

The history and distribution of the free-reed mouth-organ in SE Asia



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Roger Blench
Kay Williamson Educational Foundation
8, Guest Road
Cambridge CB1 2AL
United Kingdom
Voice/ Ans 0044-(0)1223-560687
Mobile worldwide (00-44)-(0)7847-495590
E-mail rogerblench@yahoo.co.uk
<http://www.rogerblench.info/RBOP.htm>

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ABSTRACT

One of the most distinctive musical instruments of the SE Asian area is the free-reed mouth-organ, best known as the Chinese *sheng*, and the origin of the European harmonica. It is also one of the few instruments for which there are extensive archaeological materials, as bronze skeuomorphs of the gourd originals were made in China from at least the Dian period. In addition, some more classical, instruments survive as grave goods in China. In addition, the free-reed mouth-organ is often represented in mural art in Burma and Thailand. The paper proposes an organography of this instrument, showing how it evolved and diffused over time, bringing together archaeology, ethnography and iconography.

1. Introduction

The story of the origin of the European free-reed family of instruments following a visit to the St Petersburg Museum by Christian Gottlieb Kratzenstein (1723-1795), who reputedly first saw a Chinese *sheng*, is too well-rehearsed to be worth repeating in detail. As various writers have pointed out, free reeds had been previously represented in Western texts. The first unambiguous description of a free reed instrument in a European text is Marin Mersenne's *Harmonie Universelle* of 1636 (Photo 1). An instrument clearly resembling the Thai/Laotian *khaen* is depicted, although the description gives no indication that Mersenne knew that the instrument utilised an acoustic principle hitherto unknown in the West. Mersenne attributes the instrument to 'Indiens' and proposes to add a windsack so that it could be played like a bagpipe. The same is also true of the picture of the Asian mouth organ shown in Franciscus Bianchini's (1742) *De Tribus Generibus Instrumentorum Musicae Veterum Organicae Dissertatio*, said to have been brought to Rome in 1685 by Pater Phillippus Fouquet. Likewise the mouth organ shown in Filippo Bonanni's *Gabinetto Armonico* (1722) is erroneously depicted as having flue pipes in the manner of a pipe organ, showing that the illustrator was unclear about the internal workings of the instrument. The Royal Danish Kunstkammer had an example of a *khaen* in its collection in the 17th century, described as 'an Indian organ made of cane', first mentioned in an inventory dated 1674. Pere Amiot (1779: 78 & 82, pl. vi.) in his justly celebrated *Mémoire sur la musique des Chinois*, is probably the first author to describe its workings correctly.

However, in their source area, the distribution and organology of free-reed mouth-organs is far from being well-understood. Recent possibilities of access to rural Myanmar and China have made it possible to map the types of mouth-organ in more detail and to reach some conclusions about their possible history. Apart from synchronic ethnography, it is history of the free-reed mouth-organ from sources. The remains of a mouth-organ, arrays of tuned bells, occur in the tomb of Suixian country, Hubei and dated to 433 BC which are skeuomorphs of gourds, occur in as far back as 200 BC (Photo 2).

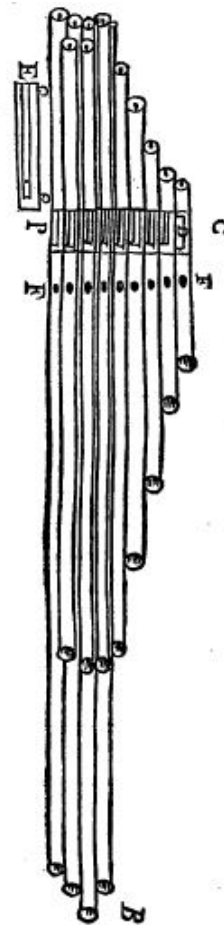
Existing reviews of the free-reed mouth-organ Finsterbüsch 1961; Miller 1981; Schwörer- at the history, morphology and distribution of across East and Southeast Asia, and considers instruments which may be relevant to its some hypotheses about the origin and spread principle of the free-reed was confined to a SE Asia, before its worldwide diffusion in the

Photo 2. Bronze wind-chest of free-reed mouth-organ imitating gourd. China, Warring States period



Source: Author photo, Yunnan Provincial Museum

Photo 1. Mersenne: depiction of a mouth-organ



Source: Mersenne (1636:308)

possible to draw out the archaeological and literary alongside the more famous Marquis Yi of Zeng, in (So 2000). Metal wind-chests, archaeological sites in Yunnan

are somewhat limited (e.g. Kohl 1997). This paper¹ looks the free-reed mouth-organ a number of transitional evolution. It concludes with of the mouth-organ. The specific geographical area in last two centuries. Free-reed

¹ A first version of this paper was presented at the EURASEAA XIV meeting in Dublin in September 2012, in the session 'Living Traditions'. I would like to thank the audience for helpful comments for this revision. The background research has been compiled over a number of years and I am grateful to the numerous museums which have permitted me to photograph relevant objects in their collections. Thanks also to John Moore and Victoria Vorreiter, Chiang Mai, Thailand for both discussions and photographs of some rarer instruments. Andrew Hsiu kindly sent me images of the Bugan mouth-organ and permission to reproduce them.

