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## Harmony & Tonality 2

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### Harmonic Processing of Tonal Melodic Sequences

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**Time:** Sat 20 8.30 am, **Stream:** E **Proc. Page:** 289-292  
**Venue:** Room G18, Webster Ground

To investigate the harmonic processing of tonal melodies, 2 experiments were performed in which listeners rated the musical logic of tone sequences implying different chord progressions. In the first experiment listeners rated the entire sequences; in the second they rated increasing fragments of the same sequences. It was predicted that 1) sequences implying more usual progressions will be rated higher, and 2) ratings for stepwise increasing fragments will reflect the process of on-line chord recognition. Results of the first experiment indicate that usual progressions are generally rated higher than less usual ones. Results of the second experiment reveal that the stepwise ratings are affected differently depending on whether an incoming tone is recognized either as a member of the current chord, or as a tone not fitting in the current chord but implying a chord change. Consequences for a model of the perception of implied harmony are discussed.

### The Psychoacoustics of Harmony: Tension is to Chords as Dissonance is to Intervals

*Norman D. Cook; Kansai University, Japan*

**Time:** Sat 20 9.00 am, **Stream:** E **Proc. Page:** 293-296  
**Venue:** Room G18, Webster Ground

Interval perception has previously been studied both as a cultural and as a psychophysical phenomenon, but, when the topic turns to harmony, i.e., the perception of three or more simultaneous tones, "cognitive" factors are invoked and psychoacoustical factors inherent to the chordal structure are generally assumed to be less important. On the basis of behavioral and fMRI experiments using chords constructed from 12-tone and 24-tone scales, it is argued that the equivalent size of two intervals in any three-tone chord is a source of "ambiguity" and "instability." It is concluded that the "inharmoniousness" of, e.g., augmented and diminished chords is due to psychoacoustical factors related to chordal substructure, and is not solely a consequence of interval dissonance and learning. Just as the dissonance of small intervals is the primary salient feature determining the perceptual character of two-tone intervals, the inharmoniousness of certain chords is determined by the relative size of the intervals contained therein.

### Diminished Chords: Cognitive Versus Sensory Priming

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This study uses diminished chords to disentangle sensory and cognitive components underlying harmonic priming. In experiment 1, the SOA and the harmonic relatedness of the prime and target chords were manipulated. We showed that, more priming was observed for the legal resolutions (C) of a prime diminished chord (B°) than for the illegal resolutions (C#, two tones in common with the prime). This finding is consistent with a cognitive account of harmonic priming. In experiment 2, we further investigate this conclusion by adding a short melody before the prime and target chords. This melody instilled either a major key (C major) or a minor key (F# minor). With a major melody, we replicated the effect observed in experiment 1 (more priming for B°-C rather than for B°-C#) but with a minor melody, we observed a reverse effect (more priming for B°-C# rather than for B°-C), but only for the nonmusicians. This study demonstrates that cognitive priming is more influential than sensory priming independently of musical expertise.

### Tempered Dekanies: Chorus Effect Using Microtonal Intervals Based on Just Intonation

*Greg Schiemer; Sydney Conservatorium of Music, Australia*

**Time:** Sat 20 10.00 am, **Stream:** E **Proc. Page:** 300-302  
**Venue:** Room G18, Webster Ground

This paper describes a creative work process that investigates a new practical application of harmonic theory based on just intonation. Theory is not only applied harmonically but developed as a means to affect timbre. The creative work is auditioned and some observations made about the way just intervals interact to affect modulated sine waves.