Música Hodie | ISSN: 2317-6776 DOI: 10.5216/mh.v23.75844

Zhao Xiaosheng's Tai Chi: Re-visiting the Meaning and Accretion of I Ching in the Contemporaneity of Chinese Music Semantics

Tai Chi de Zhao Xiaosheng: revisitando o significado e acréscimo do I Ching na contemporaneidade da semântica da música chinesa

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Abstract: The implementation of China Reform and Opening-up policy in 1978 gave birth to the Chinese new wave music, with an

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idiosyncratic manner of rebelliousness, individuality and innovation that brought a break-through in Chinese new music of the past. In this paper, we focused on a representative piano solo work *Tai Chi* (1987) by composer Zhao Xiaosheng who explored the ancient Chinese philosophy *I Ching* and the Tang Dynasty musical form *Tang Daqu* using Allen Forte's pitch class set theory. We analyzed how Zhao employed the Western sonata and Chinese *Tang Daqu* to reflect the *yin-yang* dualism, based on the composer's statement in the interview, researchers' analyses, and authors' suggestion. By decoding the pitch-class permutations that correspond to the 64 hexagrams of *I Ching*, the mathematical logic becomes the main way to combine the *I Ching* with serial music. Nevertheless, the compatibility between musical expression and commentaries of hexagrams is not reflected in the piano solo *Tai Chi*. Therefore, we discussed the entanglement of a compositional identity formation based on contradicting elements from that of the traditional Chinese musical culture and Western art music, with questions about the accretion and authenticity in the contemporaneity and musicalization of the ancient *I Ching*.

Keywords: Zhao Xiaosheng. piano solo. *Tai Chi*. *I Ching*. *yin-yang.*

Resumo: A implementação da política de Reforma e Abertura da China em 1978 deu origem à música *new wave* chinesa, com uma forma idiossincrática de rebeldia, individualidade e inovação que trouxe uma ruptura na nova música chinesa do passado. Neste artigo, focamos em uma obra representativa para solo de piano, *Tai Chi* (1987), do compositor Zhao Xiaosheng, que explorou a antiga filosofia chinesa *I Ching* e a forma musical *Tang Daqu* da Dinastia Tang usando a teoria dos conjuntos de classe de notas de Allen Forte. Analisamos como Zhao empregou a sonata ocidental e o chinês *Tang Daqu* para refletir o dualismo *yin-yang*, com base na declaração do compositor na entrevista, nas análises dos pesquisadores e nas sugestões dos autores. Ao decodificar as permutações de classes de notas que correspondem aos 64 hexagramas do *I Ching*, a lógica matemática torna-se a principal forma de combinar

o *I Ching* com a música serial. No entanto, a compatibilidade entre a expressão musical e os comentários dos hexagramas não se reflete no piano solo de *Tai Chi*. Assim, discutimos o emaranhado de uma formação de identidade composicional baseada em elementos contraditórios da cultura musical tradicional chinesa e da música erudita ocidental, com questões sobre o acréscimo e autenticidade na contemporaneidade e musicalização do antigo *I Ching*.

Palavras-chave: Zhao Xiaosheng. solo de piano. *Tai Chi*. *I Ching*. *yin-yang*.

Submetido em: 10 de abril de 2023

Aceito em: 23 de julho de 2023

Introduction

The birth of China's *xinchao* (new wave) music and new wave composers since the late 1970s display an idiosyncratic innovation of compositional technique (XIU, 1986). This period reflects a transition from compositional commonality to individuality (LI, 1986). The positive reception of new wave music and its inclination towards liberty presents a new Sino-Western creative output. New wave music forms an important part of the Chinese musical evolution. The first review described the phenomenon as an exploration of new musical concepts that are autonomous and heteronomous in character with an interest in modern compositional techniques (WANG, 1986), however, did not focus on compositional technique. The Reforming and Open-door policy of 1978 became a cut-off point between China's "new music" and "new wave music" where the rustication program "Up to the mountains and down to the countryside" (上山下乡运动) brought a different perspective to the composer's poietic intention (WANG, 1986).

Zhao Xiaosheng (赵晓生, b. 1945) was considered a middle-aged composer in Chinese new wave music, along with Zhu Jian'er (朱践耳, b. 1922), Luo Zhongrong (罗忠镕, b. 1924),5 Jin Xiang (金湘, b. 1935), Wang Xilin (王西麟, b. 1937) and Yang Liqing (杨立青, b. 1942), who preceded composers of the younger generation such as Qu Xiaosong (瞿晓松, b. 1952), Zhao Long (周龙, b. 1953) Chen Yi (陈怡, b. 1953), Ye Xiaogang (叶小纲, b. 1955), Tan Dun (谭盾, b. 1957), and many other composers from Sichuan and Shanghai (LIU, 2010). As many other middle-aged, or youth composers in China mainland of that time, Zhao, without exception, was forced to participate in the rustication program, which inspired his piano solo *Fisherman Song* (Yuge, 渔歌) in 1975 (XUE & LOO, 2017). Moreover, his father, a professor of Shanghai Conservatory of Music, was persecuted and passed away during the Cultural Revolution. Therefore, the experience of surviving

5 Zhu Jian'er (朱践耳, b. 1922) and Luo Zhongrong (罗忠镕, b. 1924) were viewed as senior composers in Wang's (1986) discussion and Zhou's (1993) dissertation. Perhaps Wang and Zhou categorized them in accordance to the age and Liu paid more attention to the properties of their compositions in comparison with those being active in the period of 1930s – 1970s as senior composers.

through the Cultural Revolution aroused Zhao's rebellious desire shown in his works during the period of new wave music after his four-year study in the United States from 1981 to 1984 (XUE, LOO, LOO & WANG, 2021).

During his study, Zhao was fascinated with compositional techniques such as Serialism and Allen Forte's (1973) pitch-class set theory, as well as the soundscape of the Modern music (BAO, 2002). Moreover, an increased interest from the West in Chinese philosophical influence by Abstract Expressionist composers during the 1960s and 1970s such as John Cage and Cornelius Cardew, who employed the *I Ching* (*Book of Change*) and Confucianism in their works, although at times tokenistic (WILLIAMS, 2022, p. 43), may have generated an influence over Chinese composers. In carving a compositional identity, Zhao focused on *minzuxing* (民族性) or ethnic-izing his music, an identical trait among the Chinese new wave composers (LAU, 2017). Therefore, after two decades since Cage's experiments on the *I Ching* in *Music of Changes* (1951), Zhao attempted another exploration on the 64 hexagrams of *I Ching* as a form of compositional technique and completed the piano solo *Tai Chi* in 1987, which is based on the mathematical principle of *I Ching* rather than divination applied in Cage's Chance Music.

The history and development of *I Ching* began with the *bagua* (eight trigrams) by the legendary emperor Fu Hsi (ca. 2000 BCE) to the full 64-hexagram *I Ching* recorded by King Wen (ca. 1150 BCE) of Chou Dynasty (KOO, 2012). The 64 hexagrams or *gua* (卦) are based on the principles of *yin* and *yang*, a binary opposition of elements that form the commonly known philosophy *Tai Chi* of Taoism. Beyond the lens of *I Ching* as a mere oracle, its philosophy is applicable to a multidisciplinary of studies such as mathematics, meteorology (the original function of *I Ching*), aesthetics, philosophy, cosmic concerns 6 and nature laws 7. Accordingly, based on the

6 In Jou's (1980) explanation, *Tai Chi* (The ultimate absolute) reflects the birth of the universe, as a dot, that emerges from *wuji* (the ultimate nothingness), within which lies the ever-changing dynamic between the opposition of the *yin* and *yang* terms, as *liangyi* (两仪) or two forms; the changes between the two forms are *bianyi* (变易). In terms of its elements known as *yi* that come from the Chinese character易, the binary of *yin* (negativity) and *yang* (positivity) shows a combination of the sun (日) and the moon (勿). Thus, as Cheng explains, "it produces the world of things; and it also produces different relationships of beings and different forms of becoming" (1987, p. 67).

7 The sun goes, and the moon comes; the moon goes, and the sun comes; the sun and moon thus take the place of each other, and their shining is the result. The cold goes, and the heat comes; the heat goes, and the cold comes; it is by this mutual succession of the cold and heat that the year is completed (OVER, 1963. 389).

Chinese aesthetics of balance and moderation with the dualism of *yin* and *yang*, Zhao coded musical pitch-class sets corresponding with the 64 hexagrams, which were permutated in his *Tai Chi* Compositional System.

In Zhao's *Tai Chi* Compositional System, he divided a twelve-tone into two sets with *yin* and *yang* symmetry to depict the eight-trigram of *Tai Chi*. The set of *yin* consists of a pentatonic scale of C, D, E, G, A with an additional pitch F# labelled as *bianzhi* (变徵) or 'change', and the set of *yang* includes a pentatonic scale of A#, G#, E#, D#, C# with an additional pitch B as the *run* (闰) or 'intercalary'; two sets are complementary, resembling yin-yang relationship in *Tai Chi*. In addition, these two sets of pitches coincidentally constitute two pentatonic scales, because the Chinese pentatonic scale contains five pitches of *Gong* (宫), *Shang* (商), *Jue* (角), *Zhi* (徵), and *Yu* (羽), in which *qingjue* (清角), *bianzhi* (变徵), *Biangong* (变宫), and *run* (闰) are additional notes. In comparison with Korean composer Isung Yun's concept in his composition where the unity between the binary of the *yin* and *yang* was presented by means of registers, dynamics and timbre (KIM, 2011; ZHAO, 1988), Zhao's dyads of *yin* and *yang* are employed in the formation of pitch-classes, musical structure, philosophical idealism, that depicts the picture of waxing (*yang*) and waning (*yin*) reflected in *Tai Chi* diagram.

On the other hand, unlike Chou Wen Chung's algorithm of transcoding the eight trigrams into pitch classes,8 Zhao reduced the minimum unit from Chou's third degree to second degree to second, and then substituted it into 64 hexagram symbols, subsequently, the permutations of scales and chords are extended to 189 (64×3-3) respectively. Thus, Zhao demonstrates a deeper exploration into *I Ching* and its derivatives, compared to Fang Xiaomin's *Wu Xing* Compositional Theory and Chung Yiu Kwong' *I Ching* Compositional System (XUE, LOO, LOO & WANG, 2019). Zhao further experimented with the application of the philosophy of *yin*

8 As Chou Wen Chung's algorithm, twelve pitches in an octave are divided into three disjunct segments, representing heaven, human, and earth respectively. Each segment contains four minor seconds. Based on this framework, Chou presets that a major second represents *yin* while a minor third plus a minor second represent *yang*.

and *yang* in piano playing techniques that led to further research on piano playing technique and mental approach (LOO & LOO, 2012, 2013).

