersch oscillates in this way between 4/4 and 6/8 throughout his performance of "Con Alma" (Gillespie) from the album *Songs Without Words*.

19 A skilled rhythm section is highly sensitive to potential errors on the part of the soloist in order to minimize the audible consequences. In this case, they were too sensitive. Errors can and do occur at several metrical levels: the addition or subtraction of a beat, measure, or even an entire eight-measure section.



EXAMPLE 7. *An added beat in "Someday My Prince Will Come" (Churchill, 1937), performed by the Bill Evans Trio, beginning at 1:35.*

Evans's skillful manipulation of this cliché, which can profoundly affect the perception of meter. In this case, his band mates were not able to keep up.

I know that Example 7 shows a mistake and not an intentional alteration because the additional beat does not appear at any other point in the performance. Its appearance in other choruses, especially an appearance at the same place in each, would suggest that the performance followed model 1c above—a familiar scheme with revisions in the realization. It is inconceivable that the group would deliberately insert an extra beat at only one point in the performance.

BILL EVANS ALONE

The phenomenon of the metrical shift, in which the appearance of a metrical alteration conceals an underlying regularity, illustrates how metrical perception and reality intersect in jazz. Bill Evans's solo recordings are a marvel of metrical manipulation. They include many metrical shifts alongside more conventional metrical dissonances. These effects are all the more disruptive in the medium of solo piano with no other instruments to provide a consonant metrical background. I have selected three examples of metrical shift from Evans's two solo albums, *Alone* (1968) and *Alone (Again)* (1975).[20] My goal is to contrast abstract descriptions of these moments, based on the scheme-realization framework and Krebs's classification system, with their perceptual effect, using an adaptation of Mirka (2009) that accounts for jazz metrical convention.[21] The perspectives are complementary, and each reveals something essential about jazz meter.

I focus on passages in which Evans suppresses the schematic meter—so-called subliminal dissonances. Krebs writes, "Because they involve only one obvious interpretive layer, subliminal dissonances can easily take on the semblance of consonances. It is the performer's duty to ensure that this does not occur" (47). Krebs believes that passages in which the notated meter is entirely suppressed should be made to sound dissonant, but the opposing interpretation would seem no less valid, in which the period of "dissonance" sounds consonant and only the transitions between shifted and schematic meter sound dissonant (Krebs's "indirect dissonance"). Indeed, the appearance of a new meter, locally consonant but dissonant with what came before, can be even more jarring than a passage of subliminal dissonance performed as Krebs would advise. Evans does not heed Krebs's suggestion; he fully commits to his metrical shifts. They are experienced as local consonances, not subliminal dissonances. The overall trajectory of each episode is as follows:

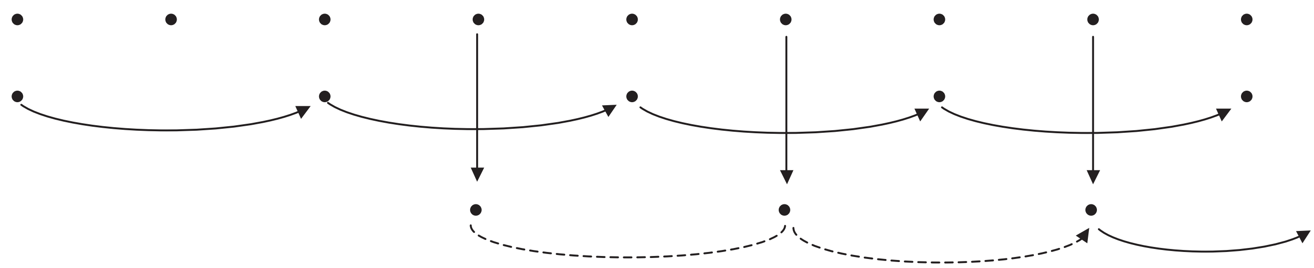
1. Initial consonance, aligned with the scheme;
2. Metrical uncertainty, caused by conflicts with the schematic meter—"preparation";
3. A new sense of consonance, shifted relative to the scheme—"metrical shift";
4. Another period of uncertainty, created by conflicts with the shifted meter—"resolution";
5. A final return to consonance, aligned with the scheme.

