CHAPTER IV

MUSICAL INSTRUMENTS

Throughout the world and over the centuries, musical instruments have flourished in an endless diversity of forms.

In the Bible, the musical instruments have been divided into three main groups: percussion instruments, wind instruments, and string instruments. In Ancient Babylon and Assyria, musical instruments were also divided into three categories: percussion, wind, and string. But the Chinese musical instruments were classified under the so-called “eight sounds” (bayin) system, which differentiated instruments by the main material from which they were made: earth (pottery), stone, metal, skin, wood, bamboo, gourds, and silk. However, the most widely used system for classifying musical instruments has four primary categories: aerophones (wind instruments), chordophones (string instruments), membranophones (drums), and idiophones (percussions). These various categories of musical instruments, their method of execution, the process by which music is made and so on, have been described by the musicologists. A brief recapitulation has been made in the following paragraphs.

For most familiar aerophones, the wind instruments, the heart of the instrument is some sort of a chamber that encloses a body of air. The air chamber may take the form of a long and narrow tube, as with a flute or clarinet, or it may be more globular in shape, as with an ocarina or wine jug. The purpose of the chamber is to allow the creation of a controlled vibration. The air in an enclosed chamber typically vibrates readily at certain frequencies and not others. These preferred frequencies are determined primarily by the size and shape of the chamber as also by the size and location of any openings in the chamber. By controlling these
features, it can control the pitches that the chamber naturally resonates. An air chamber remains silent unless something happens to get it vibrating. There are many ways to start an air chamber vibration. One is to blow through a reed or through buzzing lips, as in clarinets, oboes, or trumpets. The reed or lips act as a gateway to the airflow from the player's lungs, allowing the air to pass into the tube in a series of rapid bursts rather than in a continuous stream. Another way to set up the vibration is to direct an airstream over the edge of an opening in the chamber, to produce an edge tone, as with flutes and recorders. Edge tone mechanics are more complex than reed mechanics, but the effect once again is as that of an airflow entering the tube in a rapid series of pulses. In either case, if the frequency of those bursts agrees with one of the preferred frequencies of the air chamber, it will respond with a strong resonance. Most wind instruments are designed so that the pulsing frequency of the reed or edge tone will tend naturally to accommodate itself to the preferred frequency of the chamber. This allows the instrument to produce a strong, sustained tone at that frequency.

The string instrument or chordophone is an instrument that produces a sound when a stretched string is made to vibrate. The crux of the art of string instrument making lies in the creation of these sound radiating bodies—the soundbords and sound boxes—to which strings are attached. Most musical strings do not have much mass, and their vibrations do not carry much energy. For that reason, a string will not drive a soundboard well if the soundboard is too heavy. To be responsive, the soundboard must be light, yet reasonably rigid. Wooden soundboards for strings usually are thin, of light and springy woods. To increase their rigidity, they may be formed into curving shapes, or they may have reinforcing struts along the back. Membrane soundboards are even lighter and thinner. Stretching the membrane gives the soundboard the needed
rigidity. With many string instruments, the soundboard covers a partially
enclosed air chamber. This brings an element of air resonance to the tone,
and is especially valuable in enriching the lower frequencies. Generally,
the string instruments can be divided into two categories based on the
instruments, with which they are played: the plucked instruments and the
bowed instruments. The plucked instruments create sounds by using a
small rigid material or even the nails of the players to pluck the strings. A
long piece of wood to which usually, horsehair is attached is called a bow
and the sound generated through the passing of this over the strings
would generally offer longer notes.

Technically the drums are known as Membranophones. The term
was coined to suggest that the essential element in this class of
instruments is a vibrating membrane. Typically, the membrane is a thin,
flexible material such as an animal skin, made rigid by stretching it over
some sort of a frame. It has three main elements.

1. The membrane which provides the primary vibration. The player
excites it by percussion or, infrequently, by friction.

2. The drum body, over which the membrane is stretched. The
body may be nothing more than a shallow frame, as with a tambourine.
Or it may take the form of a deeper shell enclosing a body of air beneath
the membrane, as with a conga drum. The air below deepens and enriches
the drum tone.

