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Review on Performance of Music

In this paper, the author surveyed research on the issued of music performance. Most of the research is performed on western tonal music. The topics addressed in the paper follow a chronological order.

To achieve excellence in the music performance, the understanding of the music score and the mastery of instrumental skills are required. More specifically, in the planning phase of performance, acquiring a mental representation of the music and practicing the pieces to a satisfactory level are of general concerned, and are being studied by the research community. In the former issue, research from Palmer and de Sande investigated the representation of homophonic and polyphonic music by analyzing errors in piano performance. The results indicated that there were more errors in homophonic than in polyphonic performances and more single-note errors in polyphonic than in homophonic performance. These studies imply that every performance involves some interpretation from the performer's mental understanding, and thus affect the physical outputs. From the listener's perspective, performers try to convey their understanding in the performance, thus music is able to provide an abstract narrative. Other studies also show that the representation of music involves motor processes. That is, the spatial properties of an instrument in terms of movement patterns decide the shape or the meaning of a piece of music. In general, the representation of music can be generated in many ways, such as the structure, meaning, and movement patterns. In the issue of practicing, both mental and physical practice has been studied. The general conclusion is that mental practice is better than no practice yet worse than physical practice. On the other hand, the combination of mental and physical practice achieves the best result. Research also suggests that the memorizing of music pieces depends on the performance level of subjects, as well as the length of the music pieces. Besides, the higher performance level, the more time was devoted to playing hands separately, and repeating sections of pieces in the rehearsal.

Sight-reading is to perform a score without any preceding practice. Intuitively, if the music is well-known, or it conforms to a certain style, which has the same effect as mental representation and practicing on the subjects, the better performance output is able to be achieved. The study performed by McPherson suggests that skilled performers are able to seek relevant information by scanning the music and mentally rehearsing major difficulties before performance. Goolsby worked on the issue of eye movements, and the results show that skilled performers have shorter progressive as well as regressive fixation of the eye movements than less-skilled performers. Thus it can be concluded here that the higher lever of the performers, the higher level of the coordination among body parts and brain reactions can be maintained, and hence the better performance. However, this is not always the case, research shows even some excellent musicians can be poor sight-readers.

Improvisation plays a very important factor in music performance, especially in the performance of Jazz. A lot of work has been done on this issue. It has been suggested that improvisation can be regarded as an ordered union of event clusters, which consist of the

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creating of hierarchical and associative structure, and the selection of events contained within the performer's repertory. In actual performance, the musician have little conscious access to the processes of using any predefined theory, thus no formal principle is followed, which presents lots of difficulty for research on this topic.

In terms of the feedback in performance, it has been found that visual feedback is the most perceived factor for both performers and audiences. However, other factors, such as auditory, and kinesthetic, have also been studied and proved to be useful in conveying the meaning of music.

The final part of my reading is about motor processes in performance. Traditional opinion advices that practicing should start in a slow tempo, and then accelerate to the actual speed. However, Handel argued that such an approach may introduce some irrelevant motor pattern, and is thus questionable. Theories about motor skills have been proposed such as the closed-loop theory, open-loop theory, schema theory, and the Bernstein approach. All these are proposed to model hand movements with the interaction of brain's interpretations. Besides, empirical investigations indicate that every performer has an internal tempo or "clock" to provide markers for expressive purposes. Research shows that two hands are relatively independent in dynamics and timing. These points further support the theory that musician's interpretation of the score, in combination with his music theory and music style, is able to generate distinctive expressive output in the motor program under different circumstances.

In addition to the motor movement, other expressive movements, such as vision and sound movements have also been investigated. It shows that visual movement, especially head movement is essential to distinguish among performers.