Cognitive strategies in structuring language and music

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Humans structure music and language by identifying some sounds as more important than others, and they do so by employing cognitive strategies based on universal well-formedness conditions. However, which sounds are considered to be most salient differs across cultures, as evidenced by the world's many linguistic and musical typologies.

The first goal of the current research approach is to identify these universal well-formedness conditions (e.g. "prominence of strong elements based on the syllable/chord structure") for speech and music, based on theories from linguistics (Prince and Smolensky, 1993) and musicology (Lerdahl and Jackendoff, 1983). The second goal is to assess how cultures differ from each other regarding the relative salience assigned to these conditions. For example, in the assignment of stress in stress-timed languages such as English, syllable weight plays an important role, just like harmonic consonancy in the culture's music. In a tonal language, such as Sino-Tibetan Hmong, syllable weight is less important. The syllables in this language are less complex. Diversity in meaning is established by means of tonal differences and in the culture's music, prolongation of the melody line is more important than its harmonic consonancy. It is our aim to look for patterns of this kind between the language and music of different cultures.

The findings from these investigations will reveal 1) to what extent language and music are structurally similar, and 2) whether the world's musical typologies and the corresponding regions' linguistic typologies are related to each other on a structural level. If it is found that the rankings of universal well-formedness conditions in both the language and the music of a particular culture are related, this research will provide fundamental insight into the cognitive mechanisms that underlie the way people learn and structure language and music (i.e. universal well-formedness conditions) and provide basic insight into the possible variation in language and music of different cultures (i.e. the ranking of these conditions).

References: • Lerdahl, F. & R. Jackendoff. 1983. *A generative theory of tonal music*. Cambridge, MA: The MIT Press. •Prince, A. & P. Smolensky. 1993. Optimality Theory: Constraint interaction in generative grammar. Technical Report CU-CS-696-93, Department of Computer Science, University of Colorado at Boulder.