RESEARCH ASPECTS RELATED TO PERFORMANCE: DOES THE HARPSICHORD SOUND FADE OR DECAY QUICKLY?

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The interpretation of the means of expression in performance springs from the harpsichord sound and its environment (i.e. the ornament classes, tone classes) depending on the function of harpsichord either as a solo instrument or an ensemble instrument. The aim of this research is to analyse the duration of harpsichord tone. For that, the tone contour analysis is used as one of the current statistical methods. Thus, it is necessary to proceed from the components comprehensible to hearing such as the pitch, duration, sound intensity and the timbre, as well as their relation to each other in formal structure (i.e. short time analysis and realtime analysis). As the initial source for analysis, unconnected tone samples of separate value played with different durations, and different touch of fingers by the same harpsichord player, are used. The tones were played on Italy's cembalo with strings used from the same set. Also, mono recording technology has been used (1 AKG C 414 microphone) and Pro Tools digital recording software. For analysing segments, Audio Sculpt 2.02 beta for OSX Macintosh has been used (FFT parameters for fundamental frequency 1 Hz, sampling frequency 44.1, and the window size 220500). Observations of the samples taken confirmed that the tone's spectral qualities are not conditioned by the nature of either mechanical or cognitive finger touch. In the study we removed 130 samples from the existing 325 ones in our initial source which left 195 samples to be analysed. We used the following conditions of spectrum analysis: (1) the sonogram analysis of sound intensity spectrum, (2) identifying of tone through the fundamental frequency, (3) determining of the intensity of the fundamental and the partials.

From the analysis of the signals of different length we can see the harpsichord tone dividing into four segments described by the model ADSR (Attack, Decay, Sustain, Release) of typical analog synthesis. In the attack, the fundamental rises quickly to the maximum intensity. The climax is followed by the rise of the partials whereas the distance of the partials from the fundamental does not determine the intensity of partials in the scale. The time of the partial attack regarding the fundamental tends rather to depend on the tone's acoustic qualities and less on the touch of fingers. For the decay, the realtime spectrum analysis proves to be more vital: the sound intensity spectrum (i.e. the relation between time, frequency, and amplitude) shows decrease in the duration of the sound. The intensity of tone also decreases with the increase of the pitch frequency scale. Based on the information gained, the sustaining of tone is characterised by the existence of two or more decreasing plateaus on the time-axes. The phase of release starts with an additional attack where the tone intensity grows a little. The boundaries between decay and sustain are more ambiguous than the boundaries between attack and decay, and between sustain and release. When interpreting the plateaus not as a swift extinction, but as a slow fading of the harpsichord sound, analysing the phases of decay and sustain, the performer is left with enough interpretive alternatives to choose between stylistic features (e.g. ornament classes, tone classes, articulation etc.).

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