

*Music of the Whole World*

- presentation # 3: February 8, 2006

# **The Musical Marriages of the Far East**

study materials  
for composers and musicians

by Moshe Denburg

with bibliography and discography  
compiled by Randy Raine-Reusch and Mei Han

## *The Musical Marriages of the Far East* - study materials

### General Note

The following study materials are being made available to participants in the educational series, **Music of the Whole World**, presented by the Vancouver Inter-Cultural Orchestra (VICO) at the Vancouver Public Library. The presentation, **The Musical Marriages of the Far East**, took place on February 8, 2006.

### Acknowledgements

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**Randy Raine-Reusch** – instrument descriptions, khaen information.

**Mei Han** – zheng information, Chinese music information.

**Joseph “Pepe” Danza** – shakuhachi information.

### Orchestration of Far Eastern Instruments

These materials form part of a larger work in progress (as of February 2006) entitled *Orchestrating the World - a Manual of Intercultural Music Making* by Moshe Denburg. Portions of this work are available for downloading on the VICO website. To download this study guide, as well as an expanded one for musicians and composers which includes orchestration materials for selected Far Eastern instruments, go to:

**[www.vi-co.org](http://www.vi-co.org)**

and click on 'VICO Instruments'.

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The Far East – Scope and Considerations

The Far East comprises many nations and a very large variety of cultural traditions. Many of these are related due to migrations of peoples over the millenia; however, it would be an error of unseemly proportions to assume that these cultures can all be easily grouped together. Let us bear in mind that each one of these cultures are represented by populations as numerous as, and in many cases more numerous than, that of any European country. Thus we acknowledge the uniqueness of each culture in language, in musical instruments, and in musical expression.

For the limited purposes of the present discussion, the nation-cultures we will include in this category of the Far East are: Laos, Vietnam, Thailand, Borneo, China, Korea, and Japan.

Certain instruments of the Far East are to be found, with variations in construction and techniques of performance, in several cultures. Two significant categories, the long zithers and the free-reed mouth organs, are tabled below.

	<b>Long Zithers</b>	<b>Free-Reed Mouth Organs</b>
<b>China</b>	1. zheng 2. qin	1. sheng 2. naw 3. lusheng
<b>Laos</b>	-----	1. khaen 2. Gaeng
<b>Thailand</b>	-----	1. khaen 2. Gaeng
<b>Vietnam</b>	dan tranh	mbuat
<b>Borneo</b>	-----	sompoton
<b>Korea</b>	kayagum	
<b>Japan</b>	1. koto 2. ichigenkin	sho

For some of the instruments of the Far East there exist written traditions, while for others the music is transmitted aurally. Many Asian musical cultures have adopted or invented systems of notation - whether number notation, tablature notation, or some combination - within the past 100 years. Today, some form of notation may be utilized in China, Korea, Japan, Vietnam, and Thailand.

These notations are often instrument specific, and most of them are prescriptive rather than idiomatically descriptive, in other words, the notations do not include significant details about performance and expression; these details must still be acquired aurally from a teacher.

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- **Khaen** (free-reed mouth organ from Laos and Northeast Thailand)



[ picture of khaen ]  
- courtesy of Randy Raine-Reusch

### **Description**

The khaen is a free-reed bamboo mouth-organ from Laos and Northeast Thailand, that can also be occasionally found in parts of Northern Vietnam and Southern China. The most common khaen is the 16 pipe version, called the khaen paat which is anywhere from 2 to 3 ½ feet in length. There is a reed flush with the side of each pipe. Originally the reeds were made of bamboo or from the stalk of a certain palm tree, but now of metal (brass or silver) traditionally made by hammering a small coin on an elephant thighbone until it is paper thin and then cut to size. The pipes of the khaen are arranged in two rows and extend through both sides of a wooden wind chamber which surrounds all the reeds.

### **Khaen - Sizes and Pitches**

There are a number of different types of khaen –

- a 6 pipe instrument called khaen hok, which is considered a toy;
- a 14 pipe instrument called khaen cet (pronounced: *tshet*);
- a 16 pipe instrument called khaen paat, the most common type;
- an 18 pipe instrument called the khaen gao, which is around 6 feet long, very rare and pretty much extinct.

The standard khaen is the 16 pipe (khaen paat), and is around one meter long. The standard used to be the 14 pipe (khaen cet).

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### **Range and Notation**

On the 16 pipe khaen the range is 2 ½ octaves, normally extending from A to e<sup>2</sup>. There is no notation tradition associated with the khaen.

### **Basic Scales, Modes, and Tuning**

The khaen, being a folk instrument, each instrument may exhibit slight differences in tuning. In other words, traditionally khaen were not produced with a standard frequency in mind. But this is changing, and there are companies today mass producing khaen that are in a standard tuning.

The khaen is tuned to a natural minor scale, starting on A. If we take the lowest A to be one octave and a minor third below middle C. Thus the range will be: A to e<sup>2</sup>.

It is diatonic (7 notes to the scale) but is played pentatonically, in modes derived from the scale.

Khaen can come in different pitches – one has to order them from the maker. They will of course vary in size. The standard Khaen in A is easy to find, but khaen in other pitches are not yet common.

### **General Considerations**

The khaen is representative of the Lao culture as well as the Isan culture of northeastern Thailand. A very similar instrument to the Khaen is found in Vietnam, but it is primarily a Lao instrument.

It is played in one of five different modes determined by blocking fingerholes on two pipes to form drones. The complex note arrangements of the khaen allow for a good player to play a melody, countermelody, chords and rhythm simultaneously, and as such the khaen is perhaps the most versatile instrument of the Asian free-reed family.

Traditionally the khaen is used to accompany a form of social singing with improvisational elements, a style of music called Lam. A person called a mawlam is the singer, and the khaen player provides the main accompaniment for him. This type of music originally came from the recitation of Buddhist scriptures, and has transformed over time into a music of social commentary. Certain set scales or melodies may serve as a springboard for improvised commentary by the singer, who speaks about daily life occurrences, and communal struggles and interpersonal struggles.

