

Title	楽曲により聴取者に喚起される感情反応とRhythmに基づいた曲調変化との関係
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# The relationship between the affective reactions based on the music and the transition of musical strains caused by the rhythm

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A human being is evoked emotion by the music. The objective of this research is to deal with this well-known fact systematically.

This research belongs to the field of the analysis and the recognition in the musical information processing. This field researches from the viewpoint of the appreciators. Then, the research object is what does the human being catch from the music. However, the mainstream research of this field is the analysis of the musical structure at present. There is not a research about the affections of the human being (the appreciators).

This research attaches great importance to the recognition ability of the human being in addition to the structure analysis who listen to the music. This is the first step of the new research to objectively solve the mechanism, which a human being is evoked emotion by listening to the music. However, this word that a human being is evoked emotion by the music contains a lot of meanings. For this research to analyze all of them is an ideal but it is very difficult.

Therefore, this research takes aim at "the musical contents evoke emotion". The music has 3 big elements (rhythm, melody and harmony). The human being is evoked emotion when he listens to the music in these combinations.

The musical score is the basis of the music and composing these 3 big elements. Therefore, this research analyzes musical score.

This research approaches a subject for study, "the affective reaction which the

composition evokes ", from the two directions. The 1st is an approach from the side of the human being. Here, it evaluates the affective value. The result of these evaluations show " what is the affective reaction which the composition evokes " and " the affective reaction which the composition evokes has how much similarity". The 2nd is an approach from the side of the music. This approach analyzes musical score. Then, it investigates what elements of the music influence the affective reaction. The following result could be gotten from both approaches.

(i) The result which was gotten by the approach from the side of the human being

Experimentally, I used the music based on the description with musical score for the evaluation sound and AVSM (Affective Value Scale of Music) for the evaluation word. When limiting to the specific feelings using the evaluation word, it found that almost all appreciators experience a similar affective reaction by each musical score. Then, it divided music in the place where the appreciators notice the transition of musical strains, and after evaluating every section. The affective reaction became higher in the similarity. Also, a simple musical judgment was made using this experiment result. It estimates the similarity of the affective reaction to increase in subdividing more.

Moreover, in the case of another experiment that doesn't use an evaluation word, the appreciators described the image of the music freely by the picture and the sentences. It is possible to consider from the experiment result when the appreciators are creating each virtual world listening to the music. Moreover, those had considerable similarity. Imagining some scene by the human being while he listened to the music and that it had similarity was confirmed from experiment.

It says that there is a difference among individuals in the affective reaction that is evoked from the music because the contemplation and the experience in the past and so on influence deeply. And also, looseness with being considerable compared with the evaluation by the evaluation word was expected. Nevertheless, the considerable similarity could be confirmed.

(ii) The result which was gotten by the approach from the side of the music

Musical approach did a squeezed analysis to the rhythm in 3 musical big elements. When comparing the result of the musical score analysis and the result of the previously described subjective assessment, it found that the rhythm was the important factor to make appreciators feeling the transition of musical strains.

To analyze, the musical score must be systematically dealt with. Therefore, this approach contrived the way of making numerical value by choosing the kind of the note as

the frequency. And this approach tried comparing the rhythm pattern to have limited to the kind and the arrangement pattern of the note. From the comparing percentage and the result of the subjective assessment, it discovered the number of appreciator who felt the transition of musical strains and the comparing percentage of the rhythm pattern had a strong negative relating. Also, the result of the analysis discovered that the change of the main melody rhythm pattern was the important factor makes appreciators feel the transition of musical strains especially, too.

Moreover, when verifying former result, at the part with low comparing percentage, all appreciators felt the transition of musical strains. The validity of the research policy could be confirmed from these.

Using the result of the both approach by former, it considered relationship between the change of the musical score information and the affective change. The consideration was simple. However, as for the changing point with big rhythm pattern, it knew that the affective reaction was a big changing cardinal point. The various factors changing the affective reactions to should lurk in the neighborhood of the cardinal point. From now, this research will analyze neighborhood in the cardinal point. Then, the factors to change to the affective reaction can be discovered. And, the consideration makes expect the musical compositions and the affective reactions form the close connections.

Continuing a research in the future defines the basis value, which becomes the objective judgment basis of the transition of musical strains caused by the change of the rhythm pattern. This research wants to judge the transition of musical strains caused by the change of the rhythm pattern using the basis value.

In the future, this research defines the minimum unit of composing music in the limit where an affective reaction is evoked, calling UNIT. Then, it makes relation between each UNIT and the affective reaction clear and makes a database about them. Finally, this research aims to subdivide music into UNIT and to calculate the affective reaction, which is evoked from the music by the logic summation between each UNIT and the corresponding affective reaction.