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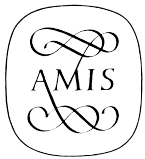

The Keyless Double Reed Aerophone: Its Usage, Construction, and Worldwide Distribution

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THE SUBJECT OF KEYLESS DOUBLE REED aerophones has not received a great amount of scholarly interest. Reference works such as the *New Grove Dictionary of Musical Instruments* and the *New Harvard Dictionary of Music* include many entries on other types of musical instruments (such as drums, harps, flutes, guitars, and trumpets), articles which include a world overview of the instruments. If and when double reeds are discussed, however, it is usually under the general heading of "oboe," with little or no attention paid to the non-Western, keyless members of that category.

The lack of information about double reeds is somewhat surprising, considering their widespread distribution and cultural significance, as well as the obvious cross-cultural ties so clearly illustrated by construction methods and social contexts. A few scholars have written detailed studies on individual instruments or have undertaken comparison studies between a few selected instruments from different cultures.[1] Yet there is still a scarcity of information written about double reeds. What little there is exists in scattered sources, a sentence here, a paragraph there, often with only fragmentary data included, such as the mention of a double reed name in a listing with many other types of instruments.

This essay provides a survey of existing literature, providing one fairly comprehensive source for scholars, teachers, and students interested in keyless double reed aerophones. The material presented here was gleaned

Material for this article is taken in part from my M.A. thesis, "The Turkish *Zurna*" (UCLA 1989). I wish to thank Tim Rice, Sue Carole DeVale, Jacqueline DjeDje, Elaine Barkin, and Richard Keeling for their invaluable advice and support.

1. See, for example, Charles McNett, "*The Chirimía:* A Latin American Shawm," *The Galpin Society Journal* 13 (1960); Nazir Jairazbhoy, "A Preliminary Survey of the Oboe in India," *Ethnomusicology* 14/3 (1970) and "The South Asian Double-Reed Aerophone Reconsidered," *Ethnomusicology* 24/1 (1980); John Okell, "The Burmese Double-Reed 'Nhai,' " *Asian Music* 2/1 (1971); Martha Ellen Davis, "The Changing Role of the *Dulzainero* in León, Spain," *Journal of American Folklore* 88/349 (1975); Arturo Charomorro, "Chirimías: Sondeo Histórico de un Modelo Islámico en América Hispana," *Latin American Music Review* 3/2 (1982); Timothy Rice, "The Surla and Tapan Tradition in Yugoslav Macedonia," *The Galpin Society Journal* 35 (1982); David D. Harnish, "Musical Traditions of the Lombok Balinese: Antecedents from Bali and Lombok," M.A. thesis, Univ. of Hawaii (1985); and Wanda Bryant, "The Turkish *Zurna*," M.A. thesis, UCLA (1989).

from a variety of sources: general and musical dictionaries; encyclopedias; books and articles on specific areas of music, religion, history, and politics; dissertations and theses; ethnographic films; and record jacket notes, as well as actual physical inspection of available instruments. One hopes the accessibility of this information will encourage others in the field to include more data on keyless double reed aerophones in future work, and will enable teachers to provide at least a general overview of this area for their students.

I have approached this vast subject in four ways: by geographical location, by construction (including playing techniques and the construction of reeds), by social function, and by ensemble groupings in which keyless double reeds are found. Instead of comparing these keyless double reeds to instruments of Western music, I have compared them with each other and have attempted to speculate on any links which seem to exist between types of instruments found in different locations, and also to identify similarities in the social functions served by these instruments and their music.

History of Keyless Double Reed Aerophones

Most scholars support the theory of diffusion in the case of double reed aerophones, although the place of origin and direction of the subsequent spread of double reed aerophones is still a topic of debate. Some scholars, such as Hoerburger[2] and Jairazbhoy,[3] have suggested that the double reed/bass drum ensemble was indigenous to South Asia, and was spread from there to the Balkans by wandering Gypsies, perhaps as early as the fifth century. Others believe that non-Western double reeds with conical bores are of Near Eastern origin, spread from there to Asia, Africa, and Europe by cultural contact through exploration, trade, and conquest.[4]

2. In Laurence Picken, *Folk Musical Instruments of Turkey* (London: Oxford University Press, 1975), 103.

3. Nazir Jairazbhoy, "The South Asian Double-Reed Aerophone Reconsidered," *Ethnomusicology* 24/1 (1980):147–156.

4. See, for example, Peter Cooke, "Zurna," *New Grove Dictionary of Music and Musicians* (London: MacMillan Press Limited, 1980):721; Martha Ellen Davis, "The Changing Role of the *Dulzainero* in León, Spain," *Journal of American Folklore* 88/349 (1975):246–247; Diagram Group, *Musical Instruments of the World: An Illustrated Encyclopedia* (U.S.: Paddington Press, 1976):44; Alastair Dick, "The Earlier History of the Shawm in India," *The Galpin Society Journal* 37 (1984):80–97; Henry George Farmer, *Turkish Instruments of Music in the 17th Century* (Portland, Maine: Longwood Press, 1976):86; Jean Jenkins and Poul Rovsing Olsen, *Music and Musical Instruments in the World of Islam* (London: Horniman Museum, 1976):69; Sibyl Marcuse, *A Survey of Musical Instruments* (New York: Harper & Row, 1975):682; Reginald Massey, *The Music of India* (New York: Crescendo Publishing, 1977):134.

Curt Sachs cites evidence from early coins that such instruments existed in Jewish Palestine at the beginning of the second century A.D.[5] According to these scholars, migration of the double reed to the east probably was a result of wandering Middle Easterners entering India from the northwest.

According to Jenkins and Olsen, the spread of double reeds from the Near East to Europe came about as a result of three main historical events: the Arab conquest of Spain in 710–713 A.D., the Christian Crusades during the Middle Ages, and the sixteenth-century Turkish occupation of the Balkans.[6] Marcuse places the introduction of the double reed into Europe during the twelfth century, stating that the Turkish *zurna* was introduced into Yugoslavia, western Bulgaria, Romania, and Albania by Gypsies from Persia in the late Middle Ages.[7]

Conical bore double reeds spread eastward from India during the fourteenth and fifteenth century along with the expansion of the Islamic religion. The *suona* was introduced into China probably during the fourteenth century as a result of the influx of Muslim culture.[8] According to Kunst, double reeds arrived in Java sometime during the fifteenth century.[9] Thailand received double reed aerophones from India both directly and indirectly. The name of one double reed, *pī chawā,* indicates its adoption directly from the Javanese *(chawā* being the Thai word for Java), possibly during the Ayuthaya period (fourteenth to eighteenth century). Another Thai double reed, the larger *pī mōn* (*pi maw-n*) or *pī phāt ra-man,* is of similar conical bore construction, but the words *mōn* and *ra-man* both refer to the Peguan people of Burma,[10] indicating an overland migration into Thailand from the west.

The introduction of the double reed into Africa came as a result of cultural contact with the Arab world. In Africa, it is probable that double reed instruments were adopted well before the introduction of Islam. There is evidence that Egypt, for example, had contact with cultures outside Africa

5. Curt Sachs, *The History of Musical Instruments* (New York: W. W. Norton and Company, Inc., 1940):120.

6. Jean Jenkins and Poul Rovsing Olsen, *Music and Musical Instruments in the World of Islam* (London: Horniman Museum, 1976):86–87.

7. Sibyl Marcuse, *A Survey of Musical Instruments* (New York: Harper & Row, 1975):682, 701–2.

8. Alan R. Thrasher, "Suona," *New Grove Dictionary of Musical Instruments* (London: MacMillan Press Limited, 1984):475.

9. Jaap Kunst, *Music in Java* (The Hague: Martinus Nijhoff, 1949):238.

10. Dhanit Yupho, *Thai Musical Instruments* (Bangkok: SIVA PHORN Limited Partnership, 1960):81–83.

five thousand years before the predynastic Egyptian cultures arose.[11] The peoples of Sudanic Africa came in contact with Mediterranean civilizations as early as the fourth and fifth millennium B.C.[12] Likewise, the eastern coast of Africa had long established trade relations with the lower Arabian peninsula (dating back as early as the first millennium B.C.) as well as contact with India, Indonesia, and China.[13]

Double reeds were introduced into the western hemisphere in the early sixteenth century by the conquering Spaniards under the leadership of Cortes, and were carried through Mexico, Central America, and into parts of South America by Spanish missionaries who used music as a means to convert the indigenous Indian population.[14]

Geographical Range

The geographical distribution of keyless double reed aerophones forms a band around the world, from approximately ten degrees south to approximately forty-five degrees north of the equator, except in the western hemisphere where distribution extends northward only to the Tropic of Cancer. (See maps at conclusion for world distribution.) The vast majority of keyless double reed aerophones are found in the eastern hemisphere, ranging from East Asia to western Europe. They are especially prevalent in the Middle East, and are found in all predominantly Islamic countries. Double reeds are also found in China, Southeast Asia, Indonesia, Malaysia, Madagascar, north, east, and west Africa, India, Russia, Central Asia, the Balkans, and both eastern and western Europe.

This distribution pattern implies that, apart from cultural reasons and population migratory patterns, there may be some climatic reasons for the prevalence of double reeds in these areas. One likelihood is the availability of materials for reed-making in these latitudes. Suitable reed grasses are difficult to obtain in higher latitudes. This cannot be taken as the sole rea-

11. J. Spencer Trimingham, *The influence of Islam upon Africa* (New York: Frederick A. Praeger, Publishers, 1968):6.

12. Jacqueline Cogdell DjeDje, "The One-String Fiddle in West Africa: A Comparison of Hausa and Dagomba Traditions," (Ph.D diss., UCLA, 1978):6.

13. J. Spencer Trimingham, *Islam in East Africa* (Oxford: Clarendon Press, 1964):2, *The influence of Islam upon Africa* (New York: Frederick A. Praeger, Publishers, 1968):99, and "The Expansion of Islam," in *Islam in Africa,* James Kritzeck and William H. Lewis, eds. (New York: Van Nostrand-Reinhold Company, 1969):21.

14. Robert Stevenson, *Music in Mexico: A Historical Survey* (New York: Thomas Y. Crowell Co., 1952):52–56; Charles McNett, "The Chírimía: A Latin American Shawm," *The Galpin Society Journal* 13 (1960):48–49.

son, however, since in at least one location non-vegetable matter is used in reed-making. This exception notwithstanding, the availability of reed grasses would seem to be a major factor contributing to the overall distribution pattern.

Conical double reeds are found throughout the entire geographical range. The majority of them are constructed of hardwood or fruitwood, materials available in all geographical locations where double reeds exist. The prevalence of cylindrical double reeds in the Far East and Southeast Asia may be due to the abundance of bamboo in those regions. Many of cylindrical double reeds are constructed from bamboo, and, since their first appearance in China, have spread mainly to those regions where bamboo is available.[15]

The only instrument in the western hemisphere positively identified in the literature as a double reed aerophone is found in Mexico, Central America, and parts of South America. Its origin is undoubtedly European. The instrument even shares its name, *chirimía,* with the Spanish double reed of today. Another instrument, the trompetica china, is "probably a type of oboe."[16] It is a twentieth-century import, played by the Chinese population in Cuba.