3. The mechanism for attaching the membrane to the body. The
method of attachment may be nothing more than tacking or gluing, or it
may be something more elaborate like the tension-control machinery as
on modern orchestral kettledrums.

A great variety of drum shapes and forms, are available worldwide.
The different forms bring out the acoustic coupling between membrane
and air in a number of ways and in varying degrees. But on any given
drum, the degree of tension on the drumhead is an essential factor. Some drums have mechanisms for adjusting head tension, either through lacing or hardware, so that the player can tighten or loosen the membrane to get a particular pitch or to find the point at which the voice of the drum is at its fullest.

The common traditional material for making drumheads is animal skin. Goatskin most often serves for smaller drums and cowhide for larger, but many other types have been used. More than any other material, skin offers the right balance between a satisfyingly full fundamental tone and enough upper partials to lend excitement and definition. Animal skin has another advantage: it expands greatly when wet. The maker can soak a skin and attach it wet to the drum. It naturally contracts as it dries tightening to a far greater tension than would be possible otherwise. This is how sufficiently high tensions have been achieved through most of humankind’s history of drum making. But the blessing is mixed. Drumheads made of skin tend to go slack in humid weather. Heating or drying can improve the situation to some extent, but is an inconvenient method. Drumheads can also be made of synthetic materials primarily fiberglass or polyester films, such as Mylar, which have no humidity problems. Nowadays, such heads are used routinely on stick-played drums. They generally have more ring in the upper partials and less fullness in the bottom—good for certain kinds of music.

In the simplest drums, the heads are simply tacked or glued directly on the drum body. Most adjustable tension drums have the head attached to a drum hoop, which holds the skin securely, distributes tension evenly, and gives tension mechanisms such as lacing or hardware something strong on which to hold. Some drums, like the hand drum, have just one hoop, called a flesh hoop. It is a ring of wood or metal, large enough to fit over the top of the drum and pull the skin down over the rim. Most
tunable drums have a second hoop, called the *counter hoop*, which rests on the top of the flesh hoop. Whatever it is that applies the tension---lacing or hardware---pulls down on the counter hoop.

**Idiophones** are musical instruments in which the vibration originates in some solid, inherently rigid material. This differentiates idiophones from wind instruments, in which the original vibration is of air (not solid), and from string instruments and drums, in which the original vibrating material is stretched (not inherently rigid).

Idiophones---admittedly a rather motley group---can be divided into subcategories based on the characteristic pattern of vibration in the sounding elements. For instance, marimba bars, tubular chimes, and other similarly long and narrow sounding bodies all show similar motions when they vibrate. They can thus be grouped together under the generic of name *free-bar instruments*. Instruments having vibrating tongues, such as music boxes, mbriras, and tongue drums, can similarly be grouped together under the formal name *lamellophones*.

In the tribal music various modification of the above categories of musical instruments are used. Music is integral to the life of the ethnic people who live in remote areas. Their music more often than not becomes a signifier of their distinct identity. In order to make music, both the Yao and the Lisaw tribal people use a variety of musical instruments which are fashioned largely from the natural products that are freely and easily accessible to them. Even as the manufacture process is simple, it yet contains within itself not only a long and regenerative historical process but also a sum of multicultural migration of influences.
The Yao Musical Instruments

Among the Yao the musical arts express their individuality, which has a close relationship with their special way of life and their mode of production. This individuality reflects the relationship between their aesthetics, psychology and religious beliefs.

Within Yao culture, musical tradition is orally transmitted, without a system of notation. The occasions for playing music are rather limited. Only three important ceremonies: wedding, funeral, and the Yao's New Year are marked by musical performances. Musical instruments are made from wood and leather gathered locally. A legend of the Yao musical instruments which has been orally transmitted from generation to generation was described thus by a senior Yao person who was interviewed during the research fieldwork in Chiang Rai, Thailand, as follow.⁴

Once upon a time the Prince of the Yao (Phan Hu) went into the jungle for hunting. Along the way, he found a chamois and shot him an arrow by his crossbow. The chamois fell down to the ground and fainted for a while. The Prince thought the chamois dead so he walked across to him. Suddenly the chamois got up and savagely hit the Prince causing the Prince to die and fall into an abyss. However, the dead body somehow got entangled on a tree at the edge of the cliff. A son of the Prince tried to bring down the dead body from the tree but was unsuccessful. Later the Chinese Emperor suggested for someone to “sing a song under the tree. May be then we can take the dead body down”. Hence, the son followed this suggestion. Unbelievably, the son could bring his father’s body from the tree easily.

