

Chapter 2

Historical Sketch

2.1 Whistled Languages and Ancient Texts

Several very ancient texts mention the presence of whistled traditions used for spoken communication. Here, we will cite texts that are possibly related to whistled languages that remain in use today.

For example, two ancient Greek historians described people of North Africa who lived in hills or mountains and apparently spoke using whistle-like sounds. First, Elien (2nd century) explained in the *De Natura Animalium* that the Kinoprosipi people “*didn’t have a language but instead used acute whistling*” (1, X, Ch. xxv), and Herodotus (Vth century) mentioned some Ethiopian troglodytes who “*spoke like bats*” in the *Melpomene* (IV: 183). Several works revisiting these early historical sources proposed that these people were most likely related to the Tibbous, a Berber group of South Sudan that lived in rocky mountains surrounding sandy valleys, the type of ecological milieu where whistled speech is useful (Malte-Brun 1826: 11; Basset 1890: 69). Here, the link with a whistled speech practice is not very clear because those authors apparently had never heard of the practice, but these texts are worth mentioning because they underline that whistle-like communications related to speech existed in North Africa a long time ago. The texts also show the surprise of the scholars of those times when encountering such practices. Moreover, we now know that several Afro-Asiatic languages are still whistled in the Omo Valleys of Ethiopia and in the Atlas Mountains in Northern Africa (see Sect. 2.3).

In Asia, several ancient sources mention the practice of *xiao*, a Chinese tradition represented by an ideogram translated as “whistling” by most of the scholars. The earliest examples of *xiao* are found in a Shijing poem (XIth to Vth BC) where the protagonist whistles while singing (Su 2006). The practice of *xiao* was described in various early documents such as Chenggong Sui’s (231–273) *Xiaofu* (“Rhapsody of Whistling”) or the *Xiaozhi* (“Principles of Whistling”). The latter is preserved in a collection of ancient texts called *T’ang Tai Ts’ung-Shu* and has been translated in

English by Edwards (1957). Its anonymous author was contemporaneous to the Tang Dynasty (he is supposed to have written it in 765). He was later identified in another Chinese ancient text called the *Feng Shih Wen Chien Chi* as Sun Guang, a Supreme Court judge. This “Treatise of Whistling” (Picard 1991) describes the art of whistling in a philosophic and aesthetic way that may sometimes be interpreted as an art of singing with whistles. For instance, Liu (1976) explained that whistling, often mentioned together with singing in this ancient text, was in fact a particular way of chanting verses in China south of the Yangtze River, where the Taoist *belief* dominated at the time. Some scholars go as far as saying that the *xiao* was connected to *kouji* (oral imitation of human and non human voices) after analyzing all the instances of *xiao* in the Han and Six Dynasties literature (e.g., Sawada 1974). The *Xiaozhi* treatise also attracted our attention because it clearly mentions distance communication in mountains in terms of the range reached by whistles (measured in *li*,¹ a Chinese unit of distance). Moreover, the description of the diverse whistling techniques focuses on how to breathe. Accordingly, it is one of the earliest works on phonetics because it explains how to make certain sounds and how to check them when they are made.² Finally, it draws a very clear and simple link between ordinary speech and whistling, explaining that the “*air forced outwards from the throat and low in key is termed speech; forced outwards from the tongue and high in key is termed xiao (whistling)*” (Edwards 1957: 218). According to our inquiry, Southern China is most likely one of the places that has hosted the greatest diversity of whistled speech traditions. Ghizou, Yunnan and, more generally, the geographical area known as the Golden Triangle continue to host numerous languages such as Hmong (often called Miao in China), Yi and Akha (sometimes called Hani in China), which still have a whistled version for both chanting verses and conducting everyday conversations in the distance (see Chaps. 3 and 5).

The oldest undisputable historical proof of the existence of a whistled form of a language dates back to the written testimony of two Franciscan priests who accompanied the French mercenary Jean de Béthencourt when he conquered the Canary Islands in 1402 for the Queen of Spain Isabel the Catholic. In their logbook published in 1609 under the title “*Le Canarien*”, Bontier and Le Verrier mention that the islands’ inhabitants spoke “*with two lips as if they had no tongue*”³ (Busnel and Classe 1976: 6; and Fig. 2.1). Thanks to other testimonies, such as the writings

¹ The *li* is a traditional Chinese unit of distance, which has varied considerably over time but now has a standardized length of a half-kilometer (1/3 of a mile). In practice, however, as late as the 1940s, a *li* did not represent a fixed measure. It could be longer or shorter depending on the effort required to cover the distance.

² Whistling is dealt with in fifteen chapters, starting from the “First Principles” and ending with the “Conclusion”. These chapters list twelve methods of whistling.

³ Free translation of “*parlent de beaulièvres ainsi que fussent sans langue*”, where “*beaulièvres*” means “with two lips”, from “*bel*”, which is “two” in ancient French (Latin: *bis*). It is highly possible that this testimony inspired a book by the poet Cyrano de Bergerac that is often recognized as the first book in the literary genre of science fiction: *Histoire Comique des États et Empires de la Lune*.

