

# Metric Deception:

## Metric Dissonance in Popular Music and its Effect on Pulse Perception

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#### Abstract

Most popular music today features simple quadruple meters that are established in their introductions. However, some songs initially establish a pulse that conflicts with the prevailing pulse of the remainder of the piece, thereby creating a sense of metric disorientation for the listener. Biamonte (2014) describes this effect as a type of formal dissonance. Our study examines 8 songs from the late 1990s to the present to determine how metrically nonstandard introductions operate and create meaning. We categorized these dissonances into three types: metric “fake-outs” (London 2006), ambiguous meter, and post-intro dissonance. Our research team of undergraduates combine Lerdahl and Jackendoff’s (1983) dot-notation approach with Geary’s (2022) Drum Pattern Lexicon (DPL) to provide a useful means for understanding how pulse perception shifts over the course of a song. We speculate on how these introductory metric dissonances—and the categories we propose—may relate to lyrical themes, album narratives, and listener experience. More broadly, we argue that metrically dissonant introductions strategically manipulate pulse to heighten attention, expectation, and engagement.

#### Methodology

Our team of six undergraduate researchers selected eight songs selected for their interesting use of metrical groupings, seemingly defying their 4/4 meter. We then analyzed the pulse perceived in each example and notated on a dot graph where we speculated this beat was felt. Two graphs are used in our analysis: the top pulse graph illustrates where the pulse is felt when listening to the guitar layer; and a bottom pulse graph showing the pulse based on the drum layer. With this, we are able to illustrate where pulses are felt throughout each song, as well as why and how the metric dissonance is experienced. We also comment briefly on what musical purpose (form, rhythm, etc.) the metric dissonance serves, and if it serves an aesthetic, narrative/lyrical, or commercial purpose.

#### Background

Meter, as a fundamental musical parameter, is understood as a perceptual phenomenon involving the grouping and subdivision of an internally sensed pulse. London (2004) characterizes meter as the cognitive organization of temporal events, emphasizing its basis in listener perception rather than notation alone. Although meter has long been central to music theory, only in recent decades have theorists sought to formalize analytical approaches to its perceptual dimensions. Our framework draws on Lerdahl and Jackendoff’s tree and dot notation (1996), as well as Geary’s (2022) concept of the primacy of the DPL. Popular music is often described as predominantly grounded in simple quadruple meter. However, Biamonte cautions against this overgeneralization, demonstrating that closer analytical attention reveals greater metric complexity. In her study of rock music (2014), she shows how metric dissonance can serve a formal function. Metric dissonance arises through the unpredictable manipulation of pulse, challenging listeners’ expectations of a stable, steady beat. In many cases, songs establish an initial pulse that is subsequently contradicted or reinterpreted by another instrumental layer—frequently the drum set—introducing a competing beat. These “false” pulses are often later revealed to align with upbeats or alternative metric subdivisions relative to the prevailing meter. The resulting ambiguity produces temporary metric confusion. Empirical research suggests that such ambiguity may enhance listener engagement. Keller and Schubert (2011) found that listeners derive pleasure from rhythmic complexity, and Vuust (2023) report greater enjoyment of syncopated rhythms compared to non-syncopated ones. The manipulation of pulse may reflect compositional strategies designed to heighten engagement—suggesting that listener expectation, disruption, and reward are integral to artistic decision-making in popular music.

Figure 1 : Metric Fake-Out, Kings of Leon *Sex On Fire*

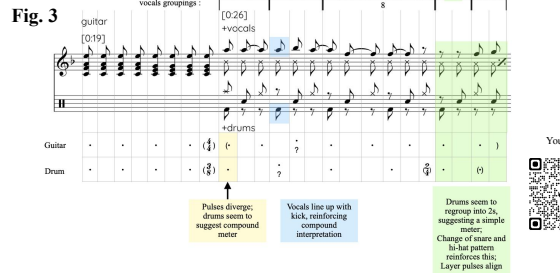
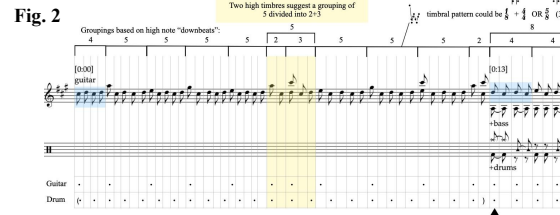
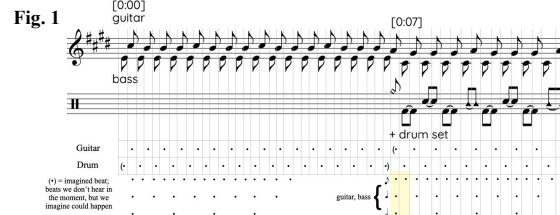
*Sex On Fire* begins with a guitar and bass riff. The bass remains on an E, but the guitar starts a pattern on C#, followed by 3 Bs. This higher note is interpreted as the apparent downbeat in our top graph, but the drum entrance soon contradicts this pulse with the true overall pulse, revealing the guitar to be on the upbeat. We illustrate the dissonance with the L&J graph, where the apparent downbeats diverge.

Figure 2 : Ambiguous Meter, Radiohead *Let Down*

*Let Down* isolates rhythmic information to the guitar layer, which creates an ambiguity for the true meter. A repeating C#-D pattern and occasional high notes (E, G#, A) seem to suggest multiple grouping interpretations. This is further complicated with a higher C#. This ambiguity is then resolved with the bass and drum layer, establishing a regular grouping of 4 beat divisions.

Figure 3 : Post-Intro Dissonance, Interpol *NYC*

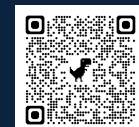
*NYC* begins with a steady opening guitar layer, suggesting a typical simple quadruple meter. This is interrupted by the entrance of the vocal and drum layers. The kick drum suggests a compound division of the beat, while the guitars remains on a regular simple division. The vocals are complicated since it seems to fall within simple or compound, depending on what layer you listen to in tandem. This confusion is resolved once the layers line up in a clear downbeat (highlighted in green on Fig. 3).



#### Conclusion

After analyzing eight songs, our team has found that with the use of nonstandard metric strategies, artists are able to create music that is rhythmically complex and begs listener attention. We noticed this dissonance may be achieved in various patterns, most typically beginning with an isolated instrument layer that is later compounded among others and ambiguity that serves as a crucial factor in the song’s dissonance. We also note it common for these metrically dissonant strategies to be utilized within the rock genre. Most commonly, we found examples of metric fake-outs. Least commonly found was the post-intro strategy, as shown in our study with less song examples than the other techniques. We also found the artists in this study appeared to enhance aesthetic, narrative, and commercial intentions to capture attention through these dissonances. We believe the rhythmic complexity used in our examples captures attention by altering pulse perception.

#### Researcher Analyses



#### Reference List