Since then the Yao make their instruments from the tree that is similar to the tree in the story. However, nobody can trace the certain name of the tree. They also started hunting chamois and brought their
skins to cover the head of the drum. As time has passed, however the Yao in Thailand have turned to use cowhide for drumhead instead of chamois skin because the Department of Forestry, Ministry of Agriculture and Cooperation, Thailand has declared chamois as one of the protected animals.

A basic distinction within Yao instrumental ensembles is between melody and percussion. The instruments the Yao use in an ensemble consist of a shawm, a drum, a gong, and a pair of cymbals. Melodic instrument, which act, as the leader is an aerophone or shawm known as Yat. Different percussion combinations are used according to the melodic component. A drum known as Yo, a gong known as Thong-law, and a pair of cymbals known as Chao-chery, generally accompany a Yao ensemble. (Figures 4.1 to 4.2, p. 158)

This ensemble is affiliated to the Chinese folk musical ensemble. Shawms, the Chinese name Suona, and shawm-and-percussion bands are common throughout China. Northern genres are most celebrated, but they are found in the south too. Smaller sizes of shawm have become more popular now, however, the large shawms traditionally used for funerals are still found in areas of the north. The shawm has perhaps been the most popular folk melodic instrument since the Ming dynasty. There is little evidence for its use in China proper before then. The name Suona shows its derivation from Central Asian shawms such as Zurna, and, originally, it was used as military music and for formal official ceremonies before becoming popular in the folk ceremonial. (Figure 4.3, p. 159)

The shawm of the Mien Yao in Thailand is called Yat, with its original name being Fanti. It is a double reed instrument with a conical bore expanding downwards. Due to its shape, the instrument belongs to the oboe family. (Figure 4.4, p. 159)
The instrument is about 17 inches long with three detachable parts: the mouthpiece is called **Yat-chang**, the body proper called **Yat-kwang**, and the bell called **Yat-hoy**.

![Figure 4.1](image1.jpg) **Figure 4.1** The Yao musical instruments.

![Figure 4.2](image2.jpg) **Figure 4.2** A Yao ensemble consists of a shawm, a drum, a gong, and a pair of cymbals (From right to left).
Figure 4.3 Shawm players at a funeral, Yang’gao, Shanxi, China, 1992.

Figure 4.4 The Yat of the Mien Yao.
The mouthpiece, **Yat Chang**, is a tube on which the reed is placed, is made of hard wood, and usually about 3 inches long. A copper flat disc used as a support for the player's lips is attached to the top and is held in place by the tube on which the reed is mounted and which passes through the disc into the instrument.

The reed somewhat resembles that of an oboe, but is more simply made, and is wider in proportion to its length. These days it is also made of brass. The process of making the reed is described by a Yao musician who was interviewed during fieldwork in Chiang Rai, Thailand which is as follows:

The reed or **Sao** is made of the cocoon from tamarind tree. First, the cocoon is cut at both ends shaping one side into a half-circle. Then it is soaked in water followed by rubbing the half-circular side on the whetstone for about 30 minutes or until it is soft. Then the sound of the reed is checked by blowing air through the tube of the reed; if the sound is not adequate it is rubbed on the whetstone till a satisfactory sound is produced. Finally, the reed is attached to the mouthpiece. (Figures 4.5 to 4.11, p. 160-163)
Figure 4.6 The process of trimming the cocoon shaping one end into a half-circular shape.

Figure 4.7 One end becomes half-circular.
Figure 4.8 Soak the reed in water.

Figure 4.9 Rub the reed at the half-circular side on the whetstone for about 30 minutes or until it is soft.
Figure 4.10 Checking the sound of the reed by blowing air through the tube of the reed.

