The Shape of Swing: How Timing Outlines Form in Jazz Solos

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The expressive shaping of swing and timing is central to jazz improvisation; however, the microrhythmic nuances that define swing are difficult to analyze using conventional music theory tools. One metric that has proven especially useful in quantifying swing is the Beat-Upbeat Ratio (BUR) (Benadon 2006), which measures the durational relationship between a downbeat eighth note and its following upbeat counterpart. While standard swing is often simplistically equated with a triplet feel (i.e., BUR ≈ 2:1), empirical studies show that performers typically swing closer to 1.3–1.4:1 and that these ratios vary throughout solos (Corcoran 2021).

Using more than 4,800 melodic phrases from solos in the Weimar Jazz Database (Pfeiderer 2017), we investigate how BUR evolves over the course of a phrase and find evidence for the theory of "BUR surges," which are progressive increases in swing ratio toward the end of a phrase. These surges often align with structural boundaries in the solos, suggesting that swing timing functions not only as groove, but also as a form-bearing gesture. Between 41% and 59% of phrases exhibit some type of BUR increase, with approximately 8% showing a statistically significant upward trend from phrase onset to close, well above the expected rate for randomized models. Performer-level analysis reveals that soloists like Nat Adderley and Hank Mobley use BUR surges significantly more frequently than other performers.

Our findings reinforce the view that swing in jazz solos is not merely a rhythmic style, but a nuanced expressive device capable of articulating large-scale musical structure. Furthermore, whether performers are conscious or not of its use, BUR surges appear to be a powerful tool for introducing complexity and development in solos. By empirically modeling these microrhythmic gestures across a broad corpus, our study highlights the interpretive depth of swing and the value of computational methods in jazz research.

References

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The authors would like to present the above work as an oral presentation.