I call phases two and four "preparation" and "resolution" in analogy with suspensions, as these phases prepare and resolve the metrical shift.[22] (In a metrical shift, preparation and resolution are gradual, while in a contrapuntal suspension, they occur immediately upon motion in a voice. This is due to the

20 I exclude Evans's multitrack albums, *Conversations With Myself* and *Further Conversations*, from the category of solo albums.

21 Mirka's work focuses on Haydn and Mozart and she often refers to metrical conventions familiar to contemporaneous listeners that have been forgotten today. My analyses attempt a similar incorporation of jazz convention.

22 Though I conceived these terms independently, I later learned Krebs himself also uses the term "preparation," though in a different way. As Krebs has it, "Metrical dissonances . . . may be prepared by allusions to a coming dissonance within primarily consonant passages" (1999, 87). By this, he means a musical figure that initially appears in a consonant passage which returns later in the piece as a means of creating dissonance. This might also be understood as "foreshadowing," since the "preparation" does not immediately precede the dissonance.



EXAMPLE 8. *A model for displacement (from Mirka [2009]: Example 5.2, p. 166).*

difference between metrical perception and perception of contrapuntal consonance and dissonance.)

Example 8 shows Mirka's illustration of the appearance of a displaced layer. The parallel multiple-analysis metrical processor "wakes up" because of an "antimetrical attack," marked with the first vertical arrow, "an attack that is articulated more strongly than is expected at a given point in the metrical grid" (123). A subsequent antimetrical attack, the next vertical arrow, creates a projection "as a hypothesis of a new regularity," shown by the dotted arc (166). Finally, "the third challenge confirms this hypothesis and establishes an analysis of a given passage as shifted in relation to the old metrical grid" (ibid.).

I modify this model to reflect the strength of jazz metrical convention and the circumscribed nature of my examples. I take as a premise that the quarter-note (tactus) level is never in doubt, despite numerous "antimetrical" attacks on weak eighth-notes. Evans presents a more-or-less constant series of attacks on which the tactus level can be superimposed; the asymmetrical (swing) treatment of eighth-notes eases perception of this level, since strong eighth-notes, corresponding to quarter-note beats, are distinctly articulated. The task confronting the listener is to determine which tactus-beats are also beats at the half-note and downbeat levels. In other words, the listener must fit a stream of readily perceptible tactus-beats into a pre-determined 4/4 framework established earlier in the performance and assumed to continue even through uncertain passages.

The strongest indication of a beat at the half-note and downbeat level is a change in harmony. This reflects jazz's clockwork harmonic rhythm and the importance of harmony in the determination of meter.[23] Depending on the schematic harmony, not every harmonic change will be taken for a downbeat: if a scheme has regular half-note harmonic rhythm, for example. In fact, harmonic change is the only evidence I ever cite for downbeat-level beats. The harmonic change might occur on a tactus-beat or on the weak eighth-note just before a tactus-beat, which implies that the following tactus-beat is a possible downbeat. Besides harmonic change, any phenomenal accent—brought about by motive, contour, stress, and so forth—can potentially suggest a half-note beat. If the accent falls on a tactus-beat then that beat is the possible half-note beat; if it falls on a weak eighth-note then the following tactus-beat is the possible half-note beat. A downbeat level cannot emerge in the absence of a half-note level.

Downbeat and half-note levels must be confirmed by multiple accents, as in Example 8. While Mirka requires three attacks to confirm "a hypothesis of a new regularity," I require only two as long as there is no plausible competitor for that level. For example, an antimetrical harmonic change—say, on beat two—has the potential to suggest a downbeat. If another change occurs four beats later, then that interpretation is confirmed assuming no other plausible downbeat-level exists. The same goes for half-note beats. The more rapid emergence of these layers, compared to Mirka's model, stems from the rigidity of the listener's pre-conceived metrical framework.[24] My model shows the re-establishment of a known meter after a short period of uncertainty.

