

## Recorded interpretations of Chopin Preludes: Performer's choice of score events for emphasis and emotional communication

Erica Bisesi,<sup>\*1</sup> Jennifer MacRitchie<sup>#2</sup>, Richard Parncutt<sup>\*3</sup>

<sup>\*</sup>*Center for Systematic Musicology, University of Graz, Austria*

<sup>#</sup>*Conservatorio della Svizzera Italiana, Lugano, Switzerland*

<sup>1</sup>erica.bisesi@uni-graz.at, <sup>2</sup>jennifer.macritchie@conservatorio.ch, <sup>3</sup>richard.parncutt@uni-graz.at

### ABSTRACT

What structural features characterize individual performers' styles? To what extent do eminent pianists agree on segmentation and rendering of musical phrases? How much do they agree on selection of score events (accents) for local emphasis, and how to emphasize them? How do these choices influence the emotional responses of listeners? How musical expertise and cognitive style of listening influences listeners' responses? Our hypothesis is that the location of the particular points emphasized by performers by mean of expressive deviations in timing and dynamics can provide some clues as to a performer's interpretation and communication of emotions. By asking 24 expert musicians to listen to 16 eminent interpretations of two Chopin Preludes op. 28 (no. 7 and no. 11), and provide information about perceived segmentation and emphasis on local events, as well as on the main emotions associated to these pieces, we extract similarities in the segmentation and emphasis on local events (phrases' climaxes and accents), and discuss striking differences across the performances. We group performances by cluster analysis and consider each cluster as an interpretative style. We also correlate interpretative styles with intended emotion. Finally, we discuss results in the light of participants' musical expertise and cognitive style of listening.

### Background

Studies such as the empirical analysis into the aural parameters of piano performance suggest that performers may use different expressive strategies to emphasize particular structural features in a piece of music. Repp performed a quantitative analysis of pianists' timing (Repp, 1998) and dynamics (Repp, 1999) in Romantic piano recordings; other studies focused on the salience of phrase boundaries (Palmer, 1992). Bisesi & Parncutt (2011) investigated how notated accents are related to the underlying musical structure in the score and how they are emphasized by mean of expressive deviations in timing and dynamics. According with Parncutt (2003), an accent is a local event that attracts a listener's attention and may involve grouping (phrasing), metre, dynamics, melody and harmony. Performers may highlight accents by changing timing and dynamics in their vicinity. This depends on many factors such as musical and personal style, local and cultural context, acoustical and technical constraints and intended emotion or meaning. Studies focusing on the relationship between expression and emotion in music performance, considered the relationship between structural features and basic emotions (Juslin, 2001) and also related structural elements such as sequences and unexpected harmonies to emotional responses such as shivers and tears

(Sloboda, 1991). Moreover, the possibility that music processing depends on cognitive styles that vary between individuals, as well as between situations and context of listening, has been investigated in many research projects. For instance, Kreutz & al. (2008) extended the Baron-Cohen's theory (2005) concerning empathizing (characterized as the capacity to respond to feeling states, emotions and free associations) and systemizing (characterized as the capacity to respond to regularities of events) to the musical domain.

### Aims

This project is addressing individual differences in performance style and their relation to musical structure (cf. Clarke, 1987), emotion and meaning (cf. Palmer, 1997) by exploring which structural features characterize individual performers' styles and the extent to which eminent pianists agree on segmentation and rendering of musical phrases. By examining the degree to which eminent performers agree on the selection of score events (accents) for local emphasis, and how to emphasize them, we also explore how these choices influence the emotional responses of listeners. Our hypothesis is that the location of the particular points emphasized by performers by mean of expressive deviations in timing and dynamics can provide some clues as to a performer's interpretation and communication of emotions. Finally, listeners' responses are also correlated to their musical expertise and cognitive style of listening (music empathising vs. music systemizing, cf. Kreutz & al., 2008).