The recognition of Zhao's *Tai Chi* Composition System and his piece *Tai Chi* (1987) – the wining of first prize in International Music Competition of Shanghai East and West Cup - Piano Composition and Performance in Chinese Style (上海国际音乐比赛·中西杯-中国风格钢琴作品创作及演奏) – encouraged the composer to develop other pieces based on the system. For example, *Chang'e* (1988) for soprano and piano, *Cloud in High Heaven* (1988) for flute and Chinese wood blocks, *Hearing Qin* (1989) for erhu and piano, sheng solo *Calling Phoenix* (1989) and national dance drama *The Sun of Remote Wilderness* (1991). Zhao's *Tai Chi* was highly recognized by Chinese composers such as Qian Renping (2001) and Chen Minzhi (1988), where Chen described the work as:

> 乱，不乱，轮回对称转。
> 乐，即乐，悟中窥仙缘。
> 太极生两仪，两仪生四象，四象生八卦，
> 阴阳，天地旋。
> 敢创新篇！(CHEN, 1988, p. 5)

> Chaos, stability, reincarnation is nature's cyclical process.
> Pleasure, is music, looking into immortal fate from enlightenment.
> *Tai Chi* generates two poles, where the two poles give birth to four directions, hence the eight trigrams.
> *Yin* and *yang*, the binary of heaven and earth.
> A new creation! (Translation by authors)

The piano solo *Tai Chi* was regarded as a breakthrough in China's new wave music history, due to its combination of Chinese ancient culture with modern compositional techniques (BIAN, 1996; CHEN, 2012; KOUWENHOWEN, 1991; QIAN, 2001;

XIN, 2013; ZHOU, 2007). *Tai Chi* was regarded as a trend of modern nationalism and as a peak in the development of China's piano music (CHEN, 2017, p. 62). In addition, as *I Ching* was an ancient Chinese divination system, the piece was perceived as a new wave of musical culture of numerological divination and prognostication (术数文化) based on the *yin* and *yang* theory and *Five Phases* (五行) during the 1980s to mid-1990s in mainland China (CHEN, 2012, p. 24).

Although Zhao's *Tai Chi* attracted some Chinese musicologists' attention (JIANG, 2013; MA, 2013; RAO, 2002; SHI, 2012; WANG, 2004), however, such conflation of the complex six-lined 64 hexagrams and the twelve-tone pattern lacks detailed analysis. Moreover, a study that decodes the *yin-yang* reflection in his piece with a validation from the composer is relatively rare. Thus, during an interview with the composer, he denied views that stated *Tai Chi* was based solely on Schoenberg's modernism (BIAN, 1996), Bartók's rhythmic pattern, harmony, and tonality (KOUWENHOWEN, 1992), and Yunnan bronze gong rhythmic imitation (JIANG, 2013). 9 Furthermore, we were intrigued by the complexity of the *I* Ching's 64 hexagrams: questions such as possibilities of cleromancy, whether the compositional technique is formulaic or based on prognostication, in what way the symbolic meaning and interpretation based on the classical script of each hexagram's broken and unbroken lines including their combinations was employed, and finally, how Zhao reconstructed Chinese antiquity on Western modern music. Therefore, in order to demystify the Chinese *I Ching* theory in the formation of the modern piano solo *Tai Chi* and its musical language, there is a need to revisit the piano solo work by delving into its historical context, theoretical analysis, and an interview with the composer. This paper illustrates how Zhao infused the *I Ching* philosophy in serial music, based on Allen Forte's (1973) pitch-class set theory.

9 During an interview with Zhao, the composer denied Jiang's claim that the rhythmic model in mm. 23-24 of *Tai Chi* reveals an influence of the Yunnan bronze gong rhythmic pattern (ZHAO, 2016a).

The *yin-yang* duality in musical structure

The structure of *Tai Chi* may reveal ambiguity as analysis by different scholars demonstrated the ancient Chinese *Octopartite* or *Baguwen* (*Eight-legged Essay*, 八股文) as the backbone of the piece (MA, 2013; PENG, 2012; SHI, 2012). The origin of *Octopartite* can be traced back to the employment of *Jingyi* (经义, Confucian classics argumentation) for the civil exam introduced by Wang Anshi (1021-2086) during the Song dynasty (KIRKPATRICK, 2016), which later developed as *Octopartite* for the imperial exam essay during the Ming and Qing dynasties with content based on *Confucian Four Books* (WANG, 2013). The *Octopartite* essay form consists of eight sections of text: *Poti* (破题, Opening), *Chengti* (承题, Amplification), *Qijiang* (起讲, Preliminary argument), *Qigu* (起股, Initial argument), *Zhonggu* (中股, Central argument), *Hougu* (后股, Latter argument), *Shugu* (束股, Final argument) and *Dajie* (大结, Conclusion) (KIRKPATRICK, 2016). In *Tai Chi*, the eight sections that reflect the eight trigrams in the *I Ching* mirrored the *Octopartite* where the structure of the ancient Chinese essay form was marked on Zhao's score as *Po* (破, Opening), *Cheng* (承, Amplification), *Qi* (起, Preliminary exposition), *Ru* (入, Beginning), *Huan* (缓, *Lento*), *Yong* (庸, *Moderato*), *Ji* (急, *Presto*) and *Shu* (束, *Finale*).

However, the structure of *Octopartite* is seemingly a metaphor of eight trigram that originated from *I Ching*, which cannot be regarded as the essential structure of piano solo *Tai Chi*. During our interview with Zhao, his descriptions regarding points of reference, fluidity of changes, and an ambiguity in the interpretation based on the *yin* and *yang* as a reflection of the West and East, reflect some similarities in the complex theory of 'change' in *I Ching*. He explained that he employed two types of structures, sonata form and *Tang Daqu* (唐大曲, *Grand Suite* of Tang Dynasty) that are hidden in Octopartite of *Tai Chi*, present *yin-yang* duality in *Tai Chi*:

> Form, this is in duality. From a Chinese perspective, this is called eight trigrams, *Baguwen*. It originated from *po*, *cheng* and so forth, this is the form of *Baguwen* but what

> is the meaning behind it? It is the structure of *Tang Daqu* of Tang Dynasty, it begins with freedom and thus reflects a condensed form of *Tang Daqu*. However, from a Western perspective, this is the first subject, the middle part is development...it is a condensed *sonata* form. Therefore, it depends on how you think of it...everything I do has duality, the central premise is duality, the form is duality, it has duality when viewing it differently from both Western and Eastern perspectives...there are two climaxes, they are all in dualism, male and female, *yin* and *yang*, Adam cannot begin the world without Eve... You can think of it as a form of *Tang Daqu*, you can also regard it as a sonata form... it reveals a symmetrical arch structure. It is up to you. Everything is, everything is not, symmetry, anyhow, it is all in duality...everything is in duality, remember this. *Tai Chi* has duality, one is divided to two... From a philosophical point of view, this is the logic behind its structure that makes it a circle (translation by authors) (ZHAO, 2016b).

Tang Daqu reflects not only the Chinese ternary principle (WANG, 2009) but also a gradation of tempo changes (YUAN, 1999), consisting of *sanxu* (散序, loose introduction), *zhongxu* (中序, middle prelude) and *po* (破, finale) (WANG, 2007). During the Tang Dynasty, *daqu* is a court music form that features singing and dancing. According to the Chinese poet Bai Juyi (白居易,772-846 CE), its structure begins with the *sanxu*, a slow and free-meter instrumental prelude where solo instruments perform one after another as an introduction in a quasi *senza-mi* t *sura* and *ad lib*. manner. *Zhongxu* (also known as *Paixu I*, 拍序) is a long and fixed-meter section that includes many movements known as *pian* (遍)10 (GU, 2012). The finale *Po* (also known as *wupian*, dance piece, 舞遍) is the final section. *Po* has seven sub-sections with tempo fluctuation and acceleration that lead to a peak via a *crescendo*, where the dance entered with tempo acceleration (GU, 2012). A *coda* usually follows in *senza-misura* and *ad lib.*, similar to the opening *sanxu*. Therefore, the tempo of the *Tang Daqu* in the order of *senza-misura* (散) → slow (慢) → medium (中) → fast (快) →

10 In the *Tang Daqu*, *pian* refers to the movements of dance, songs and instrumental music.

senza-misura (散) forms the temporal backbone of *Tai Chi* (WANG, 2009). Zhao (2006a, 2006b) commented that the form of *Tang Daqu* reveals the Chinese aesthetic doctrine of *yanzhanxing* (衍展性, *extensibility*), which Wang (2009) described as one of the most remarkable features in the structure of traditional Chinese music that differs from the Western ternary form's dramatic conflict and distinct contrast. The gradation of speed and its changes reflect an internal force generation from the center to the periphery. This temporal prominence in the *Tang Daqu* reflects the tempo of nature and its cycle, physics and human existence (LI, 2004). Referring to the characters of *Tang Daqu* form, meticulous and specific tempo markings as well as Zhao Xiaosheng's performances of his personal recital and interview, the detailed framework of *Tang Daqu* structure in *Tai Chi* is shown as the Table 1.

Table 1 - Structure of *Tang Daqu* in *Tai Chi*

Tang Daqu													
Section	*Sanxu*					*Zhongxu*				*Po* (including coda)			
Temporal structure	*senza-misura*					slow			medium	fast	*senza-misura*		
Octopartite	*po*	*cheng*				*qi*	*ru*	*huan*	*yong*	*ji*	*shu*		
Tempo marking	Largo di molto					Adagio		Lento	Moderato	Presto			Prime tempo
Bpm	♩= 30.6		♩=84	♪=76	♩=76	♪= 69		♩=55-60[11]	♩=ca.63	♪=240		♩=63	♩=ca.30.6
Measure	1	11	20	22	23	27	38	48	56	67	83	84	86

Source: Made by the authors

11 The data is collected from the recordings of Zhao Xiaosheng's performances in Beijing on July, 2016 and an interview with the composer on November, 2016.

