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## ZHAO XIAO-SHENG'S TAI CHI REFLECTION: His Innovative Tai Chi Compositional System and its Execution in Tai Chi for Solo Piano

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ZHAO XIAO-SHENG'S TAI CHI REFLECTION:

His Innovative Tai Chi Compositional System

and its Execution in *Tai Chi* for Solo Piano

by

Feifei Jiang

A DOCTORAL DOCUMENT

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ZHAO XIAO-SHENG'S TAI CHI REFLECTION:  
His Innovative Tai Chi Compositional System  
and its Execution in *Tai Chi* for Solo Piano

Feifei Jiang, D.M.A.  
University of Nebraska, 2013

Advisor: Mark Clinton

Zhao Xiao-sheng is one of the most respected living Chinese composers, whose innovative compositions hold a place of prominence in contemporary Chinese music. Zhao, a pianist himself, naturally has written a number of works for solo piano which can be divided into three major compositional periods. During the 1970's, he concentrated mostly on arranging the works of other composers. In the 1980's, Zhao began to explore the combination of contemporary Western idioms with more traditional Chinese music. Since the 1990's, he has focused his activities on creating a new kind of Chinese musical expression—a sort of Chinese-style serialism called the Tai Chi (or Taiji) System of Composition. Over the course of Zhao Xiao-sheng's compositional lifetime, his life experiences and his education have led him to this more personalized compositional style. The Tai Chi System of Composition represents the full maturity of the composer's creative thinking and the solo piano works are excellent examples of his compositional output under this system. This document will examine Zhao's innovative fusion of Chinese and Western musical influences in his solo piano works from the Tai Chi system and its place within the future of world music.

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## INTRODUCTION

Keyboard music has played a very important role in the history of Chinese music over the past four hundred years. Broadly speaking, these four centuries can be divided into four distinct periods: the beginning of the Qing Dynasty (1644) until the founding of the Chinese government (1949), the new China period (1949-1966), the Cultural Revolution (1966-1976), and the post- revolution “open door policy” (1976 to present).

In the seventeenth century, Emperor Kang Xi was very interested in new ideas, which stimulated commercial and religious contacts between the West and China. In 1601, the first Western keyboard instrument (a harpsichord) was brought to China as a gift to the Emperor. During the Qing Dynasty, Western music was well received in the Chinese court, but had little or no influence on the general population who were removed from court activities.

In the eighteenth and early nineteenth centuries, wars between China and various Western powers caused the few keyboard instruments already in China to be damaged or lost. In the Opium War of 1840, China was defeated by England, which led to the opening of several coastal cities to Western commerce. During the 1850s, the first piano shop was opened in Shanghai by the British piano maker William Moutrie. During this time, Western piano music became more prevalent in China. Later, American-manufactured reed organs became popular as well.

The Qing Dynasty ended in 1911, with the establishment of the Republic of China under the leadership of Sun Yi-Xin (Sun Yat-Sen). Because Dr. Sun studied medicine in Japan and the United States, he was heavily influenced by Western thought in areas such

as science, education, literature, art, and politics.<sup>1</sup> In the first decades of the twentieth century, many Chinese students began to study abroad in Europe and the United States (particularly at the New England Conservatory), and brought back firsthand knowledge of Western music to China. During the twentieth century, the piano also became a major instrument in China; schools began to offer piano lessons along with their studies. Xiao You-mei (1884-1940) was the first Chinese scholar to earn a Ph.D. in the field of music, which he attained in 1916 from the Leipzig Conservatory of Music. “While studying in the West, Dr. Xiao observed the development and importance of keyboard instruments in the Western process. He felt that Western music and its educational systems were more advanced, and decided to devote himself to improving music education in China.”<sup>2</sup> After establishing music departments in several universities in Beijing, he established the first institution in China to provide professional music education at the collegiate level, the Shanghai Conservatory of Music (founded on November 27, 1927).<sup>3</sup> During the 1920s and 1930s, Shanghai became an economic and cultural center in the Far East. Therefore, many Western musicians moved to Shanghai during that time, including quite a number of Russian and Jewish musicians. In fact, Russian pianists from the St. Petersburg Conservatory and the Moscow Conservatory served on the faculty of the National Conservatory, including Zoya Pribitkova, Boris Lazareff, and Alexander Nikolayevich Tcherepnin.<sup>4</sup> Other Western musicians who worked at the conservatory included pianists

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<sup>1</sup> Le Kang, “The Development of Chinese Piano Music” *Asian Culture and History* 1, no.2 (2009): page 19.

<sup>2</sup> Ibid.

<sup>3</sup> Ibid.

<sup>4</sup> Ibid.



Ada Bronstein, Alfred Wittenburg, and Mario Paci.<sup>5</sup> During this time, the National Conservatory was sometimes known as “the cradle of Chinese piano music.”<sup>6</sup> The many Chinese students who studied abroad in the first half of the twentieth century, along with the international musicians who joined the faculty of the National Conservatory during that time, fostered a truly Western philosophy that enriched the blossoming piano study in China.

In the second period of Chinese music history (after the founding of the People’s Republic of China in 1949), the government sent many composers to study in the Soviet Union and Europe. At that time, composers were still allowed to express themselves freely, and as a result, Chinese composers began to combine Western music style with native Chinese musical elements.<sup>7</sup>

Between 1966 and 1976, everything related to Western culture was forbidden by the government. During the Cultural Revolution, Chinese citizens were not allowed to teach or study Western music, and music schools were closed. All pianos were either confiscated or destroyed by the Red Guard. During this time period, only eight specific compositions were allowed to be performed. Six of these were performed in the Beijing Opera style, which is a form of traditional Chinese theatre that combines vocal performance, mime, dance, and acrobatics; the other two were ballets containing “strong political content designed to praise Chairman Mao, the Communist Party, or the Chinese

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<sup>5</sup> Rong-shen Wang, “A study of Five Chinese Piano Pieces with a Review of the Introduction and Development of The Piano in China” (DMA diss., Ball State University, 1995), page 28.

<sup>6</sup> Ibid.

<sup>7</sup> Le Kang, “The Development of Chinese Piano Music”, *Asian Culture and History* 1, no.2 (2009): page 21.

army and the victory of civil revolution.”<sup>8</sup> New musical compositions were not allowed unless they served a specific political purpose. An example of a politically-driven piece composed during this period is the piano concerto *Yellow River*, arranged from a Chinese cantata by Xian Xing-hai. The original cantata was composed in early 1939 during the Second Sino-Japanese War. The lyrics were taken from a patriotic poem by Guang Wei-ren, which spoke of the oppression of Chinese people under the invaders and called for all citizens to take up arms to defend China.<sup>9</sup> *Yellow River* was permitted to be performed during the Cultural Revolution because of its message of national support and overtones of wartime violence.

The Cultural Revolution ended in 1976. In 1978, Deng Xiao-ping became the Chairman of China. He announced an “open door” policy for the foundation of modern China, which welcomed the exchange of ideas, goods, and services between China and the West.<sup>10</sup> After 1978, a great number of Chinese composers went to study in the United States and Europe, many of whom won international competitions and became famous figures, such as Tan Dun, Zhou Long, Chen Yi, and Ye Xiao-gang. Their works demonstrate a modern compositional approach that combines Western techniques and structures with Chinese cultural and folk elements to represent the characteristics of Chinese beliefs, attitudes, and history. The first “Shanghai International Music Competition for Compositions and Performances in the Chinese Style” was held in 1978

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<sup>8</sup> Le Kang. “The Development of Chinese Piano Music”, *Asian Culture and History* 1, no.2 (2009): page 22

<sup>9</sup> “Yellow River Cantata,” Wikipedia, August 30, 2013, accessed March 6, 2013, [http://en.wikipedia.org/wiki/Yellow\\_River\\_Cantata](http://en.wikipedia.org/wiki/Yellow_River_Cantata).

<sup>10</sup> “Open Door Policy,” Wikipedia. September 25, 2013. Accessed March 6, 2013 [http://en.wikipedia.org/wiki/Open\\_Door\\_Policy](http://en.wikipedia.org/wiki/Open_Door_Policy).

and included musicians from twelve countries in addition to native participants.<sup>11</sup> One of the winning pieces from that year, entitled *Combination of Long and Short* (长短的组合), written by Quan Ji-hao, continues to be an advanced performance piece for many Chinese piano students.

The past century has witnessed a tremendous flowering of piano music in China, with diverse styles, content, and forms converging to create a modern Chinese compositional idiom. Especially after the initiation of the “open-door policy,” Chinese instrumentalists and composers were able to take advantage of opportunities to study abroad and discover new trends and compositional techniques in contemporary Western art music. When they subsequently returned to China, these composers brought back many of these Western techniques, which ultimately shaped the direction of Chinese contemporary music.

After 1989, the Chinese government relaxed its control of cultural ideology in favor of developing the nation’s economy within a global framework. As the Chinese music industry began to embrace many of the technological and marketing concepts of its Western counterparts, an entire generation of Chinese composers began to emerge. Zhao Xiao-sheng is considered one of the most influential Chinese musicians to come from this era.

Zhao Xiao-sheng’s contribution to music theory includes the creation of the Tai Chi compositional system, which found its roots in the twelve-tone compositions of Arnold Schoenberg and also in ancient Chinese philosophy, but utilized a new set of

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<sup>11</sup> “Open Door Policy,” Wikipedia. September 25, 2013. Accessed March 6, 2013 [http://en.wikipedia.org/wiki/Open\\_Door\\_Policy](http://en.wikipedia.org/wiki/Open_Door_Policy).

compositional guidelines. Using the Tai Chi system, Zhao fashioned the representative solo piano work *Tai Chi* (1987), which effectively combines three different compositional elements: traditional Western compositional structure and form, a 12-tone system reminiscent of Schoenberg, and the philosophical views of ancient China (including Taoism, *Zhouyi (I Ching)* theory, and its component Tai Chi diagram). Zhao devised pitch class sets based on the structure of the sixty-four hexagrams of the Tai Chi diagram; these pitch groups serve as the foundation for the melodic content of *Tai Chi*.

The formal structure of the work draws from the Taoist characteristic of the unity of the universe and mankind, which explains that existence begins simply, expands with the gathering of knowledge and change through time, and eventually cycles back to a sparse, elemental state. *Tai Chi* opens with a two-note musical thought, undergoes complex melodic development using pitch classes, and later returns to the initial simple, spare structure for closure. Zhao's Tai Chi compositional system meshes this cyclic formal style with the tonal building blocks of the sixty-four hexagrams to yield a logical, mathematical-spatial framework for composition. A comparison will also be made between the Tai Chi system and other Eastern and Western compositional systems, wherein the unique and distinguishing features of Zhao's Tai Chi system will be identified and discussed.

This document will investigate the characteristics of Chinese piano music and its diverse regional flavors through an examination of contemporary performance practice. The investigation will provide an overall summary of Chinese piano music, so that pianists may have a better understanding of the complexities within Chinese

compositions, as well as the frame of reference in which they were written. As the theoretical and philosophical aspects of the Tai Chi compositional system are discussed, the reader will develop an independent view of the significance of the components that form the Tai Chi method.

The solo piano work *Tai Chi* is not centered on beautiful melodies; its most important characteristic is the mathematical manipulation of pitches in a style that imitates serialism. Wassily Kandinsky's comments about Arnold Schoenberg might also apply to Zhao Xiao-sheng:

...[he] spares no effort to make full use of his intellectual freedom. He did not have a wealth of treasures found in the process of exploring the spiritual structure. His music leads us into a situation that the brain, not the ears, must comprehend.<sup>12</sup>

Zhao explains how the “Chinese style” of piano compositions displays eight aspects: rhyme, decoration, timbre, pedal, structure, rhythm, tone, and context.

Researchers have concluded that the most significant characteristic of contemporary Chinese music is the fusion of Chinese aesthetics into avant-garde Western models.<sup>13</sup> The importance of Chinese culture to the composition process is reflected in the emphasis on national music; specifically, the prevalence of folk melodies, sounds reminiscent of traditional instruments, and musical forms derived from the formal structure of poetry and ancient dance music. The “National Style” has always been influential. Before the 1970's, the pursuit of nationalism in music composition kept it at a somewhat superficial stage. From the late 1970's onward, however, the understanding and exploration of

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<sup>12</sup> Zhao, Xiao-sheng, *Tai Chi Composition System* (Shanghai: Shanghai Music Press, 2006), page 295.

<sup>13</sup> Zhao, Xiao-sheng, *The Tao of Piano Playing* (Shanghai: Shanghai Music Press, 1999), page 352-360.

different ethnical styles increased.<sup>14</sup> Despite the increase in Western influence on Chinese music, the core principles of Chinese society have remained dominant in the production of Chinese music.

The research within this document is accomplished through the analysis of several sources. An interview with the composer supplements the knowledge gleaned from his books in order to help the reader understand the structure of Tai Chi music and its compositional system. Several textbook resources will aid the reader in understanding the foundational philosophy of the compositional system, as well as the philosophical elements found in the solo piece *Tai Chi*.

To clarify, the Tai Chi system examined in this document has nothing to do with the famous Chinese martial art by the same name. Tai Chi as defined in this document is the foundational concept of the ancient Chinese philosophy *I Ching*, also known as the Book of Changes. The martial arts exercise known as Tai Chi developed later, when people used *I Ching* to create the exercise system.

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<sup>14</sup> Bai-sheng Dai, "About a Chinese Style in Piano Music: A Study from the Perspective of the Chinese Culture Context", *Musicology in China* (2005)

## CHAPTER I

### THE HISTORY OF CHINESE PIANO MUSIC

In order to fully appreciate Zhao's Xiao-sheng contribution to Chinese piano literature, one must be familiar with the cultural and historical context of his work. The development of modern Chinese piano music includes four time periods: the Experimental Period (1915-1933), the Fruitful Period (1934-1965), the Stasis Period (1966-1978), and the Rejuvenation Period (1979 to present).<sup>15</sup> These periods are divided objectively by different compositional techniques and styles. To understand the history of Chinese piano music, one must consider several important questions: When did the first keyboard instrument appear in China? What were the early compositional techniques for Chinese piano music? What are the characteristic styles and harmonies found in Chinese piano music? Which special performance techniques are utilized currently? These questions can be viewed as the basic starting point for understanding and researching the development and creation of piano music in China. Whether one examines the composers, their compositions, or specific musical periods, all information should be understood within the context of the aforementioned questions.

In order to recognize the musical trends of the Experimental Period (1915-1933), it is also necessary to be familiar with the cultural history of that time period. In 1900, the "Wusi New Cultural Movement" (五四新文化运动) was beginning in China, and all academic institutions were praising the merits of democracy and new advancements in science, which contributed to a fundamental shift of purpose in Chinese academic circles.

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<sup>15</sup> Xiao-hui Xiong, "The Past and Present of Chinese Piano Music", *Journal of Anshun Teachers College* 7, no. 4 (2005)

The intellectuals were no longer satisfied with studying traditional Chinese civilizations exclusively, and began to be curious about Western civilization and culture. At this time, modern music composition in China was in the previously mentioned Experimental Period; some composers were studying abroad, and many of their works began to imitate the trends of Western music.

Zhao Yuan-ren is perhaps the most significant composer of piano music from the Experimental Period. In 1915, he wrote *Peace March* (和平进行曲), which is considered the first piano composition in modern Chinese music history. This character piece's harmonic structure is derived from the circle of fifths chord progression in Western music theory, which is overlaid with a more traditional Chinese melody. The first composition of the Experimental Period, *Peace March* clearly exhibits a novel approach to writing piano music: the marriage of traditional Chinese music characteristics with international theoretical ideas. The mood of the work is suited to the purpose of a march; *Peace March* is jaunty and bright atmosphere, full of energy. The formal structure is ternary: A (mm. 1-8 in GM), B (mm. 9-12 in DM/GM), A' (mm. 13-21 in GM).

*Peace March* represents a significant accomplishment of twentieth-century China because it celebrates customary Chinese piano music through the use of pentatonic scales. Moreover, the piece's acknowledgement of European music theory through the use of Western harmony and formal structure make it the bellwether of the new, multicultural composition style established during this period. In addition to Zhao Yuan-ren, composers such as Lao Zhi-cheng, Jiang Ding-xian, and Xiao You-mei were among the first pioneers of modern Chinese piano music. They utilized elements of Western musical



style in conjunction with conventional Chinese musical properties to forge new Chinese piano compositional techniques and teaching methods.

During the Fruitful Period, modern Chinese piano music entered a golden age. Composition was a rather cerebral endeavor, as many piano compositions from this era drew upon European schools of musical thought for inspiration; traces of Impressionism (in the form of freedom to depict an emotionally colorful atmosphere) and neo-Baroque style (regarding the use of counterpoint) could be found in much of the Fruitful Period's piano literature. The new governmental system, founded in 1949, was open-minded about the conception and performance of literature and the arts, providing further support in the blossoming of modern Chinese piano compositional ideas and repertoire.

Many influential composers came into prominence during the Fruitful Period. Foremost among the early Fruitful Period composers was He Lu-ting, who composed a piece for solo piano entitled *The Cowherd's Flute* (牧童短笛), which won first place in the "Tcherepnin Collection of Chinese-Style Piano Works" competition. *The Cowherd's Flute* is a simple, two-voice composition that uses a pentatonic melody to create an original folk song. The style emulates a Bach invention by setting the voices in counterpoint, while the middle section imitates the sound of the titular bamboo flute. He Lu-ting did not wish to use complex Western compositional techniques to embellish *The Cowherd's Flute*; rather, he preferred to keep it light and pure, along the lines of a traditional Chinese piano work, with a hint of modernity. *The Cowherd's Flute* was the earliest example of free-counterpoint-based polyphonic music in China.

The use of traditional Chinese folk songs and instrumental literature in the arrangement of piano music is a popular composition tool. For example, Wang Jianzhong's arrangement of *Red flowers Blooming All Over the Mountain* (山丹丹开花红艳艳) originated as a folk song in the *Shanbei* region; Li Ying-hai's *Music at Sunset* (夕阳箫鼓) came from an ancient instrumental song played on the *pipa*;<sup>16</sup> Chen Pei-xun's *Autumn Moon on a Calm Lake* (平湖秋月) was originally written for a traditional full Chinese instrumental ensemble; and Zhao Xiao-sheng's *Jibei Flute's Song* (冀北笛音) began as a traditional instrumental piece entitled *Wu Bang Zi* (五梆子). Each of these arrangements features a different aspect of traditional Chinese music; each seeks to venerate the established national musical style.

In 1949, the new Republic of China was founded, and as a result, the nation attained a new name and new leadership. This governmental overhaul occurred in the midst of the Fruitful Period of Chinese composition for piano, and initially served as a catalyst for musical inspiration. In these early days, people were full of pride, expressed through their original compositions that praised the redefinition of their lives. While experienced composers wrote prolifically for piano, fledgling musicians were given the opportunity to train to follow in their footsteps: the new government set up a number of influential music institutions of higher education in areas such as Shenyang, Chengdu, Wuhan, Xian, and Guangzhou. The conservatories imitated the former Soviet system, in which classes and activities were overseen by a chairman in charge of a team of officials

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<sup>16</sup> The Pipa is a four-stringed Chinese musical instrument which has been played for almost two thousand years in China, sometime called the Chinese Lute.

who kept the school running smoothly. Pedagogical techniques were also adopted from Russia, including hand position, finger weight, and posture.