As Lao is a five tone language, it is essential for the khaen player to understand the context of the song, to anticipate what the improvising singer is going to do, and go with the tonal inflections of the language, rising with a rising pitch and so on. Thus the art of playing khaen is not easily come by, and a large repertoire and experience is necessary in order to play appropriately.

### **Method of Play**

To make the reeds vibrate the player blows air into and sucks air out of the air chamber – both exhalation and inhalation can make the reeds vibrate. When a hole of a pipe is covered, enough air pressure is created to make its reed vibrate. The length of the pipe is calculated to resonate with the fundamental frequency of the vibrating reed. Thus if the pipe is of an inappropriate length the reed will not sound.

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Traditionally one or two pipes are plugged to sound out constantly, as drones. These are usually the higher pipes of the instrument rather than the lower. They are plugged with pieces of pitch, called *kisoot*. Technically any of the pipes and any number of them can be plugged to sound as drones.

The longest pipes face the player and the pipe holes are opened and closed by the fingers of both hands. The two pipes facing the player (longest and lowest pitched) are played by the thumbs, the two farthest pipes (shortest and highest pitched) are played by the little fingers. This leaves 6 pipes in between. These pipes are played by the three remaining fingers, thus each finger has a choice of two pipes. To summarize:

- Thumbs play the 1<sup>st</sup> pipe pair;
- Index (first) fingers play the 2<sup>nd</sup> and 3<sup>rd</sup> pipe pairs;
- Middle (second) fingers play the 4<sup>th</sup> and 5<sup>th</sup> pipe pairs;
- Ring (third) fingers play the 6<sup>th</sup> and 7<sup>th</sup> pipe pairs;
- Little (fourth) fingers play the 8<sup>th</sup> pipe pair..

The maximum number of notes that can be sounded simultaneously, not including drones, is ten.

### **Chromaticism**

The khaen is a non-chromatic instrument – it can only sound the pitches which its reeds and pipes are designed to sound.

### **Dynamics**

There is a very large dynamic range possible, and one can call for *pp* to *ff* on any note. One can create crescendi and diminuendi by adding or taking away notes from a cluster.

### **Speed of Execution**

Quite fast runs are possible, perhaps stepwise a little faster than large leaps, but the action of the fingers is quite quick, even for intervallic fingerings. 16<sup>th</sup> notes at mm=132 are certainly performable, and perhaps faster still.

## **Techniques**

### **The Tradition**

The lower octave of the mode is traditionally played in octaves or fifths, or combinations of these intervals. Of course it is technically possible to play discrete notes, but the tradition has it that the lower octave is played in such a manner. The second octave and above is played in single notes.

Always there is at least one drone, and clusters are utilized where almost any mode note can be added in. These clusters are typically used at the beginning and end of pieces, a kind of ‘trumpeting’ the entrance and exit of the music.

Notes that one is not playing can be added in as a rhythmic counterpoint or accompaniment to the actual notes being played. Also, percussive breathing is used to accent the drone pipes, in a 6 note pattern. One can conceive of this accented pattern in two ways:

1. a 2/4 measure with two 16<sup>th</sup> notes followed by an 8<sup>th</sup> note, repeated, the accent falling on the 8<sup>th</sup> notes.
2. a 2/4 measure of two triplets, where the accents fall on the 3<sup>rd</sup> note of each triplet.

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The problem with notating this traditional accenting scheme in western notation is that the natural western tendency is to accent the 1 of the measure. This tendency needs to be checked. The important accents are on the 3<sup>rd</sup> and the 6<sup>th</sup> notes. One ought to consult with the performer to see whether the notation is adequate and appropriate.

### **General resources**

All the notes of the septatonic natural minor scale are playable, in combination or singly. What can become awkward is placing the fingers on three adjacent pipes. It is possible, but would necessitate developing a non-traditional skill.

### **Specific Techniques**

#### ***I. Tongueing***

All tongueings are doable – multiple, flutter, and back of the tongue flutter.

#### ***II. Vibrati***

Vibrato is accomplished with the diaphragm. One can also achieve a diaphragmatic flutter.

#### ***III. Accents***

Accenting is possible, by accentuating the breath. It is suggested to utilize just the onbe accent marking: >

#### ***IV. Timbres***

Timbral variation is not part of the instrument's vocabulary, but perhaps some experimentation can be done to vary the timbre by manipulating the pipes. Please consult with the performer.

#### ***V. Special Techniques***

1. Interesting sharpening and flattening of notes can be achieved by varying the air pressure. It is an aleatoric device (i.e. – unpredictable), but can be utilized to colour various clusters.

2. John Cage discovered that if one blows very lightly, certain reeds will sound in a pitch other than their actual constructed pitch. These pitches are not 'composable' since each instrument may respond quite differently, rendering different effects. However, it may be utilised for example at the end of a very quiet phrase that drops down to a very low volume. Experimentation with the individual performer is called for.

3. One has to include as an extended technique, fingerings that do not adhere to the traditional one finger per two pipe scenario (see above in 'Method of Play').

4. One can play and sound the voice simultaneously.

### **Asian Relatives of the Khaen**

Sheng (China)

Sho (Japan)

Mbuat (Vietnam)

Sompoton (Borneo)

### **Internet links**

<http://www.asza.com/ikhaen.shtml>

<http://www.ksanti.net/free-reed/essays/khaenlaos.html>

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### • Zheng



#### Description

(pronunciation: *djung*) A plucked half-tube wood zither from China, with movable bridges over which strings are stretched. The strings were traditionally made of silk, but today they are usually made of steel or metal wound nylon. The modern Zheng usually has 21 strings, tuned to a pentatonic scale. The performer uses the right hand to pluck the strings, and the tone can be modulated by the left hand pressing the string on the non-speaking side of the bridge. Excellent arpeggios, chords, glissandi, bends, and delicate ornaments are obtainable from the instrument.