Reflecting the *yin* and *yang* theory with a combination of musical forms that originated from the West and the East, just as the *Tai Chi* Diagram has a portion of *yin* in the *yang* and vice versa, Zhao seemingly discovered the interrelationship between the two, in which the *Tang Daqu* form has three sections that reflect a three-movement sonata. However, the result perhaps differs from the compositional intention. Regarding the sonata structure of *Tai Chi*, researchers such as Tong and Sun (2003), Li (2004) seems have different opinions with composer himself, although under the framework of symmetry and arch-shape that Zhao (2006a) mentioned in his monograph *Tai Chi Composition System*. Based on the composer's explanation, we tabled the differing views on Zhao's structure in *Tai Chi* (ZHAO, 2016a; see Table 2).

Table 2 - Different structure division in Zhao and researchers' analyses

Zhao's statement in interview									
Section	Intro.	Exposition			Development	Recapitulation			Coda
Sub-section		1st Subject	Trans	2nd Subject		2nd Subject	Trans	1st Subject	
Measure	1	11	15	17	27	61	67	86	93
Tong and Sun's analysis									
Octopartite	*po*	*cheng*		*qi*	*ru*	*huan*	*yong*	*ji*	*shu*
Section	Exposition			Dev.	Recapitulation				
Sub-section	1st Subject	Trans.	2nd Subject		2nd Subject	Episode	Trans.	1st Subject	
Measure	1	11	27	38	48	56	67	83	
Li's analysis									
Octopartite	*po*	*cheng*	*qi*	*ru*	*huan*	*yong*	*ji*	*shu*	
Section	Exposition		Development		Recapitulation				

Sub-section	1st Subject	2nd Subject	1st Phase	2nd Phase	3rd Phase	2nd Subject	Epi-sode	1st Subject
Measure	1	11	27	38	48	56	67	83

Source: Made by the authors

Although Tong, Sun and Li insisted on the structure of *Octopartite*, however, Zhao claims that it is a new sonata form in collocation with the *Octopartite*. Furthermore, although Tong and Sun's opinion shows a complete arch-shape structure, their analysis raise serious questions: firstly, the materials in section *qi* and *huan* are completely different; secondly, Zhao employed a brand-new material at measure 27, the musical feature presents a career of development in a sonata; thirdly, the section *yong* cannot be viewed as episode because the similar elements in mm. 17-18 appears in this section. On the other hand, although Li's understanding is closer to Zhao's, however, her focus weighted on the piece's architecture that lacks consideration of soundscape in a musical work. For example, Li's claim that the section *po* as the first subject of a sonata seems to have verisimilitude by relating to pith-class permutation, however, Zhao denied his view by explaining that:

> Researchers all paid attention to the structure of this piece, nobody noticed its soundscape. In fact, I expressed a type of soundscape. Here looks like the origin of the earth. It is the beginning of all things. (ZHAO, 2016a)

In addition, we found that Zhao's dictation may raise an additional question. For instance, the occurrence of transition at mm. 15 breaks the logic of common composition, because it plays a role of extension of first subject from the perspective of rhythm and pitch-class arrangement. As a result, referring to the structure of *Octopartite* and *Tang Daqu*, interview data with Zhao, as well as researchers' opinions, authors propose a structure in order to

revisit the piano solo *Tai Chi* (Table 3). With the purpose of macro cognition on the multi-structure, the forms of *Octopartite* and *Tang Daqu* are shown in Table 3.

Table 3 - Authors' proposition of sonata form in *Tai Chi*

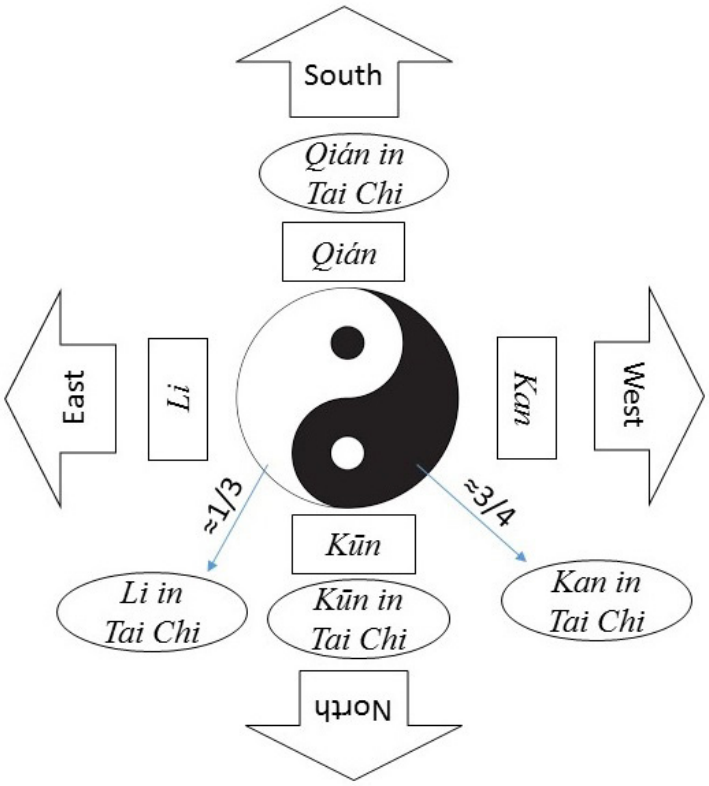
Octopartite	*po*	*cheng*			*qi*	*ru*	*huan*	*yong*		*ji*		*shu*		
Tang Daqu	*Sanxu*				*Zhongxu*					*Po*				
Sonata form	Intro.	Exposition			Development				Recapitulation					Coda
		1st Subject	2nd Subject	Trans.	1st Phase	2nd Phase	3rd Phase	Preparation	2nd Subject	Episode		Trans.	1st Subject	
Measure	1	11	17	23	27	38	48	56	61	67	83	84	86	93

Source: Made by the authors.

Tai Chi starts from pure *yin* of hexagram *Kūn* (坤, Earth) moving towards the pure *yang* of hexagram *Qián* (乾, Heaven) through an ascending order and ends with a descend to pure *yin* of hexagram *Kūn*, which draws a *yin-yang* changeable order along with the Earlier-heaven Trigram diagram (also called Fu Hsi Trigram) (Figure 1). By calculating the positions of eight trigrams *Kūn*, *Qián*, *Kan* (坎, Abysmal Water), *Li* (离, Clinging Fire), *Gen* (艮, Keeping Still Mountain), *Zhen* (震, Arousing Thunder), *Dui* (兑, Dispersion), and *Xun* (巽, Gentle Wind) in the piano piece *Tai Chi* through the measures, the *Kūn* and *Qián* trigrams match the Earlier-heaven Trigram diagram, while *Kan* and *Li* trigrams deviate from the original position instead of 1/3 and 3/4 of whole piece respectively (Figure 1). The other four trigrams such as *Gen*, *Zhen*, *Dui*, and *Xun* accordingly changed their original positions as well, which are shown in Figure 2 in detail. Although the trigrams (except for *Kūn* and *Qián*) occupied the different

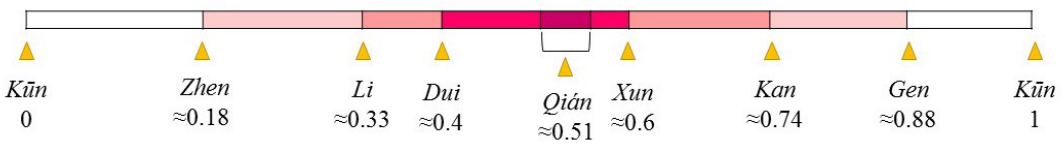
proportion with that in eight-trigram diagram12, however, the relatively symmetry and *yin-yang* transfer structure are presented definitely.

Figure 1 - Structure along with the Earlier-heaven Trigram diagram



Source: Developed by the authors.

Figure 2 - The symmetry structure and *yin-yang* transfer of eight trigrams



Source: Developed by the authors.

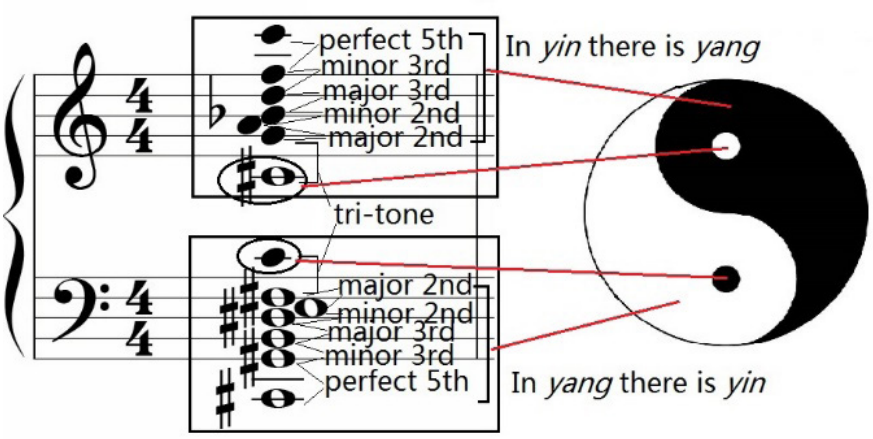
12 Each trigram is at the point of 25% of the eight-trigram diagram.

Nevertheless, a contradiction seemingly exists between the calculation of measures and composer's statement. During an interview with Zhao (2016a), he explained that the piece consisted of two climaxes, positioning the first as a calculation that was based on the Western philosophy of Golden Mean and the second, based on the traditional Chinese aesthetics. Thus, the first climax (hexagram *Qián*) appears at 0.618 of the piece rather than 0.51 of the whole measures. Through the recording analysis of Zhao's performance, his explanation of Golden Mean comes from the performance while the authors' result of 0.51 is originated from the textual analysis.

Decoding the 64 Hexagrams in *Tai Chi*

Inspired by the *Tai Chi* diagram of dualism, Zhao created a *Tai Chi* chord by using the combination of perfect 5th, minor 3rd, major 3rd, minor 2nd, major 2nd, and a tri-tone (Figure 3). More importantly, he employs the theory of "in *yin* there is *yang*, in *yang* there is *yin*" shown in the *Tai Chi* diagram, where the *yin* treble part consists of a *yang* note marked with a white-head note symbol, and vice versa for the bass part that symbolizes the *yang*.