Larger universities also set up music departments with piano training courses; this was an especially momentous endeavor because previous post-secondary musical training had encompassed traditional Chinese instruments only. The demand for an education in piano necessitated the formation of a standardized piano education system, which came to fruition at this time. During the honeymoon period of relations between China and the Soviet Union, many musical activities were shared among citizens from both countries; a large number of pianists came from the Soviet Union to China, and conversely, many Chinese pianists went to study in Eastern Europe. As Chinese composers enjoyed many successes, so did a group of high-achieving pianists, including Liu Shi-kun and Yin Cheng-zong. The main features of the Fruitful Period were: 1) Composers utilize the European compositional system proficiently; 2) The new government cultivates many musical talents, and 3) Piano instruction undergoes unprecedented development of pedagogy and technique.

In 1948, Tong Sang, a student at the Shanghai National Music Institute, composed *In a Faraway Place* (在那遥远的地方), arranged for piano from its original song setting.<sup>17</sup> This piece is especially salient because it is first atonal piece in Chinese piano history. In a demonstration of the prosperous nature of the Fruitful Period and its impact upon the lives of composers, Tong Sang went on to publish several music theory textbooks and eventually assumed the role of President of the Shanghai Conservatory.

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<sup>17</sup> Xiao-sheng Zhao, *The Tao of Piano Playing*, (Shanghai: Shanghai Music Press, 2007.): page 353.

The third period of modern Chinese piano history, known as the Stasis Period (1966-1978), overlapped with the Cultural Revolution. The Cultural Revolution wreaked havoc on human relations and the lives of citizens, causing a dark period in Chinese cultural history, or even world history. Three dark years befell the heretofore thriving culture of musical study; many musicians and artists suffered; among them, the pianist Liu Shi-kun. He was confined in jail for ten years, which caused his hands to develop a very serious tremor. After the Cultural Revolution, he could no longer perform. Still, even during this dark period of Chinese national history, many piano compositions were written, although the subject matter was controlled by the government. Composers employed traditional songs and stories as subjects, arranged for piano.

In this grim chapter of the history of human culture, the experiences of citizens can be viewed through the lens of the surviving literary and artistic works created during the revolution. A considerable number of piano works from this period are still actively performed in Mainland China on the stage.

Following the Cultural Revolution, the Chinese piano industry recovered and, gradually, foreign academic exchanges and opportunities to perform increased. At this time, the commencement of the Rejuvenation Period (1979 to present), piano compositions began to diversify once more. Western serial technique proved a prominent method of compositional exploration in the realm of Chinese piano music; the representative examples of this trend are Wang Li-san's *Wen Tian*, (问天) Chan Yi's *Duo Yie*, and Zhao Xiao-sheng's *Tai Chi*.

Since the 1980's, the compositional techniques and literature of modern Chinese piano music have achieved an impressive scope. Compositional methods and their resultant works have become ever more unique, yielding a sizeable and differentiated repertoire. For example, Ding Shan-de's compositional technique is based on a combination between the major, minor, and pentatonic scales of tonality and the twelve-tone technique of atonality, which maintains a sense of traditional and familiar tonal centers while providing innovative tone color. His compositions include *Six Overtures*, *Sixteen Piano Etudes*, *Four Little Overtures and Fugues*, *Sonatina*, *Rondo*, and *Eight Piano Pieces for Children*.<sup>18</sup>

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<sup>18</sup> Xiao-sheng Zhao , *The Tao of Piano Playing*, (Shanghai: Shanghai Music Press, 2007.) page 355.

## CHAPTER II

### BIOGRAPHY OF ZHAO XIAO-SHENG

Zhao Xiao-sheng was born in Shanghai in 1945. Zhao is a composer, pianist and educator whose contributions to Chinese piano music history are representative of a unique compositional approach: the cross-cultural combination of Western serialism and ancient Chinese philosophies inherent in his Tai Chi composition system. Along with traits borrowed from Western music theory, Chinese music theory, and ancient Chinese philosophy, two significant concepts played an important role in the invention of the Tai Chi system; namely, the revision of Western pitch classes to suit his musical needs, and the theory of “composition of forces.” This theory asserts that music is constructed from specific diametric forces, including consonance and dissonance, emotion and logic, control and relinquishment of control, centeredness and lack of center, and national and international contexts. According to this theory, a piece of music should strike a balance between each of these poles. The Tai Chi compositional system, while intricate and complex, is at the core a system of balance between the factors that affect the creation of music.

At the time of the Tai Chi system’s conception, Zhao composed pieces to showcase his new theory and prove its value. His 1985 piano concerto entitled *The God of Hope* (希望之神) represents the theory of composition of forces, the 1986 woodwind suite *Jian Music for Four Movements* serves as a clear example of the pitch classes devised by Zhao, and the solo piano piece *Tai Chi* is the paragon of the eponymous Tai

Chi compositional system.<sup>19</sup> Zhao's theory and the abovementioned pieces have led Chinese piano music in a new direction, brimming with new ideas and resources for inspiration. Other significant works by Zhao Xiao-sheng include his improvisational collections from the 1990's, some of which are also based on the Tai Chi system, and which can be found in his *Follow the Heart* (依心集) album. Zhao has added works of great quality and variety to the existing repertoire of Chinese piano music.

In 1956, Zhao studied piano in the pre-conservatory division of the Shanghai Conservatory, and his interest in composition was piqued. His early compositions clearly imitate the compositional styles of Beethoven and Chopin. In 1978, while still studying at Shanghai Conservatory, he changed his major from piano performance to composition. During this time period, Chairman Deng Xiao-Ping instituted a "three methods of transmission" (三化) cultural policy. The methods of transmission consisted of three categories: Revolutionary (modernizing cultural relations, thought processes, and locations), Nationalism (upholding certain cultural traditions and taking pride in one's country) and General Public (equality for all citizens). Zhao Xiao-sheng's understanding of the three methods of transmission impacted his composition by providing specific goals for his work. His inclusion of Western music theory processes in his Tai Chi system reflected the Revolutionary aspect of transmission, but the predominant characteristic of his compositions during this time period was Nationalism, evidenced by his prevalent imitation of traditional Chinese instruments in many of his piano pieces.

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<sup>19</sup> EdwART, "Zhao Xiaosheng," Encyclopedia of Contemporary Chinese Culture, 2011, accessed February, 2013, [http://contemporary\\_chinese\\_culture.academic.ru/973/Zhao\\_Xiaosheng](http://contemporary_chinese_culture.academic.ru/973/Zhao_Xiaosheng).

From 1981 to 1984, he came to the United States to continue his studies at Columbia University and studies electronic music at Missouri State University. During his sojourn, Zhao did not compose in a truly “Chinese” style, because he was not in his native land, and because he was absorbing the influences of his computerized coursework and the Western-style composers around him.<sup>20</sup> Upon returning to China in 1985, he became a professor at Shanghai Conservatory, where he remains to this day.

#### **a. Zhao’s Important Status in Chinese Piano Music History**

Following the political and economic reforms in China in the 1970’s, Zhao Xiao-sheng took part in the government-advocated international student exchange visits as a music composition student. After returning from the United States, Zhao Xiao-sheng began channeling his thoughts on music theory into what would become the Tai Chi compositional system. His combination of Western serialism and the Chinese philosophy of *I Ching* was a brave and innovative step in Chinese piano history, which resulted in a multiple of possibilities for Chinese piano music composition and style.

Even when Zhao does not directly use on the Tai Chi system for his compositions, he endeavors to utilize Chinese sonorities within contemporary Western idioms. In his first dance suite, *Tune of the Earth (Diqu)*, 1990–1991), he includes Chinese instruments and Beijing-opera music style, which “can be divided into the *Xipi* and *Erhuang* styles. Melody includes arias, fixed-tune melodies, and percussion patterns.”<sup>21</sup> Zhao’s third dance suite, *Heavenly Sacrifice (Tianji)*, 1990–1991), uses elements from Chinese ritual music. His ballet music *Sun Over the Wasteland (Dahuang de taiyang)*, 1992) is a collage

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<sup>20</sup> Wen-wen Dong, “Research of Xiao-Sheng Zhao’s Piano Music” (master’s thesis, Shandong Normal University, 2009), page 9.

<sup>21</sup> “Peking Opera” Wikipedia, July 10, 2013, accessed April 15, [http://en.wikipedia.org/wiki/Peking\\_opera](http://en.wikipedia.org/wiki/Peking_opera).



incorporating pop-bass rhythms, a vocalizing choir, and aleatoric Chinese orchestral playing that includes the *pipa*, a four-stringed Chinese musical instrument which sounds somewhat like the banjo in American country music.<sup>22</sup> Most of his piano compositions require a virtuoso technique, along with the ability to accurately imitate traditional Western and Chinese instruments.

Of course, Zhao is not the only Chinese piano composer to utilize multicultural elements of music theory in his works; his contemporaries offer various unique amalgamations of theories and styles. For instance, Tan Dun's *Eight Memories of Water Color, Op. 1* (八幅水彩画的回忆) combines the Chinese pentatonic mode and traditional Chinese folk tunes with European expressionist harmonies. Xu Zhi-ming uses the twelve-tone technique in his *Prelude and Fugue* (1985). Chen Pei-xun incorporates traditional Western harmonies into his piano work entitled *Autumn Moon on Calm Lake* (平湖秋月). Rather than composing a piece that brings together the music of various cultures, Zhao Xiao-sheng is set apart from these composers because he created a completely new system by which many such pieces can be written.

### **b. Zhao's Three Compositional Periods**

Zhao Xiao-sheng's body of work can be categorized into three compositional time periods: the 1970's, 1980's, and 1990's to the present. During the first period, he primarily concentrated on arranging the works of other composers. His second compositional time period was spent exploring the combination of contemporary western

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<sup>22</sup> EdwART, "Zhao Xiaosheng," Encyclopedia of Contemporary Chinese Culture, 2011, accessed February, 2013, [http://contemporary\\_chinese\\_culture.academic.ru/973/Zhao\\_Xiaosheng](http://contemporary_chinese_culture.academic.ru/973/Zhao_Xiaosheng).

idioms with traditional Chinese music. From the 1990's to the present, he has focused on improvisational composition.

In the 1970's, China underwent the Cultural Revolution. At this time, composers were not allowed to express themselves freely; they worked within the constraints of the prevailing political environment. There were only two types of performances allowed: the Chinese opera and ballet. Therefore, most compositions that did not face censorship arose from Chinese opera, ballet, or folk tunes. The primary style of piano composition at the time was the arrangement of a previous work that suited the goals of nationalist politics. Works from Zhao Xiao-sheng's first period include four vocal accompaniments for modern Chinese opera, six concert etudes, and seven piano pieces arranged from Chinese folk and revolutionary songs; the only piano performance piece he composed from new material, rather than arranging, was *Fisherman's Song* (渔歌), which was inspired by the Chinese folk instrumental piece *Wu Bang Zi* (五梆子).<sup>23</sup>

One of Zhao's seven piano arrangements that found its origins in modern Chinese opera is *Speaking of the Painful Revolutionary Family History* (痛说革命家史). The original piece was part of the fifth act of *Red Lantern* (红灯记), the most well-known revolutionary opera of the eight model operas (known as *yang-ban-xi*) directed by Jiang Qing, the wife of Chairman Mao.<sup>24</sup> These Communist Party-sanctioned operas were considered revolutionary and modern in terms of thematic and musical features when

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<sup>23</sup> Wen-wen Dong, "Research of Xiao-Sheng Zhao's Piano Music" (master's thesis, Shandong Normal University, 2009), page 11.

<sup>24</sup> Wen-wen Dong, "Research of Xiao-Sheng Zhao's Piano Music" (master's thesis, Shandong Normal University, 2009), page 17.

compared with traditional operas. The vocal style was accessible, understandable, and able to be sung by the average citizen, in contrast to the ancient singing style of opera.

The structure of Zhao Xiao-sheng's arrangement of *Speaking of the Painful Revolutionary Family History* has very obvious separation between sections. It is comprised of a through composed form with an introduction and a coda. The formal structure is a traditional Chinese musical form known as *Tang Da Qu*, defined by the following changes in tempo: Free (散) – Slow (慢) – Medium fast (中) – Fast (快) – Free (散).<sup>25</sup> This traditional Chinese musical format appears in Chapter IV's analysis of *Tai Chi*.

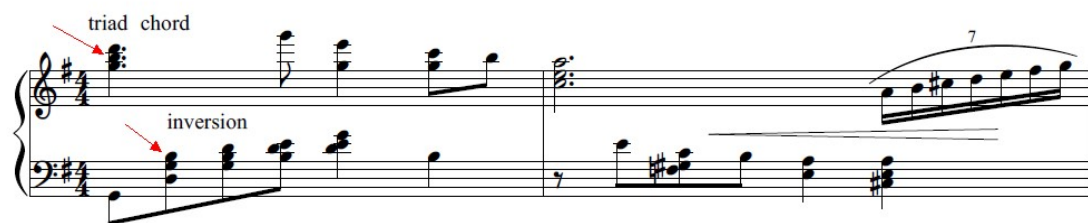
**Figure 1.1: Non-repeating ternary form**

Structure	Introduction	A	Transition	B	C	Transition	Coda
Measure number	1-2	3-16	17-20	21-31	32-44	45-74	75-92

*Speaking of the Painful Revolutionary Family History* uses the traditional Chinese pentatonic tonal system, comprised of the five tones named *Gong* (宫), *Shang* (商), *Jue* (角), *Zhi* (徵), and *Yu* (羽), which are the first, second, third, fifth, and sixth degrees of the key. Zhao's arrangement employs many third intervals and instances of the tonic triad.

<sup>25</sup> Dong Yie, "Music Structure of Tang da Qu", *Musicology of China* 3, (1989).

### Example 1.2: Triad chord and inversion

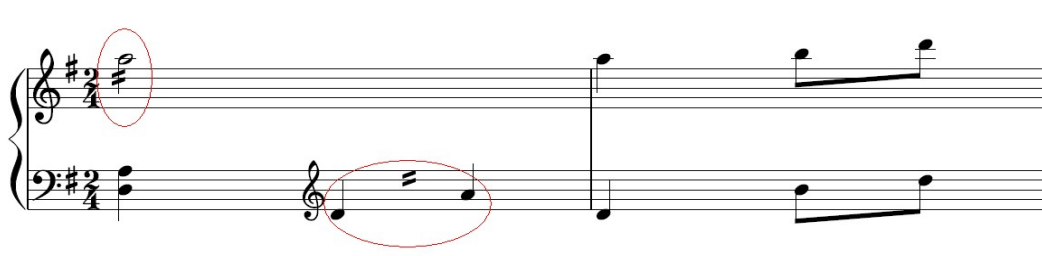


The texture of the piece utilizes many repeating notes and fifth intervals in a tremolo style, which is meant to represent strumming on the *pipa*; this technique is common in Chinese piano music.

### Example 1.3a: Repeating notes and fifth interval



### Example 1.3b: Repeating notes and tremolo



In the 1970's, Zhao Xiao-sheng arranged many popular revolutionary *Yang-ban-xi* excerpts and traditional Chinese instrumental pieces for piano. He relied on the *Tang*

*Da Qu* dance and musical form, Free (散) – Slow (慢) – Medium Fast (中) – Fast (快) – Free (散). In his arrangements, Zhao maintained the original meaning of the pieces, while altering and embellishing melodies and harmonic colors. This compositional period could reasonably be referred to as Zhao’s “Nationalism” period.

After the institution of the open door policy, Chinese piano music of the 1980’s experienced a wide range of developments. The characteristics of piano music during the time were “nationalism” and “diversification.” In August 1985, Zhao Xiao-sheng completed his piano concerto, *The God of Hope*, and by June 1987, the solo piano work *Tai Chi* was finished. National and cultural elements abound in these two works. Further musical analysis of *Tai Chi* can be found in Chapter IV.

Zhao Xiao-sheng’s composition output during the 1990’s continued to exploit the elements of nationalism and diversification, while beginning to also incorporate aspects of improvisation. An excellent example of Zhao’s incorporation of improvisational techniques in his works during that time is his volume of compositions titled *Follow the Heart* (依心集). Each composition in the collection has its own title. In May 1991, Zhao finished the piano concerto *Liao Yin* (辽音).

Zhao Xiao-sheng’s three compositional periods are easily distinguished by style and intent. His first period witnessed the budding composer imitating the styles of other composers as he began to develop his own compositional skills. During the second period, he began developing the *Tai Chi* composition system. Within the final and most recent period, Zhao continued to use the *Tai Chi* system as a framework for some of his compositions, but concentrated on improvisation.

By understanding the three time periods of Zhao Xiao-sheng's compositional works, the reader will gain insight into his compositional method.

### c. Background of *Tai Chi*

In the Chinese contemporary music world, Zhao Xiao-sheng's *Tai Chi* for solo piano enlivened twentieth century music by serving as a catalyst for new musical thought. The composer's neoteric and brave decision to introduce ancient Chinese philosophy into modern music composition was unprecedented. Musicians and scholars alike became curious as to his thought process; one wonders what might have prompted Zhao to construct a compositional system from such disparate parts.

The following passage is excerpted from an interview Zhao Xiao-sheng gave in 1991:

Composers are suffering nowadays. First, you cannot support yourself, cannot meet your living expenses, by composing. For a long time, most of the composers [in China] have been poor. The biggest difficulty for current composers is that so much good, serious music has already been written hundreds of years ago by Baroque, Classical, and Romantic composers [such as Bach, Mozart, Beethoven, and Chopin]. And also, almost all of the interesting and fun tricks of composing music have been used by composers. We cannot bring music back to the Romantic period, for example, because the audience will not be interested and passionate about it. Now what should we do? How are we going to break through this situation? It is really sad for the composer now.<sup>26</sup>

After reading this plaintive statement, a poem written by Qu Yuan thousands of years ago comes to mind: “路漫漫其修远兮，吾将上下而求索。” (“The road to find truth is very far and long, so one must look in every direction.”)<sup>27</sup> But Zhao Xiao-sheng must not have given up on the search for very much time. On January 1, 1987, he was

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<sup>26</sup> Zhao, Xiao-sheng, *Tai Chi Composition System* (Shanghai: Shanghai Music Press, 2006), page 295.

<sup>27</sup> Translate by the author.

first inspired to contemplate the ancient Chinese philosophy *Zhouyi* also known as *I Ching*, and how its principles could favor his music.

His statement regarding *Zhouyi* theory:

*I Ching* contains the idea that, when the first written records of human knowledge were developed, people's understanding of their surroundings was hazy and primitive at best. However, handing recorded knowledge down from ancestors to progeny is the foundation for a more universal way of thinking. When trying to grasp the concept of *I Ching*, forget about the mysterious nature of its writings; current and future generations should instead focus on the pure and basic principles, from which one can obtain the most valuable essence in ancient Chinese traditional culture.<sup>28</sup>

“The Unity of Heaven and Mankind” (天人合一) is the characteristic of the *I Ching* philosophy. Humankind and its context are inseparable; heaven, earth, humans, and gods coalesce to yield a unified thinking process. Thus, *I Ching* can be applied to a plethora of studies and situations. Shamans use the book of *I Ching* to divine ominous and auspicious portents; Taoists deem it their religious history, rather like a Bible, containing parables of deep spiritual meaning; medical scientists utilize it to determine the human body's internal climate and balance, including temperature, moisture level, and meridians (the body's Qi channels, through which energy should freely flow), which lends itself to individualized dialectical therapy for each patient; and naturalists employ the teachings to study astronomy, geography, and the four seasons. It can reasonably be asserted that the philosophy of *I Ching* is a mysterious and miraculous ancient Chinese classic. Zhao Xiao-sheng's inspiration to relate *I Ching* to music represents a marriage between ancient and modern sensibilities that has provided him and others with a wealth of new ideas to diversify the contemporary music world. Therefore, on January 31, 1987,

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<sup>28</sup> Xiao-sheng Zhao, *Tai Chi Composition system*, (Shanghai: Shanghai Music Press, 2006), page 181. (translate by author)

he took the first step toward the Tai Chi world of composition. He drew upon the *I Ching* system “yin-yang” (阴阳) in his creation of *Three Sections of Yin-yang*, which was composed for sixteen players.

