

Metrical mapping in text-setting: Empirical analysis and grammatical implementation

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Linguists and musicologists share a persistent interest in text-setting, that is, in how the language of a poem is matched to musical structure (e.g. Halle & Lerdahl 1993, Kiparsky 2006, Hayes 2009). For example, it is generally assumed that in English vocal music, stressed syllables tend to fall on relatively strong beats of the musical meter (Palmer & Kelly 1992, Halle & Lerdahl 1993), but there is surprisingly little quantitative evidence for it (cf. Temperley & Temperley 2013: 521).

In this paper we present a systematic quantitative investigation of how poetic meter (i.e. S and W positions of a metrical template) and syllabic prominence is matched to three dimensions of musical structure: musical meter, tone length, and tone pitch. To assess the range of variability possible in such mappings we chose a corpus which comprised three different Lieder by the same composer (Haydn, based on three poems by Hunter) and three different settings of the same poem (Annabel Lee by Poe), with 161 lines overall.

Using a set of constraints that evaluate the mapping of poetic/linguistic and musical structure, we are able to establish grammars that underlie particular text-settings. The songs in our sample vary in the probabilities with which particular constraints are violated. In all text-settings, constraints demanding the alignment of poetic-metrical positions with musical metrical strength are less easily violated than constraints demanding the alignment of syllabic prominence and musical metrical strength. Furthermore, constraints concerning musical-metrical strength are less easily violated than constraints demanding the alignment of poetic/linguistic prominence and longer tone duration. The correspondence of poetic/linguistic prominence with tone pitch does not play a significant role in our sample of songs. Overall, our study provides solid empirical evidence about general tendencies underlying the text-setting of classical songs, and second, for the existence of particular type-setting strategies.

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