

## Whistled and drum languages

Whistled languages can be divided into two groups, those that are based on 'tone' languages and those based on non-tone languages

### Whistled and drum languages

Drum languages and whistled languages are alternate linguistic systems that convert the spoken word into whistles or drumbeats.

Their primary purpose is to transmit messages over long distances.

### Tone languages and pitch

□ Tone languages use relative **pitch** to convey meaning. Tone languages are found primarily in Asia and Africa, and in some Native American languages

*Bambara* (Manding, spoken in Mali, Africa)

(á = high tone, à = low tone, ǎ = rising tone)

*bàlá* dòn    'it's the porcupine'  
*bá* lá dòn    'it's the balaphone'  
*bá* dòn    'it's the river'  
*bǎ* dòn    'it's the goat'

### Where are whistled languages found?

- *Mexico*: Mazatec, Tepehua, Nahuatl, Otomi, Totonac, Kickapoo, Chinantec, Zapotec, Amuzgo, Chol.
- *Bolivia*: Siriono
- *France* - village of Aas, French Pyrenees
- *Spain* (Canary Islands): Gomero Spanish ("el silbo")
- *Turkey*: Kuskoy
- *West Africa*: Ewe, Tshi, Marka, Ule, Daguri, Birifor, Burunsi, Bobo, Bafia, Bape.
- *Nepal*: Chepang
- *Burma*: Chin
- *New Guinea*: Gasup, Binumarien
- *Vietnam*: Hmong
- *China*: Bai

### Pitch → Whistle

When a tone language is whistled, the whistles convey the high and low pitches

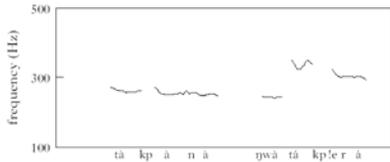
Pitch is the perception of a sound as relatively high or low.

Physically, it correlates with the frequency of the sound, or the rate of variation in air pressure

*Fundamental frequency (F0)*: rate of vocal fold vibration, measured in Hertz (Hz); the higher the F0, the higher the pitch

## Pitch

The acoustic properties of sound can be measured and displayed – below is a 'pitch track'.  
Low toned vowels have lower pitch than high toned vowels.



Sentence is from Moba, a Gur language of northern Togo – 'the young ones follow the footsteps of their elders'

## Whistled non-tone languages

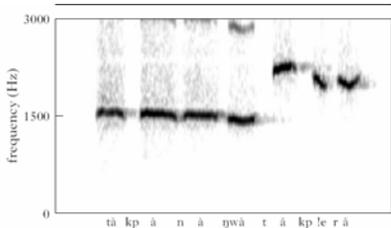
The most famous example of a non-tone whistled language is that of Silbo Gomero, whistled Spanish used on the Gomera Island of the Canary Islands.

There are also non-tonal whistled languages in Turkey and France.

## Whistled pitch

The pitch of the whistle is much higher than for a vowel, but it follows the same contour. Visual display is a 'spectrogram', which displays component frequencies of sounds.

Moba whistled speech is used by children instead of a corresponding drummed language, and to prevent missionaries who run the school to understand them.



## F2 → whistles

Whistled versions of non-tone languages convey linguistic information primarily by transposing the F2 (second formant frequency) of vowels.

Vowels have two main formants:

*F1* - corresponds to vowel height

Low F1 = vowel articulated with high tongue position (i, u)

High F1 = vowel articulated with low tongue position (a)

*F2* - corresponds to vowel backness

Low F2 = vowel articulated with back tongue position (a, o, u)

High F2 = vowel articulated with front tongue position (i e)

## Other whistled tone languages

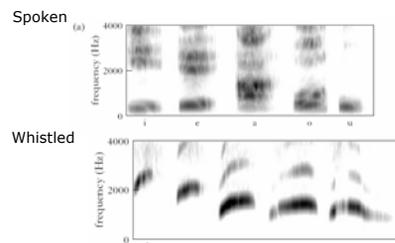
- Mazateco** Indians of northern Oaxaca, Mexico employ whistled speech
  - only men use whistle speech, but women can understand it
  - used to communicate at a distance
  - used by boys to communicate in the presence of elders talking
  - can involve multiple exchanges (questions, answers), - much of whistled speech is ritual greetings, with unambiguous messages

Huatla Mazatec is a tone language - Numbers indicated tone levels (1 = low, 4 = high)

ex. hña<sup>1</sup> khoa<sup>2</sup>?ai<sup>4</sup>-ni<sup>3</sup> 'where are you coming from?'  
 1 2 4 3  
 ni<sup>3</sup>?ya<sup>2</sup> khoa<sup>2</sup>?ai<sup>4</sup>-nia<sup>3</sup> 'I am coming from Huatla'  
 3 2 2 4 3

**Hmong** (spoken in China, Vietnam, Laos, Thailand) has seven tones, and also converts tones to whistles

## F2 → whistles



Note that the whistle produces the F2 (same Hz) – basic front (i e) Versus back (a o u) division

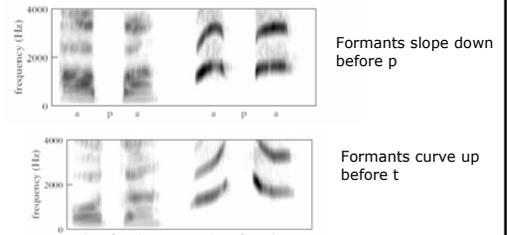
## Whistled non-tone languages

- ▣ Silbo Gomero also conveys information about the consonants by
  - 1) periods of silence – ‘voiceless’ consonants such as p t k f s
  - 2) transitions from vowel to consonant

Hear examples of Silbo Gomero:

<http://www.neurocog.ull.es/samplesilbo.html>

## Consonant information



## Whistled non-tonal languages

*Waveform*: a visual representation of the air pressure caused by sound



Sounds with greater air pressure are louder (have more energy) – these are seen with the large dark bands, which correspond to vowels

## Drum languages

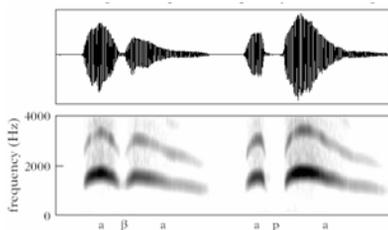
Drum languages are found in West Africa and parts of South Asia

<http://www.si.umich.edu/chico/instrument/sounds/tdrum.aiff>

They are used to convey messages at a distance, but also for standardized proverbs and greetings. Like whistled languages, they convey the *tone* of the source language. The length of the drumbeat also corresponds to the *length* of the syllable.

## Whistled

Whistled forms of ‘aba’ and ‘apa’ – note the period of silence (blank space) where the [p] consonant is



## Drum languages

The two-tone systems of West African languages are converted to drums with

- two different drums (small – high tone, large – low tone)
- varying the points where the drum is hit

- Ex. Akan (spoken in Ghana)
  - L H H H L L L
  - ònǎ́ pá sé òdò wò
  - ‘a man says he loves you’