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instruments are widely distributed and morphologically highly diverse, pointing to several millennia of evolution, something is confirmed by archaeological evidence.

In-depth research in rural areas was impractical in countries such as Myanmar and Laos until recently, while the results of Chinese scholarship are becoming increasingly available. However, it is now possible to reach many areas of Myanmar and Laos previously closed. At the same time, pressure on highland populations to relocate and dispense with aspects of traditional culture such as dress and shifting cultivation will also subject them to cultural dislocation and thus increase the influence from radio and television and consequent loss of traditional music. Hence, research into musical repertoires in these regions must be considered a high priority.

The images and the information that accompanies this paper are of varying quality. Not all museums keep very informative records about their collections, and the conditions under which pictures may be taken also differ. Instruments are included that are of clear organological interest but for which we have poor provenances. Similarly, not all pictures were taken by scholars focusing on music and the resolution of some images is low. Finally, technology moves on; digital images taken a few years ago are simply less clear than those taken with more recent cameras.

2. Morphology

2.1 Introduction

Free-reeds are known only from traditional societies in South and East Asia, although since their adoption into the European instrumentarium, they have been dispersed all over the world in the shape of the accordion, the harmonium, the concertina and the harmonica. Ironically, the Francophone culture of colonial Indochina has meant that the accordion has been carried back to countries such as Laos and Vietnam. The main free-reed instruments in SE Asia, apart from the mouth-organ, are the transverse horn and the transverse or end-blown fingerhole pipe, where the pitch is altered by stopping fingerholes, exactly as on a transverse flute. Unlike other reeds, the free reed does not overblow, and as a consequence, instruments have a limited range. However, the potential to sound two notes on a single reed according to whether the air is blown or sucked can potentially increase the available notes.

The mouth-organ consists of a series of graduated pipes, each one with an individual free reed producing a different pitch. These pipes are inserted into a wind-chest and either end inside it or pierce it. The player blows into an embouchure connected to the wind-chest which forces air through all the pipes simultaneously. Each pipe has a fingerhole above the wind-chest and by stopping this hole, the pipe is muted. Thus to play an individual note, all pipes must be stopped except one. As a consequence, the mouth-organ lends itself to playing chords and this polyphonic sound can be considered typical.

There are four morphological subtypes in SE Asia, as follows;

- I. Pipes spaced out in a circular array projecting outwards from a bottle-gourd wind-chest with a tubular embouchure
- II. Closely spaced pipes in a circular array, exactly parallel to one another, with an embouchure directly in a wooden or metal wind-chest
- III. Closely spaced pipes in two parallel lines, with an embouchure directly in a wooden tubular wind-chest
- IV. Widely-spaced pipes in two roughly parallel lines passing through a tubular wooden wind-chest with a long tubular embouchure

Type I is the most common and morphologically diverse, since it is associated with many minority cultures in mainland SE Asia and examples differ in detail, in number of pipes, resonators etc. Types II and III are associated with classical performance, Type II being the Chinese *sheng* and Type III the Laotian and Thai

Photo 3. *Yuhan*, mouth organ with pipes at right angles to the embouchure



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khene. Type IV is associated with the Hmong people of South China and adjacent countries. The geographical distribution of these types is considered in more detail in §3. A lesser-known variant on Type III has one or more rows of pipes arranged across the wind-chest, at right angles to the mouthpiece (Photo 3). Examples include the Chinese *fang sheng*, the Bangladeshi *plung* and the Vietnamese *m'buot*.

2.2 Playing methods

The morphology of the free reed makes ensures that it will sound on both inhalation and exhalation, distinguishing it from other types of reed. Circular breathing used for shawms may have first evolved to provide a continuous stream of sound natural to the free-reed. However, this technique does not work with some of the related instruments described in §5.

2.3 Additional resonators

Classical instruments such as the *sheng* and *sho* have no additional resonators to amplify the sound, but among the large instruments made by minorities in Thailand, Myanmar, Borneo and Bangla Desh, these are very common. Usually these consist of a bottle-gourd placed over the end of the pipe, and in modern times these can be replaced by glass bottles, plastic medicine boxes and other scrap materials. Occasionally, rather more unusual strategies include a large transverse bamboo internode set on the end of the longest tube. Photo 4 shows the Lisu *fulu lae lae* from NE Thailand.