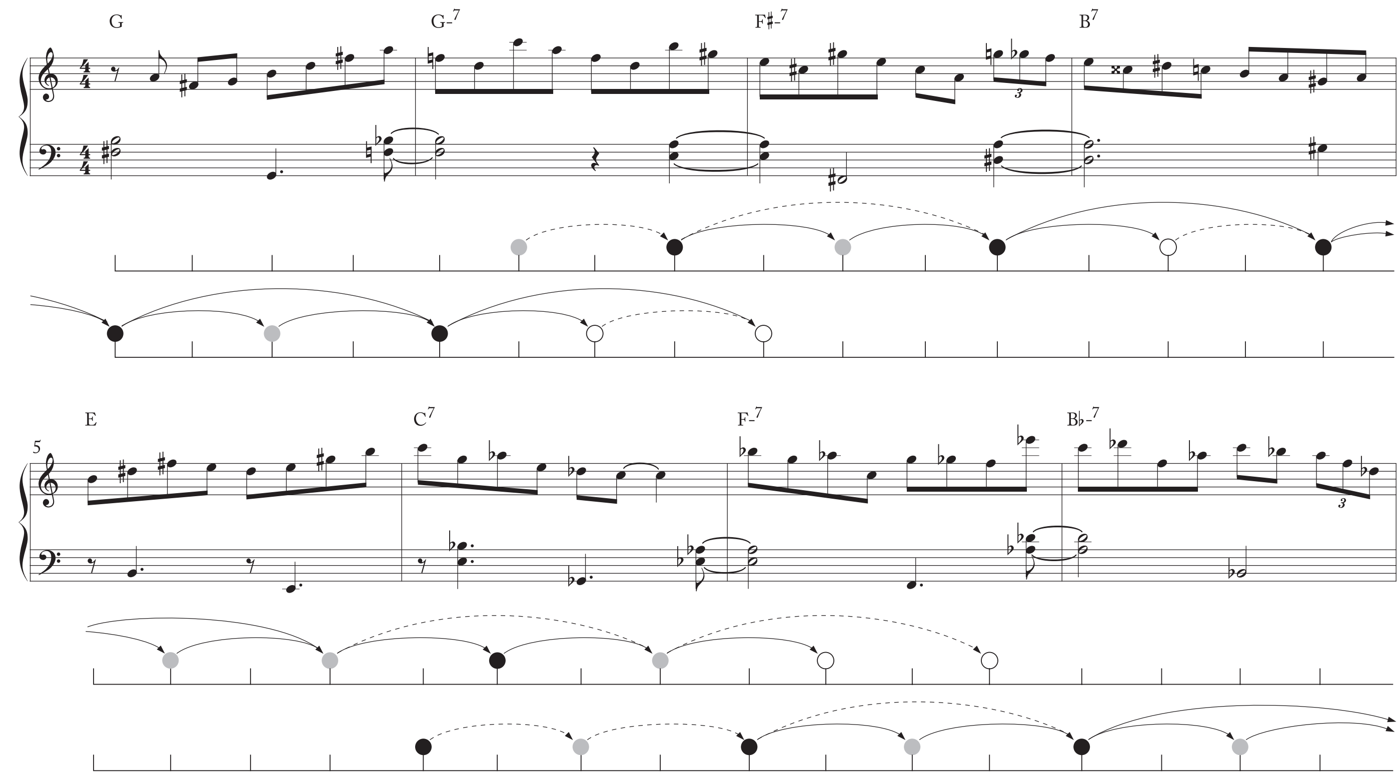
Example 9 illustrates the model. Vertical lines below the score indicate the tactus level. There are two sets: the lower set shows projections in alignment with the scheme and the notated meter, while the upper set shows shifted projections. Black dots indicate beats accented by a harmonic change either on the beat or on the preceding eighth-note. Gray dots indicate beats accented by some other factor only; in this example, those factors include left-hand attacks (on or just before the indicated beat) and extremes of contour in the right hand. White dots indicate beats where accents are expected based on a previously established metrical level but are not reinforced by the music. Arcs between beats represent projections at the half-note or downbeat level.[25] Solid arrows represent projections in confirmed levels. Dotted arcs show emerging or uncertain levels.

At the beginning of the example, the arcs are all solid and aligned with the scheme which shows continuity from earlier in the performance. On beat 2.3 (m. 2, beat 3), an expected accent does not occur. Consequently, the half-note projection originating from this beat is shown with a dotted line. Two beats later there is again no accent, and a competing half-note level has emerged. Therefore, the original half-note level disappears. If there were no competing level, the original half-note level could continue more or less indefinitely. At the downbeat level, the

23 On the metrical significance of harmony, see Lester (1986, 66) and Mirka (2009, 50 ff.)

24 In a review of Mirka, Temperley also questions the necessity of three attacks to establish a metrical level (2009, 310).

