11 | Rhythmic Influence in the Rock Revolution

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Introduction

Following the Second World War, the West – especially the United States – experienced a period of sustained economic growth. In tandem, birth rates peaked such that by the mid-1950s, a strong youth culture began to take shape, fueling a great expansion of mass media. Television, radio, movies, and music became increasingly ubiquitous elements of society as consumers, especially young consumers, sought ways to spend their leisure time and disposable income. This cultural sea change engendered a revolution in musical style, with rock and roll – or simply "rock" as it later became known – emerging as a dominant force in popular music.

The musical characteristics of early rock and roll can be seen as an amalgam of styles prevalent during the 1930s and 1940s, including blues, country, and jazz. The fusion of these disparate styles into a single "superstyle" involved importing traits from each, of course, but also a comprehensive streamlining to make the fusion appeal to a broad audience. The rhythm section, for example, became codified into the conventional arrangement of drums, bass, and guitar; meter became distilled into a regular back-and-forth pattern of kick and snare; and song forms began to follow formulaic templates.

But while the norms of 1950s rock and roll can appear to simplify earlier practices, these structures laid the groundwork for decades of stylistic evolution. Indeed, while present-day rock music often involves highly complex rhythmic structures, it grows out of fundamental rhythmic principles already widespread by the 1960s. The current chapter provides an overview of these principles, spanning from the dawn of rock and roll to modern pop/rock.

The chapter is arranged into three main sections. The first, on tactus and tempo, examines what is meant by the "beat" in rock. Although many songs have only one primary pulse layer, others exhibit conflicting levels of pulse. The second section, on meter and measures, offers an overview of the typical organizational schemes for rhythm and meter. Unlike traditional time-signature-based approaches, meter in rock warrants some

classification mechanism for swing at various levels and different drum feels. The third section, on syncopation and stress, discusses some of the most common rhythmic patterns in melody and harmony. In particular, the pervasive metric displacement of stressed pitch events away from strong beats creates a rhythmic texture emblematic of the rock style.

Tactus and Tempo

The most central rhythmic element of any musical style is the beat. In traditional understandings, the beat – or tactus – is the most perceptually salient pulse layer, i.e., the steady rate at which a listener will bob their head or tap their foot. Given this understanding, beat is essentially synonymous with tempo, as measured in beats per minute (hereafter, BPM).

In the parlance of rock musicians, though, "the beat" can take on additional meanings. Foremost, it can serve as shorthand for "the drumbeat," i.e., the drum pattern of a song. The standard rock beat, for example, is a drum pattern in $\frac{4}{4}$ with the kick on beats 1 and 3, the snare on beats 2 and 4 (the "backbeat"), and the hi-hat or ride playing some metrically congruent division of the measure into equal parts. This conflation of "beat" and "drumbeat" is no coincidence, since the regular occurrence of the kick and snare on primary divisions of the measure strongly conveys one layer of pulse to the listener.

An even further generalization of "beat" exists as well. Although the drum pattern is an important factor in assessing tempo, other instruments (including the vocal) typically convey information related to tempo perception. For example, when a listener says, "This song has a good beat," they mean at least three separate things: (1) that it is easy to synchronize body motions with the song's primary pulse rate, implying it is not too fast or too slow; (2) that the drumbeat is consonant with this pulse rate; and (3) that all of the instrumental elements facilitate body motions, not only at the primary pulse layer but also other metric levels. In this third sense, "the beat" is somewhat synonymous with "groove" or rhythmic "feel," i.e., the overall rhythmic fabric of a song.

