Twenty Chinese Instruments and "Concerto East and West." (Original Composition).

Wayne Yunwei Chow

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Twenty Chinese instruments and *Concerto East and West.*
[Original composition]

Chow, Wayne Yunwei, D.M.A.

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TWENTY CHINESE INSTRUMENTS
AND
CONCERTO EAST AND WEST

A Dissertation
Submitted to the Graduate Faculty of the
Louisiana State University and
Agricultural and Mechanical College
in partial fulfillment of the
requirements for the degree of
Doctor of Musical Arts

in
The School of Music

by
Wayne Yunwei Chow
B.M., Pittsburg State University, 1983
M.M., Pittsburg State University, 1984
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ABSTRACT

The first part of this dissertation describes twenty Chinese music instruments which appear to be the most popular instruments of the Han national people of China (China has fifty-six nationalities and Han is the majority). The reason for selecting these twenty, out of more than two hundred Chinese instruments existing today, is that they are the basic instruments of a modern Chinese orchestra. Instruments selected are the following: Di-zi, Suo-na, Guan-zi, and Sheng from the wind family; Pi-pa, Liu-qin, Yue-qin, Ran, San-xian, Yang-qin, and Zheng from the plucked string family (all strings are divided into two categories: strings which are plucked by fingers or struck by hammers, and strings which are played by a bow); Ban, Gu, Bo, and Luo from the percussion family; and Er-hu, Gao-hu, Zhong-hu, Da-hu, and Di-hu from the bowed string family. Each instrument is approached from its historical, structural, notational and idiomatic point of view, together with an illustration.

The second part is an original musical composition of the author, entitled *Concerto East And West*. It is written for two orchestras in the concertato style. Orchestra I is a medium sized Chinese ensemble employing nine different instruments described in part one, including the Di-zi, Suo-na, Pi-pa, San-xian, Gao-hu, Er-hu, Zhong-hu, Dage-hu, and Di-hu. Orchestra II is a Western symphony orchestra. The composition is composed
in a single movement. All themes are original and tonal. Besides these tonal themes there is a free atonal pitch-class motif alternating throughout the entire composition. The orchestration is based on the contrast between the two orchestras and the combination of Chinese and Western instruments, creating a very colorful sound.
PART I

TWENTY CHINESE INSTRUMENTS
Introduction

The history of Chinese instruments can be traced back to over four thousand years. According to early sources, the Chinese people bound some bamboo pipes together to make a wind instrument called Yue during the time of Xia Yu (2140 B.C.)¹. It was used for the dance of victory over the flood. In 1931, another instrument called Xun was found through excavation. It also could be thousand years old. Shaped like an egg, the Xun was made of pottery clay and had a mouth hole on the small end and finger holes around it. Its dreary sound was used to express sadness and depression.² Up to the late Zhou dynasty (450 B.C.), more than seventy types of instruments already existed. They were classified in eight categories, called the Ba-yin (eight-sound), according to the material of which they were made: Jin (gold), Shi (stone), Tu (dirt), Ge (skin), Si (string), Mu (wood), Pao (gourd), and Zhu (bamboo). During thousands of years, some of them vanished and some of them developed into the modern versions. Also, many kinds of instruments were introduced to the Han people from other nationalities and countries.

Today Chinese instruments may be classified into one of four families according to the playing techniques and tone colors:

¹Xia Yu: the first emperor of Xia Dynasty 2140 B.C. (Xin Hua Zi Dian Appdix P.5)
²Dengtiao Hu, Chinese Orchestration, p.27
1. Chui-guan (wind)
2. Tan-po (plucked string)
3. La-xian (bowed string)
4. Da-ji (percussion)

Three different kinds of notation are used today to write instrumental music:

1. Jian-pu (number notation). The Jian-pu was originated from France in the eighteenth century. It was introduced into China from Japan in the early twentieth century and it has had a popularity over other notations ever since. This notation uses the Arabic numbers, 1 through 7, to represent a musical scale. A full description is found in the Appendix. Example 1 is a Jian-pu compared to staff notation.

Ex. 1.

1=Ab 2/4

\[
\begin{array}{c}
5653 & 5653 & 2356 & 3532 & 1 \cdot 2 \cdot 3 \cdot 5 & 2321 \cdot 6 \cdot 1 & 5 - \\
\end{array}
\]


---

1 In 1742, the Frenchman Rousseau proposed a figure-notation which was systematized later by Galin, Paris, and Cheve, and was called the Galin-Paris-Cheve Method. (New Grove Dictionary of Music and Musicians)
2. Staff notation. This notation is adapted from Western countries. Only few Chinese scores are notated that way and most of them are for large ensembles or for ensembles including Western instruments.

3. Zi-pu (character-tablature). This is the oldest notation in China. It uses Chinese characters to show the pitch levels and playing techniques, like fingerings and positions. One of the earliest preserved Zi-pu, called Jieshidiao Youlanpu, was written in the Sixth century by Liang Qiuling. The Zi-pu now has been gradually replaced by the Jian-pu. Only percussion scores are still written in this notation; more details are found in Chapter IV. The following example is a Zi-pu compared to staff notation. Ex. 2.

(---, Collect Solo Music of Chinese Instruments, P.71)
Most of the musical examples in this dissertation are in the staff notation transferred from the Jian-pu. The Appendix gives more information on this matter. However in some cases, the pitch notation is used according to the following scheme:

- by C, D, E, etc.
- by c, d, e, etc.
- by c', d', e', etc.
- by c'', d'', e'', etc.
- by c''', d''', e''', etc.

The spelling of Chinese words in this dissertation may differ from that in other English books translated from Chinese. All spelling in this dissertation are according to the 1986 edition of Xin Hua Zi Dian (New Chinese Dictionary) published by Shangwu Yinshuguan in Beijing. The titles of Chinese books listed in Bibliography are translated into English by the author of this dissertation. In China, all publications including books, periodicals, music scores, and photographs are under the public dominion. They are not copyrighted.
CHAPTER I

WIND INSTRUMENTS

The wind instruments probably are the earliest instruments in China. Most of them today are made of bamboo or wood and have resonant sounds with distinctive tone colors.

The key of Chinese wind instrument is determined by the Xiaogongdiao fingering. According to this fingering, if the fundamental of an instrument is the note A, the D major scale starting with the dominant is played; thus this instrument is referred to as being in the key of D. The fundamental can be produced in all Chinese wind instruments except the Sheng (mouth organ). Although the notes of a Sheng are not produced by using the harmonic series (details are under the section of Sheng), the key of Sheng is still determined by the Xiaogongdiao fingering. The lowest note of a Sheng is the dominant of the key. For instance, if the lowest note of a Sheng is the A, this Sheng is called the Sheng in D.

Traditionally Chinese music did not have a key designation. The music for wind instruments was notated in a kind of Zi-pu (character-tablature), called Gongchi-pu, which uses characters to indicate the fingerings. Two basic fingerings were called Xiaogongdiao and Zhenggongdiao. In the first one, the fundamental was read as the character (He) and in the second, as the
(Chi). In the early twentieth century, with the infiltration of Western culture, Western musical theory exerted a great influence on Chinese music. The concept of key was introduced into China with the Jian-pu (number notation). The Jian-pu gradually replaced the Gongchi-pu. The character  '\(\hat{\text{O}}\)' (He) transferred to the 5 (sol) of the Jian-pu and the  \(\hat{\text{R}}\) (Chi), to the 2 (re). In playing a wind instrument, a major scale could be played by using the Xiaogongdiao fingering but not the Zhenggongdiao fingering. Therefore the Xiaogongdiao was used to determine the key. See example 3.

**Ex. 3.**

![Music notation]

Notes:  
\(a\ b\ c\#\ d\ e\ f\#\ g\ a\]

Xiaogongdiao:  5  6  7  1  2  3  4  5  
Zhenggongdiao:  2  3  \#4  5  6  7  \dot{i}  \dot{2}

Most wind instruments players prefer the Jian-pu notation. The numbers of Jian-pu do not indicate pitches. The 1 (do) could be tonic of any major key and its pitch changes according to the key; therefore, the numbers of a piece of music is always the same regardless of the key. Jian-pu should not be confused with the transposition system of the western instruments. The Chinese instruments are not transposing in the meaning of key. The name of the key implies only the length of the vibrating body (fundamental). A parallel example in Western instruments is the case of the tuba family.
The following instruments are presented:

1. Di-zi.
3. Guan-zi.
4. Sheng.

The **Di-zi** (bamboo flute)

The Di-zi, also called Heng-di (transverse flute) or Heng-chui (horizontal blowing), is originated from the minority people of north-west China. It flourished throughout China after the Han Wu Di (140 B.C.-87 B.C.)¹.

**ILLUSTRATION 1**

**Di-zi**

(Collect Solo Music of Chinese Instruments. P. 3)

The Di-zi is made of bamboo, shaped like the Western flute, and has six finger holes, one mouth hole and one reed hole. The reed hole is between the mouth hole and finger holes and is covered by a piece of bamboo membrane. Air blown into the mouth hole causes the bamboo membrane to vibrate and produces a sound. The tone color is brighter and clearer than the Western flute.

