The Xiao

by Scott August

One Flute to Rule Them All

Most of the world flutes that we encounter can only play one or two scales, some are even limited to just a few pitches. Those that can play more than one scale take many years of strict discipline to master and may require complicated cross fingerings, half-holing, and even odd head movements to play more than four or five pitches.

What if there was a flute that, even if you owned only one, you could play all of the same scales as a Native American-style flute, a Pueblo/Anasazi-style flute, a bansuri, a shakuhachi, a Mojave-style flute, and its extended cousin, the Mojave-6? What if this same flute could also play exotic scales like the dominant harmonic (a.k.a., Silk Road, Romani (gypsy), or Arabian scale), the harmonic minor and harmonic major, all of the Chinese pentatonic scales, plus several Japanese scales like the minyō, ritsu, ryo, kokinjoshi, hirajōshi, akebono, and ryukuan? What if that one flute could play unusual scales from Ethiopia like the tizita major and minor, the batti major and minor, the ambessel major, or the wonderfully-named yematebela wef scale? And, what if this flute could play all of these scales without any odd cross fingerings, and could also play some of these scales starting on more than one note?

If such a flute existed in the pantheon of world flutes, surely you would want one. I know that I would. Well, it turns out that such a flute does exist and it has been around, in one form or another, for a very long time. In fact, it has existed for more than 8,000 years. That flute is the xiao, pronounced as “showh.”

An Ancient Flute

Before we get to the nuts and bolts of the xiao, we should take a moment to review its history, which is much longer than that of the Pueblo/Anasazi flute. While the earliest discovered Anasazi flute dates back about 1,500 years, the earliest known version of what became the xiao dates back to 6,000 B.C.E. and was made of bird bone. There are also proto-Pueblo/Anasazi flutes that were made of bone, so for a true comparison of the dates we should look at the flutes that resemble the ones that we know today. The first xiaos that look similar to contemporary xiaos appeared during the Han dynasty (206 B.C.E. to 220 A.D.), which is about 500 years earlier than the earliest Pueblo flutes. There is a clay figurine of a xiao player from the Han period in the Nanjing Museum. It is believed that these flutes were imported from the Qiang culture, which is located in the northwestern Sichuan or Szechwan province in western China. This area was part of the Silk Road. Traders might have had flutes with them for entertainment, and these became one of the items traded or sold. These early xiaos did not yet have the same hole placement or number of holes as today’s instruments. The number and placement of the holes was not standardized until the Jin dynasty (265 to 420 A.D.). These flutes also had different names. One of these ancient names was *shudi* or *shuúzhúdi*, literally “vertical bamboo flute."

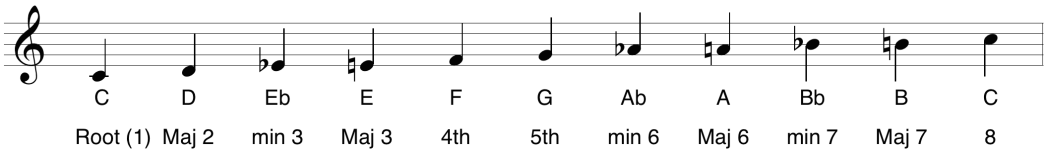
Before the Tang dynasty (618 to 907 A.D.), any flute made up of one tube was called a *di*. The term *xiao* was used for a group of tubes put together like a panpipe. During the Tang dynasty, the transverse flute became increasingly popular. From that point on, the name “di” became associated with transverse flutes. The term “xiao” began to refer to a vertical end-blown flute. The Chinese panpipe became called the *paixiao*, translated as a "row of xiao." However, it was not until the Ming dynasty (1368 to 1644) that the term “xiao” became standardized for the specific instrument that we know today.

Variations of the xiao include the *qinxiao*, which is a narrower version, and the fatter, shorter southern version is called the *nanyin dongxiao* ("southern sound notched flute") or *nanxiao*, originating in Fujian and Taiwan and later imported into Japan during the 14th century. This instrument became the shakuhachi.