Figure 4.11 Attach the reed to the mouthpiece.
Yat-kwang or the body proper is made of hard wood such as jack wood, red wood etc., and is usually 8 to 10 inches long. It is normally pierced to make seven finger holes on the front side and one hole on the backside.

A brass bell called Yat-hoy adorns the bottom. It was originally made of hard wood, is about 4-5 inches long and 4-5 inches in diameter at the widest part of its flare.

The Yat is held in a vertical position with a slight inclination downwards. While the two thumbs are used to hold the instrument in position the three fingers of the left hand (excluding the little finger) and four fingers of the right hand are used to close the finger holes. Usually in position, the left hand is above the right hand, but there are some players who place their right hand above the left. (Figure 4.12, p. 165) The index finger, the middle finger and the ring finger of the left hand are respectively called the first, second and third fingers in as much as they close the first, second and third finger holes. Likewise, the index finger, the middle finger, the ring finger and the little finger of the right hand are called the fourth, fifth, sixth and seventh fingers respectively in as much as they close the fourth, fifth and sixth and seventh finger holes.

Blowing a stream of air through the tube of the reed generates sounds of the instrument. The sound is essentially similar to that of the bagpipes, only, perhaps, more powerful, and in the hand of good players more melodious. Variation in pitch is caused by changes in the length of the air column owing to the closing and opening of the finger holes. But the semitones and the quartetones are produced by skilful adjustments in the pressure of the air blown.

The instrument looks somewhat awkward and gives the impression of being difficult to play, but actually it can be played fairly easily, and quite an intricate, complex intonation is possible on it. The musician
develops a method of continuous playing by inhaling through the nose and storing the breath in the cheeks while at the same time expelling the air through the instrument with the mouth. The result is a long, unbroken melody while playing.

Figure 4.12 A Yao musician playing Yat, Chiang Rai, Thailand.
Percussion also has a vital role in bringing out the nuances of music. Percussion is basic to Chinese ensemble music, indeed to Chinese life: it accompanies rituals, opera, narrative singing, dance, and even political campaigns. The small percussion section, is led by two high-pitched instruments played by the same player, such as clappers and woodblock, or a small single-headed drum. The percussion section of larger ‘martial’ ensembles is more complex. Here, the basic ensemble is a double-headed bass drum, small cymbals, and a single gong, which may accompany the melodic movement; a variety of other instruments such as gongs and cymbals of various sizes may be added for independent percussion sections. Loud shawms are often considered part of the martial percussion section.

Within the Yao traditional music, the percussion instrument mainly accompanies the melodies of the shawms, but may also play short individual interludes. The percussion section usually consists of a double-headed drum, a single gong, and a pair of cymbals.

The drum or Yo is a shallow frame drum with two equal heads, about 12 inches in diameter and 6 inches deep. The shell of the drum or Nom is made of some hard wood usually, jack wood or red wood. (Figures 4.13 to 4.14, p. 167)

The head, called Yo-dob, made of cowhide, earlier made of chamois skin, is stretched tightly by hoops fastened to the shell and strained by a large number of thick wood patches bound round the shell. The drum is not tuned into specific pitches and is usually played with a drumstick called Yo-chui. Yo-chui is also made of hard wood and is between 16-20 inches long. The drums can be made in varying sizes.
Figure 4.13 The Yo of the Mien Yao.

Figure 4.14 The head is stretched tightly by hoops fastened to the shell and strained by a large number of thick wood patches bound round the shell.
A gong, according to the standard definition, is an idiophone with a plate-like shape, having its point of maximum vibration at the center. Accordingly, gongs are struck near the center and supported from points of minimal vibration a little distance in from the edges. The gongs are usually made of bronze, by casting or cold hammering or both. They may have bosses, raised bumps in the center, and rims folded back, or they may be slightly convex in shape. These characteristics contribute to a satisfyingly rich gong sound.