Historically, the Di-zi was one of the most important instruments used for accompanying the Kun-qu and the Bang-ziqiang (two kinds of Chinese native operas). The Qu-di was used in

¹ Han Wu Di was the sixth emperor of the Han Dynasty 206 B.C.-220 B.C. (Xin Hua Zi Dian, Appendix p.10)
Bang-di for the accompanying the Bang-ziqiang and flourished in the north. The Bang-di is shorter and a perfect fourth higher than the Qu-di. After 1949, the Di-zi has been one of the most popular instruments for playing all kinds of music including solo.

Nowadays, Di-zi comes in a set of nine to fifteen in different sizes and keys. If the fundamental of a Di-zi is A, this Di-zi is called the Di-zi in D. Using an advanced fingering a player can play two octaves of a diatonic scale with few altered notes; thus, advanced fingering makes modulation possible on a Di-zi. Beside the original key, three other keys could be played. For instance, four keys could be played on the Di-zi in D. They are D (the fundamental is read as 5), G (the fundamental is read as 2), A (the fundamental is read as 1), and C (the fundamental is read as 6). See Example 4.

Ex. 4. —

Original key D 5 6 7 1 2 3 4 5 6 7 1 2 3 4 5
Other keys G 2 3 4 5 6 7 1 2 3 4 5 6 7 1 2
A 1 2 3 4 5 6 7 1 2 3 4 5 6 7 1 2
C 6 7 1 2 3 4 5 6 7 1 2 3 4 5 6

The Di-zi is a transposing instrument, sounding an octave higher than written. Table 1 shows ranges and keys of some of the most frequently used Di-zi.

The Di-zi has a wide dynamic range from ppp to fff. The fff is more difficult to achieve in the lower register and
the ppp is more difficult to achieve in the higher register.

Although the chromatic scale is impossible to play in a fast tempo, a good player can play almost any note altered a half step or even a quarter step at a slow or a moderate tempo. Generally, two techniques are used to achieve those altered notes:

1. Finger technique. By covering a part of the finger hole,
an altered note can be produced. For example, by partially covering the first finger hole a Bb is sounded instead of the open-hole B. By covering more of the hole, successively lower pitches can be produced.

2. The holding and blowing technique. Turning the mouth hole away from the mouth slightly, the note will sharpen, turning it toward the mouth, the note will flatten. Also blowing harder or softer will cause notes to sharpen or flatten, respectively.

Symbols appearing above the notes indicate special sound effects:

"\( \text{ጳ} \)“, Hua-she (flutter tongue).

Ex. 5.

"\( \text{ฏ} \)“, Hou-yin (throat tone). Blowing the air against the throat makes a light noise together with the note from the Di-zi.

Ex. 6.

"\( \text{ቺ} \)“, Hua-yin (sliding tone). Sliding from one note to another is a characteristic of the northern opera, Bang-zi.

Ex. 7.

"\( \text{ጻ} \)“, Duo-yin (chopping tone). An accented note is preceded
by a note from a fourth to seventh above.

Ex. 8.

"\( \mathcal{X} \)\”, Die-yin (overlap tone). An upper grace note. It may be a second or a minor third above the melody note.

Ex. 9.

"\( J \)\”, Da-yin (strike tone). Striking the finger hole very fast once after the note. The effect like a lower grace note.

Ex. 10

The Suo-na (Suo-na Horn)

The Suo-na originated in Persia, and its name was taken from Persian "surna". Introduced into China during the time of the Ming Dynasty (1368-1644), its bright and triumphant sound made the Suo-na one of the most important instruments for all kinds of ceremonies and festivals and even a required instrument for the ceremony of red happiness (marriage) and white happiness (funeral). It was also used for the accompaniment of native musical plays or used as a solo instrument. This instrument is also known by the name, "La-ba".

The Suo-na consists of three parts: a double reed, a wood
tube with eight finger holes, and a brass bell. It is made in many different keys. The Suo-na in D is the most frequently used. Regardless of its key, the Suo-na is not a transposing instrument.

The range of a Suo-na is roughly two octaves. As with the Di-zi, the chromatic scale is extremely difficult to play in a fast tempo. By using some fingering and lip controlling techniques, seven major scales can be played on a Suo-na. They are the fundamental note as 5 or 2 (frequent); as 6, 3, or 1 (less frequent); and as 4 or b7 (rare). For instance, a Suo-na in D can play the major scales of D, G, C, F, A, E, and B.
Today, the Suo-na are commonly classified in three groups according to their sizes and ranges. A Suo-na with the fundamental notes of f#' or higher is called the Gao-yin Suo-na (soprano); those with a fundamental note of f# to f' are called Zhong-yin Suo-na (alto); and those with a fundamental note lower than the f belong to the Di-yin Suo-na (bass).

The fingering techniques of Suo-na are the same as for the Di-zl. The blowing technique is similar to that used in playing a reed instrument such as the oboe. But more strength is needed to play the Suo-na, especially in its high register.

The Guan-zl (Pipe Horn)

The Guan-zl was an ancient Guiss¹ folk instrument. It was first introduced into the court of Kai-huang² in the sixth century. In the twentieth century, it is very popular along the Yellow River and in the northeast region.

The Guan-zl is a straight pipe with a double-reed mouth piece on one end. The pipe is made of hard wood or hard bamboo. It has eight finger holes and a seventh hole on the back. Other names for the Guan-zl are Bi-li, Feng-guan, and Tou-guan. It is also called the Shuang-guan (Double pipes) if the player plays two Guan-zl simultaneously.

¹Guiss: now the Xinjiang Province of China.
²Kai-huang: the first emperor of the Sui Dynasty (581-618 A.D.) (Xin Hua zi Dian, Appendix P.21)
The Guan-zi has various sizes like the Di-zi and Suo-na. The fundamental note is the 2 in the Jian-pu (numbered notation). If the fundamental is the note d, this Guan-zi is in the key of C. Normally, a Guan-zi can only play a pentatonic scale plus one altered note:

The full range is about two octaves and four notes:

The Guan-zi is more difficult to play than the Suo-na because of its bigger and longer reed which, if placed too far back in the mouth, can cause serious intonation problems. The farther back in the mouth the reed is placed, the higher the note produced, a
difference as great as a perfect fourth. A good player can use this as a technique to play a major scale or even a scale with some chromatic notes.

Most of the time the Guan-zi is used to play an expressive melodic solo passage. The frequently used special effect is the Hua-yin (sliding tone). It is very subtle and smooth, not unlike the human voice. Sometimes the Hua-yin is preceded by the Ben-yin (resolution note) especially a lower Hua-yin at the middle or high range and an upper Hua-yin at the low range:

Ex. 11

The Sheng (mouth organ)

The name of Sheng appeared in many ancient books including Confucius' Shi-ling (the Book of Odes) as early as two thousand years before Christ. Among those three hundred and sixty texts in the Shi-ling, six were written particularly for the Sheng, called Sheng-qu.

The Sheng is basically constructed in three parts: Sheng-huang (metal vibrating pieces), Sheng-miao (pipes), and the Sheng-dou (base). The Sheng-huang is placed inside each Sheng-miao. Sheng-miao are made of bamboo in different lengths and are plugged at the Sheng-dou. The Sheng-dou comes in two different shapes, square and round. The square Sheng-dou is popular in regions along the Yang-zl River and the round one
ILLUSTRATION

4. Sheng

5. Alto Sheng

6. Bass Sheng

7. Pai Sheng

(Dentiao Hu, Chinese Orchestration. P. 44.)
flourished in the north. The Sheng has many finger holes matching numbers of Sheng-miao. These finger holes are on the Sheng-dou beside a mouth piece. The player holds the Sheng with both hands around the Sheng-dou. When the player inhales or exhales air through the mouth piece, the sound comes from those Sheng-miao whose finger holes are covered. Sheng is the only wind instrument that can play a harmonic progression.

The Sheng's characteristic tone color is the result of its metal reeds mixing with its bamboo pipes. It is a beautiful solo instrument and, in addition, its sound blends well with the winds, plucked string and bowed string instruments of the Chinese orchestra.

The Sheng's range varies depending upon the lengths of Sheng-miao. The fingering also changes according to how the Sheng-miao are arranged. The following are some frequently used Sheng:

1. The Fourteen-huang Sheng in D

This is a square Sheng (square Dou) with fourteen Sheng-miao. It has twelve notes with the d" and the a" doubled in a unison. Fig. 1 shows the most convenient arrangement of Sheng-miao.

2. The Thirteen-huang Sheng in D

This is a traditional round Sheng (round Dou). It actually has seventeen Sheng-miao but among them only thirteen have Sheng-huang (There is no explanation for this fact.) Its range
is from $a'$ to $d'\ddash$. Fig. 2 demonstrates the arrangement of Sheng-miao.