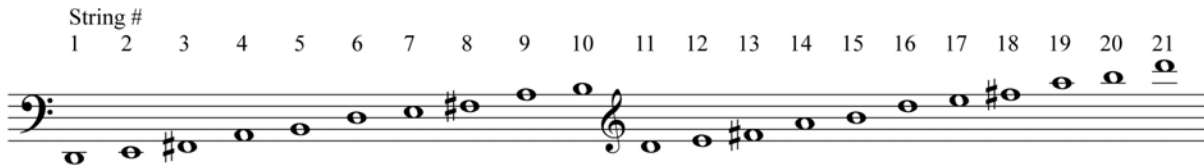
#### Tuning

The 21 string zheng is tuned variably, depending upon the scale desired. The best way to understand the tuning is to begin with the basic tuning, which is the pentatonic scale of Chinese Music. Taking string # 1 as the lowest and #21 as the highest, we obtain the following tuning:

<u>String #</u>	<u>Note</u>	<u>Piano Notation</u>	<u>Frequencies of A's</u>
1	D	D18	
2	E	E20	
3	F#	F#22	
4	A	A25	110hz
5	B	B27	
6	d	D30	
7	e	E32	
8	f#	F#34	
9	a	A37	220hz
10	b	B39	
11	d'	D42	
12	e'	E44	
13	f#'	F#46	
14	a'	A49	440hz
15	b'	B51	
16	d''	D54	
17	e''	E56	
18	f#''	F#58	
19	a''	A61	880hz
20	b''	B63	
21	d'''	D66	

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### Zheng Tuning



The zheng can be tuned differently from the basic tuning, by moving the bridges around. It is important to remember that the 'distance' of the octave needs to remain the same, i.e. - the scale is comprised of 5 strings, the sixth string being the octave. The rule of thumb is that each string can be tuned over a range of 1 tone, 1/2 tone up or 1/2 tone down. For greater interval deviations, please consult with the performer.

At the beginning of the piece, the tuning should be given exactly. There are many possibilities in this regard, and tunings that vary the notes in the different octaves are also possible. A tonic should be chosen, especially when notating in Chinese notation, since the numbering will indicate the pitches to be played.

Retuning during the course of a work requires a little time. To change the tuning of any one string, its bridge has to be moved, and this takes several seconds. It is common to retune between movements of a work. The composer should bear these issues clearly in mind when writing for the zheng.

#### A note on intonation

In China, intonation is mostly 'just', not equi-tempered, thus, when playing with western instruments this structural difference may create difficulty. With careful listening however, the difficulty can be overcome.

### Notation and String Numbering

The usual considerations for Chinese instruments apply - one can choose either Chinese or Western notation or a combination of these. If western notation is utilized, many, if not all, Chinese musicians will annotate the music in Chinese notation, since this is their first choice. It may work well for the composer to notate in the western 5 line staff and add the Chinese numbers to it for them. This may be laborious, and it is not generally necessary for Chinese musicians, who are quite adept at both systems.

In western notation one generally writes for the zheng at pitch, utilizing the bass and treble clefs. In Chinese notation one utilizes the French Chev  number system. Sometimes the performer will request a 'movable do' system. In such a situation, the piece may be written in a C tonic, and the zheng becomes a transposing instrument. Consult with the performer as to their preference.

In western notation, when notating certain ornaments such as bends, it is sometimes necessary to indicate the string upon which the ornament is executed. In traditional zheng repertoire the only string numbers that are used are 1, 2, 3, 5, and 6. These correspond to the notes of the pentatonic scale. There are 5 tonics which are traditionally used: D, F, G, Bb, and C. In these scales the note names and string numbers will be as follows:

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**Tonic D:** D = 1, E = 2, F# = 3, A = 5, and B = 6.  
**Tonic F:** F = 1, G = 2, A = 3, C = 5, and D = 6.  
**Tonic G:** G = 1, A = 2, B = 3, D = 5, and E = 6.  
**Tonic Bb:** Bb = 1, C = 2, D = 3, F = 5, and G = 6.  
**Tonic C:** C = 1, D = 2, E = 3, G = 5, and A = 6.

In a tuning which departs from the pentatonic, the scale degree of any given note may not be reflected in the string number, but rather the traditional string number only will be utilized. Thus in a tuning such as: D E F A C, the strings may be numbered as follows:

**D = 1, E = 2, F = 3, A = 5, and C = 6.**

Here the C is numbered **6** even though its scale degree may indeed be **7**. **These considerations are not written in stone.** One performer may prefer one numbering over another, and depending upon the work, and in consideration of tonic modulations, the string numbering for a given piece may be specific to that piece. Some would insist that the numbering for the tuning above must be:

**D = 1, E = 2, F = 3, A = 5, and C = 7.**

The only rule of thumb is to adhere to the traditional pentatonic string numbering in the tonic of D.

**Tonic D:** D = 1, E = 2, F# = 3, A = 5, and B = 6.

When writing in Chinese notation, the note numbers are the chief indicators of the pitches to be played, these being paramount it may confuse the performer to see a circled '6' where a 7 is actually being sounded. Clarify these issues with the performer.

### Unusual Notations for Unusual Tunings

For tunings that are different in different octaves, a tablature which works according to string number (without reference to pitch) may be useful. However, in order not to confuse the player, who is accustomed to Arabic numerals representing pitch classes, a different alpha numeric system would have to be utilized.

Another manner of dealing with this situation is to specify the tuning of the entire instrument, numbering the pitches with precise pitch classes. In western notation, the actual pitch will be apparent from its placement on the staff, and in Chinese notation, the 'dots' system will indicate the octave in which the pitch is found, for example, for the tonic note D:

D	d	d <sup>1</sup>	d <sup>2</sup>	d <sup>3</sup>
1̣	1̣	1	1̣	1̣

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### Range

#### Zheng range - D to d<sup>3</sup>



The range for the 21 string zheng extends from D (below the bass clef) to d<sup>3</sup>. Some extensions can be made, by tuning the low D down a half-tone, or by tuning the high d<sup>3</sup> up a half-tone. Check with the performer about these extremes of tuning.