Zhao divulged the following about his creative process:

I found similarities between *Ba-gua* (八卦) [the eight diagrams of natural phenomena that include sky, ground, wind, thunder, water, fire, mountain, and marsh] and the three basic elements of music, which are pitch, harmony, and key. I tried to use the format of *Ba-gua* to explain the differences of pitch colors, the chords that use yin-yang combinations, and even the yin-yang relationship [meaning, the harmony and contrast between dark and bright, moon and sun, flat and sharp, minor and major], from which I found logical explanations.<sup>29</sup>

In April of the same year, he took the next step forward; Zhao considers *Three Sections of Yin-yang* as merely a basic initial connection between *I Ching* and music. It does not have the power to influence every pitch. Therefore, he resolved to create a new concept of musical structure.<sup>30</sup> By June 1987, Zhao’s studies yielded an operable theory for this new concept, which was known as *Tai Chi Yue Zhi*, or the Tai Chi purpose of music.<sup>31</sup> It is the component of the Tai Chi system that features thirty-two complementary pairs of twelve-tone rows and the separate sixty-four hexagrams. The essence of this new structural theory can be found in the Tai Chi diagram.

The Tai Chi diagram is meant to provide composers with a framework of structure for compositions; it is not a formula that automatically generates new music. According to Zhao Xiao-sheng:

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<sup>29</sup> Xiao-sheng Zhao, *Tai Chi composition system*, (Shanghai: Shanghai music Press, 2006) page 296-300.

<sup>30</sup> Ibid.

<sup>31</sup> Ibid.



This new concept is based on *I Ching*'s sixty-four hexagrams, which led to the invention of sixty-four pitch classes. These sixty-four pitch classes are separated into two parts, which are Yin and Yang, and which possess a 'mirror' structure. The sixty-four pitch classes can be infinite in variety. But still, using this theory to compose a piano piece is a difficult process and experiment.<sup>32</sup>

After much experimentation by the composer, in the middle of July 1987, the solo piano work *Tai Chi* was finished. A specific overview of the connection and relationship between *I Ching* and the Tai Chi composition system will be provided in Chapter III, and Chapter IV contains a detailed analysis of *Tai Chi* for solo piano.

Zhao Xiao-sheng is not the only composer to reference the Chinese philosophy book *I Ching* when creating compositions. John Cage is the primary composer in the Western music field who was heavily influenced by *I Ching*, as evidenced by his four-volume *Music of Changes*, completed in 1951 and dedicated to his friend David Tudor. Cage transferred the *I Ching* philosophy of divination, or future-telling, to his compositional style by using chance operations to create different sounds, silences, tempi, durations, and layers, among other musical variables. Listing the spectra of these variables as charts, he drew from them to compose, using a conventional manner of notation with staves and bars, in which everything was notated in full detail.<sup>33</sup> An example of one of these musical variable spectra is Cage's use of piano: it can be played traditionally, by plucking the strings with finger nails, by slamming the keyboard lid, by playing cymbal beaters on the strings, and by striking the keyboard lid, just to name a few options. Pedaling requirements were also notated in full detail.<sup>34</sup>

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<sup>32</sup> Xiao-sheng Zhao, *Tai Chi composition system*, (Shanghai: Shanghai music Press, 2006) page295-300.

<sup>33</sup> Ibid.

<sup>34</sup> "John Cage: Music of Changes (1951)." Youtube. July 22, 2012. Accessed October 23, 2013.

Although Zhao and Cage both utilized *I Ching* when planning and writing compositions, their perspectives, processes, and goals differed. The formal structure of Zhao's *Tai Chi* can be explained as an intricate combination of ancient Chinese poem structure, Tang-Da-Qu music form originating during the Qin dynasty, and Western arch form. Cage's *Music of Changes* is defined by the technique of nested proportions, as were most of his pieces from the 1940s. Nested proportions are a mathematical explanation of the sections, subsections, and even motives of a piece of music, which are related by length, content, or numerical ratio. While Zhao made use of the sixty-four hexagrams in *I Ching* to create sixty-four groups of notes to choose from or combine, Cage used a heavily modified version of his chart system to generate the formal structure for *Music of Changes*. Every chart created for *Music of Changes* is eight by eight cells, which directly reflects the sixty-four hexagrams of *I Ching*, making it easier to compare the processes.<sup>35</sup>

The rhythmic structure of Cage's *Music of Changes* is  $3-5-6^{3/4}-6^{3/4}-5-3^{1/8}$ , and the sections are guided by tempo changes, including *accelerandi* and *ritardandi*. Zhao's *Tai Chi* is traditionally metered, lending a sense of stability and order to offset its other changes. Other aspects in which Cage uses somewhat more adventurous musical constructs include notation: *Music of Changes* is written in proportional notation, wherein one inch equals one quarter note;<sup>36</sup> *Tai Chi*, on the other hand, utilizes conventional notation.

John Cage did not compose *Music of Changes* with a specific or consistent

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<sup>35</sup> "Music of Changes." Wikipedia. June 12, 2013. Accessed October 25, 2013.  
[http://en.wikipedia.org/wiki/Music\\_of\\_Changes](http://en.wikipedia.org/wiki/Music_of_Changes)

<sup>36</sup> "John Cage: Music of Changes (1951)." Youtube. July 22, 2012. Accessed October 23, 2013.  
[http://www.youtube.com/watch?v=B\\_8-B2rNw7s](http://www.youtube.com/watch?v=B_8-B2rNw7s)

harmonic structure in mind; rather, the notes were chosen by tossing coins to obtain combinations that referred to one of the sixty-four hexagrams.<sup>37</sup> Cage said, “[M]y choices consist in choosing what questions to ask.”<sup>38</sup> On the other hand, Zhao’s *Tai Chi* follows the symbols (*Gua*) of *I Ching*’s sixty-four hexagrams to determine or alter harmony, melody, structure, texture, and other musical qualities. For example, the piece starts at the first *Gua*, *Kun* (坤, meaning earth), which is the *yin-yang* (minor-major) combination that serves as the pitch center of *Tai Chi*. As the piece progresses, the texture thickens by adding various *Gua*, and eventually thins toward the end with the subtraction of *Gua*, finally finishing out with *Kun* only, mirroring the beginning. A more thorough explanation of the *Tai Chi Ba-Gua* is included in Chapter III.

The most pronounced difference between Zhao Xiao-sheng and John Cage is the effect of their nationalities on their compositional goals and styles. Cage was born in the United States, and was therefore brought up with Western cultural tendencies, while Zhao originated in China, and grew up with the cultural heritage of that location. The two men’s perspectives and backgrounds foster a divergent understanding of *I Ching* philosophy. Cage views *I Ching*, or at least the piece of that philosophy on which he based his chance operation charts, as a divination text that can assist him in making certain compositional choices. Zhao, by contrast, is more fully aware of the historical and cultural significance of *I Ching* as a multifaceted, multi-perspective traditional Chinese philosophy of the universe and humankind; he appreciates and utilizes it holistically.

*I Ching* is not a system composed only of changes and variations; it also requires

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<sup>37</sup> David W. Bernstein, and Christopher Hatch, *Writings through John Cage’s Music, Poetry, and Art*, (Chicago and London: The University of Chicago press, 2001) page 235.

<sup>38</sup> Ibid.

the combination, or coexistence, of contradictory forces that must find balance. The complexity of *I Ching* philosophy lends itself to a broad foundation for the exploration and construction required by the music composition process. The next two chapters, respectively, provide a detailed explanation of *I Ching* and expand upon Zhao Xiaosheng's approach to the philosophy in the creation of his *Tai Chi* compositional system.

## CHAPTER III

### ZHAO'S TAI CHI COMPOSITION SYSTEM

#### a. Parsing Zhao's Tai Chi Composition System

The Tai Chi compositional system is based on *I Ching* (*The Book of Changes*). Before delving into the details of the system, one must possess a basic understanding of the *I Ching* itself. It is one of the oldest works of literatures in China, and was considered the foremost of *Five Classics* (*Wu Ching*, 五经) by the *Ru Jia* (儒家) educational method, which was based on the teachings of Confucius.<sup>39</sup> It is also known as the *Book of Changes*, or *Zhouyi*. *I Ching* once encompassed the ancient works “Continue Mountain” (*Lian Shan*, 连山), “Return Possession” (*Gui Zang*, 归藏), and “Book of Changes,” but the “Continue Mountain” and “Return Possession” segments have been lost.<sup>40</sup> *I Ching* focuses on the quantifiable and mystical aspects of nature and humanity; it was the first written representative of classical Chinese culture, philosophy, and cosmology. The fundamental idea of *I Ching* is based on the monism of yin and yang, the balance between these two elements, and the flow of change through time.

The following quote from the *Book of Changes* explains the origin and purpose of *I Ching*:

When all the rest of the world said goodbye to the Stone Age, and strove to free itself from the bonds of Mother Nature, marching forward with rapid strides to build civilization, the ancient sages of China took a quite different direction: They clung to Mother Nature ever more closely. *The Book of Changes* and the dialectical science of traditional Chinese

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<sup>39</sup> “I Ching,” Wikipedia, September 11, 2013, accessed March 6, 2013, [https://en.wikipedia.org/wiki/I\\_Ching](https://en.wikipedia.org/wiki/I_Ching).

<sup>40</sup> Ibid.

medicine were born and perfected against this background, characterized by the notion of “the Unity of Heaven and Mankind”.<sup>41</sup>

The nomenclature of *I Ching* breaks down as follows: the “I” stands for “Ri”(日), which means “the sun,” and “Ching” stands for “Yue,” or “the moon.” *Ri* represents the positive (yang, 阳), while *Yue* symbolizes the negative (yin, 阴). “I” also has three meanings: simple and easy, changing, and unchanging.<sup>42</sup> Because nothing in the universe is permanent, all things undergo constant change; therefore, the concept of change is significant to *I Ching*. However, the changing universe is governed by constant, unchanging laws. *The Book of Changes* states that “[t]he Universe is one big body, while the human body is a miniature universe.” (宇宙大人身, 人身小宇宙)<sup>43</sup> If one considers an individual person to be a small universe (supported by the fact that our bodies are comprised of a plethora of smaller living organisms), it follows that mankind abides by the same basic scientific law as the heavenly bodies. In addition, the human race holds itself accountable to a code of ethics which is naturally ingrained in the conscience. We do not need to continuously remind ourselves of these universal moral principles, though we sometimes have the power to choose whether or not to follow these “simple and easy” regulations.

*I Ching* emphasizes the importance of the balance between yin and yang. An appropriate analogy might be to substitute yang for the male gender, and yin for women. If the world contained only men or only women, would it function as it should? The

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<sup>41</sup> Chun-cai Zhou, Guang-di Liu, and Paul White, *The Illustrated Book of Changes* (Beijing: Dolphin, 2006), page1-3.

<sup>42</sup> Ibid.

<sup>43</sup> Ibid.

imbalance would generate many problems, the most obvious of which is fairly immediate dead end for the human race. Following lines of reason similar to this example is the goal of the “I” method of cognition: it is a search for balance between forces in the universe, a search for cause and effect, and a method for discovering the nature of relationships between concepts, thoughts, words, and actions. If one uses the “I” method, it is possible to find these balances in unexpected situations.<sup>44</sup>

The word “*Ching*” encompasses two meanings: “way or principle” (*Dao*, 道), and “truth” (*Li*, 理). *I Ching*, therefore, is a book that elucidates the truth of the universe and the principle of human behavior.<sup>45</sup> It is a sacred and authoritative canon which describes the balance of the universe.

As the foremost of all the *Ching* (Chinese classics), *I Ching* offers a world outlook and methodology for the whole of Chinese civilization, and stands as the symbol of China’s traditional politics, culture, and moral authority.<sup>46</sup>

When *I Ching* was initially developed, its first representation was “two appearances” (*Liang yi*, 两仪), or the balance of the opposite forces of yin and yang that is at the core of the philosophy. Eventually, this idea evolved into the “four images” (*Si xiang*, 四象) in order to allow for more variety of comparable and contrasting concepts, such as the four seasons. The four images expanded once again to form the “eight diagrams” (*Ba-gua*, 八卦) in order to study eight natural phenomena: used to study many

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<sup>44</sup> Chun-cai Zhou, Guang-di Liu, and Paul White, *The Illustrated Book of Changes* (Beijing: Dolphin, 2006), page 3-

<sup>45</sup> Chun-cai Zhou, Guang-di Liu, and Paul White, *The Illustrated Book of Changes* (Beijing: Dolphin, 2006), page 4.

<sup>46</sup> Ibid.

other forces and concepts as well, as can be seen in Figure 2.1b. (“易有太极， 是生两仪， 两仪生四象， 四象生八卦.”)<sup>47</sup>

Out of all of the diagrams in the *Ba-gua*, the two most important *Gua* are *Qian* (乾), as yang , which represents heaven; and *Kun* (坤), as yin, which represents earth.<sup>48</sup>

*Qian* and *Kun* are opposite forces, yet they are dependent, just as day and night are characterized by their contrasting attributes. Strength and tenderness, life and death, man and woman, the ominous and the auspicious – each of these pairs can be seen as a reflection of *Qian* and *Kun*. In the *Ba-gua*, every iteration of two diametrically-opposed extremes, when combined, can help explain the changes and developments that occur in the universe. In the *Zhouyi* sixty-four hexagrams, the original *Ba-gua* retain their name and symbols, which are *Qian* (乾), *Kun* (坤) , *Li* (离), *Zhen* (震), *Xun* (巽), *Kan* (坎), *Gen* (艮), *Dui* (兑).<sup>49</sup>

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<sup>47</sup> Chun-cai Zhou, Guang-di Liu, and Paul White, *The Illustrated Book of Changes* (Beijing: Dolphin, 2006), page 28.

<sup>48</sup> Chun-cai Zhou, Guang-di Liu, and Paul White, *The Illustrated Book of Changes* (Beijing: Dolphin, 2006), page 31.

<sup>49</sup> Chun-cai Zhou, Guang-di Liu, and Paul White, *The Illustrated Book of Changes* (Beijing: Dolphin, 2006), page 73-215.



Figure 2.1a: *Ba-gua* (Eight Diagrams)

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Figure 2.1b: Illustration of the Images of *Ba-gua*

卦名 Name of divinatory symbol	乾 Qian	坤 Kun	震 Zhen	巽 Xun	坎 Kan	离 Li	艮 Gen	兑 Dui
符号 Symbol	☰	☷	☳	☴	☵	☲	☶	☱
属性 Character	健 Healthy	顺 Smooth	动 Stirring	入 Entering	陷 Trapping	丽 Clinging	止 Stop	悦 Happy
人伦 Human relations	父 Father	母 Mother	长男 Firstborn son	长女 Firstborn daughter	中男 Middle son	中女 Middle daughter	少男 Younger son	少女 Younger daughter
远取诸物 Taking things for example from afar	马 Horse	牛 Ox	龙 Dragon	鸡 Chicken	豕 Swine	雉 Pheasant	狗 Dog	羊 Sheep
近取诸身 Taking organs of the body for example from nearby	首 Head	腹 Abdomen	足 Feet	股 Thigh	耳 Ears	目 Eyes	手鼻背 Hand, nose and back	口 Mouth
自然 Nature	天 Heaven	地 Earth	雷 Thunder	风 Wind	水 Water	日 Sun	山 Mountain	泽 Lake
方位 Direction	西北 Northwest	西南 Southwest	东 East	东南 Southeast	北 North	南 South	东北 Northeast	西 West
季节 Season	冬秋间 Around winter and autumn	夏秋间 Around summer and autumn	春 Spring	春夏间 Around spring and summer	冬 Winter	夏 Summer	冬春间 Around winter and spring	秋 Autumn
五行五色 Five elements and five colors	金 Metal	黄土 Yellow soil	木 Wood	青木 Green wood	水黑 Water black	火赤 Fire red	土 Earth	白金 White metal

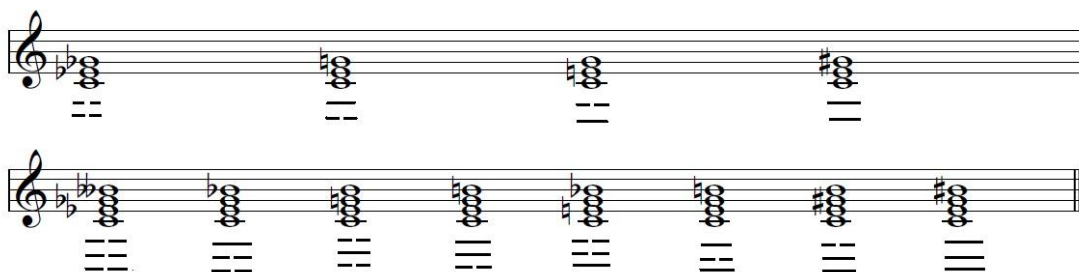
51

<sup>50</sup> *Bagua*, 2013, Wikipedia, accessed December, 2012, <http://en.wikipedia.org/wiki/Bagua>.

With yin-yang philosophy in mind, Zhao Xiao-sheng asserts that music follows its own regular pattern. The following two examples expound the connection between yin-yang philosophy and musical constructs.

Allow yin to stand for the minor third interval (depicted below each chord as a dashed line), and yang to stand for the major third interval (depicted by a solid line). Witness that their combination generates the common patterns of triads and seventh chords. (ex. 2.2)

**Example 2.2:**



This passage from *Tai Chi* provides the perfect musical paradigm for *I Ching*. Zhao lists four triad chords in a row, each one representing one of the four possible qualities (diminished, minor, major, and augmented); these are immediately followed by the eight possible seventh chords built on the same base note of C (fully-diminished, half-diminished, minor-minor, minor-major, major-minor, major-major, augmented-major, augmented-augmented). The four triad chords, each different and characterized by its sonic distinction from the others, exemplify the four images. The eight seventh chords, in turn, represent the eight diagrams of *Ba-gua*.

<sup>51</sup> Chun-cai Zhou, Guang-di Liu, and Paul White, *The Illustrated Book of Changes* (Beijing: Dolphin, 2006), page 60.