Fig. 1. The Fourteen-huang Sheng in D

![Diagram of Fourteen-huang Sheng in D]

Fig. 2. The Thirteen-huang Sheng in D

![Diagram of Thirteen-huang Sheng in D]

(Fig. 1 & 2: Dengtiao Hu, Chinese Orchestration. P. 44.)
3. The Twenty-one or more Huang round Sheng

Within the last two decades, the development of playing technique has given the possibility of adding more Sheng-miao on the traditional Thirteen-huang Sheng, improving the ranges and the chromatic possibilities. For instance, the Xu Chao-ming Sheng, named after Xu Chao-ming of the Shanghai Conservatory, has twenty-two Sheng-miao. The Sheng-miao arrangement is shown in the Fig. 3.

**Fig. 3. The Twenty-two-huang Sheng**

Five Sheng-miao are exchangeable. The five substitute
Sheng-miao and their pitches are

- \( c^\# \) (substitutes for the \( g^\# \) of the ninth)
- \( g^\# \) (substitutes for the \( e^\# \) of the eighth)
- \( bb^\# \) (substitutes for the \( a \) of the twenty-second)
- \( c'' \) (substitutes for the \( f'' \) of the first)
- \( d'^\# \) (substitutes the \( b \) of the sixteenth)

If the \( bb^\# \) and \( d'^\# \) substitutions are used, a chromatic scale can be played:

4. Zhang Zhi-liang of the Beijing Conservatory designed a Thirty-six Huang round Sheng with the chromatic scale in a three-octave range from \( g \) to \( f'^\# \).

(Fig. 3 & 4: Dentiao Hu, *Chinese Orchestration*. P. 46.)
All kinds of chords can be played on a Sheng if the notes are in its range. It is a non-transposing instrument. In traditional music, only the melody line was written out and in performance was doubled at the fourth or fifth interval to make the melody more colorful. Usually the fifth was added above the melody and the fourth was added below. Today composers for the Sheng always write out all the notes to be played. See example 12.

Ex. 12.

Allegro

(Minchao Xu, Tiaodan Chayie Shang Beijing, Beijing People's Publication, 1975)

After 1949, the alto and bass Sheng were designed to complete the Sheng family. These are similar in shape to the traditional Sheng but are bigger and the player must sit and hold the instrument on his knee while playing. See illustrations 5 and 6. The range of the alto Sheng is three octaves from d to e'. The range of the bass Sheng is from D to e'.

Another modified Sheng, designed according to principles of the Sheng and the Organ, is called Pai-sheng. It has a keyboard. See illustration 7. Its blowing technique is like that of the Sheng, and its finger technique is like that of the Organ. There is also a pedal air pump used for playing long notes. The range of the Pai-sheng is four octaves from D to e''. A two-staff score is used when the music is written in the staff notation.
CHAPTER II

PLUCKED STRING INSTRUMENTS

The plucked string instruments are also important among Chinese instruments. Their history encompasses a period of over three thousand years. They can be classified into three categories according to their shapes and playing techniques:

1. Lute-like instruments. These are held in the arms and the strings are plucked by fingers. The earliest one was called Xian-gu, and it later developed into many different types, including the Pi-pa.

2. Dulcimer-like instruments. The strings are struck by a pair of hammers, such as the Yang-qin.

3. Instruments having a long soundboard. They are placed in a flat position when being played, such as the Zheng.

Because the number of plucked string instruments is so great, for the sake of clarity, only the most popular and frequently played of these will be discussed. These are presented in the following order: Pi-pa, Liu-qin, Yue-qin, Ruan, San-xian, Yang-qin, and Zheng.

The **Pi-pa** (Pi-pa lute)

The Pi-pa, also called the Qu-xiang Pi-pa (curved neck), is named according to the playing method. The word *Pi* refers to the technique of plucking strings outward with the right hand, and the
ILLUSTRATION 8

Pi-pa

(Collect Music of Chinese Instruments, P. 116.)

word Pa refers to the opposite motion. There were two kinds of Pi-pa in the early time. One was popular during the Qin Dynasty (214 B.C.). It had a round body and a straight finger-board. Both sides of the body were covered by animal skin, like the drum. Later, it developed into the San-xian. The other kind of Pi-pa originated in India and was brought into west China around the middle of the fourth century. It had a curved body made of solid wood as it is today. Although it did not have a fingerboard, frets were glued on its body under the strings. Since the seventh
century, the second kind has flourished throughout China as an important solo instrument and has developed into the modern Pi-pa. In south China, Pi-pa is also used for accompanying, especially for the Ping-tan (a native dramatic recitative).

During its thousand years of development, the Pi-pa has improved in range and sophistication of playing technique. The playing position has evolved from that of holding the instrument sideways to holding it straight.

The Pi-pa has four strings. Normally they are tuned in a, e, d, and A, but sometimes they are tuned according to the range of music or the convenience of playing, as in the scordatura type of tuning used by German composers of the seventeenth century.

Ex. 13. Scordatura Tunings For The Pi-pa

\[ \begin{align*}
& \quad \text{for Fujian music (music of the Fujian region)} \\
& \quad \text{for Pu Yian Zhou (anonymous nineteenth century composition)} \\
& \quad \text{for Ba Wang Xie Jia (a Pi-pa music from the nineteenth century)} \\
& \quad \text{for Jiang Jue Ling (anonymous nineteenth century composition)}
\end{align*} \]

The modern Pi-pa has a range of more than three octaves. It has a small but clear sound and can be used to play monophonic,
polyphonic, or chordal passages. The tone color also can be changed dramatically by using different finger techniques. Usually two staves are used for a Pi-pa solo when the music is notated in staff notation.

Pi-pa music cannot be accurately notated using either staff or number notation. Many symbols are used along with notes to indicate finger techniques and special effects. Some symbols used in notation appear in the following table, and Example 14 is music for Pi-pa solo.

Ex. 14

(Haochu Shen, collector, "Qinhal Natiane", Collected Solo Music of Chinese Instruments, P.118)
TABLE 2
PI-PA SYMBOLS

The left hand:

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Name</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>o</td>
<td>Fan</td>
<td>partial</td>
</tr>
<tr>
<td>७</td>
<td>Yin</td>
<td>vibrato</td>
</tr>
<tr>
<td>८.०</td>
<td>Sou</td>
<td>left hand pizzicato</td>
</tr>
<tr>
<td>।</td>
<td>Da</td>
<td>stricking the string with a finger</td>
</tr>
<tr>
<td>।</td>
<td>Sha</td>
<td>putting a finger nail on the string lightly</td>
</tr>
<tr>
<td>१,२</td>
<td>Tui &amp; La</td>
<td>sliding tone by using a finger to push or pull the string hard to change the string's tension</td>
</tr>
<tr>
<td>९,४</td>
<td>Jin &amp; Tui</td>
<td>sliding the finger up or down on the string</td>
</tr>
<tr>
<td>।</td>
<td>Sha-zhu</td>
<td>stopping the sound</td>
</tr>
<tr>
<td>।</td>
<td>Xu-an</td>
<td>putting the finger on the note but not touching the string</td>
</tr>
</tbody>
</table>

The right hand:

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Name</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>।</td>
<td>Tan</td>
<td>plucking the string outward with the index finger</td>
</tr>
<tr>
<td>।</td>
<td>Tiao</td>
<td>plucking the string inward with the thumb</td>
</tr>
<tr>
<td>।</td>
<td>Gou</td>
<td>plucking the string outward with the thumb</td>
</tr>
<tr>
<td>।</td>
<td>Mo</td>
<td>plucking the string inward with the index finger</td>
</tr>
<tr>
<td>।</td>
<td>Ti</td>
<td>plucking the string outward with the middle finger</td>
</tr>
<tr>
<td>।</td>
<td>Mo</td>
<td>plucking the string inward with the middle finger</td>
</tr>
<tr>
<td>।</td>
<td>Ti</td>
<td>using two fingers to pull the string up then release it to make a sound by the string against the finger wood body</td>
</tr>
<tr>
<td>Symbol</td>
<td>Name</td>
<td>Explanation</td>
</tr>
<tr>
<td>--------</td>
<td>--------------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>L</td>
<td>Pai</td>
<td>same as the Ti</td>
</tr>
<tr>
<td>•</td>
<td>Tan-ban-mian</td>
<td>knocking the wood surface with the finger nail</td>
</tr>
<tr>
<td>••</td>
<td>Gun</td>
<td>plucking the string very fast</td>
</tr>
<tr>
<td>•••</td>
<td>Lun</td>
<td>plucking the string very fast with all five fingers in turn</td>
</tr>
<tr>
<td>••••</td>
<td>Ban-lun</td>
<td>plucking the string very fast with four fingers (no thumb) in turn</td>
</tr>
<tr>
<td>•••••</td>
<td>Da-zhi-yao</td>
<td>plucking the string back and forth with the thumb</td>
</tr>
<tr>
<td>•••••</td>
<td>Yao</td>
<td>plucking the string back and forth with other fingers</td>
</tr>
<tr>
<td>••••••</td>
<td>Man-lun</td>
<td>The Lun on all four strings</td>
</tr>
<tr>
<td>••••••</td>
<td>Lun-ban</td>
<td>The Lun on the wood surface</td>
</tr>
<tr>
<td>•••••</td>
<td>Shuang-tan</td>
<td>plucking two strings outward with the index finger</td>
</tr>
<tr>
<td>•••••</td>
<td>Shuang-tiao</td>
<td>plucking two strings inward with the thumb</td>
</tr>
<tr>
<td>•••••</td>
<td>Fen</td>
<td>plucking two strings together with both the index finger and the thumb as the Tan &amp; Tao</td>
</tr>
<tr>
<td>•••••</td>
<td>Zhe</td>
<td>plucking two strings together with both the index finger and the thumb as the Gou &amp; Mo</td>
</tr>
<tr>
<td>•••••</td>
<td>Kou</td>
<td>plucking two strings together with both the index finger and the thumb as the Tan &amp; Gou</td>
</tr>
<tr>
<td>•••••</td>
<td>Sao</td>
<td>plucking three or four strings with the index finger</td>
</tr>
<tr>
<td>•••••</td>
<td>Fu</td>
<td>plucking three or four strings with the thumb</td>
</tr>
<tr>
<td>••••••</td>
<td>Shang, Zhong, &amp; Xia</td>
<td>positions of the right hand: Shang (up) is close to the frets, Zhong (middle) is between the last fret and the end of strings, and Xia (down) is close to the end of strings.</td>
</tr>
</tbody>
</table>
The **Liu-qin** (Liu-qin lute)

