Investigating structure of contemporary music applying tension design and empirical perception analysis

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BACKGROUND IN MUSIC THEORY, ANALYSIS AND COMPOSITION
The theoretical background is energetic (Kurth 1931), phenomenological and Klangspannungsanalyse (Karkoschka 1974). Analysis of culmination, tension development and its relation to form and the function of different structural parameters (Kirschbaum 2001), form in relation to time (Kotta 2008), form and perception (Baroni 2003), and cognitive structure, theory, and analysis (Zbikowski 2002) opens more detailed possibilities in understanding structure in relationship to perception. For the analysis of contemporary music, graphical methods are used (Lock 2006).

BACKGROUND IN PSYCHOACOUSTICS (AUDITORY MUSIC PERCEPTION)
A perceptual experiment investigates and empirically maps interaction of musical structure with auditory cognition of human being (Krumhansl & Schenck 1997), and relies on the empirical methods of musicology (e. g. Clarke & Cook 2004). One notes an (In)compatibility of music structure and perceptual segments (e. g. Valk-Falk 1999) of the musical work (from contemporary music styles) based on analysis of tension development (Kirschbaum 2001), using graphical methods. The interdisciplinarity of the work is supported by results on the interactive nature of the perception of music and simultaneous painting from an earlier study (Valk-Falk, Lock & Rosin 2005). Visualization of cognitive “drawing” of tension (by testing contemporary music in this study) makes possible juxtaposing personal cognition (of subjects) as well as passing a resolution connected to (visualized) musical tension.

AIMS
We focus on structural aspects of contemporary music observing their tension value. Our approach is to investigate the interaction of auditive and visual analysis aspects, because the tension development of music can be received only through listening.

MAIN CONTRIBUTION
In this study a theory of tension design is applied. Score-based tension design is developed, and perception-based tension design is investigated. Data and verbal responses of seven participants supported interpretation of the tensional structure of a contemporary music piece for large ensemble „Oxymoron“ (2003) by Estonian composer Erkki-Sven Tüür (*1959).

IMPLICATIONS
The analysis of tension design in contemporary music can be realized successfully by combining a theoretical approach with cognitive perception analysis results. Studying responsibility to auditive musical signals makes possible the visual mapping of sound signals in different ways, in order to understand the musical events with the help of different domains through analysis. During investigation and data interpretation the methodology for two types of tension design were evolved. Output of score-based tension design seems to be in accordance with human perception of musical events independent from earlier experience in contemporary music. The overall contour of perception-based tension design shows remarkable individuality and organic development, but also reveals concordance in significant moments of tension design.

REFERENCES
NY: Prentice-Hall.

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