**Figure 2.3: Seventh chord with *Ba-gua***

Seventh chord	<i>Ba-gua</i> symbol name	Yin-yang symbol	Major/minor third in the chord
Fully-diminished	<i>Kun</i> (坤)	Perfect yin	Mmm
Half-diminished	<i>Gen</i> (艮)	Yin-yin-yang	mmM
Minor	<i>Kan</i> (坎)	Yin-yang-yin	mMm
Minor augmented	<i>Xun</i> (巽)	Yin-yang-yang	mMM
Dominant	<i>Zhen</i> (震)	Yang-yin-yin	Mmm
Major	<i>Li</i> (离)	Yang-yin-yang	MmM
Augmented	<i>Dui</i> (兑)	Yang-yang-yin	MMm
Double augmented	<i>Qian</i> (乾)	Perfect yang	MMM

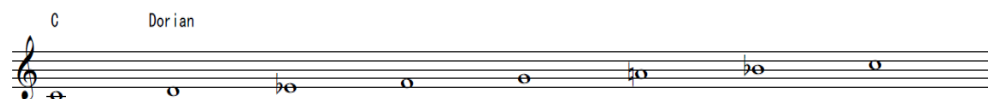
52

The yin-yang system can also apply to Western theory. For example, in the C Dorian scale, consider the third intervals between the tonic pitches. The interval from C to Eb is a minor third (yin). According to *I Ching* theory, when an incident or pattern begins with yin, it must proceed with yang thereafter. The C Dorian scale follows this logic: the interval between Eb and G is a major third, representing yang. Had it been a minor third, the triad chord would be diminished rather than minor, and the sound of the scale would be compromised. The next third interval, G to Bb, is a minor third (yin), and the interval from Bb to C is a major second, which, while it does not follow the previously-established pattern of thirds, finishes the scale with a yang quality. Therefore,

<sup>52</sup> Xiao-sheng Zhao, *Tai Chi composition system*, (Shanghai: Shanghai music Press, 2006) page 95.

the scale oscillates between yin and yang, as it should; according to the *I Ching*, “Yin produces yang, and both become positive.”<sup>53</sup>

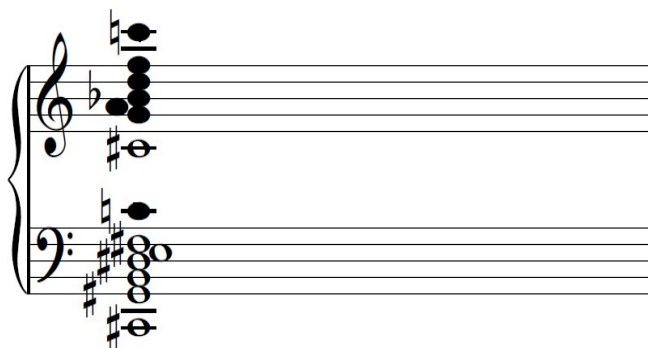
#### Example 2.4: C Dorian



The Tai Chi Harmony is the foundation of sixty-four hexagram pitch class sets (horizontal scalar patterns) and hexagram harmonies (vertical chord patterns). *Tai Chi* makes use of this fundamental chord, as well as many of the other chords and scalar patterns that derive from it. The Tai Chi harmony contains yin pitch class sets (identified as black notes in Example 2.5 below) and yang pitch class sets (portrayed as white notes in Example 2.5). The yin and yang pitch class sets each include six intervals between the pitches: perfect fifth, major and minor second and third, and tritone (*San quan yi*, 三全音). The chords formed by the yang and yin sets mirror one another structurally; for instance, the interval between the top C and the F beneath it is a perfect fifth, while the interval between the two lowest notes, C# and G#, is also a perfect fifth.

<sup>53</sup> Chun-cai Zhou, Guang-di Liu, and Paul White, *The Illustrated Book of Changes* (Beijing: Dolphin, 2006).

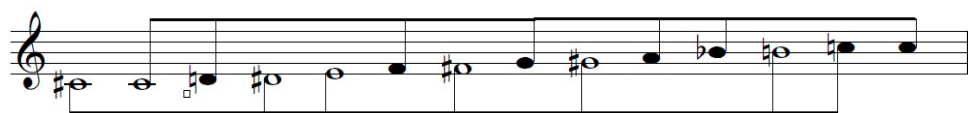
### Example 2.5: Tai Chi Chord



54

Zhao Xiao-sheng drew from the Tai Chi harmony above to create the Tai Chi Scale, which arranges the pitches in scalar order, preserving their yin or yang designation. Taken together, the top “C” and the “C#” form a yin-yang combination, complementary yet dissonant, which serves as the dual pitch center in Zhao Xiao-sheng’s *Tai Chi*.

### Example 2.6: Tai Chi Scale



55

As with the Tai Chi harmony, the white notes represent the yang pitch classes, while the black notes symbolize the yin pitch classes. The C and C# that constitute the tonal center of *Tai Chi* are a representation of the two appearances in their purest musical form: one yin and one yang note which rely upon each other while simultaneously acting

<sup>54</sup> Xiao-sheng Zhao , *Tai Chi Composition System*, (Shanghai: Shanghai Music Press, 2006.) page 183.

<sup>55</sup> Xiao-sheng Zhao , *Tai Chi Composition System*, (Shanghai: Shanghai music press, 2006.) page 184.

as opposing sonic forces. The yang and yin pitch classes, when combined, yield a twelve-tone row that is referred to as Tai Chi's "yin yang hug" (阴阳合抱), because it is a visual and musical display of yin and yang coming together, as two people do when they embrace. The Tai Chi scale can also be called the "two appearances pitch set,"<sup>56</sup> because it is the tone row formed by the combination of the two appearances and their respective pitch classes. The yang pitch class consists of two major triad chords, and the yin area is formed by two minor triad chords. These four chords are designated the "four images chords" of the Tai Chi scale, due to the fact that they are four different triads that, united, form the tone row of the Tai Chi scale.

### Example 2.7 Four images chords

The musical notation for Example 2.7 consists of two systems. The first system shows a melodic line in treble clef with a key signature of one sharp (F#) and a bass line in bass clef. The second system shows two chords in treble and bass clefs, both with a key signature of one sharp (F#). The first chord is a major triad (F#, A, C) and the second is a minor triad (F#, Bb, D).

57

Every note in the Tai Chi harmony corresponds to one of the eight *Ba-gua* pitch classes, which were put together based on the harmony; therefore, each of the eight

<sup>56</sup> Xiao-sheng Zhao, *Tai Chi Composition System*, (Shanghai: Shanghai music press, 2006.) page 184.

<sup>57</sup> Ibid.

diagrams (*Ba-gua*) has its own pitch set, which is represented by a given symbol. The sixty-four hexagrams, in turn, are constructed using the *Ba-gua* pitch sets.

**Example 2.8a: *Ba-gua* (eight diagrams) pitch set**

Qian                      Kun      Dui

Gen                      Li                      Kan

Zhen                      Xun

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**Example 2.8b: Sixty-four hexagrams pitch set**

Kun坤                      Fu复                      Yi颐                      Tun屯

Yi益                      Zhen震

ShiKe噬嗑                      Sui随

WuWang无妄                      MingYi明夷

Bi贲                      JiJi既济

JiaRen家人                      Feng丰

<sup>58</sup> Xiao-sheng Zhao, *Tai Chi Composition System*, (Shanghai: Shanghai Music Press, 2006.) page 185.

Li 离

Ge 革

TongRen 同 人 Lin 临

Sun 损 Jie 节

ZhongFu 中 孚 GuiMei 归 妹

Kui 睽

Dui 兑

Lv 履

Tai 泰 DaXu 大 畜

Xu 需

XiaoXu 小 畜

DaZhuang 大 壮

DaYou 大 有



Guai 夬

Qian 乾

Gou 姤

DaGuo 大过

Ding 鼎

Heng 恒

Xun 巽

Jing 井

Gu 蛊

Sheng 升

Song 讼

Kun 困

Wei Ji 未济

Jie 解

Huan 涣

Kan 坎

Meng 蒙

Shi 师

Dun 遁

Xian 咸

Lv 旅

Xiaoguo 小过

Jian 渐

Jian 蹇

Gen 艮

Qian 谦



59

The Tai Chi composition system is a complex, multi-level method for creating music. The aforementioned component parts of the system include the Tai Chi harmony, the Tai Chi scale, yin-yang appearances, four images chords, the two appearances pitch set, the *Ba-gua* pitch set, the sixty-four hexagrams pitch set, and the sixty-four yin-yang Tai Chi chords. The amalgamation of these musical parts generates the “Tai Chi image score” (Figure 2.9)

**Figure 2.9: Tai Chi image score**



60

<sup>59</sup> Zhao, Xiao-sheng, *Tai Chi Composition System*, (Shanghai: Shanghai Music Press, 2006.) page 186-188.

<sup>60</sup> Zhao, Xiao-sheng, *Tai Chi Composition System*, (Shanghai: Shanghai Music Press, 2006.)

Zhao Xiao-sheng's *Tai Chi* utilizes multiple facets of the Tai Chi image score in its composition; *Zhou yi's* yin-yang theory's sixty-four hexagrams, which encircle the other parts of the Tai Chi image score, are featured prominently in the piece. Zhao selected certain hexagrams to provide the framework for his composition, first adding pitch classes from his selected hexagrams to increase the number of available notes, and then, once every note in the twelve-tone row is presented together, removes notes in the opposite manner until only the first hexagram remains. This initial hexagram consists of C and C#, and is given the name *Kun* (坤), which means "earth." Because it is present throughout the entirety of *Tai Chi*, it is considered the tonal center, and anchors the piece musically throughout the addition and subtraction of other hexagrams. Zhao selected his hexachords systematically to create a tone row that contains every pitch between the initial C# and C, and each hexagram he adds follows the last in a clockwise motion around the circle of hexagrams. The purpose of using increasingly more and then fewer hexagrams as the piece proceeds reflects *I Ching's* assertion that the universe undergoes continual change. Zhao's music never stagnates due to its frequent change in tonal variety.

Before Zhao developed the sixty-four hexagrams that lend their influence to his melodies and compositional structure, he studied Western serialism and determined to formulate his own version of that compositional theory. The first step he took was to amass two hundred of the available pitch class sets and order them in a table, along with their Western serial designations, in order to make the process of composing with pitch class sets less cumbersome. Pitch classes are the fundamental building blocks of the Tai

Chi system; their attributes have a profound influence on the music of which they are a part.

Zhao's pitch class elements table serves as an unequivocal method for systematically organizing and determining the musical qualities of pitch class sets. Zhao adopted Allen Forte's method as a process for considering pitch classes in a mathematical context (A.F).<sup>61</sup> The pitch class elements table reveals a given pitch class set's category number (Zhao's system of ordering the pitch class sets in a specific way), note position (when, as in serialism, C = 0), interval function (an abbreviation that corresponds to a specific interval quality), and dissonance ratio (between 0 and 36.50; the higher the ratio, the more dissonance between pitches in the set), among other classifications.<sup>62</sup> For example, the first pitch class set that Zhao chose from the table to create the sixty-four hexagrams has a category number of 2-6; the note position is 0, 1 (C, C#); the interval function is D (minor second); and the dissonance ratio is 5.5. If one compares this pitch class elements table with the Tai Chi sixty-four hexagrams pitch class analysis table (which lists the characteristics of the pitch classes in the sixty-four hexagrams), and locates pitch class set 2-6 first, both tables will show the same note position and interval function.

In his table, Zhao used the following abbreviations to name the interval function between pitches:<sup>63</sup>

1. SIL-Silence
2. U-Unison

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<sup>61</sup> Xiao-sheng Zhao, *Tai Chi composition System*, (Shanghai: Shanghai Music Press, 2006.) page 97.

<sup>62</sup> Xiao-sheng Zhao, *Tai Chi Composition System*, (Shanghai: Shanghai Music Press, 2006.) page 95.

<sup>63</sup> Ibid.

3. P-Perfect
4. M-Major third
5. N-Minor third
6. T-Tritone (augmented fourth, diminished fifth)
7. S-Major second
8. D-Minor second

The smallest dissonance ratios for pitch class sets of various sizes are:<sup>64</sup>

- Two- note pitch class (2-1): No. 2, 0-5, P ( perfect interval), ratio = 1.5
- Three- note pitch class (3-1): No. 7, 0-3-7, PMN (Major third chord), ratio = 4.66
- Four- note pitch class (4-1): No. 18, 0-3-5-8, P2MN2S3 (*Gong*, 宫; *Jiao*, 角; *Zhi*, 徵; *Yu*, 羽) Chinese pentatonic, ratio = 7.75
- Five- note pitch class (5-1): No. 41, 0-2-4-7-9, P4MN2S3 (Chinese pentatonic scale), ratio = 10.60
- Six- note pitch class (6-1): No. 76, 0-2-4-5-7-9, P5M2N3S4D (Six-note diatonic scale), ratio = 14.30
- Seven- note pitch class (7-1): No. 114, 0-1-3-5-6-8-10, P6M3N4TS5D2 (Seven-note diatonic scale), ratio = 18.00
- Eight-note pitch class (8-1): No. 152, 0-1-2-4-5-7-9-10, P6M5N6T2S5D4 ( Eight-note diatonic scale plus *Run*, 闰), ratio = 22.125

The specific scales found in the Pitch Class Elements Table are:

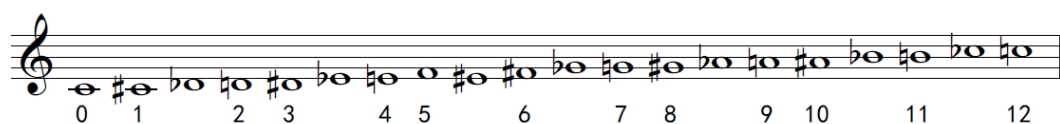
- “*Gong*, 宫; *Shang*, 商; *Jue*, 角; *Zhi*, 徵; *Yu*, 羽;” Chinese pentatonic scale; No. 41; 5-1
- Whole tone scale; No. 97; 6-16
- Medieval mode (Major); “*Ya yue*, 雅乐; *Qing yue*, 清乐; *Yan yue*, 燕乐;” Seven-note diatonic scale; No. 114; 7-1
- Harmonic minor scale; No. 119; 7-4

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<sup>64</sup> Zhao, Xiao-sheng, *Tai Chi Composition System*, (Shanghai: Shanghai music press, 2006.) page 98.

- Melodic minor scale; No. 184; 9-4
- Twelve-tone serial technique; No. 200; 12-1

**Example 2.10a: List of pitch classes in simplest form, with corresponding numbers**



**Figure 3.10b: Pitch Class Elements Table**

Serial Number	Class mark	Pitch class interval function	Note number	Number of arrangements	Note position	A.F notation	Dissonance Ratio
0	0-1						0
1	1-1	U	1	1	0-0		1
2	2-1	P	2	2	0-5	000010	1.5
3	2-2	M	2	2	0-4	000100	2.5
4	2-3	N	2	2	0-3	001000	3.0
5	2-4	T	2	1	0-6	000001	3.5
6	2-5	S	2	2	0-2	010000	4.0
7	3-1	PMN	3	6	0-3-7	001110	4.66
8	3-2	P2S	3	3	0-2-7	010020	4.66
9	3-3	M3	3	1	0-4-8	000300	5.0

Figure 3.10b continues

Serial Number	Class mark	Pitch class interval function	Note number	Number of arrangements	Note position	A.F notation	Dissonance Ratio
10	2-6	D	2	2	0-1	100000	5.5
11	3-4	PNS	3	6	0-2-5	011010	5.66
12	3-5	N2T	3	03	0-3-6	002001	6.33
13	3-6	PMD	3	6	0-1-5	100110	6.33
14	3-7	MTS	3	6	0-2-6	010101	6.66
15	3-8	MS2	3	3	0-2-4	020100	7.0
16	3-9	PTD	3	3	0-1-6	100011	7.0
17	3-10	MND	3	6	0-1-4	10110	7.33
18	4-1	P2MN2S	4	4	0-3-5-8	012120	7.75
19	4-2	P3NS2	4	4	0-2-5-7	021030	7,75
20	4-3	P2MNS2	4	8	0-2-4-7	021120	8.25
21	4-4	P2M2ND	4	4	0-1-5-8	101220	8.25
22	3-11	NSD	3	6	0-1-3	111000	8.33
23	4-5	PMN2TS	4	8	0-2-5-8	012111	8.75
24	4-6	PM3ND	4	8	0-1-4-8	010310	8.75
25	4-7	PM2N2D	4	4	0-1-4-9	102210	9.00
26	4-8	P2MNSD	4	8	0-2-3-7	111120	9.00
27	4-9	P2MTSD	4	8	0-1-5-7	110121	9.25
28	4-10	N4T2	4	1	0-3-6-9	004002	9.50
29	4-11	M3TS2	4	4	0-2-4-8	020301	9.50
30	4-12	PMN2TD	4	8	0-1-4-7	102111	9.50
31	4-13	M2T2S2	4	2	0-2-6-8	020202	10.00

Figure 3.10b continues

Serial Number	Class mark	Pitch class interval function	Note number	Number of arrangements	Note position	A.F notation	Dissonance Ratio
32	4-14	PMNTSD	4	8	0-1-3-7 0-1-4-6	111111	10.00
33	4-15	P2MTD2	4	4	0-1-5-6	200121	10.00
34	3-12	SD2	3	3	0-1-2	210000	10.00
35	4-16	M2TS3	4	4	0-2-4-6	030201	10.25
36	4-17	PN2TSD	4	8	0-1-3-6	112011	10.25
37	4-18	PMNS2D	4	8	0-1-3-5	121110	10.25
38	4-19	PM2ND2	4	4	0-1-4-5	201210	10.25
39	4-20	PN2S2D	4	4	0-2-3-5	122010	10.50
40	4-21	P2T2D2	4	2	0-1-6-7	200022	10.50
41	5-1	P4MN2S3	5	5	0-2-4-7- 9	032140	10.60
42	4-22	MN2TSD	4	8	0-2-3-6	112101	10.75
43	4-23	P2TSD2	4	4	0-1-2-7	210021	10.75
44	4-24	PMNSD2	4	8	0-1-2-5	211110	11.00
45	4-25	PMTSD2	4	8	0-1-2-6	210111	11.25
46	5-2	P3M2N2S 2D	5	10	0-1-3-5- 8	122230	11.60
47	4-26	MN2SD2	4	4	0-1-3-4	212100	11.75
48	5-3	P2M2N2T S3	5	5	0-2-4-6- 9	032221	11.80
49	5-4	P2M2N3T SD	5	10	0-1-4-6- 9	113221	12.00
50	5-5	P3MN2TS 2D	5	10	0-1-3-6- 8	122131	12.00

Figure 3.10b continues



Serial Number	Class mark	Pitch class interval function	Note number	Number of arrangements	Note position	A.F notation	Dissonance Ratio
51	5-6	P2M4N2D 2	5	10	0-1-4-5- 8	202420	12.00
52	5-7	P2M3NTS 2D	5	10	0-1-4-6- 8-	121321	12.20
53	5-8	P3MN2S3 D	5	10	0-2-3-5- 7	132130	12.20
54	4-27	PMS2D2	4	8	0-1-2-4	221100	12.25
55	5-9	P2M3N2T D2	5	5	0-1-4-7- 8	202321	
56	5-10	P3M2NTS D2	5	10	0-1-3-7- 8	211231	12.40
57	5-11	P2MN3TS 2D	5	10	0-2-3-5- 8	123121	12.60
58	5-12	P2M3N2S D2	5	5	0-1-2-5- 9  0-1-3-4- 8	212320	12.60
59	5-13	PM3N2TS 2D	5	10	0-1-3-5- 9	122311	12.80
60	5-14	P2M2NTS 3D	5	10	0-1-3-5- 7	131221	12.80
61	5-15	PMN4T2S D	5	10	0-1-3-6- 9	114112	13.00
62	5-16	P2M2N2T SD2	5	10	0-1-4-5- 7  0-1-2-5- 8	212221	13.00
63	5-17	P3MNTS2 D2	5	10	0-1-2-5- 7	221131	13.00

