

IN SEARCH OF THE ANCIENT HARMONIZING
POWER OF MUSIC: THE CHINESE CONNECTION

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In the thirty or so years since the tomb of the Marquis Yi of Zeng was excavated by Chinese archaeologists, the ancient ceremonial orchestra found there has been the subject of dozens, if not hundreds of articles by a variety of specialists. This orchestra, generally considered to be one of the greatest finds in the archaeology of music, has revealed a technology in bronze casting and an understanding of acoustics totally unsuspected and unequaled, even in modern times. We refer to the set of 65 bronze chime bells, whose total weight is approximately 2500 kg. While there were hints and even legends that ancient Chinese music was once capable of marvelous effects, until this orchestra was discovered there was no visible indication that, indeed, something truly extraordinary in this art or science might once have existed.

The acoustics of the bells, found in excellent condition, have been adequately studied; and the entire set has been replicated so that its sound can be enjoyed by modern audiences. Its musical range is very close to that of the piano, and it has been used to play music composed millennia after it was interred around 433 BCE. Yet, very little can be said with any assurance as to what kind of music the bells were intended to make.

Carrying gold-filled inscriptions that present the most complete treatise of ancient Chinese music we have, the bells are a witness to a baffling sophistication in theory. As Robert Bagley has said, “[w]e do not know what was going on at the Zeng court. Marquis Yi was a patron of music and music theory like no other.”¹

This paper will attempt to make musical sense of aspects of the ceremonial orchestra which, until now, have defied convincing analysis or have even been considered irrelevant.

It is understandable that, given the usual focus of research, aspects of the ceremonial orchestra have proven mysterious. The two researchers whose work is being reported here, Michael Legge and Nicolette Schwartzman, have brought an unusual expertise to an analysis of the bells and chime stones: ancient Chinese medical energetics (Schwartzman) and musical composition and computer program design (Legge). More will be said about them later, but it should be noted that the musical theory they offer to bring coherence to mysterious aspects of the orchestra is only an application of their discoveries in the potential of music to exert an unusual harmonizing effect. These discoveries, they feel, were not only anticipated by the ancient Chinese but, from the evidence of the Zeng orchestra, perfected by them.

In the ancient Chinese classics, there are numerous references concerning a music with extraordinary harmonizing influence. The *Yüeh Chi*, the Classic of Music, speaks of

a music upon which the tranquility and lasting peace of the kingdom depends. Played at ceremonies and rites, it is said to bring about harmonious relationships, such is the power over those who hear it. However, the manner in which it acts is not clearly specified. The text of the *Yüeh Chi*, itself, like other ancient classics destroyed in the Great Burning of Books ordered by the Ch'in emperor Shih Huang Ti in 213 BCE, was rewritten decades later by scholars from what they could remember. Not only was the text subject to error from memory, but it was recast in order to conform to the Confucian philosophy prevailing then.

We can, however, still find evidence of a science of music whose main thrust was to harmonize the human on a variety of levels, not merely to act as a moral force.

We read in the *Yüeh Chi* (II, 23), "Music is the movement of the heart."² According to the ancient Chinese theory of the Five Elements, the emotion associated with the heart is joy. The heart, considered the most important organ in the body, can be nourished by music, as the same text indicates (III, 27): "Music creates joy without which human emotions cannot exist. Joy reveals itself in sounds and tones..."³

Beyond what one might take as an undifferentiated encouragement of joy, music has discreet powers to help people according to their inner nature. However, in order to discern what that inner nature is and to prescribe the music needed to bring that nature into ideal harmony, a very special knowledge is required. The *Yüeh Chih* (III, 31) relates a conversation between Tzu Kung, a disciple of Confucius, and the music master I: "Tzu Kung turned to I, the Master of Music, and said: 'I have heard that there are songs which are appropriate to certain persons. Which songs are appropriate to me?' Master I replied: 'I am only an insignificant musician and I am unworthy to be asked what music is suitable for you.'"⁴

One might wonder on what basis a person would be evaluated in order to find the "appropriate" music and how a music would vary in its structure or qualities in order to exert the proper rebalancing (harmonizing) force.