While traditionally xiaos are made of purple bamboo and wrapped to stabilize and prevent cracking, they can also be made of jade, porcelain, and ivory. Domestic xiaos are made of wood. The modern xiao has six or eight finger holes. The extra two holes on the eight-hole version do not give the flute more pitches; rather, they make some of the notes easier to play. In my experience, xiaos with eight finger holes are common in the United States. Traditionally, xiaos are used as a solo instrument or paired with a *guqin*, a Chinese zither. The xiao's sound is rich and mellow like a Pueblo/Anasazi flute but smoother, with less wind and air noise. Xiaos can also play two octaves with the same fingering for all but two of the highest notes.

Xiao Me the Notes

In the West, most xiaos come in either the key of *C* or *D*. The Chinese name these keys based on the pitch a fourth above, meaning *F* and *G*. Since most world flutes are bottom-note centric, we will name the key by the flute's bottom note. All examples will be shown for a xiao with *C* as the bottom note. Without having to half-hole or use any bizarre cross fingerings, a xiao can play 10 pitches. A xiao in the key of *C* can play the following pitches.



While the intervals in the above example are based upon the bottom note, in this case *C*, the root is moveable depending on which of the 10 pitches a scale might start. This is not unlike piano, guitar, or orchestral "silver" flute, which are not limited to one scale based on their lowest note; rather, they can play many scales starting on different pitches. This is one of the most versatile features of xiaos.

Scott August holding a xiao.

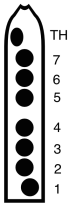
Basic Xiao Fingering and Holding the Instrument Correctly

Typically, a player holds the xiao at a 45-degree angle to the face. Although, like the Pueblo-style flute, this will vary slightly from player to player, as well as from flute to flute. Also, like the Pueblo-style flute, the angle to the face/jaw is more crucial than the angle to the body. In other words, if the head is lowered or raised, the flute needs to move with it to maintain the angle.

The mouthpiece of a xiao is similar to a Pueblo/Anasazi flute but with a deeper notch, like a South American quena. Although there are many variations, the xiao discussed in this article is of the northern style and has a capped mouthpiece with a notch cut into it. Traditionally, the cap is derived from a joint in the bamboo.

Xiao Mouthpiece

As is illustrated by the diagram on the right, the xiao has eight finger holes, seven in the front and a thumbhole for the upper hand in the back. The finger holes on the front are divided into a grouping of three on the top and four on the bottom. Each hole is labeled for reference in the diagram. (Note: This is not a TABlature system.)



Full Piper's Grip

Modified Piper's Grip

The fingers of the upper hand cover the three top holes and the thumbhole, while the fingers of the lower hand cover the bottom four holes. The bottom hole is articulated or offset to make the reach easier. The holes can be covered with the fleshy pads of the fingers or by using the space between the joints, which is called a "piper's grip." Either way of covering the holes is correct. Some players mix the two styles, resulting in what is called a "modified piper's grip." Although technically not necessary, depending on the tonality of the scale, a player can elect to keep either hole number two or hole number three covered at all times for stability.

Xiao Scales

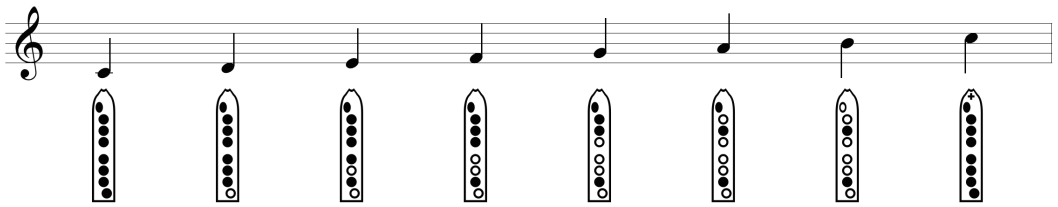
The xiao has so many scales that we cannot possibly look at all of them here. However, since most world flute players understand scales starting on the bottom note of their instrument, we will focus on the scales that the xiao can play starting from the bottom note. Remember, for the Chinese, the key of the xiao is not the bottom note of the flute; rather, it is a fourth above. The bottom note of a xiao, unlike a Pueblo/Anasazi flute, is weaker and less clear than some of the notes above it. However, it is easier to illustrate some of the scales a xiao can play by using the lowest note.