Figure 3.10b continues

Serial Number	Class mark	Pitch class interval function	Note number	Number of arrangements	Note position	A.F notation	Dissonance Ratio
64	5-18	M4T2S4	5	5	0-2-4-6-8	040402	13.20
65	5-19	PM2N2T2 S2D	5	10	0-1-3-7-9	122212	13.20
66	5-20	P2M2N2S 2D2	5	10	0-2-3-4-7	222220	13.20
67	5-21	P2MN2T2 SD2	5	10	0-1-3-6-7	212122	13.40
68	5-22	PM2N3TS Di2	5	10	0-1-3-4-7	213211	13.60
69	5-23	P2MN2TS 2D2	5	10	0-1-2-4-7  0-1-3-5-6	222121	13.60
70	5-24	P2M2T2S 2D2	5	5	0-1-2-6-8	220222	13.60
71	4-28	NS2D3	4	4	0-1-2-3	321000	13.75
72	5-25	PM2NTS2 D2	5	10	0-1-2-4-8	221311	13.80
73	5-26	P3MT2SD 3	5	10	0-1-2-6-7	310132	13.80
74	5-27	P2M2NTS D3	5	10	0-1-2-5-6	311211	14.00
75	5-28	PMN3TS2 D2	5	10	0-1-3-4-6	223111	14.20
76	6-1	P5M2N3S 4D	6	6	0-2-4-5-7-9	143250	14.30
77	5-29	PM2NTS3 D2	5	10	0-1-2-4-6	231211	14.40

Figure 3.10b continues

Serial Number	Class mark	Pitch class interval function	Note number	Number of arrangements	Note position	A.F notation	Dissonance Ratio
78	5-30	P2MNTS2 D3	5	10	0-1-2-3- 7	321121	14.60
79	5-31	PM2N2S2 D3	5	10	0-1-2-4- 5	322210	14.80
80	6-2	P4M2N3T S4D	6	6	0-2-3-5- 7-9	143241	15.00
81	5-23	M2N2TS3 D2	5	10	0-2-3-4- 6	232201	15.00
82	6-3	P3M6N3D 3	6	2	0-1-4-5- 8-9	303630	15.00
83	5-33	PMN2TS2 D3	5	10	0-1-2-3- 6	322111	15.20
84	6-4	P3M4N3T S2D2	6	12	0-1-3-5- 8-9	223431	15.30
85	6-5	P4M3N2T S3D2	6	12	0-1-2-5- 7-9  0-1-3-5- 7-8	232341	15.30
86	5-34	PMN2S3D 3	5	10	0-1-2-3- 5	322110	15.40
87	6-6	P4M2N3T S3D2	6	12	0-1-2-4- 7-9  0-1-3-5- 6-8	233241	15.50
88	6-7	P2M4N2T 2S4D	6	12	0-1-3-5- 7-9	142422	15.83
89	6-8	P3M2N4T 2S2D2	6	12	0-1-3-6- 8-9  0-1-4-6- 7-9	224232	15.83

Figure 3.10b continues

Serial Number	Class mark	Pitch class interval function	Note number	Number of arrangements	Note position	A.F notation	Dissonance Ratio
90	6-9	P3M3N3D S3T2	6	12	0-1-2-4- 6-9  0-1-3-4- 6-8	233331	15.83
91	6-10	P3M4N3T SD3	6	12	0-1-2-5- 6-9  0-1-3-4- 7-8	313431	15.83
92	6-11	P3M4N3S 2D3	6	12	0-1-3-4- 5-8	313430	16.00
93	6-12	P2M3N4T 2S2D2	6	12	0-1-3-4- 7-9  0-1-3-5- 6-9	224322	16.16
94	6-13	P3M4N2T S2D3	6	12	0-1-4-5- 6-8	322431	16.16
95	6-14	P4M2N2T 2S2D3	6	12	0-1-2-5- 7-8	322242	16.16
96	6-15	P2M2N5T 2S2D2	6	12	0-1-3-4- 6-9	225222	16.30
97	6-16	M6T3S6	6	1	0-2-4-6- 8-10	060603	16.50
98	6-17	P2M2N4T 3S2D2	6	12	0-1-3-6- 7-9	224223	16.50
99	6-18	P3M3N2T 2S2D3	6	12	0-1-2-5- 6-8  0-1-2-4- 7-8	322332	16.50

Figure 3.10b continues

Serial Number	Class mark	Pitch class interval function	Note number	Number of arrangements	Note position	A.F notation	Dissonance Ratio
100	6-19	P2M2N4T 2S3D2	6	12	0-2-3-4- 6-9  0-2-3-5- 6-8	234222	16.60
101	6-20	P2M4NT2 S4D2	6	12	0-1-2-4- 6-8	241422	16.60
102	6-21	P2M4N3T S2D3	6	12	0-1-2-4- 5-8	323421	16.60
103	6-22	P3M2N3T S3D3	6	12	0-1-2-3- 5-8  0-1-2-4- 5-7	333231	16.83
104	6-23	P3M2N2T 2S3D3	6	12	0-1-2-3- 6-8  0-1-2-4- 6-7	332232	17.00
105	6-24	P3M2N3S 4D3	6	12	0-2-3-4- 5-7	343230	17.00
106	6-25	P4M2NT2 S2D4	6	12	0-1-2-3- 7-8  0-1-2-5- 6-7	421242	17.00
107	5-35	MN2S3D4	5	5	0-1-2-3- 4	432100	17.00
108	6-26	P2M2N4T 2S2D3	6	12	0-1-3-4- 6-7  0-1-2-3- 6-9	324222	17.16
109	6-27	PM4N2T2 S4D2	6	12	0-2-3-4- 6-8	242412	17.16

Figure 3.10b continues

Serial Number	Class mark	Pitch class interval function	Note number	Number of arrangements	Note position	A.F notation	Dissonance Ratio
110	6-28	P2M3N3T S3D3	6	12	0-2-3-4- 5-8  0-1-3-4- 5-7	333321	17.16
111	6-29	P3M2N2T S4D3	6	12	0-1-2-3- 5-7	342231	17.16
112	6-30	P4M2T3S 2D4	6	3	0-1-2-6- 7-8	420243	17.16
113	6-31	P3M2N2T 2S2D4	6	12	0-1-2-3- 6-7	422232	17.50
114	7-1	P6M3N4T S5T2	7	7	0-1-3-5- 6-8-10	254361	18.00
115	6-32	P2M3N2T S3D4	6	12	0-1-2-3- 4-8  0-1-2-4- 5-6	432321	18.00
116	6-33	P2M2N3T S3D4	6	12	0-1-2-3- 4-7  0-1-2-3- 5-6	433221	18.16
117	7-2	P5M4N4T S4D3	7	14	0-1-2-4- 5-7-9	344451	18.714
118	7-3	P4M4N4T 2S5D2	7	7	0-1-3-4- 6-8-10	254442	18.857
119	7-4	P4M4N5T 2S4D3	7	14	0-1-3-4- 6-8-9	335442	19.00
120	7-5	P5M3N4T 2S4D3	7	14	0-1-2-4- 6-7-9	344352	19.00
121	7-6	P4M6N4T S2D4	7	14	0-1-2-4- 5-8-9	424641	19.00

Figure 3.10b continues

Serial Number	Class mark	Pitch class interval function	Note number	Number of arrangements	Note position	A.F notation	Dissonance Ratio
122	6-34	PM2N3TS 4D4	6	12	0-1-2-3- 4-6	443211	19.00
123	7-7	P4M5N3N 3T2D3	7	14	0-1-2-4- 6-8-9	343542	19.143
124	7-8	P5M3N3T S4D3	7	14	0-2-3-4- 5-7-9	354351	19.143
125	7-9	P4M5N4T 2S2D4	7	7	0-1-2-5- 6-8-9	424542	19.286
126	7-10	P5M4N3T 2S3D4	7	14	0-1-2-4- 7-8-9	433452	19.286
127	7-11	P4M3N5T 2S4D3	7	14	0-1-2-3- 6-7-9	345342	19.429
128	7-12	P4M5N4T S3D4	7	7	0-1-2-4- 5-6-9  0-1-3-4- 5-7-8	434541	19.429
129	7-13	P3M5N4T 2S4D3	7	14	0-1-3-4- 5-7-9	344532	19.572
130	7-14	P4M4N3T 2S5D3	7	14	0-1-2-3- 5-7-9	353442	19.572
131	6-35	PM2N3S4 D5	6	6	0-1-2-3- 4-5	543210	19.60
132	7-15	P3M3N6T 3S3D3	7	14	0-1-3-4- 6-7-9	336333	19.715
133	7-16	P4M4N4T 2S3D4	7	14	0-1-2-3- 5-8-9  0-1-2-4- 5-7-9	434442	19.715
134	7-17	P5M3N3T 2S4D4	7	14	0-1-2-3- 5-7-8	443352	19.715

Figure 3.10b continues

Serial Number	Class mark	Pitch class interval function	Note number	Number of arrangements	Note position	A.F notation	Dissonance Ratio
135	7-18	P2M6N2T 3S6D2	7	7	0-1-2-4- 6-8-10	262623	19.858
136	7-19	P3M4N4T 3S4D3	7	14	0-1-3-5- 6-7-9	344433	19.858
137	7-20	P4M4N4T S4D4	7	14	0-2-3-4- 5-7-8	444441	19.858
138	7-21	P4M3N4T 3S3D4	7	14	0-1-2-3- 6-7-9	434343	20.00
139	7-22	P3M4N5T 2S3D4	7	14	0-1-2-3- 5-6-9	435432	20.14
140	7-23	P4M3N4T 2S4D4	7	14	0-1-2-3- 4-7-9  0-1-2-3- 5-6-8	444342	20.143
141	7-24	P4M4N2T 3S4D4	7	7	0-1-2-4- 6-7-8	442443	20.143
142	7-25	P3M5N3T 2S4D4	7	14	0-2-4-5- 6-8	443532	20.286
143	7-26	P5M3N2T 3S3D5	7	14	0-1-2-3- 6-7-8	532352	20.286
144	7-27	P4M4N3T 2S3D5	7	14	0-1-2-3- 4-7-8	533442	20.429
145	7-28	P3M3N5T 2S4D4	7	14	0-1-2-3- 4-6-9	445332	20.572
146	7-29	P3M4N3T 2S5D4	7	14	0-1-2-3- 4-6-8	453432	20.715
147	7-30	P4M3N3T 2S4D5	7	14	0-1-2-3- 5-6-7	543342	20.857
148	7-31	P3M4N4T S4D5	7	14	0-1-2-3- 4-5-8	544431	21.00

Figure 3.10b continues



Serial Number	Class mark	Pitch class interval function	Note number	Number of arrangements	Note position	A.F notation	Dissonance Ratio
149	7-32	P2M4N4T 2S5D4	7	14	0-2-3-4- 5-6-8	454422	21.143
150	7-33	P3M3N4T 2S4D5	7	14	0-1-2-3- 4-6-7	544332	21.286
151	7-34	P3M3N4T S5D5	7	14	0-1-2-3- 4-5-7	554331	21.429
152	8-1	P6M5N6T 2S5D4	8	8	0-1-2-4- 5-7-9-10	4256562	22.125
153	8-2	P7M4N5T 2S6D4	8	8	0-1-2-3- 5-7-8-10	465472	22.125
154	8-3	P6M5N5T 2S16D4	8	16	0-1-2-3- 5-6-8— 10	465562	22.375
155	8-4	P6M6N5T 2S4D5	8	8	0-1-2-4- 5-7-8-9	545662	22.375
156	7-35	P2M3N4T S5D6	7	7	0-1-2-3- 4-5-6	654321	22.572
157	8-5	P5M5N6T 3D4	8	16	0-1-2-4- 5-7-8-10	456553	22.625
158	8-6	P5M7N5T 2S4D5	8	16	0-1-2-4- 5-6-8-9	545752	22.625
159	8-7	P5M6N6T 2S4D5	8	8	0-1-3-4- 5-6-8-9	546652	22.75
160	8-8	P6M5N5T 2S5D5	8	16	0-1-2-3- 5-6-7-10	555562	22.75
161	8-9	P6M5N4T 3S3D5	8	16	0-1-2-3- 5-7-8-9	554563	22.875
162	8-10	P4M4N8T 4S4D4	8	2	0-1-3-4- 56-7-9- 10	448444	23.00

Figure 3.10b continues

Serial Number	Class mark	Pitch class interval function	Note number	Number of arrangements	Note position	A.F notation	Dissonance Ratio
163	8-11	P4M7N4T 3S6D4	8	8	0-1-2-4- 5-6-8-10	464743	23.00
164	8-12	P5M5N6T 3S4D5	8	16	0-1-2-3- 6-7-9-10	546553	23.00
165	8-13	P4M6N4T 4S6D4	8	4	0-1-2-4- 6-7-8-10	464644	23.25
166	8-14	P5M5N5T 3S3D5	8	16	0-1-2-3- 5-6-7-9  0-1-2-3- 4-6-8-9	555553	23.25
167	8-15	P6M5N4T 3S4D6	8	8	0-1-2-3- 4-7-8-9	644563	23.25
168	8-16	P4M6N4T 3S7D4	8	8	0-1-2-3- 4-6-8-10	474643	23.375
169	8-17	P5M4N6T 3S3D5	8	16	0-1-2-3- 4-6-7-9	556453	23.375
170	8-18	P5M5N5T 2S6D5	8	16	0-1-2-3- 5-7-9	565552	23.375
171	8-19	P5M6N5T 2S4D6	8	8	0-1-2-3- 4-5-8-9	645652	23.375
172	8-20	P5M4N6T 2S6D5	8	8	0-2-3-4- 5-6-7-9	566452	23.50
173	8-21	P6M4N4T 4S4D6	8	4	0-1-2-3- 6-7-8-9	644464	23.50
174	8-22	P4M5N6T 3S3D5	8	16	0-1-3-4- 5-6-7-9	556543	23.625
175	8-23	P6M4N4T 3S3D6	8	8	0-1-2-3- 5-6-7-8	654463	23.625
176	8-24	P5M5N5T 2S5D6	8	16	0-1-2-3- 4-5-7-8	655552	23.75

Figure 3.10b continues

Serial Number	Class mark	Pitch class interval function	Note number	Number of arrangements	Note position	A.F notation	Dissonance Ratio
177	8-25	P5M5N4T 3S3D6	8	16	0-1-2-3- 4-6-7-8	654553	23.875
178	8-26	P4M5N6T 2S5D6	8	8	0-1-2-3- 4-5-6-9	656542	24.125
179	8-27	P4M5N5T 2S6D6	8	16	0-1-2-3- 4-5-6-8	665542	24.375
180	8-28	P4M4N5T 2S6D7	8	8	0-1-2-3- 4-5-6-7	765442	25.125
181	9-1	P7M7N7T 3S3D6	9	18	0-1-2-3- 5-6-7-9- 10	667773	25.80
182	9-2	P8M6N6S 6T3D6	9	9	0-1-2-3- 5-6-7-8- 10	676683	25.80
183	9-3	P6M9N6T 3S6D6	9	3	0-1-2-4- 5-6-8-9- 10	666963	26.00
184	9-4	P7M6N7T 3S7D6	9	18	0-1-2-3- 4-5-7-8- 10	677673	26.22
185	9-5	P6M6N8T 4S6D6	9	9	0-1-2-3- 4-6-7-9- 10	668664	26.44
186	9-6	P7M7N6T 3S6D7	9	18	0-1-2-3- 4-5-7-8- 9	766773	26.44
187	9-7	P6M7N6T 4S7D6	9	18	0-1-2-3- 4-6-7-8- 10	676764	26.55

Figure 3.10b continues

Serial Number	Class mark	Pitch class interval function	Note number	Number of arrangements	Note position	A.F notation	Dissonance Ratio
188	9-8	P6M7N6T 3S8D6	9	9	0-1-2-3- 4-5-6-8- 10	686763	26.66
189	9-9	P7M6N6T 4S6D7	9	9	0-1-2-3- 4-6-7-8- 9	766674	26.66
190	9-10	P6M7N7T 3S6D7	9	18	0-1-2-3- 4-5-6-8- 9	767763	26.77
191	9-11	P6M6N7T 3S7D7	9	18	0-1-2-3- 4-5-6-7- 9	777663	27.11
192	9-12	P6M6N6T 3S7D8	9	9	0-1-2-3- 4-5-6-7- 8	876663	27.66
193	10-1	P9M8N8T 4S8D8	10	10	0-1-2-3- 4-5-6-7- 8-9-10	888894	29.50
194	10-2	P8M9N8T 4S8D8	10	10	0-1-2-3- 4-5-6-8- 9-10	888984	29.70
195	10-3	P8M8N9T 4S8D8	10	10	0-1-2-3- 4-5-6-7- 9-10	889884	29.70
196	10-4	P8M8N8T 5S8D8	10	5	0-1-2-3- 4-6-7-8- 9-10	888885	29.90
197	10-5	P8M8N8T 4S9D8	10	10	0-1-2-3- 4-5-6-7- 8-10	898884	30.00

Figure 3.10b continues

Serial Number	Class mark	Pitch class interval function	Note number	Number of arrangements	Note position	A.F notation	Dissonance Ratio
198	10-6	P8M8N8T 4S8D9	10	10	0-1-2-3- 4-5-6-7- 8-9	988884	30.30
199	11-1	P10M10N 10T5S10D 10	11	11	0-1-2-3- 4-5-6-7- 8-9-10		33.18
200	12-1	P12M12N 12T6S12D 12	12	1	0-1-2-3- 4-5-6-7- 8-9-10- 11		36.50

65

As was previously mentioned, the “I” in *I Ching* has three meanings: “simple and easy,” “changing,” and “unchanging.” The Tai Chi compositional system demonstrates the connections between these characteristics of *I Ching* philosophy and the creation of music.

When one first glances at a musical composition, one observes the surface-level changes throughout, and judges the quantity of differentiation within the music, which can be “simple and easy” to determine using the Tai Chi system. The “changing” facet of the music means that one must carefully analyze a piece of music to determine the details of its construction, including form, tonal centers, harmonies, mood, and rhythmic variety. On the other hand, the “unchanging” facet of a composition gauges the level of stability of various musical elements. For example, if a piece maintains one consistent tonal center throughout, or utilizes similar rhythmic motives, the rhythm and tonal center are the

<sup>65</sup> Zhao, Xiao-sheng, *Tai Chi Composition System*, (Shanghai: Shanghai music press, July 2006.): page 103-111.

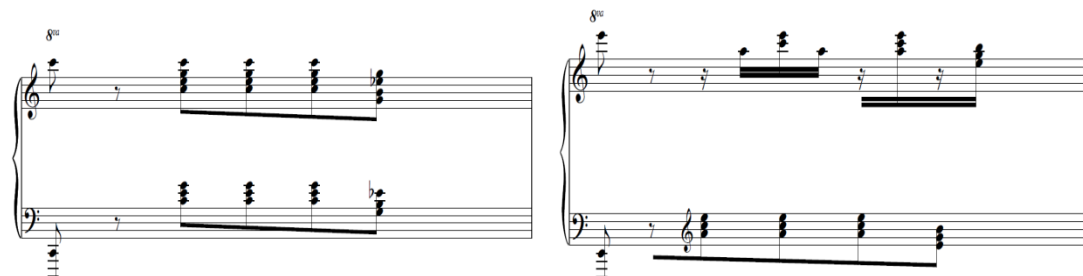
stable, “unchanging” elements. These unchanging musical elements anchor or provide framework for the piece, such as the purpose of composition, and allows the piece to flow in a manner that makes sense, despite its internal changes.