Liu-qin, also Liu-yie Qin or Tu Pi-pa, was found in the Shandong (the east coast) region. It was mainly used for accompanying Shandong Liu-qin Xi, a native musical drama. Flourishing along the east coast, it was an important instrument in many native operas and musical dramas, such as Anhui Si-zhou Xi and Zhejiang Luan-Tan.

The Liu-qin looks like the Pi-pa but it is smaller. It originally had two or three strings, which were tuned in two notes:

![Illustration 9](image)

**ILLUSTRATION 9**

Liu-qin

(Dengtiao Hu, *Chinese Orchestration*. P. 109.)
Nowadays, a bass string is added. There is no fixed tuning for the four strings, but most players prefer the tuning of d'', g', d', and g. The Liu-qin has a range of four octaves. It is not a transposing instrument. The tone color is very bright and clean, especially in the high register.

The Liu-qin is held in a vertical position on the player's legs, like the Pi-pa, and is played with a Bo-zi (plectrum) most of the time. Other right hand techniques and notation symbols are also similar to those of the Pi-pa.

The Example 15 is music for the Liu-qin.

Ex. 15

(Hueiran Wang, *Chuendao Yihe*, Beijing People's Publication 1975)

The Yue-qin (moon lute)

The earliest Yue-qin existed during the time of Bei-song, about the eleventh century. It was used in the Beijing opera, Yun-nan Hua-deng, and other native plays.

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¹ Bei-song: North Song dynasty (960-1279) (*Xin Hua Zi Dian* Appendix P. 25)
The early Yue-qin used in the Beijing opera had only one string, tuned as $3$ (mi)$^1$. Its range was about one octave. Later, the three-string Yue-qin became popular for the Beijing opera. The first string was still tuned as $3$; the others were tuned a fifth and an octave lower:

\[ \text{Illustration of Yue-qin} \]

$^1$ The mediant of any major scale, see Appendix.
The four-string Yue-qin is used in the Chinese orchestra. It is tuned in two different ways. One is in a pair of d" and a'; the other, d"", g", d", and g:

\[ \text{\[\text{Diagram of Yue-qin tuning}\] } \]

The Yue-qin has a richer and louder sound than the Liu-qin. It is also played with a Bo-zil and uses some Pi-pa finger techniques.

**The Ruan (Ruan lute)**

The Ruan appeared two thousand years ago at about the same time as the Di-zi. It had a round wood body, a finger board with twelve Pin-wei (frets), and four strings. The name, at the early time, was confused with the Pi-pa. Not until the Tang dynasty was (618-907), the name changed to the Ruan-xian and later, shortened to the Ruan. The strings were tuned in a pair of d and a.

In the 1950's, a set of Ruan in four different sizes were made by the People's Central Radio Orchestra. This family was used as a part of the plucked string section, thus producing unified tone color in all registers. The various instruments of the Ruan family were named according to their sizes: the Xiao-ruan (small), the Zhong-ruan (medium), the Da-ruan (big), and the Di-ruan (bass). Their tunings and ranges are shown in Table 3.
TABLE 3 Tunings and Ranges of Ruan

<table>
<thead>
<tr>
<th>Tuning</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Xiao-ruan</td>
<td></td>
</tr>
<tr>
<td>Zhong-ruan</td>
<td></td>
</tr>
<tr>
<td>Da-ruan</td>
<td></td>
</tr>
<tr>
<td>Di-ruan</td>
<td></td>
</tr>
</tbody>
</table>

(Dengtiao Hu, Chinese Orchestration, P.118)
The Xiao-ruan is not a transposing instrument. The Zhong-ruan is not a transposing instrument if the alto or the bass clef is used; however, it is notated an octave higher if the treble clef is employed. The Da-ruan is also a non-transposing instrument, and it uses either the bass or the treble clef. The Di-ruan is a transposing instrument. It sounds an octave lower than written.

The Ruan is held sideways, like the Guitar, and is played with a Bo-zi or Zhi-tiao (artificial finger nails). The techniques and notational symbols are the same as that of the Pi-pa.

The San-xian (Three-stringed lute)

As an important accompaniment instrument, the San-xian has been popular since the Yuan dynasty (1206-1368). There was also another similar instrument, the Xian-gu (stringed drum), that existed about one thousand years earlier. It probably was the forerunner of the San-xian.

ILLUSTRATION 12

San-xian

(Collect Solo Music of Chinese Instruments. P. 105.)
The San-xian has a small body with a snake skin covering its surface. Unlike other plucked string instruments, the San-xian has a very long finger-board without frets. It is in two sizes. The one which flourished in the north is bigger than that in the south. Generally, the three strings are tuned to suit the music. In ensembles, the most frequent tunings are g, d, G for the big San-xian, and d', a, d for the small one. Some regional music requires different tunings which are shown in the following example.

Ex. 16. Tunings of the San-xian for Regional Music

\[\text{for Suzhou Pintan, Fujian Nanyue, and Jiangnan Sizhu}\]
\[\text{for Xihe Dagu and Shanxi Bangzi}\]
\[\text{for Nanyang Bangzi}\]
\[\text{for Sichuan Yangqing}\]

Having a body covered by skin, the San-xian produces a loud and unique tone color. It has a long sustained sound, especially on open strings. Its high register sounds like a small drum and its middle register sounds like the Pi-pa. When a player places his right small finger on the bridge, the sound is muted and becomes soft and sweet in quality.
Some right hand techniques of the Pi-pa can also be used with the San-xian. Those techniques include Tan, Tiao, Gun, Shuang-tan, Shuan-tiao, Fen, Zhe, Kou, Sao, and Fu. The practice of playing slides from one note to another, marked "\~", is an important technique used with the San-xian and it accounts for its characteristic whining sound, see example 17.

Ex. 17. Moderato

(Dengtiao Hu, Chinese Orchestration P.127)

The Yang-qin (struck instrument)

The Yang-qin was brought into Guangdong region (south China) from western Asia about late Ming dynasty (1600) and then flourished throughout China. It was a major instrument in many Chinese native musical works that included speaking and singing as well as such plays as Guangdong Yin-yue, Changde Si-xian, Shandong Qin-shu, Sichuan Qin-shu and Jiangnan Si-zhu.

ILLUSTRATION 13

Yang-qin

(Collection of Folk Music P. 87.)

1 for a description of techniques see the Pi-pa section.
The shape of Yang-qin is very similar to that of the dulcimer with many strings which are stretched across bridges connected to a flat soundboard. Originally the Yang-qin had only two bridges and a range of two and half octaves. Like the piano, every two or three strings were tuned to the same pitch, and the entire instrument was tuned in a diatonic scale according to the particular music. For instance, the D scale was used for the Jiangnan Si-zhu; and the C scale, for the Guangdong Yin-yue.

Since 1950, structure of the Yang-qin has been improved. Today's most popular version of the Yang-qin has four bridges, five rows of notes and a range of four octaves. There are some slides, under the end of strings, that can alter pitches by a half step for the purpose of modulation. Some advanced models even have dampers to stop the sound as needed. The tuning also may be varied by the player. Table 4 shows the most common tuning for the Yang-qin.

TABLE 4. Yang-qin Tuning

(Huongnian Yang: Chinese Orchestration, P.--)
The Yang-qin is a non-transposing instrument and, its music is usually notated on a double staff when staff notation is used.