2.4 Size

Free reed mouth organs can vary greatly in size, between the coconut-resonated *ra rai* (Photo 5), just about 10 cm. long, to the immensely tall instruments of the Lisu, Lahu and Mru, where the longest pipe may be over 2 m. Even larger instruments of Type III, with the pipes in two parallel lines up to 3 m. long are found in the collection of the National Museum of Thailand (Photo 19) but whether these were made for practical performance is uncertain.

2.5 Reeds: idioglot or heteroglot

All the simplest free reed instruments are idioglot, in other words the reed is cut from the same material as the pipe, as with the clarinets also found in this region. However, once the reed is damaged or worn, it is difficult to replace in a complex instrument intended for long-term use. As a consequence, almost all mouth-organs have inserted separate or heteroglot reeds. Usually these are made of bronze and look not dissimilar to the jews' harps found throughout the region. John Moore (p.c.) reports that among the Hmong the lowest pipe in the *qen* has two or three bronze reeds in order to increase its volume. It is hard to tell how common this constructional practice in folk instruments across the region as it may require taking instruments apart, not a favourite with museums, or discussion with the makers.

3. Distribution

3.1 General

Table 1 shows the geographical distribution of mouth-organ types by country;

Photo 4. Lisu *fulu lae lae* with transverse bamboo resonator



Source: John Moore

Photo 5. The *ra rai*, a free-reed mouth-organ with a coconut wind-chest



Source: Author photo, courtesy National Museum of Thailand

Table 1. Geographical distribution of mouth-organ types

Type	Countries
I	NE India, Bangla Desh, Burma, China, Thailand, Laos, Việt Nam, Borneo
II	China, Japan, Korea
III	Thailand, Laos, Vietnam
IV	China, Thailand, Laos, Việt Nam

The following sections cover individual countries, reviewing the literature and known types of instrument occurring in each. The maps show a very approximate distribution of the types of free-reed organ.

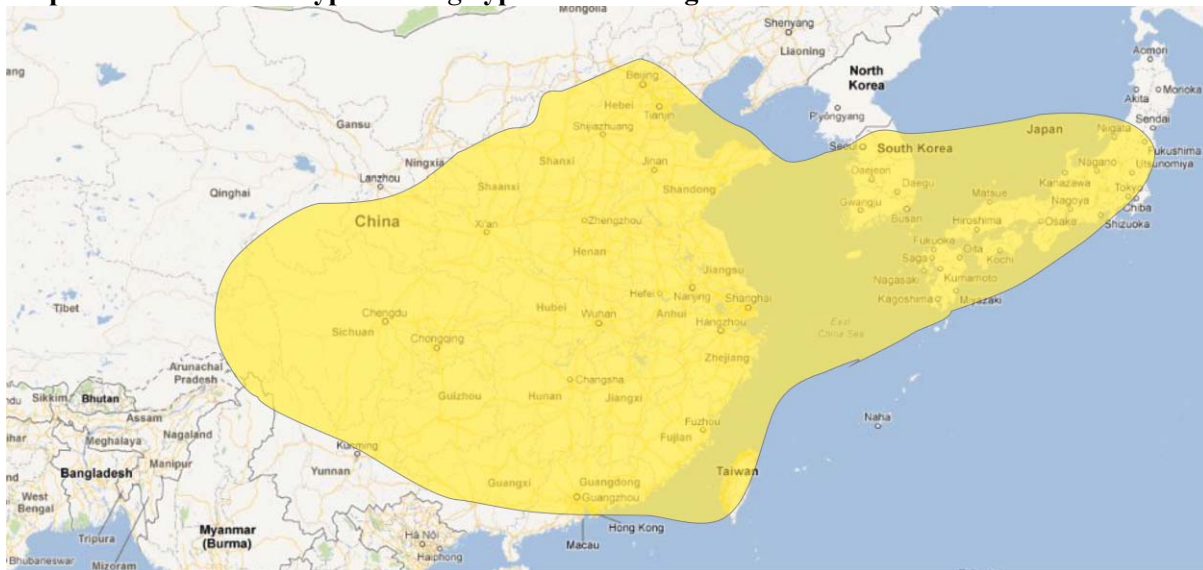
Map 1 shows a composite distribution Types I and III, mouth-organs with a wind-chamber of either gourd or wood. This excludes the East Asian *shēng* type (Map 2) and the Hmong type (Map 3) but includes the bronze copies of gourd wind chambers of the Dian kingdoms.

Map 1. Distribution of free-reed organs with gourd or wood wind-chamber, Type I



Map 2 shows a schematic distribution of the Chinese *sheng* and its historical borrowings into Korea, Japan and Taiwan.

Map 2. Distribution of Type II *sheng*-type free-reed organs



Map 3 shows the distribution of the Hmong-type mouth-organ (Type IV). The chequered pattern indicates that it is scattered across this region as are the Hmong people themselves, living interspersed with other communities.