Indeed, we might wonder if a whole science of harmonizing music has been lost and only hints of it can be discerned in the ancient classics. The man who brought the knowledge of Chinese music to the West, Joseph Marie Amiot, was of this opinion. In his case, it was not a reading of the ancient classics that made him think a music capable of unusual effects had been lost but, rather, what high ranking Chinese officials told him about their music. Hoping to impress these guests who had come to visit him at the Jesuits' residence in Peking, Amiot, a skilled musician, had played for them what he thought was finest in European music. Finding them not the slightest bit moved by his performance on the clavichord, Amiot was curious to know what his distinguished visitors thought of the music. As he relates in his *Mémoire sur la Musique des Chinois*, published in Paris in 1779, "they answered as politely as they could that our melodies not being made for their ears nor their ears for our melodies, it was not surprising that they should not appreciate the beauties of these as they could their own. 'The melodies of our music,' one doctor added..., 'go straight from the ear all the way to the heart, and from the heart to the soul. We feel them, we understand them. What you just played does not have that effect on us. However, the melodies of our ancient music were something else entirely. Just to hear them was to be swept away. All our books accord them the most lavish praise, but they inform us at the same time that we have lost much of the excellent method that our ancestors used to bring about such effects...' "⁵

Amiot was determined to apply the Western methods of scholarship that he had learned from the Jesuits to a study of the matter and recover that “excellent method”, the theory that allowed for such a music. He states precisely what he hoped to find and how successful he was in this endeavor: “I would have wanted to find detailed rules and a method for the application of these rules. It was not possible for me to have this satisfaction.”⁶

Had the texts been available in China that would have allowed Amiot to extract the information he wanted, it is likely that some Chinese savant centuries earlier would have found the method for making that music.

It may be that the expertise required for composing a powerful harmonizing music was already becoming rare in China at the beginning of the fifth century BCE when Confucius, as reported in *The Analects*, visited the state of Ch’i and heard a music which affected him like no other. Walter Kaufmann translates the account: “When the Master visited Ch’i, he heard the Shao music and (he was so moved that) for three months he was not aware of the taste of meat (food). He said: ‘I did not imagine that music could become so excellent as this one.’”⁷

If the music masters who could bring about such effects were an endangered group at this time, one might wonder how they fared during the decades that followed during the Warring States Period when kingdom after kingdom disappeared, conquered by more powerful states. Was the Marquis Yi’s orchestra one of the last to employ the real knowledge of harmonizing music? His bronze bells with their costly gold inlaid inscriptions labeled the two strike points on each bell in such a way that the notes each could produce would be instantly understood by a musician no matter which of the then current pitch standards he might know.

The 65 bells were found intact in the tomb and still suspended from their heavy wooden timbers, arranged in an “L” shaped configuration in three tiers. The smallest bells are at the top and the largest at the bottom, some weighing more than 200 kg. The bells are so well preserved that the music they can still make is not believed to be appreciably diminished from the time they were interred. From the evidence in the tomb, five people were required to play them, three using wooden mallets for the middle tier and possibly the upper tier bells and two employing wooden poles to strike the bells at the bottom. All of this indicates that complex music was made here. Because of their almond shape (when seen in cross section), the sound the bells make does not linger as in the case of round bells. Professor Bagley neatly sums up the musical possibilities of the bell set: “It is a fully melodic instrument, supplying all twelve notes of the chromatic scale—in other words, all the notes found on a piano keyboard—over a range of three octaves (a less dense scale continues for two more octaves). At moderate speeds, the bells can play any melody that a modern piano can.”⁸

Visually, the bell set impresses the viewer not only with its grandeur but with its refinement and complexity. The bells are cast with elaborate decorations (some of these are protrusions or bosses which serve to keep the sound from lingering too much), the timbers from which they are suspended are covered with lacquer on which there are a wealth of geometric motifs, and the supports for the whole structure are in the shape of sculptured figures. Here is evident a concern for complexity, order, and perfection.

We might suspect that the music made by the ceremonial orchestra would have reflected these values. The owner of the orchestra, the Marquis Yi, was, as Professor

Bagley has said in a reference previously cited, “a patron of music and music theory like no other.” To this patron, the politically more powerful King of Chu presented a large bell, called a *bo*, which occupies a place of prominence on the lower rack of the bell set. It was specially cast for the marquis and carries an inscription with the date it was given, 433 BCE, as well as the wish that it be used for the ceremonies. Because the two notes it can produce, F# and G#⁹, can be provided by other bells in the set, some who have written about the instrument have concluded that these notes, besides being musically superfluous, are without significance. We might question whether the King of Chu, obviously interested in the kind of music the Marquis’ orchestra could play and likely familiar with the latter’s bell set, would have given him an expensive bronze bell that was made for him alone whose tones had neither musical use nor other import. Unlike almost all the other bells in the set of bell chimes whose notes were either a major or a minor third apart, those of the *bo* are a major second apart. Here already is something to make one take notice.