Construction

As defined by Curt Sachs, the bodies of double reed aerophones are tubes which enclose a column of air.[17] In this article, these tubes are divided into two main categories: those with a conical bore and those with a cylindrical bore. Some subdivisions of these categories are also identified: integral or separate bell, single or multiple body parts, and the presence or absence of an upper end plug. The "device" used by aerophones to set the air into vibration may be the compressed lips of the player (as for a trumpet), the sharp edge of a flute, or a reed. The instruments surveyed here employ concussion reeds, also called double reeds, which are examined with respect to various construction methods around the world. Tables containing data on all instruments located in the literature are located in the Appen-

15. Theodore C. Grame offers an interesting exploration of the connections between bamboo and music instruments, their uses and legends in "Bamboo and Music: A New Approach to Organology," *Ethnomusicology* 6/1 (1962).

16. John M. Schecter, "Trompetica china," *New Grove Dictionary of Musical Instruments* (London: MacMillan Press Limited, 1984):637.

17. Curt Sachs, *The History of Musical Instruments* (New York: W. W. Norton and Company, Inc., 1940):457.

dix. These tables are organized both by alphabetical listing of instrument names and by geographical location of the instruments for ease of reference.

Conical Bore Instruments

Double reed aerophones with conical bores are the most prevalent worldwide. They vary in size from the tiny *nzumari* of Kenya (fifteen centimeters)[18] to the ninety-five centimeter-long *nāgasvara* from South India. Typically they are carved or lathed from a single piece of wood (e.g., the African *algaita*) or are made of graduated segments of bamboo like the Sumatran *sarune.* Exceptions to this include *pī chawā* of Thailand and Laos which is occasionally made of ivory[19] and the *bramevac* of Gascony which is made of a strip of coiled bark held together with thorns.[20]

The bore of the conical double reed is narrowest at the top and expands exponentially toward the bell. The bell may be a simple flare at the end of the body or it may be a separate, possibly detachable, piece made of wood, metal, or animal horn. The number of finger holes ranges from none (on drone instruments such as the Indian *ottu*) to eight. The holes are usually round and are located on the front of the instrument in a straight line down its length. If a thumb hole is present, it is situated on the back of the instrument. Placement of the finger holes varies according to the tuning system of the culture. Holes found on an instrument that functions solely as a drone, like the *ottu* or the *sur* from India, are not finger holes, but rather are for intonation purposes. Typically located on the back of instrument or near its bell, these holes can be plugged with wax or left open in order to tune the drone to the melody instrument.

Instruments with conical bores are found throughout the entire geographical range of keyless double reed aerophones. Examples include the *suona* from China, the north Indian *śhehnā'ī,* the *pī chawā* and *pī mōn* from Thailand and Laos, the *serunai* from Sumatra and Malaysia, the Indonesian *preret, selompret,* and *tarompet,* the *charumera* from Japan, the Algerian *algaita,* the Turkish *zurna,* the *sopila* and *svirale* from Yugoslavia, and the

18. Graham Hyslop, *Musical Instruments of East Africa: 1 Kenya* (Ontario: Thomas Nelson and Sons, Ltd., 1975):6.

19. David Morton, "Pī," *New Grove Dictionary of Musical Instruments* (London: MacMillan Press Limited, 1984):68.

20. *New Grove Dictionary of Musical Instruments* (London: MacMillan Press Limited, 1984):268.

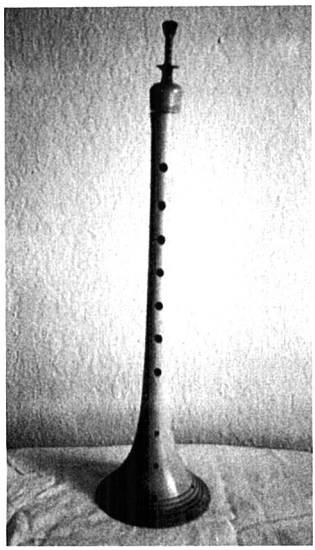

FIGURE 1A. Turkish *zurna* with reed.

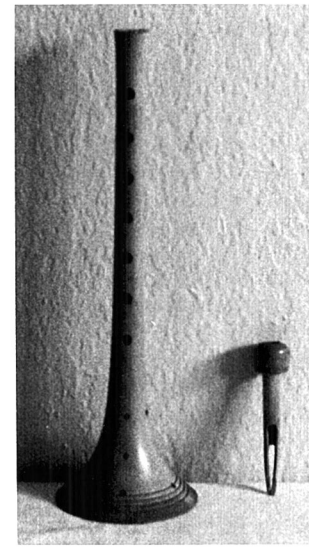

FIGURE 1B. Two-piece construction: *zurna* with its *nâzik* (end plug) removed.

dulzaina of the Basque region in Spain. The *hichiriki* of Japan also has a conical bore, but it is a reverse conical bore, wider at the top and narrowing as it approaches the bottom of the horn.

Some double reed aerophones are built in two or more pieces. Many in the Near East and North Africa, like the Turkish *zurna* and the Moroccan *ghayta,* are formed in two pieces: the body proper (where the finger holes are located) and a clothespin-shaped plug which fits in the upper end of the instrument. In India, Southeast Asia, and East Asia, the two parts are usually the body proper and a separate or detachable bell, such as are found on the *hné* from Burma, the *pī chawā* from Thailand, the *śhehnā'ī,* the Tibetan *rgya-gling,* some versions of the *sarune* and *serunai* from Sumatra, the *suona,* and the *nzumari.* The *mohōrī* of eastern India (the Orissa interior and Andhra Pradesh) is made from three naturally cylindrical segments of bamboo, each with a different diameter. When fitted together these three sections create the equivalent of a conical bore.[21] The Indonesian *tarompet* is

21. Alastair Dick, "Mohori," *New Grove Dictionary of Musical Instruments* (London: MacMillan Press Limited, 1984):677.

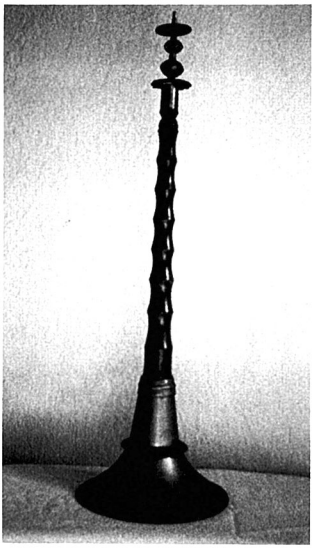

FIGURE 2A. Chinese *suona* (from the UCLA Ethnomusicology Collection).

FIGURE 2B. Two-piece construction: separate metal bell and conical wooden body of *suona* (from the UCLA Ethnomusicology Collection).

constructed in a similar manner, with four or five body parts creating a stepped conical bore. The body of the *sarune* of the Batak Toba region, Sumatra, has four parts, alternating between segments of wood and segments of buffalo or goat horn. The smaller *sarune* (thirty centimeters) is found with either a conical or a cylindrical bore.

Cylindrical Bore Instruments

Double reeds with cylindrical bores are most commonly found in Asia, Southeast Asia, and India. They are generally shorter than those with a conical bore, ranging from nineteen to thirty-seven centimeters, and are usually constructed in one piece. As is the case for instruments with conical bores, hardwoods and fruitwoods (e.g., rosewood, ebony, kirarr, mulberry, apricot, and figwood) and bamboo are the most common construction materials. However, David Morton mentions specimens of one instrument, the *pī nai* of Thailand and Laos, which are made of marble.[22]

22. David Morton, "Pi," *New Grove Dictionary of Musical Instruments* (London: MacMillan Press Limited, 1984):68.

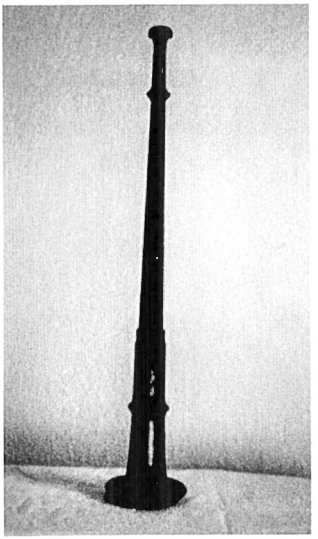

FIGURE 3A. Thai *pī chawā* (from the UCLA Ethnomusicology Collection).

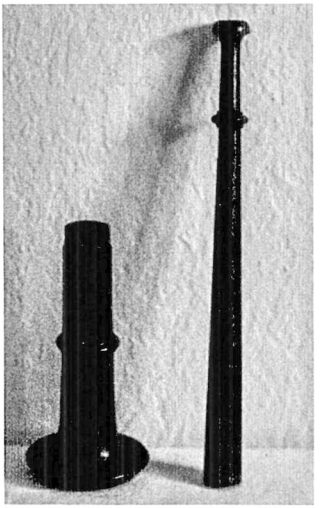

FIGURE 3B. Two-piece construction: separate wooden bell and conical wooden body of *pī chawā* (from the UCLA Ethnomusicology Collection).

The majority of cylindrical double reeds are a straight or slightly curved length of pipe, having neither a flared end nor a separate bell. Many are made from bamboo, a naturally cylindrical material which requires little or no alteration. There are a few exceptions, such as the *horonäva* of Sri Lanka and the Indian *kōl* and *mohōrī,* all of which have separate bells made of different materials. The bodies of the *horonäva* and the *mohōrī* which is found on the coastal plains of Orissa are outwardly conical but their bores are cylindrical. The *pī nai* and *pī nōk* of Thailand are lathed with a bulge in the middle, but their bores are nonetheless cylindrical.

The *chirimía* from Mexico, Central, and South America presents an interesting phenomenon. Its immediate ancestor, the Spanish *chirimía,* has a conical bore and an integral flared bell. Examples of the *chirimía* noted by McNett have a cylindrical bore; no mention is made of the presence of any type of bell.[23] In photographs of *chirimías* and an eighteenth-century Mexi-

23. Charles McNett, "The *Chírimía:* A Latin American Shawm," *The Galpin Society Journal* 13 (1960):44.

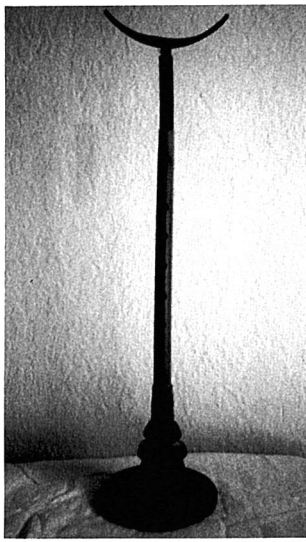

FIGURE 4. Indonesian *tarompet* (from the UCLA Ethnomusicology Collection).

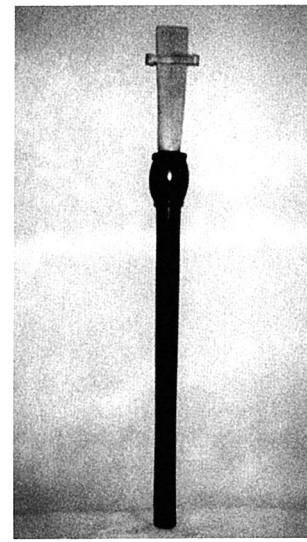

FIGURE 5. Turkish *mey* with broad reed.

can mural in Charomorro's article,[24] the instruments appear to be constructed in a manner similar to the Turkish *zurna,* with an outwardly cylindrical shape for the upper eighty percent of the body and a flared integral bell at the bottom. The latter examples also appear to have an upper end plug. These factors would indicate a conical bore. It is possible that *chirimías* are constructed with either type of bore, as is the case for the *sarune* from the Batak Toba region of Sumatra. The different bores can in part be attributed to the technology available to the instrument makers. Both types of instruments follow the basic model of the Spanish *chirimía* with variations resulting from the use of different tools used in construction. A cylindrical bore is formed with much greater ease than a conical bore. The bores of some of the *chirimías* noted by McNett have been burned through and then scraped out with a hot iron; finger holes were burned through and enlarged with a knife. Others were bored with a brace and bit; the finger

24. Arturo Charomorro, "*Chírimías:* Sondeo Histórico de un Modelo Islámico en América Hispana," *Latin American Music Review* 3/2 (1982):179–181.