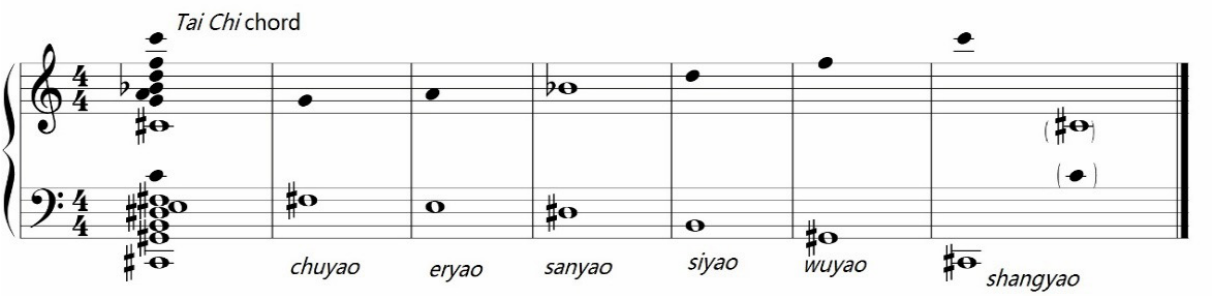
Figure 3 - *Tai Chi* chord by Zhao Xiaosheng



Source: Developed by the authors.

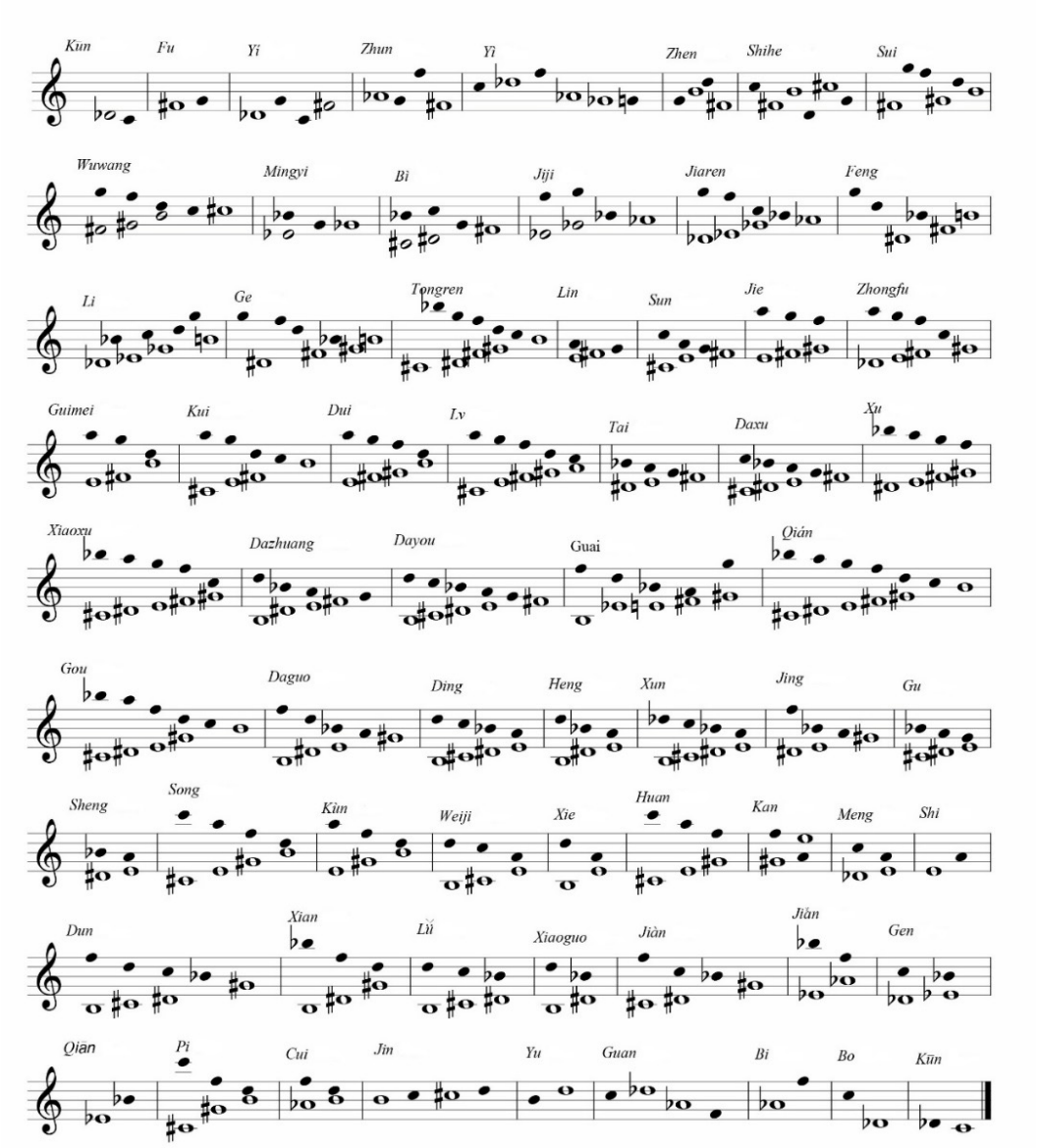
Based upon the *Tai Chi* chord, Zhao constructed the 64 sets of pitch classes corresponding to the 64 hexagrams, according to *yáo* (爻) or lines of the eight trigrams. *Yáo* are pictorial lines that reflect the transformation and interaction of *yin* and *yang*. Fu Xi created a broken line "--" to represent *yinyáo* (阴爻) while an unbroken line "—" to represent *yangyáo* (阳爻). The eight trigram shows eight arrangements of three-line trigram while the 64 hexagrams reveal sixty-four six-line figures. To understand the hexagram, the lines begin from the bottom as *chuyáo* (初爻, first line), èryáo (二爻, second line), *sānyáo* (三爻, third line), *sìyáo* (四爻, fourth line), *wŭyáo* (五爻, fifth line), and *shangyáo* (上爻, upper line). Zhao's six dyads of pitch classes are extracted from *Tai Chi* chord that consists of *yin* and *yang* rows correspond with the six lines of the hexagrams. Each dyad includes one *yin* note with a black head and one *yang* note with a white head (Figure 4). Decoding the 64 hexagrams requires removing all notes corresponding to broken lines and reserving all notes corresponding to unbroken lines to reveal the pitch-class sets (Figure 5). In addition, the construction of hexagram *Kūn* does not follow the aforementioned principle, which consists of C and C# (or D♭) that indicate the *yang* note of *yin* and the *yin* note of *yang*.

Figure 4 - *Tai Chi* chord and the pairs of notes corresponding to the *yao* position



Source: Developed by the authors.

Figure 5 - Pitch-classes in the 64 hexagrams



Source: Developed by the authors.

The piano solo *Tai Chi* was composed based on the 64 pitch-class sets to reveal the mapping of the circular diagrams of the 64 hexagrams by Shao Yong (1011-1077) (RYAN, 1996), which moves from simplicity to complexity and returning to the core is a reflection of *I Ching* that depicts the cyclical process of the universe. In the philosophy of *I Ching*, the universe begins with the ultimate

nothingness or emptiness (*Wu Chi*) to the ultimate absolute (*Tai Chi*) and returns to emptiness again (JOU, 1980). In addition, the theory is similar to the ideal of *Taoism* "*tao* produced one, one produced two, two produced three, and three produced all things, all things are transformed from *yin* to *yang*, then the synthesis of the *yin* and *yang* generates a new entity (道生一，一生二，二生三，三生万物，万物负阴而抱阳，冲气以为和)" (LAOZI, 2008, p. 117). However, the increase and decrease of *yin-yang* movement is not an addition and subtraction; it shows a tortuous track, which is drawn in Zhao's piano solo *Tai Chi* through the cardinal numbers of hexagrams. Tables 4 and 5 show the ascending and descending routes of *yang* movement respectively.

Table 4 - An ascending route from hexagram *Kun* to *Qián*

Hexagram	Measure	Pitch-class set	Cardinal number
Kūn (坤, Earth)	1-4	2-1 [0, 1]	2
Fu (复, Return)	5-6	2-1 [6, 7]	2
Yí (颐, Mouth Corners)	5-10	4-9 [0, 1, 6, 7]	4
Zhun (屯, Difficulty at the Beginning)	11-14	4-1 [5, 6, 7, 8]	4
Yì (益, Increase)	15-16	6-Z38 [5, 6, 7, 8, 0, 1]	6
Zhen (震, Arousing Thunder)	17	4-20 [6, 7, 11, 2]	4
Shihe (噬嗑, Biting Through)	18-19	6-Z38 [11, 0, 1, 2, 6, 7]	6
Wuwang (无妄, Innocence)	20-24	8-9 [5, 6, 7, 8, 11, 0, 1, 2]	8
Mingyi (明夷, Darkening of the Light)	25-26	4-17 [3, 6, 7, 10]	4
Bì (贲, Brace)	27-28	6-Z50 [10, 0, 1, 3, 6, 7]	6
Jiji (既济, After Completion)	29	6-8 [3, 5, 6, 7, 8, 10]	6
Jiaren (家人, Family)	30	8-23 [5, 6, 7, 8, 10, 0, 1, 3]	8
Feng (丰, Abundance)	30	6-20 [2, 3, 6, 7, 10, 11]	6
Li (离, Clinging Fire)	31	8-13 [5, 7, 8, 10, 11, 0, 1, 2]	8
Ge (革, Revolution)	31	8-17 [2, 3, 5, 6, 7, 8, 10, 11]	8
Tongren (同人, Fellowship)	32	10-5 [5, 6, 7, 8, 10, 11, 0, 1, 2, 3]	10
Lin (临, Approach)	33-34	4-10 [4, 6, 7, 9]	4
Sun (损卦, Decrease)	35	6-Z50 [0, 1, 4, 6, 7, 9]	6

Zhongfu (中孚, Inner Truth)	36	8-7 [4, 5, 6, 7, 8, 9, 0, 1]	8
Guimei (归妹, Marrying Maiden)	36	6-32 [2, 4, 6, 7, 9, 11]	6
Kui (睽, Opposition)	37	8-23 [11, 0, 1, 2, 4, 6, 7, 9]	8
Dui (兑, Dispersion)	38	8-10 [2, 4, 5, 6, 7, 8, 9, 11]	8
Lv (履, Treating)	39	10-5 [4, 5, 6, 7, 8, 9, 11, 0, 1, 2]	10
Tai (泰, Peace)	40	6-Z13 [3, 4, 6, 7, 9, 10]	6
Daxu (大畜, Great Taming)	41	8-28 [0, 1, 3, 4, 6, 7, 9, 10]	8
Xu (需, Waiting)	42	8-1 [3, 4, 5, 6, 7, 8, 9, 10]	8
Xiaoxu (小畜, Small Taming)	43	10-3 [0, 1, 3, 4, 5, 6, 7, 8, 9, 10]	10
Dazhuang (大壮, Great Power)	44	8-20 [2, 3, 4, 6, 7, 9, 10, 11]	8
Dayou (大有, Great Possession)	45	10-3 [6, 7, 9, 10, 11, 0, 1, 2, 3, 4]	10
Guai (夬, Breakthrough)	46-47	10-1 [2, 3, 4, 5, 6, 7, 8, 9, 10, 11]	10
Qián (乾, Creative Heaven)	48-51	12-1 [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11]	12

Source: Made by the authors.

