

ĐÀN BẦU

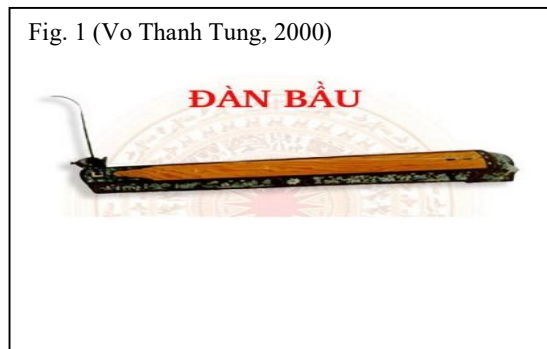
The Vietnamese Monochord

By Nguyễn Xuân Thảo

Concerning the Đàn bầu (literally, Đàn = musical instrument; Bầu = gourd, fig. 1), the Vietnamese people have an interesting traditional saying:

“Đàn Bầu ai gảy nấy nghe
Làm thân con gái chớ nghe Đàn bầu”

Fig. 1 (Vo Thanh Tung, 2000)



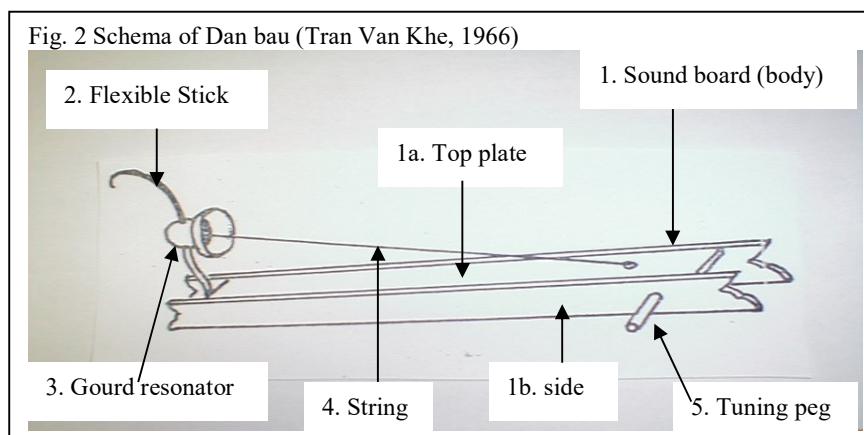
(Let the player of the Đàn bầu be the only one who listens to his music. As a young maid, guard yourself against listening to it). The wise elders would warn their daughters not to listen to the Đàn bầu because the emotional appeal of its sound might seduce them and make them fall in love with the player of the instrument. On the other hand, “If one sound had to be chosen to evoke thoughts of Vietnam, for many it would be the sound of the Đàn bầu, also known as the dan doc huyen (single-string instrument),” writes Jason Gibbs (1996), an American composer, bassoonist and librarian living in San Francisco, in his article, “A Musical Instrument Workshop in Hanoi.” The two citations agree at least on one thing, that the sound of the Đàn bầu is very special. What makes it so special? How is the Đàn bầu constructed? How is it played?

Origin of Đàn bầu

The Đàn bầu, the Vietnamese monochord, is also called *Đàn độc huyền* or *nhứt huyền cầm*, or *độc huyền cầm* (single string instrument; *Đàn* = *cầm* ‘Sino-Vietnamese word for ‘đàn’ meaning musical instrument; *độc* = *nhứt* = single, one; *huyền* = string). “Discriminated against at times, it has been an instrument of blind street beggars, yet it

was also an instrument of choice at the Tran imperial court (1225-1400)” (Nguyen, 1998, p.471). A Chinese person who visited Vietnam during the Tran dynasty mentioned the existence of a one-stringed instrument among the Vietnamese musical instruments. That incident was recorded in 18th century by Le Quy Don, a Vietnamese well-known scholar, in his work “Kien Van Tieu Luc” (cited in Midori, 2000). It was the first time that the Đàn bầu was mentioned in a written document and there it was referred to under a Sino-Vietnamese name “Dan doc huyen”. Another source mentions that “according to Dai Nam Thuc Luc Tien Bien” the Đàn bầu was constructed in 1770 (Vo, 2001, p.176). It is not certain whether the Dan doc huyen mentioned is the same as the Đàn bầu; or whether Đàn bầu is a new design of the old Dan doc huyen with a new resonator made of gourd. Is that why it was called by the new name Đàn bầu for the first time? At any rate, it does seem strange that it was not mentioned elsewhere (except for oral popular traditions) before it was introduced again into the court music orchestra by the Nguyen dynasty (1802-1945) at the end of 19th century (Tran, 2001). Perhaps the reason is that the Đàn bầu was considered to be a popular instrument, favored by ambulant blind street beggar musicians. Perhaps too due to the pessimistic traditional saying about its harmful ethical effect on female listeners, it did not merit mention in the official books or royal annals which survive to this day.

