

Rhythm of War Dance Song

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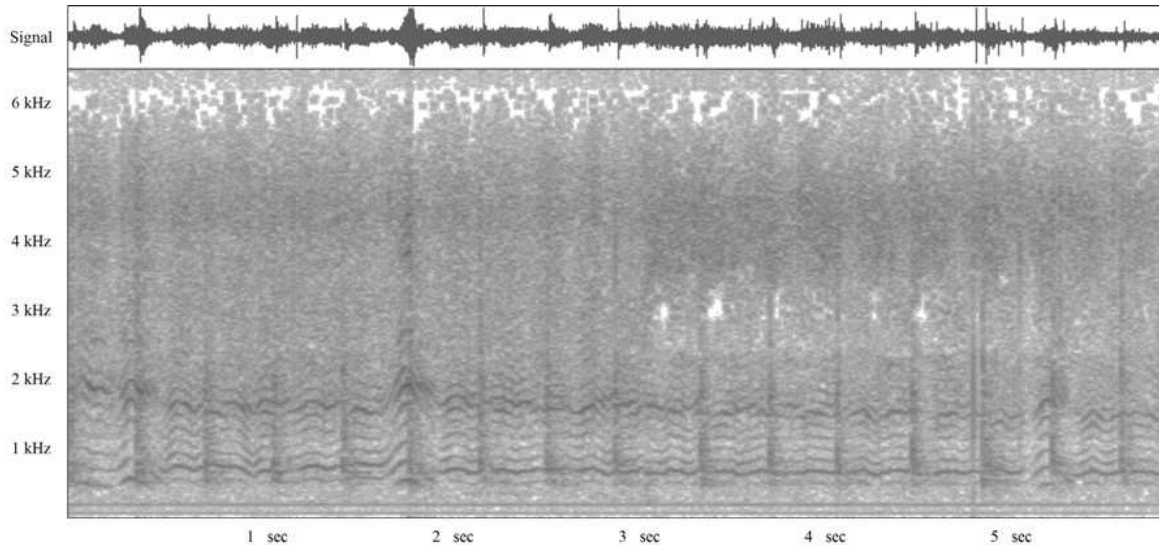


Fig. 1. Spectrogram of 6 seconds segment of War Dance Song

This exemplificative exercise was made to characterize the constant monophonic rhythm of drum beats accompaniment included in the open audio track¹ War Dance Song from [The Demonstration Collection of E.M. von Hornbostel and the Berlin Phonogramm-Archive Various Artists of The Smithsonian](#).

In a Preamble from a document of UNESCO: [The oldest sound documents \(Edison-cylinders\) of traditional music of the world from 1893 to 1952](#), the importance of *Berlin Phonogramm-Archive* is commented:

The *Berlin Phonogramm-Archive* is a part of the musicological section of the Ethnographical Museum, State Museum at Berlin, Prussian Cultural Heritage Foundation [*Berliner Phonogramm-Archiv am Museum für Völkerkunde, Staatliche Museen zu Berlin, Stiftung Preußischer Kulturbesitz*]. More than 145,000 recordings of music representing the cultural heritage of many cultures all over the world excluding Western Art and Pop music are stored on completely different sound carriers such as Edison-phonograms, analog and digital tapes, and all kinds of discs (from 78 shellac discs to LPs and CDs). This is a world-wide unique sound collection with universal significance and intercultural dimensions.

The general information provided of the selected audio [track 305](#) is the following:

¹ An open audio track was selected to allow similar analysis or test to be made by other researchers. It is necessary to buy the full track in order to be downloaded. Only 26 seconds is free for listening, but using a computing trick a segment of that signal with the song of the drum was analyzed.

FW04175_305. War Dance Song. TRACK ARTIST. Male singer. COUNTRY(S). Canada. CULTURE GROUP(S). American Indian. GENRE(S). American Indian; Animals; Calls; Dance; Military music; Songs; World music. INSTRUMENT(S). Drum. DURATION. 1:17

Additional information of the audio track is provided in a [pdf](#) file (p 32):

Band 5. Cylinder 60. Leden. Canada IIb---(38; 1911) Cree Indians. War dance song. Male solo with drum accompaniment. At the end an animal call. This is customary. The designation for this piece is probably correct. See the remarks accompanying Cylinder 59. H-c; 216 rpm; FB-IOO; FT-6KC; EB -5. ET -5; pitch pipe' A' and preliminary announcement; speech between sections; extreme surface noise. [Typical Plains Indian style]

In several documents the [War Dance](#) is described and commented, because it was and still is very important for the called North American Indian tribes, but the numeric characterization of the rhythm of that dance or any other from ethnological field recordings were not found in the open literature. Even the sounds of many dances were not commented in detail by the researcher that observed and described the ceremonies.