The Diatonic Scales

Diatonic scales are the most common scales used in Western music. They are made up of seven different pitches, plus the octave.

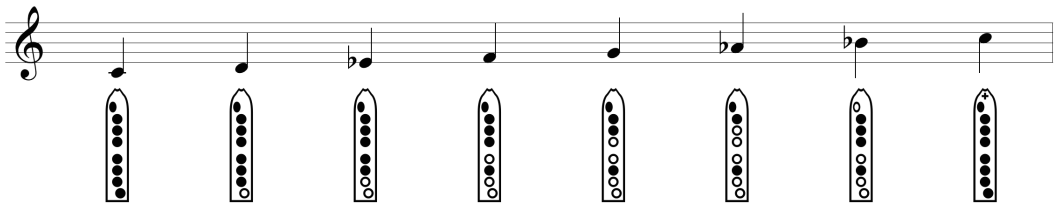
The first scale we will look at is the diatonic major scale. Usually just called the major scale, this is also known as the "do-re-mi" scale. In the Western church mode system, this is called the *Ionian* mode. This is the most common scale used today in Western music. The xiao can play four diatonic major scales.

Diatonic Major Scale



The xiao can also play a diatonic or natural minor scale beginning on the bottom or root note. Again, this is usually just called a minor scale. Its Western church mode name is *Aeolian*. This is also the scale of the Mojave-6 flute. The xiao can play four diatonic minor scales.

Diatonic (Natural) Minor Scale



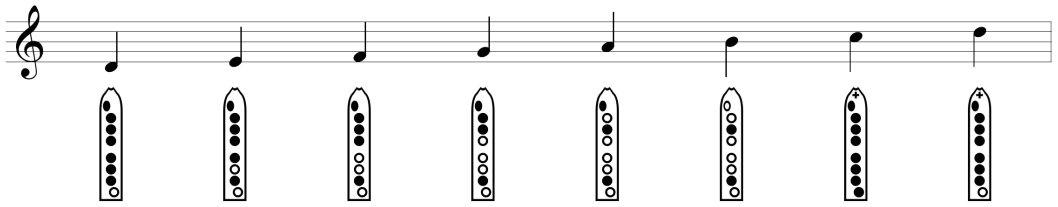
In Western classical music, in the diatonic (natural) minor scale the seventh scale degree is a whole-step beneath the octave note. When that seventh scale degree is raised by a half-step, the minor seventh interval becomes a major seventh interval. The resulting scale is called a harmonic minor scale. In this scale, a stronger melodic tension is created by this raised seventh scale degree in its upward resolution to the octave note. This change enables the dominant (V) chord to be major in quality, rather than minor. To play the harmonic minor scale on a xiao, replace the lowered seventh scale degree of the minor scale with the raised seventh degree. The xiao can play a harmonic minor scale starting on the root, as well as the sixth scale degree. Although not as common as the scales that we have looked at so far, if the third scale degree of a harmonic minor scale is raised to be a major third, then we get the harmonic major scale. (The harmonic major scale is really just a major scale with a flatted sixth scale degree.) The xiao can play a harmonic major scale starting on the root and the third scale degree.

<u>The Seven Diatonic or Church Modes</u>

Before we leave the seven-note scales, it should be mentioned that the xiao will play one complete version of each of the church modes. These modes are called Ionian, Dorian, Phrygian, Lydian, Mixolydian, Aeolian, and Locrian. They can be played on the xiao using the notes of any of the xiao's major scales. They are called “diatonic” modes because they exist within the major scale’s note pool. These modes can also be transposed using accidentals to maintain the same intervalic relationship within each mode.

Let us construct a diatonic Dorian mode using the major scale, starting on the bottom note of the xiao as an example. Playing the notes between the low *D* and the *D* an octave above it will produce a Dorian mode:

The Dorian Mode



It is important to note that there are no modes for the pentatonic scales in Western music.