### Methods

We ask 24 participants to listen to 16 eminent interpretations of two Chopin Preludes op. 28 (no. 7 and no. 11), and provide information about perceived segmentation and emphasis on local events, as well as on the main emotions associated to these pieces. We are considering performances by Martha Argerich (1977), Claudio Arrau (1973), Vladimir Ashkenazy (1978), Daniel Barenboim (1976), Idil Biret (1992), Jorge Bolet (1974), Alfred Cortot (1942), Samson François (1959), Rudolf Kehrner (1992), Evgeny Kissin (1999), Anna Kravtchenko (2005), Moura Lympany (1995), Nikita Magaloff (1975), Murray Perahia (1975), Ivo Pogorelich (1989), and Maurizio Pollini (1975). Participants are expert musicians from the University of Music and Performing Arts (Graz, Austria), the Conservatorio della Svizzera Italiana (Lugano, Switzerland), the KTH (Stockholm, Sweden), and the Trieste Conservatory (Italy). Participants are divided into 2 groups of 12 people, with each group asked to perform the experiment with a different Prelude.

The experiment consists of 4 stages and all data is collected through the *Presentation 16.0* software. In stage 1 and 2, we

investigate the relationship between musical structure (respectively, segmentation and accents) and interpretation. In each stage, participants hear each of 16 performances twice and in a random order. First, they are asked to describe how the performer is phrasing the piece by moving a vertical slider up and down to indicate phrase beginnings and endings. Participants are also asked at the same time to indicate the climax of each phrase by moving the slider all the way to the top. By presenting participants with just the audio of the performance and not the score, we ensure that ratings are based on the performer's sense of musical structure rather than the participant's theoretical reading of the score. In the second stage, all performances of the same piece are presented to participants again, twice for each performance as before, and any time an accent is emphasized by the performer by mean of local variations of timing and/or dynamics an "A" appears on the screen. The instants of occurrence of these events are derived by a previous measuring of timing and amplitude variations in the audio files, retaining only the local peaks that correspond to salient events previously marked on the score as metric, dynamic, melodic or harmonic accents. In this stage, participants are asked to rate the salience of each accent by pressing a key from 1 (not very salient) and 3 (very salient). In stage 3, participants hear all performances again and, for each performance, are asked to choose two adjectives from a list printed on the screen that they feel best represent the performance. Adjectives are derived by the five basic emotions of happiness, sadness, anger, fear, and tenderness, with the addition of some more subtle emotions from the Hevner's Adjective Circle (Hevner, 1936). Finally, in stage 4 the participants are submitted a questionnaire in order to ascertain their musical expertise and cognitive style of listening. Questions concerning the cognitive style are high-loading Music-Empathizing-Systemizing items identified by Kreutz & al. (2008). The questionnaire is presented to participants in their native language. Our first target is to extract similarities in the segmentation and emphasis on local events (phrases' climaxes and accents), and discuss striking differences across the performances. On this basis we are formulating intuitive principles for hierarchical segmentation and realisation of phrases, and selection and emphasis of score events. We group performances by cluster analysis and consider each cluster as an interpretative style. We also consider overall tempo and temporal accent density. Our second target is to correlate interpretative styles with intended emotion. Our third target is to correlate results from the previous stages to participants' musical expertise and cognitive style of listening.

## Results

An explorative study conducted on a small number of listeners indicated that performers who choose slower tempi also tend to place more emphasis on local events and less on phrase structure. Generally, phrases' climaxes correspond to melodic or harmonic accents. Melodic and metric accents tend to be more important for interpretation than is generally assumed in the psychological literature, which has instead focused on phrasing and harmonic accents. Agreement among pianists is higher for melodic and metric accents and lower for harmonic accents. Final results will be presented at the conference.

## Conclusions

We are revising and extending *Director Musices*, a software package for automatic rendering of expressive performance (Friberg & al., 2006; Friberg & Bisesi, forthcoming). Results of stage 1 and 2 will contribute to the artificial generation of different interpretations of the same piece. Results from stage 3 will enable us to label and categorize these performance styles. In an attempt to understand the differences in interpretation of the same piece by some of the most distinguished pianists in recent recording history, and demonstrate the effects of individual differences on their listening audiences, this project furthers the understanding of this process of interpretation from a cognitive and structural viewpoint.

This work is supported by the Stand-Alone Project P 24336-G21, sponsored by the Austrian *FWF*.

## Keywords

performance, interpretation, structure, emotions, cognitive style

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