Construction of the Đàn bầu



The traditional acoustic Đàn bầu (fig. 2) consists of five components, namely, the soundboard (*thân đàn*), stick (*cần đàn, vòi đàn*), gourd (*bầu đàn, đôi âm bằng vỏ trái bầu*), string (*dây đàn*), and tuning peg (*trục lên dây*). **The soundboard** is a wooden board 80-100 cm long, 9-12cm wide, and 7-10 cm high. The top plate is usually made of *ngô đồng* thin wood. The sides are made of tulip wood or some kind of hardwood. The bottom plate is made of thinner hardwood, pierced with holes for sound. Some traditional Đàn bầu do not have a bottom plate. This soundboard is also used as a frame to stretch out the single string from the wider end to the stick or handle fixed at the other narrower end. **This flexible vertical stick** is made of bamboo or carved buffalo horn, about 40-50 cm long. It holds a half dried **gourd**, -- hence its popular name Đàn bầu (Dan = musical instrument; Bau = gourd) --, in its lower part, about 5 cm above the top plate. The gourd is usually replaced by an empty coconut shell, or a turned wooden bell in the modern electric Đàn bầu. The string, now made of steel, with a diameter of ca. 0.38-0.40 mm (0.014-0.015 gauge), is fastened to the lower part of the stick through the open side of the

gourd that covers it as a secondary resonator. The string passes along the body, over a nut at the other end, and goes through a little hole before being attached to a **wooden tuning peg** inserted below the top plate through the sides of the board. **The bamboo Đàn bầu**

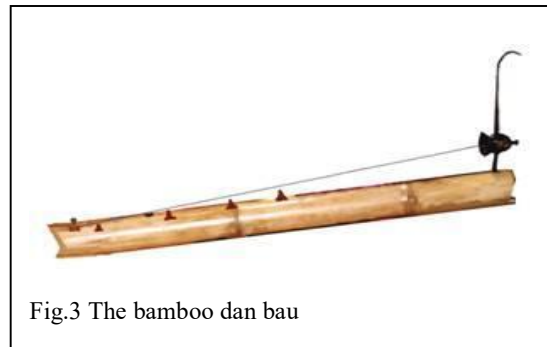


Fig.3 The bamboo dan bau

(fig.3) with a bamboo-made soundboard is supposed to be the first born of other wooden Đàn bầu, and it is played mostly by blind street musicians (Thanh Cam, 2003)

Fig. 4 (Artist Hải Phượng, from Chuck-haiyen.com/instruments)



The electric Đàn bầu (fig. 4), since it uses an electromagnetic pick-up in which the vibrating string induces signals directly, may