124 CONQVESTE
 grande medecine, & de fruitaiges de
 diuerfes manieres, & y court bonnes
 riuieres parmy, & y font les terres bon-
 nes pour tous labourages & bien gar-
 nies d'herbages. Le pays est fort & Pays bien
peuple.
 bien peuplé de gens; car il n'a mie esté
 ainsi foullé comme les autres païs ont
 esté. Ils font belles gens & ne viuent que
 de chair: & est le plus delectable païs que
 nous ayons trouué és Isles de pardeçà,
 mais il est bien adeshmain, car c'est la plus
 lointainne ile de terre ferme. Toute-
 fois il n'y a du cap de *Bugeder*, qui est terre
 ferme des Sarraïns, que cent lieues lan-
 coïses, & aussi c'est vne îste ou il y a fort
 bon air, neiamais volentiers on n'y est
 malade, & les gens y viuent longuement.

*c. à l'ef-
part,*

*Salubrité
de l'air.*

De l'Isle Gomere.

CHAPITRE LXVII.

L'Isle de Gomere est quatorze lieue
 pardeçà, qui est tres-forte Isle, en ma-
 niere d'vne tresfle; & le païs bië-hault & af-
 fez plain, mais les baricaues y sôt meruei-
 leusement grandes & parfondes, & est l

DES CANARIES. 125
 païs habité de grand peuple qui parle le Langue e-
strange &
particuli-
re.
 plus estrange langaige de tous les autres
 païs de pardeçà; & parlent des baulievres
 ainsi que si feussent sans langue, & dist on
 pardeçà que vng grand Prince * pour au- * Les ro-
laires An-
gloises dis-
sent qu'ou
surent les
Romains.
Voyés an-
not. 28.
 cun messaiët les fit la mettre en exil & leur
 fit tailler leurs langues, & selon la manie-
 re de leur parler on le pourroit croire; le
 païs est garny de dragonniers & d'autre
 bois assez, & de bestiaï menu, & de moult
 d'autres choses etranges, qui seroient lon-
 gues à raconter.

De l'Isle d'Enfer ou Tenerife.

CHAPITRE LXVIII.

L'Isle d'Enfer, qui se dic *Toneyfis*, est Teneriff
ou Tenerif
 en maniere d'vne herche, presque
 ainsi que la grand Canare, & contient en-
 uiron dix-huict lieues Françoises de long
 & dix de large, & en tout le meilleur a
 vne grand' montagne la plus haute qui Montagne
haute, Voy-
ci annot.
not. 27 &
29.
 soit en toutes les Isles Canariennes, & s'e-
 stent la patte de la montagne de tous co-
 stez par la plus grand' partie de toute l'Is-
 le; & tout entour sont les baricaues garnis

Fig. 2.1 Relevant chapter of Bontier and Le Verrier book where they mention for the first time in history the whistled practice of the inhabitants of La Gomera Island (reproduced from Busnel and Classe 1976: 7)

of Fray Alonso de Espinosa (1594) and the anthropologists Quedenfeldt (1887) and Verneau (1891), we know that these colonial priests had witnessed a real whistled form of the local Berber language(s) then spoken for long distance communications on the Islands of La Gomera, El Hierro, Tenerife and Gran Canaria by their original inhabitants, commonly called the *Guanche*.⁴ There has been a good deal of speculation about the native language(s) of the Canaries, but so little evidence is available that it is difficult to say with confidence whether there had been various dialects of a unique language or different languages. These are now-extinct idioms spoken until the 16th or 17th century. Throughout the 15th century, these islands were conquered by mostly Andalusians and some Castilians, who subdued or suppressed the native Guanche populations. After subsequent settlement by conquerors, these populations were gradually diluted by the settlers, and their culture largely vanished. Given that the idioms became extinct, it would seem that the Guanches who survived the wars and illnesses adapted their whistled technique to their conqueror's language, which they had to learn. When Quedenfeldt and Verneau visited the Canary Islands at the end of the 19th century, the technique had

⁴ The term *Guanche* stricto sensu refers exclusively to Tenerife's original inhabitants.

already been adapted to Spanish. Modern-day Canarian culture is Spanish with some Guanche roots, and the technique for whistling the language—now called *El Silbo*, i.e., “The Whistle”—is one of the few remnants of the islands’ ancient language(s), along with a few sentences and individual words recorded by early travelers, supplemented by several toponyms and some words assimilated into the local Spanish. It is on the island of La Gomera that Silbo survived best, and it is there that the first initiative to revitalize a whistled language was launched at the end of the 1990s under the impulse of some traditional whistlers, now called *Maestros de Silbo*, i.e., “Masters of Silbo”. The historical and cultural importance of Silbo explains why the official educational system of the region followed this initiative by including Silbo in the compulsory curriculum of La Gomera’s primary schools, as will be detailed in Chap. 4. The government of the Canary Islands also promoted this oral practice at the international level, and in 2009, Silbo was declared a Masterpiece of the Oral and Intangible Heritage of Humanity by the United Nations Educational, Scientific and Cultural Organization (UNESCO).

In the Americas, the most ancient historical testimony of the presence of a whistled practice dates back to 1755, when a Jesuit historian reported a whistled form of speech among the Ka’aygua people of Paraguay (Lozano 1755): “*they use a proper language difficult to learn, because when they speak they rather whistle it*” (cited by Clastres 1972: 113). According to the anthropologist Pierre Clastres, this Ka’aygua population is related to the ancestors of the Aché people, among whom he witnessed whistled dialogues, as pictorially reported in his book “*Chronique des indiens Guayaki*” (Clastres 1972, discussed later in Sect. 4.1).