FIGURE 6. Thai *pī nai* (from the UCLA Ethnomusicology Collection).

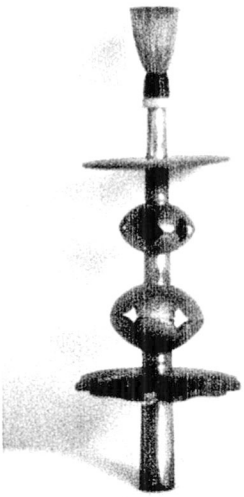

FIGURE 7. Chinese *suona* reed on ornamented staple (from the UCLA Ethnomusicology Collection).

holes were also drilled, indicating a more advanced technology.[25] The double reeds of both types of *chirimías* are attached to conical staples. This gives the cylindrical *chirimía* the ability to overblow at the octave, which is inherent in the conical bore shapes of its Spanish and American counterparts.

There are fewer differences between varieties of cylindrical double reeds than between those with conical bores. The difference in length between the largest and smallest cylindrical instruments is only eighteen centimeters, whereas with conical instruments the difference is eighty centimeters. The number of finger holes on conical instruments ranges anywhere between none and eight; cylindrical instruments have from five to eight finger holes. Cylindrical instruments are crafted of wood or bamboo; conical instruments utilize these materials as well as metal, ivory, and animal horn. This greater number of differences among conical double reeds may be accounted for by the wider cultural and geographical spread.

25. Charles McNett, "The Chírimía: A Latin American Shawm," *The Galpin Society Journal* 13 (1960):46.

Reeds

All of the aerophones examined in this study use concussion reeds, also known as double reeds, rather than free reeds or percussion reeds. Construction techniques vary from culture to culture. The Western oboe reed (shown in figure 1 as an example of a concussion reed) is formed from a strip of cane which is folded in half; the two ends are then slipped over a staple and bound to the tube with string. The fold is then cut off and shaped and the player blows through the opening which occurs between the two halves.

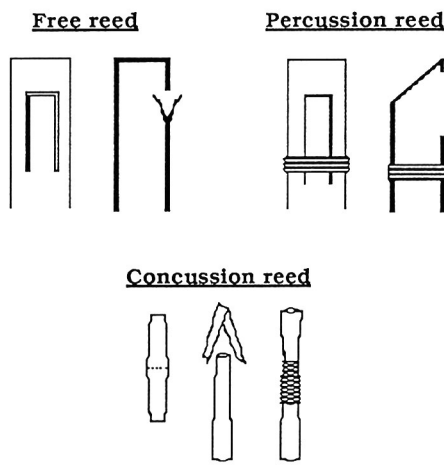

FIGURE 1. Reed types.

Other methods are employed in the construction of multiple-blade reeds, such as those for the Indian *śhehnā'ī* and the *pī nai* from Thailand. (See figure 2.) *Śhehnā'ī* reeds are formed by laying two strips of cane parallel, one on either side of the staple (step 1), with the middle of the strip approximately five millimeters below the upper end of the staple. Cotton string is wrapped around the middle of these strips to tie them to the staple (step 2). The lower half of each strip is then folded up so that the ends are even, forming four blades. Finally, another string is tied around the out-

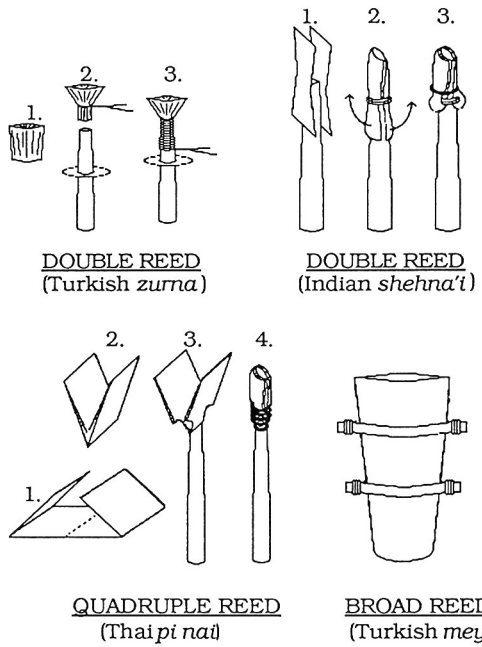

FIGURE 2. Concussion reeds.

side of the base of the four blades of the reed to keep the outer two blades upright (step 3).

Pī nai reeds are manufactured by yet another process, photographed by David Morton in *The Traditional Music of Thailand.*[26] A strip of palmyra palm leaf[27] is folded so that the two ends meet in the middle (step 1). It is then folded in half again so that the free ends are toward the inside of the fold (step 2). The staple is then inserted through a hole drilled or cut in the single fold (step 3). The reed is tied to the staple and the upper edge with two folds is then cut and rounded so that there are four blades (step 4).

26. David Morton, *The Traditional Music of Thailand* (Berkeley: University of California Press, 1976).

27. Dhanit Yupho, *Thai Musical Instruments* (SIVA PHORN Limited Partnership, 1960):71.

The double reeds for most conical bore instruments (both Western and non-Western) are attached permanently to a staple. With reference to the development of the staple, Anthony Baines theorizes that "the principal advantage gained over the older method of inserting a long-stemmed reed directly into the pipe was probably very much quicker and easier reed-making."[28] Reis Flora supports the idea that the staple was "developed to solve the problem of connecting a double reed to a pre-existing conical bore resonator."[29] The shape of the staple does serve as an extension of the conical bore of the instrument and, as shown in the case of the Latin American *chirimía,* aids in the ability of the instrument to overblow at the octave. In addition, the staple has a very practical function. The material used in making reeds is typically quite fragile. Attaching it to a staple reduces the amount of handling of the actual reed material when inserting it into and removing it from the instrument. The majority of the staples used are made of metal with an outer binding of cork or string on the lower end to form a secure connection between the staple and the body of the instrument. Exceptions are the *serunai* of north and west Sumatra and the *serunai kayu* of Malaysia, both of which use a staple made of bamboo.[30] The *kōl* of southern India uses the quill of a bird feather for a staple.[31] The Chinese *suona* reed is one of the few reeds not permanently attached to a staple. It is formed separately and then slipped over a metal staple for performance.

The broad reed, another concussion reed which is used on most cylindrical double reed aerophones (e.g., the Turkish *mey,* and the *bālabān)* does not use a staple, but is inserted directly into the body of the instrument. To ensure a good connection between reed and body, the hole at the top of the body is often ringed with a pliable substance such as beeswax. These broad reeds are made from a large segment of an aquatic grass such as *Phragmites australis.*[32] To form a Turkish *mey* reed (shown in Figure 2), a hollow segment about one centimeter in diameter is soaked in water and cut to the desired length (approximately twelve centimeters). The cortex from the lower end is then pared away and the upper end is thinned. This cylinder is

28. Anthony C. Baines, *Woodwind Instruments and Their History* 3rd ed., (London: Faber and Faber Ltd., 1967):228.

29. Reis Flora, "A Comparative Analysis of Selected Double-Reed Aerophones from Asia" (M.A. thesis, UCLA, 1969):53.

30. Margaret J. Kartomi and Lyn Moore, with Jack Percival Baker Dobbs, "Sarunai," *New Grove Dictionary of Musical Instruments* (London: MacMillan Press Limited, 1984):301.

31. Pribislav Pitoëff, "Kōl," *New Grove Dictionary of Musical Instruments* (London: MacMillan Press Limited, 1984):452.

32. Laurence Picken, *Folk Musical Instruments of Turkey* (London: Oxford University Press, 1975):357.

gradually compressed by hand from the proximal end upwards, until the tip of two centimeters is formed. Broad reeds include one or two wooden regulators which adjust the size of the opening between the two sides of the reed. These are made of thin pliable strips of wood placed on each side of the reed, and tied together at their narrow ends on either side of the blades.[33]

The materials used for making a double reed depend on the type of vegetation indigenous to the specific geographical location. Typical reed-making materials include various types of aquatic grasses, palm leaves, and grass stalks. Occasionally, these materials undergo various preparations before use. A *Tillandsia* leaf is dried and smoked before being made into a reed for some Latin American *chirimías*.[34] The reed for the African *algaita* is created from suitable grass stalk which is then prepared by boiling it with meat fat, onions, and spices.[35]

The lack of suitable vegetation for reed-making may account for the lack of double reed aerophones in certain parts of the world, although at least one culture has found a viable substitute. In the Puebla-Tlaxcala region of Central Mexico, reeds for the *chirimía* are formed not from plant material but from splinters of cow horn tied to a staple.[36]

Playing Techniques of Double Reed Aerophones

Playing techniques among double reed aerophones of the world differ mainly with respect to the placement and movement of the hands and fingers, blowing techniques, and manipulation of the reed. These differences can be attributed to instrument and reed construction, the musical characteristics of each particular culture, or a combination of both factors.

Hand Placement

Instrument construction determines hand placement on double reeds. The number of finger holes and thumb holes on the instrument dictate how many fingers are used. If the instrument has an even number of finger

33. Ibid., 476.

34. Charles McNett, "The Chírimía: A Latin American Shawm," *The Galpin Society Journal* 13 (1960):44.

35. David W. Ames and Anthony V. King, *Glossary of Hausa Music and Its Social Contexts* (Evanston, Illinois: Northwestern University Press, 1971):47.

36. Arturo Charomorro, "Chirimías: Sondeo Histórico de un Modelo Islámico en América Hispana," *Latin American Music Review* 3/2 (1982):172.

holes, coverage of the holes usually is divided evenly between the hands (e.g., three holes covered by the top hand, three by the bottom hand). If the number of finger holes is uneven, the upper hand typically covers the lesser number of holes. (See Figure 3.) The hand position used on the African *algaita* shows an interesting combination of these. The uppermost of its four finger holes is covered by the index finger of the right hand while the remaining three holes are covered by the index, second, and third fingers of the left hand.[37]

In most traditions the left hand covers the uppermost holes and the right hand covers the lower holes. One variation of this is found in the playing technique of the *pī nai* in Thailand. Here the right hand covers the upper three holes while the left hand covers the lower three.[38] The playing technique for the *algaita* is similar, with the left hand covering the holes closest to the bell of the instrument. Sometimes hand position is left to the discretion of the player. I observed this phenomenon during a 1988 Los Angeles performance of Tibetan Buddhist ritual music by monks from the Drepung Loseling monastery of South India. One of the *rgya-gling* players was observed with his right hand in the upper position while the other player had his left hand in the upper position. The lack of standardization of hand position poses no technical difficulties since it is not necessary to hit any keys. Two basic types of finger positions are employed by double reed players. One method has the finger holes covered by the pads of the fingers. In the second, more common method, the finger holes are covered by the flat part of the finger, midway between the first and second knuckles.

Breathing Techniques

Aerophones, by Sachs' definition, require "the steady breath of the player." Double reed players employ two techniques to create this steady breath. One technique involves inhalation, the exhalation of that breath while playing a musical phrase or segment, followed by a brief interruption for a new breath, and exhalation of that breath for the next musical portion. This creates the pattern of silence-sound-silence-sound that is typically heard among Western aerophone players.