25 My "projective analyses" are radically different from those in Hasty (1997), though I am indebted to this work for inspiration.



example 9. *Projective analysis of "All the Things You Are," beginning at 0:14.*

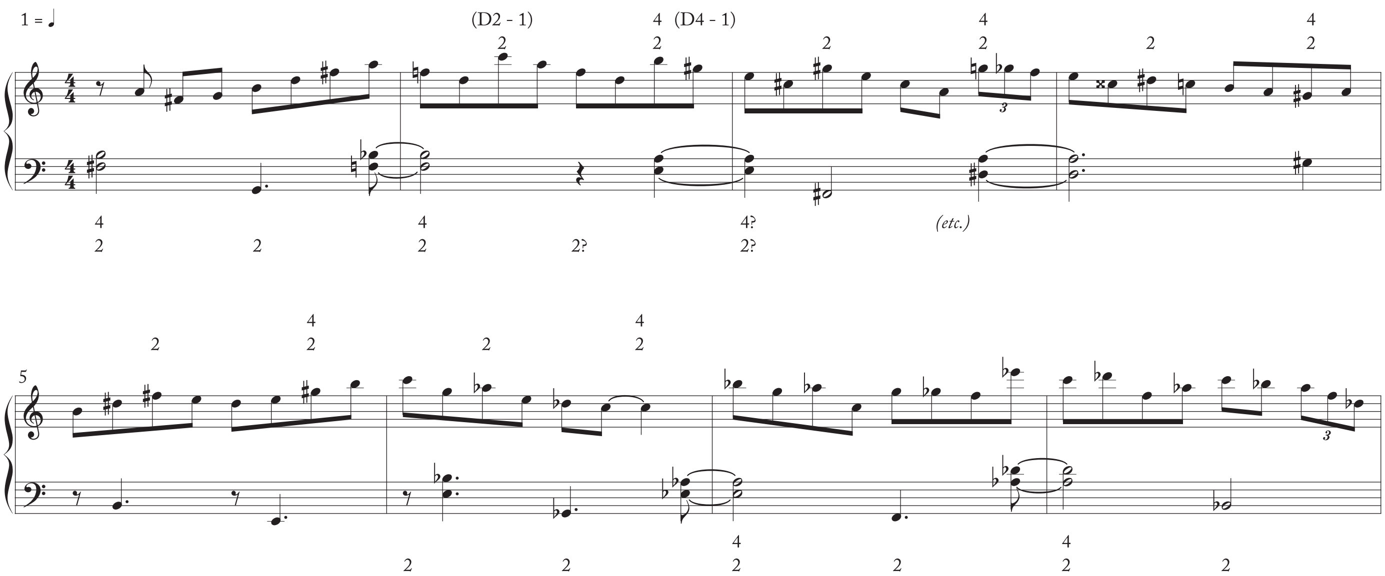
projection from beat 2.1 does not receive confirmation at beat 3.1. Ordinarily, there would be a dotted arc originating from beat 3.1, but since the half-note level has disappeared by this point the downbeat-level disappears as well. (Note that solid arrows indicate only that the *origin* of a projection is metrically reinforced, not the destination. This is why the arrow from beat 2.1 to 3.1 is solid but leads to an unaccented beat.)

The shifted meter begins to emerge from beat 2.2, which receives accent by contour from the first note of a four-note motive in the right hand. The second appearance of this motive, two beats later, confirms the shifted half-note level, since evidence no longer exists for the schematic half-note level. The harmonic change on beat 2.4 suggests a possible downbeat, which is confirmed four beats later with another harmonic change. I call the confirmation of a shifted downbeat level a *false downbeat*. Evans begins destabilizing the shifted meter on beat 5.4 when an expected harmonic change does not come and a downbeat-level projection is not confirmed. Four beats later there is again no harmonic change, so the shifted downbeat level dissolves upon the return of the schematic half-note level. Phenomenal accents preserve the shifted half-note level through the end of m. 6.