Finally, there is a large body of colonial literature about whistle systems in Africa, particularly in Western and Central Africa, where musical instruments such as drums, horns and flutes are commonly used to send messages over considerable distances (e.g., Labouret 1923). Early ethnographers were attentive to what enabled the local populations to build networks of correspondence among villages (drums) or distant dialogs between individuals (whistles). Indeed, these methods were commonly used during warfare (drums and whistles) or to communicate the law (drums), and the ethnographers represented the colonial administration. Missionaries also paid attention to these phenomena because the locals utilized them to tell old stories, to sing and to pray. Culturally, the texts that were played and are still sometimes played with the singing or reciting mode of instruments and whistles regularly refer to the traditional cosmogony, which the missionaries had—and sometimes still have—an obscured mission of changing.

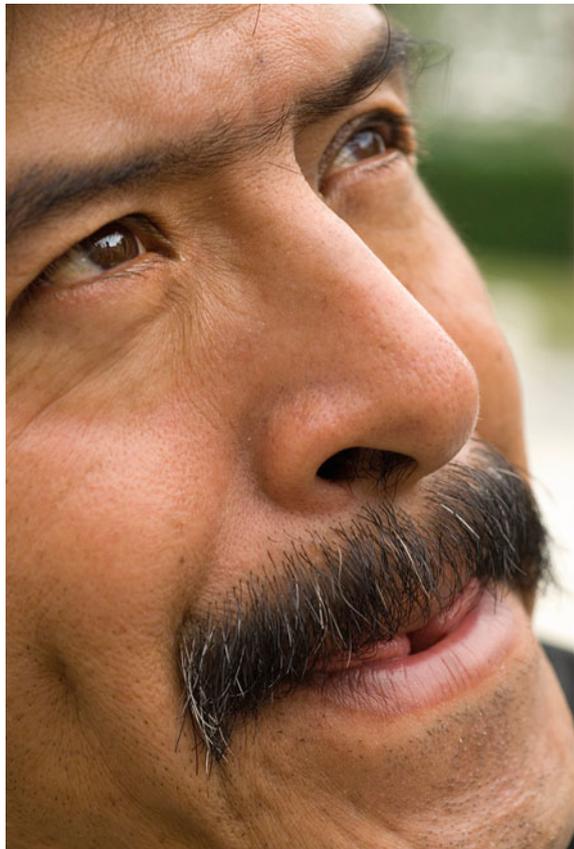
2.2 First Linguistic Analyses

It was only at the beginning of the second half of the 20th century that precise linguistic descriptions were produced. In 1948, *Language* published an article by Cowan that was the first comprehensive linguistic study of a whistled form of a language (Cowan 1948). Cowan explains how the Mazatec of the Sierra Mazateca in

Oaxaca communicate at medium and long distances through modulated whistles, with, according to him, the same ease, speed and intelligibility as speech used in the ordinary manner (see Chap. 8 for a full conversation in Mazatec related by Cowan). As noted by Busnel and Classe (1976), the account he gives of the technique employed shows it to be a very simple matter indeed. Mazatec is a tonal language, that is to say, one in which the fundamental frequency of the glottal waveform, which at the auditory level is associated with the sensation of pitch, plays a role no less important for lexical meaning than do vowel and consonant qualities (segments). In the whistled form of Mazatec, which is mostly produced with a lingo-dental technique (Fig. 2.2), the sender extracts from all of the parameters of the speech continuum the prosodic (supra-segmental), i.e., melodic features, of tone and duration, thereby converting the speech signals as we generally know them into a type of tune.

Cowan noted that the same or similar procedures had frequently been observed not only in Central America but also in Africa and in Asia. These techniques are closely related to those of Mazatec whistle speech because they are also based on the tone feature of the various languages involved. As far as we know, the earliest

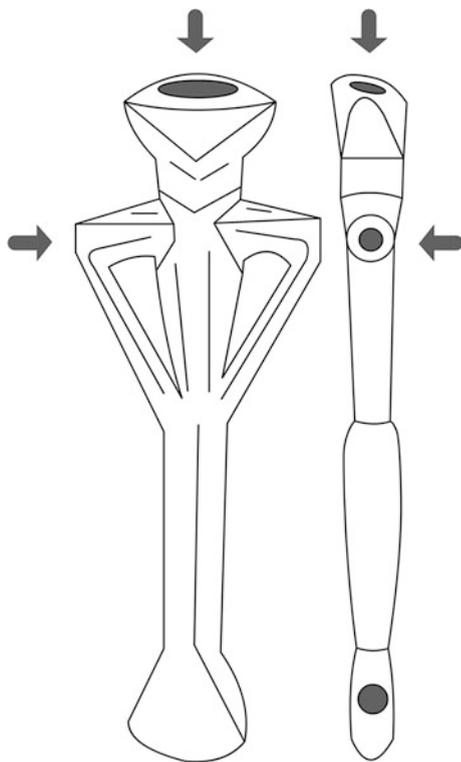
Fig. 2.2 A Mazatec whistler —lingo-dental technique of whistling (*Photo* © Rolex Awards/Jacques B elat. All Rights Reserved)