The relationship between body motions and the rock beat is a seminal component of rock rhythm, because a regular role of rock music is something for people to dance to. The goodness of a rock beat thus relates to its danceability, especially the type of energetic dancing that symbolizes youthfulness. Perhaps not surprisingly, average tempos for rock exceed those of other musical styles. Musicologists, for example, posit that tempos

11.1 Beethoven, Piano Sonata in C Minor, Op. 13, II, mm. 1–4

for classical music are most often in the range of 60–80 BPM, correspond-
ing to an adult's resting heart rate.[1] In contrast, average tempos for rock lie
within the 110–125 BPM range, corresponding to an elevated heart rate
associated with physical activity.[2]

Given that the lower end of the range for typical tempos in classical
music (60 BPM) is about half the upper end of the range for rock (125
BPM), it may be that classical and rock musicians will sometimes disagree
on the primary pulse layer of a musical work due to different expectations.
Which metric level, for example, represents the main beat at the beginning
of the second movement to Beethoven's Piano Sonata in C Minor, Op. 13
(Example 11.1)? As a timing reference, consider Arthur Rubinstein's
1962 RCA recording. Despite the $\frac{2}{4}$ time signature that Beethoven indi-
cates, the quarter note cannot be the primary pulse layer, for it is too slow
to be a viable beat; in Rubinstein's performance, the quarter-note rate is
about 29 BPM, which lies below the 30 BPM threshold for beat perception
noted by music cognition researchers.[3] More likely, a classical musician will
feel the eighth note as tactus, which in Rubinstein's performance is around
58 BPM, since this rate aligns more closely with tempo norms in
classical music.

For a rock musician, however, the sixteenth note may be the preferred
tactus, as it engenders a more typical rock tempo. Indeed, it is in this way
that the band Kiss conceptualizes Beethoven's theme, which is featured at
the beginning of their song "Great Expectations" (1976). In particular,
when the Beethoven theme appears at 2:24, the drumbeat implies a tempo
of 116 BPM. Note that the pacing of harmonic and melodic content in
Kiss's arrangement is almost identical to that in Rubinstein's performance;
the opening tonic chord, for example, lasts about two seconds in both
versions. The Kiss arrangement thus does not alter the rate at which
musical content is disbursed; rather, it offers a different hearing of the
tactus, one corresponding better with an upbeat, danceable tempo.

The preference in rock for danceable tempos is so intrinsic to the style
that experienced listeners may feel tempos nearer the 110–125 BPM ideal
even when the drum pattern gives conflicting information. A good example
of this scenario is the song "Human Nature" by Michael Jackson (1983).

If the kick and snare in this song are taken to indicate beats 1 and 2 in $\frac{4}{4}$ the tempo would be 47 BPM. While this tempo lies above the 30 BPM lower limit for beat perception noted earlier, it seems too slow to animate lively body movement. As a result, most listeners will synchronize with a tempo twice that speed, 93 BPM, which comes closer to a typical rock tempo. Indeed, Michael Jackson can be seen in live performances to bounce his leg at this 93 BPM rate. In this song, there thus exists a tension between the tactus more preferred for dancing and the pulse implied by the kick and snare.

What, then, is the tempo of "Human Nature"? Some musicologists suggest that tempo should always be determined by the kick and snare (thus 47 BPM here).[4] But this hard-and-fast rule often ignores the beat rate most listeners prefer. An alternative is to say that the tempo of "Human Nature" is 93 BPM, while the kick and snare alternate at half that rate. Rock musicians refer to this metric organization as a "half-time feel." During a half-time feel, there exists a divorce of the drum pattern from the primary tactus. Thus, while drum patterns traditionally align with the primary beat, the existence of a separate musical layer (the drums) dedicated to rhythmic information allows for a more complex arrangement in which the drum-beat operates on a different level of the metric hierarchy than the tactus.

While some songs like "Human Nature" are in a half-time feel through-out, other songs will change between a normal and half-time feel (and vice versa). For most of the Ne-Yo song "Closer" (2008), for example, the drum pattern is congruent with the song's tempo, 126 BPM in $\frac{4}{4}$ with the hand-claps on beats 2 and 4 substituting for the snare. In the last chorus (3:33), however, the hand claps move to beat 3, creating a half-time shift that breaks up the monotony of yet another chorus. Note that this new drum feel at the song's end does not affect the pacing of the harmonic and melodic material, which repeats earlier content verbatim.