The half-note level of the schematic meter reasserts itself beginning from beat 6.1. The phenomenal accents in m. 6 are truly ambiguous. The right hand supports hearing a harmonic change to C7 on the downbeat, in line with the scheme, while the left hand supports hearing the change on beat two—contradicting even the "shifted" meter that emerged previously, according to which the change should have occurred on beat 5.4. The left-hand attack on beat three supports the schematic meter, while the right hand's ending on beat three-and supports the shifted half-note level by accenting beat four. These ambiguities weaken the shifted meter. The harmonic change and beginning of a new phrase on beat 7.1 suggest a possible downbeat, which is confirmed four beats later.

The five phases of the metrical shift, described above, have clear correspondents in this analysis. Phases one, three, and five, the perception of consonance within either the schematic or shifted meter, roughly correspond to the places where projections are active and confirmed. Phases two and four, the periods of transition, correspond to places where the projections conflict. Example 10 shows a possible interpretation of the music of Example 9 following Krebs's approach. The pulse layer is the stream of quarter-notes. There are two competing sets of 2-layers and 4-layers, indicated with numbers in the score. The numbers followed by question marks are subliminally retained layers. This analysis presents similar information to Example 9: note, for example, the "(2)" in m. 4, indicating the continuation of a layer without a phenomenal accent, instead of the white dot at the equivalent point of Example 9.

But Example 10 differs from 9 in two key respects. First, Example 9 paints a subtler picture of the transition between the schematic meter and the shifted meter. Second, and more



example 10. *Krebs-style analysis of "All the Things You Are," beginning at 0:14.*

essential, is the D4-1 and D2-1 dissonance in Example 10, representing the conflict between the subliminal, schematic interpretive layers and the interpretive layers present on the surface. According to Mirka, "Experimental work in perception of polyrhythms suggests that listeners are not able to hear two metric frameworks at the same time" (2009, 168). Therefore, Krebs's interpretation would suggest the continued primacy of the schematic meter even through the subliminal dissonance, when it disappears. I find it impossible to perceive the example this way. To those who cannot hear it, this dissonance is theoretical only: a dissonance between the musical surface and a schematic background that is imperceptible, but which must be there since the passage *can* be notated in consistent 4/4 with no added or subtracted beats. Even to a listener who can mentally retain the schematic meter, a projective depiction like that in Example 9 would show the emergence of the dissonant layers in a subtler way than Example 10.[26]

The technique of metrical shift thus combines fidelity to the schematic model—there are no added or subtracted beats and the episode can theoretically be understood as a subliminal dissonance—with the outward appearance of a mistake comparable to that in Example 7 (the extra beat in "Someday My Prince Will Come"). In other words, given a listener who assumes an inviolable schematic meter and who mistakenly perceives beat 3.4 as a schematic downbeat, the perceptual hiccup caused by the unexpected downbeat is only attributable to listener error (a counting mistake) or performer error (a missing beat). However, there is no mistake: the hiccup arises from Evans's motion out of and back into the schematic meter.

Example 11 presents another metrical shift, as well as an attempted metrical shift, incompletely realized. Evans challenges the schematic half-note level for the first time in m. 2. Both hands imply that the eighth-notes in this measure form the grouping 3/3/2. This pattern suppresses the expected half-note beat on beat 2.3. The harmonic change on beat 2.4 results in a potential shifted downbeat level and half-note level. However, the shifted half-note level is not confirmed, so the schematic meter never disappears even though there is another early harmonic change on beat 3.4. The shifted downbeat level suggested by harmonic changes on beats 2.4 and 3.4 never really materializes. The left hand bass note on beat 3.3 reinforces the schematic half-note level, contradicting this potential shifted level. Neither the shifted half-note nor the shifted downbeat level receives further confirmation. The continuation of B7 harmony through beat 4.4 counteracts any possibility of hearing a false downbeat here. Dotted arcs continue in the schematic meter through mm. 3 and 4 because no serious competitor emerges, representing continued awareness of these levels. In Mirka's terms, the parallel multiple-analysis processor wakes up in m. 2 but fails to overrule the established meter due to contradictory and unconfirmed hypotheses. The default choice in this situation is to maintain the original meter. Resolution of B7 to E on beat 5.1 lends strong support to the schematic half-note and downbeat levels. Since the shifted meter never fully emerges, the experience of mm. 1 to 5 does not follow the five-phase plan described above. Instead, to most listeners, mm. 2 to 4 probably contain genuine metrical dissonance, since the antimetrical attacks are heard against the schematic meter.

