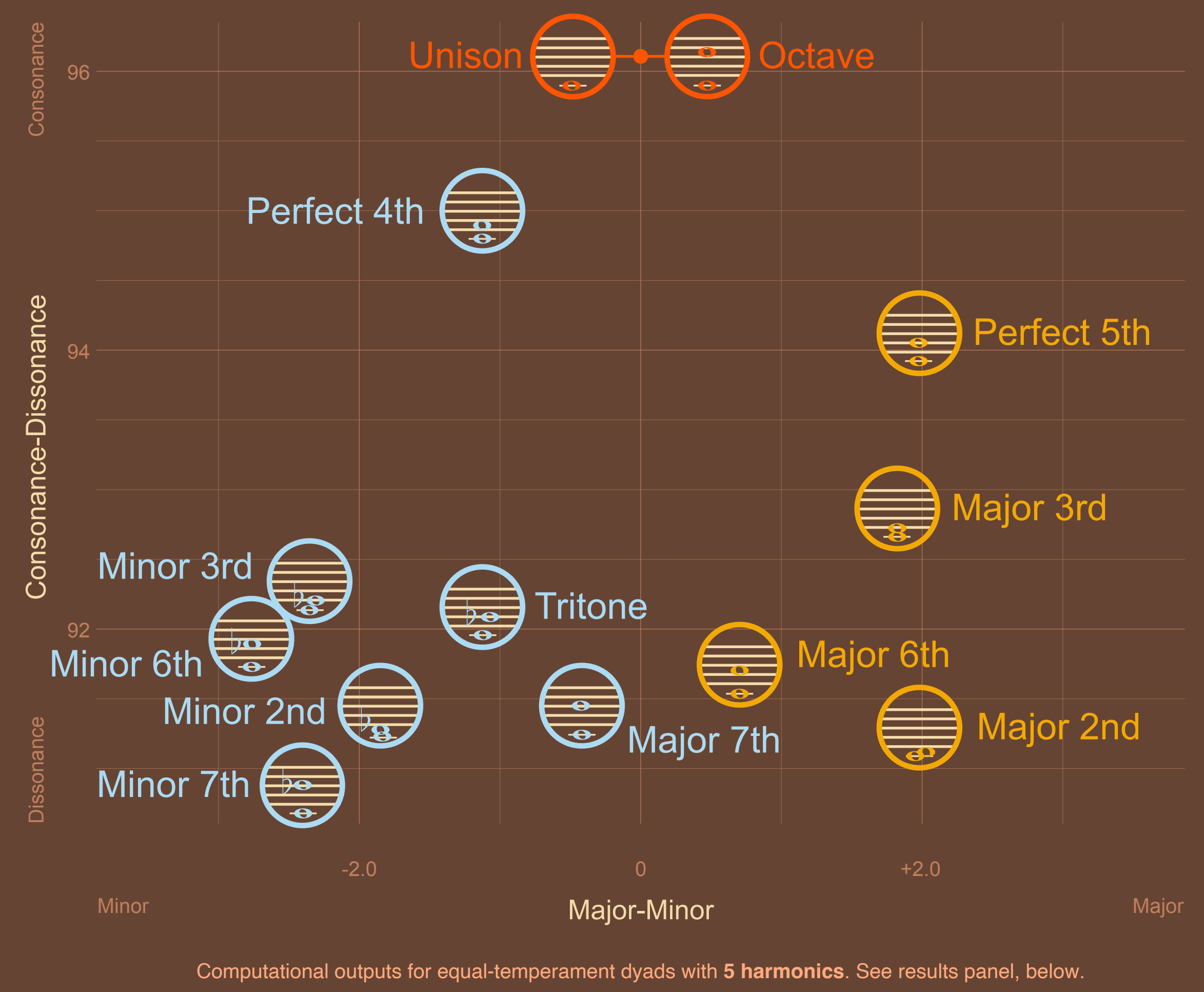