In addition to half-time feels, songs may employ a double-time feel, where the kick and snare alternate at twice the primary pulse rate. The song "Should I Stay or Should I Go" by the Clash (1982) provides a good illustration of this scenario. The verse material (0:17) is a variation on the standard twelve-bar blues pattern at a comfortable tempo of 112 BPM in $\frac{4}{4}$ with the normal snare backbeat on beats 2 and 4. In the chorus (1:08), though, the drum pattern changes such that the snare occurs regularly on the "and" of every beat, assuming the same tempo. Admittedly, the increased rate of kick and snare alternations gives the feeling of a faster tempo, 224 BPM. But it is rather uncomfortable to sustain head-bobbing or foot-tapping at this rapid pace. Moreover, the chorus is basically a repeat of

the same twelve-bar blues pattern of the verse, with the same pacing of melodic and harmonic content. As a result, it seems more analytically robust to describe the chorus as having a tempo of 112 BPM with a double-time feel – thereby capturing the conflict between the drum pattern and the implied beat based on the unaltered pacing of harmonic and melodic content – rather than to simply say the tempo has increased to 224 BPM, which does not account for the lack of speed change in the harmony and melody.

The notion that the tactus of a song tends to stay close to the 110–125 BPM range may seem overly restrictive, perhaps no less so than the alternative of saying the kick-snare rate always determines tempo. But unlike other musical styles that have primarily instrumental textures, rock texture is almost exclusively based around a vocal melody. Perhaps because the pacing of lyrics is constrained by ideal rates of speech delivery, the pacing of melodic content in rock turns out to be relatively stable. Thus, while music cognition researchers report that the range of tactus perception lies between 30 BPM and 240 BPM (an eightfold increase), the range of variation for the pacing of pitch-based content in rock is much more narrow. As evidence, cover versions of songs rarely shift the speed of the vocal melody more than a small amount, much less than twice or half the original rate. For example, Cream's original version of "Sunshine of Your Love" (1967) has a clear tempo of 116 BPM in $\frac{4}{4}$ with a normal drum feel. In contrast, the cover by Fudge Tunnel (1991) may at first sound extremely slower, but the rate of vocal delivery in Fudge Tunnel's cover is not much slower than the original. The reason Fudge Tunnel's version sounds especially slow is the lumbering drum pattern, which conveys a half-time feel against the more moderate pacing of the melodic and harmonic material. Thus, by referring to the cover as a half-time $\frac{4}{4}$ at 100 BPM, we capture both the change in the drum feel as well as the only moderate change in harmonic and melodic pacing.

Meter and Measures

While the tactus is the most central pulse layer, also of interest is the entire hierarchy of pulse layers, i.e., meter. The meter of a musical composition is traditionally conveyed through its time signature, usually classified into two categories based on (1) the number of beats per measure, usually duple, triple, or quadruple; and (2) the number of regularly occurring, equal divisions of this beat, either two (simple) or three (compound). This scheme results in six standard time signatures: $\frac{2}{4}$, $\frac{3}{4}$, $\frac{4}{4}$, $\frac{6}{8}$, $\frac{9}{8}$, and $\frac{12}{8}$.

Although it is not impossible to classify meter in rock using only this basic system, some addendums are useful to better capture typical pulse hierarchies. We have already seen, for example, that the rhythmic framework of some songs involves conflicting pulse information, such as half-time or double-time feels. Time signatures could be adapted to account for this conflict, such as labeling half-time as $\frac{2}{2}$ or double-time as 8/8. But trying to incorporate drum feels into the time signature becomes problematic in cases other than $\frac{4}{4}$, such as $\frac{3}{4}$ or $\frac{6}{8}$.

The other complicating factor is the widespread use of swing at different metric levels. Swing, which divides the beat into two unequal values, is a common feature of jazz and related styles that predate rock, of course. In jazz, the unevenness of the swing – which primarily occurs between eighth notes – can range from ratios of 1.05:1 to 3.5:1 or higher.[5] In contrast, swing in rock generally conforms to a 2:1 ratio, equivalent to a quarter-note triplet followed by an eighth-note triplet. In this regard, swing in rock represents another standardization of rhythmic parameters from earlier styles.