37. David W. Ames and Anthony V. King, *Glossary of Hausa Music and Its Social Contexts* (Evanston, Illinois: Northwestern University Press, 1971):47.

38. Phra Chen Duriyanga, *Thai Music*, 5th ed. (Bangkok: The Fine Arts Department, 1973):16.

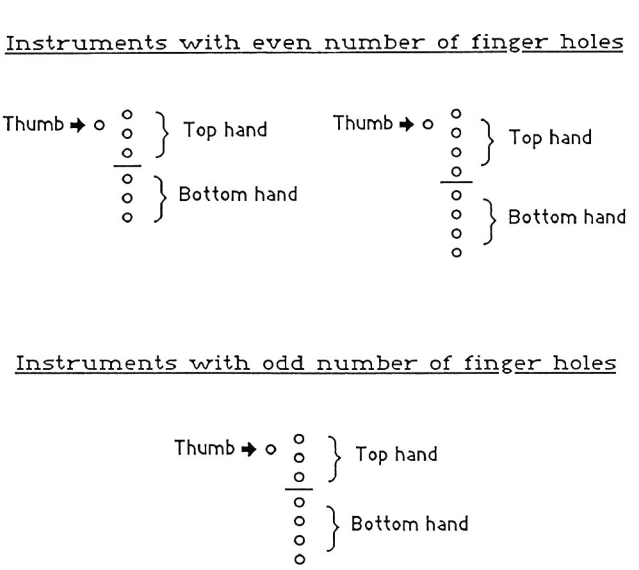

FIGURE 3. Hand placement.

A more common technique is the use of circular breathing which creates a continuous flow of air through the reed and is responsible for the uninterrupted sound characteristic to many non-Western double reeds. To accomplish this, the player's mouth and puffed-out cheeks serve as an air reservoir. When a new breath is needed, the player moves his epiglottis to close off the passage between his mouth and throat, and expels the reserved air from his mouth through the reed while inhaling through his nose. When the air reservoir is depleted or sufficient fresh air has been inhaled, the player again begins normal blowing. Double reeds that are played with circular breathing include the *zurna,* the *pī chawā* and *pī nai* from Thailand, the *selompret, tarompet,* and *preret* from Indonesia, and the Chinese *suona.* The presence of a pirouette (a disk on the staple against which the player places his lips) is very common, though not necessary, on instruments which employ circular breathing. Use of a pirouette (or quasi-pirouette like the coconut-shell cheek guard of the Indonesian *tarompet*) is

said to support the player's lips and aid in breath control.[39] The type of reed used (double, broad, or multiple) does not determine whether circular breathing is used. Circular breathing is possible on all types of double reeds. The technique is used less frequently on the larger broad reeds, however, because it is much more difficult to accomplish since the amount of air required to cause the reeds to vibrate is much greater and the circular exchange of air would need to be extremely swift.

Reed Manipulation

Playing techniques of double reed aerophones also differ with regard to the manipulation of the reed itself, that is, whether or not the reed is controlled by the player's lips. In many instances (e.g., the *algaita* from North and West Africa, the *suona,* the *pī chawā,* the *pī nai,* the *sarune* from Sumatra, the South Asian *surnai,* and the Korean *t'aep'yŏngso),* the entire reed (including part of the staple) is enclosed within the player's mouth. When the reed is entirely enveloped in this manner, the vibrating portion of the reed has no contact with the lips. It is therefore considered to be "unlipped." The only manipulation of the reed which takes place in this case is caused by the tongue and occurs for purposes of articulation and ornamentation. The presence of a pirouette on a reed is a good indication that the reed is unlipped, though not entirely conclusive since the use of a pirouette is optional on some instruments. Conversely, the pirouette is usually absent from those instruments with lipped reeds. Slight adjustments of the pitch level (e.g., if necessary for intonation purposes) can be accomplished by changing the air pressure when blowing on unlipped reeds.

In playing other double reeds such as the Korean *hyang p'iri,* the *hichiriki,* the *śhehnā'ī,* the *mey,* the *bālabān,* and the *nāgasvara,* the performer controls the reed with his lips. Pressure placed on the reed by the player's lips influences the pitch level, often quite radically. With some aid from fingering, Bismillah Khan, the noted Indian *śhehnā'ī* player, can produce a smooth glissando of an octave and a fifth on his instrument.[40] Large broad reeds, such as on the mey and the *bālabān* are always lipped. Their large size precludes them from being placed entirely inside the mouth.

39. Ernst Heins, "Tarompet," *New Grove Dictionary of Musical Instruments* (London: MacMillan Press Limited, 1984):531; Christian Poché, "Zurna," *New Grove Dictionary of Musical Instruments* (London: MacMillan Press Limited, 1984):906.

40. Reis Flora, "A Comparative Analysis of Selected Double-Reed Aerophones from Asia" (M.A. thesis, UCLA, 1969):37.

Social Contexts of Double Reed Aerophones

Non-Western double reeds perform in a broad spectrum of social contexts. They are used both indoors and out, in court and folk traditions, for functions ranging from circumcisions to funerals, religious rituals to sporting events.

In some cultures the double reed is associated with either a court or classical tradition or a folk tradition, but not both. The *bālabān,* for example, is associated only with the folk tradition in Azerbaidzhan and northeast Iraq. It accompanies the *ashugs* (epic ballad singers) and folk-dance, and is played in folk orchestras and in cafes, but has no place in the classical tradition.[41] The *zurna* of Turkey is a traditional folk instrument and does not currently perform classical Turkish music, although in the 1920s the *cura zurna* (small *zurna*) was part of an ensemble which accompanied one genre of classical vocal music.[42] Other double reeds which are associated only with folk traditions include the *mauri dizau* of northeast India,[43] the *kōl* of southern India,[44] and the *sahanai* which is played by Nepalese *damai* (tailor-musicians).[45] Other double reeds are restricted to the classical music traditions of their cultures. The *hichiriki,* for example, is used solely in the Japanese court tradition, in *gagaku* and as accompaniment for genres of vocal court music.[46] Trimingham notes that, on the Mrima coast of East Africa, the insignia of Shirazi states consisted of "a horn (*siwa*) said to have been brought from Persia, drums, and a long trumpet." These instruments were used at the enthronization and funeral of a chief.[47] Although there is no description of the physical characteristics or playing techniques of this *siwa,* its reputed Persian origins and its use with trumpet and drums (a common occurrence in Africa), combined with the similarity of the name *siwa* to *surna,* this instrument is, in all likelihood, a double reed.

41. Jean During and Johanna Spector, Scheherazade Qassim Hassan, and Mark Slobin, "Bālabān," *New Grove Dictionary of Musical Instruments* (London: MacMillan Press Limited, 1984):113; Jean During, *La musique traditionelle de l'Azerbayjan et la science des muqams* (Baden-Baden, Germany: Éditions Valentin Koerner, 1988):17–18.

42. Walter Feldman, personal communication, 1988.

43. Alastair Dick, "Mauri dizau," *New Grove Dictionary of Musical Instruments* (London: MacMillan Press Limited, 1984):623.

44. Pribislav Pitoëff, "Kōl," *New Grove Dictionary of Musical Instruments* (London: MacMillan Press Limited, 1984):452.

45. Mireille Helffer, "Da-man," *New Grove Dictionary of Musical Instruments* (London: MacMillan Press Limited, 1984):283.

46. David W. Hughes, "Hichiriki," *New Grove Dictionary of Musical Instruments* (London: MacMillan Press Limited, 1984):216–217.

47. J. Spencer Trimingham, *Islam in East Africa* (London: Oxford University Press, 1964):15n.

There are, however, many instances when the double reed "crosses over" and is used in both classical or court music and folk music within the same culture. The Chinese *guan* is heard in both court music and in regional instrumental ensembles.[48] The *hné* is a part of professional orchestras and small amateur village ensembles in Burma, as well as providing accompaniment to wedding festivities and folk rituals such as rice planting.[49] The Vietnamese *kèn bau* is used in traditional *hat tuōng or hat bōi* ensembles to accompany musical theatre and in the *dại nhạc* court ensembles.[50] In North Africa the *algaita* is used not only for accompanying dance, but also is heard at the court of traditional rulers, where the *algaita* player plays and sings praise songs to the king.[51] Among the Hausa people of the Sokoto region of Nigeria, this same instrument is associated with the ruling class, although, by royal permission, "performers play on it for purposes of begging."[52] The South Indian *nāgasvara* performs in concert settings, for temple festivals, and for folk dramas.[53] The *charumera* is used in *kabuki* and is played by street vendors of hot Chinese noodles.[54] The Korean *t'aep'yōngso,* the only melodic instrument in *nongak* (farmers' music), is heard in military procession music and in three pieces played at the Royal Ancestral Shrine.[55]

The construction of the instrument has some bearing on the physical context in which it is used. Conical instruments, because of their construction and the type of reed used, typically produce a loud, piercing sound which is best suited for open-air functions. They can be heard from a great distance and over the noise of large crowds. Cylindrical double reeds when used with a broad reed, such as the Turkish *mey,* produce a softer, mellower sound which is much more suitable indoors. Exceptions do occur, however, depending on the social context. On occasion, despite their loud

48. Wang Tie-chui, "On Guanzi Performance," *Chinese Music* 8/1 (1985):4.

49. John Okell, "The Burmese Double-Reed 'Nhai,' " *Asian Music* 2/1 (1971):28.

50. Tran Quang Hai, "Dai nhac," *New Grove Dictionary of Musical Instruments* (London: MacMillan Press Limited, 1984):536; "Klan khaek," *New Grove Dictionary of Musical Instruments* (London: MacMillan Press Limited, 1984):374.

51. Anthony King and K. A. Gourlay, "Algaita," *New Grove Dictionary of Musical Instruments* (London: MacMillan Press Limited, 1984):44.

52. Helen E. Hause, "Terms for Musical Instruments in the Sudanic Languages," *Supplement to the Journal of the American Oriental Society* 7 (1948):19.

53. Reis Flora, "Nāgasuaram," *New Grove Dictionary of Musical Instruments* (London: MacMillan Press Limited, 1984):742.

54. David W. Hughes, "Charumera," *New Grove Dictionary of Musical Instruments* (London: MacMillan Press Limited, 1984):341.

55. Robert C. Provine, "P'iri," *New Grove Dictionary of Musical Instruments* (London: MacMillan Press Limited, 1984):499–500.

volume, conical double reeds are used indoors, for example the *ghayta,* the *nāgasvara,* the *śhehnā'ī,* the *seurune kaleë,* and the *suona.* Cylindrical instruments occasionally used out of doors include the *bālabān,* the *kōl,* the *p'iri,* and the *sharnai.*

One of the most prevalent uses of conical double reed aerophones is as an accompaniment to dance. This function is common throughout the entire geographical range of the double reed. They are ideally suited for the outdoor context in which most non-Western folk dancing takes place. The shrill tone quality is clearly audible and is capable of creating great excitement and tension. Double reeds are used not only for the accompaniment of traditional folk dancing which functions as entertainment, but also for choreographed and ritual dances as well. Examples of the latter function can be seen in the use of the *selompret* or the *tarompet* to accompany *ebeg* or *kuda lumping,* the Indonesian hobby-horse trance dance;[56] the *preret* for the Balinese male trance dance *daratan*;[57] the *hichiriki* for *komagaku*; the *nafari* for 'the red fingernail dance' in Sumatra;[58] and the recent use of the *seurune kaleë* in Sumatra for newly choreographed dances.[59]

In many areas, double reeds are a part of life-cycle rituals such as circumcisions, weddings, and funerals. Wedding ceremonies in India, Southeast Asia, and the Balkans are all celebrated with the accompaniment of a double reed. In Gascony, France, the *bramevac* is considered an essential instrument by the male participants in the *charivari* (shivaree) ritual.[60] In Thailand, Vietnam, Sumatra, Kampuchea, Sri Lanka, India, Syria, and Armenia, double reeds are used in funeral and cremation ceremonies. In Korea and North Vietnam, the *hnè* and the *phān ty* perform for calendric rituals such as the planting and the harvesting of crops.[61] In Sri Lanka, the *horonāva* is part of the *hēvisi* ensemble, which functions to mark particular auspicious days and the hours of the day.[62]

56. Ernst Heins, "Tarompet," *New Grove Dictionary of Musical Instruments* (London: MacMillan Press Limited, 1984):531; Margaret J. Kartomi, "Music and Trance in Central Java," Ethnomusicology 37 (1973):188.

