

Death whistle cremated



Fig. 1. Photos of the whistle, by Jorge Cervantes Martínez

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This short paper is to announce the rediscovery of an extraordinary death whistle from the archaeological zone of Ixcateopan (350-1521 a.C.), state of Guerrero, Mexico. It was found by Jorge Cervantes Martínez, teacher-researcher of INAH (*Instituto Nacional de Antropología e Historia*), when he was looking for ancient human bones of that state.

The whistle was rediscovered in a sack of materials from the burial number 3, including rest of bones from a personage cremated, more than 90 small knives of obsidian and two arrowheads, a broken pot of clay and pieces of carbon, without any information, data or pictures of how they were originally found in the archeological exploration by Josefina Gasca Borja, in 1986, but the technical report of the discovery was not found.

The rediscovery is very important and singular, because it is the first known resonator of this extraordinary and exclusive mexican noisy family, associated to mortuary ceremonies, in the conditions to produce the original sounds and that may be formally analyzed. The only known resonator of this family that was analyzed with its sounds is a fragment from the *Mazatepetl*¹

¹ The first paper was published in Spanish in 2006: <http://tlapitzalli.com/ehecatl92/judio/judio.html>
The second paper was published in 2008: <http://tlapitzalli.com/ehecatl92/judio/silbatodelamuerte.pdf>

(deer hill), located at the south of Mexico City. A short paper in English was published by Ian Mursell in Mexicolore as [The 'death whistle'](#) and in the web site of the author as [Death whistle](#).

Several known similar mexican whistles were found in other zones and archaeological sites, as Tlatelolco of Mexico City, *Huexotla* of Texcoco, the Maya and the Gulf of Mexico, but very few know them and they were not analyzed or published their sounds.

The decorating skull of the Ixcateopan whistle is similar to [whistle from Huexotla](#) and other whistle from a collection of [Jorge Dajer](#) (deceased), but they were not analyzed. It means the whistle from Ixcateopan, his maker or his teacher could come from a zone near to Lake Texcoco.

With the information provided by Jorge Cervantes Martínez, his permission and the results of a first analysis of the death whistle, it is possible to show its main characteristics and properties. Other longer pdf with more information in Spanish was posted in the web site of the author as *Silbato de la muerte cremado, en Guerrero*²



Fig. 2. X-ray of the resonator.

² http://tlapitzalli.com/nuevos/death_whistle/silbato_de_la_muerte_cremado.pdf

Sounding mechanism

The internal structure of the resonator can be shown with an X-ray of Fig. 2, but the image is not very clear, because the chaotic chamber³ is white due to the thick walls of ceramic and the decorating ears with earrings located in line with the middle of the sounding mechanism. It is necessary to take other X-rays or a computerized tomography (CT)⁴, to know its exact internal morphology and dimensions to make approximate experimental models.

An approximated structure of the internal sounding mechanism may be as it is shown in Fig. 3 but it is necessary to know its exact morphology and dimensions with a CT.



Fig. 3. Aproximate sounding mechanism of the death whistle from Ixcateolan.

Spectral analysis of the sounds

The resonator is not a common whistle. Its noisy sounds are not musical (in the modern western sense), they are similar to those of the wind and other natural phenomenon and animals, but they were not identified.

The resonator can produce many types of sounds depending of the way of its excitation. It may generate a wide range of noisy sounds with very different intensity and timber.

This type of very special sounds is not well known, analyzed and commented by most of the authors of mexican ancient music. Most of the actual use of sounds from models of death whistle is a musical invention, not related with its ancient utilization on mortuary ceremonies. It

³ The chaotic chamber is the internal cavity where the complex and turbulent dynamic of sound waves are produced to generate the noise. The dynamic could not be modeled with computers, but it was described in English in the paper of the Ancient noise generators <http://tlapitzalli.com/isgma04/ang/Velazquez.pdf>

⁴ CT images are much neater and deliver more detailed information than X-ray photographs. Moreover, CT also allows reconstructing 3-dimensional (instead of flat) images.

was said in several papers and open videos that its sounds were used in wars, but evidence or prove was not provided or found. Those noisy sounds can produce special effects. In the past main mexican rulers were cremated, as it is shown in a [pic 8 of Mexicolore](#), from the Florentine Codex and [pic 10](#) from the Codex Telleriano-Remensis, but ancient death whistles were not found inside the main mexica archaeological site of the Templo Mayor, located at the actual center of Mexico City.