Map 3. Distribution of Hmong-type free-reed organs



3.2 China

China has the most complex repertoire of free reed mouth organs, because the instrument was adapted into the classical music repertoire at an early date (Thrasher 1996). The archaeological and iconographic record is more complete than for other countries, although some early images are quite difficult to interpret. Tradition credits the invention of the *sheng* to various semi-mythical characters such as the Emperor Huang Di or the Empress Nu Gua in the third millennium BC. The shape is said to have been inspired by a phoenix at rest on its nest. The earliest written descriptions (as far back as the ‘oracle bone’ inscriptions of the fifteenth century BC) use the names;

<i>he</i> (和, harmony)	small size
<i>chao</i> (巢, nest)	medium size (presumably because it resembles a bird's nest)
<i>yu</i> (筭)	large size

all having varying numbers of pipes often arranged in crosswise rows.

The following table sets out the main types of mouth organ that have historically occurred in China.

- yú* (筭) - large free reed mouth organ (no longer in use)
- he* (和) - small free reed mouth (no longer in use)
- shēng* (笙) - free reed mouth organ consisting of varying number of bamboo pipes inserted into a metal (formerly gourd or hardwood) wind-chest with finger holes. There are three subtypes:
 - bao shēng* (抱笙) – larger *sheng*
 - pai shēng* (排笙) – very large *sheng*
 - fang shēng* (方笙) – *sheng* with a rectangular arrangement of 14 pipes in two rows at right angles to the mouthpiece

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húlú shēng (葫蘆笙, SC 葫芦笙) - free-reed mouth organ with a gourd wind chest (used primarily in Yunnan)

húlú sī (葫蘆絲, SC 葫芦丝) - free-reed wind instrument with three bamboo pipes which pass through a gourd wind chest; one pipe has finger holes and the other two are drone pipes (used primarily in Yunnan)

The *shēng* can be seen in pictographs dating from 1200 BC with a gourd wind chamber, and looks very similar to the current southern Chinese and northern Thai *naw*. The ‘oracle bones’ of the Yin dynasty (ends 11-12th century BC), mention it under the name *ho* (a small *shēng*); and the *Shi-ching* (Book of Odes) attests its use before the time of Confucius (551-479 BC), who is believed to have played the instrument. Another ancient text, the *She-king*, says:

*The lutes are struck, the organ blows
Till all its tongues in movement heave.
The drums loud sound, the organ swells
Their flutes the dancers wave.*

The earliest find of an actual instrument is in the tomb of Marquis Yi of Zeng, in Suixian country, Hubei, and dated to 433 BC (Guangsheng 2000). This instrument has a wind-chest of lacquered wood imitating a gourd, and two arrays of pipes at right angles to the direction of the mouthpiece, corresponding to the *fang shēng* (方笙). Slightly later instruments have been found in the Han tombs, representing a variety of construction techniques (Mok 1978).

The earliest pictorial images of the mouth-organ are those on Chinese bronzes, where it is shown as part of a ritual orchestra. Figure 1 shows a performance of Ya-Yueh ritual music decorating a *hu* wine-vessel from the Warring States period (480-221 BC) now in the Musée Guimet. From left to right, the instruments are pan-pipes, bell-chimes, mouth-organ, stone chimes, mounted barrel-drum and standing clapper-drum.

Figure 1. Performance of Ya-Yueh ritual music, Warring States Period



Source: Vandier (1938)

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The *shēng* (笙), has 17 pipes of varying lengths forming an incomplete circle around a wind-chest of either carved wood or metal. This arrangement gradually became more or less standardised, with *yu* denoting a melody and *shēng* a harmony instrument. Older instruments often had much longer mouthpieces than those used on modern ones - perhaps so the emperor could see the faces of the female court musicians that serenaded him. Photo 6 shows a female *shēng* player represented on the tomb of Wang Jian (847-918 AD), in the Yongling Museum, Chengdu². By the Tang period, representations of the *shēng* become relatively common (Photo 7). The repertoire of the Tang court is gradually being published (Picken 1981-1990) and melodic instruments such as the lute and mouth-organ feature in the scores.

Of the seventeen pipes of the typical *shēng*, three or four were blocked and had no reeds. By the mid-twentieth century these silent pipes were often given reeds to add chromatic notes. Larger instruments with more pipes started to be produced and resonators added to give more volume. New variations on the traditional *shēng* have been invented, such as the keyed *shēng* or *jia jian sheng* (加键笙). As its name suggests, instead of the notes being selected by the player's fingers, there is a system of keys or buttons which open and close the ends of the pipes. The most recent versions of this instrument have 37 pipes, covering three fully chromatic octaves. Larger ensembles sometimes use the *da pai shēng* (大排笙, 'large row *sheng*'), a large floor-standing organ-like instrument and the somewhat smaller *bao shēng* (抱笙, "held *sheng*"), supported by a stand or held in the player's lap.