Could these two tones, Legge and Schwartzman wondered, provide some sort of guide to the way the music of the orchestra was to be structured? Perhaps they were directions to be understood only by those music masters who maintained a certain tradition of harmonizing music and knew that this bell which stood out from all the others in its style and in the way it was suspended from the rack carried in code directions as to how the music was to be ordered so that it might provide maximum benefit to the marquis.

The *Yüeh Chi* makes it amply clear, despite its fragmented and imperfect nature, that the prime purpose of ceremonial music was to exert a harmonizing effect, whether on a group or on an individual. If it was an individual who was to benefit from the music, then we might ask what distinguishing qualities made it suit him. The recognition that a harmonizing music had to suit individual need is evident in the anecdote in that same work (III, 31) where Tzu Kung, a disciple of Confucius, asks Music Master I to tell him what particular composition will help him the most. Here, the pieces of music that I is being asked to choose from are known by their names rather than by the musical qualities, attributes, or theoretical structure that may distinguish them.

Before discussing what Legge and Schwartzman’s study of the *bo* revealed, it will be useful to briefly digress and consider the pentatonic scale which many authorities believe was used as the basis for music played on the bell chimes of the marquis. With each of its five notes correlated with an Element in the Five Element theory (*wu xi*), the pentatonic scale was regarded by the ancient Chinese as according with the very structure of the universe. Music played in that scale could have an effect on the macrocosmic as well as the microcosmic (human) level. So the scale could be regarded almost as sacrosanct and the notes—do, re, mi, sol, la—had to be at the heart of a composition. But does this mean that only five notes could be used for making music?

Yaxiong Du, writing in *Ritual Music in a North China Village: the Continuing Confucian and Buddhist Heritage*, explains how the ancient Chinese could employ more than five tones in a composition and still call it pentatonic. Speaking of the “step-names (*jieming*) system mentioned in Eastern Zhou literature (770-221 BCE), Yaxiong Du compares the nine tones or “step-names” to what is known in the West as movable do solmisation. Of the nine names, five (for the tones do, re, mi, sol, la) are considered “authentic” tones (*zhengsheng*) and are, he says, “usually organized as a pentatonic scale.” The other four tones (those for fa, fa#, ti flat, ti) are called “changing” tones

(*biansheng*) because “they are not members of the pentatonic scale.” They, however, can be used in a composition and this will still be considered pentatonic. Yaxiong elaborates: “In the Chinese heptatonic system, the five “authentic tones” (do, re, me, sol and la) are considered to be fundamental tones, and the four “changing tones” are their complements. Therefore, their structures are still pentatonic, unlike the diatonic scales of European common-practice music.”¹⁰

Walter Kaufmann in *Musical References in the Chinese Classics* also speaks of the use of more than five notes in ancient Chinese music called pentatonic. Here, the extra notes are seen as “accompaniment”. He refers to the *Yüeh Chi* (II, 17), which he translates: “...Like the five colors they (the basic five notes) create a complete and undistorted whole...The (use of) basic notes and their accompaniment in clear and less clear notes regulates the flow of music.”¹¹ Kaufmann comments on this reference from the classics: “The ‘accompaniment in clear and less clear notes’ probably refers to the five basic and the seven auxiliary *lü* as they were used in parallel fourths, fifths (and octaves).”¹²

The citations from Yaxiong and Kaufmann refer only to expanded resources in music, the use of seven and perhaps nine notes in a composition, without any mention of a change in underlying theory. Orthodox music is pentatonic. Could a definition of that orthodoxy be even further stretched by what follows?

The theoretical structure which, we propose, will give musical relevance to the tones of the *bo* would reflect the correlative genius of the ancient Chinese taking a new turn, applying the theory of the Five Elements in an expanded context. (This theoretical structure, we will subsequently see, can also explain the labeling of the storage boxes for the chime stones of the lithophone, that instrument meant to accompany the bells.)