57. David D. Harnish, "Musical Traditions of the Lombok Balinese: Antecedents from Bali and Lombok" (M.A. thesis, University of Hawaii, 1985):127.

58. Margaret J. Kartomi, "Nafari," *New Grove Dictionary of Musical Instruments* (London: MacMillan Press Limited, 1984):739.

59. Margaret J. Kartomi, "Seurune Kaleë," *New Grove Dictionary of Musical Instruments* (London: MacMillan Press Limited, 1984):355.

60. *New Grove Dictionary of Musical Instruments* (London: MacMillan Press Limited, 1984):368.

61. Tran Quang Hai, "Phān ty," *New Grove Dictionary of Musical Instruments* (London: MacMillan Press Limited, 1984):66.

62. Natalie M. Webber, "Hevisi," *New Grove Dictionary of Musical Instruments* (London: MacMillan Press Limited, 1984):216.

Double reed aerophones are often heard in religious contexts. The *horonäva* is prominent in many Buddhist rituals, as is the Tibetan *rgya-gling*. The *bishkur* or *zhimbur* from the south central Soviet province of Buryat is also played in Buddhist monasteries.[63] The double reed is also used as a part of Islamic religious ceremonies. In Morocco, the *ghayta* is played from the top of minarets during Ramadan to worship the saints.[64] The *ghazzi* in Pakistan plays mourning songs for the Shi'ite lamentation of Muhurram.[65] Music for Hindu ritual also includes double reeds. The *nāgasvara,* the *ottu,* and the *kuzhal* are all used in Hindu temples in India. Although more rare, the double reed is also used in the Christian religion. In Central America, the *chirimía* is played from the church tower for ceremonies, to lead religious processions, and for saints' days fiestas.[66] In Spain, the *dulzaina,* a double reed closely related to the *chirimía,* is also played for festivities on saints' days and during Epiphany.[67]

In other areas and religions, one finds double reed aerophones used for rituals associated with magic, mysticism, and healing. The *pī* is used in the Kampuchean *araks* cult of the gods.[68] The Burmese play the *hné* during spirit-worshipping ceremonies.[69] Michael Mendizza's film "The Master Musicians of Jahjouka" (1983) shows the *ghayta* performing for a therapeutic ceremony in Jahjouka, Morocco. The *p'iri* is part of the ensemble associated with Korean shamanic ritual, and in Sumatra, the *seurune kaleë* is played in the home of a sick person and for mystical cleansing ceremonies.[70]

The double reed has a strong association with theatre traditions in many cultures. The most popular use of the suona today is to mark dramatic moments in Chinese opera.[71] The *guan* is also used in Chinese theatre, al-

63. K. Vertkov, *Atlas muzikalnyhki instrumentov narodov CCCP* (Moskow, 1963):143–44.

64. Christian Poché, "Ghayta," *New Grove Dictionary of Musical Instruments* (London: MacMillan Press Limited, 1984):42.

65. Alastair Dick, "Sharnai," *New Grove Dictionary of Musical Instruments* (London: MacMillan Press Limited, 1984):363.

66. John M. Schecter, "Chirimía," *New Grove Dictionary of Musical Instruments* (London: MacMillan Press Limited, 1984):357.

67. Martha Ellen Davis, "The Changing Role of the Dulzainero in León, Spain," *Journal of American Folklore* 88/349 (1975):247.

68. David Morton, "Pī," *New Grove Dictionary of Musical Instruments* (London: MacMillan Press Limited, 1984):69.

69. *New Grove Dictionary of Musical Instruments* (London: MacMillan Press Limited, 1984):224.

70. Margaret J. Kartomi, "Seurune kaleë," *New Grove Dictionary of Musical Instruments* (London: MacMillan Press Limited, 1984):355.

71. Alan R. Thrasher, "Suona," *New Grove Dictionary of Musical Instruments* (London: MacMillan Press Limited, 1984):475.

though in the Cantonese tradition it has recently been replaced by the tenor saxophone.[72] The Japanese *charumera* is referred to as a "Chinese flute" (*tōjin-bue*) because its function is to signify a Chinese scene in *kabuki*.[73] In Burma, the *hné* accompanies the all-night *zat-pwé* drama and puppet shows.[74] The *pī nai* is part of the ensemble which accompanies *Likay,* a popular theatre form in Thailand. Kashmiri folk opera and theatre genres in Vietnam, Indonesia, Malaysia, and India also incorporate double reeds in their accompaniment.

Double reeds are found in the military bands of some cultures. Historically, the invigorating sound of the *ghayta* was used in north Africa to lead warriors into battle.[75] Today, the *zurna* is part of the Turkish military band, *mehter.* The Chinese *suona* and in Korea the *t'aep'yŏngso* are both used in military bands.

Another function of the double reed is as an accompanying instrument for sporting and athletic events. *Zurnas* in Turkey are heard during horse races and *cirit,* a traditional equestrian game, as well as during *güres,* the ceremonial wrestling matches which take place in northeastern parts of the country. The *sur-na* in India plays during polo games, horse races, and archery contests.[76] Both the Kampuchean *sraḷai* and the *pī* in Thailand accompany boxing.[77] The *pī* plays for Thai fencing as well. In Mexico, the *chirimía* performs during bullfights.[78] During principal feasts in Valls, Spain, the *gralla* plays a *toc* (toccata) as accompaniment for the building of a human tower or pyramid up to six ranks high.[79] In the *joutes* (nautical tournaments) held along the coast of southern France, two musicians join the rowers in each boat. One plays a drum, the other a keyless double reed aerophone, the *hautbois.*[80]

72. Alan R. Thrasher, "Guan," *New Grove Dictionary of Musical Instruments* (London: MacMillan Press limited, 1984):82.

73. David W. Hughes, "Charumera," *New Grove Dictionary of Musical Instruments* (London: MacMillan Press Limited, 1984):341.

74. Judith Becker, "Hsìang-waìng," *New Grove Dictionary of Musical Instruments* (London: MacMillan Press Limited, 1984):255.

75. Christian Poché, "Ghayta," *New Grove Dictionary of Musical Instruments* (London: MacMillan Press Limited, 1984):42.

76. Mireille Helffer, "Da-man," *New Grove Dictionary of Musical Instruments* (London: MacMillan Press Limited, 1984):539.

77. Tran Quang Hai, "Klan khaek," *New Grove Dictionary of Musical Instruments* (London: MacMillan Press Limited, 1984):444.

78. John M. Schecter, "Chirimía," *New Grove Dictionary of Musical Instruments* (London: MacMillan Press Limited, 1984):357.

79. *New Grove Dictionary of Musical Instruments* (London: MacMillan Press Limited, 1984):72.

80. Anthony C. Baines, "Keyless Oboes in Southern France," *The Galpin Society Journal* 32 (1979):134.

Occasionally the double reed takes on a symbolic function. Sometimes its sound is used to evoke a specific scene, as in the case of the *charumera* signifying a Chinese scene in Japanese theatre.[81] This is very similar to the frequent use of the Western oboe to convey a rural or pastoral scene in Western classical music, for example in Copland's *Appalachian Spring*, *Swan Lake* by Tschaikovsky, and the Third Movement of Beethoven's Sixth Symphony (*Pastoral*), subtitled *Lustige Zusammensein der Landleute* ("Merry Assembly of Countryfolk"). In some cases, usually ritual occasions, the sound of the double reed is perceived to be the actual sound of some other object or being. The *čekštukas* is used in Lithuania to signify a baby's cry. Friends of a newly-wed couple would blow the *čekštukas* while passing the couple's home, wishing them a large family.[82]

Ensemble Uses of Double Reed Aerophones

The types of instrumental ensembles which include keyless double reed aerophones are numerous. One ensemble comprising one or two double reeds and a drum appears almost without exception throughout the entire geographic range. Regardless of the construction of the double reeds and drums involved or the culture in which it is found, this particular ensemble almost invariably accompanies dance. The volume and carrying ability of the combined timbres of double reed and drums attract attention and create tension and excitement, making this ensemble ideal for leading processions, another function that is quite widespread.

Probably the most ubiquitous version of this ensemble is that of one double reed and one drum. However, often more than one double reed will be included. In some areas when more than one double reed is present, one instrument will play the melodic line while the other(s) sustains a drone, as in the Balkans for example. Only one instrument will play the melody because of intonation difficulties as perceived by those particular cultures. In addition, these musical traditions emphasize solo improvisation which would become indistinct with more than one player.

In traditions with different musical criteria, two or more double reeds will play in unison or polyphony. The *gagaku* instrumental ensemble of Japan with its three unison *hichirikis* is one example. In Mexico, four or five

81. David W. Hughes, "Charumera," *New Grove Dictionary of Musical Instruments* (London: MacMillan Press Limited, 1984):341.

82. Arvydas Karāska, "Čekštukas," *New Grove Dictionary of Musical Instruments* (London: MacMillan Press Limited, 1984):319.

chirimías will play in unison, joined by a drum.[83] Up to eight *chirimías* will perform together for large festivals in Central America.[84] Identical pairs of Tibetan *rgya-gling* and *svirale* from northwest Bosnia in Yugoslavia play in unison.[85] The *sopila,* found on Krk Island, Yugoslavia, is used in pairs (one instrument of each size), playing consecutive sixths and sevenths.[86] In Armenia, large ensembles of *dudukner* will perform polyphonically.[87] A photo in the *Atlas* of folk instruments of the USSR shows a state ensemble in Dagastan comprising four *zurnas,* six chordophones, a drum, and an accordion.[88] In Morocco, eight *ghaytas* play together for various ceremonies, in unison, antiphonally, or with one instrument playing the melody and the others sustaining a drone.[89]

Idiophones are used fairly often with double reeds. Cymbals, xylophones, wooden and iron clappers, raft rattles, and castanets are all found in ensembles with double reeds. In Indonesia and Southeast Asia, gongs and gong-chimes are commonly combined with a double reed and drums. There are many ensembles such as these which include only membranophones and idiophones (providing punctuation and rhythm) and double reeds, with the latter playing the melodic line. The timbres of these instruments seem ideally suited to each other, each capable of being heard clearly in conjunction with the others.

Trumpets are also found in various ensembles with double reed aerophones. Among the Hausa in West Africa, the *algaita* is joined by long metal trumpets called *kakaki* and drums (*ganga*) to perform praise songs to rulers.[90] The Kota people of South India play the *kōl* in ensembles with semi-circular trumpets and drums.[91] *Zurnas,* trumpets, and drums form

83. Charles McNett, "The Chírimía: A Latin American Shawm," *The Galpin Society Journal* 13 (1960):47.

84. John M. Schecter, "Chirimía," *New Grove Dictionary of Musical Instruments* (London: MacMillan Press Limited, 1984):357.