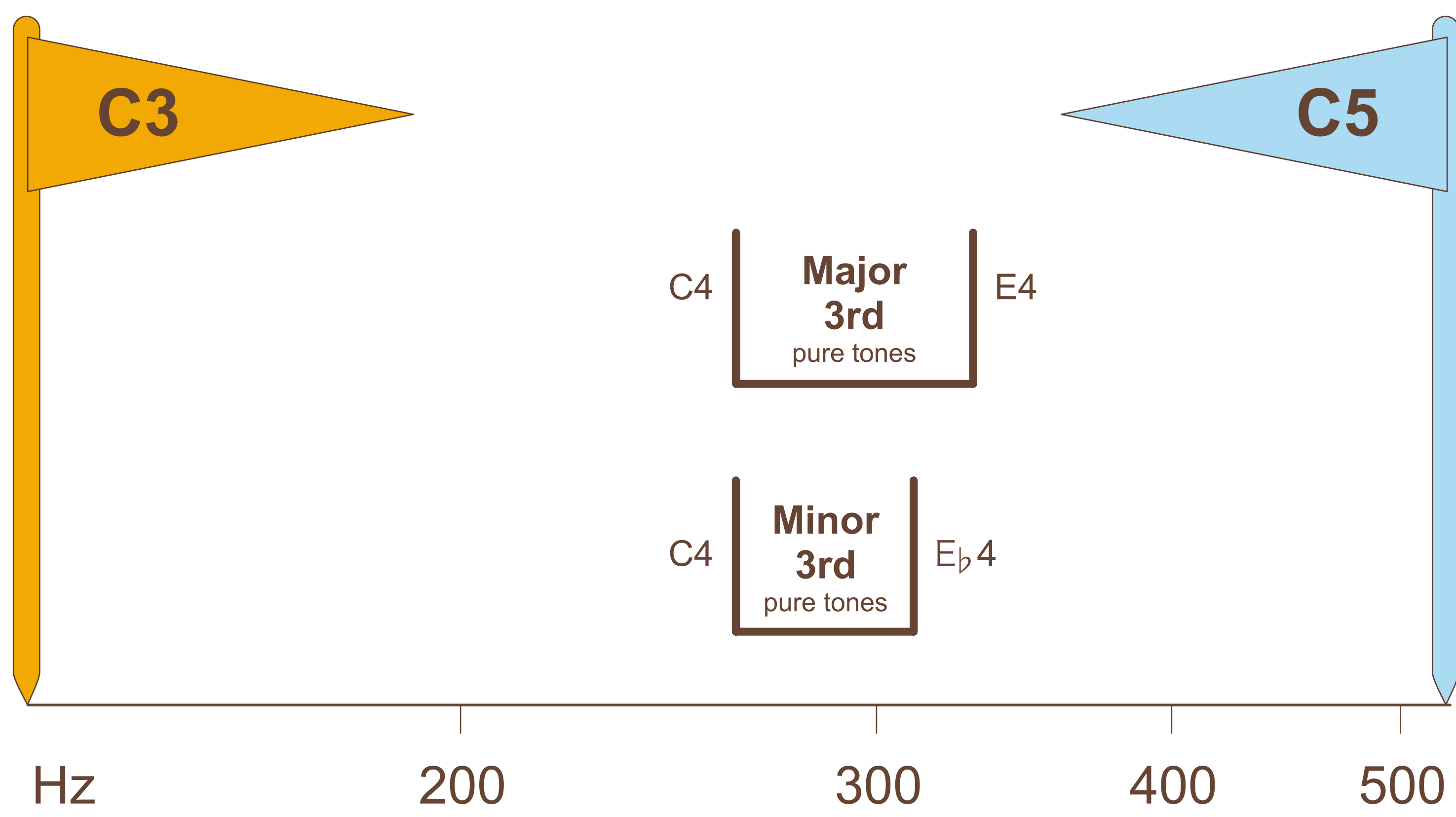