The Yang-qin is played with a pair of small hammers called the Qin-qian. They are made of bamboo, and their heads are covered by a piece of felt or thick cloth. Playing techniques include Dan-yin (single striking), Jia-hua (ornament), and Zhen-yin (tremolo).

In the Dan-yin technique the player strikes once on each note. He could use only one Qin-qian or both Qin-qian alternately and can play a very fast or elaborated passage. See example 18.

Ex. 18

(Shuhua Xiang, *Salwai Xin-chuen*, Shanghai Art Publication 1981)

Besides simply striking the strings, other techniques can be employed such as:

1. Fan-zhu: using the back of Qin-qian's head or a bare bamboo Qin-qian to strike the strings. This produces a clear and melodious sound.

2. Bo-xian: plucking strings with the tail of the Qin-qian.
This effect is indicated by a "+" mark above the note. Using the tail of the Qin-qian to play a glissando (indicated by "\x22\x22") is also a popular technique. See example 19.

Ex. 19

(Haoyie Wu: Yanhe Changxiangqu. Shanxi Publication. 19--)

3. Zhua-xian: plucking strings with the fingers.

4. Men-zhu: holding the string after striking it which produces a short and muffled sound.

5. Yin-yin or Hua-yin: a vibrato effect achieved by applying pressure to the string with the finger of one hand and rocking the hand back and forth while striking the string with a Qin-qian in the other hand.

6. Fan-yin: harmonics. These are very clear, especially in the middle register.

The Jia-hua is a technique characteristic of Chinese folk music. It is used not only with the Yang-qin but also with other instruments. Originally, the Jia-hua was a freely ornamented melody but, today, it is often written out by the composer. Some frequently used Jia-hua for the Yang-qin are:

1. Adding a grace note at an octave below. See example 20.

2. Striking a single note repeatedly. See example 21.
3. Adding and repeating a note on the weak portion of each beat. See example 22.

4. Filling in leaps with notes. See example 23.

The Zhen-yin is similar to the tremolo used with drums. It involves rapid repetition of one or two notes alternately to produce a trembling effect, like that of xylophone.

Ex. 20

Ex. 21

Ex. 22
Ex. 23

Melody

Yang-qin

(Ex.19-23: Dentiadu Ho, Chinese Orchestration, P.139-143)

The Zheng (many-stringed zither-like instrument)

The Zheng, also Qin-zheng, originated in the Qin Kingdom\(^1\) about 400 B.C. It was very popular throughout China and was used for solo and accompaniment as well as in ensemble.

ILLUSTRATION 14

Zheng

(Guangcheng Liang: Hand Book of Instruments. P. 58.)

The Zheng has a rectangular wood soundboard and from thirteen to forty strings that are tuned in a pentatonic scale. Under each string is a movable bridge used for adjusting the pitch. The three types of Zheng are classified according to the kinds of strings: Lao-xian (nylon string), Gang-xian (metal string) and Si-xian (silk string).

The most frequently used Zheng today has twenty-one strings.

\(^{1}\) Qin Kingdom is now the Shanxi Province of China.
It is tuned in the D pentatonic scale from D to d\textsuperscript{4} and uses a double staff when staff notation is used:

It is difficult to modulate on the Zheng but this can be accomplished in music which features closely related keys by moving the bridge or by varying the amount of pressure on the strings. For example, the G pentatonic scale can be played by raising the F\# to G:

and the A pentatonic scale could be played by lowering the D to the C\#:

The Zheng is played with both hands. As with other plucked string instruments, the right hand is used to pluck the strings and the left, to stop them. Some right hand playing techniques are presented below:

1. Pi (\textsuperscript{7}), using the thumb to pluck strings inward.
2. Tuo (L), the opposite motion of Pi.
3. Mo (\textsuperscript{\textcircled{v}}), using the index finger to pluck strings inward.
4. Tiao (\textsuperscript{/}), the opposite of Mo.
5. Gou (⊙), using the middle finger to pluck strings inward.
6. Ti (☉), the opposite motion of Gou.
7. Ti′ (☉·), using the ring finger to pluck strings inward.
8. Dazhi-yao (☉), using the thumb to pluck strings back and forth rapidly.
9. Shizhi-yao (☉·), using the index finger to pluck strings back and forth rapidly.

Some left hand playing techniques.

1. An-yin (stop strings). The player presses a finger on a string near the bridge to increase tension on the string; thus a higher pitch which could be as high as a perfect fourth above the fundamental is produced.

2. Hua-yin (sliding note). Sliding from a grace note within a minor third below or above is a characteristic play of the Zheng. See example 24.

Ex. 24.

(Collection of Chinese Folk Music, Henan People's Publication)
3. Yin-yin (vibrating note). There are two kinds of Yin-yin, the free vibrating and the trill. The first is a very fast vibrato with an unspecified pitch above. It is marked "«". The second one is a regular trill marked "\text{tr}".

4. Overtones. The most frequently used overtone is the first harmonic, and the best range is from A to a'.

5. Sha-yin (damped note). Using the left hand to stop the sound immediately after playing.

6. Kou-xian (held note). By pressing on the string with the left hand and moving the hand from side to side while plucking the string with the right hand, a wind-like effect is produced.
The name Hu-qin refers generally to all Chinese bowed string instruments. Historically, they appeared later than wind, plucked string, and percussion instruments. The earliest Hu-qin was the Xi-qin appearing during the seventh century at the time of the Tang Dynasty. For many years, the Hu-qin developed in every region of China into the type that is suitable for using in native musical plays and operas. Examples of these instruments are the Hu-qin in the Han-ju of Hubei Province, Ban-hu in the Qin-qiáng of Shanxi Province, Yu-hu in the Yu-ju of the Guangdong Province, Jing-hu in the Jing-ju (Beijing opera) etc. All of these are different types of Hu-qin. They vary in their materials, sizes, and shapes, as well as tone colors.

The standard Hu-qin used in Chinese orchestras is of the Er-hu family which includes Er-hu, Zhong-hu, Da-hu, and Di-hu, and sometimes the Gao-hu. Parallel to the violin family of Western instruments, the Er-hu family may well be considered the most important section of a Chinese orchestra. As a group, the Er-hu family possesses a very great pitch range encompassing EE of Di-hu to the d'' of Gao-hu. Unlike wind, plucked, or percussion instruments, the Er-hu family has a uniform tone color, as well as a wide dynamic range. The following details pertain to the
pertain to the Hu-qin of the Er-hu family.

The **Er-hu** (two-string fiddle)

The Er-hu is the most popular bowed string instrument in China. The word **Er** means two and the **hu** means the Hu-qin. As the name implies, the Er-hu is a two stringed Hu-qin. It was originated from the north of the country in the eleventh century and used mainly for accompaniment of native plays. Not until the twentieth century did it become a solo instrument as well.

**ILLUSTRATION 15**

**Er-hu**

(Guangcheng Liang: Hand Book of Instrument. P. 81.)
The parts of the Er-hu include 1. Qin-tong (soundbox), 2. Qin-gan (holder), 3. Zhen-zi (bridge), 4. Qin-xian (strings), 5. Qian-jin (nut), and 6. Gong-zi (bow). See fig. 5.

Fig. 5. Er-hu Structure

The Qin-tong is a small, hexagonal tube made of wood. One end is covered by the snake skin over which two strings are strung while the other end is open. Shaped like the violin bow, the Gong-zi is made of bamboo and horsehairs. It is placed between the two strings. The inside string is called Nei-xian and the outside one the Wai-xian. They are tuned in a perfect fifth whose pitches are variable according to the mode of the music. For instance, they are tuned in sol-re for the Zhi mode (similar to the mixolydian) and la-mi for the Yu mode (similar to the Aeolian). Rarely are the strings tuned in intervals other than a fifth, a perfect fourth or an octave. For most solo and ensemble music, the Er-hu is commonly tuned in d' and a'. The range of Er-hu is about four octaves according to tuning and proficiency.
of the performer.

The player always sits and holds the Er-hu in a vertical position on his knee. The right hand is used for bowing and the left hand, for stopping the strings. Although the bow is placed between the two strings, many bowing techniques of the violin are possible on the Er-hu such as legato, detaché, staccato, portato, and spiccato. The spiccato, marked "‡", is played by bouncing the bow up and down on the Qin-tong.

The Er-hu produces a soft and expressive sound. The Wai-xian (outside string) is brighter but the Nei-xian (inside string) is richer. Composers take advantage of this to achieve a contrasting tone color in writing for the solo Er-hu.

The Gao-hu (soprano Er-hu)

The Gao-hu is a modified Er-hu but is smaller and has a brighter sound. In ensemble playing, the Gao-hu is generally used to enrich the sounds of Er-hu especially in the high register. The playing technique is the same as for the Er-hu. The tuning of Gao-hu is d" and g'.

The Zhong-hu (alto Er-hu)

The Zhong-hu is bigger than the Er-hu, and is tuned in d' and g. It has a range of two and one half octaves and the player reads the treble clef when staff notation is used. The playing techniques are the same as for the Er-hu, but for the performer of the Zhong-hu, it is more difficult to play very fast passages. The
tone color of Zhong-hu is sweet, especially in its middle range.

