



Non Score-Dependency: Theory and Assessment



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There is no generally accepted method of assessing the unusual ability of some musicians to play by ear. In developing assessment methods, is there perhaps anything we can learn from the way linguists test oral proficiency in second language acquisition?

Syntactic knowledge allows the mind to accomplish a remarkable transformation of the input: a linear sequence of elements is perceived in terms of hierarchical relations that convey organized patterns of meaning (Patel 2003). Listeners demonstrate implicit knowledge of syntactic patterns and principles in a number of ways, including judgments of correctness, memory advantages for rule-governed sequences, and production of plausible substitutions when linguistic or musical sequences are recalled less than perfectly (Blacking 1973; Sloboda 1985).

Hypothesis

Non score-dependent musicians should be expected to demonstrate the same implicit knowledge of syntactic patterns when they recall and play music without access to the written music notation.

In this study, we asked five award-winning improvising organists to listen to short music examples (n=15), asking them either to replicate, harmonize (add full chords) or transpose them by ear. Recordings of their attempts were transcribed and analysed.

The music examples were composed in two-part harmony, allowing the subjects no explicit access to the harmony. Bass and treble lines were of similar melodic import. Local changes of tonality were suggested, for example to the relative major or minor key.



Analysis of the results concentrated on

- accuracy of replication
- syntactical plausibility in the event of substitution and insertion

results

Accuracy of replication

Exact notes:
Treble voice: 70% (SD 0.13)
Bass voice: 46% (SD 0.08)
Melodic contour: corr = 0,833 (Pearson)
Chords: 69% (SD 0.08)

Replication of melodic contour:

excellent



Replication of bass contour:

poor



Syntactical plausibility

Aural model:



Melodic omission:



Melodic insertion, substitution:



Harmonic insertion, substitution:



Aural model:



Substitution of tonal center:



A large percentage of the notes (30%) and harmonies (31%) played consisted of substitutions and insertions. Syntactical plausibility of substitution was tightly related to the harmony. A large percentage of substituted tones (95%) belonged to the harmony. Plausible insertions (93%) can easily be classified as neighboring tones, passing tones, suspensions and anticipations. Only a few substitutions or insertions can be classified as wrong notes. No significant differences were found between syntactical plausibility in the different conditions: replicate, harmonize or transpose.

discussion

The correlation between the melodic contour of the aural model and the replication is much larger than the number of exactly replicated tones. At least when listening to unfamiliar music, non score-dependent musicians apparently imitate the melodic contour of the music they hear, substituting a plausible harmonic progression to match the tones of the melodic line as they play it. In the bass line, the voice contour is not followed, the majority of the tones belonging to the harmony. The richness of the musical vocabulary of these musicians can be found not only in their interesting departures from the original harmony and even the tonality, but also in the many melodic insertions, including not only passing and neighboring tones, but also anticipations and suspensions. In addition, they employ melodic imitation devices suggested, but not found, in the aural model.

conclusions

Assessment of a musician's ability to play by ear can be based on his or her ability to demonstrate implicit knowledge of syntactic patterns while recalling and playing music without access to the written notes. Formal accuracy of replication of the notes of the melody may not necessarily be proof of that implicit knowledge, while the ability to imitate the melodic contour and situate it in a plausible tonal and harmonic context may. The ability to make plausible additions and substitutions, not only melodic but also tonal, harmonic and motivic and the level of skill in making those additions and substitutions can be seen as a further demonstration of the musician's implicit knowledge of the musical 'language'.