When analyzing a piece of music in the manner of Zhao Xiao-sheng, one must bear each of these three attributes in mind. One must determine the nature of several properties of the music, including structure, form, position (the pitch classes utilized), quantity (number of pitch classes and inversions used, as well as rhythmic density), state (types of harmonies employed, and the comparisons between them), nucleus (changes in or consistency of interval function), and phase (surface-level observation of the musical form and properties).<sup>66</sup> The following examples provide an illustration of Zhao’s method of musical analysis, which relies upon the musical application of the three *I Ching* characteristics mentioned above, as well as the information contained in the Pitch Class Elements Table.

**Example 2.11a: *Pour le Piano*, Debussy**

- Same quantity, different position, same state, same nucleus, different phase

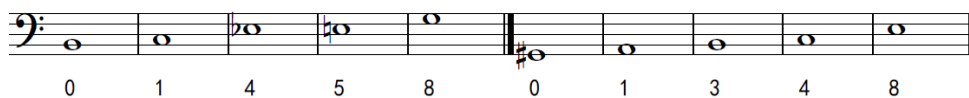
-----Same state, different phase-----



-----Different position-----

<sup>66</sup> Zhao, Xiao-sheng, *Tai Chi Composition System*, (Shanghai: Shanghai music press, 2006.) page 93-103.

## Structure

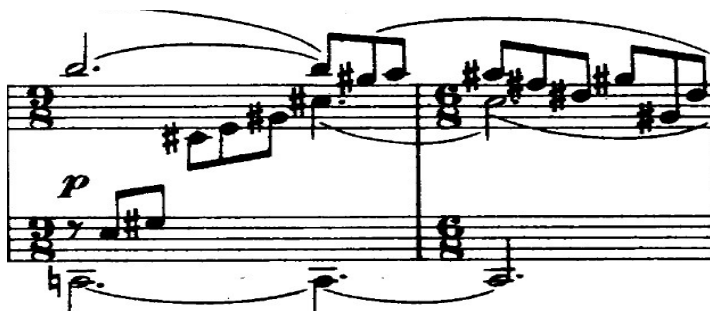


**SAME:** Note number: 5                      5  
 Serial number: 5-6                      5-12  
 Interval function: P2M4N2D2                      P2M3N2SD2  
**SAME:** Nucleus: PMN                      PMN

Example 2.11b: *Piano sonata #7*, Prokoviev (P.147)

- Same quantity, same position, different state, same nucleus, same phase

-----Different state-----



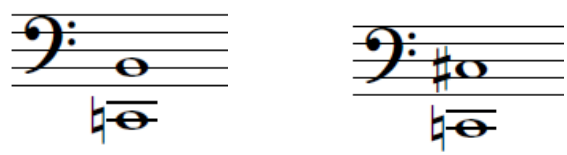
-----Same position, same phase-----

## Structure



**SAME** Note number: 6                      6  
 Serial number: 6-11                      6-2  
 Interval Function: P3M4N3S2D3,                      P4M2N3TS4D

SAME Nucleus: D



Chapter IV includes a detailed explanation of the musical elements of a passage from *Tai Chi*, which follows this method of analysis.

**Figure 3.12: Sixty-four hexagram pitch class set table.**

Tai Chi Sixty-Four Hexagram Pitch Class Analysis Table<sup>67</sup>

Serial Number & <i>Gua</i> Name	No. 1 <i>Kun</i> (坤)	No. 2 <i>Fu</i> (复)	No. 3 <i>Yi</i> (颐)	No. 4 <i>Tun</i> (屯)	No. 5 <i>Yi</i> (益)	No. 6 <i>Zhen</i> (震)
Class mark	2-6	2-6	4-21	4-28	6-25	4-4
Note position	0,1	6,7	0,1,6,7	5,6,7,8	0,1,5,6,7,8,	2,6,7,11
Interval function	D	D	P2D2T2	NS2D3	P4M2NS2D4T2	P2M2ND

<sup>67</sup> Xiao-sheng Zhao, *Tai Chi Composition System*, (Shanghai: Shanghai Music Press, 2006.) page???



Serial-number & Gua-Name	No.7 Shike (噬嗑)	No.8 Sui (随)	No.9 Wuwang (无妄)	No.10 Mingyi (明夷)	No.11Bi (贲)
Class mark	6-25	6-26	8-21	4-7	6-8
Notes position	0,1,2,6,7,11	2,5,6,7,8,11	0,1,2,5,6,7,8,1 1	3,6,7,10	0,1,3,6,7,10
Interval function	P4M2NT2S 2D2	P2M2N4T2S2 D3	P6M4T4S4D 6	PM2N2 D	P3M2N4T2S2 D2

Serial-number & Gua-Name	No.12 Ji-ji (既济)	No.13 Jia-ren (家人)	No.14 Feng (丰)	No.15 Li (离)
Class mark	6-24	8-2	6-3	8-19
Notes position	3,5,6,7,8,10	0,1,3,5,6,7,8,10	2,3,6,7, 10,11	0,1,2,3,6,7,10,11
Interval function	P3M2N2S4D3	P7M4N5T2S6D4	P3M6N3D3	P5M6N5T2S4D6

Serial-number & Gua-Name	No.16 Ge (革)	No.17 Tong-ren (同人)	No.18 Lin (临)	No.19 Sun (损)
Class mark	8-7-	10-1	4-7	6-8
Notes position	2,3,5,6,7,8,10,11	0,1,2,3,5,6,7,8,10,11	4,6,7,9	0,1,4,6,7,9
Interval function	P5M6N6T2S4D5	P9M8N8T4S8D8	PN2S2D	P3M2N4T2S2D2

Serial-number & Gua-Name	No. 20 Jie (节)	No.21 Zhong-fu (中孚)	No.22 Gui-mei (归妹)	No.23 Kui (睽)
Class mark	6-35	8-19	6-1	8-2
Notes position	4,5,6,7,8,9	0,1,4,5,6,7,8,9	2,4,6,7,9,11	0,1,2,4,6,7,9,11
Interval function	PM2N3S4D5	P5M6N5T2S4D6	P5M2N3S4D	P7M4N5T2S6D4

Serial-number & Gua-Name	No.24 Dui (兑)	No. 25 Lu (履)	No.26 Tai (泰)	No.27 Da-xu (大畜)
Class mark	8-20	10-1	6-26	8-10
Notes position	2,4,5,6,7,8,9,11	0,1,2,4,5,6,7,8,9,11	3,4,6,7,9,10	0,1,3,4,6,7,9,10
Interval function	P5M4N6T2S6D5	P9M8N8T4S8D8	P2M2N4T2S2D3	P4M4N8T4S4D4

Serial-number & Gua-Name	No.28Xu (需)	No.29 Xiao-xu (小畜)	No.30 Da-zhuang (大壮)	No.31 Da-you (大有)
Class mark	8-28	10-3	8-4	10-3
Notes position	3,4,5,6,7,8,9,10	0,1,3,4,5,6,7,8,9,10	2,3,4,6,7,9,10,11	0,1,2,3,4,6,7,9,10,11
Interval function	P4M4N5T2S6D7	P8M8N9T4S8D8	P6M6N5T2S4D5	P8M8N9T4S8D8

Serial-number & Gua-Name	No.32Guai (夬)	No.33Qian (乾)	No.34 Gou (姤)	No.35Da-guo (大过)
Class mark	10-6	12-1	10-6	8-21
Notes position	2,3,4,5,7,8,9,10,11	0,1,2,3,4,5,6,7,8,9,10,11	0,1,2,3,4,5,8,9,10,11	2,3,4,5,8,9,10,11
Interval function	P8M8N8T4S8D9	P12M12N12T6S12D12	P8M8N8T4S8D9	P6M4N4T4S4D6
Serial-number & Gua-Name	No.36 Ding (鼎)	No.37 Heng (恒)	No.38 Xun (巽)	No.39 Jing (井)
Class mark	8-28	6-25	8-4	6-25
Notes position	0,1,2,3,4,9,10,11	2,3,4,9,10,11	0,1,3,4,5,8,9,10	3,4,5,8,9,10
Interval function	P4M4N5T2S6D7	P4M2NT2S2D4	P6M6N5T2S4D5	P4M2NT2S2D4
Serial-number & Gua-Name	No.40 Gu (蛊)	No.41 Sheng (升)	No.42 Song (讼)	No.43 Kun (困)
Class mark	6-26	4-21	8-12	6-12
Notes position	0,1,3,4,9,10	3,4,9,10	0,1,2,4,5,8,9,11	2,4,5,8,9,11
Interval function	P2M2N4T2S2D3	P2T2D2	P5M6N6T3S4D5	P3M2N4T2S2D2

Serial-number & Gua-Name	No.44 Wei-ji (未济)	No.45 Jie (解)	No. 46 Huan (涣)	No.47 Kan (坎)
Class mark	6-24	4-2	6-3	4-19
Notes position	0,1,2,4,9,11	2,4,9,11	0,1,4,5,8,9	4,5,8,9
Interval function	P3M2N3S4D3	P3NS2	P3M6N3D3	PM2ND2
Serial-number & Gua-Name	No.48 Meng (蒙)	No.49 Shi (师)	No.50 Dun (遁)	No. 51 Xian (咸)
Class mark	4-20	2-1	8-20	6-8
Notes position	0,1,4,9	4,9	0,1,2,3,5,8,10,11	2,3,5,8,10,11
Interval function	PM2N2D	P	P5M4N6T2S6D5	P3M2N4T2S2D2
Serial-number & Gua-Name	No.52 Lu (旅)	No.53 Xiao-guo (小过)	No.54 Jian (渐)	No.55 Jian (蹇)
Class mark	6-35	4-19	6-1	4-2
Notes position	0,1,2,3,4,5	2,3,10,11	0,1,3,5,8,10	3,5,8,10
Interval function	PM2N3S4D5	PM2ND2	P5M2N3S4D	P3NS2
Serial-number & Gua-Name	No.56 Gen (艮)	No.57 Qian (谦)	No.58 Pi (否)	No.59 Cui (萃)
Class mark	4-20	2-1	6-26	4-10
Notes position	0,1,3,10	3,10	0,1,2,5,8,11	2,5,8,11
Interval function	PN2S2D	P	P2M2N4T2S2D3	N4T2

Serial-number & Gua-Name	No.60 Jin (晋)	No.61 Yu (豫)	No.62Guan (观)	No.63Bi (比)	No.64 Bo (剥)
Class mark	4-28	2-3	4-4	2-3	2-6
Notes position	0,1,2,11	2,11	0,1,5,8	5,8	0,1
Interval function	NS2D3	N	P2M2ND	N	D

The sixty-four hexagrams pitch class table reveals that the Tai Chi system has four overarching characteristics which are complexity and simpleness, compatibility, symmetry, and multiple solutions.<sup>68</sup>

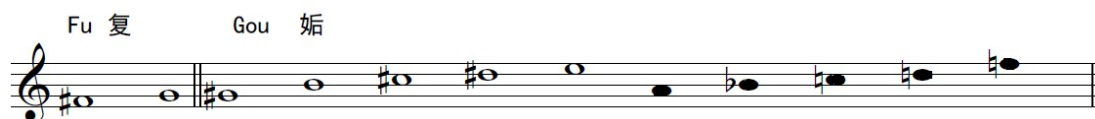
The Tai Chi system is distinguished by its emphasis on the need for opposite forces to work together. Dense and complex musical passages attain distinction by their contrast with simpler, calmer passages. In a similar manner, musical dissonance is embraced, as was discussed earlier in the chapter with regard to *Tai Chi's* dual tonal center (C and C#). "Compatibility," in the context of the Tai Chi compositional system, denotes a study of dissonance and consonance, and an acceptance of dissonance as a key element in the creation of interesting, challenging music. Symmetry, as depicted by the mirrored structure of the Tai Chi harmony and the equal-but-opposite nature of the yin-yang symbol, binds otherwise disparate musical elements in a manner that grants consistency and stability. Finally, the objective of the sixty-four hexagrams is to offer composers a broad variety of pitch class combinations, multiple solutions that permit the combination of as many or as few pitch class sets as are needed.

<sup>68</sup> Xiao-sheng Zhao, *Tai Chi Composition System*, (Shanghai: Shanghai music press, 2006.) page 195-200.

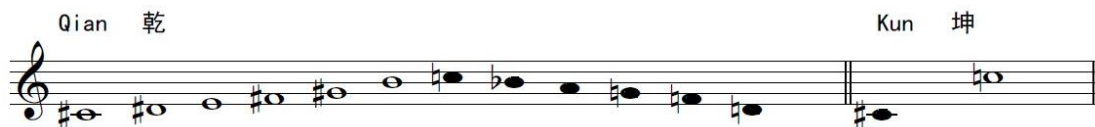
### b. Comparison of the Tai Chi System with Western Composition Systems

In the diagram of the sixty-four hexagrams, each of the symbols, known as *Gua*, has another symmetrical *Gua* which serves as its complement in the creation of a twelve-tone row. To determine the pair of *Gua*, one can use the serial number found in the Tai Chi Sixty-Four Hexagrams Pitch Class Analysis Table, plus or minus thirty-two. For instance, if a composer selects hexagram No. 2 (*Fu*, 复), and wants to create a twelve-tone row, he or she can use the formula  $2 + 32 = 34$ ; the symmetrical *Gua* for hexagram No. 2 is hexagram No. 34 (*Gou*, 姤).<sup>69</sup> The musical illustration of this process is depicted below.

#### Example 2.13a: No. 2 (*Fu*, 复) + No. 34 (*Gou*, 姤)<sup>70</sup>



#### Example 2.13b: No. 33 - 32 = 1; No. 33 (*Qian*, 乾) + No. 1 (*Kun*, 坤)<sup>71</sup>



<sup>69</sup> Xiao-sheng Zhao, *Tai Chi Composition System*, (Shanghai: Shanghai music press, July 2006.): page 205-212.

<sup>70</sup> Ibid.

<sup>71</sup> Ibid.

*Qian* is the only *Gua* that contains twelve notes without the assistance of a complementary *Gua*. It is the prototype of the Tai Chi scale. Viewed as two pairs of six-note pitch class sets, the yin and yang halves of *Qian* each break down into same-tonic iterations of the *Gong* and *Zhi* Chinese pentatonic scales. The yin half of *Qian* can be restructured as *Gong* and *Zhi* scales with tonic note “F,” while the yang half contains *Gong* and *Zhi* scales with tonic note “B.”

### Example 3.14

= B Gong 宫                      + B Zhi 徵

= F Gong 宫                      + F Zhi 徵

72

The combination of *Qian* and *Kun* is one of the most symbolically significant options within the Tai Chi system. Because *Qian* signifies heaven, and *Kun* signifies earth, the pair exemplifies the concept of opposite forces coming together. This assertion is also supported by the fact that *Qian*, with twelve notes, is the largest pitch class set in the sixty-four hexagrams table, while *Kun*, with two notes, is the smallest. The original meaning of *Kun* is “none” or “nothing;” while *Qian*, which contains every available pitch, can be viewed as all-encompassing, or “everything.” Within the context of the Tai Chi system, *Kun* is the paragon of the fusion of yin and yang, containing one yin note and one

<sup>72</sup> Xiao-sheng Zhao, *Tai Chi Composition System*, (Shanghai: Shanghai music press, 2006.) page 212.

yang note that constitute tonal centers of *Tai Chi*. It is the author's conception that because *Qian* represents everything, and *Kun* is at the core of *Tai Chi*, which affects the entire piece, *Kun* is therefore a reflection of *Qian* in *Tai Chi* and the sixty-four hexagrams.

Because Zhao Xiao-sheng partially modeled his *Tai Chi* compositional system on Schoenberg's twelve-tone serial system, there are many similarities in the musical structure of the two techniques, including an emphasis on formula that is considerably mathematical, and the treatment of notes as pitch classes freed from the responsibilities of traditional scales. Zhao takes this liberation of pitch classes even farther than Schoenberg; the *Tai Chi* system does not require the presentation of an entire tone row at the beginning of a piece, but instead permits the composer to utilize smaller melodic cells that eventually add up to a tone row. In this manner, pitch combinations are allowed to be as dissonant or consonant as the composer desires. What Zhao refers to as the "liberation of dissonance" is the *Tai Chi* compositional system's attempt to achieve the ideal of modern music liberating traditional serial thinking.<sup>73</sup>

The *Tai Chi* system is similar to Schoenberg's twelve-tone system in that both formulas use twelve unrepeat notes that follow a strict logical relationship and attain sonic variety through fragmentation and an array of available patterns. The difference between Zhao Xiao-sheng's *Tai Chi* system and Schoenberg's serial technique is that Zhao draws upon the philosophy of *I Ching*, in addition to the manipulation of musical material, to effect change. The essential principles of the twelve-tone row are to "strengthen thematic consistency" and create the "emancipation of dissonance."<sup>74</sup> The

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<sup>73</sup> Xiao-sheng Zhao, *Tai Chi Composition System*, (Shanghai: Shanghai Music Press, 2006.) page 214.

<sup>74</sup> Xiao-sheng Zhao, *Tai Chi Composition System*, (Shanghai: Shanghai Music Press, 2006.) page 215.



Tai Chi system does not require the twelve notes to be used equally. In fact, Zhao Xiao-sheng is of the opinion that sounding all twelve notes at the beginning of a piece of music is a waste of material. Playing the twelve important notes at the beginning and developing the music through repetition in differing orders is seen as two-dimensional and unsurprising. There are too few contrasting elements that lend to the creation of musical tension; therefore, the diversification of the musical style is restricted. In serial music, equality of pitch supersedes musical tension and unpredictability.

Traditional twelve-tone music is atonal; free of a pitch center that exerts greater influence over the music than any other pitch. Many Chinese composers attempt to use the Chinese pentatonic tonal system alongside the twelve-tone compositional system; however, theoretically, they still believe that atonality and tonality are two fundamentally opposed, and mutually exclusive, concepts. On the other hand, the thirty-two tone rows formed by the sixty-four hexagrams in Tai Chi theory have tonal and pentatonic elements. Some combinations of hexagrams yield scalar patterns that contain church modes, Chinese pentatonic scales, and other traditional Eastern scales. Thus, the Tai Chi compositional system bridges the gap between the traditionally opposite poles of tonality and atonality. From the perspective of yin-yang philosophy, atonality and tonality are concepts interspersed within Tai Chi theory in the same manner that, according to *I Ching* philosophy, “Yin has Yang, and Yang has Yin.”<sup>75</sup>

Many serial works of music employ twelve-tone rows that match up with the thirty-two pairs of the Tai Chi sixty-four hexagrams. When Zhao Xiao-sheng analyzes

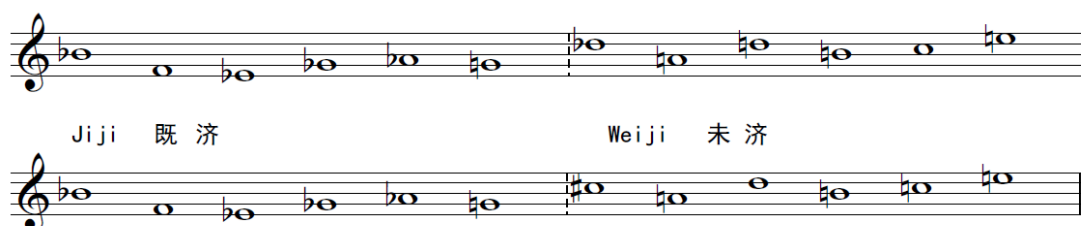
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<sup>75</sup> Chun-cai Zhou, Guang-di Liu, and Paul White, *The Illustrated Book of Changes* (Beijing: Dolphin Book Press, 2006.)

these pieces, he uses the Tai Chi system rather than the serial technique as his perspective lens. The following excerpts from Milton Byron Babbitt's *Three Compositions for Piano* and Wang Li-san's *Dream Sky* exemplify his approach.

