

Orchestrating the World

- a manual of intercultural music making

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- **Dizi** (Chinese transverse bamboo flute)



[Picture of Dizi]

Description

The Dizi is a bamboo flute with a membrane covering one hole to create an increase in resonance and a typical 'buzzing' quality. It is really a renaissance flute with a membrane. There are 6 playing holes. The speaking length is determined by blocking the pipe at both ends. There is extra pipe material which is just esthetic - this extra length does not effect the speaking length.

Since the dizi is mainly a diatonic-major-scale instrument, with very few accidentals playable, they come in many different lengths to accomodate the different keys that a piece of music calls for.

Tunings and Pitches

The system utilized for naming pitches is a 'movable do'. However, this too is divided into 3 systems:

1. The lowest note (the 'pipe note') is called 'Do';
2. The lowest note (the 'pipe note') is called 'Re';
3. The lowest note (the 'pipe note') is called 'Sol'.

Taking the dizi's pitches, from the lowest note (the 'pipe note') to one octave above, and taking this pipe note as 'Sol' we obtain the following:

Sol La Si Do Re Mi Fa Sol.

Thus 'Do' (of the diatonic major scale) in system #3 is obtained with the 3 lowest holes of the dizi open. Dizis are named by this 'Do'. This is regardless of the naming of the pipe note. Thus if pipe note's pitch is G, then this dizi will be called a C dizi, which is the pitch obtained when the 3 lowest holes of the dizi are open.

In traditional Chinese music, the part will always have an indication at the top for the pipe note, e.g. - 'Pipe note is Sol'. This is especially useful in Chinese notation which utilizes a number system, and so 1=Do, 5=sol and so on. The key then is secondary, since all the dizis will rspnd to the same movable do system.

Range

Concert Pitch and Written Pitch

The range of all dizis is 2 octaves and a major 2nd. Thus if the pipe note is Sol = g^1 , the dizi will have a concert pitch range extending from g^1 (above middle C) to a^3 .

The written range will always be one octave below the concert pitch.

Scales and Modulations

The range of the dizi is not large. Also, being mainly diatonic, modulation is restricted. It is common to utilize several flutes during the course of 1 piece, to overcome somewhat the limitations on modulation. However, even with the 3 basic accidentals, certain modes and scales will be unplayable on the dizi, even septatonic ones. Perhaps dizis could be constructed to render specific modes, which utilize non-diatonic intervals. As far as the author is aware, dizis with such properties have not yet been conctructed.

Dizi (Chinese transverse bamboo flute)

Accidentals

The basic diatonic major scale can be expanded a little. By techniques of embouchure and some cross fingerings certain semi tones are possible. This is true of all dizis, regardless of size.

Taking the pipe note as Sol, one may assume the natural scale, i.e. the one that begins with the pipe note, is a mixolydian. Here, the 7th is Fa. The raised 7th, **Fa[#]**, is easily obtained. Other accidentals, though possible, are more difficult, and more problematic.

The next obtainable accidental, in this scheme, is **Si_b**. It is a bit sharp in the lower octave, a bit more in tune in the upper octave.

One more accidental obtainable is **Mi_b**.

Finally, the lower octave **Do[#]** is obtainable, but the higher octave **Do[#]** does not speak at all.

Some flutes are prepared with more holes in them, in order to obtain more accidentals. However, this reduces the resonance of the instrument and is not acceptable in traditional music.

Half-holing is not a good technique for the dizi. Performers may choose to avoid it, since the pitches thus obtained are very hard to tune. And it is never exactly 1/2 the hole that needs to be covered. Only in a very slow passage can one safely call for a half-holed pitch. This may work especially for the 1/2 tone above the pipe note.

Thus we can count on 3 basic accidentals in the scale and two other *special* accidentals.

Taking the pipe note as Sol, we obtain:

Sol [**Sol[#]**] La **Si_b** Si Do [**Do[#]**] Re **Mi_b** Mi Fa **Fa[#]** Sol [**Sol[#]**] La **Si_b** Si Do Re **Mi_b** Mi Fa **Fa[#]** Sol [**Sol[#]**] La (ch)

One ought to check with the performer before utilizing any accidentals apart from the 3 basic ones.