The frequencies of the recorded noisy sounds in stereo are shown in the spectrogram of Fig. 4. It was generated with Col Edit Pro 2.0.



Fig. 4. Spectrogram of the recorded sound.

An example of the frequencies from the recorded sounds is shown in the spectrogram of Fig. 5. It is related to the second recorded segment of the sound track but in mono mode. The noise is generated up to 23 Hz, with a band of strong frequencies of more than 2 kHz and other stronger signals from 2 kHz to 3 kHz, with noise up to more than 7 kHz.

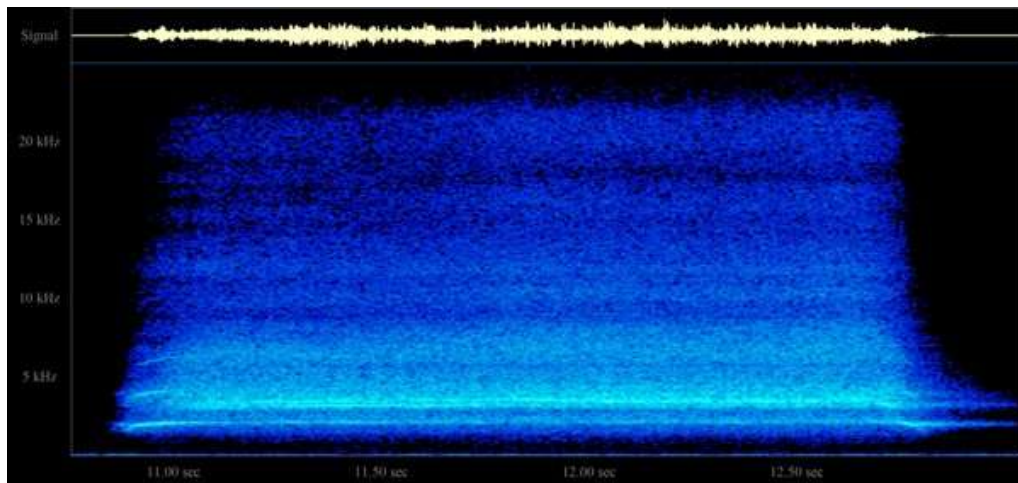


Fig. 5. Spectrogram of the second recorded segment of sound track.

The noisy sound of the spectrogram can be heard [here](#) in mp3. The audible sensation of that type of sounds is better than any explanation or description with words, but they must be analyzed and characterized formally.

Analysis of maximum radiated acoustic power

The maximum pressure of the sounds was from 90 dB to 106 dB, measured with a sonometer at 1 meter and 0 degrees. It is equivalent to a maximum radiated acoustic power from 0.0125 Watts to 0.5 Watts. That level of acoustic power can be compared with other similar known estimations. For example, estimation in similar conditions of the fragment of death whistle from the *Mazatepetl* was 0.2 Watts. Other ancient resonators of this type were not tested in a similar way. Most of the known models of that whistle, as those shown in some open videos, have less acoustic power.

To test the maximum audible power in distance, the resonator was played along several open soccer fields of the National Polytechnic Institute at Mexico City, because now it cannot be tested at Ixcateopan due to its actual dangerous situation in that zone of Guerrero state. The sounds of the whistle could be listened up to a distance of 250 steps in that open field. It means that sounds of the resonator could and can be listened inside the ceremonial field of any archaeological site. Experimental models of death whistles were used to test its audible power in several archaeological sites, as at the *Mazatepetl* and they could be listened inside its ceremonial areas.