documents to provide reliable explanations of whistled speech in Africa are brief descriptions of the Gurunsi, Banen and Lele, three groups that effectively speak tonal African languages (Eboué 1935; Dugast 1955; Pepper 1956). Whereas the Banen were found to use primarily their fingers to whistle, the Gurunsi primarily used two- or three-hole wooden whistles (see one schematic example on Fig. 2.3). The Lele used either fingers or an antelope-horn whistle with three holes: *In the Mayo-Kebi, for example, the Lele rarely travel without their ‘tebere’ hanging around their neck by a lanyard, a whistle with three lateral holes* (see Pepper 1956: 9). One example of simple whistled dialog witnessed by Pepper between two Lele speakers was reported together with both a written transcription of the words and a discrete musical annotation of the tones played for each vowel (see Fig. 2.4). As this example shows, at that time, the researchers rarely used recorders, and they transcribed what they heard using the occidental musical annotation, which provided only an approximation of the complex sound reality of such systems. Interestingly, according to Pepper *this domain of musical speech can be expressed in other ways—by whistling in the fingers, by blowing in trumpets, or by using skin drums* (Pepper 1956: 9).

In Asia, the earliest modern scientific study we know of on whistled speech addresses the tonal Chin Asian language (Stern 1957). The general principle of whistling Chin was also found by Stern as essentially similar to Mazatec and to the

Fig. 2.3 Schematic representation of a Gurunsi wooden whistle. The whistler blows into the upper hole without completely plugging it up (vertical arrow). The force of the airflow and the eventual blocking of the two lateral holes (with the fingers, horizontal arrows) change the pitch of the whistled signal



Commanda Bargadje e tchaani kuda here tugu Azina.
Le Commandant de Bargadje est parti en brousse route village Azina.

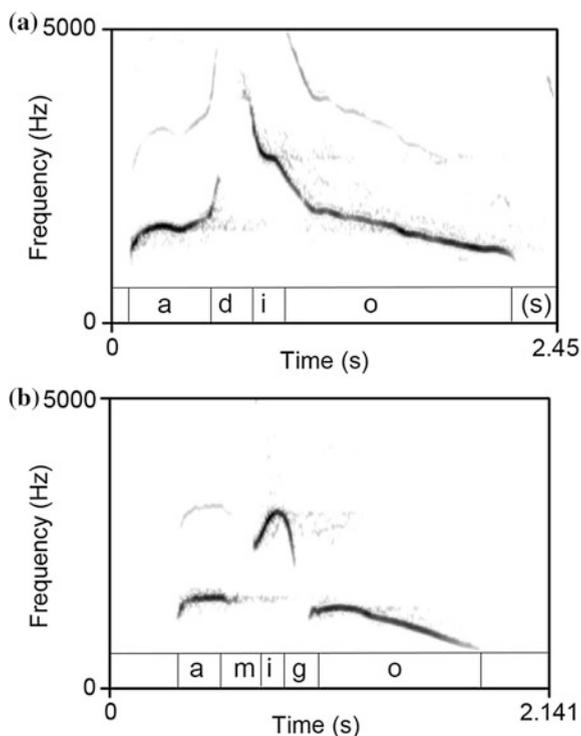
E lo ne ne mega? E be ho lo gu ye ba ro go ko lon ke ge
Parti pour faire faire quoi? Parti pour le travail du coton à Kolon

Fig. 2.4 Whistled conversation in Lele language as transcribed by Pepper (reproduced from Pepper 1956: 9). (Translation:—*The commander of Bargadje left to the bush by the road of Azina village.—Left for what?—Left for cotton work in Kolon*)

abovementioned African languages. Just like for most tonal African languages, the tone transposition has been also adapted to local Chin musical instruments such as gongs. However, little linguistic detail was provided by Stern about these communication systems.

The studies on Silbo are also important in the history of the description of whistled languages because they are the first to address a non-tonal language, namely, Canarian, which is a dialect of Spanish. The mechanism of Silbo was necessarily completely different from that of whistled Mazatec, Gurunsi, Banen and Lele in that it could not be positively based on prosodic features, at least to a significant degree. In the Spanish non-tonal language, reliance on intonation, stress and quantity in the absence of the articulation of vowels and consonants clearly will not promote ease of communication because these parameters carry only a limited load of functional information for speech intelligibility. A complete description of whistled Spanish was undertaken only in the late 1950s, by the linguist André Classe (1956, 1957), and it was preceded by several attempts that give an idea of the difficulty encountered by early researchers attempting to understand the phenomenon. Of the numerous early articles on Silbo, the most important are Fritsch (1867), Quedenfeldt (1887), Verneau (1891) and Lajard (1891). These articles all describe Silbo as a picturesque and entertaining phenomenon but reveal little about its mechanism, except perhaps in the study of Lajard, who came close to understanding it. Busnel and Classe (1976) accurately note that Quedenfeldt and Verneau wrap the subject in an opaque veil of mystery because they stand by the idea that the pitch of whistling mirrors the pitch of ordinary speech. A description of the mechanism of whistled speech in non-tonal languages will be given in Chap. 7, but it can be stated here that Classe was the first to find that in essence, whistled Spanish consists of replacing the vocal tract resonance of everyday phonation with a whistle, that is to say, a steady or modulated note that is practically a sine wave. Such resonance of the cord tone in the vocal tract defines vowel and consonant qualities that are therefore transposed in whistles (Fig. 2.5). This originates at the front end of the speech tract, not in the larynx, with the factor of articulation remaining as it is in ordinary speech. The document in which Lajard begins to supply a logical explanation of this phenomenon and that might have greatly helped Classe is entitled *Le langage sifflé des Canaries*. Lajard has a very