Historically, the zheng had fewer strings, but today's professional instrument comprises 21. There are smaller zhengs, with 16 notes, for playing traditional folk repertoire.

### General Considerations

In traditional Chinese music, the Zheng plays a significant role in ensembles. However, it is known as a great solo instrument. It has excellent projection, but still retains a sweet sound, and is capable of very subtle nuances and a large range of feeling.

Very idiomatic to the zheng are arpeggiations, repeated patterns, chordal textures, and tremolos. Microtonal nuances and ornamentations are highly performable, for instance melodies with bending and shakes. Quick scalar runs are not as idiomatic, though with proper preparation and due consideration for the necessity of bending notes, the entire gamut of notes can be rendered by any professional. Other nuances include muted notes and harmonics.

### Method of Play

Strings are played on the speaking side only - the other side of the bridge does not render a defined note, however it is used as an effect sometimes. All the in-between notes, those that lie between the pitches of the tuned strings, are produced by pressing the strings behind the bridges with one hand while plucking with the other. However, these pitches are much harder to define than those on the open strings and to a large degree, using these bent notes as stable notes or for harmonic purposes is not desirable.

Each string can be pressed, or bent, to a maximum interval of 1½ tones. The higher the string, the greater its tension and so greater care must be taken with these, and there are some limitations as to how great an interval one may achieve in instances of higher string tension.

Plectra are worn on the fingers of the right hand only. This hand plucks the strings, while the left hand is utilized to create bends on the non-speaking side of the bridges. The left hand is also utilized to pluck the strings. The fingering patterns are important to bear in mind: *middle-thumb-index-thumb* is most common. The ring finger is also used, but the aforementioned are the basic. It is not necessary to notate the fingering.

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### Hand Span

The normal hand span covers an octave for certain, but up to 2 octaves is quite possible. In traditional zheng compositions, no more than an interval of an octave is called for.

### Dynamics

The zheng's dynamic range is not large, but aggressive playing is possible, and will project more. Playing more notes at once will add presence, and long glissandi, which utilize many strings, are quite idiomatic and will certainly project well.

The zheng is a very resonant instrument with a long decay; however, the higher the note played, the shorter the speaking length of string, and thus the quicker the decay.

### Speed of Execution

Speed of execution depends upon the musical figure being played. Tremolos on one note can be done very quickly, whereas melodic figures which require bending the strings, and/or intervallic leaps, will be harder to execute at extreme speeds.

### Techniques

#### *I. String Bending Techniques*

By means of bending a string on the non-speaking side of the bridge, a variety of techniques are performable. Here are the techniques obtainable by string bending.

- Vibrati of large and small frequency ranges and at all speeds. Many subtle variations are possible: slow, vibrato with portamento (gliss), on one stroke quickly, on multiple strokes, fast and forte, etc.
- Ornaments executed with string bending include upper and lower mordents and grace notes. The composer must consider all necessary preparation of the notes called for; for example, in a lower mordent, the upper note must be 'pre-bent' in order for the ornament to be performed.
- Microtones can be called for as well.
- Intervallic bends, in other words, bends of two or more notes together, are possible. They are less difficult the smaller the interval. Much strength is needed for octave bends, for instance. Check feasibility with the performer.

#### String Bending - considerations

The composer must always bear in mind that string bending occupies the left hand, and it is variously difficult to do many string bends in succession on different strings. This is all the more so if the strings to be bent in succession are intervallically - therefore physically - far apart, and/or if the performer is called upon to proceed directly from one string in an *unreleased bent position* to another string bend. Intonation too will become harder to control.

After releasing a bend the left hand can return to playing after a second. It is quicker if the left hand is to play a string close to where the bend occurred rather than further away.

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Quick plucks on bends to obtain discrete notes can be performed by a fine professional. Excellent intonation on bent notes is always difficult to achieve.

The composer must remain aware that when a bent string is released, the sound of the unbent string will be made audible - the more so for a lower, longer decay note and in quieter passages. Decay is quicker with the higher pitched strings. The bent note's decay rate also depends on how vigorously the string has been plucked. In thin textures the release of this note will be heard clearly, unless it is allowed to decay completely. This could take some time. In denser textures, the note can be released after a beat or two and not interfere much with the sounds that succeed it. However, there will still be a 'shadow' sound of the released string.

### **II. *Glissando***

Glissandi are quite idiomatic, just as on the western orchestral harp. The first and last notes of the glissando are notated with an appropriate glissando marking connecting them.

### **III. *Tremolo, Tremolando***

Tremolos on one note at a time are easily done, as well as tremolandi over a small diapason, where a string is bent while playing tremolo. Tremolos can be measured or unmeasured.

Intervalllic tremolos are executable, but adjacent string tremolos are harder to execute than those which use strings further apart.

### **IV. *Arpeggios and Chords***

- Chords can be played as plucked figures, or in arpeggio.
- Using both hands, up to 8 strings can be fingered on a chord.
- Arpeggiated chords ranging more than an octave are performable, though speed of execution will be compromised the larger the range.
- Utilizing a bent string in a 4 note/one hand chord may not intone well. This must be considered an extended and virtuosic technique, done in consultation with the performer.

### **V. *Harmonics***

Harmonics, up to the 5th partial (on a lower string) are possible. Consult with the performer for feasibility. One hand harmonics are also executable, thus freeing the other hand to play other strings at the same time.

### **VI. *Muted Notes***

There are different kinds of muting possible.

- a) Muting with the left hand finger on the bridges (1/2 mute);
- b) Muting with left hand on the strings while playing with right (full mute);
- c) Muting with right hand while playing, using the palm's outer edge;
- d) Muting with either hand, after playing, to stop the sound;
- e) In a glissando, muting certain strings with the left hand's fingers in order to accentuate a specific combination of pitches.

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### **VII. Accents and Timbres**

#### Accents

Standard accents can be called for.