While the pentatonic scale, for the purpose of illustration, is usually presented in the scale of C, composed of C, D, E, G, and A, it can begin with any tone of the chromatic scale. Whatever tone it begins with, each note correlates with the Five Elements in the following order: Earth, Metal, Wood, Fire, and Water. Like that other ancient theory, that of yin and yang which was developed before it, the theory of Five Elements explains change on the macrocosmic and microcosmic levels and is also used to categorize phenomena. The order in which the Elements are given above is not invariable. They appear in other sequences according to their application. However, the above order has an unexpected, almost a hidden congruence with another system as we shall see

We will look at the pentatonic scale of A, listing the notes in a column to be read from the bottom up. Beside each note is its correlative Element.

F#	Water
E	Fire
C#	Wood
B	Metal
A	Earth

We will now list the Five Elements according to another ancient theory, that of the horary cycle, which is used in classical Chinese medicine to account for the daily movement of energy (*chi*) within the body as it peaks in one organ system after another, all twelve of them. Each organ system is correlated with an Element. At its basic level, the horary system lists the order in which energy moves from Element to Element over a 24 hour period. There are six periods of four hours each; and in each four hour period, there is a yin and a yang organ. This order, listed below, reads from the top down and begins, incidentally, at 11 a.m.

Fire
 Water
 Fire
 Wood
 Metal
 Earth

The element Fire appears twice here because, unlike the other Elements with which only two organ structures are associated, there are four Fire organs.

If we compare this list of Elements with the one preceding it, we can see that they are identical except for the lack in the pentatonic-Element scale of a Fire at the top. To make the two ordering systems—musical scale and horary cycle—match perfectly, we have to add a Fire to the pentatonic. The only note with which the top Fire can be correlated is G#. We now have:

Fire	G#
Water	F#
Fire	E
Wood	C#
Metal	B
Earth	A

In keeping with a suspected underlying system uniting musical theory with that of energy flow, we have turned a pentatonic scale into a hexatonic. We can consider these six notes as yin tones. From here we can proceed to construct a system that will provide the yang notes and, thus, account for all twelve tones of the chromatic scale. This is done, as Legge and Schwartzman discovered, by constructing another hexatonic scale an augmented fourth apart from the first. This gives us a scale of Eb. We now have A as the yin scale and Eb as the yang:

	yin	yang
Fire	G#	D
Water	F#	C
Fire	E	Bb
Wood	C#	G
Metal	B	F
Earth	A	Eb

To the twelve tones with their division into yin and yang we can now correlate the body's six yin organ structures and the six yang. We get:

	yin	yang
Fire	G# - Heart	D – Small Intestine
Water	F# - Kidney	C – Urinary Bladder
Fire	E – Pericardium	Bb – Triple Heater
Wood	C# - Liver	G – Gall Bladder
Metal	B – Lung	F – Large Intestine
Earth	A – Spleen	Eb – Stomach

We now have a system where tone correlates with organ. The two hexatonic keys A and Eb define the whole yin yang system. Each tone is a fundamental tone for its corresponding organ. The fundamental determines the scale whether it be pentatonic, hexatonic, diatonic (heptatonic), octatonic, or nonatonic.

While we could have chosen to begin with any pentatonic scale and expand it to a hexatonic, it is only the one in A in which, according to this ordering system, the two notes of the *bo*, F# and G# will correlate with the body's *two most important organs*, Kidney and Heart. Of all the body's organs, the Heart is considered the emperor. The chief Fire organ, it corresponds with the cardinal direction south. The Water element is associated with north, and the chief Water organ is Kidney. Heart Fire and Kidney Water can also be associated with, respectively, heaven and earth, the celestial influence and the primal nourishing one for the body. So what we see here, then, is the *bo* with its tones of G# and F# providing coordinates for a particular energetic nature which is charted above to reveal the correspondence of musical tone with each organ. We assume this particular energetic nature to be that of the Marquis Yi of Zeng.

Classifying people according to type, or energetic type, was practiced by the ancient Chinese just as it was by the Greeks. The latter saw four elements—fire, earth, air, and water (and their associated four humours)—involved in determining a person's individual makeup. For the Chinese, there were five determinants. What we have above is a further refinement of that system where twelve categories are provided if one specific organ is taken as the reference, it having one of twelve possible tones with which it can be correlated.

