9th International Conference on Music Perception and Cognition

Alma Mater Studiorum University of Bologna, August 22-26 2006

The perception of local and global timing in simple melodies

Sandra Quinn, Roger Watt
Department of Psychology, University of Stirling, UK

Local relations refer to adjacent events (such as the time between successive notes in amelody); global relations refer to a continuous succession of local events (such as the rhythmic timing of the complete series of notes in a melody).
Tones in a short auditory sequence can have their perceived timing distorted by local pitch relations. The Tau and Kappa timing effects in visual motion stimuli have equivalent auditory pitch motion versions (Shigeno 1993) where the perceived delay from one tone to the next depends on local pitch separation. We report data which show local distortions in the perceived duration of a sequence of 3 tones where the first and last tones have one pitch and the middle tone another pitch. Perceived duration increases with the pitch interval between the middle tone and the others: the larger the pitch interval the longer the perceived duration. We report a range of results which allow us to relate this finding to the relative frequency of the melodic intervals in "vernacular" western tonal music: melodic events that are uncommon (such as a pitch change of a major 7th) are perceived to last longer than identically timed common ones (such as major 2nd).
This local effect suggests that there should be an equivalent global effect: large intervals should tend to make melodies sound slower. However, we also report data showing that melodies with frequent large intervals tend to have their perceptual characteristics (such as happiness/sadness) judged as if the melody is faster (not slower) than melodies without large intervals. This shows a discrepancy between local timing and global timing.
This set of findings is difficult to reconcile with any unitary additive model of time perception. We will describe an alternative account of time based on the nature of events. Uncommon events happen less frequently (by definition) and therefore the time between uncommon events will normally be longer that the time between common events. In this sense, uncommon events can be said to dilate the perception of time. When events happen more frequently than usual, a melody sounds rushed.
Shigeno S (1993), Percept Psychophys. 54:682-92.

Key words: Time, Perception, Melody

scmq1@stirling.ac.uk