#### Timbres

Playing closer to the pressure bar (the right side of the player) gives a more projected sound, but the sound becomes quite brittle very close to the bar, especially on higher strings. Closer to the bridges the sound is softer and less defined, especially in the tenor and bass areas.

Timbre is also effected somewhat by which hand is plucking, since it is usual that the right hand fingers utilize hard plectra, while those of the left hand do not. Thus the left hand pluck may be softer in timbre.

### **VIII. Other techniques**

- A kind of a 'bartok slap' is audible with aggressive plucking.
- A two thumb technique, with plectra on both, can be utilized to create very fast staccato like figures. The plucking is executed in quick alternation, and the flesh of the palms mutes the notes immediately. The resulting patterns, of notes and chordings, are highly dynamic and staccato-like. (Note: This is an invention of Randy Raine-Reusch)
- Harmonics can give an interesting effect when played with somewhat aleatorically.
- Moving the bridges while playing is possible. A gradual melody will work, never anything fast. A half step, either up or down, can be executed as part of a simple melodic movement.
- Percussive effects are possible: knuckles on wood; yarn mallets; other objects as beaters.
- Bowing the strings is also possible; check with the performer for feasibility, e.g - are the string planes convex enough to allow all strings to be bowed, or only the extreme high and low?

### **Asian Relatives of the Zheng**

Kayagum (Korea)

Koto (Japan)

Dan Tranh (Vietnam)

Yatga (Mongolia)

## *The Musical Marriages of the Far East* - study materials

- **Shakuhachi** (Japanese end blown bamboo flute)



### Description

The Shakuhachi is an end-blown notched bamboo flute of Japan. The modern standard version has four finger holes and one thumb hole. Originally imported from China by the early 8<sup>th</sup> century, it reappeared around the 15<sup>th</sup> century in a Japanized form and has since come to be used in several quite diverse types of music: meditative solos, small ensemble pieces, folksong, and modern works by both native and foreign composers.

### Shakuhachis - Sizes and Pitches

The name *shakuhachi* is derived from the term "*issshaku hassun*" which means one *shaku* and eight *sun* (1.8 Japanese feet, equivalent to 54.5 cm. Thus, 1 *shaku* = 30.3cm). Even though the term *shakuhachi* refers to the standard size instrument - which renders  $d^1$  as its pipe note - it can refer to many different sizes ranging from 1.3 *shaku* to 2.5 *shaku* and even longer. There are shakuhachis for every note in the gamut, though the two most common are those whose pipe notes are  $d^1$  and  $c^1$ .

**(1 shaku = 30.3 cm)**

* Tonic (Pipe note)	Piano Pitch	Approx.Length in Shaku	Approx.Length in Cm
$g^1$	G47	1.3	39.4
$g_b^1/f\#^1$	F#46	1.4	42.4
$f^1$	F45	1.5	45.4
$e^1$	E44	1.6	48.5
$e_b^1/d\#^1$	D#43	1.7	51.5
$d^1$ (standard flute)	D42	1.8	54.5
$d_b^1/c\#^1$	C#41	1.9	57.6
$c^1$	C40	2.0	60.6
$b$	B39	2.1	63.6
$b_b/a\#^1$	A#38	2.2	66.7
$a$	A37	2.3	69.7
$a_b/g\#$	G#36	2.4	72.7
$g$	A35	2.5	75.7
$f$	F33	2.7	81.8

\* The **tonic** of the shakuhachi is the same as the **pipe note** - the note sounded when all finger holes are closed.

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### Naming

We will call a Shakuhachi by its pipe note, ie. the note which is rendered when all holes are closed. For the purposes of this discussion, the shakuhachi referred to is always the standard **pipe note d<sup>1</sup>** flute.

### Range and Notation

Taking the standard **pipe note d<sup>1</sup>** shakuhachi, the extreme range would extend from **c<sup>1</sup>** to **e<sup>4</sup>**. The following considerations apply:

- **c<sup>1</sup>** and **c#<sup>1</sup>** are special extended notes, created by lowering the head while playing the pipe note **d<sup>1</sup>**.
- the basic range is **d<sup>1</sup>** to **e<sup>3</sup>**.
- extended range is up to **e<sup>4</sup>**; some notes in this highest octave are difficult to obtain, for example **f<sup>3</sup>**. Consult with the performer.

In western notation one notates the **pipe note d<sup>1</sup>** shakuhachi at pitch and in the treble clef. Japanese notation is possible, and will be covered in the section on Japanese notation systems. For shakuhachi other than the **pipe note d<sup>1</sup>** there are 2 ways to notate, though the decision should be left up to the performer:

1. **Transposition** - notate for the **d<sup>1</sup>** shakuhachi always, and indicate which pipe note is called for.
2. **At concert pitch**, in western notation.

The transposition method would seem the more reasonable, and would allow the performer to change between different sized instruments without having to adjust his mind to an entire new notational map.

### Basic Scale and Tuning

The scale rendered by beginning on the pipe note, and without half holing, is a pentatonic minor: **6-1-2-3-5-6**, or, in movable *Do*: la-do-re-mi-sol-la. A shakuhachi in D will render the scale: **d-f-g-a-c-d**.

The standard shakuhachi renders a pipe note of **d<sup>1</sup>**. However, certain instruments may not accord with western standard pitch, partly because the shakuhachi has a long tradition of solo meditational music, and in such a context standard pitch is non-essential. The composer needs to call for an instrument of standard pitch when composing for shakuhachi within an ensemble.

### General Considerations

Though shakuhachi differ in size, rendering different absolute pitches, the scale remains unchanged, and for practical purposes is named d-f-g-a-c. This is called the D shakuhachi. In notating on the western staff, as mentioned above, it is best to always consider the shakuhachi as if it were the D; thus, a shakuhachi whose pipe note is **c#**, for example, would sound a 1/2 tone lower than notated. One should double check with the performer.