A model of **major-minor** and **consonance-dissonance perception** emerged when chord cycles were estimated by **frequency and period ratios**.



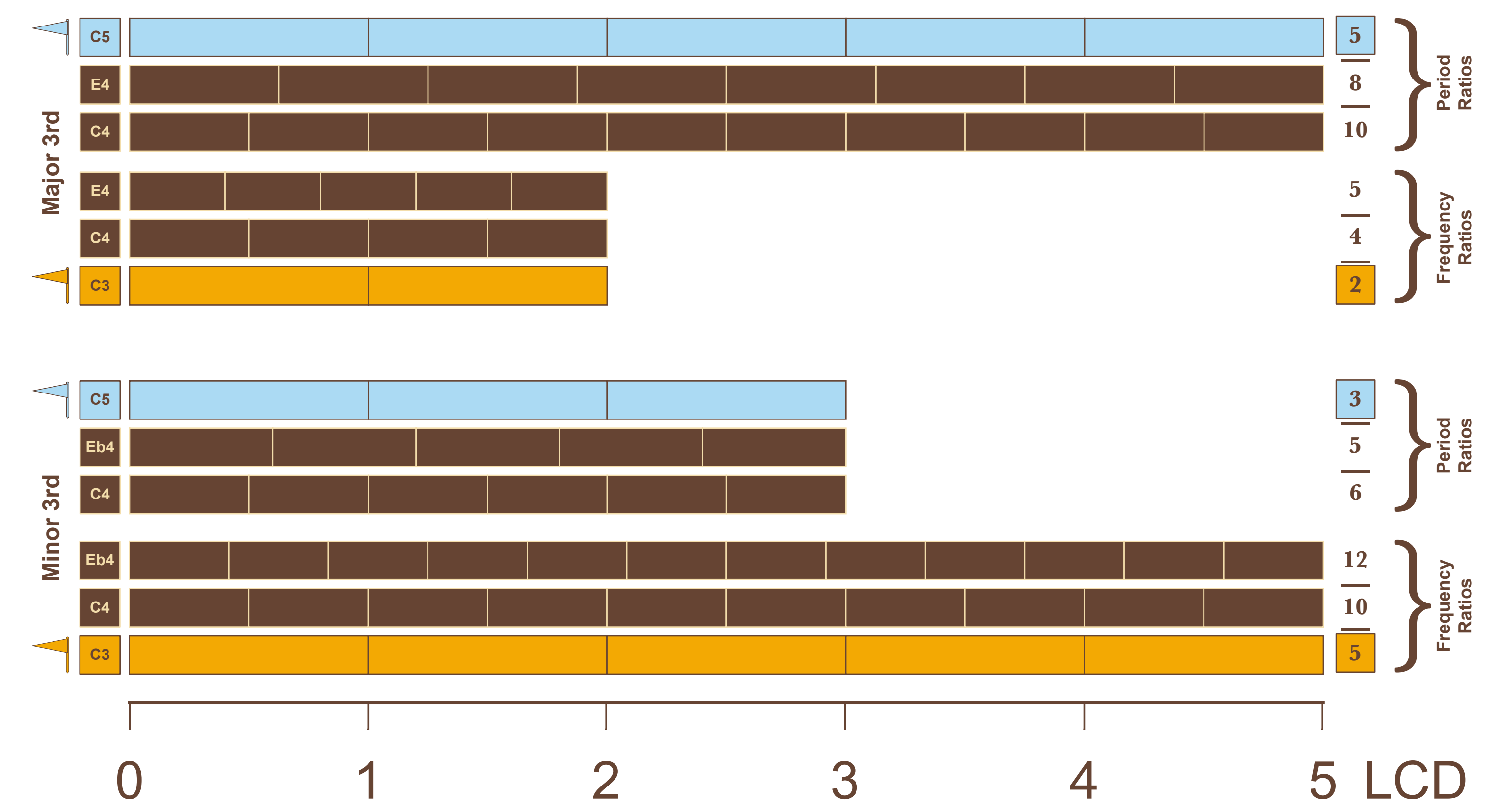
The Computational Model

I. **Two** reference tones were selected **higher** and **lower** than each chord.



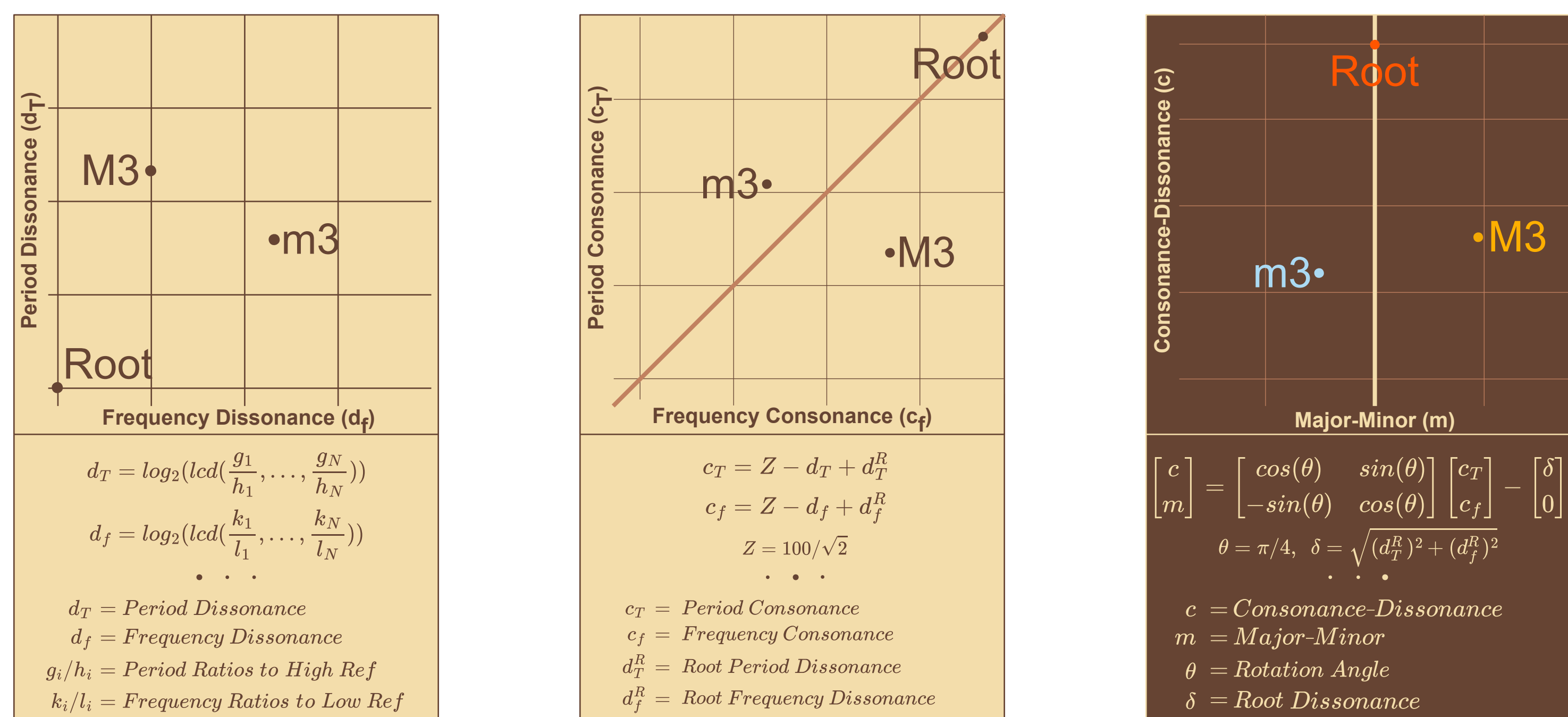
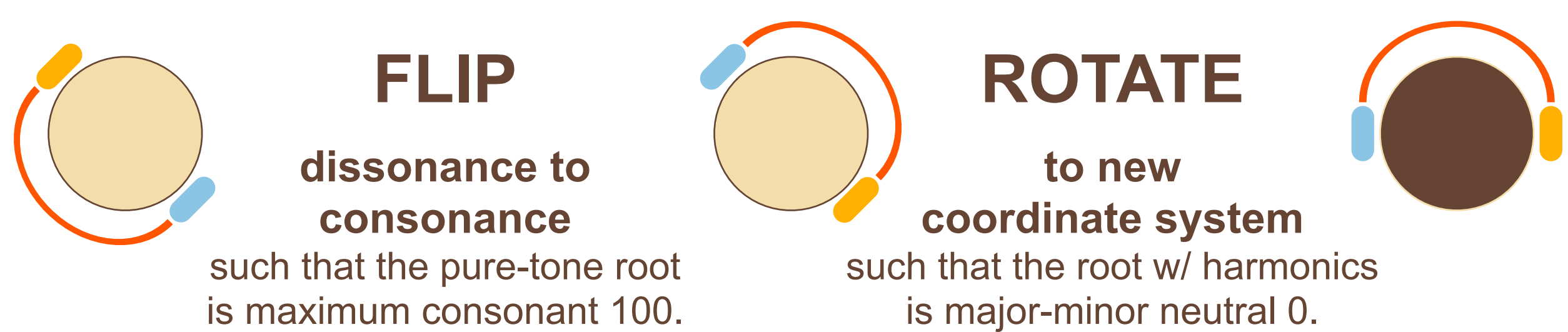
The root pitch fundamental, determined by pattern matching, was transposed higher and lower than the chord, including harmonics.