The *lu shēng* (TC 蘆笙, SC 芦笙) or *lu sha* (蘆沙, SC 芦沙) is a mouth organ played by southern minorities in China and neighbouring countries, such as the Dong, Gelao, Lahu, Hmong and Shui. It usually has six pipes in two rows of three, ranging in size from the small types shown, to instruments with pipes up to four metres in length. Photo 8 shows a mouth-organ of the Bugan, an isolated Austroasiatic minority in South China.

Although the pipes protrude through the bottom of the wind-chest in a manner similar to the those of the *hulu sheng*, the pipes are closed near the lower end. Often the upper ends of the pipes have additional resonators added to them and in some cases a pipe might be fitted with multiple reeds to emphasise a particular note. These have two rows of pipes side by side along the instrument, in line with the mouthpiece of the instrument. Examples include the *sumpton* of Northeastern Borneo, the Thai/Laotian *khaen* and the *lu shēng* played by Chinese minority groups (the latter two having windchests of carved wood, contrasting with the gourd wind-chest of the former).

Photo 6. Female *sheng* player. Photo 7. Tang-era statuette of female musician with *sheng*



Source: Author photo, Yongling Museum, Chengdu



Source: Author photo, Historical Museum, Forbidden City

Photo 8. Bugan mouth-organ



Source: Courtesy Andrew Hsiu

² The inside of the tomb is extremely dark and cramped and photography is not permitted. The photo shows a cleaned-up image of the player prepared by the Museum authorities separated from the tomb.

3.3 Korea

The *shēng* was introduced into Korea from China during the Three Kingdoms period (57 BC to 668 AD), where it became known as the *saeng hwang* (hangul: 생황; hanja: 笙簧). Typically the *saeng hwang* has seventeen pipes, with one of them being silent. Photo 9 shows a in the album *Hyewon pungsokdo* (1805). Two other early Chinese mouth-organs are known from Korean records, the *u* (hangul: 우; hanja: 竽) from the Chinese *yu*; and the *hwa* (hangul: 화; hanja: 和) a mouth organ with 13 pipes from the Chinese *he*. Both are no longer in use.

3.4 Japan

In the eight century, the Chinese presented a gift of three *shēng* and three *yu* to the Japanese court at Nara. The *yu* fell almost immediately into disuse, although some of these instruments, *u* in Japanese, are still preserved in the Shoso-In Imperial Treasure House in Nara. The *shēng* was transformed into the Japanese *shō* (笙), which is slimmer and higher pitched than the typical *sheng*. Photo 10 shows a painting of a performer playing in Tang style from the *Shinzei Kogakuzu*³. The *shō* has seventeen pipes of which two are traditionally silent. The *Shō* plays in *Gagaku*, literally ‘elegant music’, the music of the Japanese court. *Gagaku* most commonly features the *shō*, *hichiriki* (a double-reed instrument), *fue* (a bamboo flute), *koto* and percussion. The *shō* plays long sustained tone clusters, which slowly evolve as the piece progresses. Remarkably, there are decipherable scores in Japan that date from the eight century which give an idea of the musical output of the *shō* (Harich-Schneider 1973:77).

3.5 Iran

By the sixth century AD, the mouth organ had spread from China to Persia, where it was known as *mushtaq sini*, *bisha-i mushta* and later as *chubchiq*. The instrument is depicted in several illustrations from that period, but seems not to have entered the mainstream of Persian music. A mouth-organ is depicted on a Persian vase from the 10th or 11th century is together with a shawm (Gazette archéologique, tome xi., 1886).

3.6 Việt Nam

Việt Nam is one country apart from China where there is significant early iconography of the mouth-organ. Photo 12 shows an image of a mouth-organ player on a libation cup, on the Việt Khe coffin (ca. 200 AD) now in the Vietnamese Historical Museum in Hanoi⁴. The

Photo 9. Korean *saeng hwang*



Source: *Hyewon pungsokdo* (1805)

Photo 10. *Shō* player, Tang style



Source: Shinzei Kogakuzu

Photo 11. Mouth-organ player, Ngọc Lũ bronze drum



Source: Courtesy Ambra Calo

Photo 12. Gourd mouth organ on a libation cup, Việt Khe coffin



Source: Author photo, Vietnamese Historical Museum

³ Atsuo Masamune 1927. *Shinzei kogakuzu* [信西古樂圖]. Tōkyō : Nihon Kōten Zenshū Kankōkai, Shōwa 2.