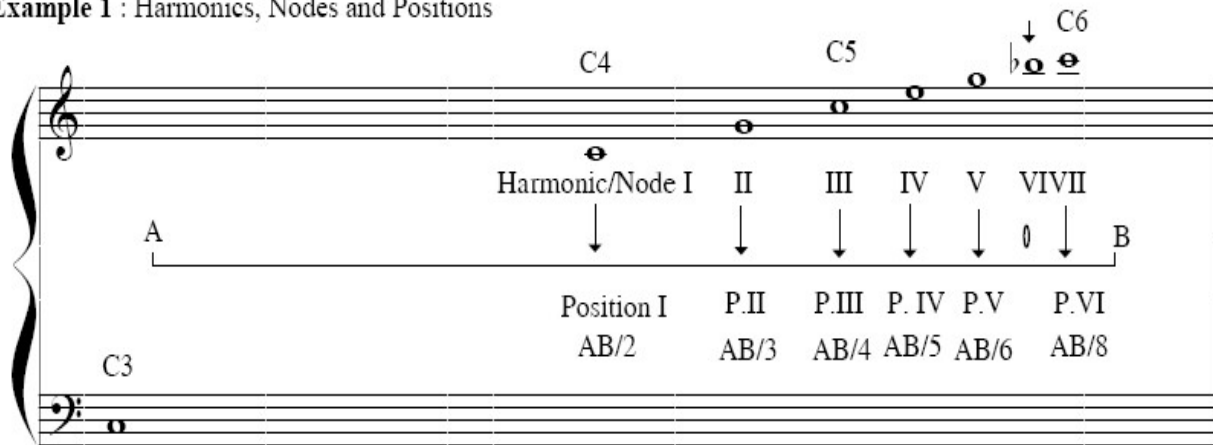
have a smaller solid wood body, because the vibrations of the body board have much less

influence on the tone in the electric Đàn bầu than in the traditional acoustic one, as it is the case of the electric guitar in comparison with “its acoustic cousin” (Rossing, Moore, and Wheeler, 2002, p.217). The pick-up is located along the string about 4 cm from the nut and is connected to an amplifier through a 6 mm-jack. The wooden tuning peg is replaced by a steel tuning machine. The soundboard may be manufactured in such a way that it is composed of two parts which can be folded up so it can be put into a small wooden case. When stretched out, the case can be used as a stand on which to play the Đàn bầu.

Vibrations of the string and pitches from harmonics

The string is excited by plucking it with a small pointed piece of bamboo or rattan. The bamboo pluck or plectrum is held between the thumb and the two next fingers of the right hand. Although the open string is sometimes plucked as a fundamental mode of vibration at a point of the string to produce a particular effect of low sound, -- it is best plucked close to the stick to produce a solid sound --, the musicians mostly play its harmonics, i.e. “modes of vibration whose frequencies are whole-number multiples of the frequency of the fundamental mode” (Rossing, Moore, and Wheeler, 2002, p.36). For example, if the open string is tuned to C3 with the frequency of f , its harmonics will be successively C4 ($2f$; harmonic I), G4 ($3f$; harmonic II), C5 ($4f$; harmonic III), E5 ($5f$; harmonic IV), G5 ($6f$; harmonic V), Bb5 ($7f$; harmonic VI), C6 ($8f$; harmonic VII) etc . . . (Example 1).

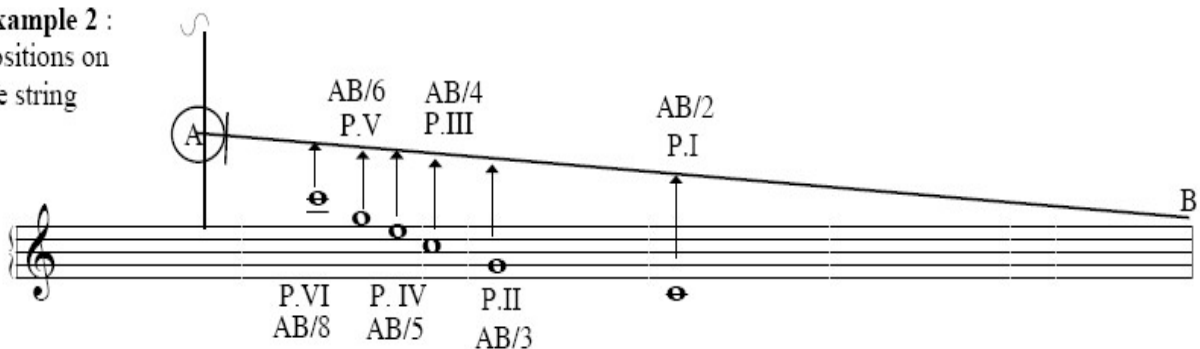
Example 1 : Harmonics, Nodes and Positions



Fundamental (open string: 0)

To play these harmonics, the player stops (touches) the string at the nodes that divide it by 2 (C4), 3 (G4), 4 (C5), 5 (E5), 6 (G5), 8 (C6) . . . with the edge of his right hand, plucks the string with the same hand and leaves it as soon as possible to allow it to vibrate freely. Usually, the player does not use the harmonic VI (Bb), because it is a little lower than the tempered Bb on the piano, and its position is too close to the harmonic VII (C6). For this reason, the nodes on the Đàn bầu are referred to as position I for C4, position II for G4, position III for C5, position IV for E5, position V for G5, and position VI for C6 (Example 2).