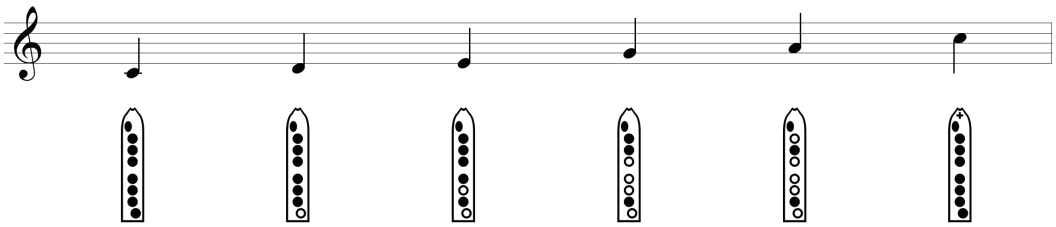
<u>Native American-Style Flute Pentatonic Scales</u>

Later, I will take a much more detailed look at pentatonic scales when I discuss how to play Chinese scales on the xiao. However, this is a good point to talk about the two most prominent scales in the world of Native American flutes: the scales most often played on the Pueblo/Anasazi-style flute and those typically played on the modern Native American-style flute.

A pentatonic scale is an arrangement of five pitches within an octave. The main scale associated with the Pueblo/Anasazi-style flute is the major pentatonic scale. The major pentatonic scale's most defining characteristic is that it has the intervals of a major third and a perfect fifth. None

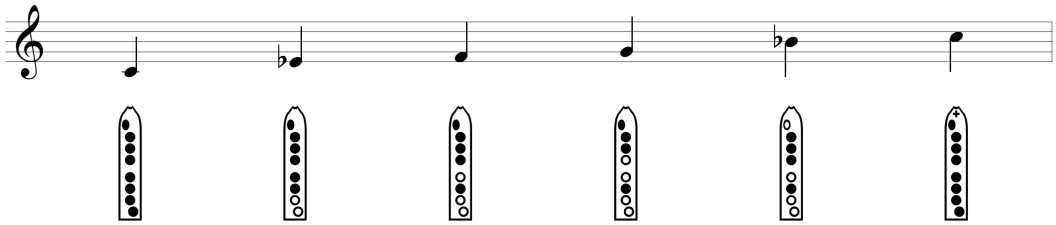
of the other common Western pentatonic scales have this combination. The xiao can play the major pentatonic scale starting on six different pitches. Here is the major pentatonic scale on a xiao, starting on the root:

Major Pentatonic Scale



The xiao can also play the basic scale of the modern Native American-style flute, which is the pentatonic minor scale. The most defining characteristic of the minor pentatonic scale is that is possesses the intervals of a minor third and a perfect fifth. None of the other common Western pentatonic scales have this combination. The xiao can play six different versions of the minor pentatonic scale. Here is the minor pentatonic scale on a xiao, starting on the root:

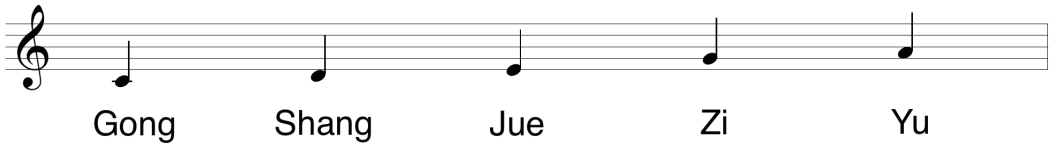
Minor Pentatonic Scale



Chinese Pentatonic Scales

Although their musical cultures are quite different, the similarities between Western and Chinese scales is surprising. The Chinese use a system similar to the Pythagorean tuning from Western music to develop a 12-note scale. From these 12 pitches, Chinese musical theorists derived heptatonic scales or seven-note scales that are, for the most part, the same as the Western diatonic scales. However, most traditional Chinese music is based on pentatonic or five-note scales. The two left over pitches from the diatonic scales are used as auxiliary or "color" notes. The Chinese pentatonic scales do not have any half-steps, similar to playing only the black keys on a piano. Pentatonic scales that do not have half-steps are called *anhemitonic* pentatonic scales.

