

"Turning the beat around": Time, temporality, and participation in the jazz solo break

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Disciplinary background A. Performance science has shown that lengthening the duration of a beat stresses its contextual position as a metrical accent (Repp 1992). Consistent patterns of lengthening and shortening can therefore help listeners form higher-level rhythmic and metrical structures (Iyer 2002). How such patterns vary during a performance has not been explored.

Disciplinary background B. Cognitive psychology provides a rich theoretical background for understanding the process of temporal entrainment in music performance contexts. Research into attention and perception has revealed how the anticipation of repetitive events contributes to entrainment within individuals.

Abstract

(1) To investigate whether musicians create consistent patterns of beat lengthening when performing and examine the effect these patterns have on metrical construction. (2) To establish if these temporal patterns differ depending on whether the musician creating them performs with others or is unaccompanied. (3) To explore the effects that changes in temporal patterns in unaccompanied or accompanied music may have on higher-level perceptual, attentional, and participatory processes in listeners and performers.

Through the study of a single structural device, this paper interrogates the participatory and cognitive processes involved in the construction of musical metre. The subject is the 'solo break', a common structural device in jazz performance practice where one musician briefly improvises alone, without accompaniment from the ensemble; the ensemble is then reintroduced after the break, usually beginning a new section in the performance. During the solo break, the unaccompanied soloist is responsible for stating the beat, and their placement and accentuation of it can differ substantially from the previous ensemble passage. If the entrained pulse is rejected or otherwise altered by the unaccompanied musician, this can affect how the underlying metre is perceived (London 2004). There is often significant variance between different perspectives on the metre during an unaccompanied break, the consequences of which might negatively impact the participatory and interactive processes between the performers (Berliner 2004).

This paper presents the findings of a recent quantitative study we conducted into beat lengthening and accentuation during the solo break. Ninety-two instances of breaks exchanged between an unaccompanied drummer and an ensemble were identified from the analysis of a corpus of fifteen commercial recordings. Timing data in the form of inter-onset intervals (IOIs) was extracted from the performance of the drummer in these extracts. Through the application of the autocorrelation function defined in Clayton et al. (2005) to this data, the presence and strength of systematic patterns of beat lengthening and shortening were identified before, during, and after a solo break.

Our findings suggest that musicians establish different timing patterns depending on whether they perform with or without accompaniment. This is shown to manifest in a process of metric 'smoothing'; strong beats were typically lengthened (with weak beats shortened) during ensemble passages, while beats tended to be of more unpredictable duration during unaccompanied performances. Beat groupings with consistent differences in duration are generally easier to parse into higher-level rhythmic structures than groupings with unpredictable durations (Fraisse 1982). As a consequence,

we argue that the unaccompanied solo break poses a greater challenge to the perception of musical metre than ensemble performance more generally.

Interdisciplinary implications. It is well-documented that musicians frequently make mistakes during solo breaks, usually by ‘turning the beat around’ – perceiving metrically-strong beats as weak beats, and vice-versa (Berliner 2004). Our analyses show how these mistakes may emerge from attentional and perceptual difficulties involved in entraining to passages of unaccompanied improvisation. Consequently, the results presented here have implications for future research in music education and performance, alongside the interdisciplinary study of cognition and interaction in musical participation. More generally, these results speak to the value of applying quantitative methodology to improvised jazz, a subject that traditionally resists empirical study given its lack of notated scores and the freedoms afforded to its performers.

References

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