Fig. 2.5 Two whistled Spanish words: **a** /adios/ (meaning: *good bye*); **b** /amigo/(meaning: *friend*). They share the same vowels /a, i, o/ that are rather steady notes but differ in the modulations imprinted by the consonants /d, s/ or /m, g/. One can note also the modulation of the hiatus between vowels /i/ and /o/ of /adios/



clear idea of how the whistle can be used as it is because he realizes that whistled speech is all a matter of articulating vowels and consonant segments, not of the prosodic features of ordinary Spanish, primarily because he tried to learn to whistle Spanish. Unfortunately, his ignorance of linguistics and phonetics prevents him from solving the problem and causes him to give a somewhat misleading account of the process. He seems to think that Silbo is a mixture of whistling and normal speech, apparently not realizing that phonation—an indispensable component of normal speech—is incompatible with simultaneous loud whistling and that the approximation of the vocal ligaments necessary for the production of the cord-tone excludes the possibility of emitting air under enough pressure to produce the penetrating sound indispensable for long-distance communication (Busnel and Classe 1976). Lajard makes another mistake: he thinks that Canarian speech is practically identical with Castilian, which is not the case [as we will see in Chap. 7 and as Classe notes in his first article, which was published in *Archivum Linguisticum* (Classe 1956)]. Before that, Quedenfeldt, to his credit, observes that the only detectable variable in the whistled medium is pitch. To test the idea, he enlists two musicians, who note what they think they hear when Gómeros whistle. The accuracy of the transcription was checked later by Busnel and Classe (1976) by whistling back to other whistlers the musical annotations of the musicians with absolutely no success. The first error of Quedenfeldt is to think that whistled Spanish is entirely a matter of prosodic features

as normally understood in linguistics (although he did not use that terminology). His second error is similar to that made by the anthropologists confronted with whistled speech in African languages because a musician trained along the usual lines in orthodox fashion would automatically refer any pitch he perceives to the nearest note of the familiar chromatic series. As shown in Figs. 2.5 and 2.6b, c and as it will be shown later (Chap. 7), all whistled speech sound realizations are glides interpreted in terms of range, contour and steepness (apart from some rare relatively steady vowel-phonemes). It follows that Quedenfeldt’s musicians produce only notations of vowels “normalized” by being forced to fit the Western musical scale.

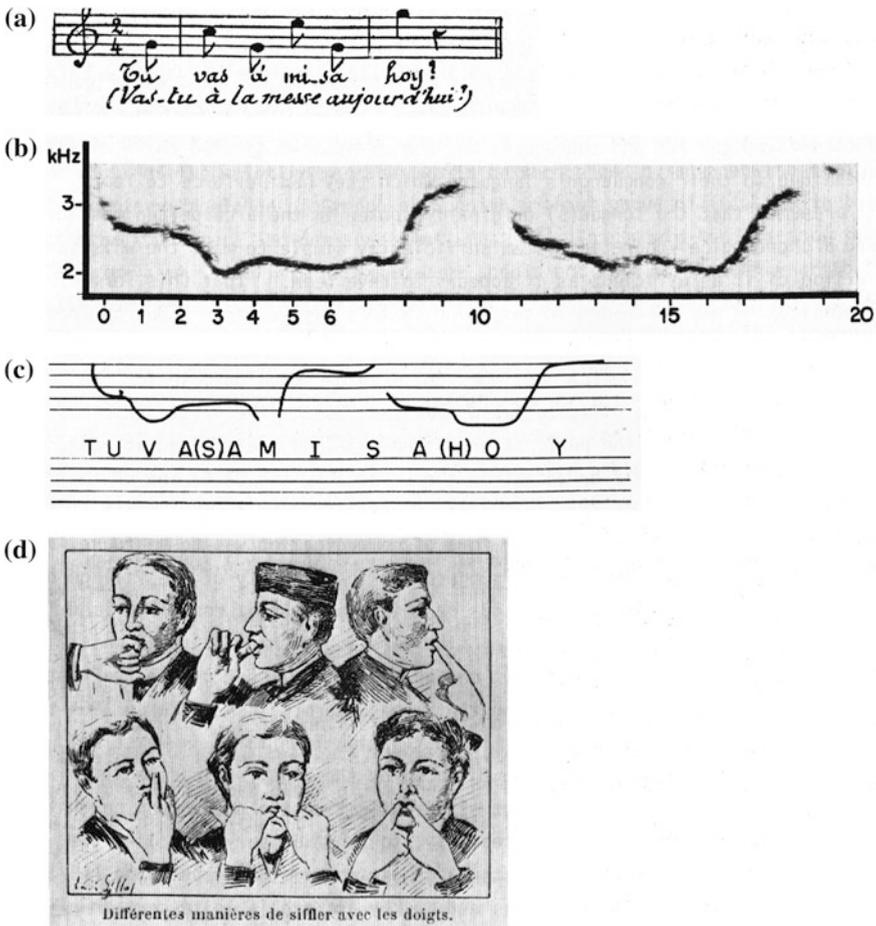


Fig. 2.6 Whistled sentence “Tu vas a misa hoy? (Translation: *Are you going to church today?*). **a** musical annotation obtained by Quedenfeldt; **b** Spectrogram; **c** Melodic line of **b** reproduced on a musical scale. **d** Description of whistling techniques observed in La Gomera from: *Le Monde illustré*, 1893 (reproduced from Busnel and Classe 1976: 9)