Example 2 :
Positions on
the string



These positions are not marked anywhere either on the string or on the top plate. What is marked is the exact point where the player will most readily pluck the string with the plectrum to produce the corresponding harmonic.

Because the frequency is proportional to the tension of the string (Rossing, Moore, and Wheeler, 2002, p. 41 and 63), by **bending the stick inward**, i.e. pulling it to the right

with the left hand, the string is loosed, causing less tension, lower frequency, and lower pitch. **By bending it outward**, i.e. pushing to the left with the thumb, the string is stretched out, increasing the tension, and thus a higher frequency, and higher pitch. Thus, by bending the stick (Example 3):

Example 3: Range and possible pitches on each position

The musical notation illustrates the range and possible pitches on each position of the Dan Bau string. The notation is divided into four staves. The first staff shows the open string (Position 0) with notes from C2 to F3. The second staff shows Position I (C3 to F4) and Position II (G3 to C5). The third staff shows Position III (G3 to F5) and Position IV (E4 to A5). The fourth staff shows Position V (G4 to C6) and Position VI (C5 to F6). Brackets indicate the range of notes for each position, and some notes are shown with a 'b' symbol indicating bending.

- on Position 0 (the open string), we can get a range from (C2-) G2 to F3
- on Position I, we can get a range from (C3-) G3 to F4;
- on Position II, we can get a range from (G3-) D4 to C5;
- on Position III, we can get a range from (G3-) G4 to F5;
- on Position IV, we can get a range from (E4-) Bb to A5;
- on Position V, we can get a range from (G4-) D5 to C6;
- on Position VI, we can get a range from (C5-) G5 to F6.

In general, the string may be lowered or raised to a fourth. The notes in the brackets are not usually played because if the string is too loose, it does not produce a beautiful sound. The range of Đàn bầu may be more than 4 octaves, from C2 to F6,

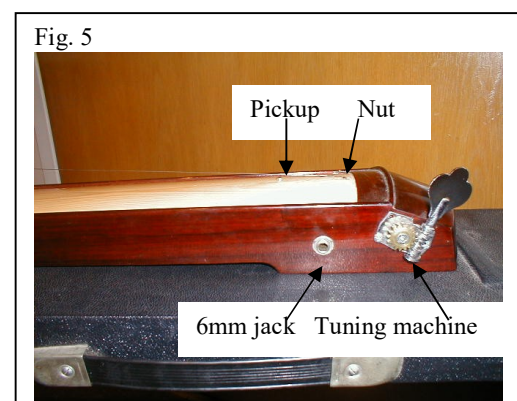
similar to the human mixed voice range. A steel string of 0.38-0.40 mm in diameter and 85cm in length stretched on a 100cm-long soundboard is best when tuned to C4. Tuning to A3-D4 is possible. Beyond these limits, the string may become either too loose or too tense. As a result, the color of the sound will be affected.

Vibrations of the soundboard and the gourd

Like the string of an acoustic guitar (Rossing, Moore, and Wheeler, 2002), the plucked string of the traditional acoustic *Đàn bầu* radiates only a small amount of sound directly. And even smaller amount of sound is produced when plucked on an harmonic. However, it excites not only the top plate, which in turn will transmit the vibrations to the air cavity and the bottom plate, if any; but it excites also the stick playing the role of a bridge as in a guitar or violin, which in turn transmits vibrations to the gourd as well as to the plate. The gourd itself is a small resonator which is directly affected by the plucked string and also receives at the same time vibrations transmitted by the stick-bridge. Although the gourd air cavity is small, it contributes quite a bit in radiating the sound of an acoustic *Đàn bầu*. Thus, if it is well constructed, the acoustic *Đàn bầu* may well be able to radiate a sufficient amount of sound to reach many listeners in a small room. Unfortunately, so far there are no scientific standards for the construction of a good acoustic *Đàn bầu*. Furthermore, due to the need for *Đàn bầu* players to perform before large audiences, they tended to abandon the acoustic *Đàn bầu* and to adopt the electric *Đàn bầu* as soon as it appeared in the 1950's of the 20th century.