The basic notes can be manipulated to sound the entire gamut of notes, by utilizing several techniques:

- a) Meri - a lowering of the head, which results in a lowering of the pitch. Up to 1 whole tone lower is possible.
- b) Kari - a raising of the head, which results in a raising of the pitch. Up to 1/2 tone higher is possible.
- c) Half (or partial) Holing - raises or lowers the tone.
- d) Cross (aka forked) Fingerings - render certain notes of the scale with a more reliable dynamic than by using meri or kari or partial holing.

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There are shakuhachis of every size, though not all performers own the entire gamut, so the composer must ascertain which shakuhachi the performer owns before committing pen to paper.

The traditional method of shakuhachi playing is an aesthetic all its own, not easily transferred to a western aesthetic. However, there are forms of ensemble in Japan, such as the *Sankyoku*, which can give the composer an idea of how the shakuhachi behaves in ensemble. *Sankyoku* is a trio which includes Shakuhachi, Koto (13 string zither), and Shamisen (3 string fretless lute).

### Chromaticism

The shakuhachi is not truly a chromatic instrument, though in the hands of a fine player all the notes in the gamut can be realized. Still, care must be taken in writing anything that departs from the basic scale, since these notes are produced variously by lowering or raising the head (changing the angle of breath attack), half-holing, and employing cross-fingerings. Dynamics and speed of execution may be affected when using these techniques, and playing in tune is hardly a trivial achievement.

### Harmony

The shakuhachi is not easily given to harmonic ensemble playing, but it is an excellent solo instrument and can blend well in contrapuntal textures. If discrete, held notes are required, it is wise to adhere to the 5 notes of the basic scale, and to consult with the given performer regarding the feasibility of performance. The training of the musician is also a factor - a shakuhachi player who has experience playing harmonic textures will better be able to play harmony notes in tune.

### Bending Notes

From any fingering one can obtain as much as a whole step difference down, and a half step up, by changing the angle of the flute with the face. For example, from a  $d^1$  fingering, by lowering the head (called *meri* in Japanese) one can obtain  $db^1$  and  $c^1$ ; by raising the head (called *kari*) one can obtain  $eb^1$ . Some fingerings are manipulated more easily than others.

### Dynamics

In the shakuhachi tradition timbre and uniqueness of notes take precedence over the concept of equality of dynamics between notes. This equality of dynamics is more a western concept. It is used in the more modern schools of shakuhachi playing (Tozan), but the older, more traditional style (Kinko) is not concerned with this concept.

Fundamental to the use of *meri* is a softening of the dynamic. Half holing is generally a stronger dynamic than *meri* but 1/2 tone *meri* can be quite strong, especially at higher places in the octave. For example,  $Bb^1$  *meri* is stronger than  $eb^1$  *meri*.

A whole tone *meri* (*dai meri*) is quite soft. *Kari*, on the other hand, tends to increase the dynamic a bit, but it is difficult to execute in the lower part of the instrument - the higher we go in the octave (i.e. - the more lower finger holes that are open) the easier *kari* becomes. Cross fingerings, some of which are quite traditional, can be used to good effect in creating notes that speak quickly and well and are readily fingered; in certain cases these fingerings are easier for the performer than half holing.

In general the shakuhachi does not have a large dynamic range. In the lower octave  $c^1$  and  $c\#^1$  are quite quiet, since they rely completely on *meri* (lowering the head). From  $d^1$  to  $c^2$  there is good dynamic control, but not too loud. In the middle octave - from  $c\#\#^2$  to  $e^3$  - we may assume good dynamic control, and in the upper octave - from  $f^3$  to  $e^4$  - it becomes more difficult to play quietly.

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By combining half and quarter holing, some cross fingerings, and the meri-kari technique (see *Bending Notes* above), the chromatic scale is obtained. Certain notes will have a softer dynamic, and in fact this altered dynamic is what is required in traditional shakuhachi playing. Creating equal dynamics for all the notes in the gamut can be achieved to a large degree, but is an aesthetic outside certain traditional schools.

To obtain equality of dynamics between the natural and half-holed notes, it is possible, between  $d^2$  and  $d^3$ , to use alternative fingerings. Above  $d^3$  the force of breath needed for these notes results in a dynamic equality, regardless of alternate fingerings.

The eb's are the most dynamically unequal of the in-between notes. A good alternate fingering exists for  $eb^2$ . The other in-between notes of the scale are not as bad.  $Bb^1$  meri is not too soft dynamically, so it may be treated as one more note in the gamut.  $Eb^1$  meri is uncompromising, and will definitely be softer dynamically. There may be a way to play the  $eb^1$  as kari.

Since it became common for the Shakuhachi to play in certain instrumental ensembles in Japan, the need for it to play all the notes in the gamut with equal dynamics has received some attention. There are now shakuhachi with 7 holes and even 9 holes. These are constructed for ease of dynamic control throughout the range. The composer would have to ascertain whether the performer owns such an instrument before calling for it, since it is not yet common.

### Speed of Execution

Speed of execution depends on the passage being played - if the notes called for are easily fingered, and have little meri-kari demands, the speed is maximized. In general the shakuhachi is not as agile as other flutes with more holes. Bursts of breath and ornament, leading up to a main note, are very idiomatic and give the impression of great speed.

It is important to consider the speed of articulation possible with the various methods of pitch production: meri and kari will be slower than 1/2 holing and cross fingerings. The choice needs to be made in consideration of the actual figure to be played. There seem to be forked or half holed fingerings for every note except  $e_b^1$  and  $b_b^1$ .

### Techniques

#### **I. Tongueing**

Traditionally tongueing is not called for. When a repeated note is desired this is accomplished by rapidly opening and closing (tapping) a neighbouring finger hole (in Indian music these are called *janta svaras*). Still, all kinds of tongueing are performable, single, double, triple and flutter. Fluttertongue is more common in the tradition than double and triple tongueing. In more modern shakuhachi pieces tongueing is called for.

#### **II. Vibrati and Glissandi**

Idiomatic to the shakuhachi is a slow vibrato, created by side to side head movement. A wider vibrato is obtainable by an up and down head movement. These are pitch vibrati. A diaphragm (amplitude) vibrato is also performable. Vibrato is not part of the usual shakuhachi tone, it is called for as a technique or an ornament.