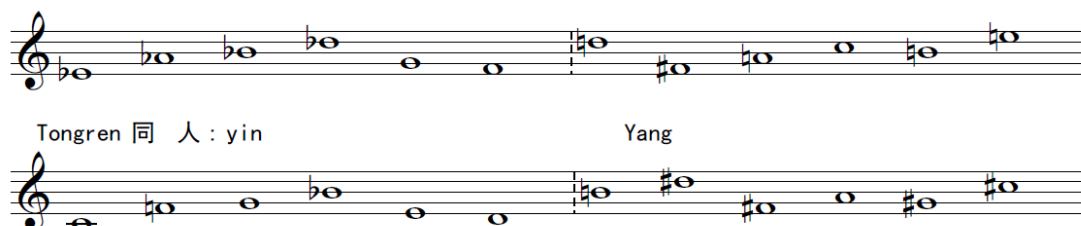
**Example 3.15a: Milton Babbitt's *Three Compositions for Piano***

- Twelve-tone row No.11, *Jiji* (既济) + *Weiji* (未济).



**Example 3.15b: Wang Li-san's *Dream Sky***

- Twelve-tone row No. 17, *Tongren* (同人) + *Shi* (师).



The examples above demonstrate that, before the Tai Chi compositional system was conceived, serial composers used pitch class combinations that would prove to suit the Tai Chi system well. Zhao Xiao-sheng's decision to apply *I Ching* philosophy and his cultural understanding of the world to his serial-based system offers an Eastern

perspective to a successful Western composition technique, resulting in a rich multicultural basis for composition, musical analysis, and the sharing of ideas.

## CHAPTER IV

### ANALYSIS OF ZHAO'S SOLO PIANO WORK *TAI CHI*

#### a. Formal Structure

According to Zhao Xiao-sheng, the most creative musical forms are the Western sonata form and the ancient Chinese *Tang Da Qu* form, which stems from the *Tang Da Qu* dance, and is a dance form dating back to the Tang Dynasty that has been used in traditional Chinese opera and melody art.<sup>76</sup> Those two forms reflect the cultural and cognitive difference between East and West. In creating *Tai Chi*, Zhao blended these two greatest forms in a unique “combination of Chinese and Western elements” that is distinguished by its “duality of structure.”<sup>77</sup>

The *Tang Da Qu* dance form has a three-part structure: The first part is a free introduction known as *San-xu* (散序), which does not have a set tempo, and is constituted by either an instrumental solo or ensemble performance. *San-xu* does not contain singing or dancing. The middle section is termed *Zhong-xu* (中序), which is marked by musical development. *Po* (破), the final section, adds an element of dance to the piece, which normally repeats several times. This final segment has a fast tempo that allows the piece to finish on a note of excitement.<sup>78</sup> *Tang Da Qu* form utilizes an overarching tempo scheme of “Free (散) – Slow (缓) – Medium-fast (中速) – Fast (快速) – Free (散),” which corresponds rather loosely to the three sections of the structure, according to the

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<sup>76</sup> Chun-cai Zhou, Guang-di Liu, and Paul White, *The Illustrated Book of Changes* (Beijing: Dolphin Book Press, 2006.)

<sup>77</sup> Xiao-sheng Zhao, *To Music Holy Place*, (Shanghai: Shanghai Music Press, 2006.): page 167-171.

<sup>78</sup> Dong Yie, “Music Structure of Tang da Qu”, *Musicology of China* 3 (1989)

composer's desires. *Tai Chi* employs an arch form that contains attributes from *Tang Da Qu* dance form and Western sonata form.

Zhao's notes in the score divide *Tai Chi* into eight sections: "*Po* (破), *Cheng* (承), *Qi* (起), *Ru* (入), *Huan* (缓), *Yong* (庸), *Ji* (急), and *Shu* (束)." This structure implies the eight diagrams of Tai Chi theory, the *Ba-gua*. The form of the piece is not entirely dictated by tempo; rather, a new section begins when Zhao introduces new musical material, such as different hexagrams, rhythms, or melodic content. Since the tempo structure is derived from the *Tang Da Qu* dance form, "*San* (散), *Huan* (缓), *Yong* (庸), *Ji* (急), *San* (散)," or "Free – Slow – Medium-fast – Fast – Free," the tempo changes sometimes align with formal section changes, but not always.

The composer's analysis indicates that the eight formal sections of *Tai Chi* should be regarded as an arch form, or reversed recapitulation sonata form, with sections A, B, and C comprising the exposition; D standing for development; and C1, E, B1, and A1 serving as the reversed recapitulation. The typical arch form is based upon repeating the sectional structure in reverse order to produce a palindrome, as in "ABCBA." The form of *Tai Chi* alters this arch form to create "ABC (D)C(E) BA," in which the "D" section is the development and, in the author's estimation, the "E" section is an insertion of new material within the reversed recapitulation.

The *Tang Da Qu* structure coincides with the reversed recapitulation sonata form as follows:

1. *Po*, 破 (mm. 1-11): In the original *Tang Da Qu* dance form, this is the final section with a tempo marking of *presto*, but in *Tai Chi*, it is introduced at the beginning of the piece and the tempo marking is *largo di molto*. On its own, *Po* could be “A.”
2. *Cheng*, 承 (mm. 11-25): The author asserts that sections B and C fall within this formal segment, which retains the *largo di molto* tempo of the *Po* segment. The development commences within this segment as well, at m. 23.
3. *Qi*, 起 (mm. 26-45): The D section continues throughout this segment, which is marked *adagio*.
4. *Ru*, 入 (mm. 46-53): This portion of the development is distinguished from the *Qi* segment by frequent changes in time signature.
5. *Huan*, 缓 (mm. 54-64): The D proceeds with a *lento* tempo indication.
6. *Yong*, 庸 (mm. 65-75): The end of the development section and all of C1 are contained in this segment, which is marked *moderato*.
7. *Ji*, 急 (mm. 76-91): *Ji* corresponds to the E section, with a tempo marking of *presto*.
8. *Shu*, 束 (mm. 92-103): The final segment is composed of sections B1 and A1 at the *tempo primo, largo di molto*.

The abovementioned structural development is in line with the structural characteristics of traditional Chinese music. The music takes us through the range of emotions represented by Tai Chi theory’s *Ba-gua* (eight diagrams); in a manner reflecting

the piece's arch form, the musical material gradually shifts from a simple, well-ordered beginning to a more complex and discordant disorder, then progresses by degrees back toward a sense of simple order as the work culminates. The increasing complexity of *Tai Chi* is achieved by introducing musical material slowly through an additive process.

Below are excerpts from the corresponding sections of *Tai Chi*:

**Example 3.1a: A, mm. 1 & 2**

The musical score for Example 3.1a: A, mm. 1 & 2, is written for three staves. The first staff is empty. The second staff, in treble clef, contains a melodic line starting in the second measure with eighth notes and triplets, marked with '3' and brackets. The third staff, in bass clef, contains a bass line starting in the first measure with eighth notes and triplets, also marked with '3' and brackets. The music is divided into two measures by a vertical bar line.

Example 3.1b: A1, m.88

Example 3.1b: A1, m.88. This musical score is written for three staves in 3/4 time. The top staff features a melodic line with a half rest, followed by eighth notes, and a final half note with a fermata. The middle staff contains a complex rhythmic pattern with multiple triplets (indicated by '3' and brackets) and slurs. The bottom staff has a half rest followed by a half note with a fermata.

Example 3.2a: B, m.11

Example 3.2a: B, m.11. This musical score is written for three staves in 3/4 time. The top staff begins with a key signature change to one sharp (F#) and a common time signature, followed by a half note and a half note with a fermata. The middle staff features a melodic line with slurs and sixteenth notes, with the number '6' appearing above the staff. The bottom staff has a half rest followed by a half note with a fermata.



Example 3.2b: B1, m.86



Example 3.3a: C, m.17



Example 3.3b: C1, m.61



In addition to the perspective lenses of *Ba-gua* and the arch form, the formal structure of *Tai Chi* can be viewed in relation to that of ancient Chinese poetry. In ancient China, musical compositions borrowed their form from poems: *Qi*, 起 (starting); *Cheng*, 承 (undertaking); *Zhuan*, 转 (turning); and *He*, 合 (closing). With regard to *Tai Chi*, *Qi* represents the exposition, the combination of *Cheng* and *Zhuan* comprise the development, and *He* corresponds to the recapitulation.

The ancient Chinese scholar of the Qing Dynasty, Liu Xi-zai, made the following statement in the *Yi Gai* regarding ancient Chinese poem form:

起、承、转、合四字，起者，起下也，连合亦起在内；合者，合上也，连起亦在内；中间用承用转、皆顾兼趣合也。<sup>79</sup>

This text explains the relationship between *Qi*, *Cheng*, *Zhuan*, and *He*. According to Liu Xi-zai, *Qi* is in *He* and *He* is in *Qi*, which means that the beginning and ending sections act in cooperation with each other. *Cheng* and *Zhuan* form a bridge between *Qi* and *He* by acting as transition, development, or connective material. Therefore, the four structural sections are dependent upon one another, interacting with rigorous logic. This ancient poem form, with its connotations of dialectical connection between sections, echoes the structure and logical assertions contained in *Tai Chi*.

## **b. Thematic and Tonal Structure**

In the first formal section, *Po*, the melodic material focuses on two low notes: C and C#. As discussed in Chapter III, these two clashing notes constitute the dual tonal center of the entire piece, and are therefore of singular importance. The hexagram in the

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<sup>79</sup> Xi-zai Liu, *General Arts*, (Shanghai: Shanghai Ancient Books Press, 1982)

Tai Chi system that is composed of C and C# is referred to as the *Kun Gua* (*Kun diagram*); *Kun* refers to the earth. In *Kun*, C represents yin and C# represents yang; these connotations find their origin in the yin-yang philosophy of *I Ching*.

**Example 3.4: Tonal center of *Tai Chi*: C and C# (Db)**



Typically in music theory, the tonal center of a work or passage is a single note; for example, the tonal center of E major is E, and the tonal center of G *gong* (宫) is G. However, in *Tai Chi*, both notes of the *Kun Gua* are equally significant. The yin and yang notes are repeated many times in differing ranges, which can be viewed as an expression of the vast and abstract nature of the universe.

In the second section, *Cheng*, the melody incorporates an irregular repetition of tritones and minor second intervals that lack a set pattern.

**Example 3.5:**



The soft, pure tone and spatial displacement lend this section a misty feeling and transport the audience to an ethereal musical world.

The melody of *Qi*, the third section, is a unison line for both hands that is separated by four octaves. This material is repeated an abundance of times throughout *Tai Chi*, in various registers and consisting of different rhythms.

**Example.3.6: m.27**

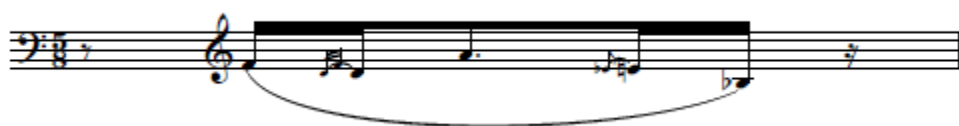


In section five, *Huan*, the entire twelve-tone row is played for the first time; it is the melodic pinnacle of the piece, and it comes at the moment within the length of *Tai Chi* that forms the golden ratio (0.618), said to be the most perfect mathematical ratio because it is found in nature.<sup>80</sup> The yin and yang notes are employed skillfully throughout the section: they form bass note pedals in the left hand that span an octave and then two octaves; they form Tai Chi harmonies in both hands; and they play a part in the left-hand melody, which achieves its greatest complexity in this section due to the use of all twelve

<sup>80</sup> Xiao-sheng Zhao, *Tai Chi compositional system*, (Shanghai: Shanghai Music Press, 2006.) page 190.

tones in the tone row. The harmonies in this section are made up of vertically stacked melody notes from section three, *Qi*, demonstrating the close relationship and easy interaction of musical material in *Tai Chi*.

**Example 3.7: The harmonies are created by the sustained notes of the melody stacked in thirds**



Some of the melodic material and rhythmic content of the second section is transformed and echoed in section six, *Yong*. Melodic cells are re-voiced or given new notes with the same contour; rhythmic patterns are expanded or condensed but remain recognizable, such as sixteenth-note sextuplets becoming eighth-note sextuplets with the same articulation pattern.

**Example 3.8:**

**Section II**



**Section VI**





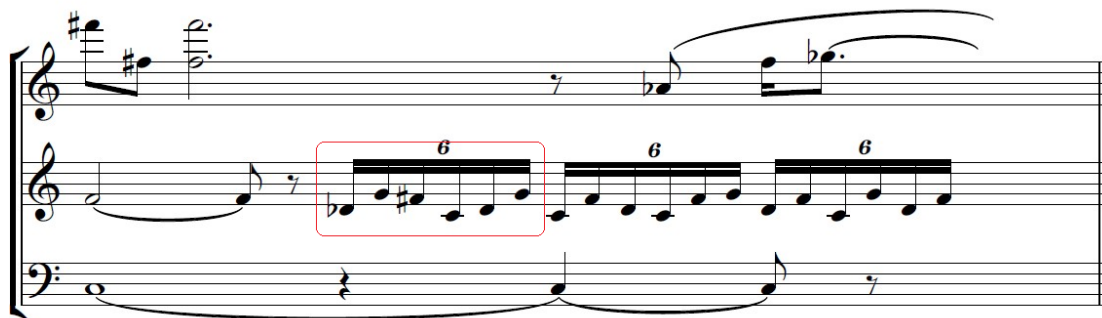
lonesome sound of the beginning. The *Shu* section starts, providing a reversed recapitulation that mirrors the opening of *Tai Chi*. As it is stated in the *Book of Changes*, “万物始于一而归于一,” “Everything starts on one and ends on one.”<sup>81</sup> The piece offers a final iteration of yin with yang, oscillating between the two pitches until the final C sounds. At the close of the piece, the music and the audience have come full circle, structurally and emotionally. We end with the same sense of anticipation we felt at the beginning as the spare sounds fade into silence.

### c. The Sixty-Four Hexagrams of *Zhouyi* Theory

The entirety of the melodic and harmonic material utilized in Zhao’s *Tai Chi* can be found in the sixty-four hexagrams. Below are some examples of the pitch classes of several *Gua* that are used in the composition of this piece.

In section two, *Cheng*, the middle line of sextuplets utilizes the *Yi Gua*.

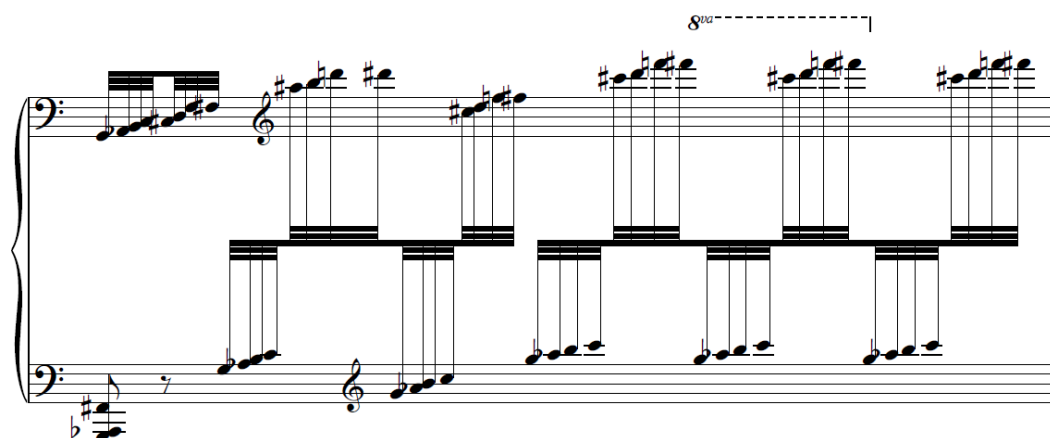
#### Example 3.10: *Yi* (颐) C#, F#, G, C



<sup>81</sup> Chun-cai Zhou, Guang-di Liu, and Paul White, *The Illustrated Book of Changes* (Beijing: Dolphin Book Press, 2006.)

Example 3.11 shows two musical passages that make use of the *Wuwang Gua*.

**Example 3.11a: *Wuwang* (无妄) C#, D, F, F#, G, G#, B, C**



**Example 3.11b:**



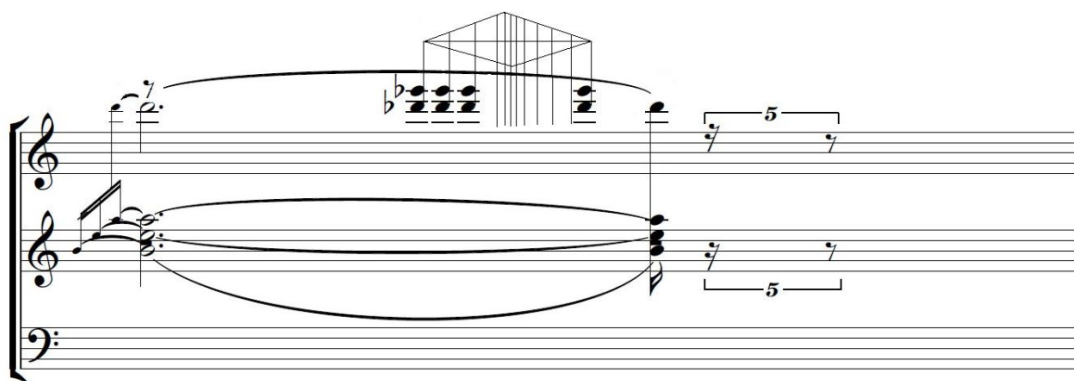
**d. Rhythm and Meter**

Zhao Xiao-sheng uses some improvisational, aleatoric techniques to add a feeling of unexpected surprise to an already emotionally rich and theoretically complex piece. One of these techniques is referred to as variable rhythm, which is depicted below as vertical lines without noteheads that increase and decrease in frequency according to an approximation of notes or chords played. The technique is aleatoric in nature because the

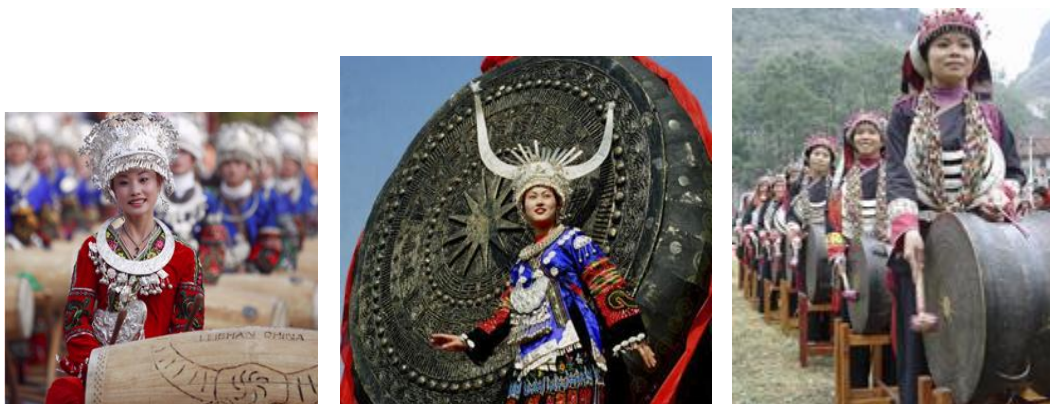


composer's notes are guidelines for the performer, who makes the final decision concerning how many notes to play and at what definite tempo; therefore, Zhao has designed to leave this portion of the music to chance. The Chinese connotation of variable rhythm is a sense of random change, because the passage does not have exact rhythm.