A single gong of the Yao is called **Thong-law**. It is a medium-sized gong with a lip-flange some two inches in depth and could be from 10-15 inches in diameter. The word Thong means Brass, and law means Gong, therefore, Thong-law means the Brass Gong. Usually it is played with a padded beater called **Law-chui**. Law-chui is made of hard wood between 10-12 inches long, and a long piece of cloth is circled around it many times and wrapped at one end. (Figure 4.15, p. 169)

**Chao-chery**, is a pair of medium-size cymbals of flat metal usually made of brass with a central rounded boss about three-quarter of an inch deep. The flange is about one inch wide, and the entire diameter of each cymbal is about five inches. Each cymbal has a cord fastened through a hole in the top of the boss, often with a tassel at the end. (Figure 4.16, p. 169)

This instrument seems to have been derived from the Chinese, however, it can be found in many countries with variation in sizes and with different names such as the Jalra of southern India, the Shab-lek of Thailand, etc.
Figure 4.15 The Thong-law, a single gong of the Mien Yao.

Figure 4.16 The Chao-chery, a pair of medium-size cymbals of the Mien Yao.
The Lisaw Musical Instruments

It is interesting to see that the Lisaw pay more attention to singing than to playing musical instruments. Most of Lisaw people love singing. They play instruments just as accompaniments to their singing or dancing or other entertainment.

Lisaw learn to sing by watching and imitating the other Lisaw who know the lyrics. Most of the Lisaw songs have the same rhythm. They are sung from generation to generation. Lisaw people do not produce new songs and they have no name for the songs. When they begin singing, most of them know the content of the song. Most of the old generation can sing. Young people can practice singing with the teachers or experts, or older men or women.

Courting songs are the most popular among the Lisaw, which are sung by young men and young women in the same or different villages. The important thing to be careful about is that the surnames of the singer and the courted person must be different. Those with the same surnames are forbidden to sing courting songs to each other. When the men are free from their work they would go to another Lisaw villages to find women to be their prospective wives. They have to make an arrangement to meet the women they are courting before singing songs to them. The neighbours might be requested to make the necessary arrangements for them. If the women are not busy, they would accept the invitation to sing songs with the men. The musical courtship always takes place near a canal or under a big tree or at some other appropriate place because they do not want anybody to come to know of what they are singing.

Within the content of the songs, men start by singing about themselves, which family they are from and why they have come to this village. Women will answer or ask them questions. In an answer to the
men, the women would say that they have never met them before so they are not sure of their love.

A man sometimes sings to confirm his love. An example of such a song is as follows.

**Woman:** Did you have trouble during the trip and did you find anything?
**Man:** The trip was very difficult. I had to pass the forest until I got to the market.
**Woman:** What did you see and buy in the market?
**Man:** I saw many things and I bought some betel nuts for you, since I was thinking of you.
**Woman:** What did you see after that?
**Man:** I found a river and I had to pay for a rented boat.
**Woman:** Did you spend your money?
**Man:** It doesn’t matter. I spent it for you.
**Woman:** What did you find after crossing the river?
**Man:** I had to climb over high mountains under burning sun.
**Woman:** Was it very difficult?
**Man:** It doesn’t matter. I overcame the obstacles because I was thinking of you.
**Woman:** Then, what did you see?
**Man:** I found a rest area and I chewed the betel that I had bought.
**Woman:** How did you find the way to my village?
**Man:** I found your foot prints so I followed them to find you.
**Woman:** So let’s chew the betel and betel nuts together.

In this song, the man reconfirms his love. He may add that he will give her valuable things (silver flowers and golden flowers are the usual gifts). The woman would deny the offerings because for her love is more important than material things. At the end, the man offers her an
engagement and she accepts. They make an arrangement to sing to each other. This may finally lead to living together.\textsuperscript{6}

The main musical instrument which accompanies the songs is an unfretted lute-type called \textit{Sewbew}. (Figure 4.17, p. 173) It is a plucked stringed instrument with a sound box made of hard wood such as red wood or jack wood. The sound box is circular, has four holes at the back that allow the sound to project better. The head, of snakeskin or cowhide, is about 6 inches in diameter. The neck, which has no frets, is inserted through the sound box securely. The instrument is usually about 30-33 inches long. However, it could be found in varying sizes with the longest one up to one meter. Three strings of wire are attached to the end of the neck, which protrude through the bottom of the sound box. From there they are passed over the bridge, often made of wood and placed at approximately the middle of the head; then they are fastened to the ends of three tuning pegs inserted back to front through the top of the neck. To make the strings tauter a noose is fastened around them at the neck and pulled tight, drawing them in toward the neck. The noose can be moved up or down.