The hypothesis of Legge and Schwartzman, which they have proven countless times in rebalancing patients from a variety of disharmonies, is that a music's key is a determinant of its therapeutic value.

Consulting the chart above, we find that F#, or its enharmonic Gb, is the tone for the Marquis' kidneys. Music composed in this key would be expected to exert a harmonizing effect on his kidneys and its associated energetic structures. Similarly, music in the key of C would be expected to act to bring his urinary bladder back into balance. Taken together, these two organ systems are considered yin and yang of Water and would be the organs most in need of harmonization in a middle-aged man (the marquis is believed to have been about 45 at time of death) for whom maintenance of his virility was a concern. Twenty-one young females were buried along with the marquis,

eight of whom were in the same chamber with him. Surely some of these were his consorts and were perhaps intended to serve him in the same capacity after death. So, harmonizing his Water was likely to have been a prime concern. Both of the Marquis' Water tones, F# and C, figure in the labeling on the storage boxes for the chime stones and, thus, reveal quite a bit about how music to be played on them was to be structured.

The boxes all together can hold 41 stones in numbered slots, 32 of which can be hung at any time on the two meter long rack where two rods vertically arranged take 16 stones each.

How, we might ask, were the stones hung on the rack? The way the archaeologists reconstructed their order on the basis of which they were found, broken and covered with mud, was to place the largest stones in the center of each rod with smaller ones sloping evenly away to each end. The configuration makes a pleasing and symmetrical design, and it may very well be the one in which they were arranged in the tomb. However, for the making of music, such a configuration makes no sense, posing useless difficulties for the one who would play the instrument.

What, then, do we know about the way in which the stones were to be played? The storage boxes for the stones offer us the most concrete evidence for their intended use. As previously stated, one box was labeled F#. It had "numbered slots for thirteen stones belonging to the pentatonic scale in F#," as stated in *Music in the Age of Confucius*.¹³ A second box was labeled "Guxian", Chinese for C and held thirteen stones in that pentatonic scale. The third box, as the same volume indicates, "held all the other notes needed to fill out the chromatic scale." However, it also gives this information in another way, translating from the Chinese label: "Intermediate-note stones, fourteen are within".¹⁴ Intermediate, of course, means coming in between two things or, for instance, two sets. These intermediate stones which also could be seen as those needed to complete the chromatic scale were those which could produce the notes F and B.

The following chart shows the non-overlapping scales of F#(Gb enharmonic) and C along with the tones B and F in such a way that makes sense musically.

	Kidney	Urinary Bladder
Fire	F	B
Water	Eb	A
Fire	Db	G
Wood	Bb	E
Metal	Ab	D
Earth	Gb	C

Indeed F and B are intermediate notes if we imagine this chart as one whole system where an arrow going up from Gb to F and then to Cb (B enharmonic) makes a diatonic scale in Gb and another arrow going up from C to B and then to F makes a diatonic scale in C. As musical keys corresponding to the Kidney and Urinary Bladder of the Marquis Yi, we would expect that the stones for Gb and C were grouped in their boxes to allow for ease in setting them up on the chime stone rack so that music to harmonize these two organs could be made.

However, as Michael Legge and Nicolette Schwartzman discovered, music in a diatonic key can exert a harmonizing influence on the targeted organ but the real power to “move energy” and restore balance in an organism (animals as well as people have profited from their music) comes when a non-harmonic note is added to the composition. Recent scientific experiments have corroborated this power of the unexpected non-harmonic tone to elicit a marked response in respect to brain activity. In an article entitled “Why Musicians Make Us Weep and Computers Don’t”, reported on July 10, 2008 on www.sciencedaily.com, results of research at the University of Sussex and the Max Planck Institute for Human Cognitive and Brain Sciences in Leipzig revealed that the brains of participants in a study “showed clear electric activity in response to musical changes (unexpected chords and changes in tonal key), which indicated that the brain was understanding the ‘musical grammar’.”