would make the interpretation of their signals by whistlers practically impossible. For example, faced with the vowel series [u a a i a oi], even a perspicacious reader will be unable to recognize it as the sentence, i.e., “Tu vas a misa hoi?”, stripped of its consonants. Interestingly, Busnel and Classe compare the musicians’ version with the genuine article in a figure we reproduce here (Fig. 2.6a, b, c).

The peak of interest for whistled Spanish raised by the articles of Verneau, Quedenfeldt, Frisch and Lajard attracted considerable attention, and their interpretations were reproduced in popular magazines and discussed in some scientific societies, seldom accurately, and often were embellished by journalists and anthropologists. For example, whistled speech was the subject of a notice in *Le Monde Illustré* (Fig. 2.6d). It was also the subject of discussions on the origin of the practice and the origin of language in the *Société d’Anthropologie de Paris*, where Lajard had presented his work (e.g., Bordier 1892). Interestingly, these discussions occurred at a time when the *Société de linguistique de Paris* had informed its members that it would not receive any communication about the origin of language.

One other researcher, René Guy Busnel, a contributor to this chapter, found in whistled speech one of the driving forces of his reflections on human languages and on communication in general, from the early 1950s until the end of his career, and even later. Busnel found a whistled language in France, which appeared inconceivable at that time. Because Busnel was a pioneer in the field of biological acoustics, whistles were already among his research interests, and he found it fascinating that they could be used by humans to transmit messages of linguistic attitude for telecommunication purposes in natural surroundings. He contacted Classe after having read a report of his work in an article of the *Unesco Courier*. When he spoke about whistled speech and played some sounds sent by Classe in a French radio broadcast by ORTF, he received a communication from a listener to the effect that there was what appeared to be a very similar form of communication in the French Pyrenees near the village of Aas, where a local dialect of Occitan (Béarnese) was still largely spoken. The last few users of this whistled version of Béarnese were approached, and their whistling was recorded and duly analyzed (Busnel et al. 1962a, b). Whistled Béarnese was found to function very similarly to Silbo Gomero, but with different vowels and consonants. Then, in March 1964, *The New York Times* published a note entitled “Turkish Town Talks in Whistles”, which inspired an expedition financed by the Wenner Gren Foundation, organized by Busnel, with the object of investigating the phenomenon on the spot with a pluridisciplinary team. The expedition showed that the village of Kusköy (literally, “the village of birds”) was in a region near the Black Sea where whistled Turkish was still largely practiced by shepherds who called it “kudili”, that is, the “language of birds”. Not unexpectedly, it was found to function very similarly to Silbo Gomero, despite the much more complex vocalic system of the Turkish language (see Chap. 7). The results of this inquiry have been published (Busnel 1970, Leroy 1970), and sound films made at Aas and Kusköy were quickly made available to certain research and teaching establishments through the Service du Film de

Recherche Scientifique⁵ (SFRS), which Busnel helped launch [see Busnel (1964) on Béarnese, Busnel (1967, 1968) on Turkish and Busnel and Siegfried (Busnel 1990) on whistled speech in general]. In his publications, Busnel approached the topic slightly differently from his predecessors. Inspired by the German school of human ethology (Lorentz and Eibl-Eibesfeldt), he focused on human behavior in relation to the ecological milieu and as an acoustician, he managed to use—for the first time—the most modern technological tools then emerging to record and analyze sounds and images. Thus, one of the first European sonographs was imported from United States to study the whistled language of the Pyrenees. Moreover, in collaboration with hospitals in Paris and Ankara, he captured X-ray images of the vocal tracts of Béarnese and Turkish speakers while they were both speaking and whistling the same words and sentences. The interdisciplinary teams that he gathered were composed of eminent specialists in psychology, acoustics, signal treatment, biology, ethology and linguistics, which greatly furthered understanding of the whistled languages practiced in the Pyrenees, Turkey and the Spanish Canary Islands.

Thus, under the impulse of Busnel, Classe and Cowan, interest in whistled languages reached a second peak around the 1970s. Cowan, after his first study on Mazatec whistling, benefited from the network of information constituted by the missionary linguists of his evangelistic organization, the “Summer Institute of Linguistics”,⁶ which is still quite active in various autochthonous populations that speak minority languages. He describes the whistled version of the non-tonal Tepehua language of Mexico and mentions all of the languages that his network colleagues note as also being whistled (the list contains thirty languages, some of which have been revealed either to approximate codes or to be actual codes, and there are many parts of the world that he does not mention). Tepehua whistled speech is succinctly described without any sonogram but is clearly described as an articulation-based whistled system (Cowan 1972, 1976). Cowan is also the first to qualify whistled speech as a *style of speech*. Finally, some years later, Classe and Busnel have provided a detailed account of their investigations in a monograph entitled “Whistled languages” (Busnel and Classe 1976), in which they compile a general review of current knowledge in the domain with a description of various aspects of the subject.