The Chinese give names to their pentatonic scales. The Chinese name for a scale or mode is *diao*. Each scale name is based on the pitch that functions as the root of the scale. Here are the five notes in the Chinese pentatonic system: (Note: Since space is limited, the fingering charts for these scale will not be shown. However, you can easily find the fingerings for any note using the scales already illustrated.)



Each of these notes, as well as the scales that are based on them, are associated with objects found in nature. Here are a few of these connections:

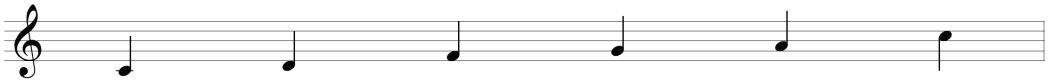
Note:	Gong	Shang	Jue	Zi	Yu
Direction:	Center	West	East	South	North
Colors:	Yellow	White	Blue	Red	Black
Elements:	Earth	Metal	Wood	Fire	Water

The name of a scale is a combination of the note name plus diao (scale). The five pentatonic scales are: gongdiao, shangdiao, juediao, zidiao, and yudiao.

The most common scales used in Chinese music are the gongdiao and zidiao, but the xiao can play all of the Chinese diao. For Native American-style flute players and those who play the Pueblo/Anasazi flute, the main scales would be the gongdiao and yudiao. The gongdiao is the same as the pentatonic major, the scale of the Pueblo/Anasazi-style flute, while the yudiao is the same as the minor pentatonic, the scale of the Native American-style flute. It should be noted that the juediao has the same pitches as the mis-named "mode IV" pentatonic minor for the Native American-style flute. In Western classical music, regardless of what Native American-style players might have been misled to believe, there are no pentatonic "modes."

For an example of a gongdiao played on a xiao, see the major pentatonic scale above. If the major third scale degree of the gongdiao scale is replaced by the fourth scale degree, the result is a zidiao scale:

Zidiao Scale



To see an example of the yudiao, see the pentatonic minor scale above.

Japanese Scales

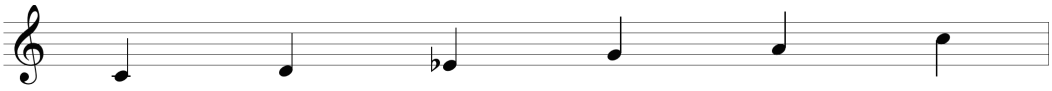
While Chinese and Western music theory and scales share some common elements, some of the scales found in Japanese music are quite different. This is true even though much of the basic foundation came from traditional Buddhist chant that was imported from China. The Japanese pentatonic scales, or modes, that do not have half-steps are called *chosi* and are derived from the Chinese diao. The two main Japanese scales are the *ryo* and *ritsu*. The ryo and ritsu scales are the basic scales of a style of Buddhist chant called *shōmyō*, which originated in China and made its way to Japan through Korea.

The ryo scale is the same as the gongdiao or major pentatonic scale. For an example of the ryo scale, see the pentatonic major scale above. The xiao can play six different ryo scales. For an example of the ritsu scale, see the zidiao scale above. The xiao can play six different ritsu scales.

One of the most distinctive features that make Japanese scales and modes different from the Chinese scales is the heavy use of half-steps. As we have seen, the basic pentatonic scales of China and the West do not have any intervals smaller than a whole-step. Many Japanese scales have half-steps. These pentatonic scale types are called *hemitonic*.

One of the most well known Japanese scales with a half-step is the *akebono* scale. It is produced when the third scale degree of a major pentatonic scale is lowered, or flattened, creating a half-step between the second and third notes in the scale. The xiao can play four different akebono scales.

Akebono Scale (from the root)



Other Japanese scales that the xiao can play are the hirajōshi, kumoijoshi, kokinjoshi, minyō, and ryukyu. The minyō is the scale to which the shakuhachi flute is tuned and is the same scale as the Chinese yudiao. Considered to be a folk music scale, the minyō is the same scale as the Western minor pentatonic scale, which is the basic scale of the modern Native American-style flute. The xiao can play six minyō (shakuhachi) scales.

