Rethinking linguistic models of rhythm through evidence from jazz bop swing

Stephanie Shih
Stanford University, USA

stephsus@stanford.edu

Abstract

Background to the research or performance/installation
Jackendoff and Lerdahl's (1983; henceforth, GTTM) grid-based theory of modeling musical intuitions of rhythm—based on Western classical music—has formed a foundation for current research on both musical and linguistic rhythm.

Interdisciplinary issues
Influenced by approaches in describing linguistic rhythm, which have developed since the 1980s, the conclusions of this research at once engages in the decades-old debates of metrical theory as well as explores the limitations of linguistic theory for musical description.

The issue/hypothesis under investigation
When extended to non-classical forms, the GTTM grid theory is too limited to accurately model and fully capture musical intuitions governing the cognition of rhythm. From evidence in jazz bop swing, a form whose rhythm is perceptibly distinct from that of classical music, this paper develops revisions on the current generative theory for describing musical rhythm.

Findings/description
Using data from Ella Fitzgerald recordings, I generate a metrical model of jazz rhythm that departs from GTTM's model in three significant ways. First, the polyphonic texture of jazz necessitates the existence of two metrical models which together capture jazz's rhythmic form, though these models are similar in many ways and may be reconciled as one. Second, evidence from jazz supports an argument that musical rhythm, like linguistic rhythm, involves the metrical features of culminativity and constituency. This argument leads to the use of a tree-based model for representing rhythm as opposed to GTTM's grid-based model, which fails to demonstrate constituency structure. Third, unlike the binary metrical model hitherto used to describe musical rhythm, jazz rhythm requires ternary metrical structure, like anapestic meters in poetics, accounting for both the seemingly uneven rhythm of swing and jazz's conflict between stressing phrasal beginnings and metrical prominent beats.

Conclusions/future directions
This revised model, based on jazz, accounts for more of the metrical relationships present in music that possible in GTTM, permitting more flexibility and comprehensiveness in describing listeners' intuitions of musical rhythm. Furthermore, the model presented here more greatly reflects models of linguistic rhythm, a significant conclusion in regards to the similarities between language and music.