The amplification of the electric *Đàn bầu*

It is possible to attach a microphone to the soundboard of an acoustic *Đàn bầu* in order to amplify its sound. But the microphone also picks other unwanted sounds. For that reason, it is much more convenient to use an electric *Đàn bầu* which has an electromagnetic pick-up inserted near the



nut (fig. 5). The electric signals of the vibrating string are induced directly in the pickup which “consists of a coil with a magnetic core. The vibrating steel string causes changes in the magnetic flux through the core, thus inducing an electrical signal in the coil.” (Rossing, Moore, and Wheeler, 2002, p. 218). The electrical signals are sent to an amplifier through a 6 mm jack. The volume will usually be increased if the iron pole of the pickup core is fixed closer to the string. But if it is adjusted too close to the string, “distortion will result due to the force exerted on the string by the magnet.” (Rossing, Moore, and Wheeler, 2002, p. 219). Unlike the electric guitar whose sound timbre becomes very different from that of its acoustic ‘cousin’, the electric Đàn bầu still preserves the original unique timbre of its traditional acoustic ‘brother’. Further, the electric Đàn bầu can display “secondary harmonics”, i.e. harmonic of the harmonic, by first plucking the string to produce a given primary harmonic sound and by quickly touching at the exact position of another nodal harmonic. This secondary harmonic gives a bright, but soft sound, as if it were from afar (Vo Thanh Tung, 2001).

Techniques for special timbral articulations

The right hand basic technique consists of the plucking to produce primary harmonics’ sounds, whose dynamics and timbre depend on the manner how to attack the string. Three other techniques (Example 4) include touching the string to the right position to produce *ngón bội âm 2* (secondary harmonic), playing *ngón rời* (staccato) and playing *ngón vê* (tremolo).

Example 4. Right hand techniques



by plucking the string upward while keeping on touching the string at the node, and playing *ngón vê* (tremolo) by plucking upward and downward quickly while keeping on touching the string at the node like in staccato technique.

The left hand techniques (Example 5) include *ngón nhẵn* (outward bending), *ngón chùng* (inward bending), *ngón giật* (fast outward bending), *ngón luyến* (slur bending), *ngón vuốt* (glissando), *ngón rung* (vibrato), *ngón vỗ* (light tapping) (Vo, Thanh Tung, 2001).

Example 5. Left hand techniques

<p>1) Ngón nhẵn (Outward Bending) on Position I</p>	<p>2) Ngón chùng (Inward Bending) on Position II</p>	
<p>3) Ngón giật (Fast Outward Bending) up to a fourth</p>	<p>4) Ngón luyến (Slur Bending) on Position I</p>	
<p>5) Ngón vuốt (Glissando) from G3 (P.I) to F4 (G4)</p>	<p>6) Ngón rung (Vibrato)</p>	<p>7) Ngón vỗ (Tapping with a finger)</p>

Vibrato and light tapping techniques are very essential to specify a modal nuance (Example 6) (Pham Duc Thanh). Thanks to these techniques, the clear and soft sound of Đàn bầu is very ‘special’ that charmed and is still charming many listeners. Đàn bầu can be best played as solo. It is used to accompany a poem declamation or a song. It is also member of a chamber music ensemble. Moreover, many concertos for Đàn bầu made it become a star in symphonic orchestra.

Example 6. Ngón Rung đậm (Slow Vibrato) and Ngón vỗ (Tapping) in some Hơi (Modal Nuances)
(Pham Duc Thanh)

<p>Regular pentatonic scale in C Key/Position</p>	<p>Hơi Bắc (modal nuance Bac)</p>	<p>Hơi Ai (modal nuance Ai)</p>
<p>Hơi Xuân (modal nuance Xuan)</p>	<p>Hơi Sa Mạc (modal nuance Sa Mac)</p>	<p>Hơi Oán (modal nuance Oan)</p>

Đàn bầu, unique special monochord among different ‘cousins’

The monochord, a single-string instrument, was mentioned in Greece in the 5th century BCE and said to have been invented by Pythagoras. Until late 19th century, it has been used as a musical device to teach in class, to tune, and to do experiments rather than to be performed as a musical instrument (The New Grove Dictionary, 2001, 2nd ed. Vol 17).