⁴ Thanks to Ambra Calo for drawing my attention to this

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instrument represented is almost certainly a gourd-resonated mouth organ with a long tubular mouthpiece and a small number of pipes, resembling closely those still found in the region today. Slightly more difficult to interpret are depictions of mouth organs on bronze drums. Bronze drums are spectacular prestige objects, probably not originally intended as musical instruments, which were first cast in Việt Nam ca. 400 BC and were widely traded and sometimes imitated in workshops throughout the region (Calo 2009). They are decorated with complex imagery which is often difficult to interpret, but figures with elaborate feather head-dresses are common, as are boats. Photo 11 shows what is almost certainly a mouth-organ player on the Ngọc Lũ bronze drum (found 1893 in the Red River Delta, dated 2-3rd century BC). In this case, the pipes clearly transpierce the wind-chest, resembling more Types III and IV than the minority instruments in Việt Nam, but the representation is too schematic to say much more.

Việt Nam is also home to gourd-resonated mouth-organs more typical of the region. Photo 13 shows a gourd-resonated mouth-organ, attributed to the Xa Pho people⁵, with six pipes, a gourd wind-chest and resonator. Photo 14 shows an instrument remarkably similar to those excavated in Yunnan, with bronze copies of gourd wind-chests (Photo 2). The pipes are arranged in two rows, four plus two and emerge from the base of the wind-chest, allowing bending of the notes. A very similar instrument, known as *kupuot*, is played by the Roglai people; strikingly, however, the posture is quite different. The Roglai hold the instrument at right angles to the body, so that the pipes project laterally rather than forward (Photo 15).

Photo 15. Roglai *kupuot* mouth organ



Source: Vietnamese Institute of Ethnomusicology

3.7 Laos

Laos is one of the ethnically most complex countries in SE Asia, with some 127 languages spoken. Many of these minorities are little-studied, and their musical instruments almost unknown. A lack of a national museum in Laos has made it difficult to get an overview of the situation. Moreover, research is not encouraged in some rural areas. Nonetheless, the *khaen* or *khene* mouth-organ (Lao: ຄຳເໝ; Thai: แคน) can be considered the national instrument of Laos, and features on heritage sites, on Youtube videos and numerous CDs (Photo 16). The photo shows a typical arrangement of pipes, with two rows of seven passing through a near-conical wind-chest. The reeds are usually bronze or even silver today. Laotian modes are typically pentatonic. Miller (1980, 1985) are useful guides to both practical performance on the instrument and a study of its performance in Lao society. It is

Photo 14. Gourd mouth-organ with two rows of pipes from Vietnam



Source: Author photo, Vietnamese Institute of Ethnomusicology

Photo 13. Gourd-resonated mouth-organ, Xa Pho people



Source: Author photo, Vietnamese Institute of Ethnomusicology

⁵ On the VIM website, this instrument is named as the *mbuot*, and said to be Hmong, but I have examined the actual instrument and the notes accompanying it.

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the most important instrument of Laos and Northeast Thailand, as it is the most refined in tuning, playing techniques and repertoire. Four sizes are common today: with six, fourteen, sixteen and eighteen pipes. The most common *khaen* is the sixteen-pipe version, the *khaen paat*, from two to three and a half feet in length. The sixteen-pipe *khaen* plays a two-octave diatonic minor scale and is tuned in half and whole steps similar to Western tuning. The pitch, however, is not standardised and varies considerably between instruments. The eighteen-pipe version, the *khaen gao*, which reaches over six feet has virtually disappeared. Playing such an instrument was extremely taxing because of the wind-pressure players had to maintain. Prince Henri d'Orleans (1894:371) wrote; 'A man carrying a Laotian organ, which he has difficulty in setting up, follows them [the singers]. The pipes of the organ are so long -- nearly fourteen feet -- that he is finally obliged to cut a hole in the roof, but the damage can be easily repaired.' This instrument, known as *ken pe* or *pi pe*, is also played by the Tai in Viêt Nam where it has thirteen sounding pipes and a single dummy pipe.

Photo 16. Laotian *khaen*



Photo 17 is one of the few examples of an iconographic representation in Laos. It shows a mouth-organ together with flute and reed-pipe in a glass mosaic at Wat Xieng Thouong, Luang Prabang, which is dated to ca. 1830.

3.8 Cambodia

In Cambodia, the mouth-organ is used among the ethnic Lao in Stung Treng province and in *lakhon ken*, a Cambodian dance drama genre that features the *khene* as the main instrument. Mouth-organs are probably not traditional in Cambodia and none are represented on its most famous iconographic record of musical instruments, the friezes at Angkor Wat (Blench 2007).

3.9 Thailand

Thailand has a wide variety of mouth-organs

Photo 17. Musical instruments, glass mosaic, Wat Xieng Thouong, Luang Prabang



Source: Author photo

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reflecting its ethnolinguistic diversity. The Lao *khaen* is also played in Thailand (Photo 19), but the gourd organs typical of minorities of Yunnan are found, as well as the Hmong mouth-organs.

