

Cambouropoulos, Emilios. "Pitch Spelling: A Computational Model."

This paper begins with Cambouropoulos comparing the different opinions of the utility of enharmonic spelling from experts such as Parncutt, Longuet-Higgins, and Temperley.

Cambouropoulos' own opinion is that enharmonic spelling is not a necessary prerequisite for pitch perception, but it reflects underlying tonal qualities of pitch which may assist other musical tasks such as harmonic analysis, melodic pattern matching, and motivic analysis. His hesitant attitude is carried throughout the entire paper.

Two main hypotheses are offered: 1) A strong link exists between enharmonic pitch spelling and tonal structure (primarily true for tonal music of the classical era) and 2) Listeners internalize frequencies of occurrence of musical intervals and therefore frequencies can be used effectively for inferring higher-level tonal information. The reasonability of the first hypothesis seems viable, but the second hypothesis is just impossible. If it was general knowledge of how to go about testing how "listeners internalize" things or occurrences, then such research would not be so broad in style or as incomplete as it seems to be. Cambouropoulos successfully tests the first hypothesis but barely touches upon the second. Maybe he assumes he can argue his way to make people agree with his idea of how "listeners internalize" music.

Cambouropoulos derives his "interval optimization" algorithm off of Temperley's idea. Cambouropoulos claims that both approaches are actually related, that the "line of fifths" approach is actually a special case of the general "interval optimization" approach and that it provides one possible ordering of pitch intervals. Cambouropoulos introduces another ordering using a variation of his four-level classification (1996), a two preference categories version. It was nice of Cambouropoulos to create a proof of how the "line of fifths" actually refers to an ordering of intervals but it seems to be such an obvious detail that it becomes doubtful that Temperley did not take this idea into account.

The actual algorithm that was created to test the different approaches used a shifting overlapping windowing technique with two fundamental principles which were accounted for using penalty values: 1) Notational parsimony and 2) Interval optimization. The one issue with using penalty values is that the validity of the values are subjective and even in this example, the specific values have been selected after trial-and-error optimization on the subject material. The one great thing that came from this experimentation is that from the first two tests, it was shown that the ordering of pitch intervals greatly affect the spelling process. The observance that pitch-spelling algorithms that are based on an interval optimization process are overall very successful is in the eye of the beholder. Any small tweak of the input values could create a more "successful" result.