Another type of Zhong-hu called the Shuangqianjin (double nuts) Er-hu is, basically, an Er-hu with an upper and lower Qian-jin. When using the lower Qian-jin, the instrument may be used as an Er-hu; and when using the upper Qian-jin it may be used as a Zhong-hu. The Shuangqiajin is thus a very versatile instrument.

The Da-hu (tenor Er-hu)

The Da-hu traditionally had two strings. The playing position was like that of the Er-hu. In 1959, Yang Yusen of the Shanghai Conservatory designed and constructed a new Da-hu, also called the Dage-hu (improved Da-hu), see Illustration 16. It had four strings instead of two. The Qin-tong of the Dage-hu was much bigger than that of the old Da-hu, and one end was covered by a piece of wood board rather than snake skin. A fingerboard was added and the instrument was placed on the floor rather than held on the knee. The playing position and techniques were adopted from those of the cello. After 1960, this Dage-hu replaced the old Da-hu in the most of professional Chinese orchestras.

The Dage-hu is tuned to a, d, G, and C. It is not a transposing instrument, and the player reads the bass or the treble clef when staff notation is used. The range of the Dage-hu encompasses more than four octaves. The tone color in the lower register is very rich, and the sound lingers for a long time. The upper register of the instrument has a warm, mellow sound.
The **Di-hu** (bass Er-hu)

The Di-hu is the lowest instrument in the Er-hu family. Its shape is like that of the Dage-hu. It originally had three strings, but today it has four. The tuning and the playing position are the same as for the double bass of the violin family. The Di-hu is a transposing instrument, sounding an octave lower than written.

**ILLUSTRATION**

16. Dage-hu  
17. Di-hu

(Dengtiao Hu: *Chinese Orchestration*. P. 189.)
CHAPTER IV

PERCUSSION INSTRUMENTS

Chinese percussion instruments are very important in the native plays and operas. In the Beijing opera, for example, each character is represented by a specific rhythmic pattern, a technique similar to the leitmotif used by Wagner and other composers of Western music. This pattern is played by percussion instruments during the character’s entrance on stage. Thus the audience is effectively informed of a character’s entrance.

In addition to using percussion instruments in native plays and operas, the Chinese people use these instruments in holiday celebrations. The instruments are to a certain extent representative of their feelings of happiness and joy.

Traditionally, Chinese percussion scores are notated by a type of Zi-pu (character notation) called Luo Gu Jing. Each percussion instrument is assigned to one or more Chinese characters according to its sound. For example, the character Da (pronounced Da) is used for the big drum and Cang (Cang) for the big gong. For the same instrument, characters may also vary according to the type of music played. For example, the characters used in the Beijing opera are different from those used in Jin opera (the native opera of the Shanxi province). The Luo Gu Jing
is easy to read in many ways for Chinese percussionists, like a short hand chart, but it cannot represent complicated rhythm or complex instrument combinations. To some extent the player has freedom to interpret a character therefore, the same Luo Gu Jing may be played differently by different players. The following example is a Luo Gu Jing compared to staff notation.

Ex. 25

(Dengtiao Hu: Chinese Orchestration. P.305.)

There are many different kinds of percussion instruments which may be classified by the materials of which they are made, by their pitches, or by the sounds they produce. Presented here are some of the most frequently used percussion instruments. These may be grouped into four different categories, according to their sounds and the methods by which they are played:

1. Ban (block).
2. Gu (drum).
3. Bo (cymbals).
4. Luo (gong).

The Ban (block)

The Ban are wooden block instruments including the Pai-ban,
Bang-zi, and Mu-yu. Their tones are dry and brittle.

ILLUSTRATION 18

Pai-ban

Bang-zi

Mu-yu

(Guangcheng Liang: *Hand Book of Instrument*, P.141.)

The Pai-ban is also called Chuo-ban. It is named after Chuo, a court musician during the reign of Tang Xian-zong (712-754). Since that time, the Pai-ban is made of three pieces which are bound together by string. In performance, the drummer plays the Pai-ban with his left hand while beating the drum with his right hand. Usually the Pai-ban is played on the strong beat only.

The Bang-zi is a pair of hard wooden sticks in different sizes: one stick is columnar in shape and about seven inches long;

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*Tang Xian-zong*, the tenth emperor of the Tang Dynasty (618-907).
the other, cuboid in shape and shorter. The player holds a stick in each hand and claps the two together to produce a loud, sharp sound, usually on strong beats.

The Mu-yu is known as the temple block, and its name means literally wooden fish. It is a hollow wooden block, roughly circular in shape and has a fish figure engraved on its surface. Sometimes a series of two to twelve Mu-yu in various sizes, and pitches are used. The performer strikes the Mu-yu with small, wooden mallets.

The Gu (drum)

The Gu is made in many different shapes and sizes. The most popular ones are the Da-gu (big drum), the Xiao-gu (small drum), the Pai-gu (tom-tom) and the Dingyin-gu (timpani).

The Da-gu has a wooden frame shaped like a barrel. Both the top and bottom have a diameter of 18 inches and are covered by animal skin. It is played with two round wooden sticks. Its sound is low and deep like that of thunder.

The Xiao-gu differs from the Da-gu only in its size. It has a diameter of 5 inches. Its sound is ecstatic. The tremolo is used effectively to express moods of tension and when combined with other percussion instruments, enthusiasm.

The Pai-gu is a set of small drums in various sizes which have definite pitch. The modern Pai-gu usually is a set of five drums, each producing definite pitches on both heads. Their sound is similar to that of the timpani but at a higher pitch. The
The Dingyin-gu is similar to the timpani and is normally used in a set of two or three. Its tuning method is also adapted from that of timpani, but it is a transposing instrument, sounding an octave lower than written when staff notation is used.

The Bo (cymbal)

The Bo originated from the west of China and became popular during the time of the Southern and Northern dynasties (420-589). There are five different Bo which are frequently used: Xiao-bo (small), Zhong-bo (medium), Da-bo (large), Shui-bo (water sound), and Xing (literally, "star").
The Xiao-bo has a diameter of 3 inches and produces a bright and clear sound. The Zhong-bo is 6 inches in diameter. It is an essential percussion instrument in the Beijing opera. The Da-bo is over 9 inches in diameter and its sound is profoundly affecting when it is played very loud. The Shui-bo is so called because its sound is like that of running water. It is slightly bigger and thinner than the medium Bo. The Xing is a modified Bo. It is a pair of small bells that produces a clear high pitch and a very quiet melodious tone.

The Bo have indefinite pitches. They can be played by hitting the pair together or by beating on the half pair with a wooden stick.

The Luo (gong)

The Luo is a circular piece of metal which is struck with a beater. Made in various sizes, the largest Luo is carried on the shoulders of two people when used at festivals. Luo has a colorful but approximate pitch. Generally when used in an ensemble, a pair of Luo of different size is chosen. The small Luo is a
fifth higher than the big one.

The Shimian-luo (gong set), also Yun-luo, is made of ten or more different Luo hung on a wooden frame. These are chosen according to the pitches required by particular compositions. Examples of the use of Luo include:

1. The Shimian-luo used by the Shanghai Conservatory of Music has ten Luo. Their arrangement on the frame and approximate pitches are shown in fig. 6.

2. The Yun-luo used in *Yuzhou Kaige* (composed by the Chinese Art Troupe in 1974) has fifteen small luo. Their setting and approximate pitches are shown in fig. 7.

3. In the *Jiangjunling* (arranged by the Shanghai National Ensemble in 1959) eleven big luo are used. Their setting and approximate pitches are shown in fig. 8.
Fig. 6. Shimian-luo (Shanghai Conservatory)
Fig. 7. Yun-luo (Yuzhou Kaige)
Fig. 8. Yun-luo (Jiangjunling)

(Fig. 6-8: Debiao Hu, Chinese Orchestration, p. 19-26)
Chapter V

ORCHESTRA

The Chinese orchestra appeared as early as the time of the Zhou dynasty (1066 B.C.). It was classified in two types: the court orchestra and the folk orchestra.

The court orchestra of emperor Liang Wu Di of the sixth century A.D. employed more than five hundred percussion instruments alone. In addition, this orchestra included other wind and plucked string instruments. Such a large ensemble was maintained for over a thousand years in the imperial court. At that time, there were two kinds of court orchestras, one was used to play Ya-yue (ceremony music), and the other, to play Yan-yue (banquet music). The Ya-yue consisted of odes to the emperor and the Yan-yue was based on folk tunes. The Ya-yue orchestra was formal in its size and instrumentation, but the Yan-yue orchestra was not.

The structure of folk orchestras outside the court varied from region to region. For example, the orchestra used in the south was called Sizhu-yue and included percussion, wind, plucked string and bowed string instruments; the orchestra in the north was called Chuida-yue and included only percussion and wind instruments. A folk orchestra played only its own regional music.