A plectrum, made of a sharp-end of the buffalo horn (Figure 4.18, p. 174), is held with the thumb and index finger of the right hand and moved back and forth across the strings to set them in motion.

From the fieldwork undertaken in Chiang Mai, Thailand, it has become possible to relate the Sewbew to those which have been used since the Lisaw inhabited China, but unfortunately their antiquity cannot be traced exactly. Today a large number of Lisaw people produce the instruments either for sale to Lisaw people from another villages or to city markets.

A Lisaw musician in a village described the process of the instrument making which is as follows:
First, the neck of the instrument is fashioned by cutting a large piece of hard wood with a big knife. The knife produces burrs, which are subsequently filed off. This is followed by piercing three holes at the top of the neck for inserting the tuning pecks. Then the sound box is made with four holes which allow the sound to project better at the backside, and a rectangular hole is made at one side for attaching the neck through the sound box. Finally, the front side of the sound box is covered with snakeskin or cowhide, and strings attached to the instrument and tuned to the desired pitch. (Figures 4.19 to 4.27, p. 174-178)

Figure 4.17 The Sewbew, an unfretted-lute type of the Lisaw.
Figure 4.18 A plectrum, made of a sharp-end of the buffalo horn.

Figure 4.19 Making the neck of the instrument by cutting a large piece of hard wood with a big knife.
Figure 4.20 The knife produces burrs, which are subsequently filed off.

Figure 4.21 Piercing three holes at the top of the neck for inserting the tuning pecks.
Figure 4.22 Insert the tuning peck to the neck.

Figure 4.23 Making the sound box.
Figure 4.24 Piercing four holes at the back of the sound box that allow the sound to project better.

Figure 4.25 A rectangular hole at one side for inserting the neck through the sound box.
Figure 4.26 Insertion of the neck through the sound box.

Figure 4.27 A Lisaw musician playing Sewbew during the Lisaw New Year festival, Thailand.
The other instrument of the Lisaw is the free-reed mouth organ called **Fulow**. The sound box is made from a gourd which has several finger holes for different pitches, inserted with five bamboo tubes of different lengths tuned to pentatonic scale. The tube is made from bamboo and has fingers hole openings at the base of each tube. The instruments are made in various sizes, small ones being in the treble, large ones descending to low bass. (Figures 4.28 to 4.30, p. 180-181)

The Fulow, is quite similar to the Chinese free-reed mouth organ called **Sheng**, a melodic instrument of the Chinese folk ensemble. It is played everywhere in the north of China, but not so much to the south of Jiangsu. In most places the Sheng has seventeen pipes, but it is rare for all of the pipes to have sounding reeds: it often has fourteen, and sometimes as few as ten sounding reeds.22 (Figure 4.31, p. 181) It is clear that the Lisaw, who originated in China, follow the Chinese prototype.

As mentioned before, the Lisaw prefer singing rather than playing instruments. Hence, they do not have any percussion instruments. Both the instruments are played only as accompaniments of singing or dancing.
Figure 4.28 The Fulow, a free-reed mouth organ of the Lisaw, Thailand.

Figure 4.29 The instruments are found in varying sizes.
Figure 4.30 A Lisaw musician playing Fulow during the Lisaw New Year Festival, Thailand.

Figure 4.31 Sheng played by a folk musician, Yang’gao, Shanxi, China, 1991.
Reference and Notes

Documents


3 Hopkin, Bart. Making Simple Musical Instruments; Asheville, NC, 1995, pp. 11-103.

4 Sae-wang, Nykuay (60 years) An interview, Ban Phaduar village, Chiang Rai, Thailand, 4th July 2001.


Figures
