Musicological Significance of Traditional Chinese Music Inheritance and Information Theory Research

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Noted physicist Sir Arthur Stanley Eddington's famous argument states reasoning suffices entropy to be comparable with beauty and melody. Entropy is the level of disorder in a system and in information theory, it refers to the measurement of uncertainty. Significance of music originates from expected uncertainties of time and musical characteristics in consequent situation resulted from estimation and evaluation of musical inheritance method possibilities by antecedent situation.

With the developments of school songs in the first half of 20th century, musical notations, both stave and numerical score, quickly spread all over and gained popularity in China. Traditional musical notations of Chinese music, because they only record pitch and either roughly or do not reflect pace, were conceptualized to be obsolete. This is the very reason traditional Chinese musical notations were abandoned. However, a traditional Chinese musical book (纳书楹曲谱), translated as Nashu Studio Theatrical Music, writes [1]very detailed notation of pace is beneficial for beginners, however it restricts people with profound understanding of music and excellent performing techniques from developing their own performing characteristics. For instance, in upper Gong Chi of Gong Chi Score (工尺谱), a form of traditional Chinese musical notation, if three Yin translate to one Ban, there can be as many as over 5 possible combinations of pace and this allows flexibility for performers to recreate the music. Jian Zi Score (减字谱) of Gu Qin, a seven-stringed plucked instrument, indirectly records pitch and even detailed playing techniques but recording of pace is nowhere to be found in such score. Pace of these scores are determined by the playing technique of different schools of performers. The same ancient score, when played by different performers, shows distinct styles. The traditional Chinese inheritance method of oral instruction and rote memory also has many uncertainties. The background, life experience, personality, a aesthetic taste and mode of teachers and learners all contribute to forming different styles and characteristics during inheritance, creating uncertainties.

Significance and information are both associated with uncertainties through probability. In any communication of information, the lower probability of a subsequent event, the more uncertainties (and information) are contained in antecedent-consequent relationship. Information is the measurement of degree of freedom in message selection. The greater this degree of freedom and volume of information are, the more uncertain that message is. Thus, the chosen degree of freedom, uncertainty and volume of information are positively correlated. If information theory is applied to the discussion of significance of traditional Chinese music score inheritance, what conclusion will it lead us to?

The value of information itself is based on representation, expressing, externalization revealing objects and their characteristics and significance. This paper combines algorithm music[2] and information theory and discusses the value and significance of traditional Chinese music scores and inheritance method of oral instruction and rote memory for the purpose of discovering new methods for traditional Chinese music inheritance.

References and Notes

1. Original text: 板眼中另有小眼原为初学者而设，在善歌者自能生巧，若细细注明转觉束缚
2. Algorithm music expresses music using algorithm instead of music notations. It is a more abstract visualization of music scores. Algorithm music records the internal structure of music. Style and characteristics of performers can be recorded and analyzed with probability computation using computers.