In parallel to the work of these three scientists, various linguists have produced ad hoc analyses of whistled languages previously unknown to the scientific

⁵ The SFRS has given birth to the Cerimes (Centre de ressources et d’information sur les multi-medias pour l’enseignement supérieur), and most of the films cited here are freely available for streaming at <http://www.cerimes.fr/>.

⁶ The SIL is an organization that uses linguistics to translate the Christian Bible into minority languages that are primarily oral. Its work is accompanied by a denigration of the local cosmogony and its expression in verbal art, celebrations, and music. The SIL conducts its work despite the clear ethical issues related to the invasive interference of religious activity with traditional beliefs, events, and arts. Nowadays, several countries specify that such interference is forbidden by the law.

community. In Mexico, whistled *Kickapoo* was briefly described in 1954 in a short communication published in the *American Anthropologist* (Ritzenhaler and Peterson 1954). Several interesting points were underlined. For example, the practice was mostly used for courtship messages, principally at night. It seemed to have been derived from a lover's flute tradition, originally used by men to serenade their sweethearts. The technique to produce the whistles consisted of cupping the hands. Air was blown into the cavity between the knuckles of the thumbs placed against the lips vertically. However, it was only in 1971 that some linguistic aspects of this practice were provided in an analysis showing that whistles emulated the pitch of their spoken equivalent (Voorhis 1971). Another important example is whistled *Chepang*, found in Southern Nepal: it was first very simply introduced by Pike (1970) and later precisely described by Caughley (1976) with a new type of analysis based on syllable weight. Interestingly, that different analysis was found necessary because the Chepang language is incipiently tonal, which gives this Tibeto Birman language a special position between the two categories of whistled languages formerly described as pitch-based (for spoken tone emulation) and formant-based (for vowel and consonant emulation) (see more details in Chap. 7). During the same period, a short ethnomusicology study explained that the Hmong people traditionally utilize a leaf vibrating between their lips for courtship messaging and that the tunes they play emulate the linguistic tone of each syllable of the poetic sentences that they compose for this instrument. Because the tonal system of the Hmong language is one of the most complex in the world, the author provides a schematic explanation of it in the booklet that accompanies the recordings (Brunet 1972). Although this explanation is not detailed, the linguistics behind the melody are mentioned. Finally, a double-volume grouping of most of the previous publications related to whistled and drummed systems has been edited by the semiologists Sebeok and Umiker-Sebeok (1976). This publication reached a large audience and contributed to the broad diffusion of articles that had remained unpublished or little promoted. Among them was one paper on whistled Spanish in Mexican region of Tlaxcala; the practice had been noted in the municipality of Juan Cuamatzi (Hasler 1960) and was later heard over much of the southern part of the region, according to Wilken (1979). According to these authors, whistlers of Tlaxcala used teeth, tongue and fingers to whistle, much as in La Gomera. Coberly's (1975) comparative analysis of whistled vowels and consonants in La Gomera and Tlaxcala is not published in the volumes of Sebeok and Umiker-Sebeok (1976), but it is interesting because it found no evidence for the transfer of whistled speech between these two Spanish-speaking whistling cultures. The mystery remains complete about the origin of this practice in Tlaxcala: did it arrive with the Spanish settlers? Or was it transferred to Spanish from local preexisted whistling traditions?

During the same period, a few early works also mention whistled forms of languages spoken in Oceania (Laycock 1977; Townsend 1968; Eilers 1977). These works have only recently been rescued from oblivion in a recent review by Niles (2010), an ethnomusicologist at the Institute of Papua New Guinea Studies who surveyed the presence of whistled speech traditions in a country that preserves one

of the world's highest language diversities. He showed that the work of Nekitel on Wam and Abu? in Papua New Guinea represents the first real attempt to linguistically describe the practice in that region (Nekitel 1992). He also has found recordings of whistled speech in the Telefol and Folopa languages (Grimes 2000).

In 1980, the existence of a whistled version of Greek was revealed by an award-winning 20-min documentary entitled *Antia*, after the name of the only village where it is used, which is located on Eubea Island (or Evia), the second-largest island in Greece (Ioannou 1980). This documentary was followed by three short studies: first, a purely acoustic general interpretation of a few spectrograms; second, a phonetic analysis of Greek whistled vowels showing that the inhabitants of Antia used a whistled articulation of segments in a manner similar to Silbo, Turkish and Béarnese (Xiromeritis and Spyridis 1989, 1994); and third, a sociolinguistic study showing that whistling remained very common among the inhabitants over 40 years of age but was no longer transmitted to the younger generations (Charalambakis 1994).

In parallel, some linguists working in Africa have presented other descriptions of the whistled speech register in tonal languages, such as Bench in Ethiopia (Wedekind 1981), Mooré in Burkina Faso (Junzo 1998), Jóola in Casamance, Senegal (Moreau 1997) and Moba among the Gurma people of Togo and Ghana (Rialland 2005). Moreau's work is a sociolinguistic study of Jóola in which she observes that, additionally, the Bāinuk and the Manjak people of this region also occasionally whistle their respective languages.