II. Each chord's cycle was estimated **twice** by:
 1. **frequency ratios** relative to the **low** reference
 2. and **period ratios** relative to the **high** reference.



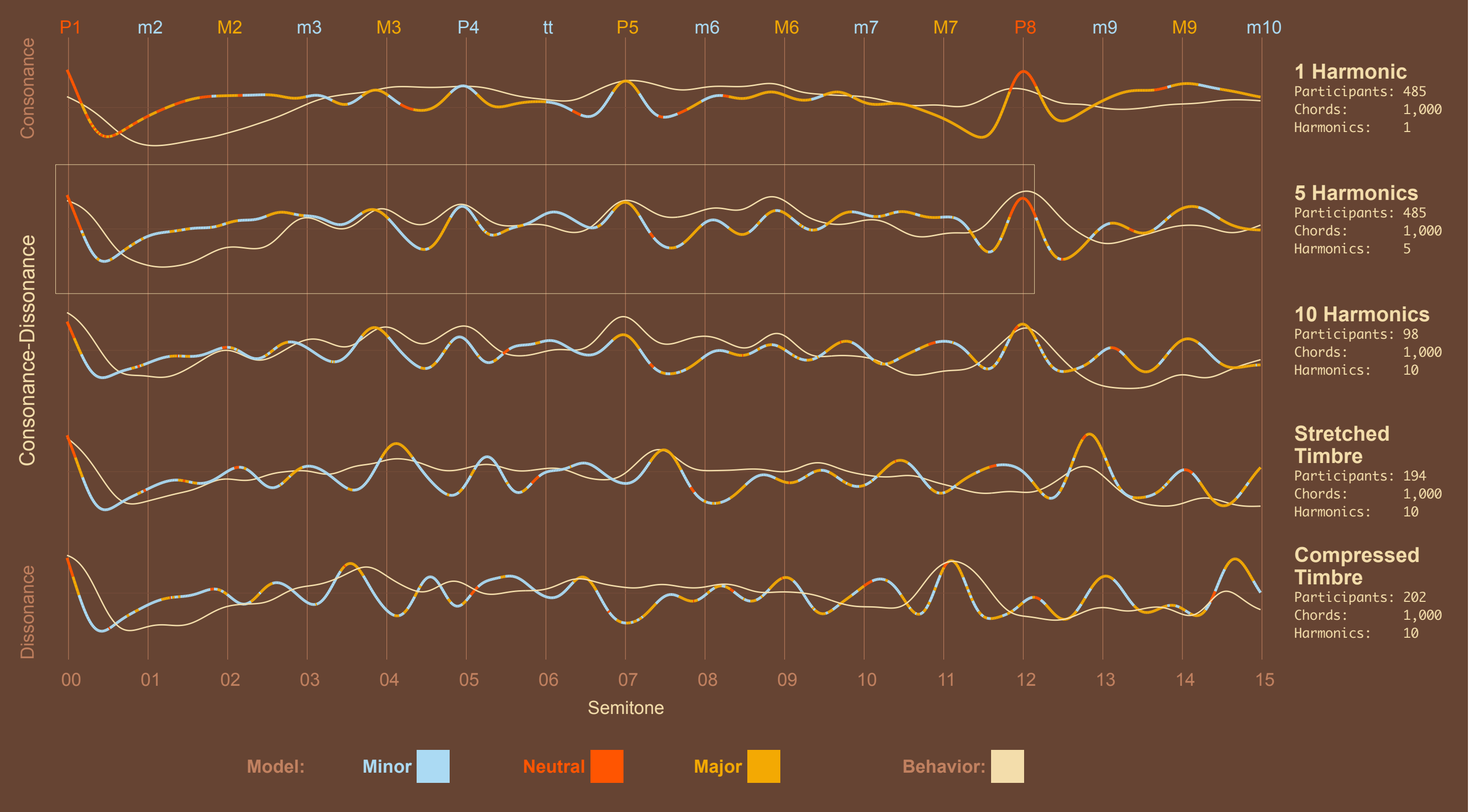
Irrational ratios were approximated as integer fractions within $\pm 1/16$ th semitone (± 16.6 cents), see Stolzenburg (2015).

III. The **two** estimated cycles formed the **2D** space: **major-minor** and **consonance-dissonance**.



Results

Consonance-dissonance predictions were compatible with massive large-scale behavioral experiments and major-minor predictions matched tradition.



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<https://homeymusic.com/research/MaMiCoDi>