Glissandi and portamenti are performable, and when using meri-kari the portamento is very convincing. Gradual release of the finger holes is utilized to create glissandi, up and down.

#### **III. Accents**

Accents of all kinds are performable.

#### **IV. Timbres**

- a) Meri-Kari - meri produces a softer thinner tone, kari a somewhat airy and louder tone;
- b) timbral trills are possible – one would have to ask the performer which notes apply.

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### Chinese Notation

#### General Considerations

Chinese music is written according to a number system, known as *jianpu*, which means "simplified notation" in Chinese. The system's invention is attributed to Jean-Jacques Rousseau (1742) but its development continued in the hands of Pierre Galin (1786-1821), Aimé Paris (1798-1866), and Émile Chev  (1804-1864). In some circles Chinese number notation is simply referred to as the French Chev  system. Variants of the number system are utilized all over Asia.

Nowadays, Chinese musicians can read western notation as well as Chinese. Many of them, when working from a Western staff notated part, will annotate it with the number system, since this is more native to their training.

The number system is similar in many respects with Indian notation, the main difference is that in Indian notation letters, representing the notes of the gamut, are utilized, whereas in Chinese notation numbers are employed. Like Indian notation, Chinese notation can be very useful as a musical shorthand.

In writing for Chinese instruments there are 3 ways to go: 1. we may use Western notation together with certain markings to indicate the specific techniques; 2. we may use Chinese notation throughout; 3. we may use both Western and Chinese notation in combination.

#### Note Numbers

To begin with, Chinese notation is conceived as a 'movable *do*' system. For the sake of elaboration we will take the tonic of the system as equivalent to the note 'C'.

The gamut is represented by the following numbers:

<b>1</b>	<b>1#</b>	<b>2</b>	<b>2#</b>	<b>3</b>	<b>4</b>	<b>4#</b>	<b>5</b>	<b>5#</b>	<b>6</b>	<b>6#</b>	<b>7</b>
C	C# Db	D	D# Eb	E	F	F# Gb	G	G# Ab	A	A# Bb	B

#### Considerations

- The tonic of any major scale will always be **1**, and the tonic of any minor scale will always be **6**.
- The key and tempo are noted at the beginning of the work, e.g.

**1 = C** 4/4 (C Major)

**1 = Ab** 3/4 (Ab Major)

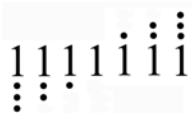
Note that even in cases where the key is minor, or for a mode, only the **1** of the key is indicated.

- Specific modes can be indicated supplementarily, for example **3 = E** would mean the phrygian mode on E, thus the key signature is that of C major (no accidentals), but the tonic is E.
- Both flat (b) and sharp (#) signs are utilized in Chinese notation.

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- Lower octave notes are indicated by placing a dot  $\cdot$  below the number; higher octave notes are indicated by placing a dot  $\cdot$  above the number; 2nd lower octave utilizes double dots  $\cdot\cdot$  below; and 2nd higher octave by double dots  $\cdot\cdot$  above. And so on.

A six octave range would be represented thus:



### Durational Elements

#### Pitch (melodic and harmonic) Notation

Here is the key to durational values, first in Chinese number notation, and below in Western staff notation.

1. A number on its own is a quarter note:

4/4 | 1 2 3 4 | 5 6 7  $\dot{1}$  ||



2. A number with one line below is an eighth note:

4/4 | 1 2 3 4 5 6 | 5 4 3 2 1 1 ||



3. A number with two lines below is a sixteenth note:

4/4 | 1 2 3 4 5 5 3 2 1 2 1 ||



4. Similarly, numbers with 3 lines below are thirty-second notes, with 4 lines below, sixty-fourth notes.

5. A number followed by a dash is a half note:

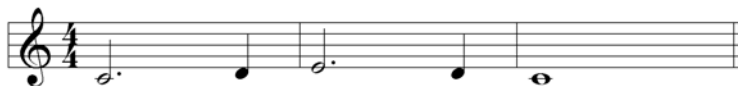
4/4 | 1 - 2 3 | 2 - 1 - ||



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6. A number followed by two dashes is a three quarter note, and a number followed by three dashes is a whole note:

4/4 | 1 - - 2 | 3 - - 2 | 1 - - - ||



7. A number followed by a dot (.) is a dotted note:

4/4 | 1 . 2 3 4 5 | 4 . 3 2 1 - ||



8. The number '0' represents a rest. Its duration is determined in the same way as that of note numbers.

4/4 | 1 2 0 3 4 5 | 0 4 3 2 1 - ||



9. As in western notation, ties are used to extend the duration of a note, e.g.

4/4 | 1 2 3 4 4 5 4 3 2 1 1 ||



10. Triplets and other added durational indicators are notated as in western music, with a slur over the notes affected and a number indicating values:

3/4 | 1 2 3 4 4 5 | 4 3 2 1 0 ||



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11. Harmonies, chords, double stops, and so on, are notated in a vertical fashion, thus:

$$\frac{4}{4} \left| \begin{array}{ccc} 5 & 7 & 6 - \\ 3 & 5 & 4 - \\ 1 & \underline{23} & 4 \underline{32} \end{array} \right| \begin{array}{c} 5 - - - \\ 3 - - - \\ 1 - - - \end{array} \parallel$$

### Rythmic Notation

Non-pitched rhythms can be notated with **X**'s, and the rules of duration are the same as for pitch representations. Here is example 8 above, in rhythmic notation:

$$4/4 \mid \underline{\underline{\mathbf{xx}}} \underline{\mathbf{ox}} \mathbf{x} \mathbf{x} \mid \underline{\mathbf{o}} \mathbf{x} \underline{\underline{\mathbf{xx}}} \mathbf{x} - \parallel$$

To further study Chinese notation, and number notation in general, peruse Chinese instrumental scores.