Table 5 - A descending route from hexagram *Qián* to *Kun*

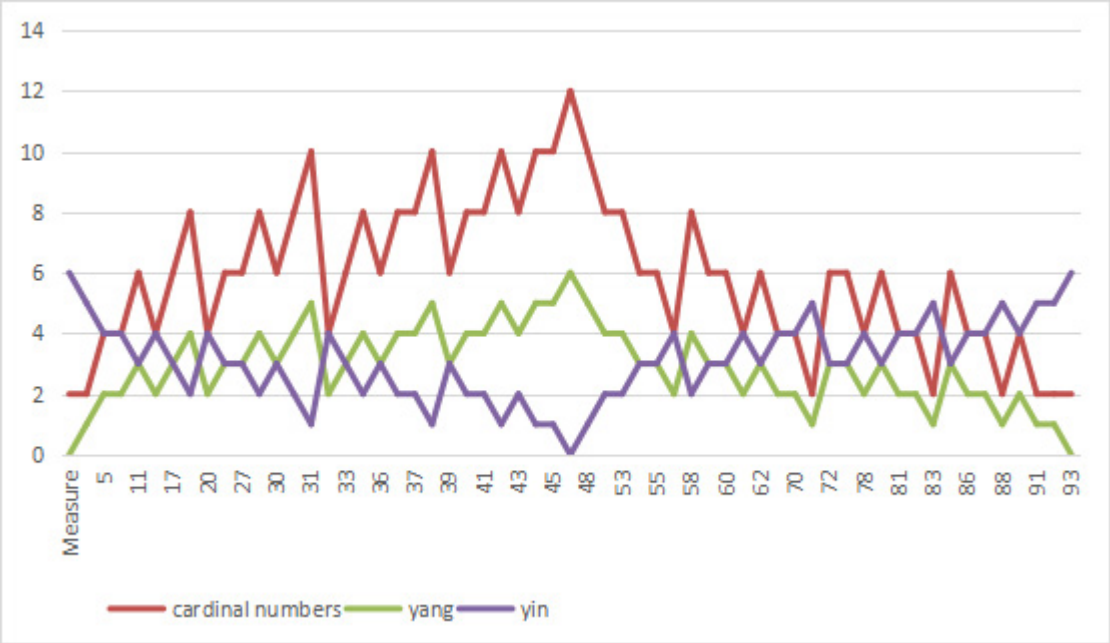
Hexagram	Measure	Pitch-class set	Cardinal number
Qián (乾, Creative Heaven)	48-51	12-1 [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11]	12
Gou (姤, *Coming to Meet*)	52	10-1 [8, 9, 10, 11, 0, 1, 2, 3, 4, 5]	10
Daguo (大过, *Great Preponderance*)	53	8-9 [8, 9, 10, 11, 2, 3, 4, 5]	8
Ding (鼎, *Cauldron*)	54	8-1 [9, 10, 11, 0, 1, 2, 3, 4]	8
Heng (恒, *Duration*)	55	6-Z6 [9, 10, 11, 2, 3, 4]	6
Xun (巽, Gentle Wind)	56	8-20 [8, 9, 10, 0, 1, 3, 4, 5]	8
Jing (井, Well)	57	6-Z6 [3, 4, 5, 8, 9, 10]	6
Sheng (升, Pushing Upward)	57-58	4-9 [3, 4, 9, 10]	4
Song (讼, Conflict)	59	8-17 [11, 0, 1, 2, 4, 5, 8, 9]	8
Kùn (困, Oppression)	60	6-Z29 [8, 9, 11, 2, 4, 5]	6
Weiji (未济, Before Completion)	61	6-8 [9, 11, 0, 1, 2, 4, 5]	6
Xie (解, Deliverance)	62	4-23 [9, 11, 2, 4]	4
Huan (涣, Dispersion)	69	6-20 [0, 1, 4, 5, 8, 9]	6
Kan (坎, Abysmal Water)	70	4-7 [4, 5, 8, 9]	4
Meng (蒙, Youthful Folly)	71	4-17 [9, 0, 1, 4]	4
Shi (师, Army)	72	2-5 [4, 9]	2

Xian (咸, Influence)	75-77	6-Z29 [2, 3, 5, 8, 10, 11]	6
Lǚ (旅, Wanderer)	78	6-1 [10, 11, 0, 1, 2, 3]	6
Xiaoguo (小过, Small Preponderance)	79	4-7 [10, 11, 2, 3]	4
Jiàn (渐, Development)	81	6-32 [8, 10, 0, 1, 3, 5]	6
Jiǎn (蹇, Obstruction)	82	4-23 [3, 5, 8, 10]	4
Gen (艮, Keeping Still Mountain)	83	4-14 [10, 0, 1, 5]	4
Qiān (谦, Modesty)	84	2-2 [3, 5]	2
Pi (否, Standstill)	86	6-Z39 [9, 11, 0, 1, 2, 5]	6
Cui (萃, Gathering Together)	87	4-28 [2, 5, 8, 11]	4
Jin (晋, Progress)	88	4-1 [11, 0, 1, 2]	4
Yu (豫, Enthusiasm)	90	2-3 [9, 0]	2
Guan (观, Contemplation)	91-92	4-20 [0, 1, 5, 8]	4
Bǐ (比, Holding Together)	92	2-3 [5, 8]	2
Bo (剥, Splitting Apart)	93	2-1 [0, 1]	2
Kūn (坤, Earth)	93-94	2-1 [0, 1]	2

Source: Made by the authors.

Zhao intended to depict a constant flow and flux of the *I Ching* based on the 64 hexagrams and Western pitch-class sets. However, four hexagrams such as *Sui* (随, Fowling), *Jie* (节, Articulating), *Gu* (蛊, Correcting) and *Dun* (遁, Retiring) are hidden in their neighbouring hexagrams rather than direct application, because they are the subsets of their neighbouring hexagrams. Besides that, a similar fluctuation between cardinal numbers of 64 hexagrams in piano solo *Tai Chi* and *yang* movement is shaped and vice versa for the *yin* movement (Figure 6), in which the *yang* and *yin* movement is calculated by the amount of *yangyao* and *yinyao* in 64 hexagrams. Due to the derivation of pitch-class sets employed in *Tai Chi* from the image of hexagrams, the musical development goes along with the rise and fall of *yang* movement. In the meanwhile, the *yin* movement reverses to the musical development, as the music begins with the pure *yin* in hexagram *Kūn*. When the music arrives at the hexagram *Qián*, the *yin* disappears. Accordingly, the hexagram *Qián* positions the climax of piano solo *Tai Chi*.

Figure 6 - The fluctuation of musical development and *yin-yang* movement

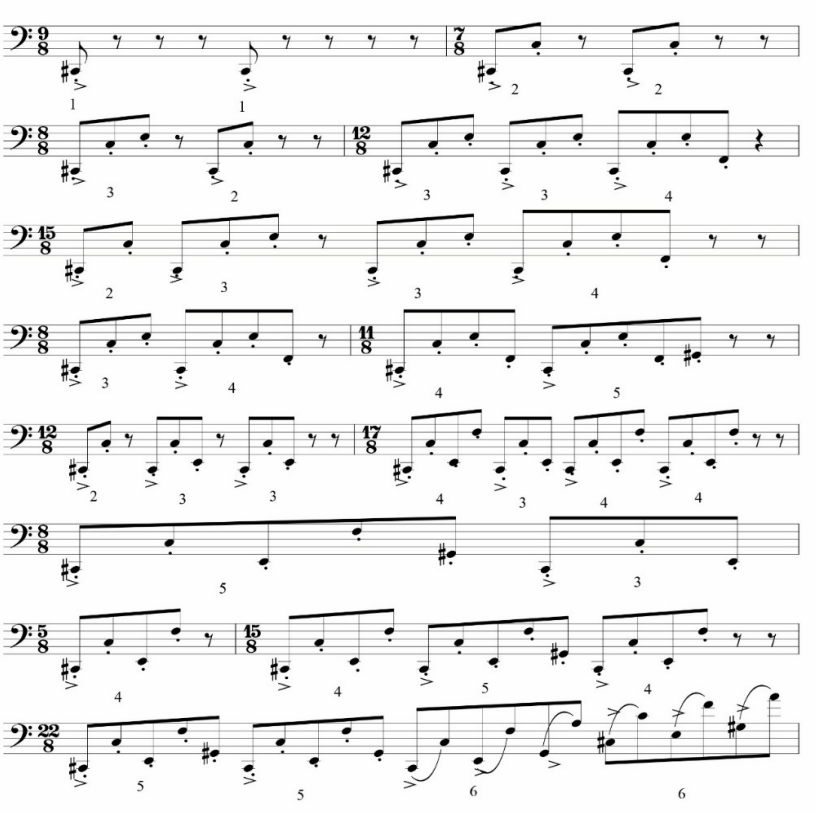


Source: Developed by the authors.