26 Krebs uses the terms "submerge" and "surface" to describe the behavior of the metrical (schematic) interpretive layer in similar passages. During the passage from direct dissonance to subliminal dissonance, the metrical layer submerges; it surfaces again at the end. The difference is that in Example 9/10, at no point is there direct dissonance—the superimposition of two dissonant layers—except (possibly) in m. 6, by which time the shifted meter has started to dissolve.

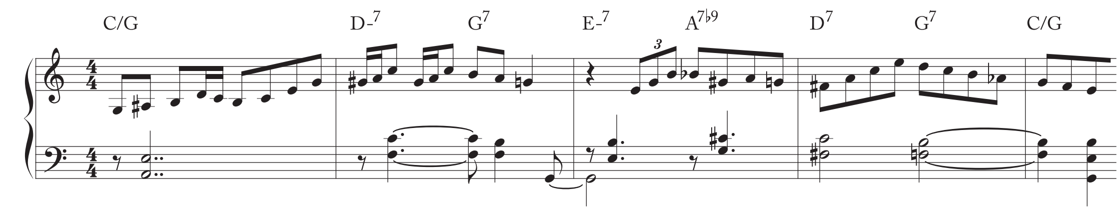
example 11. *Projective analysis of "All the Things You Are," beginning at 1:00.*

In mm. 5 to 7, shifted half-note and downbeat levels emerge. Phase one, initial consonance, is short-lived. In phase two, the preparation, left-hand attacks and a repeated two-beat motive, begun on beat 5.4, initiate a shifted half-note level while harmonic changes initiate a shifted downbeat—this time, one beat *later* than the scheme. The C in the right hand on beat 6.1 implies a harmonic change to C7 in line with the scheme, contradicted by the left hand one beat later. The shifted meter wins out against the schematic meter because of the regular succession of accents in the left hand and the displaced two-beat motive in beats 5.4 to 7.1. The first false downbeat is beat 7.2. Phase three, the metrical shift, spans mm. 7 and 8.