For Legge and Schwartzman whose work can be seen as having done much to restore this basic “grammar” which makes possible an enhanced harmonizing potential in music, the unexpected and the non-harmonic is added to a composition in terms of a rigorous logic. If we look at the diagram above which presents the music needed to rebalance the yin and yang Water organs of the marquis, we can view the information in terms of a system that represents two diatonic scales. We can also see this information as a diatonic scale for the kidney (in Gb) with its complementary pentatonic scale in C, which is an augmented fourth away from the diatonic. Tones from this pentatonic scale can be added to music played in diatonic Gb to “move energy” not in a random way but in one targeted according to Element. For instance, the non-harmonic tone A, the note correlated with Water, if added to Gb would be expected to strengthen that Element. Any other one of these notes from C pentatonic could be added to Gb for particular effect in strengthening an Element. When a combination of two non-harmonic tones from the pentatonic is added to the diatonic scale, the addition is seen as harmonizing the Elements to which the two notes correlate. Of course, what is true for Gb is also true for the other diatonic scale in the diagram. Here, notes from the pentatonic scale Gb would provide the non-harmonic notes for C.

What we see, then, is an unexpected and unparalleled use of the pentatonic scale. Instead of limiting a composition to five notes or even adding two extra notes, or “accidentals” to them so that we have a seven note scale for making music, we now realize that a very refined and powerful use can be made of the pentatonic scale when it is used along with the diatonic. Did the ancient Chinese at the Marquis Yi’s court at Leigudun structure their music to take advantage of this unusual power of the pentatonic scale? Was such a sophistication in music theory beyond them?

Much has been written about the enormous contributions the ancient Chinese made during their golden age in the development of new theoretical systems, and much has been said about their correlative genius. Legge and Schwartzman believe that the ceremonial orchestra of the Marquis Yi of Zeng provides evidence of theoretical advances in music whose applications are only beginning to be understood.

Notes

1. Bagley, “The Prehistory of Chinese Music Theory”, p. 88. Professor Bagley’s articles have been indispensable to our study of the bell chimes and stone chimes of the Marquis Yi of Zeng.
2. Kaufmann, *Musical References in the Chinese Classics*, p. 40.
3. Kaufmann, *Musical References in the Chinese Classics*, p. 47.
4. Kaufmann, *Musical References in the Chinese Classics*, p. 48.
5. Amiot, *Mémoire sur la musique des Chinois, tant anciens que modernes*, pp. 2-3. Translations of Amiot are ours.
6. Amiot, *Mémoire sur la musique des Chinois, tant anciens que modernes*, p. 4.
7. Kaufmann, *Musical References in the Chinese Classics*, p. 59.
8. Bagley, “Percussion” in J. F. So (ed.) *Music in the Age of Confucius*, p. 35. This volume provides the best description in English of the entire ceremonial orchestra of the Marquis Yi of Zeng as well as his smaller chamber orchestra.
9. *Zeng Hou Yi mu* (Marquis Yi of Zeng—Excavation Report), pp. 138-140 (data table 18). We would like to express our thanks to Hsi-Chu Bolick, East Asian Bibliographer at the Davis Library, the University of North Carolina at Chapel Hill, for her assistance with translation.
10. Yaxiong Du, *Ritual Music in a North China Village: the Continuing Confucian and Buddhist Heritage*, p. 96.
11. Kaufmann, *Musical References in the Chinese Classics*, p. 40.
12. Kaufmann, *Musical References in the Chinese Classics*, p. 70.
13. There is also a slot for a fourteenth stone “with the pitch [Xinzhong zhi] yuzeng, which belongs neither to the F-sharp nor to the C pentatonic scale; it is one of the additional notes needed to fill out the chromatic scale.” So, *Music in the Age of Confucius*, p. 125.
14. So, *Music in the Age of Confucius*, p. 125.

References

Amiot, Joseph Marie. *Mémoire sur la musique des Chinois, tant anciens que modernes*. Paris: Chez Nyon, 1779.

Bagley, Robert. "Percussion" in J. F. So (ed.) *Music in the Age of Confucius*. Washington, DC: The Smithsonian Institution, 2000, pp. 35-63.

_____. "The Prehistory of Chinese Music" in *Proceedings of the British Academy*, 131, 41-90 (2005). London

Kaufmann, Walter. *Musical References in the Chinese Classics*. Detroit: Information Coordinators, 1976.

So, Jenny F., ed. *Music in the Age of Confucius*. Washington, DC: The Smithsonian Institution, 2000.

Yaxiong, Du. *Ritual Music in a North China Village: the Continuing Confucian and Buddhist Heritage*. Chicago: Chinese Music Society of North America, 2004

Zeng Hou Yi mu, ed. Hubei Sheng Bowunguan. Beijing, 1989.