Notation

The Dizi player will choose the best instrument for the notated music. He will transpose for the flute he is playing, depending upon the naming of the pipe note.

In China musicians generally learn to read western notation - notes are written one octave lower than concert pitch. They also learn to read the movable do number notation (French Cheve system). Some may even prefer the numbered notation, since, being a 'movable do', no transpositions are required.

In writing in 'movable do' one would indicate, for example, as follows:

Pipe note = Sol

Do (1) = C

or

Do (1) = E and so on.

The dizi player will then choose the flute he deems best for the piece.

General Considerations

The closer a hole is to the blowing hole, the greater effect it has on pitch. A professional should have all 12 dizis, corresponding to all 12 keys of the gamut. A dizi which is very low (perhaps the lowest) is F (Pipe note = Sol = C (middle)).

The smaller, higher pitched dizis are very strident in their upper register, much like the western piccolo. They project very well. In contrast, the larger/lowerpitched dizis can be covered easily in their lower range. Still, projection for all dizis is good.

The membrane, made of a reed sliced paper thin, needs to be adjusted very carefully, at just the right tension: too tight and it won't vibrate, too loose and it will break.

Dynamics

Generally, the same considerations that apply to the western flute apply to the dizi. The volume is a bit bigger than western flute, but when playing at very soft dynamics it is difficult to bring the pitch up, i.e. intonation becomes a problem at softer dynamics. This is especially so when playing the higher register. The lower register's intonation is more controllable at a soft dynamic.

Here are some general guidelines for dynamic projection:

<u>Range</u>	<u>Projection</u>
low	ppp → mp
mid	p → f
high	mp → fff

Speed of Execution

In diatonic progressions the dizi is very quick, as agile as the western flute. If utilizing accidentals the pace slows somewhat, due to the imposition of cross fingerings. Of the 3 basic accidentals we may assume as follows (Pipe note = Sol):

Fa[#] can go very fast.

Si_b and **Mi_b** are not as fast.

Techniques

I. Tongueing

All kinds of tongueing are performable, single, double, triple and flutter. There are 2 kinds of flutters: 1. Guttural 'r' flutter (French 'r') - a flutter that can be quite soft; 2. Rolled 'r' flutter (dental-tongue) - a more forceful flutter.

II. Vibrati and Glissandi

Both pitch and amplitude vibrati, are possible, and at various speeds.

Glissandi are highly executable with the exception of movement across the pipe note. E.G. - where pipe note = **Sol**, a glissando from **La** down to **Fa[#]** will not be playable (since the pipe note **Sol** is played with all holes covered.)

One may differentiate between a glissando which is smooth and one which has a more 'stepwise' sound in it.

III. Harmonics

Harmonics on the lower 3 holes of the pipe are very effective. A safer limit would be the lower 2 holes. On these a 3rd harmonic (one octave and a fifth higher) is possible - these pitches will sound softer and more distant than the same pitches played by overblowing.

IV. Accents

All accents are performable: staccato, legato, tenuto and the combinations of these.

V. Special Techniques

There are a variety of special techniques possible. Here we mention a few.

Bird Sounds

The dizi can imitate bird sounds very effectively. Consult with the performer about the effects possible, and the notation of these.

Striking at Holes' Edge

Striking at the edge of a hole while playing a note is an effective way of playing a repeated note without tonguing or renewing the breath. There will be a little 'bump' in the sound. (Note: In India the notes thus rendered are called 'janta svaras'.)

Rolling Hand

A special effect can be created by rolling the hand across the bottom 3 holes of the pipe.

Throat Singing

The player can sing with the throat while playing.

Related Instruments

Xiao - this is a vertical bamboo flute with the same range as the dizi but without a membrane. It is not as flexible as the dizi and is harder to intone. It is a delicate instrument with a softer dynamic.

The xiao is good for expressive solo playing, but does not project well as part of a larger Chinese ensemble or orchestra. One way to obtain the xiao's sound for such settings is to take a dizi and cover its membrane, rendered the membrane inoperable. The dizi will thus imitate the xiao's sound while retaining good projection, flexibility, and intonation. The projection is somewhat lessened without the resonance of the membrane, but is still much stronger than that of the xiao.

Tung Xiao - is the direct relation of the Japanese Shakuhachi.