5e Colloque en pédagogie musicale
5th Colloquium on Music Pedagogy

Le lundi 28 avril 2008
Pavillon Pérez, salle 208
9h00 à 13h00

Monday April 28, 2008
Perez Hall, room 208
9 am to 1 pm

Perceptual Span in Music Sight Reading: Effects of Notational Complexity

- YiFei Liu

Recently researchers studying music reading have been looking at perceptual span. It has been established that perceptual span for pianists is more than two beats and less than four beats horizontally. Reading skills and harmonic difficulties did not affect the span size (Gilman & Underwood, 2003; Truitt et al., 1997), but notational complexity did have an impact on eye movement during sight singing (Goolsby, 1994); this effect might influence the perceptual span. However, no research to date has studied the relationship between notational complexity and perceptual span in piano sight playing. Our research was designed to study the effects of notational complexity on the perceptual span of university piano major students during piano sight playing by using the moving window paradigm: only a portion of music appears as eyes are moving. Four window conditions (two beats ahead, four beats ahead, six beats ahead, and no window) were applied to all sight-reading excerpts at the RCM grade 6, 7, and 8 levels. All excerpts were paired and each pair contained one simple and one complex example of visual information; eye movement was recorded with Eyelink II, a head-mounted, binocular eye-tracking device. Data analysis was based on the paired excerpts across the three grade levels, and within the same grade level, with the purpose of examining whether notational complexity interacts with the perceptual span. A second condition was applied with different but equivalent stimuli: notes were removed as the eyes moved forward, making it impossible to look back at previous notation.

Eye-Hand Span in Musical Sight Reading: Effects of Musical Texture

- Bonnie Huor

Eye-hand span (EHS) in sight reading is the distance between the position of the eye and hands, on the fixated and played note, respectively. Studies measuring EHS during sight reading have found that the eyes are generally ahead of the hands by varying amounts. EHS is measured in two ways: in notes (note-index), or in time (time-index). The note index is determined by the amount of notes between eye and hand. The time-index refers to the amount of time between fixation and performance. Since time-index is related to tempo, this study will control for tempo and will measure EHS using the note-index. In general, EHS decreases as the music increases in complexity.

However, the type of complexity that contributes to the decrease in EHS has not been identified. This study will aim to study the EHS as a function of musical texture. The EHS of skilled pianists will be compared in two different dual-staved musical textures: homophony and polyphony.

Processing Linguistic and Musical Syntax in the Brain: A Study of Eye-Movements

- Stephanie Ahken

A possible link between the processing of language and music in the brain may reside in the processing of syntax, a notion shared by both. Neurophysiological studies suggest that the integration of syntax in music and in language may share a cortical network comprising the anterior part of the brain and an area of the premotor cortex. Thus, it is conceivable that syntactic processing has a motor component that could interfere with eye-movements. This study will investigate the eye-movements of readers during the processing of musical and linguistic syntactic incongruities. Selected participants will read linguistic sentences aloud and sight-read short musical sequences that are either syntactically congruent or incongruent. The observation of eye patterns will be done with the EyeLinkII eye-tracking system. Duration and frequency of fixations and regressions will also be analyzed to reflect syntax processing and comprehension. This study is part a growing body of research on music and linguistic syntactic integration and may help to expand our current knowledge of the underlying mechanisms of such processes in the brain.

The Impact of the Structural and Physical Cues of the Musical Phrase on Eye-Hand Span in a Tonal or Atonal Context: Behaviours of Novice and Intermediate Piano Students

- Mary Claire Lazure

The results of studies have shown that eye-hand span expands or contracts within a specified boundary and to an area of high redundancy. Research has also shown that there is a larger eye-hand span and a better memory of notes with tonal music. The harmonic structure plays a role in the subdivision of a phrase. In this study, novice students (grades 3 and 4) and late intermediate piano students (grades 7 and 8) sight-read and performed single-line excerpts with the inclusion or exclusion of structural cues, including a tonal or atonal melody, and the inclusion or exclusion of physical cues, including phrase markings. After determining the subject's general eye-hand span, the excerpts were removed at a pre-determined point during the first or second phrase and the subject's eye-hand span was analyzed. The research aims to describe the length of the eye-hand span of novice and intermediate students with the inclusion or exclusion of the structural and physical cues.

Perception of Tonal and Atonal patterns: Differences between Experts and Novices in a Simple Reading Task by Detecting Eye Movements

- Shirley Ho

When reading music, it is assumed that musicians perceive and encode musical notes in higher hierarchic orders instead of merely note-to-note approach. Research have proved that such approach are being used when processing different musical structures. The perceptual processing of musical notation can be detected by eye movements. In general, skilled readers use more but shorter fixation than less skilled readers when reading a score. When reading a melodic line, the saccade length is longer with tonal triad patterns. Different eye movements are used when perceiving the same rhythmic patterns at different tempi. It is determined by the performance rather than the visual appearance. This research will look into apparent differences between experts and novices when processing tonal triad patterns. It is hypothesized that experts may use different eye movements to process familiar tonal structures from atonal patterns. The eye movements will be detected by the Dual Purkinjie Image Eyetracker (SRI) when subjects carry out a simple reading task. The results will be reflected in terms of eye movements such as fixation (duration and frequency) and saccade (amplitude) of subjects as they perform in the task.

Coordination of the Breathing of Novice, University and Expert Pianists with the Performance of Four Tasks: Finger Tapping, a Scale, a Finger Exercise, and a Beginner Piece

- Flora Nassrallah

In the past few years there has been an interest on the breathing of musicians. Research has taken place to understand the respiratory behaviours of wind players (Cossette, Sliwinski, & Macklem, 2000; Gilbert, 1998), brass players (Shemann, 2000) and violinists (Stadler & Szende, 1965). However, little is known on the breathing patterns of pianists. Few studies on the breathing of pianists determined that a variation of the meter affects the breathing rhythms (Ebert, Hefter, Binkofski, & Freund, 2002) and that breathing rate is linked to tempo (King, 2006). This thesis examined the relationship between breathing and finger movements on and off the piano and studied pianists of different levels (novice, university, and professional) to establish the effects of experience on breathing patterns. Three experiments were conducted: 1) participants were required to perform finger taping and to play a scale at specific metronome speeds; 2) participants were asked to play a finger exercise in different meters; 3) participants had to perform a simple piece. Analysis of the MIDI-files from the Yamaha-Disklavier, the data from the respiratory transducers and the performed elements (tapping, scale, exercise and score) determined the observable relationship between breathing cycles and rhythm, meter or phrasing.

A comparative study on the three reading approaches and their long term effects towards sight-reading

- Catherine McNulty

There are hundreds of method books to choose from out there, but how do we decide which method is best for our students? Usually, we look for certain aspects such as age, repertoire, technique, ect, to guide our students throughout their lessons. Although, even though they're all important, the most influential characteristic to choosing a method book is its philosophy towards a specific reading approach. Each method is either based on the Middle-C approach, Intervallic Approach, Multi-Key Approach or the Eclectic Approach. This study is a progressive research paper that focuses on the influence of these reading approaches towards sight reading. The first step will be presented as a descriptive comparison and understanding of the approaches and will demonstrate the methodology that will be used for future scientific references and feedback.