The *yin-yang* movement not only presents a fluctuation in whole work, but also expresses the mathematical logic from a micro-perspective. For example, when the music enters in mm.67-79, the elements of pitch-class sets in the lower voices coincide with a sequence that is arranged by the number of *yangyao* in each hexagram (Figure 7) and is ordered by clockwise -rotation from hexagram *Kūn* (ZHAO, 2006a, p. 188):

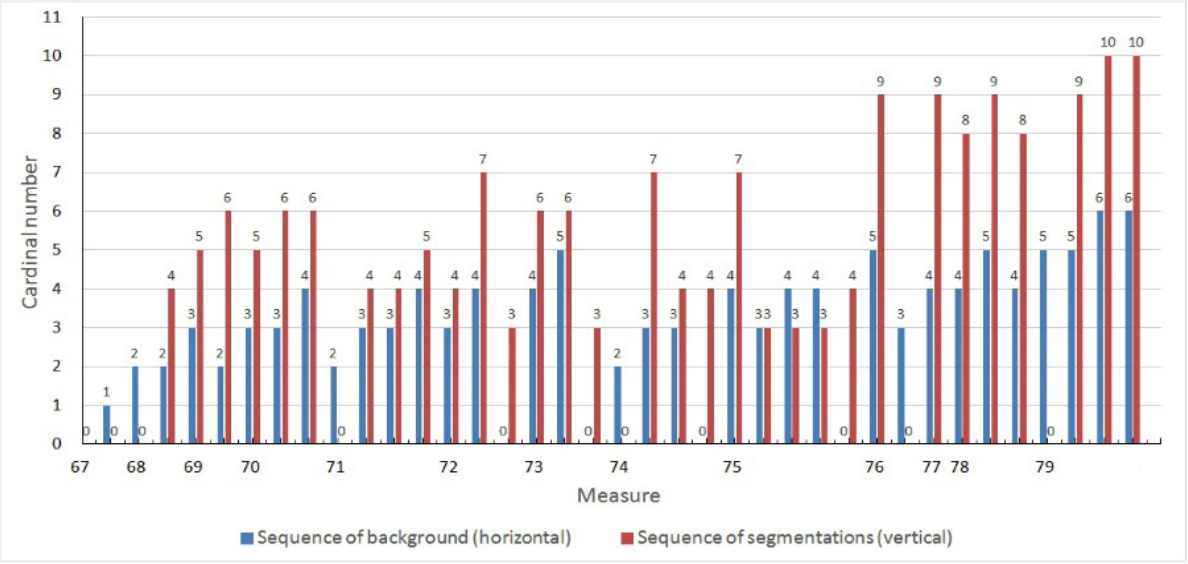
> 1, 1, 2, 2, 3, 2, 3, 3,
> 4, 2, 3, 3, 4, 3, 4, 4,
> 5, 2, 3, 3, 4, 3, 4, 4,
> 5, 3, 4, 4, 5, 4, 5, 5,
> 6 .....

Figure 7 - The lower voice sequence, mm. 67-79



Source: Developed by the authors.

Figure 8 - The fluctuation of ordered sequences in both horizontal and vertical



Source: Developed by the authors.

Apart from that, the sequence of vertical segmentations shows similar fluctuation with that of the horizontal ones (Figure 8). In addition, to some extent, the orderly sequences in both the horizontal and vertical positions are interactive. By analysing the pitch-class sets of the background, the aforementioned numbers not only denote the numbers of *yangyao* of hexagrams but also the cardinal numbers of the pitch-class sets, and the latter numbers indicate that the former prime forms plus one pitch class (Figure 9).

Figure 9 - The cardinal numbers correspond to the prime forms in the background

1
2: 2-1 [0, 1]
3: 3-3 [0, 1, 4]
4: 4-7 [0, 1, 4, 5]
5: 5-21 [0, 1, 4, 5, 8]
6: 6-20 [0, 1, 4, 5, 8, 9]

Source: Developed by the authors.

Seen from the creation and application of 64 hexagram pitch-class sets, Zhao focused on the numerology of *I Ching* while John Cage's chance operation utilized the divination aspect of the ancient philosophy. In other word, Zhao offered a conceptual model based on the *I Ching* numerological relation to music, which is a realization of notation and algorithm, although his calculation of the 64 hexagrams based pitch-class sets is to some extent similar with Chou Wen Chung's Variable Modes (XUE & LOO, 2019).

Deciphering Zhao's Interpretation of the *I Ching* in *Tai Chi*

The concept of dualism complicates when the *I Ching* was compared to Western philosophies such as the Cartesian conflicting dualism and the Western ontological principle of 'being' (KOO, 2012).

Contradictorily to Western dialecticism, the *yin* and *yang* depicts two opposing entities that are complementary where "each has the seed of its opposite by which it will transform. Thus, there is no pure *yin* or *yang* during the whole process" (JING, 2021, p. 190). In addition, *I Ching* is about constant changes where *I* (change) is the result of 'being.' In *Tai Chi*, Zhao's arrangement of the hexagrams reflects the order and cyclical changes of musical ebb based on the continuous interdependence of the *yin* and *yang* polarities. However, in some cases, complexity in the musical numerological mapping and order of *Tai Chi* may obfuscate the symbolic meaning of the *I Ching* hexagrams that leads to incongruity.

Firstly, the complexity of Zhao's arrangement to begin the music with *Kūn* (Earth/*yin*) instead of the order of *I Ching* that begins with *Qián* (Heaven/*yang*), may be more accurately reflected by the concept of *Wu-chi* (the ultimate nothingness/*yin*) that give rise to *Tai-chi* (the ultimate absolute/*yang*) reading in Taoism. The term *Wu-chi* appeared in Lao Zi's in *Daodejing* Chapter twenty-eight as the highest form of *Dao* where purity and emptiness is achieved, in the text "one returns again to the limitless (复归于无极)" (CHENG, 2021, p. 155).

In *Tuanzhuan* (彖转), the hexagram *Kūn* was explained as:

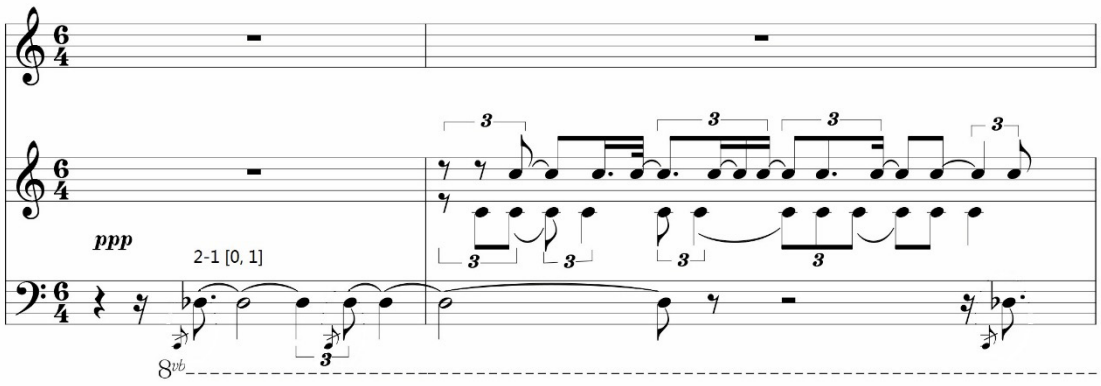
> All things owe to it their birth; it receives obediently the influences of Heaven. *Kun*, in its largeness, supports and contains all things. Its excellent capacity matches the unlimited power of *Qián*. Its comprehension is wide, and its brightness great. The various things obtain by it their full development (HUANG & ZHANG, 2019, p. 17).

Zhao employed the hexagram *Kūn* as the outset to resonate in the background for 4 bars with its pitch class set 2-1 [0, 1] while an octave in C is repeated in a compound rhythmic pattern in the dynamic of *ppp* (Figure 10). The *yang* note C and *yin* note D♭ constitute the simplest form in *Tai Chi*, along with the simplicity meaning of *I* in *I Ching* 13 and Laozi's thought that *Great truths are always simple* (大道至简). In the meanwhile, the

13 The *I* (易) of *I Ching* contains three meanings: change (变易), unchanged (不易), and simplicity (简易).

three-octave-distance enlarges the soundscape that depicts the vast earth.

Figure 10 - Hexagram *Kūn*, mm.1-2



Source: Developed by the authors.

Opposite to the hexagram *Kūn*, the hexagram *Qián* is preset by Zhao as the climax of the piece, which embodies five paralleled phrases consisting of two fragments to express melodies and quasi-percussions in the dynamic of *ff*. Zhao composed the hexagram *Qián* as a symbolic representation of strength and grandeur, which holds an opposition to the hexagram *Kūn*. In other words, if *Qián* is likened to a fire, then the metaphor *Kūn* is water, reflecting the commentary of *Qián* in *Tuanzhuan*:

All things owe to it their beginning: it contains all the meaning belonging to heaven. The clouds move and the rain is distributed; the various things appear in their developed forms. The sages grandly understand the connection between the end and the beginning, and how the indications of the six lines in the hexagram are accomplished, each in its season. Accordingly, they mount the carriage drawn by those six dragons at the proper times, and drive through the sky. The method of *Qian* is to change and transform, so that everything obtains its correct nature as appointed by the mind of Heaven; and thereafter the conditions of great harmony are preserved in union. The result is what is advantageous, and correct and firm. The sage appears aloft, high above all things, and the myriad states all enjoy repose. (HUANG & ZHANG, 2019, p. 4)

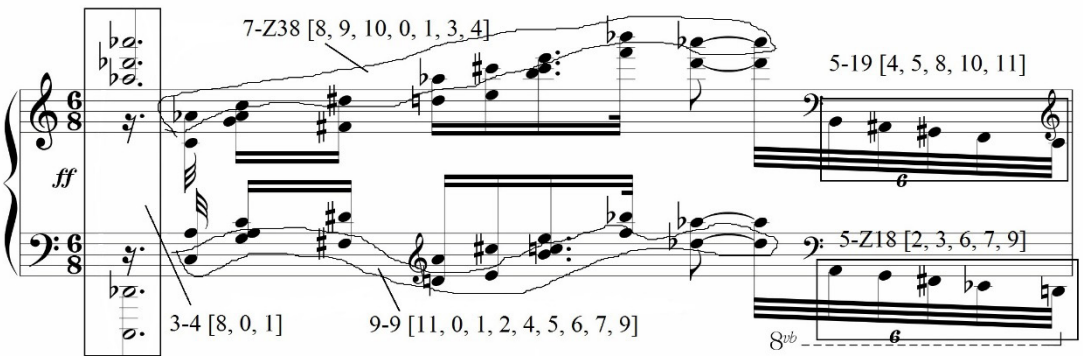
and *Xiangzhuan* (象传):

> Heaven, in its motion, gives the idea of strength. The superior man, in accordance with this, nerves himself to ceaseless activity (HUANG & ZHANG, 2019, p. 5).