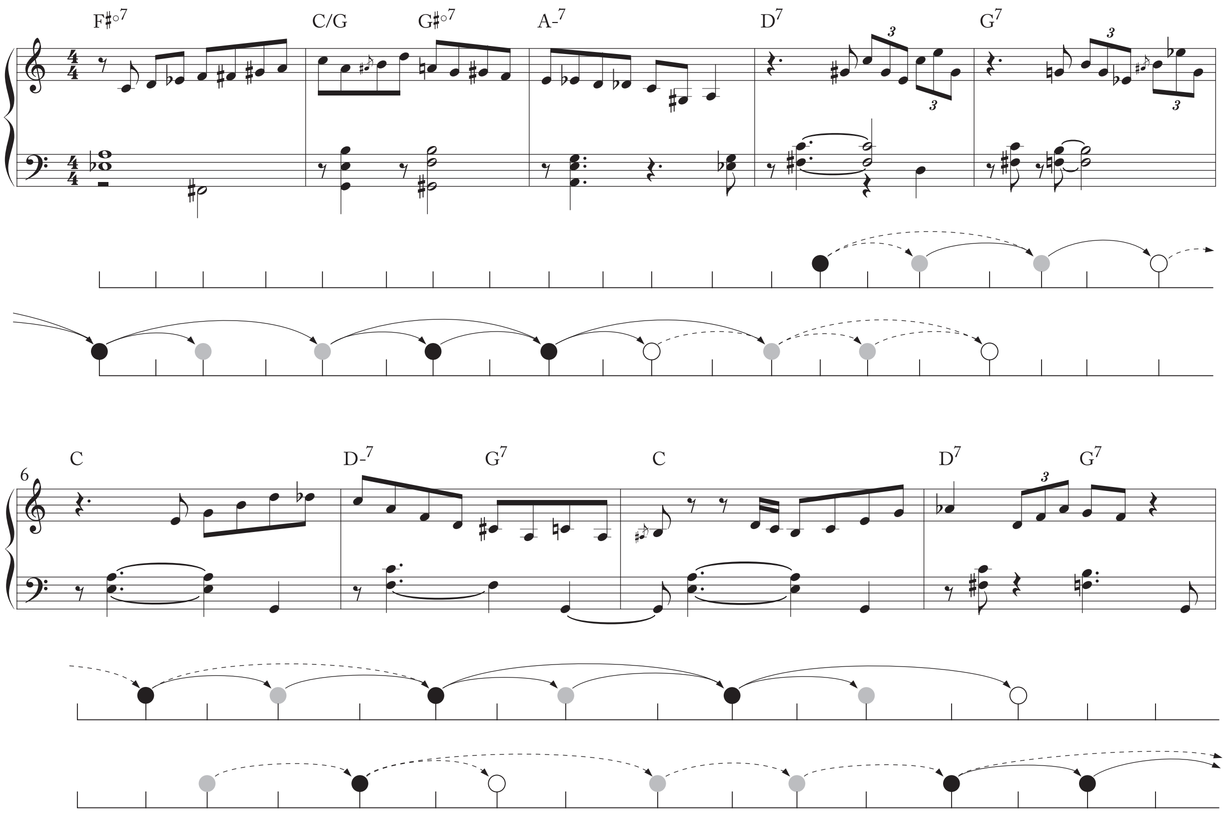
Evans returns abruptly to the schematic meter in m. 9. He establishes it just as he established the shifted meter: through left-hand attacks and harmonic changes. Although Evans doubles the harmonic rhythm in mm. 9 and 10, transforming E♭7–A♭ into B♭m7–E♭7–E♭m7–A♭7, the arrival of E♭m7 in m. 10 has the same metrical implications that the arrival of A♭ would have had. The schematic downbeat level does not receive confirmation until beat 11.1 (not shown).

The underlying strategy in Examples 9 and 11 is evidently the same. In both cases, a two-beat motive and left-hand attacks establish the shifted half-note level while harmonic changes establish the shifted downbeats. This recording of "All the Things You Are" is noteworthy for reasons aside from these metrical shifts. The performance was not included on the original release of the album *Alone*, appearing later as a bonus track on the CD. According to Evans biographer Peter Pettinger (2002), the recording is a "chip off the workbench block that Evans would surely not have wanted to be issued" (191). Unusually, the recording begins nine measures into a chorus, omitting any statement of the opening theme. Given the frequency and consistency of metrical shifts on this recording, and the uncharacteristically spare arrangement, I suspect it offers a glimpse of how Evans practiced this device.

Evans's technique evolved in the seven years between *Alone* (1968) and *Alone (Again)* (1975). I have noted several instances in previous examples when Evans's left hand plays on beats one-and or three-and, implying a shifted half-note level. Throughout the later album, Evans's left hand plays on these beats even during periods when the schematic meter is clearly in control, as Example 12. The left hand articulates the harmonies late in every measure but m. 4. The voice-leading in the right hand clarifies the harmonic rhythm and preserves the schematic meter. (Note the melodic motion from C to B on beat 2.3, B to B♭ on beat 3.3, G to F♯ on beat 4.1, and A♭ to G on beat 5.1.) This is metrical dissonance, not a metrical shift: the schematic meter predominates against the dissonant left hand. Though the left hand presents the harmonic changes later than expected, the listener has already registered the harmonic change by the time the left hand arrives and the left hand simply sounds late relative to the scheme. This left hand accompaniment pattern constantly leaves the schematic meter vulnerable should the right hand ever cease to follow the scheme.



example 12. *A typical texture in "The Touch of Your Lips," beginning at 1:09 (Olsen [1995], 56).*



example 13. *Projective analysis of "The Touch of Your Lips," beginning at 1:42 (Olsen [1995], 57).*

Example 13, also from "The Touch of Your Lips" (Noble), depicts such a scenario. There is a metrical shift in mm. 5 to 8. Unlike the previous examples, however, I find that with careful attention I am able regain the schematic meter in m. 6 after an experience of metrical uncertainty in m. 5. In other words, Example 13 is truly ambiguous—not that two interpretations are experienced at once, but that I can hear the passage either way to the exclusion of the alternative.[27] However, I tend to hear the metrical shift.

