

## **Articulation Strategies in Expressive Piano Performance Analysis of Legato, Staccato, and Repeated Notes in Performances of the Andante Movement of Mozart's Sonata in G Major**

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Music and motion are related in different interesting ways. In contemporary music the concept of motion is often used by creating the illusion of a moving sound source [1]. This study considers aspects of piano players' finger motions and the resulting expressive character of performance. In the pianists' performance duration and intensity are considered. Practical studies of articulation play an important role in the training of piano students. The KTH performance rules system comprises technical rule and an empirical rule. Battel and Fimbianti analyzed expressive performances of five pianists, two female and three male. They played the same score nine times in different adjectives. They found significant differences in overall articulation between the different performances. The passionate version, the slowest, is played legato with both hands, the bright and flat versions; the fastest are played non-legato in both hands. To measure the degree of legato articulation, the concept Key Overlap Time (KOT) for adjacent tones was used. The KOT is defined as the time interval between the onset of key depression for one tone and the key release for the preceding one. This study examines how articulation varied in a realistic performance situation depending on the expressive character of the performances. The pianists practiced on the piece for 12 days, and they should perform the piece in different expressive characteristics like bright-dark, heavy-light, hard-soft, passionate-flat. The adjectives are in pair of opposite meanings. The pianist was asked to exaggerate the expressive intentions in their performances. This will help the performer to change the expressive characteristics of some pieces. Also it will satisfy the need of a larger contrast between performances with different adjectives for an easier analysis of the deviations relative to natural performances. The study will have three type of articulation: Legato, Staccato and Repeated tones.

In Legato articulation: The KOT was dependent of the interval size between the notes, and varied with the IOI. KOR is the KOT represented as percentage of the IOI. The longer the IOI, the shorter the KOR will be. The pianists used legato articulation as a cue for differentiating the adjective pairs in their performances. All pianists tended to change their performances in similar ways, when switching from one adjective to its opposite. The interval direction was significant, the tempo was slightly faster in ascending than in descending intervals. The result showed that KOR decreased for increasing IOI. The pianists played faster in ascending than in descending melodic patterns. In Legato articulation the KOR decreased with increasing IOI of the first of two overlapping tones, such that short notes were played with a larger KOR than longer notes.

In Staccato articulation: Key Detached Time (KDT) defined as the time between the release of the key and the instant when the key of the following note is fully depressed. The Key Detached Ration (KDR) was defined as the ration between KDT and

the IOI of the preceding tone. The smallest KDR values were obtained for dark, heavy and passionate, while bright, flat, hard, light, and natural shows large values. In staccato articulation KDR seems independent of IOI, such that the tone duration is shortened by a constant percentage of the IOI.

Repeated Tones articulation: The repeated notes are rendered differently from staccato notes. The KDR for repeated tones was less than the mean KDR for staccato tones. In the heavy and natural performances the average KDT in note repetition remained constant. The KDT in note repetition is not an expressive rendering but the effect of the bio-mechanic of finger movement in a natural performance situation. In the articulation of repeated notes the KDR for the first note is in the range of a mezzo-staccato articulation, decreasing with increasing IOI.

Large differences between the five pianists' performances did not show a general behavior in their articulation strategies. As articulation is one the most important aspects for the communication on emotional intentions, there should be new rules applied to emotionally music performance. Also these experiments can focus on different type of music, and different instruments. The result for the violin showed similarities to the result for the piano. Then this should be considered in different music instruments. I think some other aspects also can be considered as culture, gender, personal characteristics in articulation.