Beginning with the set 3-4 [8, 0, 1], the similar intervals or chords with sixteens in the middle voices draw a two-voice melody as the first sentence of hexagram *Qián*, where the upper pitches shape the set 7-Z38 [8, 9, 10, 0, 1, 3, 4] and the lower pitches form the set 9-9 [11, 0, 1, 2, 4, 5, 6, 7, 9]. At the end of the first phrase, the sets 5-19 [4, 5, 8, 10, 11] and 5-Z18 [2, 3, 6, 7, 9] display percussive characteristics in its rhythmic pattern of septuplet (Figure 11), because these two sets have similar interval vectors and they are related simultaneously as Rp and R1 (Figure 12). Although the dynamic of this phrase is *ff*, the musical element such as the percussive part merely employs the pitches rather than intervals or chords. Therefore, it approaches to the explanations of first line of hexagram *Qián*:

> In the first (or lowest) NINE 14, undivided, (we see its subject as) the dragon lying hid (in the deep). It is not the time for active doing. (CONFUCIUS, 2016, p. 3)

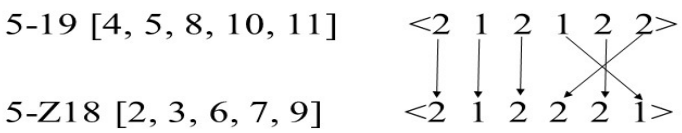
Figure 11 - The first sentence structure of hexagram *Qián*, mm. 48



Source: Developed by the authors.

14 In hexagram, the broken line (*yinyao*) is regarded as SIX while the unbroken line (*yangyao*) is regarded as NINE. Taking hexagram *Qián* as example, the first line is called first NINE, the second line is called second NINE, and by analogy. In hexagram *Kūn*, the first line is called first SIX, the second line is called second SIX, and by analogy.

Figure 12 - The relationship between sets 5-19 and 5-Z18

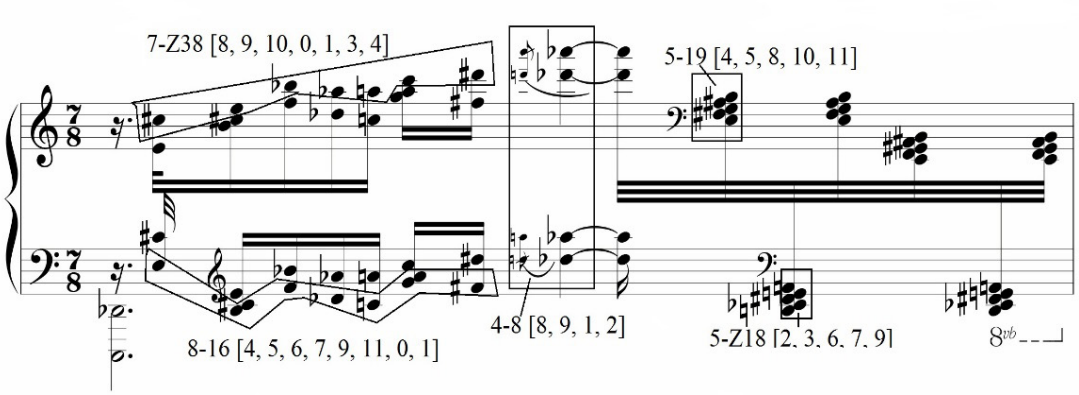


Source: Developed by the authors.

In the second sentence of the hexagram *Qián*, the original set 3-4 becomes 2-1 [0, 1], while the lower voice of melodic part is changed from cardinal 9 set to cardinal 8 set of 8-16 [4, 5, 6, 7, 9, 11, 0, 1]. Still under the sets of 5-19 and 5-Z18, the original scale structure is replaced by tone-cluster; the percussive character becomes more obvious (Figure 13), mirroring the commentary of the second line in hexagram *Qián*:

> In the second NINE, undivided, (we see its subject as) the dragon appearing in the field. It will be advantageous to meet with the great man. (CONFUCIUS, 2016, p. 3)

Figure 13 - The second sentence structure of hexagram *Qián*, mm. 49



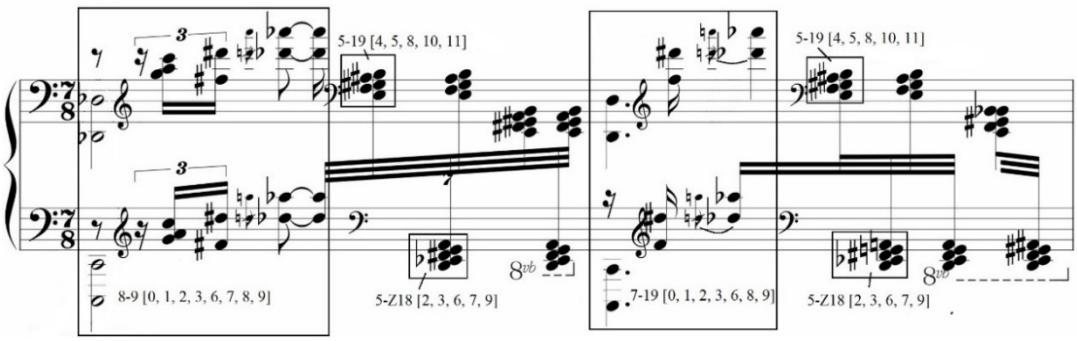
Source: Developed by the authors.

The third sentence of hexagram *Qián* is compressed into half a bar, the length of melody is also halved, in which all the pitches of two voices construct the set 8-9 [0, 1, 2, 3, 6, 7, 8, 9], yet the

percussive nature is reserved. Similarly, the fourth appearance of hexagram *Qián* occupies the last half of mm. 50, which is established by seven-element set 7-19 [0, 1, 2, 3, 6, 8, 9] and the percussive rhythmic pattern changes from septuplet to *tremolo* (Figure 14). Although the structure of these two sentences are similar, the soundscape is different; the fourth sentence is more intense than the third sentence on the aspect of *tremolo*.15 Accordingly, commentaries of the third and fourth lines in hexagram *Qián* reads:

> In the third NINE, undivided, (we see its subject as) the superior man active and vigilant all the day, and in the evening still careful and apprehensive. (The position is) dangerous, but there will be no mistake. In the fourth Nine, undivided, (we see its subject as) if he were leaping up, but still in the deep. There will be no mistake. (CONFUCIUS, 2016, p. 3)

Figure 14 - The third and fourth sentences of hexagram *Qián*, mm. 50



Source: Developed by the authors.

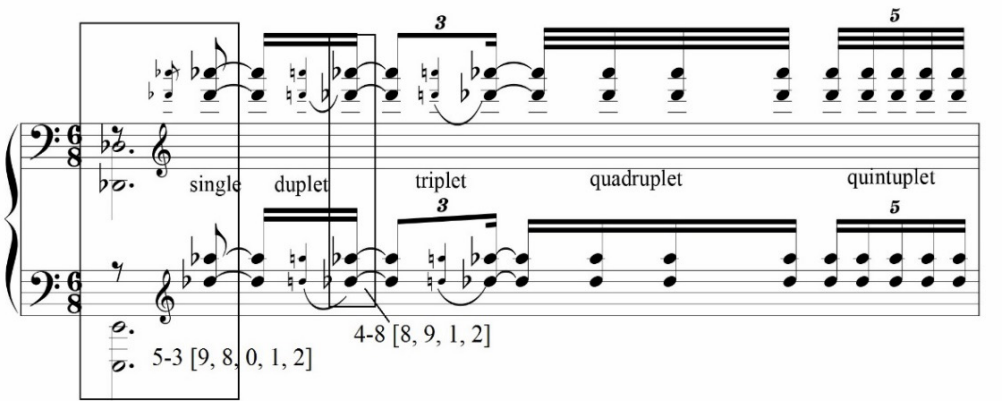
The last sentence of hexagram *Qián* merely reserves the beginning and the end of the melodic pattern with the reduced five elements, then, it experiences an increasing process of transforming from the eighths to the quintuplet notes (Figure

15 According to Zhao's performance of *Tai Chi*, he remarkably prolonged the time value of *tremolo* in the fourth sentence.

15). This sentence pushes the music into the climax, just as the commentary of the fifth line in hexagram *Qián*:

> In the fifth NINE, undivided, (we see its subject as) the dragon on the wing in the sky. It will be advantageous to meet with the great man. (CONFUCIUS, 2016, p. 3)

Figure 15 - The fifth sentence in hexagram *Qián*, mm. 51



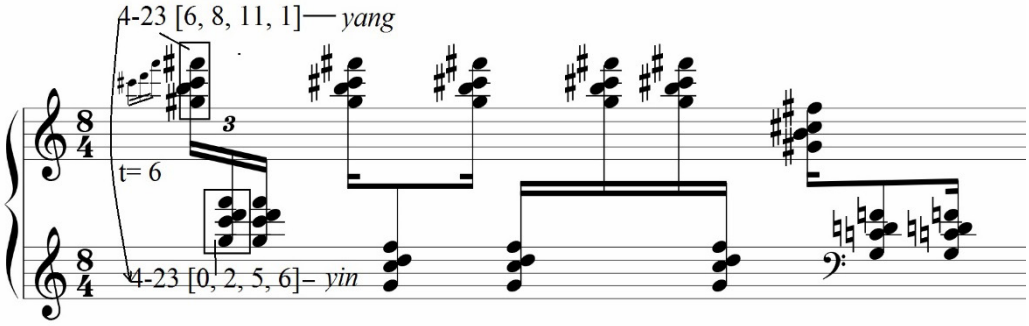
Source: Developed by the authors.

After the fifth sentence, Zhao finished the description of hexagram *Qián*. Here, Zhao's design appears to be reasonable to the hexagram commentary. The fifth NINE of hexagram *Qián* is regarded as the throne and the right of emperors (CAI, 2020, p. 47), the ancient idiom "the honor of nine-five (九五之尊)" that indicates only the emperor can be entitled describes the highest position of fifth Nine. Then, the subject tends to wane in sixth NINE. Therefore, the arrangement that the climax stops at the fifth NINE rather than sixth NINE is not only fit for the meaning of fifth line but also reflects the Confucius's philosophy of *Zhong* (middle, 中) and *Zhongyong* (golden mean, 中庸) (LI, 2020).

Apart from the *yin-yang* contrast between hexagrams *Kūn* and *Qián*, further division of the two polarities also occurs in the inner capacity of hexagram. For example, in mm. 23-24, the pitch-class set of hexagram *Wuwang* is divided into two sets 4-23 [6, 8, 11, 1]

and 4-23 [0, 2, 5, 6], which are complementary and symmetrical (Figure 16). The former is a *yang* set because it utilizes the *yang* notes of hexagram *Wuwang* while the latter is a *yin* set because of the utilization of *yin* notes. The *yin* and *yang* sets are subordinated to the same set number but the transposition operator of them is 6. These two sets appear alternatively on the left and right hands with different rhythms of triplet, quadruplet, sextuplet and syncopation to mimic the timbre of *luo* (锣, gong) and *gu* (鼓, drum) (XUE & LOO, 2018). During the contrast of timbre from *yin* and *yang* sets, the music produces a dynamic sound with fierce conflict.