85. Mireille Helffer, "Rgya-gling," *New Grove Dictionary of Musical Instruments* (London: MacMillan Press Limited, 1984):244; "Svirale," *New Grove Dictionary of Musical Instruments* (London: MacMillan Press Limited, 1984):479.

86. *New Grove Dictionary of Musical Instruments* (London: MacMillan Press Limited, 1984):417.

87. Robert At'ayan, "Duduk," *New Grove Dictionary of Musical Instruments* (London: MacMillan Press Limited, 1984):615.

88. K. Vertkov, *Atlas muzikalnyhki instrumentov narodov CCCP* (Moskow, 1963): photo 37.

89. From Michael Mendizza's film, "The Master Musicians of Jahjouka" (1983).

90. Anthony King and K. A. Gourlay, "Algaita," *New Grove Dictionary of Musical Instruments* (London: MacMillan Press Limited, 1984):44.

91. Pribislav Pitoëff, "Kōl," *New Grove Dictionary of Musical Instruments* (London: MacMillan Press Limited, 1984):452.

the Turkish military band known as *mehter*.[92] In parts of Mexico, a bugle is occasionally included in ensembles with *chirimías* and drums.[93]

Chordophones and other aerophones are included less frequently in ensembles with double reeds. This is most likely due to the relative volume and piercing timbre of the double reed as compared to that of chordophones. The majority of aerophones and stringed instruments stand little chance of being heard clearly in the presence of a double reed instrument, especially if all are playing in unison. When they are combined, it is probably for the general effect of the combined timbres, rather than the sounds of individual instruments. In Azerbaidzhan and northeast Iran, the *bālabān* (one of the quieter double reeds) plays with a lute called a *chogur* and a frame drum for *ashug* ballads.[94] In Niger, the Hausa combine the double reed *algaita* with an *imzad*, a single-stringed bowed lute, to accompany a female singer.[95] A two-stringed fiddle is part of the Vietnamese *hat tuong* ensemble, along with the *kèn bau* and various drums.[96] The *mahori* ensemble of Thailand consists of a *pī chawā*, a gong, a small drum, and stringed instruments.[97] The *gagaku* ensemble is probably the best example of the combined use of various types of instruments with double reed aerophones. Besides three *hichiriki*, this ensemble also includes two *sō* (zithers), two *biwa* (lutes), three *ryūteki* (transverse flutes), three *shō* (mouth organs), *shōko* (gong), and *tsuridaiko* and *kakko* (barrel drums).[98]

The use of voices in conjunction with double reeds is not common worldwide. However, in many parts of Africa (Chad, Somalia, Niger, North Cameroon, and Tunisia), it is a widespread practice. As shown by the annotations in Alan Merriam's *African Music on LP* (1970), voices and double reeds (*algaitas* and *zukras*) are combined in ensembles for traditional

92. Kurt Reinhard, "Turkey," *New Grove Dictionary of Musical Instruments* (London: MacMillan Press Limited, 1984):272.

93. Charles McNett, "The Chírimía: A Latin American Shawm," *The Galpin Society Journal* 13 (1960):47.

94. Jean During et al, "Bālabān," *New Grove Dictionary of Musical Instruments* (London: MacMillan Press Limited, 1984):113; Jean During, *La musique traditionelle de l'Azerbayjan et la science des muqams* (Baden-Baden, Germany: Éditions Valentin Koerner, 1988):17–18.

95. Alan P. Merriam, *Africa Music on LP: An Annotated Discography* (Evanston, Illinois: Northwestern University Press, 1970):9.

96. Tran VanKhé, "Hát cai lu'o'ng," *New Grove Dictionary of Musical Instruments* (London: MacMillan Press Limited, 1984):205.

97. David Morton, "Mahōrī," *New Grove Dictionary of Musical Instruments* (London: MacMillan Press Limited, 1984):596–97.

98. David W. Hughes, "Gagaku," *New Grove Dictionary of Musical Instruments* (London: MacMillan Press Limited, 1984):3.

songs of the Hausa, Digo, Djerma, Beri-beri, and Dinari peoples. As previously mentioned, a double reed is also used in Azerbaidzhan and northeast Iran to accompany *ashug* ballads. In most cases, the double reed and the voices are typically not heard at the same time, but in alternating phrases. Alternation of voices and double reeds ensures that the texts can be clearly heard and understood.

Summary

The many varieties of double reeds and the wide array of social contexts and ensembles in which they are found prove the keyless double reed aerophone to be a very versatile and culturally significant instrument. The social contexts and ensembles in which double reeds are found and their construction techniques follow similar patterns throughout most of the world.

The geographical distribution of keyless double reed aerophones forms a band around the world, from approximately ten degrees south to approximately forty-five degrees north of the equator, except in the western hemisphere where distribution extends northward only to the Tropic of Cancer. This distribution pattern implies that there may be some geographical and climatic as well as cultural reasons for the prevalence of double reeds in these areas. One likelihood is the availability of material for reed-making in these latitudes. Suitable reed grasses are difficult to obtain in higher latitudes. This cannot be taken as the sole reason, however, since it has been shown that in at least one location (the Puebla-Tlaxcala region of Mexico) non-vegetable matter (cow horn) is used in reed-making. This exception notwithstanding, the availability of reed grasses would seem to be a major factor contributing to the overall distribution pattern.

Conical double reeds are found throughout the distribution range. The majority of them are constructed of hardwood or fruitwood, materials available in all geographical locations where double reeds exist. The prevalence of cylindrical double reeds in the Far East and Southeast Asia may be due to the abundance of bamboo in those regions. A majority of cylindrical double reeds are constructed from bamboo, and, since their first appearance in China, have spread mainly to those regions where bamboo is available.

The social contexts and ensembles in which double reeds are found follow similar patterns throughout the entire eastern hemisphere. Their use as accompaniment for dance predominates, followed by their important role in life cycle and religious celebrations. Double reeds are also widely employed for theatre and sporting events. The combination of double

reeds and drums is a worldwide phenomenon. Another common ensemble grouping includes double reeds, drums, and trumpets. Chordophones, other aerophones, and, more rarely, voices are also heard in conjunction with double reeds.

The use of the double reed in the western hemisphere differs from its use in the east in several significant ways. The *chirimía* is very limited in its geographical distribution. As a fairly recent import from Spain, its social contexts in the west (mainly religious and sporting) are confined to those in which it is found in Europe; it has not become widely accepted in the traditions of the indigenous population. The *chirimía* is often closely associated with the Christian religion, stemming from the fact that its introduction and distribution in the New World was due to Spanish priests who employed it for purposes of indoctrinating the native populace into Christianity.

Space constraints do not permit the mention here of every double reed that I located in the literature. Additionally, there doubtless exist double reeds which have not been mentioned here or elsewhere and, as is apparent from the tables in the Appendix, many details which have not yet been recorded. It is my hope that this article will prompt other scholars to investigate keyless double reed aerophones, so that we may begin to eliminate some of the mystery and point out the misconceptions surrounding them.

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APPENDIX

TABLE 1
Keyless Double Reed Aerophones
Listing by Name

Name	Location	Length	Bore	Finger Holes	Body Parts	End Plug	Sep. Bell	Reed/ Pir.	Circ. Breath.	Material
abā (mizmār baladī)	Egypt									
aghanam	Morocco							double		beeswax mouthpiece
algaita	W. Africa: Mali, Niger, no. Nigeria, so. Chad, Cameroon	30–55 cm	con	4–5	2	yes	yes	double, P	yes	daniya wood, leather-covered bell
anjomara	Nw Madagascar			5						
bālabān (bālabon, bālamān, yasti	Caucasus, Azerbaijan, no.	28–31 cm	cyl	7–8, T	1	no	no	broad		mulberry or apricot wood
balaman, mey, ney,	Iran, NE Iraq	30 cm	cyl	7, T	1	no	no	broad		wood
duduk, narme,	*	30.5 cm	cyl	7, T	1	no	no	broad		wood
qarnāta)	*	31.5 cm	cyl	7, T	1	no	no	broad		wood
	*									
bishkur (zhimbur)	Buryat, U.S.S.R.	30–40 cm	con	7, T	2	no	yes	P		wood & metal
bramevac (trompe de charivari, tontarde)	Gascony, France		con					double		coiled bark held with thorns
čekštukas	Lithuania		cyl	0	1	no	no			wood
charamel (caramillo, charamela, charamelinha, charamita, charumbela)	Spain, Portugal, Italy	30 cm	con	7, T				double, no P		

(*continued*)

Name	Location	Length	Bore	Finger Holes	Body Parts	End Plug	Sep. Bell	Reed/ Pir.	Circ. Breath.	Material
charumera (tōjin-bue)	Japan		con	7, T	1	no	no			
chirimía	Spain	30 cm	con					double, P		wood
	Central & So. America	30 cm	con/cyl	6	1			double, P		wood
duduk	Armenia, Georgia	28–40 cm	cyl	8, T	1	no	no	broad		wood
desīmvāhlī	Nepal									wood
dulzaina (bolingozo)	Basque region, Spain	40 cm	con	T			yes	double, opt. P		wood
ghayta	Morocco, Algeria, Libya	40 cm	con	6–7, T	2	yes	no			apricot wood
ghazzi	Sind, Pakistan									
gralla	Catalan, Spain	40 cm	con	8	2		yes	broad		
guan (guanzi, kuan tse, bili, hujia)	China	37 cm	cyl	7, T	1	no	no	broad		bamboo or wood
hichiriki	Japan	18 cm	rev con	7, 2T	1	no	no	broad	yes	wood, bark
hnè (hnè-galeì, nhai)	Burma	26–40 cm	con	7, T	2	no	yes	quad		wood and bark
horonäva	so. India, Sri Lanka	28–33 cm	cyl	7	2	no	yes	quad, P		
ka tang-muri	NE India									ebony & brass
kabiry	Madagascar									
karamouza	Greece, Bulgaria		con							
karna	Iran	90 cm	con		2		yes			
kèn (kèn bàu, kèn bóp, kèn bát, kèn gia nam, kèn trung, cai ken, cai ken loa, cai ken mot)	Vietnam		con	7, T	2		yes			cedar and brass or copper

(*continued*)

Name	Location	Length	Bore	Finger Holes	Body Parts	End Plug	Sep. Bell	Reed/ Pir.	Circ. Breath.	Material
kōl	So. India	30–35 cm	cyl	6	4		yes	double, P		
kuzhal	So. India									neemwood and brass
mauri dizau	NE India		cyl					double, P		
mey	Turkey	30–35 cm	cyl	7, T	1	no	no	broad		
	‡Turkey	35.5 cm	cyl	7, T	1	no	no	broad		plum wood
mizmār (shalbiyya, sibs, telt)	Egypt, Tunisia, Iraq, Morocco, Yemen		con					double	yes	wood apricot wood
mahōrī, mohurī, muhurī, mahvarī	east India		con		3				yes	
mohura	central India	19 cm	cyl	7	2	no	yes			bamboo
morī	So. India	59 cm	con	8	2		yes			bamboo and metal
mukhavīnā	So. India	35 cm	con							wood & metal
mutta	Pakistan, No. India	25 cm								
mvāhlī	Nepal		cyl	7, T	2		yes			
nafari	Sumatra, Malaysia			7, T						wood, metal bell
nāgasvara	India	95 cm	con	7	1	no	no	double		copper or wood
(nāgaswara, nāgasvaram, nāgasuram, ñyanam)	*India	88 cm	con	7	2	no	yes	double		wood
nzumari (bung'o)	Kenya	15 cm	con	6	2	no	yes			wood
ottu	India	80 cm	con	0	1	no	no			bamboo & wood
	*India	77.5 cm	con	0	1	no	no			
pereṇeḍ (pendre, perene, pereṟeḍ, sahnāi, śahnāī, sanāi)	so. Bihar, India	25 cm	con	6	2	no	yes	dbl, no P		wood or bamboo, brass bell