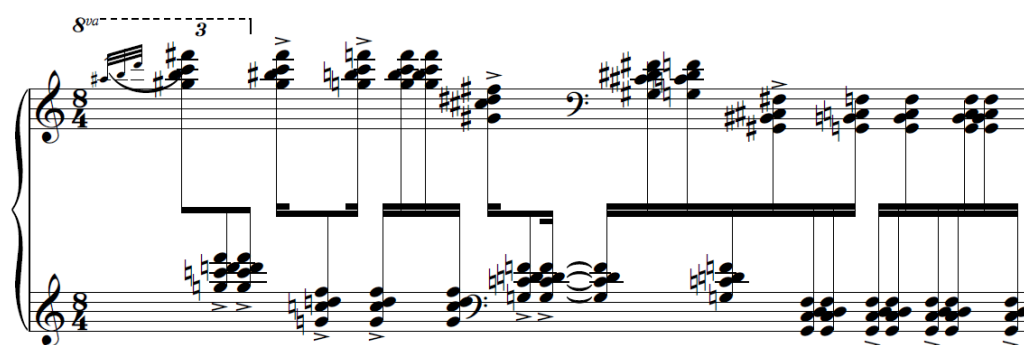
### Example 3.12: Variable rhythm



Another uncommon technique employed by Zhao Xiao-sheng is the *Yunnan Tong Luo (Gong)* rhythm. The rhythm comes from the *Tong Lou* dance, an ancient dance performed in the *Yunnan* province by the *Miao* and *Zhuang* nationalities. This dance presents the high-spirited, ebullient sentiments of the people from this location; a passionate and upbeat celebration, it was performed at festivals and as part of a common social interaction amongst visiting friends. The *Yunnan Tong Luo* rhythm was played on a variety of drums, such as those pictured below, wherein the rhythm is being performed by people in the traditional dress of the *Yunnan* province.



**Example 3.13: Yunnan Tong Luo rhythm**



Sections four and five of *Tai Chi* bear mentioning because they use a plethora of different and complex metric markings. For example, in section four, known as the *Ru* section, the procession of meter markings includes 7/8, 8/8, 7/8, 5/8, 6/8, 10/8, and 5/8 in succession, with a change in meter every one or two bars. Section five, the *Huan* section, employs the rare time signature 18/16, among other markings. Metric complexity is another unique element of this piece.

#### **e. Harmony**

As mentioned before, the ubiquitous Tai Chi harmony featured in *Tai Chi* exemplifies the combination of yin and yang. Its several intervals include perfect fifths,

major and minor seconds and thirds, and tritones. Zhao uses specific pitch classes and intervals extracted from the Tai Chi harmony to suit a certain musical passage. Example 3.9 reveals the yin-yang combination present in the treble staff in measure 45 of section four. Focusing on the lowest and highest pitch classes along the staff, the first yin pair is F#-D#, which proceeds to a syncopated yang (F#-D). These two pairs alternate once more before finishing the measure with yin (half notes on F# and D#). Similar yin-yang combinations derived from the Tai Chi harmony can be identified frequently throughout *Tai Chi*.

**Example 3.14: Tai Chi Harmony, m. 46**



### f. Layers

As with many structural aspects of *Tai Chi*, the number of musical layers employed at any given moment varies significantly, from two to seven that span the lowest to highest ranges of the piano. The layers are organized so that they stay within distinct boundaries determined by register and do not interfere with one another. Each layer maintains an independence of sound, continuity, and coherence, and strives to find the proper balance between the musical and the spiritual.

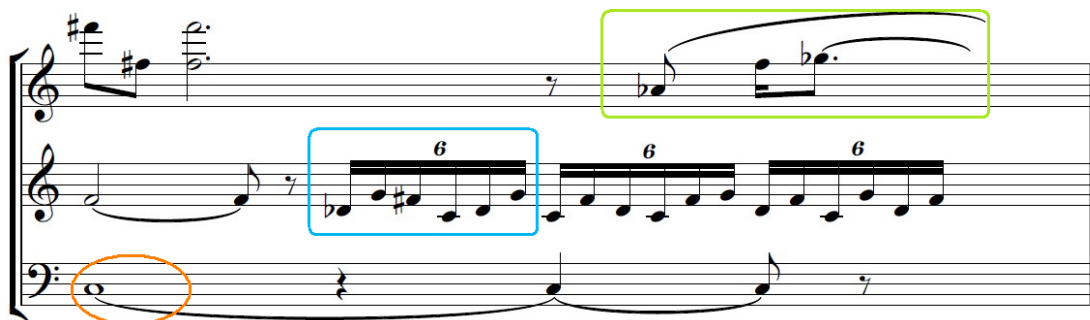
#### Example 3.15: Five layers mm.3 & 4

The musical score for Example 3.15 is written in 6/4 time and consists of four staves. The score is divided into two measures, mm.3 and mm.4. The following table summarizes the five highlighted layers:

Layer	Staff	Register	Instrumentation
1	Staff 1	High	Flute
2	Staff 2	High	Violin
3	Staff 2	Mid	Violin
4	Staff 3	Low	Cello
5	Staff 4	Low	Double Bass

Depicts five easily distinguished musical layers. The following example demonstrates three layers. The bass is a pedal tone on C, which is derived from the sixty-four hexagrams' *Kun* (坤); the middle layer is comprised of tones from the *Yi Gua* (C#, F#, G, C); and the melody is in the top level.

### Example 3.16



### g. Imitation of Traditional Instruments and Tone Color

In Chinese music, it is common for composers to write music that imitates the tone of traditional Chinese instruments. In *Tai Chi*, Zhao Xiao-sheng simulates the sounds of the *Gu Qin* (an ancient seven-string instrument related to the zither) and *Gu Zheng* (a much larger version of the *Gu Qin* that was developed later). As mentioned in the previous section, *Tai Chi* contains a variety of different register-spanning musical layers; in the same manner, the *Gu Qin* can produce three distinct basic tone colors depending upon musical register and performance technique. The first tone color is termed “scattered sound” (散音), which means a sparse tone created by plucking the strings with the right hand. “Pressed tone,” also known as “walking tone” (按音或走音),

is achieved by pushing the left-hand finger down and wiggling it to produce vibrato, while plucking with the right hand; of the three tone colors, this is the most sustained. The highest of the three tone colors consists of the overtone series (泛音). To play overtones on the *Gu Qin*, the performer lightly touches one string with the left hand and plucks it with the right hand; the resultant overtone will have a ghostly, transparent quality that may remind the listener of soft birdsong.

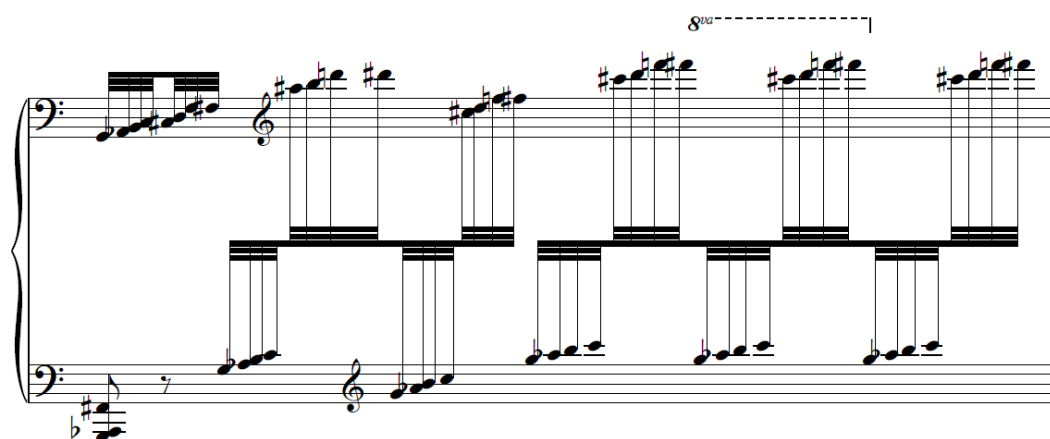
The bass notes C and C#, which feature so prominently within *Tai Chi*, are often played as pedal tones with grace notes as though an open string is reverberating. This compositional technique, depicted below, is the paragon of the scattered sound tone quality.

**Example 3.17: *Gu Qin* open string, scattered sound m.1**



In addition to emulating the tone colors of the *Gu Qin* and *Gu Zheng*, Zhao decided to imitate the performance technique in some passages of *Tai Chi*. The following example demonstrates a replication of a *glissando* as it would be played on the *Gu Zheng*, the scalar thirty-second notes acting as a fingernail strumming the strings up and down to effect a waterfall of sound.

**Example 3.18: Imitation of a *Gu Zheng* glissando**

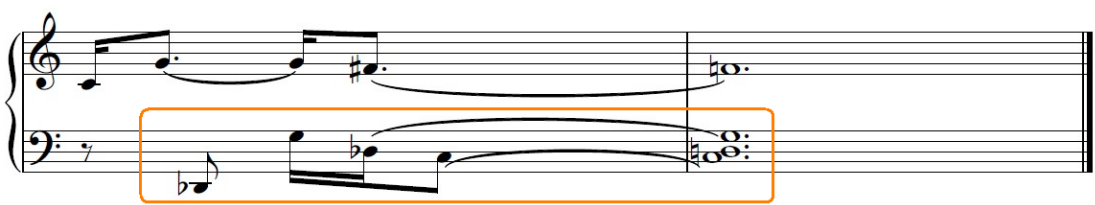


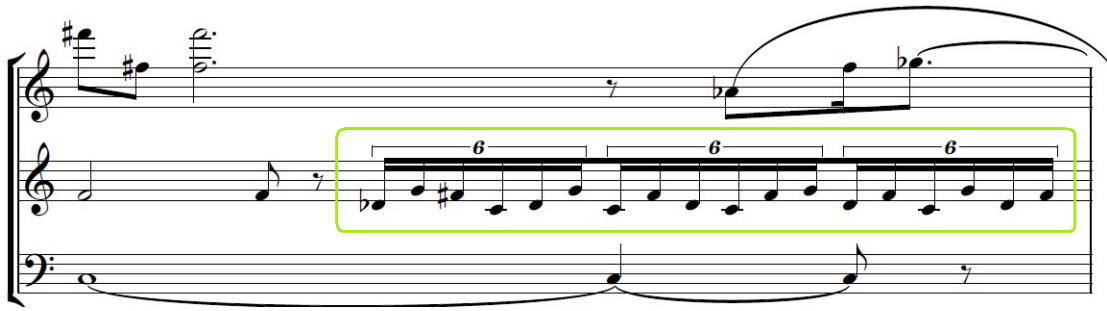
*Tai Chi* makes use of many varied tone colors from diverse traditional Chinese instruments, such as the gong, small bell, *er-hu* (a two-stringed instrument with a long neck and snakeskin drum at the bottom, played with a bow), bamboo flute, *xiao* (wooden flute), and *sheng* (a wind instrument consisting of a set of bamboo pipes and keys that, when pressed with the fingers, dampen or open them, like a small organ). In every phrase of the piece, the audience can trace the tone color back to that of a traditional Chinese instrument.

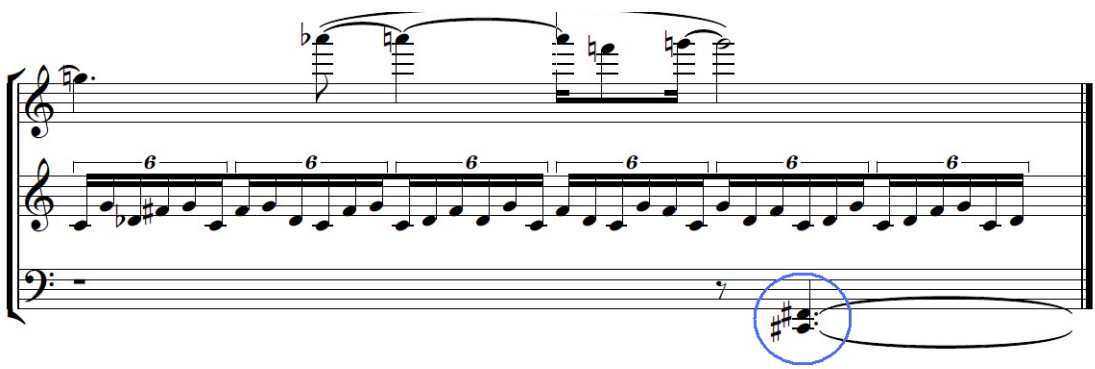
**h. Use of Pitch Class**

Employing the characteristics of *I Ching* philosophy as its foundation, *Tai Chi* uses the properties of nature and a pitch class theory based on twelve-tone serialism to forge a special method of analysis. Utilizing Zhao's pitch class elements table, one can see that the following musical example from *The Book of Changes* maintains the same body (basic musical material) and position (range), while the state (harmony), nucleus (interval function), and phase (visual appearance of the music) change.

**Example 3.19: Musical Passage Analyzed Using the Pitch Class Elements Table**

a. 

b. 

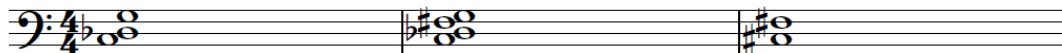
c. 

Interval Function: P4M2NT2S2D4

Serial number:6-25

Different Nucleus

a                      b                      c





### **i. Summary**

Tai Chi theory reflects the close relationship of various musical elements, and the level of change versus consistency contained within these elements, which include pitch, rhythm, and structure. The pitch classes drawn from the sixty-four hexagrams begin with the simple, two-note *Kun Gua* (坤), expand to form a complex twelve-tone row, and then diminish once more to C and C#. The rhythm fluctuates between free style (as in the unmeasured *Tang Da Qu* structure) and regulated pattern (such as the sections that utilize multiple time signatures). In the structure, the eight sections are based upon the *Ba-gua* and *Tang Da Qu* dance form. Designed by the blueprint of a composition system whose roots are in Western music theory and serialism, and given greater depth by the infusion of Chinese philosophy and cultural traditions, *Tai Chi* represents a perfect combination of Chinese and Western compositional thought.

## CONCLUSION

Zhao Xiao-sheng is the paragon of innovative composition techniques for piano. His Tai Chi composition system is the most profound combination of traditional Chinese elements and novel Western theory to date, encompassing the ancient philosophy of *I Ching* (also known as *Zhouyi* Theory, and in written form, *The Book of Changes*), traditional Chinese pentatonic scales, and Western serialism. Discouraged by the thought that composers no longer had fodder for original composition, Zhao found a muse in the concept of serialism, believing that this system provided the potential for viewing music composition through a new perspective lens. In the creation of his Tai Chi system, he determined to fuse twelve-tone music with traditional modes and scales, and made use of pitch class sets that, employing the logic of *I Ching*, are organized in a less stringent manner than that of traditional serialism. On the other hand, there are fertile grounds for comparison between Tai Chi's thirty-two pairs of twelve-tone rows and Schoenberg's twelve-tone system, as explored in Chapter III. Zhao Xiao-sheng composed *Tai Chi* in order to expound and test out his new compositional system.

In Chapter II, Zhao Xiao-sheng's use of *I Ching* philosophy to create the *Tai Chi* compositional system was presented in contrast with John Cage's use of the divination component of *I Ching* to create variable charts for his composition, *Music of Changes*. Many aspects of their pieces differ, including the formal structure, rhythmic structure, notation, and harmonic language. More importantly, the composers' approaches to *I Ching* differ, due to their dissimilar cultural and national backgrounds. In the author's opinion, John Cage does not fully comprehend *I Ching* philosophy; therefore, rather than

utilizing multiple aspects of *I Ching* or alluding to its comprehensive, “big-picture” worldview, he only draws upon the divination aspect and the visual style of the diagrams in order to design his own charts and employ chance operations when composing *Music of Changes*. Cage’s decision to “flip a coin” and allow probability or chance to determine various aspects of his work results in a lack of logical guidelines for the listener or performers. On the other hand, Zhao’s *Tai Chi* compositional system is very consistent with the philosophical explanation and details of *I Ching*, but *Tai Chi* for solo piano lacks the chance operations that lend some modern compositions an interesting and unexpected angle. Thus, the combination of the styles of Cage and Zhao would serve as a worthy direction for new music to pursue in the future.

From the performance practice perspective, *Tai Chi* is influenced by traditional Chinese instrumental techniques, which lend a historical sound that provides contrast with the piece’s modern tone colors. The emulations of traditional Chinese instruments also set the mood throughout the piece, allowing the listener to experience a spectrum of emotions as the spare, atmospheric sound acquires and later loses motion. The emotive aspects of *Tai Chi* depend upon the performer’s investment in the music; some of the passages that imitate the *Gu Qin* are sparse and meditative, but the performer must appreciate that the sound of the pedal tones fading into silence as part of the music, rather than a moment of relaxation. If the performer loses focus, these passages will fall flat, with no sense of tension or continuation connecting the phrases. In Chinese piano performance practice, the concept of carrying music and silence through the phrase is represented by breathing: the performer must hold his or her musical breath through each

long phrase. The emulation of traditional Chinese instruments, both in timbre and melodic content, unite with the cultural understanding of performance practice to demonstrate the nationalism of the piece.

Music is the most intangible and elusive of all the art forms. It cannot be experienced visually, touched physically, or tasted, though its power can affect each of these senses; one can only perceive it aurally, logically, and emotionally. Music's incorporeal nature proffers a canvas for philosophers and theorists to utilize in their explanations of the relationship, connection, and similarity of structure among all life and qualities in the universe. The ancient Chinese philosophy *I Ching* provides an overview of the balance between humankind and the universe, which helps people to organize the conflicting concepts of contradiction and unification in their world. Zhao Xiao-sheng was aware of the compositional potential of the vast and detailed *I Ching* philosophy when he drew upon it to create the new compositional system from which emerged his solo piano work *Tai Chi*. The Tai Chi compositional system allows musicians and audience members to experience the power within the changing, unchanging, and simple and easy elements of the music. In addition to seeking these elements, the enlightened pianist must understand the structure and theory behind each work, and must use the tone of the instrument, phrase breaths, and his or her emotional faculties to play from the mind and the heart, willing the physical self to transmit the music to the audience's mind and heart and let it resonate. Regardless of the origins or dwelling places of the performer or the audience, this physical, emotional, logical, and spiritual collision will serve as a witness to the transcendent power of music.

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