In the first half of the twentieth century, under the
Influence of the May 4th Movement', the large court orchestra gradually lost its position; but folk orchestras developed more and more.

After 1949, many professional orchestras were founded under the support of the government. They are combined orchestras of all types and can play all kinds of Chinese music including the Ya-yue and the Yan-yue. Also, composers write music particularly for those orchestras to play in concert halls.

Today's typical Chinese orchestra has four sections: wind, percussion, plucked string, and bowed string instruments. The size of the orchestra depends upon the type of music. The basic numbers of each instrument in a small, medium, or large orchestra are shown in the table 6.

The order of instruments in music scores is not standardized, but generally, five principal orderings may be found in most scores.

1. Order according to the importance of each instrument in the music. In the Beijing opera, for example, the Jing-hu (Hu-qin of Beijing opera) is always placed on the top of score due to its importance.

2. Order according to the pitch level of instruments from high to low. Sometimes the names of the instruments are not specified in this kind of ordering. The instruments are grouped

'the New Culture Movement that was started on the May 4th 1919 at Beiping University (now, Beijing University), China.
into three sections: high, middle, and low. In this case, only a three-line score is needed.

**TABLE 6**

Numbers of Each Instrument in Chinese Orchestras

<table>
<thead>
<tr>
<th>Instrument</th>
<th>Large</th>
<th>Medium</th>
<th>Small</th>
</tr>
</thead>
<tbody>
<tr>
<td>Di-zi</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Sheng (Soprano)</td>
<td>2</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>(Alto)</td>
<td>2</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>(Bass)</td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Suo-na (Soprano)</td>
<td>4</td>
<td>1-2</td>
<td></td>
</tr>
<tr>
<td>(Alto)</td>
<td></td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>(Bass)</td>
<td></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Guan-zi</td>
<td>2</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Percussion</td>
<td>4-6</td>
<td>2-3</td>
<td>1</td>
</tr>
<tr>
<td>Yang-qin</td>
<td>2</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Zheng</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Liu-qin</td>
<td>4</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Pi-pa</td>
<td>4</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>San-xian</td>
<td>4</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Ruan</td>
<td>8</td>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td>Gao-hu</td>
<td>8-10</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Er-hu</td>
<td>10-12</td>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td>Zhong-ho</td>
<td>6-8</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>Da-hu</td>
<td>6</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Di-hu</td>
<td>4</td>
<td>2</td>
<td>1</td>
</tr>
</tbody>
</table>

(Huongnian Yang, *Chinese Orchestration*, Beijing Conservatory)
3. In the order of wind, plucked string, bowed string, and percussion instruments:

Wind  Suo-na
     Sheng

Plucked string  Zhong-ran
     San-xian

Bowed string  Zhong-hu
     Da-hu

Luo

Percussion  Gu
     Bo

4. In the order of wind, plucked string, percussion, and bowed string instruments.

5. In the order of wind, percussion, plucked string, and bowed string instruments.

The last ordering is the most popular. It is similar to that used for the Western symphony orchestra:
### Symphony Orchestra vs Chinese Orchestra

<table>
<thead>
<tr>
<th>Woodwind</th>
<th>Wind</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brass</td>
<td>Percussion</td>
</tr>
<tr>
<td>Percussion</td>
<td>Plucked string</td>
</tr>
<tr>
<td>String</td>
<td>Bowed string</td>
</tr>
</tbody>
</table>

Examples of this ordering are *Boluojiang Huanxianqu* (by Huanzhi Li), *Huongqiqu* (by Jingxi Xu), and *Tianxianpei* (by Jiaqin Zeng).

The four sections of the orchestra have a vast difference in their relative loudness. That is, if a forte is marked in each section, percussion instruments will be the loudest and they are followed decreasingly by the winds, the bowed strings and the plucked strings instruments.

In conclusion, today's trends of the development of Chinese instruments is in three main directions. The first trend is to improve the temperament. This includes increasing the capabilities of playing chromatic passages and modulations. The second trend is to extend the range of the instruments which may be done by improving the instrument's structure or by developing a particular instrument into a family (a set of the instrument) to achieve a wider range. The last is to adjust the volume of sound. Some instruments are too loud and some are too weak and they need to be adjusted so that they can be balanced easier in an orchestra.

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*All three scores are published by Beijing People's Publication.*
PART II

CONCERTO EAST AND WEST
LIST OF INSTRUMENTS

<table>
<thead>
<tr>
<th>Orchestra I</th>
<th>Orchestra II</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wind</td>
<td></td>
</tr>
<tr>
<td>2 Di-zi</td>
<td>2 Flutes</td>
</tr>
<tr>
<td>1 Suo-na</td>
<td>2 Oboes</td>
</tr>
<tr>
<td>Plucked String</td>
<td>2 clarinets in Bb</td>
</tr>
<tr>
<td>6 Pi-pa</td>
<td>1 Bass clarinet</td>
</tr>
<tr>
<td>2 San-xian</td>
<td>2 Bassoons</td>
</tr>
<tr>
<td>Bowed String</td>
<td></td>
</tr>
<tr>
<td>2 Gao-hu</td>
<td>2 Horns in F</td>
</tr>
<tr>
<td>8 Er-hu</td>
<td>2 Trumpets in Bb</td>
</tr>
<tr>
<td>6 Zhong-hu</td>
<td>2 Trombones</td>
</tr>
<tr>
<td>4 Dage-hu</td>
<td>4 Percussions</td>
</tr>
<tr>
<td>2 Di-hu</td>
<td>Celesta</td>
</tr>
<tr>
<td></td>
<td>Harp</td>
</tr>
<tr>
<td></td>
<td>Violins I</td>
</tr>
<tr>
<td></td>
<td>Violins II</td>
</tr>
<tr>
<td></td>
<td>Violas</td>
</tr>
<tr>
<td></td>
<td>Cellos</td>
</tr>
<tr>
<td></td>
<td>Double Basses</td>
</tr>
</tbody>
</table>

Explanations:

1. See the Part I for details regarding orchestra I and all Chinese instruments.

2. Da-hu and Di-hu are noted on the same staff (the sounding of Di-hu is one octave lower).

3. The bass clarinet is played by the second clarinetist.

4. The distribution of percussion instruments among the four
players is:

Percussion 1: 4 Timpani

Percussion 2: small Triangle (Tr1), Xing, 5 Tom-toms (Tom),
Suspend Cymbal (S Cym), Bass Drum (BD),
Shimian-luo (Sluo).

Percussion 3: medium Triangle, small Tambourine (Tamb),
5 Temple Blocks (TB), Snare Drum (SD),
Orchestra Bell (OB).

Percussion 4: large Triangle, large Tambourine,
Crash Cymbals (C Cym), Cong, Xylophone (Xyl),
Shimian-luo.

5. The 5 Temple Blocks and 5 Tom-toms are noted from low to high:

6. The Shimian-luo is shared by both percussionists 2 & 4
and its pitches are:

7. All the transpositions are maintained.
EXPLANATION OF SYMBOLS

- allow to vibrate for the notated duration.
- allow to vibrate and die out.
- measured roll (eight 32nds)
- unmeasured roll, as fast as possible.
- unmeasured roll, last note not accented.
- unmeasured roll, last note slightly accented.
- on the edge (cymbals)
- on the edge (timpani)
- on the kettle (timpani)
The following chart is a seating arrangement. However, a conductor may change it as necessary due to the spatial allowance or acoustical problems.
INTRODUCTION

As the title Concerto East And West implies, the idea of this musical work is to highlight contrasting tone colors between Chinese and Western instruments. The entire composition is written in a single movement and is scored for a Chinese orchestra (orchestra I) and a symphony orchestra (orchestra II). The percussion section of the Chinese orchestra is omitted but those percussion instruments are included in the symphony orchestra (orchestra II).

This composition has three themes. The first is the main theme:

The second is a chant-like melody:

The third theme is in Chinese style:

Besides these three themes, there is a hexachord motive which has a free atonal sound in contrast to the tonality of the composition:


Loeb, David. *Chinese and Japanese Musical Instruments and Their Notation.*


APPENDIX

JIAN-PU

The most of Chinese music scores are in the Jian-pu (numbered notation). The following chart shows corresponding notes of jian-pu to the staff notation:

<table>
<thead>
<tr>
<th>Jian-pu</th>
<th>Staff notation</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Do'</td>
<td>Represents a tonic of any major key or a mediant of any minor key</td>
</tr>
<tr>
<td>2</td>
<td>Re</td>
<td>Represents a supertonic of any major key or a subdominant of any minor key</td>
</tr>
<tr>
<td>3</td>
<td>Mi</td>
<td>Represents a mediant of any major key or a dominant of any minor key</td>
</tr>
<tr>
<td>4</td>
<td>Fa</td>
<td>Represents a subdominant of any major key or a submediant of any minor key</td>
</tr>
<tr>
<td>5</td>
<td>Sol</td>
<td>Represents a dominant of any major key or a seventh of any minor key</td>
</tr>
<tr>
<td>6</td>
<td>la</td>
<td>Represents a submediant of any major key or a tonic of any minor key</td>
</tr>
<tr>
<td>7</td>
<td>Si</td>
<td>Represents a leading tone of any major key or a supertonic of any minor key</td>
</tr>
<tr>
<td>x</td>
<td>the note is played an octave higher</td>
<td>x represents any number; more dots may applied as more octaves higher</td>
</tr>
<tr>
<td>x</td>
<td>the note is played an octave lower</td>
<td>x represents any number; more dots may applied as more octaves lower</td>
</tr>
</tbody>
</table>

\* Movable do of the solfeggio, the do changes along with the key changes.