The *naw* is played by a number of minority peoples of the region, including the Yi, Lahu and Lisu peoples. It has five pipes grouped in a circular cluster, whose open ends appear flush with the bottom of the gourd wind chamber, which allows the player to "bend" the notes by slowly covering the ends of the pipes with the right thumb while playing. The technique is difficult, and the resulting music is very lively and quite loud. Traditionally this instrument also played a coded language, used for unmarried people to converse with.

Photo 19. *khaen gao* mouth organs, Thailand



Source: Author photo, National Museum of Thailand

Photo 18. Lisu mouth-organ, Thailand



Source: Vorreiter (2009)

Photo 20. Lahu mouth-organ, Thailand



Source: Vorreiter (2009)

3.10 Myanmar

The mouth-organ does not play a significant role in the Burmese instrumentarium today, although it is played by some minorities in the north. However, there is evidence that it was of greater importance in the past. One of the more intriguing pieces of textual evidence for the mouth organ occurs in the Tang chronicles. In 802 AD, the ruler of the Pyu kingdom sent a troupe of thirty-five musicians to the Tang capital at Yang Chao (Becker 1967). The music was so noteworthy that the chronicler included a complete list of instruments, among which were two mouth organs of different sizes with gourd wind chests. Each had sixteen pipes and the longest was nearly five feet in length. The number of pipes is surprisingly large, but the size of the instrument and the detail of the gourd suggests some of the folk instruments such as the Lahu type (Photo 20) rather than the two orderly rows of the *khaen* type instruments (Photo 19).

Photo 21. Mouth-organ players at Bagan



Courtesy Alexandra Green

3.11 Bangla Desh

Bangla Desh is dominated by Indo-Aryan speakers for whom the mouth-organ is extremely alien. However, along the border with Myanmar live Sino-Tibetan minorities, who play mouth-organs in very large ensembles. The CD, *Ritual Mouth Organs of the Murung*, documents a large ensemble of performers on large instruments, *plung*, with gourd wind-chests.

3.12 NE India

India is at the very edge of the distribution of the mouth-organ and represents a spillover from SE Asian types. Photo 22 and Photo 23 show a mouth-organ played by the Kuki in Nagaland, which is clearly a Type I instrument.

Photo 22. Kuki mouth-organ



Source: Author photo, courtesy Guwahati museum.

3.13 Borneo

Mouth-organs and the free-reed in general are not typical of Island SE Asia. They were clearly not part of the Austronesian instrumentarium, and are only found on one island, Borneo, and only in a restricted region in the northwest. The *keluri*, *keledi* and the *enkulurai* are free-reed mouth organs. Blench (2011) has argued that this enclave almost certainly reflects a prior settlement of Austroasiatic speakers in this region, now submerged by later Austronesian migrations.

Typical instruments have six pipes which do not pierce the bottom of the gourd. The *keluri* or *keledi* is played by the Orang Ulu or 'upriver people' of the interior of Borneo (Photo 24), and the *enkulurai* is played by the Iban and related peoples who live in the lowlands close to the coast (Photo 25). Both these instruments are made

Photo 24. Orang Ulu mouth organ, Borneo



Source, Author photo, courtesy Sarawak Museum

The longest pipe on the Iban instruments is twice the length of the Orang Ulu *keluri*. Some Iban instruments may reach over 2 metres in length, although an average instrument is around 80 cm. *Keluri* were traditionally played for 'long dances' associated with the rituals around headhunting, but with its disappearance, these instruments are now seldom played or made. There are still a few elder players able to perform, but their music will likely disappear soon.

3.14 Hmong mouth-organ

The Type IV mouth-organ is characteristic of the Hmong (Miao) peoples who live dispersed across a large region of Yunnan, spreading to Việt Nam eastward and into northern Laos and Thailand. The characteristics of Type IV are the extended tubular mouthpiece which narrows into a slim wooden wind-chest. The pipes, which can be as few as three, but are more typically six or seven, transpierce the wind-chest, but the performers do not 'bend' the notes with their thumbs. Photo 27 shows a typical performer in northern Thailand, while Photo 26 shows a close-up of wind-chest in a typical Hmong mouth-organ in Việt Nam.

Photo 23. Kuki mouth-organ performer



Source: Courtesy Don Bosco museum

Photo 25. Bidayuh mouth-organ, Sarawak



Source: Author photo, Sarawak Cultural Village, Kuching

with a made a gourd wind chamber with six bamboo pipes and a bamboo or occasionally metal free-reed.

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Hmong everywhere essentially use the mouth-organ while dancing; however, the music itself is crucial in communicating with the spirits, for example at funerals.