Projective analysis clarifies how this ambiguity might arise. The left hand establishes the schematic meter at the outset, maintained by the right hand from the beginning of m. 3. Melodic motion from F to E suggests the harmonic change on the downbeat of m. 3. In m. 4, evidence for the schematic meter fades. The left hand attack on beat 3.4.5 fails to support the schematic downbeat on beat 4, because it does not articulate the expected harmonic change to D7. The delay of this harmonic change creates a potential shifted downbeat and half-note level beginning on beat 4.2. The shifted half-note level is confirmed by the left hand on beat 4.4. However, the shifted downbeat receives no confirmation four beats later on beat 5.2. Instead, Evans delays the expected harmonic change by yet another beat, to beat 5.3 (anticipated by an eighth-note). At this point, there is no clear downbeat level, schematic or shifted, since the shifted half-note level has already overthrown the schematic downbeat level. Metrical uncertainty prevails.

The left hand's presentation of a new harmony just before beat 6.2 creates a potential shifted downbeat level, aligned with

27 The case of hearing two interpretations at once is described in Temperley (2001, 219–20) and Mirka (2009, 169), both drawing on Lerdahl and Jackendoff (1983).

EXAMPLE 14. *Two interpretations of voice-leading in Example 13, mm. 6–7. Top: D is an inessential dissonance, meter is shifted; bottom: D is an essential dissonance, meter is schematic.*

the shifted half-note level suggested in m. 5. The left hand reinforces the shifted level through the next two measures. The shifted meter yields to the schematic meter on beat 9.1, when the right hand's arrival on A♭ suggests motion to D7♭5 or Dm7♭5. Even though the left hand reaches D7 a beat late, the right hand's arrival has perceptual priority.

It is also possible to hear mm. 6 to 8 in reference to the schematic meter rather than the shifted meter. Phrase-beginnings and endings highlight beats 6.3, 8.1, and 8.3 in line with the schematic half-note level. The downbeat of m. 7 is the nexus of ambiguity: I find that the perception of this beat dictates how I hear the entire passage. As shown in Example 14, the right hand's voice-leading can support either hearing. In a schematic hearing (bottom), the upper four notes of a Cmaj9 chord move down by step to a Dm7 chord across the bar line. In this view, the motion to C on beat 7.1 suggests a harmonic change on this beat. The chordal ninth, D, is an essential dissonance, resolved upon reaching the next harmony. But the C on beat 7.1 can also be heard as the root of a still-active C chord, to which the ninth (D) resolves as an *inessential* dissonance (Example 14, top). The harmonic change to Dm7 only occurs with the right hand's arrival on F.[28] Either hearing is plausible, but I find it impossible to hear both at once. If one hears a harmonic change on beat 7.1, one will likely hear the schematic meter through the rest of the passage, and never become aware of the shifted meter.

28 The voice-leading of mm. 7 to 8, a chromatic descent from D to B, supports the shifted meter: the motion from C to B sounds like the resolution of a suspended fourth of the G chord, another inessential dissonance, suggesting that dominant harmony continues through beat 8.1.

CONCLUSION

In a 1978 interview, Evans said the following about the evolution of his playing: "I think the rhythmic construction of the thing has evolved quite a bit . . . The displacement of phrases, and the way phrases follow one another, and the placement against the meter . . . is something that I've worked on rather hard."[29] These examples have illustrated two phases in this evolution. Generally, on *Alone (Again)*, as compared to *Alone*, Evans creates a near-continual sensation of metrical instability through metrical dissonance which periodically lapses into full-blown metrical shift. On *Alone*, however, the metrical background is more stable and predictable, and metrical shifts stand out.

Metrical shifts highlight the dual character of jazz meter. I have approached them from two angles: as "subliminal dissonances," emphasizing their preservation of the schematic meter, and as perceptual events characterized by the alternation of stability and uncertainty during which the sense of metrical continuity is lost. I believe a clear picture of jazz meter can only come from a synthesis of these perspectives.

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29 From Marian McPartland's *Piano Jazz*. Also quoted at the opening of Larson (1997).

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