Finally, and quite recently, important, detailed descriptions have been published on whistled languages of Central and South America. These descriptions do not appear in the principal reviews dating back to 1976, such as an article on Pirahã (Everett 1985) and a Ph.D. thesis on Chinantec (Foris 2000).

2.3 New Sources of Whistled Languages

Our fieldwork research revealed new examples of whistled speech in several languages, such as Akha (Southeast Asia), Mixtec (Mexico) (Meyer 2005), Siberian Yupik (Alaska) (Meyer 2008) and Tamazight (Moroccan Atlas). Akha was found thanks to the Mountain People Community Development association (MPCD) in Chiang Mai Thailand, and Siberian Yupik was presented for the first time on an Alaskan radio program in 2005. Meyer made contact with the Yupik community in 2006 to invite two speakers to an international forum of first people in France, thus initiating the study of the whistled aspect of that language. New fieldwork was made in summer 2014, this time on site. Mixtec was recorded in a village of the Sierra Mazateca not far from the Mazatec community of Huautla de Jimenez, where only a few sentences were recorded and a full study is yet to be performed. The study of Tamazight is another story. For a long time, historians and Gomero whistlers of the Canary Islands, who inherited Silbo from the Guanche Berber language, suspected the existence of a whistled language in Morocco, the nearest Berber-speaking country with mountainous landscapes similar to those found in the

island of La Gomera. In 2006, Dentel, a member of the “Whistled Language Unit”, read the book “Désert” (Le Clezio 1980), in which she found a description of two young shepherds whistling sentences in the Tashelhit Berber language. This information motivated the other members of the unit to intensively research informants who could help the team localize a whistled language in the Atlas. During the summer of 2013, Pucheux travelled to the high Atlas region and met several people able to whistle fluently in Tamazight. Finally, in fall 2014 a field research was launched on this peculiar aspect of this language by Meyer and Gautheron. In Chap. 7, we will discuss some of the first recordings made in Morocco.

In other cases, we were able to confirm whistled speech in languages in which the phenomenon had formerly only been mentioned in dissertations focused on other aspects of the language or in recordings published by ethnomusicologists, including Ari (Fournel 2002), Wayãpi (Beaudet 1997), Gavião and Suruí (Rondônia) (Moore 1984; Guerra 2004) and Bai and Yi (Yunnan) (Xian-Ming 2002; Various Artists 2003) or Spanish in Andalusia (Asencio-Cañadas and Morales-Jiménez 1992). For Ari, additional data were collected by colleagues, and the analysis is in process. For Andalusian Spanish fieldwork of Meyer and Dentel in 2014 gathered sufficient data to show how the whistling technique is original and unique as it uses a clay or wooden whistle (of the acoustic type called *hole tone*, see Chaps. 3, 5 and 7). Moreover, during a five-year stay in the linguistics division of the Museu Goeldi, Brazil, Meyer worked extensively with the whistled versions of Gavião and Wayãpi in the Amazon because those versions are still used in several of the local communities’ important daily activities, such as hunting. Suruí whistled speech was also analyzed, but it is no longer used; people only remember how they used to use it. As we will see in Chap. 7, Gavião, a tonal language, provides extensive details on how surface tone is whistled, whereas Wayãpi clearly encodes vowels and consonants in whistles, much as do Silbo, Turkish, Greek and Béarnese.

With the help of Brazilian colleagues, it was also possible to identify other sources in the literature, including those on the Bororó and Karajá, with a rather consistent and detailed linguistic description (Aytai 1986), and briefly in anthropological studies of the Aché (Clastres 1972), the Tuparí (Caspar 1975), the Krahô (Timbira language) (Rodrigues 1999; Meyer 2012) and the Ashéninka (Hvalkof and Veber 2005). When verifying whether these forms still exist, no whistlers were found among the Aché, the Bororó or the Karajá, all of whom have been extensively studied recently by Brazilian linguists whom we met personally. Moreover, only one whistler was found among the Tuparí of Rondônia,⁷ near the border between Brazil and Bolivia where the anthropologist Caspar reported the whistled practice as follows:

⁷ That whistler was recorded by Moore, coordinator of the Linguistics Division of the Museu Goeldi, Belém, Pará, Brazil.

The boys, and also adult men exchange at short distances messages by whistling different, rapidly sequenced tone levels. Already in 1948 I observed how young persons communicated with each other by whistling through the community house, which measures about 30 metres, for example before they would go hunting together. In 1955 I did similar observations during the long walk from Rio Branco to the maloca.⁸ One evening we set up our nightly camp. Just to inform Óali that I needed something from his luggage, the young Konkwat whistled a message into the forest which he translated for me at my request: “Óali, bring your luggage here!” And indeed, someone whistled an answer back, and immediately thereafter Óali came and brought me the required piece of luggage. On such occasions one whistles at first only the name of the addressee and waits for the answer. Then one sends the message and waits for the confirmation. One whistles just with the lips, without using one’s hands or other means. The distance seems generally only short; however, the whistling saves one from having to search or to shout, which is very disliked. (Caspar 1975: 224).

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⁸ Community house.

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<http://www.springer.com/978-3-662-45836-5>

Whistled Languages

A Worldwide Inquiry on Human Whistled Speech

Meyer, J.

2015, IX, 182 p. 63 illus., 24 illus. in color., Hardcover

ISBN: 978-3-662-45836-5