Figure 16 - Two tetrachords of the hexagram *Wuwang*, mm. 23



Source: Developed by the authors.

The symbol ䷅ of *Wuwang* comprises the upper trigram *Qian* and the lower trigram *Zhen*, which is explained in *Xiangzhuan* (象传) as

> The thunder rolls all under the sky, and to (every) thing there is given (its nature), free from all insincerity. The ancient kings, in accordance with this, (made their regulations) in complete accordance with the seasons, thereby nourishing all things. (WANG, HAN, KONG & LU, 2012, p. 158)

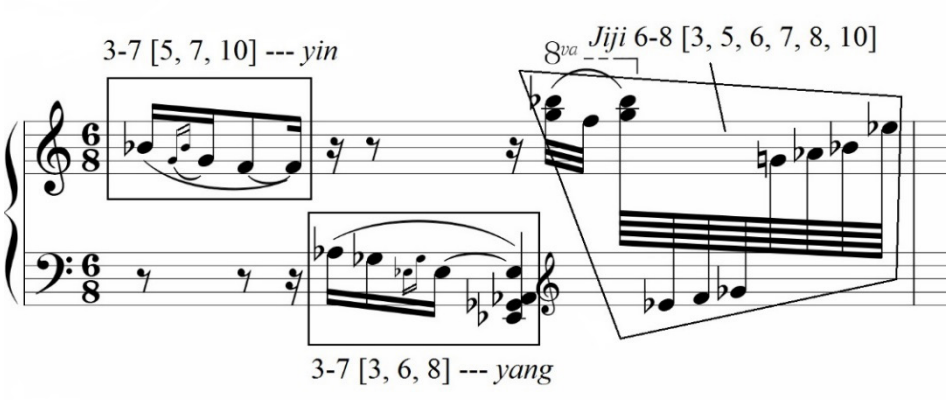
The soundscape of this fragment seems close to the thunder and the dynamic also sounds like the heaven, however, the musical implication perhaps differ from the literal expression of hexagram *Wuwang*, which shows a conflict between *yin* and *yang* rather than the thunder following the heaven.

Another examination shows the complementary *yin-yang* theory in hexagram *Jiji*, in which the timbre becomes soft so as to imitate *guqin* (古琴, Chinese seven-string plucked instrument) (Author, 2018). The pitch class set in hexagram *Jiji* is divided into two sets 3-7 [5, 7, 10] and 3-7 [3, 6, 8]; the former employs pitch classes while the latter employs *yang* pitch classes. Then, in the last three beats of mm. 29, two sets are merged as set 6-8 [3, 5, 6, 7, 8, 10] (Figure 17). Different with the conflict expression in hexagram *Wuwang* that was mentioned above, the *yin* and *yang* sets in hexagram *Jiji* present a responding relationship, mirroring the constitution of hexagram *Jiji* – the upper trigram *Kan* (☵) and lower trigram *Li* (☲). Trigram Kan indicates the water with the *yin* manner while trigram Li denotes the fire with the *yang* manner; accordingly, they can be respectively regarded as the *yin* set in the treble and the *yang* set in the bass. Although Zhao subtly depicts the symbol of hexagram *Jiji* in the music, the indication of the explanation of the hexagram *Jiji* seems difficult to find, which is:

Jiji intimates progress and success in small matters. There will be advantage in being firm and correct. There has been good fortune in the beginning; there may be disorder in the end. (Confucius, 2016, p. 193) and in *Xiangzhuan*:

> (The trigram representing) fire and that for water above it form *Jiji*. The superior man, in accordance with this, thinks of evil (that may come), and beforehand guards against it. (Wang et al., 2012, p. 328)

Figure 17 - *Yin-yang* complement in hexagram *Jiji*, mm. 29



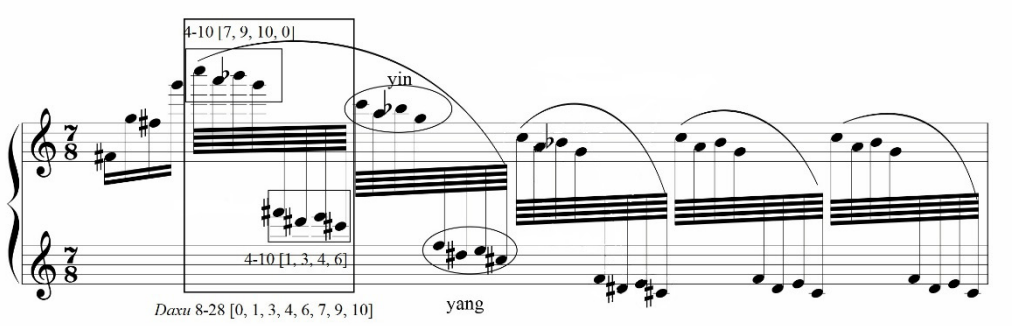
Source: Developed by the authors.

In mm. 41, the pitch classes of the hexagram *Daxu* are separated by two tetrachord-sets — 4-10 [7, 9, 10, 0] and 4-10 [1, 3, 4, 6], with sixty-fourths covering the register from the high voice to the bass. These two sets are 6 levels apart and they reflect the characters of balance and symmetry through the *yin-yang* contrast (Figure 18). To some extent, the form of *Daxu* is similar with *Jiji* (Figure 17). The application demonstrates two sets with *yin* and *yang* elements to form the hexagrams' pith-class sets. However, the trigram's *yin-yang* property was ignored because the *yin* and *yang* sets in *Daxu* were merely divided along with their *yin* and *yang* attributes in the pitch-class set. According to the symbol of hexagram *Daxu* ䷙, the inner trigram is *Qian* (heaven) with *yang* manner while the outer trigram is *Gen* (mountain) with *yang* manner as well. Therefore, incongruity between the music and the symbolic representation of the hexagram *Daxu* was perceived. In addition, the descending quasi arpeggio with thirty-seconds that aims for the soundscape of *saofu* (扫拂) that is smooth and silk-like 16, contradicts the commentary of the hexagram *Daxu* in *Tuanzhuan* that "have (the attributes) of the greatest strength and of substantial solidity" (WANG et al., 2012, p. 162). Thus, the mapping of musical congruence to the symbolic

16 *Saofu* is one of techniques of *pipa* (琵琶, Chinese lute), which includes the two modes of *sao* (扫) and *fu* (拂). *Sao* means that the forefinger sweeps the four strings from the inside to outside, while *fu* indicates that the thumb plucks the four strings from the outside to inside.

meaning of each hexagram may engender issues of semantic congruence, or remain a conundrum.

Figure 18 - Hexagram *Daxu*, mm. 41



Source: Developed by the authors.

Conclusion

Tai Chi reveals an eclectic synthesis of the pitch-class sets, the 64-hexagrams of *I Ching*, and a dual sonata-*Tang Daqu* musical form, displaying the artistic trend of creativity among the "New Wave" Chinese composers in the late Twentieth century. The above analysis demystifies what first appears to be contradicting structural and isomorphic arrangements of musical forms and compositional technique between that of the East and West. Mapping and decoding the 64 hexagrams on *Tai Chi* led to new possibilities of musical semantics in serial music. Understanding *Tai Chi* reveals an exploration of musical creativity from a micro to macro level of permutation based on the interchanging and interdependent *yin-yang* model. In addition, Zhao's explanation reveals his state of *poiesis* during the composition of *Tai Chi*, that suggest a perpetual "unspecificity" based on the ontology of "change" as "being" in *I Ching*; the composer's arrangement of interchangeable musical materials from the East and West depicts his intention to demonstrate the interdependence polarities of the *yin* (West) and *Yang* (East). Thus, *Tai Chi* is allegorical. At a micro level, *Tai Chi* display chords, musical forms, and the marriage of

the Western pitch-class sets and the Chinese 64-hexagrams based on the *yin-yang* model as its backbone. At a macro level, Zhao's explanation during our interview session reveals an ambiguity of this particular "interchange" and "interdependence" of the *yin-yang* dualism that reflect his artistic view of inevitable fluidity of global exchange and interdependence, and as a way that liberates his musical creativity with a resuscitation of Chinese identity.

However, the work *Tai Chi* and Zhao's *Tai Chi* compositional model may still, in some way reflect an allusion or of lexical ambiguity, similar to that of John Cage's, we have yet to identify a connection between its musical symbolism and the ancient commentaries based on the 64 situations described in the hexagrams of *I Ching*, except for the two prominent hexagrams *Kūn* and *Qián*. Besides that, the musical mapping of the 64 hexagrams does not reflect the original order in *I Ching*, although Zhao coded all 64 hexagrams into pitch-class sets. As the 64 hexagrams represent life situations and each *yin* and *yang* line depict a sentence of prognostication that contribute to a particular situation, the complexity of interpretation and inference based on the specificity of each hexagram of *I Ching* form a challenging interpretation among sinologists due to comprehension and translation of its commentaries in classical Chinese language. Thus, converting the specificity of the 64 hexagrams to music is a complex task. *Tai Chi* may raise questions in terms of limitations due to the use of pitch-class set and structural flow based on the sonata or *Tang Daqu*, that may not fully reflect the value *I Ching* due to its perplexity and complexity. Perhaps, converting the *I Ching* to Western art musical language and symbolism may invite new queries on concepts of numerology and symbolism. Furthermore, an accretion of aesthetic conception that long departed from classical Chinese value and context–such as the principles of *yijing* (artistic realm), *qiyun* (rhythmic vitality), and *yixang* (ideal image) with reference to Confucianism and Daoism–in the contemporaneity of Chinese music semantics, may worth a re-examination when *I Ching* is employed as a compositional method.

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Acknowledgement

This research was supported by Humanity and Social Science Youth foundation of Ministry of Education of China under grant of Application of I Ching in the Modern Music (19YJC760133).

Authorship contribution

Xue Ke – conceptualization, analysis, investigation and writing original draft. Loo Fung Ying – supervision, conceptualization, review and Editing. Loo Fung Chiat – data collection and analysis, review. Wang Xiao Hang – data curation, review and editing.

Financing

This research has been financed by Humanity and Social Science Youth foundation of Ministry of Education of China under grant of Application of I Ching in the Modern Music (19YJC760133).

Publisher

Federal University of Goiás. School of Music and Performing Arts. Graduate Program in Music. Publication in the Portal of Periodicals UFG.