Because swing in rock typically follows a 2:1 ratio, it can be difficult to distinguish between swing and compound meter. The Elvis Presley song "Stuck on You" (1960), for example, is a rolling twelve-bar blues with a quadruple beat at 132 BPM. It is possible to consider this song as in $\frac{12}{8}$, with the drum fill at 1:04 confirming the division of the beat into three equal parts. But the pervasive "long-short" division of the beat, most noticeable in the hi-hat and piano parts, exemplifies a classic "shuffle" rhythm, which rock musicians understand as a type of triplet division of $\frac{4}{4}$ with the middle triplet missing. The pervasive use of shuffle in rock songs leads to a general trend by rock musicians to conceptualize triply divided quadruple meters not as $\frac{12}{8}$ but rather as $\frac{4}{4}$ with swung eighth notes. Consequently, $\frac{12}{8}$ has become a deprecated meter in rock, even when a consistent underlying triple subdivision exists.[6]

The deprecation of $\frac{12}{8}$ in favor of a swung $\frac{4}{4}$ does not mean that compound meters in rock are deprecated as a rule. To the contrary, $\frac{6}{8}$ is the most appropriate time signature for many songs. In rock, though, $\frac{6}{8}$ and $\frac{12}{8}$ are dissimilar types of compound meter. Although we could think of a $\frac{12}{8}$ measure as twice as long as a $\frac{6}{8}$ measure, the fairly consistent pacing of harmonic and melodic material in rock (discussed above) suggests that it is preferable to maintain consistent measure lengths in terms of absolute time when possible. In other words, given a chunk of time that we are calling a measure, dividing that time into four triply divided beats is very different from dividing that same amount of time into two triply divided beats.

As an illustration, consider two versions of the song "With a Little Help From My Friends." The original version by the Beatles (1967) is a clear $\frac{4}{4}$ shuffle – or $\frac{12}{8}$ perhaps – at a tempo of 110 BPM and measure lengths of 2.2 seconds. In his 1968 cover, Joe Cocker sings the melody at only a slightly slower pace, the same amount of music now lasting 2.5 seconds. If we take bar lengths to be the same between these two versions because the melodic pacing is roughly the same, Cocker's version indicates a $\frac{6}{8}$ time signature, with only one kick and snare per bar. Note that if we consider the Beatles version as in $\frac{12}{8}$, it would be unreasonable to hear the eighth note as tactus, since its rate of 330 BPM lies well above the ceiling for tempo perception. Yet in Cocker's version, the metric level that aligns most closely with tempo norms for rock is the eighth note, at 145 BPM. That said, the kick-snare rate in Cocker's version is around 48 BPM, which still lies within the range of tempo perception. This conflict between an eighth-note tactus and a kick-snare pattern at a slower yet still viable rate is a hallmark of $\frac{6}{8}$ time signatures in rock, paralleling similar conflict between metric layers found in a half-time $\frac{4}{4}$.

Another subtle but important aspect of the rhythmic organization in Cocker's cover is the pervasive swing on the sixteenth-note level, most noticeable in the ride cymbal. Whereas eighth-note swing in $\frac{4}{4}$ can be captured by the time signature (as $\frac{12}{8}$), it is impossible to represent sixteenth-note swing in $\frac{6}{8}$ via some alternative time signature. Because sixteenth-note swing is not possible to designate through the time signature alone, rock musicians typically consider swing overall as a separate aspect of meter than the time signature. Sixteenth-note swing may also occur in $\frac{4}{4}$, as heard in "Rag Doll" by Aerosmith (1987), "Sunday Morning" by Maroon 5 (2002), and "Say You're Sorry" by Sara Bareilles (2010). When sixteenth-note swing occurs in $\frac{4}{4}$, the first and third sixteenth notes of each beat are longer than the second and fourth sixteenth notes, while the eighth notes evenly divide the quarter-note beat. (Eighth-note swing and sixteenth-note swing are thus mutually exclusive.)