Some other countries also have their own single-string zither, for example:

- In China there is the *Ixian qin* (Nhat huyen cam or Co cam, using left hand fingers to press on the string to produce different pitches) (Vo, Thanh Tung, 2001);
- In Japan there is the *Rokan or Hyotan* (reported by Midori in VNS) or *Sumakin or Suma Koto or Ichigenkin*;
- In India there is the *Gopiyantira, the Pinaka, the Ananda-lahari* (using tension only on the open string to produce different sounds, not using harmonics like the Đàn bầu), and the *Yektar* (played with a bow);
- In Cambodia there is the *Sadew or Sadiou* (Tran Van Khe, 1962).

Other ethnic minorities in Vietnam have similar monochords, such as the *Taong Maung* of the Muong minority, and the *Rabap Katoh* of the Cham minority.

All these monochords are different from Đàn bầu in many aspects, especially in the manner in which sound is produced. Only the Đàn bầu is used to play harmonics in accordance with the natural acoustic law of resonance (Tran, Van Khe, 1962; Gibbs, 1996; Midori, 2000; Vo, Thanh Tung, 2001). The one-stringed *Diddly-Bow*, a traditional African-American instrument, is a rare case in which players use harmonics. But they use only the harmonics 1, 2, 3, and 4 by sliding a bottleneck with the left hand at different locations on the string, while the right hand plucks the string. Consequently, the Diddle-Bow sounds are limited to only five pitches including the fundamental and its four first harmonics (Titon, 2002).

The large range of pitches of more than four octaves, obtained by playing at least six harmonics and by bending the stick to vary the tension of the string, and also the different techniques used by both hands make the sound of the Đàn bầu unique. Gibbs (1996) observes, “The instrument’s virtuosity and expressiveness are to [be] found in its

left hand technique, which should have a subtlety that mimics the sound of the Vietnamese singing voice or declaimed poetry” (par.8).

To conclude, it is obvious that some aspects remain to be explored more deeply and more scientifically, such as the origin of the Đàn bầu, the scientific standards for the construction of a good electric Đàn bầu and especially the soundboard and gourd resonator of the traditional acoustic Đàn bầu. I expect more research will be done on the vibrations of the soundboard concerning the dimensions and quality of the top and bottom plates, and the air cavity; and the experiments as to the best location of the sound holes; especially regarding the vibrations of the gourd resonator in correlation with the stick (handle) considered as a bridge which transmits the vibrations of the string to the narrow end of the body. If the volume can be increased on the acoustic Đàn bầu, which may be a combination of both acoustic and electric with an attachment of one or two pickups, people would be able to play and practice it at any place or time without needing an amplifier. Then, many more Vietnamese young people, even young girls, would be able to learn to play the Đàn bầu and preserve the tradition of this wonderful instrument. This is also the expectation of Elizabeth Brown (2002), American composer and performer, who once told a Vietnamese journalist:

In 1998, the first time I came to Vietnam, I was immediately seduced by the sound of the Đàn bầu in a concert on Vietnamese traditional music. I bought a Đàn bầu and brought it with me back to New York. I sought in vain for a teacher who could teach me how to play the Đàn bầu. Two years later, I came again to Vietnam for two weeks, having just enough time to learn a little more about the Đàn bầu and to record some music pieces for the Đàn bầu. During the two following years, I listened to the Đàn bầu music even when cooking, sometimes 50 times a day. Last November 2002, I volunteered as Visiting Artist at the Hanoi National Conservatory of Music through a grant from Asian Cultural Council. I gave a

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master class in flute and learned to play the Đàn bầu with Ms. Thanh Tam,
professor of the Đàn bầu in the Traditional Music Department (VnExpress, Jan. 12)

Nowadays, like Brown, Vietnamese girls are no longer cautioned against listening to the Đàn bầu sound, and some of them are trying to learn to play it themselves. The improvement of the sound volume of the acoustic Đàn bầu will help to make love for its sound eventually become a love for playing the instrument which in turn will foster the preservation of one of the greatest cultural treasures of the Vietnamese nation.

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