Photo 26. Close-up of wind-chest in a typical Hmong mouth-organ



Source: Author photo, Vietnamese Institute of Ethnomusicology

Photo 27. Hmong mouth organ



Source: Vorreiter (2009)

communication with the spirits

The well-known use of the *shēng* in East Asian court music is in fact highly atypical of its role in SE Asian society. The free-reed sounds on inhalation, allowing the player to set up a continuous rhythm reinforced with chords which is highly suitable for accompanying dancing, in the same manner as the bagpipe in medieval Europe. It was just this capacity that ensured the harmonica was rapidly adopted by blues players and the accordion by European village musicians. Among the Hmong, dancing with the mouth-organ is highly characteristic and players can also map a highly complex series of dance steps to the rhythms of the *gen*. Schwörer (1982) discusses the uses of the mouth-organ among the Lahu in Northern Thailand, where it is an indispensable accompaniment to the ritual cycle. Most importantly, the Lahu and related peoples use the tones produced by mouth-organ to mimic the speech-tones of the language and in this way recite the lengthy epics which reinforce their identity.

4. Soul music: the mouth-organ and

5. Evolution of the mouth-organ: transitional instruments

One of the puzzles about the mouth-organ is the way it appears to be fully-developed from its inception; transitional or children's instruments do not seem to account for its evolution. The initial question is the source of the free reed and to which instrument it was first applied. A possible source is the idioglot clarinet, found throughout this region. Photo 28 illustrates the ephemeral clarinets, *mae lii mae lo*, made by Akha women in northern Thailand. It is easy to imagine that an accident with cutting or a casual experiment might lead to the discovery of the free-reed principle. If so, the earliest instruments would have been free reed pipes similar to the clarinets. The Hmong *traa nplai* shown in Photo 29 is one such instrument, although today it has a reed-cap made of a glass jar. In some cases, such as the Palaung *waou*, an additional drone-pipe without a fingerhole is parallel to the main sounding tube. Expanding the number of these may well have led to the evolution of the mouth-organ.

Photo 28. Akha idioglot clarinets, *mae lii mae lo*



Source: Courtesy John Moore

Photo 29. Hmong *traa nplai*



The other important innovation is the wind-chest. These are not very common globally; for example, they do not occur in Africa, Oceania or the New World. In Western Eurasia, they are usually replaced by the flexible bag of the bagpipe, although the reedcap on shawms such as the krummhorn and others constitute a type of fixed wind-chest. The *pungi*, or so-called ‘snake-charmers’ pipes found in parts of India, has a gourd wind-cap which encloses two clarinet reed-pipes, one a drone and the other with fingerholes. It seems most likely that the wind-chest, originally a gourd, was developed in the Yunnan region first to prevent damage to the reed, and then to hold multiple pipes in place.

In seeking the origin of the free reed mouth organ it is valuable to look at other instruments which may be transitional in its evolution. The most important of these are the single or multiple fingerhole pipes with gourd wind-chests still played in the region. One such instrument, played in South China, is the *ija* (Photo 30). The gourd wind-chest is in place, but is only transpierced by a single pipe with two fingerholes, resembling more the transverse fingerhole free-reed pipes played by the Hmong.

Photo 30. *Ija*, free-reed pipe with wind-chest and fingerholes



Source: Author photo

7. A possible historical schema

The distributional evidence suggests that we should look to the reed-pipes of Laos and Vietnam as the original sources of the free-reed mouth-organ. Somewhere between Laos, Vietnam and Yunnan is the most likely home of the earliest instruments, which would have had gourd wind-chests and a small number of pipes. This may well have been prior to the dispersal of Austroasiatic languages, since the language phylum and the gourd-organ largely overlap. If so, then this may have been before 4000 bp, when Austroasiatic began to disperse (Sidwell & Blench 2011). If it is correct that Austroasiatic speakers reached Borneo prior to the Austronesians, then this again gives a date of prior to 3500 BP (Blench 2010).

The Dian kingdoms of Yunnan took up the mouth-organ and began to make copies of the wind-chambers in metal, presumably by the third century BC (Allard 1999). When the Chinese first came into contact with the Dian, they initially copied the gourd-resonated instruments in more costly materials (Guangsheng 2000). By the Tang period the instrument had been re-arranged to resemble the *sheng*. This type of mouth-organ was exported to Japan and Korea by the eighth century and has remained largely unchanged in ritual orchestras. There is no real evidence for the evolution of the Lao/Thai *khaen* instruments, but these are probably a restructured version of the *fang shēng* could be relatively late, perhaps sixteenth century, to judge by the representation at Bagan. Similarly, there is no iconography for the Hmong *qen*. However, nearly identical instruments occur wherever the Hmong are found, pointing to its dispersal with the ethnic group itself,

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which can probably be placed at least 2500 BP. The Hmong almost certainly migrated from central China southwards towards Laos. Even so, its idiosyncratic design has no obvious progenitor.

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