The effective audible power is due to the strong frequencies generated in the range of maximum human hearing sensitivity (1-6 kHz) and the acoustic power.

It seems that other death whistles might have been used in the sacrifices of slaves, because *chichtli* (in Nahuatl) was an instrument that could produce the sounds *chich* and it was used in the banquets of traders where slaves were killed and *chich* was the signal to pull out the hair from the middle of the head. To analyze the possible relation of *chich* voice and the sounds of the death whistle model were produced and compared with a [spectrogram](#). Considering this finding and the relation with *Ehecatl* the death whistle could be named *Ehecachichtli* to honor him.

The only known death whistles from an archaeological context were found in the hands of a skeleton at Tlatelolco site in front of the Temple of *Ehecatl*, personage associated with the wind, as it is shown in [Pic 4](#) of Mexicolore.

This death whistle and other materials of the burial must be analyzed in laboratory, as deep as it is possible. The result of those analyses may be published.

In some historical writings⁵ it is said that the objects of burials were deposited after the cremation of the personage, but the visual analysis of the surface of the death whistle indicates

⁵ There are several texts related with prehispanic funerary cremations, but most of them are in Spanish, as those of mexicans and texcocans: <https://texcococultural.wordpress.com/2013/01/07/96/>

that in this case it may be different, as it is shown in the Fig. 6. It seems that the death whistle was cremated with the personage. The test of the dark and grey material from the surface of the whistle could be produced by the smoke of the incinerated bones and may be useful to prove that the whistle was cremated with the personage.



Fig. 6. Surface of the ceramic with rests of decorative pigment affected by the smoke and fire.

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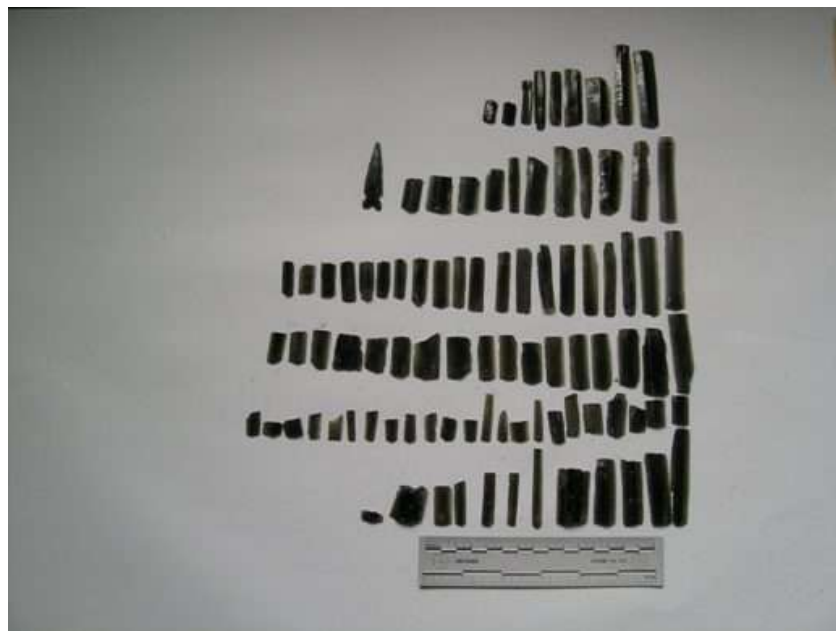


Fig. 7. Pieces of obsidian from the burial.

The big quantity of obsidian pieces indicates that the cremated personage could made or used them (Fig. 7), but their analysis in laboratory may be useful to know their probable origin. They

are green as those from the mines of Hidalgo state that were used by several cultures of the ancient Valley of Mexico and shores and islands of Lake Texcoco.

The broken pot of clay seems of Mexica style. Its analysis by the experts on that type of ceramic may help to confirm that.

Ixcateopan was one of the last places conquered and dominated by the Mexica military power, becoming towards the end of the 15th and early 16th century, a tributary of the Triple Alliance.

The pieces of charcoal from the burial may be useful to date it.