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The Learnability of Goal-directedness in Jazz Music

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Abstract

Musicians and listeners perceive dependency structures between musical events such as chords and keys. Music theory postulates the goal-directedness of such dependencies, which manifests in formal grammar models as right-headed (head-final, left-branching) phrase structure. Goal-directedness has a direct cognitive interpretation; dependencies that point forward in time can be understood as creating expectation, and the empirical correlates of this relationship are a topic of current psychological research.

This study presents a computational grammar model that represents the abstract concept of headedness but does not encode properties specific to music. Bayesian grammar learning is applied to infer a grammar for Jazz and its headedness proportions from a corpus of Jazz-chord sequences. The results show that the inferred grammar is right-headed. A second simulation using artificial data was conducted to verify the correct functionality of the headedness induction. The goal-directedness of Jazz harmony is thus demonstrated to be learnable without music-specific prior knowledge.