(*continued*)

Name	Location	Length	Bore	Finger Holes	Body Parts	End Plug	Sep. Bell	Reed/ Pir.	Circ. Breath.	Material
p'iri: hyang-p'iri, sagwan ('native oboe')	Korea	27 cm	cyl	7, T	1	no	no	double		wood
se-p'iri ('thin oboe')	Korea	23 cm	cyl	7, T	1	no	no	double		
tan-p'iri ('Chinese oboe')	Korea	23 cm	cyl	7, T	1	no	no	double		bamboo
phān ty	No. Vietnam									
pī chanai (pi aw,m pi ō)	Thailand, Laos, Kampuchea	25 cm	cyl	7, T	2	no	yes	double, P	yes	hardwood or ivory
pī chawā	Thailand, Laos	33 cm	con	7, T	2	no	yes	double, P	yes	wood or ivory
	*	42 cm	con	7, T	2	no	yes		yes	wood
pī klāng	Thailand, Laos	38 cm	cyl	6	1	no	no	quad	yes	hardwood or marble
pī mọn (pi maw-n)	Thailand, Laos		con	7, T	2	no	yes	double, P	yes	hardwood
	*	50 cm	con	7, T	2	no	yes		yes	wood
		40 cm								
pī nai	Thailand, Laos	40–45 cm	cyl	6	1	no	no	quad	yes	hardwood or marble
	*	41.5 cm	cyl	6	1	no	no		yes	wood
	*	41.5 cm	cyl	6	1	no	no		yes	wood
	*	41.5 cm	cyl	6	1	no	no		yes	wood
pī nọk	Thailand	30 cm	cyl	6	1	no	no	quad	yes	hardwood or marble
	*	33 cm	cyl	6	1	no	no	quad	yes	wood
	*	33.5 cm	cyl	6	1	no	no	quad	yes	wood
	*	31 cm	cyl	6	1	no	no	quad	yes	wood

(*continued*)

Name	Location	Length	Bore	Finger Holes	Body Parts	End Plug	Sep. Bell	Reed/ Pir.	Circ. Breath.	Material
pifaro (piffaro, piffero)	Portugal, Italy									
pile (bili)	No. Vietnam	37 cm	cyl	7, T	1	no	no			
pipānī	west India	45 cm	con	7, T	2		yes			
pipiza	Greece, Bulgaria							double		
preret	Bali	45–58 cm	con	7, T	2		yes	double, P	yes	wood & metal
rgya-gling (gnya ling, rgya glin)	Tibet	60 cm	con	7, T	2		yes	double, P	yes	wood, copper, silver
sahanai	Nepal		con	7, T						wood
saleot	no. & west Sumatra	50 cm		4	3	no	yes	double, P		bamboo, metal, buffalo horn
sarune	Sumatra, Batak Toba	80 cm	con/cyl		4		yes	P		wood & animal
	Sumatra, Batak Toba	30 cm	con/cyl		3		yes			horn
	Sumatra, Batak Karo	25 cm	con	8						silantam wood
	Sumatra, Pakpak Dairi region	40 cm	cyl	6						wood
sarune (bulo surik)	Indonesia	25–30 cm	con	4	2		yes	double		bamboo, horn
sarunei	Sumatra, Batak Simalungun		cyl	6, T	1		no			wood, bamboo
saunay	Phillipines		cyl							
selompret (slompret, saronen, serompet, sompret)	Java, Indonesia	45 cm	con	6, T	1	no	no			wood
serunai	west Malaysia	45–50 cm	con	7, T	1		no		yes	wood
	no. Sumatra				1			P		wood, bamboo
	west Sumatra			4	2		yes	P		wood, horn

(*continued*)

Name	Location	Length	Bore	Finger Holes	Body Parts	End Plug	Sep. Bell	Reed/ Pir.	Circ. Breath.	Material
serunai kayu	Malaysoa	34 cm	con	7	2		yes	P		wood, metal
serune	Sumatra, Central Aceh province	24 cm	con	6, T	2		yes			jackfruit wood
serune kaleë	Sumatra, Aceh province	40–45 cm	con	6–7, T	1–2		yes	P		wood, horn
sharnai, surna	Sind, Pakistan	21 cm	con	8, T	1		no	P		kirarr wood
shehna'i (śahnāī, sanāī, shahnāī, sundrī)	No. India	50 cm	con	7	2	no	yes	quad, P	yes	wood
silu	Bali									
sopila	Krk Is., Yugoslavia		con	6						
sorna (sorai)	Iran, no. India									
sraḷai (sraḷai kḷọng khāēk)	Kampuchea		cyl	6	1	no	no	quad		wood
ṣmāy (ṣmāj)	Gulf State		con							wood
sruti	India									
suona (sona, aizai,	China	45 cm	con	7, T	2	no	yes	double, P	yes	wood, metal
dachui, haidi, jina,	*China	31 cm	con	7, T	2	no	yes	double, P	yes	wood, metal
jinkijiao)	*China	29 cm	con	7, T	2	no	yes	double, P	yes	wood, metal
sur	sur			0						
sur-na (ha-rib)	No. India	60 cm		8, T	1		no	P		aricot wood
surna	*Near East	34.5 cm	con	7, T	1		no	double	yes	wood
	*Near East	33.5 cm	con	7, T	1		no	double	yes	wood
surnāī	No. India, Central Asia	46 cm	con	7, T	2	yes	no	double, P	yes	wood
	*Near East	33 cm	con	7, T	2	yes	no	double	yes	wood

(*continued*)

Name	Location	Length	Bore	Finger Holes	Body Parts	End Plug	Sep. Bell	Reed/ Pir.	Circ. Breath.	Material
svirale	NW Bosnia, Yugoslavia		con	6						
t'aep'yŏngso (holok, hojŏk, swaenap, nallari)	Korea	47 cm	con	7, T	2		yes	double, P	yes	hardwood, metal
tarompet	Sunda, W. Java	50 cm	con	6, T	4–5	no	yes	double, P	yes	wood
	*Java	40 cm	con	6	5	no	yes	double, P	yes	wood
tetepret	central Java	45 cm	con	6, T		no				
trompetica china	Cuba			5?						
tulila	no. & west Sumatra			4	2	no	no	double		wood, metal
xyu	No. Vietnam, Laos, NE Thailand, so. China		con	6, T						wood
zukra	Tunisia									
zurla (zurle, surle)	Eastern Europe	35–60 cm	con	7, T	2	yes	no	double, P	yes	wood
zurna	Near East, Central Asia	25–50 cm	con	7, T	2	yes	no	diouble, P	yes	wood
	*Turkey	33.5 cm	con	7, T	2	yes	no	double, P	yes	apricot wood

*Instruments from the UCLA Ethnomusicology Collection
‡Instruments from the author's collection

TABLE 2
Keyless Double Reed Aerophones
Listing by Geographic Region: Middle East and Central Asia

Name	Location	Length	Bore	Finger Holes	Body Parts	End Plug	Sep. Bell	Reed/ Pir.	Circ. Breath.	Material
abā (mizmār baladi)	Egypt									
aghanam	Morocco							double		beeswax mouthpiece
bālabān (bālabon, bālamān, yasti balaman, mey, ney, duduk, narme, qarnāta)	Caucasus, Azerbaijan, no. Iran, NE Iraq	28–31 cm	cyl	7, T	1	no	no	broad		mulberry or apricot wood
duduk	Armenia, Georgia	28–40 cm	cyl	8, T	1	no	no	broad		wood
karna	Iran	90 cm	con		2		yes			
mey	Turkey	30–35 cm	cyl	7, T	1	no	no	broad		plum wood
mizmār (shalbiyya, sibs, telt)	Egypt, Tunisia, Iraq, Morocco, Yemen		con					double	yes	wood apricot wood
sorna (sorai	Iran, no. India									
srnāy (srnāj)	Gulf State		con							wood
surna	Near East	34.5 cm	con	7, T	1		no	double	yes	wood
surnāī	No. India, Central Asia	33–46 cm	con	7, T	2	yes	no	double, P	yes	wood
zurna	Near East, Central Asia	25–50 cm	con	7, T	2	yes	no	double, P	yes	wood

TABLE 3
Keyless Double Reed Aerophones
Listing by Geographical Region: Asia—East, Southeast, Central

Name	Location	Length	Bore	Finger Holes	Body Parts	End Plug	Sep. Bell	Reed/ Pir.	Circ. Breath.	Material
bishkur (zhimbur)	Buryat, U.S.S.R.	30–40 cm	con	7, T	2	no	yes	P		wood & metal
charumera (tōjin-bue)	Japan		con	7, T	1	no	no			
desīmvāhlī	Nepal									wood
guan (guanzi, kuan tse, bili, hujia)	China	37 cm	cyl	7, T	1	no	no	broad		bamboo or wood
hichiriki	Japan	18 cm	rev con	7, 2 T	1	no	no	broad	yes	wood, bark
hnè (hnè-galeī, nhai)	Burma	26–40 cm	con	7, T	2	no	yes	quad		wood and bark
kèn (kèn bàu, kèn bóp, kèn bát, kèn gia nam, kèn trung, cai ken, cai ken loa, cai ken mot)	Vietnam		con	7, T	2		yes			cedar and brass or copper
mvāhlī	Nepal		cyl	7, T	2		yes			
nafari	Sumatra, Malaysia			7, T						wood, metal bell
p'iri: hyang-p'iri, sagwan ('native oboe')	Korea	27 cm	cyl	7, T	1	no	no	double		wood
se-p'iri ('thin oboe')	Korea	23 cm	cyl	7, T	1	no	no	double		
tan-p'iri ('Chinese oboe')	Korea	23 cm	cyl	7, T	1	no	no	double		bamboo
phăn ty	No. Vietnam									
pī chanai (pi aw, pi ǫ)	Thailand, Laos, Kampuchea	25 cm	cyl	7, T	2	no	yes	double, P	yes	hardwood or ivory

(*continued*)

Name	Location	Length	Bore	Finger Holes	Body Parts	End Plug	Sep. Bell	Reed/ Pir.	Circ. Breath.	Material
pī chawā	Thailand, Laos	33 cm	con	7, T	2	no	yes	double, P	yes	wood or ivory
pī klāng	Thailand, Laos	38 cm	cyl	6	1	no	no	quad	yes	hardwood or marble
pī mọn (pī maw-n)	Thailand, Laos	50 cm	con	7, T	2	no	yes	double, P	yes	hardwood
pī nai	Thailand, Laos	40–45 cm	cyl	6	1	no	no	quad	yes	hardwood or marble
pī nọk	Thailand	30 cm	cyl	6	1	no	no	quad	yes	hardwood or marble
pile (bili)	No. Vietnam	37 cm	cyl	7, T	1	no	no			
preret	Bali	45–58 cm	con	7, T	2		yes	double, P	yes	wood & metal
rgya-gling (gnya ling, rgya glin)	Tibet	60 cm	con	7, T	2		yes	double, P	yes	wood, copper, silver
sahanai	Nepal		con	7, T						wood
saleot	no. & west Sumatra	50 cm		4	3	no	yes	double P		bamboo, metal, buffalo horn
sarune	Sumatra, Batak Toba	80 cm	con/cyl		4		yes	P		wood & animal
	Sumatra, Batak Toba	30 cm	con/cyl		3		yes			horn
	Sumatra, Batak Karo	25 cm	con	8						silantam wood
	Sumatra, Pakpak dairi region	40 cm	cyl	6						wood
sarune (bulo surik)	Indonesia	25–30 cm	con	4	2		yes	double		bamboo, horn
sarunei	Sumatra, Batak Simalungun		cyl	6, T	1		no			wood, bamboo
saunay	Philippines		cyl							
selompret (slompret, saronen, serompet, sompret)	Java, Indonesia	45 cm	con	6, T	1	no	no			wood

