

Rigidity and Flexibility: A Comparative Study of Traditional Chinese and Western Music from the Perspective of Complex Information System Theory [†]

Gengxian Cao ^{1,*} and Donghe Li ²

¹ The College of Humanities & Social Science, Xi'an Jiaotong University, Xianning West Road, No.28, Xi'an 710049, China

² The College of Electronic & Information Engineering, Xi'an Jiaotong University, Xi'an 710049, China; lidonghe@stu.xjtu.edu.cn

* Correspondence: cgx.566@mail.xjtu.edu.cn; Tel.: +86-131-520-66319

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Abstract: Through discussion on the increments of unordered elements in the transition of 20th century western contemporary music, this paper investigates similarities between 20th century western music and traditional Chinese music. Analyzing chaos in Tradition Chinese Music scripts and inheritance and comparing the fractal features of Chinese and Western music, it also views, from the perspective of philosophy, the value and philosophical meaning of Chinese and Western music.

Keywords: rigidity; flexibility; uncertainty; traditional Chinese and Western music; complex information system

1. From Ordered to Unordered—Transition of 20th Century Western Music

Western music has the advantages of graceful melody, ordered rhythm and pleasing sound but its expression is greatly restricted by rhythm and stress. The natural world presents itself in a complex modality where orders and unordered events both exist. As part of the natural world, the inward world of human shares this same complex characteristics. The modality of traditional western music cannot express the complexity of world and inner thinking. Science provides us with means to investigate into the complex world and similarly, the sensitive musicians were also starting to breaking the traditions and orders in traditional western music that had been in place for hundreds of years, expressing the complexity of world and changes in human think. They broke traditions, gave up classics and replaced them with extension in music expression.

2. Rise of Uncertainties—The Joining of 20th Century Western Contemporary Music Concepts and Traditional Chinese Music Concept

In composing of 20th century western music, some musicians broke norms and started the uncertainties of rhythms. Furthermore, adding more uncertain elements in music scores became what 20th century western contemporary music composers gave thoughts to and put into practice. The rigid expression of music score which had always been in dominant position in traditional western music changed in 20th century. Western musician in 20th century reduced and even gave up the principle of rigidity in composing and turned to the flexibility as in Chinese music. They also changed their focus in creating new music to the secondary creation by performers and learners.

20th century started the discovery into new space-time model and behaviors and at the same time suggested the beginning of re-recognizing the meaning of space-time and behaviors of eastern arts. The establishment of new musical space-time concept and model must take into consideration the combination of the space-time view and value of both eastern and western music and contemporary science and philosophy. [1]

3. Fractal and Chaos in Traditional Chinese Music

3.1. Fractal and Chaos Theory

The theory of fractal and chaos originated in the seventies of 20th century as a new theory. The study of chaos is the resulted from the combination of modern science and modern technology, especially computer science. Chaos theory is universal and applies to astronomy, geography, mathematics, physics, biology, chemistry and many more. From things as big as the universe to those small as fundamental particles, all things are governed by this theory and we cannot clearly describe its great power and vast influence.

3.2. Chaos in Traditional Chinese Music Scripts and Inheritance

The characteristics differ in the scripts of traditional western music and traditional Chinese music. In traditional western music, the primary creation by musicians are treaded as golden standards. Those who perform or practice must closed follow the primary creation of musicians and not change the music score and such practice is inheritance of certainty and rigidity. Statistically speaking, if each performance of traditional music script is treated as a sample, by putting together all these samples, we will find they follow the pattern of normal distribution. This is because in each interpretation of music score, the outcomes vary very little if any. Traditional Chinese music scores, because of its structure and indications, employ elements of both certainties and uncertainties. When being, as a result of subjective character and implicit experience introduced by performers, the outcome of the same music score varies from one performer to another. If we use musical notations or numbered musical notations that everyone understands to record the performance of the same traditional Chinese music piece by different generations of inheritors and performers and put these recordings together, we should find that they do not follow the pattern of normal distribution. These recordings are in general similar but also very in some aspects. Certain and uncertain acts form a dialectical relationship. Certain acts expressed in the form of patterns while uncertain acts appear as lack or non-existence of patterns. Certain acts provide a stable foundation for the process of development and evolution of music while the uncertain acts are the conditions for variations. This explains how a uniform style is kept in Traditional Chinese Music inheritance even there is no rhythm or even pitch in its scores while there are variations and creativities on this style.

4. Comparative Analysis of Traditional Chinese and Western Music

4.1. Comparison of Cultural Backgrounds Where Traditional Chinese and Western Music Scores Originate

Traditional Chinese music does not employ the concept of arithmetic progression but possesses its own characteristics, which significantly relate to the local language and characters. In traditional Chinese music, the duration of one beat is based on one monosyllabic Chinese character and the reading, vocal and instrumental performance of the beginning, middle and end of each beat or character correspond to a particular duration, stress level and sense of charm. If arithmetic progression were employed, each beat or character would exactly equal and this would lead to the loss of flexibility and charm of music in terms of timing. The duration inequality between beat and beat, sound and sound form what we call beat discrepancy. Beat discrepancy is defined by contemporary musician Professor Jianhua Guan as the difference in time among two or more beats that cannot be equaled to or divided exactly by the same fraction.

4.2. Comparative Analysis of Traditional Chinese and Western Music Score Scripts

In spatial sequence, music demonstrates similarities in its parts and whole and gradually develop towards fine structures. This phenomenon of self-similar structures is called fractal. Music constitutes pitch (frequency) and rhythm which together form countless combination. Some combinations make graceful music while some only annoying noise. Are there commonalities among those combinations of pitch and rhythm that make great music? There were almost not any communications between the west and the east. Nonetheless, musician from both areas compose beautiful melody that last until now. Are there certain commonalities between eastern and western music? To study how they relate and differ, this paper tries to analyze both music using fractal theory. Through the fractal comparison in the paper, we will show Chinese music not only demonstrate same fractal pattern as western music but has freedom, creativity and diversity resulted from its uncertain inheritance.

5. Analysis of Value and Meaning on Traditional Chinese Music's Chaos and Fractal Characters

When compared with its western counterpart, traditional Chinese music appear to be simply in orchestration and harmony but does constantly evolve and develop through inheritance. This phenomenon shows a complex modality. Tradition Chinese music being influenced by cultures and aesthetics, its inheritance itself demonstrate complex modality and reflects diversity, creativity and liberty. Compared to traditional Chinese music, traditional western music shows greater complexity in configuration, orchestration, harmony and so on. For instance, different branches of orchestra cooperate with each other, producing abundant sound and together with harmony show a modality that appear to be complex. However, the realm of its music performance is relatively narrow and simple and lacks the creativity and liberty in performers' recreation thus showing its character of simplicity. Because of these, in 20th century, when faced with the complexity of nature, human and world, western contemporary musician added more unordered elements to reflect the complex world together with science.

Conflicts of Interest: The authors declare no conflict of interest.

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