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Authors
Harasim, Daniel
O'Donnell, Timothy
Rohrmeier, Martin Alois

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The Learnability of Goal-directedness in Jazz Music

Daniel Harasim
École Polytechnique Fédérale de Lausanne, Lausanne, Switzerland

Timothy O'Donnell
McGill University, Montreal, Quebec, Canada

Martin Rohrmeier
École Polytechnique Fédérale de Lausanne, Lausanne, Switzerland

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.