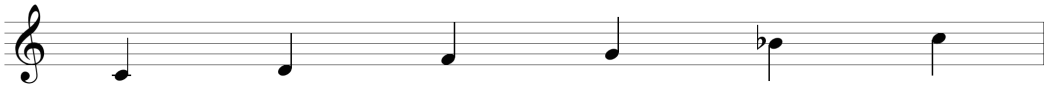
Ethiopian Scales

The xiao can also play many scales from traditional Ethiopian music. The music of Ethiopia is a mix of Middle Eastern and African influences. The scales used in traditional Ethiopian music, called *kiñit*, show the influence of the Arabic *maqams*, a system of melodic modes like the ragas from India. Traditional Ethiopian chant, which dates back to the 6th century and is called *zema*, uses seven notes. Similar to China, most Ethiopian music is based on pentatonic scales.

Ethiopia also has a traditional four-hole flute called a *wasänt* or *washint*. These are oblique end-blown flutes made of bamboo and were believed to have originated with shepherds or cowherds of the Amhara culture. They vary in length from 11 inches to 27 inches. Players typically carry many different wasänts with them in order to play in different keys.

The xiao can play many of the Ethiopian scales, or kiñits. Here is one simple example:

Yematebela Wef Scale

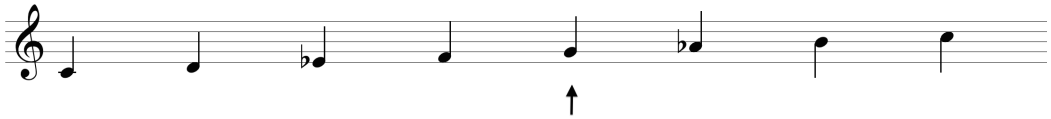


The Silk Road/Romani (Gypsy) Scale

Lastly, let us look at the one scale that cannot be played starting on the root note of the xiao. The dominant harmonic scale is also known as the Silk Road, Romani (gypsy), and the Freygish scale. This scale is also associated with music from the Middle East, including Hebrew, Turkish, and Arabic music. It is also found in music from India.

The dominant harmonic scale is the same scale as the harmonic minor scale that we looked at earlier, only starting on the fifth degree of the scale instead of the root. The fifth scale degree is called the dominant and is indicated by the arrow as shown in the illustration below:

Dominant Harmonic Scale



How to Buy a Xiao

You could try your luck at ordering a bamboo xiao from a Chinese importer or on eBay, but you cannot be certain of the tuning. Plus, bamboo needs a lot of care. Bamboo can crack or split from changes in temperature and humidity. The other option is to acquire a good quality wood xiao made by a maker in the United States. Currently, there are only two makers producing these instruments: Geoffrey Ellis and Vance Pennington. Both are master flute makers, and your flute will be in tune, need less maintenance, and be extremely good looking.

When purchasing a xiao, check that the notch and the area just inside of it are clean and smooth. You should not feel any ripples along the notch, just a smooth crescent. While not razor sharp, the notch should not be dull. The inside of the flute body should be sealed and smooth, the smoother the better. While a coat of lacquer is not required, it should be sealed to prevent moisture from penetrating the wood. Some makers use a marine epoxy. The inside should feel smooth to the touch and you should not see any splinters of wood or bamboo when you look inside. The body of the xiao should be straight.

The length of a xiao can vary and the mouthpiece can be either capped or uncapped. The presence of a cap is typically determined by the style of xiao, but a custom-made xiao can have either mouthpiece style.

Listen to audio and video samples of the xiao on the Santa Fe Flute School Web site: **www.santafefluteschool.com/resources/xiao**

Finger diagrams courtesy of Clint Goss: **www.NAFTracks.com**

Scott August is an award-winning recording artist and world flute player. He was classically trained on cello and piano and holds a Bachelor's degree in music composition from the University of Southern California. Between 1990 and 2003, Scott composed and produced music for TV commercials and corporate films including NASA and The Discovery Channel. He is also the author of four books for North American Indigenous-style flutes. His music and books can be found at Cedar Mesa Music. Scott gives workshops and private Internet (Skype) lessons through the Santa Fe Flute School.

Imperial Xiao by Vance Pennington

Xiaos by Geoffrey Ellis