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**Descriptions of selected Far Eastern Instruments**  
with special thanks to Randy Raine-Reusch

**Dan Tranh** - The Dan Tranh is a 16 string zither from Vietnam approximately 1 metre long. The strings are all made from metal of a uniformly thin gauge, allowing for extremely subtle nuances to be voiced. The instrument is usually played with metal or tortoise shell picks on the thumb and first two fingers. The dan tranh is performed as both a solo instrument, in small ensembles, and as part of larger traditional music orchestras. It has a very quiet and delicate sound.

**Ichigenkin** - The ichigenkin is an extremely rare 1-string zither that was believed to have originated in the Shikoku region of Japan. The ichigenkin has a history as a philosopher's instrument, and at one time was a preferred instrument of many members of the Samurai class. Presently used to accompany vocal music, the ichigenkin is capable of extreme subtlety while producing a surprisingly full and complex sound.

**Gaeng** - The gaeng or qeej is the free-reed mouth organ of the Hmong people of Laos and northern Thailand. It has a very long wooden wind chamber intersected by six pipes placed in two rows that curve upwards. The reeds are usually made of brass. The mouth piece can be up to a metre long with the pipes ranging from a metre (common in Laos) to 4 metres (found in southern China). It is usually played for funeral rites but can also be performed at the New Year's festival and other events.

**Kavagum** - A long zither which originated in the southern kingdom of Kaya, the Kayagum has a soundboard made of paulownia wood and 12 strings of twisted silk. The strings rest on moveable bridges each carved in the shape of a crane's foot. It has great expressive capabilities including microtonal shadings, and it is perhaps the most favored of all Korean instruments that are normally performed in a solo capacity.

**Koto** - A prominent member of the family of Asian long zithers, the Koto has seen more than a millenium of development since it was brought to Japan from China. It normally has 13 strings which rest on moveable bridges to facilitate various tunings. It is played with plectra on the right hand fingers, while the left hand is employed primarily in creating ornamentation and altered pitches.

**Lusheng** - (pronunciation: *loo-shung*) The lusheng is a free-reed mouth organ played by several minority peoples of Southwestern China. The Chinese lusheng is a version of the Lao *gaeng* but different in size and construction materials. Traditional lusheng have six bamboo pipes set into a bamboo or wooden wind chamber. Sizes range from 1/3 of a metre to 3-4 metres. Recent innovations, created in response to Chinese government ideologies, have increased the number of pipes in order to play more complex music, and a set pitch to play with other instruments.

**Mbuat** - The mbuat is the free-reed mouth organ of the Meo (Hmong) people of Vietnam. Played as a solo instrument or in small ensembles it was commonly used for expressing caring between a man and woman. It is perhaps the oldest example of free reed mouth organs in existence. The Raglai people of Vietnam play an almost identical instrument called a kpuot. The Murung people of Bangladesh play an instrument called a plung which is almost identical in construction to the mbuat.

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**Naw** - Found in southern China and in the mountains of northern South-east Asia, the naw or hulusheng (which literally means gourd sheng) is a free-reed mouth organ, and one of the oldest members of the sheng family. It has five pipes grouped in a circular cluster, and placed in such a way as to allow the player to "bend" the notes. The music of the naw is lively and quite loud, in spite of its possessing bamboo reeds.

**Qin** - (pronunciation: *chin*) A seven-stringed zither without bridges, it is widely recognized as the Chinese instrument with the highest pedigree, as it has over 3000 years of history. It can be called Qin, but is also referred to as Guqin, as "gu" implies 'ancient'. Acoustically it is of very soft dynamic, and is not played as an ensemble instrument and hardly in public. It is reserved as an instrument of personal discipline and enrichment.

**Shakuhachi** - An end blown notched bamboo flute of Japan, the modern standard version has four finger holes and one thumb hole. Originally imported from China by the early 8<sup>th</sup> century, it reappeared around the 15<sup>th</sup> century in a Japanized form and has since come to be used in several quite diverse types of music: meditative solos, small ensemble pieces, folksong, and modern works by both native and foreign composers.

**Sompoton** - The sompoton is a free-reed mouth organ from northeastern Borneo. It has a gourd wind chamber from which extend 8 pipes arranged in two rows. There are bamboo reeds in seven of these pipes only, and three of these pipes do not have sound holes and are played by closing and opening the tops of the pipes with fingers of the right hand. The instrument has an average size of just over 1 foot, but may range in size from 6 inches to 3 feet in length.

**Sheng** - (pronunciation: *shung*) The sheng is a mouth organ made of bamboo, consisting of a bundle typically of 17 pipes (but as many as 36 in some larger models) attached to a wind chamber. The pipes are fitted with free reeds, nowadays made of brass. The Sheng is an ancient Chinese instrument and since it is capable of sounding up to 6 notes at once, it is utilized both as a solo voice and for harmonic accompaniment.

**Sho** - A Japanese free-reed mouth organ related to the Chinese shêng, the sho has around seventeen bamboo pipes and 15 reeds. The pipes extend from the top of a wooden wind chamber, and arrayed in a circular manner. The instrument is used to provide a chordal element, and is prominent in a style of Japanese court music called Gagaku.

**Zheng** - (pronunciation: *jung*) A plucked half-tube wood zither from China, with movable bridges over which strings are stretched. The strings were traditionally made of silk, but today they are usually made of steel or metal wound nylon. The modern Zheng usually has 21 strings, tuned to a pentatonic scale. The performer uses the right hand to pluck the strings, and the tone can be modulated by the left hand pressing the string on the non-speaking side of the bridge. Excellent arpeggios, chords, glissandi, bends, and delicate ornaments are obtainable from the instrument.

*The Musical Marriages of the Far East* - study materials

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compiled by Randy Raine-Reusch and Mei Han

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**Internet Resources**

- [www.asza.com](http://www.asza.com) click on: 'WORLD INSTRUMENT GALLERY'  
- For more information on a large array of world music instruments

**For more information on intercultural events, music, and study**

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