In addition to $\frac{4}{4}$ and $\frac{6}{8}$, the next most useful time signature for rock is $\frac{3}{4}$. These three time signatures – $\frac{4}{4}$, $\frac{6}{8}$, and $\frac{3}{4}$ – form the core set of time signatures suitable for classifying meter in rock, since they represent the three most maximally contrasting ways to divide a measure: two parts divided into two subparts ($\frac{4}{4}$), two parts divided into three subparts ($\frac{6}{8}$), and three parts divided into two subparts ($\frac{3}{4}$). Theoretically, it is possible to consider a fourth category that divides the measure into three parts and three subparts, i.e., $\frac{9}{8}$. But potential cases of $\frac{9}{8}$ in rock, such as "A Taste of Honey" by the Beatles (1963) or "Only Love Can Break Your Heart" by

Neil Young (1970), are more commonly conceptualized as songs in $\frac{3}{4}$ with eighth-note swing, since (as with $\frac{12}{8}$) the eight-note layer is typically too fast to be felt as a viable tactus.

Rock songs in $\frac{3}{4}$ are far less common than those in $\frac{4}{4}$ or $\frac{6}{8}$, perhaps because of the difficulty in reconciling a standard drumbeat with the odd number of beats in a measure. The normal drum pattern in $\frac{3}{4}$, for example, is a kick on beat 1 and snare on beat 3, which lacks the evenly spaced alternation between kick and snare found in other meters. As a work-around, drummers can shift the kick-snare pattern to a higher or lower level of the metric hierarchy, akin to a half-time or double-time feel. The song "Take It to the Limit" by the Eagles (1975), for example, has a strong tactus at 90 BPM, yet the kick and snare at the beginning occur every three beats. It is doubtful that the kick and snare distance is perceived as the true beat rate here, given it lies on the threshold of beat perception, so it makes more sense to consider the song in $\frac{3}{4}$ with a half-time feel rather than a slow $\frac{6}{8}$. Further support for the $\frac{3}{4}$ hearing appears later in the leadup to the chorus (1:12), where the drums revert to a normal $\frac{3}{4}$ pattern.

Taking a global view, Figure 11.1 provides a chart of the most common metric parameters found in rock. This chart classifies typical rhythmic organizations via three categories, each of which has three options: (1) the time signature, which is usually $\frac{4}{4}$, $\frac{6}{8}$, or $\frac{3}{4}$; (2) the drum feel, which may be normal time, half time, or double time; and (3) the level of swing, which may be none, eighth notes, or sixteenths. A song could thus be a double-time $\frac{4}{4}$ with sixteenth-note swing, such as "Up from Below" by Edward Sharpe and the Magnetic Zeros (2009); a half-time $\frac{4}{4}$ with eighth-note swing, such as "Grapevine Fires" by Death Cab for Cutie (2008); or a double-time $\frac{3}{4}$ with no swing, such as "Synchronicity I" by the Police (1983). From the standpoint of traditional time signatures, the chart in Figure 11.1 may seem like a radical simplification, but it represents over

Time Signature	Drum Feel	Swing
$\frac{4}{4}$	Normal	None
$\frac{6}{8}$	Half-Time	Swung 8ths
$\frac{3}{4}$	Double-Time	Swung 16ths

11.1 Chart of common metric parameters found in rock

twenty viable combinations – far more than the six basic time signatures of $\frac{2}{4}$, $\frac{3}{4}$, $\frac{4}{4}$, $\frac{6}{8}$, $\frac{9}{8}$, and $\frac{12}{8}$ – before the consideration of irregular meters.