159
<table>
<thead>
<tr>
<th>Jian-pu</th>
<th>Staff notation</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>x---</td>
<td>0</td>
<td>x represents any number</td>
</tr>
<tr>
<td>x-</td>
<td>∅, ♯</td>
<td>same as a dotted note x represents any number with any duration</td>
</tr>
<tr>
<td>x</td>
<td>♫, ♯</td>
<td></td>
</tr>
<tr>
<td>x</td>
<td>♫</td>
<td></td>
</tr>
<tr>
<td>x-</td>
<td>∅, ♯</td>
<td></td>
</tr>
<tr>
<td>x-</td>
<td>∅, ♯</td>
<td></td>
</tr>
<tr>
<td>x.</td>
<td>♫, ♯</td>
<td></td>
</tr>
<tr>
<td>0 0 0 0</td>
<td>0</td>
<td>0= rest</td>
</tr>
<tr>
<td>0 0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>✫</td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>♫</td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>♫</td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>♫</td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>♫</td>
<td></td>
</tr>
<tr>
<td>#</td>
<td># (sharp)</td>
<td>It is placed before a number</td>
</tr>
<tr>
<td>b</td>
<td>b (flat)</td>
<td>It is placed before a number</td>
</tr>
<tr>
<td>1=(C D A bE ♫ F etc.)</td>
<td>a major key signature of C, D, A, Eb, F#, etc.</td>
<td></td>
</tr>
<tr>
<td>6=</td>
<td>a minor key signature, it is rare</td>
<td></td>
</tr>
</tbody>
</table>
Characters of Jian-pu not listed above, such as time signatures, bar-lines, slurs, repeat marks, and so on, are the same as those used in the staff notation.

There are two very important things regarding the transferrence of music written in Jian-pu to staff notation: the key signature and the range of instrument must both be considered.

In Jian-pu, the key signature is located at the left top corner above the music. 1=A means the key signature of A major and the number 1 is note A, 2 is B, 3 is C, and so on. Some compositions use a major key signature although the music is in a minor key, 1=C instead of 6=A for instance. This may be confusing. Since the key signature for A minor is the same as that for C major in the staff notation; therefore, the principle of relative majors and minors existing in staff notation also exists in Jian-pu notation. Another problem results when music written in Jian-pu is transferred to staff notation, that of range. 1=A in Jian-pu does not indicate which octave is required. This depends upon the medium for which the piece is written. Certainly, one should use the bass clef instead of the treble if the music is for low voices or low instruments.

The following is an example of music originally in Jian-pu transferred to staff notation.
Jian-pu:

1=D 4/4  

月夜 刘天华

Staff Notation:

The Moon Night  
by Liu Tian-hua

(Hu, Dengtiao: Chinese Orchestration)
GLOSSARY

A
Anhui Si-zhou Xi 安徽泗洲戏
An-yin 按音

B
Ba-yin 八音
Ban 板
Ban-hu 板胡
Ban-lun 伴轮
Bang-di 檀笛
Bang-zi 檀子
Bang-ziqiang 檀子腔
Beijing 北京
Beiping 北平
Bei-song 北宋
Ben-yin 本音
Bi-li 笔墨
Bo 琴
Bo-xian 握弦
Bo-zi 握子

C
Cang 仓
Chi 尺
Changde Si-xian 常德丝弦
Chui-guan 吹管
Chuida Yue 吹打乐
Chuo 锺

D
Da 打
Da-bo 大钹
Da-gu 大鼓
Da-hu 大胡
Da-ji 打击
Da-ruan 大阮
Da-yan 打音
Da-zhi-yao 大指摇
Dage-hu 大革胡
Dan-yan 单音
Di-hu 低胡
Di-ruan 低阮
Di-yan 低音
Di-zi 筏子
Die-yin 赤音
Dingyin-gu 定音鼓
Duo-yin 副音
Er-hu 二胡
Fan 風
Fan-zhu 反竹
Fen 分
Feng-guan 風管
Fu 拂
Fujian 福建
Fujian Nanyue 福建南乐
Gao-hu 高胡
Gao-yin 高音
Gang-xian 高弦
Ge 葛
Gong-zi 弓子
Gongchi-pu 工尺谱
Gou 句
Gu 鼓
Guan-zi 箏子
Guangdong 广东
Guangdong Yin-yue 广东音乐
Guiss 南丝
Gun 经
Han 汉
Han-ju 演剧
Han Wu Di 演武帝
He 合
Heng-chui 横吹
Heng-di 横笛
Hou-yin 喉音
Hu-bei 湖北
Hu-qin 胡琴
Hua-she 花舌
Hua-yin 花音
Jia-hua 加花
Jian-pu 简谱
Jiangjunling 将军令
Jiangnan Sizhu 江南丝竹
<table>
<thead>
<tr>
<th>Character</th>
<th>Pinyin</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jieshidaio Youlanpu</td>
<td>镜石调幽兰谱</td>
<td></td>
</tr>
<tr>
<td>Jin</td>
<td>Jin</td>
<td>金</td>
</tr>
<tr>
<td>Jin</td>
<td>Jin</td>
<td>靖</td>
</tr>
<tr>
<td>Jing-hu</td>
<td>Jing-ju</td>
<td>京湖</td>
</tr>
<tr>
<td>K</td>
<td>Kai-huang</td>
<td>开皇</td>
</tr>
<tr>
<td>Kou</td>
<td>扣</td>
<td></td>
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Pu Yan Zhou

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Qin 秦
Qin 琴
Qin-gan 琴杆
Qin-qian 琴弦
Qin-qiang 琴腔
Qin-tong 琴筒
Qin-xian 琴弦
Qin-zheng 琴筝
Qu-di 曲笛
Qu-xiang 曲项

R
Ruan 阮
Ruan-xian 阮弦

S
San-xian 三弦
Sao 扫
Sha 撞
Sha-zhu 煮住
Shandong 山东

Shandong Qinshu 山琴书
Shanghai 上海
Shanxi 山西
Shanxi 陕西
Shanxi Bangzi 山西梆子
Sheng 笙
Sheng-do 笙斗
Sheng-huang 笙簧
Sheng-miao 笙葭
Sheng-qu 笙曲
Shi 石
Shi-jing 诗经
Shimianluo 石面锣
Shizhiyao 食指瑶
Shuangqianjin 双钱
Shuang-tan 双弹
Shuang-tiao 双挑
Shui-bo 水钹
Si 丝
Si-xian 丝弦
Sichuan Qinshu 四川琴书
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Sizhuyue 丝竹乐
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Wayne Yunwei Chow was born on January 14, 1956, in Beijing, China. He studied at Beijing Lixin High School where he graduated in 1975 with honors. In the same year he attended the teachers' training program in the Third Normal School of Beijing. At the age of twenty he became a music teacher at Beijing Lixin School.

In the summer of 1979, Mr. Chow came to the United States. He held a Geraldine P. Gordon Music Scholarship for four years at Pittsburg State University from where he received his B.M. degree in piano performance in 1983 and his M.M. degree in theory/composition in 1984. During those years Mr. Chow was inducted into the Phi Kappa Phi American Graduate School and College Honor Society. He won one of the prizes of the Waddill Chamber Music Competition with his own composition Piano Quintet in F. His biography was published in the eighth annual edition of The National Dean's List, 1984-85.

In the fall of 1984, Mr. Chow was accepted as a doctoral student in music composition by Louisiana State University. He was inducted into Pi Kappa Lambda National Music Honor Society in 1985 and received the National Collegiate Music Award and the Academic All-American Collegiate Award in 1987. Presently, he is a member of The College Music Society and served as the vice-president of LSU Chapter of American Society of University Composers.

Mr. Chow's professional experience includes three years as a
teacher at a public school in China, two years as a music theory and piano assistant teacher at Pittsburg State University, two years as a graduate assistant in composition/new music ensemble and one year as an assistant piano technician at Louisiana State University. Also many of his compositions were recorded by the Beijing Radio and performed in China and the United States.
DOCTORAL EXAMINATION AND DISSERTATION REPORT

Candidate: Wayne Yunwei Chow

Major Field: Music

Title of Dissertation: Twenty Chinese Instruments and Concerto East and West

Approved:

[Signatures]

Dean of the Graduate School

EXAMINING COMMITTEE:

[Signatures]

Date of Examination:

July 15, 1987