# ASYNCHRONY VERSUS INTENSITY AS CUES FOR MELODY PERCEPTION IN CHORDS AND REAL MUSIC

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## Background

In expressive piano performance, pianists bring out the melody by playing it louder and by playing it sooner than the accompaniment (melody lead, Palmer, 1989, 1996; Repp, 1996a; Goebl, 2001). In this contribution, we investigate perceptual aspects of this phenomenon. In previous research on the perception of tone salience in dyads, we found that loudness is the dominating cue, asynchrony has only marginal influence (Goebl & Parncutt, 2002).

## Aims

In a multi-voiced context, we investigate the relative perceptual salience of individual voices that are shifted back and forth in time and varied in intensity simultaneously. We are interested in how much each of these cues is responsible for the perceptional salience of a tone or voice. In comparison to our previous work, we extend the stimulus material to three tone chords in order to study the perceptual salience behaviour in different vertical positions in a chord. Studies on the detection of pianists' errors revealed that outer voices tend to receive greater perceptual attention than inner voices (Palmer & van den Sande, 1993; Palmer & Holleran, 1994; Repp, 1996b). Another perceptual explanation of the melody lead phenomenon is the streaming hypothesis according to Bregman's theory of auditory scene analysis. To test this hypothesis, the stimulus material is extended to sequences of chords and to an excerpt of real music.

## Method

In the first experiment, three-tone piano chords are presented to the participants in which one tone is increased and decreased in intensity (five steps from −14 to +14 MIDI units) and shifted in time backwards and forwards from -55 ms to 55 ms in five steps. This target tone is indicated by an acoustical primer that sounded one second before the chord. The participants have to rate how loud the target tone sounds to them on a 7-point scale. To avoid streaming over stimuli, two chord types are used (always with the same major sixth in the higher two tones) and their pitch is randomly shifted one semitone up and down. The second experiment uses the identical setup, but with sequences of five chords per stimulus. In the third experiment, the first nine bars of Chopin's Ballade op. 38 are used with the upper voice and a middle voice as two possible melodies. These two voices (as indicated by different colours in the score) are varied in timing and in intensity as before and the participants have to rate which of the two voices attracts their attention more, again on a 7-point scale.

## Results & Discussion

The experiments are currently in progress. Results will be presented at the conference.