An in-depth discussion of irregular meters in rock, such as complex or changing meters, is beyond the scope of the current chapter. That said, it seems worth providing one example to model a general approach. The song "Whipping Post" by the Allman Brothers Band (1969) is famous for the odd rhythmic structure of its main riff, which involves some grouping of eleven. This metric irregularity disappears once the vocals enter (0:26), as the verse material settles into a repeated grouping pattern of three at 200 BPM. This fast tempo is somewhat uncomfortable to sustain as a regular tactus, so many listeners may find themselves conflicted between this rate and the slower rate of 67 BPM. This tactus conflict is the hallmark of a $\frac{6}{8}$ meter, and, perhaps not surprisingly, the leadup to the chorus and the chorus itself (0:56) present a standard $\frac{6}{8}$ drum pattern. The song overall, therefore, seems to be in $\frac{6}{8}$, with the verse feeling more energetic due to the surface rhythms of the bass and drum parts. More importantly, we can understand the opening riff not as some long span of eleven beats but rather as a bar of $\frac{6}{8}$ followed by a bar of $\frac{5}{8}$ – this $\frac{5}{8}$ bar resulting from the deletion of an eighth note – which reconciles the riff's 3+3+3+2 grouping with typical metric organizations found in rock. The additional complicating factor arises from the double-time pattern that the drums play against this $\frac{6}{8}$ meter, with the kick on the first of every three eighth notes. In general, irregular meters in rock can be understood as some variation on the strategy seen here, where a beat or sub-beat is deleted from or added to one of the more regular metric organizations shown in Figure 11.1.

Syncopation and Stress

In traditional conceptions of meter, an important distinction exists between strong and weak beats. In $\frac{4}{4}$, for example, beats 1 and 3 are considered strong – i.e., the metric locations that are normally accented – while beats 2 and 4 are weak – i.e., those that are normally unaccented.[7] A similar pattern of strong and weak is understood to continue through higher and lower levels of the metric hierarchy. The first eighth note of a beat, for example, is considered strong while the second is weak. The musical surface typically reinforces these patterns of strong and weak so as to clearly convey the meter; otherwise, metric confusion may occur.

In contrast, meter in rock can appear organized in a somewhat opposite manner. In a standard $\frac{4}{4}$ drumbeat, for example, the snare is almost always

louder than the kick, and the spectral energy of a snare lies within a frequency range to which the human ear is especially sensitive. As a result, beats 2 and 4 are arguably more accented in rock on a regular basis than beats 1 and 3. This is not to imply that rock musicians do not recognize the structural importance of the downbeat. Rather, expectations in rock with regard to recurring patterns of stress and accent are often different from traditional norms. (This difference is highlighted by the familiar joke among popular musicians that "friends don't let friends clap on beats 1 and 3.")

Off-beat accents are not exclusive to rock music, of course. Styles ranging from jazz to bluegrass have long traditions of putting stress on what are traditionally considered weak beats or weak portions of the beat. More broadly, syncopation – as a rhythmic pattern that goes against the beat structure – dates back in European music to at least the Middle Ages. That said, certain types of syncopation and non-traditional accent patterns are particularly endemic to rock, as found in its melodic and harmonic material.

Perhaps the most characteristic rhythmic feature of a rock melody is the anticipatory syncopation. In essence, an anticipatory syncopation is an event that occurs prior to a relatively stronger beat but, unlike a regular anticipation, without a new event on that stronger beat. The length of the anticipation is most typically an eighth note, although sixteenth-note anticipatory syncopations are also common. One example can be found in the song "Sweet Caroline" by Neil Diamond (1969). When the title line is sung at the beginning of the famously anthemic chorus (1:02), linguistic stress occurs on the word "sweet" and the first and third syllables of "Caroline." But while "sweet" and the first syllable of "Caroline" are sung on the beat, the last syllable of "Caroline" is sung on an eighth note prior to the following downbeat, without any new melodic content on that downbeat. From the standpoint of traditional text setting, this anticipation by the syllable "–line" may seem odd, since the linguistic stress does not align with the metric stress.

What are we to make of this situation? One view is that rock melodies regularly displace linguistically stressed syllables, typically forward in time, from locations of metric stress. In other words, the third syllable of "Caroline" belongs to the next downbeat on a deeper level, but the musical surface shifts that linguistically stressed note away from the location of metric stress. The reason for this forward shift, we might hypothesize, is perhaps to make the melody more rhythmically interesting. Another view is that rock simply has no priority for aligning linguistically stressed events with strong metric locations. In $\frac{4}{4}$, for example, the metric distribution of

note onsets in rock melodies appears to be essentially uniform, with equal probability of a note occurring on any eighth note of the measure.[8] By this view, the last syllable of "Caroline" does not belong to the following downbeat in any sense; instead, it simply belongs where it is. The metric location of melodic notes may be a function of speech patterns. It certainly seems more natural to sing the word "Caroline" as it is in this chorus, rather than evenly spacing out each syllable.