(*continued*)

Name	Location	Length	Bore	Finger Holes	Body Parts	End Plug	Sep. Bell	Reed/ Pir.	Circ. Breath.	Material
serunai	west Malaysia	45–50 cm	con	7, T	1		no		yes	wood
	no. Sumatra				1			P		wood, bamboo
	west Sumatra			4	2		yes	P		wood, horn
serunai kayu	Malaysia	34 cm	con	7	2		yes	P		wood, metal
serune	Sumatra, Central Aceh province	24 cm	con	6, T	2		yes			jackfruit wood
serune kaleë	Sumatra, Aceh province	40–45 cm	con	6–7, T	1–2		yes	P		wood, horn
silu	Bali									
sraḷai (sraḷai klōng khāēk)	Kampuchea		cyl	6	1	no	no	quad		wood
suona, (sona, aizai, dachui, haidi, jina, jinkojiao)	China	29–45 cm	con	7, T	2	no	yes	double, P	yes	wood, metal
surnai	No. India, Central Asia	46 cm	con	7, T	2	yes	no	double, P	yes	wood
t'aep'yŏngso (hojŏk, swaenap, nallari)	Korea	47 cm	con	7, T	2		yes	double, P	yes	hardwood, metal
tarompet	Sunda, W. Java	50 cm	con	6	4–5	no	yes	double, P	yes	wood
tetepret	central Java	45 cm	con	6, T		no				
tutila	no. & west Sumatra			4	2	no	no	double		wood, metal
xyu	No. Vietnam, Laos, NE Thailand, so. China		con	6, T						wood
zurna	Caucasus region (Armenia, Georgia, Dagestan, Azerbaijian), Near East	25–50 cm	con	7, T	2	yes	no	double, P	yes	wood

TABLE 4
Keyless Double Reed Aerophones
Listing by Geographical Region: South Asia

Name	Location	Length	Bore	Finger Holes	Body Parts	End Plug	Sep. Bell	Reed/ Pir.	Circ. Breath.	Material
ghazzi	Sind, Pakistan									
horonäva	so. India, Sri Lanka	28–33 cm	cyl	7	2	no	yes	quad, P		
ka tang-muri	NE India									ebony & brass
kōl	So. India	30–35 cm	cyl	6	4		yes	double, P		
kuzhal	So. India									neemwood and brass
mauri dizau	NE India		cyl					double, P		
mahōrī (mohurī, muhurī, mahvarī, mohori)	east India		con		3				yes	
mohura	central India	19 cm	cyl	7	2	no	yes			bamboo
morī	So. India	59 cm	con	8	2		yes			bamboo and metal
mukhavīnā	so. India	35 cm	con							wood & metal
mutta	Pakistan, No. India	25 cm								
nāgasvara (nāgasura, nāgaswaram, nāgasvara, nāyanam)	India	95 cm	con	7	1	no	no	double		copper or wood
ottu	India	75–80 cm	con	0	1	no	no			bamboo & wood
pipani	west India	45 cm	con	7, T	2		yes			
sharnai, surna	Sind, Pakistan	21 cm	con	8, T	1		no	P		kiarr wood
shehna'i (śahnāī, śanāī, shahnāī, sundrī)	No. India	50 cm	con	7	2	no	yes	quad, P	yes	wood
sruti	India									
sur	sur			0						
sur-na (ha-rib)	No. India	60 cm		8, T	1		no	P		apricot wood
surnai	No. India, Pakistan, Afghanistan, Iran	46 cm	con	7, T	2	yes	no	double, P	yes	wood

TABLE 5
Keyless Double Reed Aerophones
Listing by Geographical Region: Africa

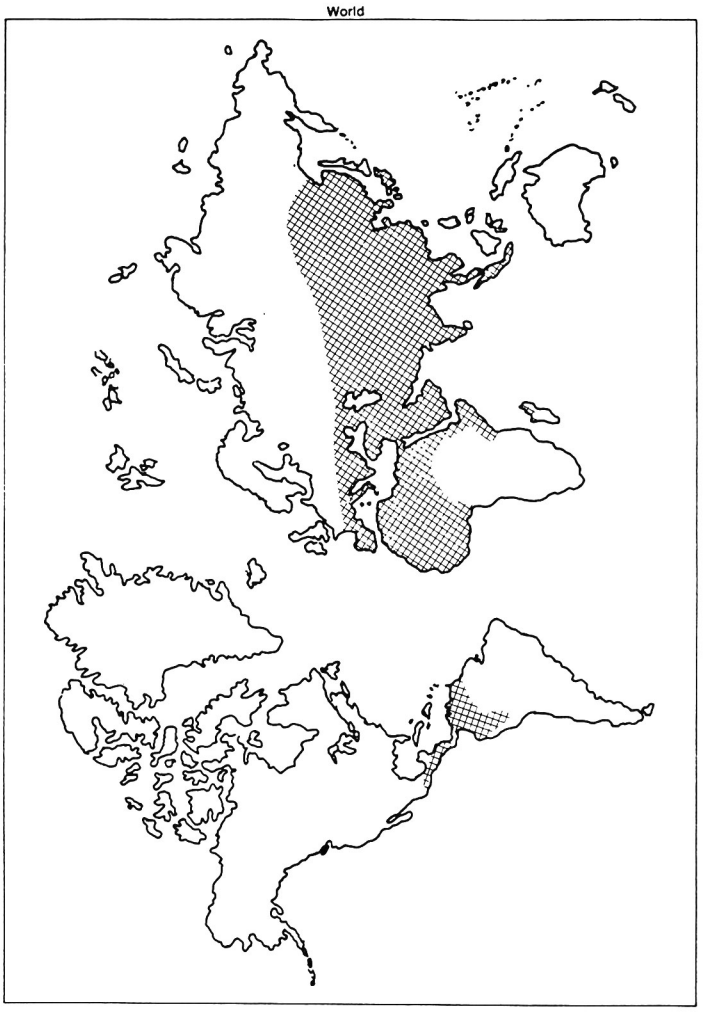
Name	Location	Length	Bore	Finger Holes	Body Parts	End Plug	Sep. Bell	Reed/ Pir.	Circ. Breath.	Material
algaita	W. Africa: Mali, Niger, no. Nigeria, so. Chad, Cameroon	30–55 cm	con	4–5	2	yes	yes	double, P	yes	daniya wood, leather-covered bell
aghanam	Morocco							double		beeswax mouthpiece
anjomara	New Madagascar			5						
ghayta	Morocco, Algeria, Libya	40 cm	con	6–7, T	2	yes	no			apricot wood
kabiry	Madagascar									
mizmār (shalbiyya, sibs, telt)	Egypt, Tunisia, Iraq, Morocco, Yemen		con					double	yes	wood apricot wood
nzumari (bung'o)	Kenya	15 cm	con	6	2	no	yes			wood

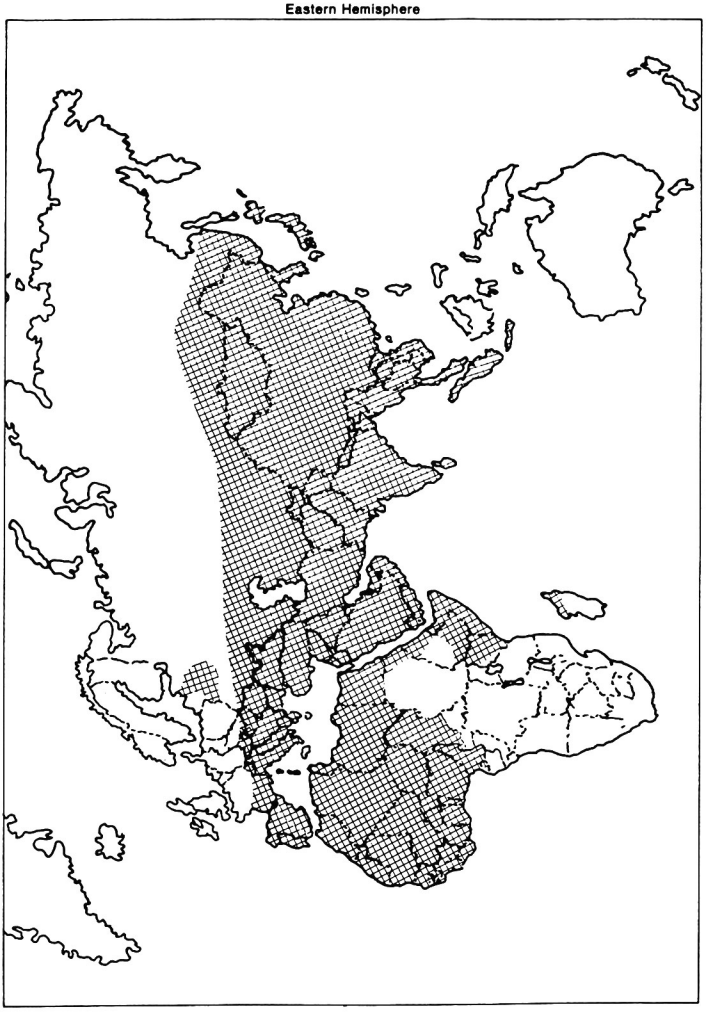
TABLE 6
Keyless Double Reed Aerophones
Listing by Geographical Region: Central and South America

Name	Location	Length	Bore	Finger Holes	Body Parts	End Plug	Sep. Bell	Reed/ Pir.	Circ. Breath.	Material
chirimía	Mexico, Central & So. America	30 cm	con/cyl	6	1	yes	no	double, P		wood
trompetica china	Cuba			5?						

TABLE 7
Keyless Double Reed Aerophones
Listing by Geographical Region: Europe

Name	Location	Length	Bore	Finger Holes	Body Parts	End Plug	Sep. Bell	Reed/ Pir.	Circ. Breath.	Material
bramevac (trompe de charivari, tontarde)	Gascony, France		con					double		coiled bark held with thorns
čekštukas	Lithuania		cyl	0	1	no	no			wood
charamel (charamela, charamelinha, charamita, charumbela, caramillo)	Spain, Portugal, Italy	30 cm	con	7, T				double, no P		
chirimía	Spain	30 cm	con					double, P		wood
dulzaina (bolingozo)	Basque region, Spain	40 cm	con	T			yes	double, P		wood
gralla	Catalan, Spain	40 cm	con	8	2		yes	broad		
karamouza	Greece, Bulgaria		con							
pifaro (piffaro, piffero)	Portugal, Italy									
pipiza	Greece, Bulgaria							double		
sopila	Krk Is., Yugoslavia		con	6						
svirale	NW Bosnia, Yugoslavia		con	6						
zurla (zurle, surle)	Eastern Europe	35–60 cm	con	7, T	2	yes	no	double, P	yes	wood
zurna	Turkey, Balkans	25–50 cm	con	7, T	2	yes	no	double, P	yes	wood


World


Eastern Hemisphere


Western Hemisphere