Some evidence for the first view can be found when examining how rock musicians treat traditional melodies. The nursery rhyme "Mary Had a Little Lamb" is a useful case study, since its melody (Example 11.2a) is well known and simple, and has been the basis of more than one rock song. Consider, for example, the version heard on Chubby Checker's 1959 song "The Class" (0:22; Example 11.2b), which hews closely to the original melody. The biggest differences are within the rhythmic domain. In particular, all but one of the rhythmic divergences involve anticipatory syncopation: "lamb" in the second measure, the first syllable of "ev'ry" in the fifth measure, "went" in the sixth measure, "lamb" in the seventh measure, and "go" in the last measure – each has been displaced forward in time by an eighth note. Generally speaking, there appears to be a preference for anticipatory syncopation at the beginning of a phrase but especially at the end of a phrase, similar to the strategy found in "Sweet Caroline."

11.2 Three versions of the nursery rhyme "Mary Had a Little Lamb."
(a) Traditional version
(b) Version from Chubby Checker's song "The Class" (1959)
(c) Version from the Wings' song "Mary Had a Little Lamb" (1972)

The consequent effect is a lack of finality, as the misalignment of linguistic stress with metric strong points thwarts a solid sense of resolution.

A similar strategy can be found in Paul McCartney's version (Example 11.2c), released by Wings in 1972. McCartney significantly changes the pitch structure of the melody, but the rhythmic relationship between his version and the original remains clear. Like Chubby Checker's version, anticipatory syncopations are most commonly found at the ends of phrases or subphrases. But in McCartney's setting, the anticipatory syncopations cascade further back toward the beginning of each phrasal unit. Rather than just syncopating "lamb" in the second measure, for example, McCartney syncopates the second syllable of "little" as well as "lamb." Similarly, each syllable of "white as snow" now occurs an eighth note earlier than in the original version. By enlarging the zone of anticipatory syncopation prior to phrase endings, McCartney's version further increases the sense of being off-balance, thereby avoiding strong melodic closure.

Many melodies in rock employ anticipatory syncopation to such an extreme that almost every note occurs between beats. Examples include the verse material to "Taxman" by the Beatles (1966), "Wrapped Around Your Finger" by the Police (1983), and "Smells Like Teen Spirit" by Nirvana (1991). Similar to how the standard rock drumbeat puts stress on beat locations traditionally considered weak, therefore, rock melodies often put stress on divisions of the beat that are traditionally considered weak. In an unaccompanied setting, such high levels of melodic syncopation might be untenable, causing confusion as to the beat location. Since the metric structure of the song is so clearly conveyed by the drumbeat, though, perhaps there is less onus in rock for the melody to express the meter and more freedom to play against it. In other words, the evolution of typical rhythmic patterns in rock melodies may be the result of having the beat clearly expressed by the dedicated rhythmic layer of the drums.

In contrast to melodic events, harmonic events in rock align fairly closely with traditional rhythmic norms. Generally speaking, chords in rock change every half measure, measure, or two measures. In the overwhelming majority of cases, moreover, these chord changes occur on the beat. Indeed, the downbeat is by far the most common metric location for a new harmony in rock. Because there are so many other counterforces in rock creating stress on traditionally weak beats and weak divisions of the beat, perhaps it is imperative for the harmonic layer to stress the beginnings of measures.

That said, syncopation – particularly anticipatory syncopation – is not uncommon for harmonies in rock. These are sometimes referred to as a

"push" by rock musicians, since the chord seems "pushed" forward by an eighth note prior to the beat. In general, anticipatory syncopation in rock harmony tends to occur on weaker portions of the measure or hypermeasure. For example, if a song section has a harmonic rhythm of one chord per measure, the push usually occurs on the harmony in the second and fourth measure, as heard in the verses of "She Will Be Loved" by Maroon 5 (2002) and "Fire Meet Gasoline" by Sia (2014). Similarly, if a song section has a harmonic rhythm of two chords per measure, the push usually occurs on the chord midway through the measure, as heard in the chorus of "Peace of Mind" by Boston (1976) and the verse of "Jesus Take the Wheel" by Carrie Underwood (2005). Note that this more limited approach to anticipatory syncopation in the harmonic domain shows a preference for aligning harmonies with the beginnings of measures and hypermeasures, presumably so as not to overly disturb the underlying metric structure.

Another type of syncopation frequently encountered in the accompanimental pattern of a rock song is the cross rhythm. Typically, cross rhythms involve multiple groupings of three eighth notes in a $\frac{4}{4}$ meter with one or two groupings of two eighth notes that create a repeating one-bar or two-bar unit. A common example is the 3+3+2 "tresillo" rhythm (also found in African and Latin American music), such as at the beginning of "Swingtown" by the Steve Miller Band (1977) and "She Goes Down" by Mötley Crüe (1989). Note that the 3+3+2 cross rhythm is similar to a push on beat 3 in $\frac{4}{4}$, which causes the second chord to enter on the "and" of beat 2. The groupings of threes can also be extended to create a 3+3+3+3+2+2 "double tresillo" pattern, as heard at the beginning of "Shoot to Thrill" by AC/DC (1980) and "Runaway" by Bon Jovi (1984). Rotations of the double tresillo are also possible, such as the 2+3+3+3+3+2 pattern heard at the beginning of "Faithfully" by Journey (1983). Note that in all these cases, the groupings of three do not cut across important structural boundaries, such as the beginning of a hypermeasure or two-bar unit. Instead, the syncopation created by the cross rhythm is regularly resolved on every downbeat or every other downbeat, which helps maintain the clarity of the underlying metric organization within the harmonic domain.

Conclusion

As put forward here, rhythm and meter in rock involve different norms than do other musical styles, especially as compared to classical music.

These differences include expectations about typical beat rates, ways in which the beat is divided, and patterns of stress. Many of these normative characteristics can be traced to earlier popular styles, such as jazz, bluegrass, blues, and gospel. But as a musical melting pot, paralleling similar trends of cultural assimilation in the United States, rock music can be viewed as a homogenization of these tributary styles into an amalgam meant for mass-market appeal.

It would be remiss to close without some mention of the role technology played in this process. Not coincidentally, the birth of rock and roll occurred in tandem with the birth of the multitrack recording studio. Rock musicians were thus able to create arrangements and performances entirely free from musical notation. Other styles – such as folk and blues music – existed primarily as oral traditions prior to rock, of course. But it was in the cauldron of the recording studio where these styles came together. The lack of any requirement to notate the music allowed, arguably, for more complex rhythmic and metric structures to proliferate, most notably in the heavily syncopated melodies of rock. Looking forward, as computer-based digital audio workstations (e.g., Ableton Live, Logic Pro) increasingly supplant the traditional recording studio as the primary setting for music-creation, technological changes will undoubtedly continue to transform the rhythmic and metric organization of popular music in new and revolutionary ways.

Endnotes

1 F. Lerdahl and R. Jackendoff, *A Generative Theory of Tonal Music* (MIT Press, 1983), 73.
2 T. de Clercq, "Measuring a Measure: Absolute Time as a Factor for Determining Bar Lengths and Meter in Pop/Rock Music," *Music Theory Online*, 22.3 (2016).
3 J. London, *Hearing in Time: Psychological Aspects of Music Meter*, 2nd ed. (Oxford University Press, 2012), 30.
4 A. Moore, *Rock: The Primary Text: Developing a Musicology of Rock*, 2nd ed. (Aldershot: Ashgate, 2001), 42.
5 M. W. Butterfield, "Why Do Jazz Musicians Swing Their Eighth Notes?" *Music Theory Spectrum*, 33 (2011), 3–26.
6 K. Wyatt, C. Schroeder, and J. Elliott, *Ear Training for the Contemporary Musician* (Milwaukee: Hal Leonard, 2005), 77.
7 Lerdahl and Jackendoff, *A Generative Theory*, 19.
8 D. Temperley, *The Musical Language of Rock* (Oxford University Press, 2018), 79.