A previous analysis on two short segments of audio tracks² from [Recordings of Edward S. Curtis](#) of 10,000 wax cylinders was done as a result of a suggestion from [Nancy Rumbel](#) to search and analyze some of the first audio tracks of the past two centuries. It was mentioned that many of hundreds of thousands more, which are sheltered or stored in music libraries and collections around the world, can be characterized with scientific techniques of signal analysis, without incurring in semiotic speculations. The main restriction is that most of the recordings are not openly available for their study, or even for plain listening by the public.

However, some technical limitations had been observed. Modern sound analysis techniques, such as the so-called sonograms³ were exploited since the middle of last century to examine ethnological sound documents (mainly for musical transcription of songs) and other complex sounds, such as voice of humans and animals, but have not been widely used by the scholars to analyze the first and actual ethnological recordings.

It seems that the cosmovision and preference of the music and its techniques that came from Europe and other continents had impeded the analysis and characterization of the ancient American sounds⁴ as their rhythms. It is better to analyze and compare the rhythmic sounds with the natural properties and systems of the animal part of our human body, because it is the main receptor and follower

² [1. Medicine Bear Song, Atsina Gros Ventres](#) and [3. Bull's Head Medicine Song](#).

³ The sonograms were obtained with the [Melograph](#), as the used by Charles Seeger.

⁴ For example, in the north [American Folk Music](#) begins with the new nation and is the more widespread. The tribal music is called [American Native Music](#) and [Aboriginal Music of Canada](#). For hundreds of years after Europeans came to America, the aboriginals were forbidden to practice their ceremonies, even more the Dance of War. That is one reason why little information about their music and sounds is available to us.

of them. The melodies and poetic songs are for the mind, but many of them have no meaning at all for us.

Many Western researchers were not interested in the drum accompaniment of the songs because they were considered monotonous, simple, boring or primitive. In most of the recordings the main objective was the songs. They were more interested in their semiological meaning. The sound of the drum or other rhythmic instruments as the rattles was not included in many recordings, because it was considered noise or of very low value.

It was already mentioned that the numeric characterization of the constant rhythms, also allows comparisons and correlations on the tastes and uses of sounds from different ethnic groups. It could be done more easily that with musical analysis techniques, natural languages or the little available information about them. This short exemplificative exercise is also to show that it is possible to analyze, compare and find similarities between monophonic rhythm of tracks from different tribes, nations and collections, even considering the fairly noisy signals of wax cylinders.

In the study on two Recordings by Edward S. Curtis the songs were not discussed because it is more difficult to characterize them with numbers. The beats⁵ of the drum accompaniment of medicine songs from a tribe in USA were analyzed with spectrograms⁶ estimated nearly 168 beats/minute or 2.8/second. This means that it could induce in the brain an electrical signal through the middle of the lowest infrasound frequency range called Delta, which is 1-4/second and corresponds to the state of sleeping without dreams. As $168/3 = 56$, reinforces the heartbeat, as a nearest multiple of the minimum of normal male. It is believed that the special effect generated was crossed: for one, the delta frequency induced in the brain rest state and minimum energy consumption and, second, the increase of the heartbeat induced greater blood circulation throughout the whole body. That special effect could be analyzed experimentally.

The spectral window segment of 6 seconds, 16 beats of the drum accompaniment of Cree Indians from Canada are shown in Fig. 1. With these data, it was possible to calculate the rate generated in 60 seconds (10 segments of 6 seconds), which is $10 \times 16 = 160$ beats/minute or $160/60 = 2.67$ beats/second. It is very similar to the calculated beat rhythm from the Curtis recordings. It also could induce in the brain an electrical signal through the middle of the lowest infrasound frequency range called Delta. As $160/3 = 53.3$, also reinforces the heartbeat, as a nearest multiple

⁵ The beats are shown in gray vertical stripes of the graph. The undulating signals are from the voice.

⁶ Spectrogram is obtained with mathematical calculations of the Fast Fourier Transform. It does not include subjective factors and is the best known technique to get the main components of a signal from the time domain as its frequency (Hz), intensity (dB) and time (sec). The used computer program to generate the spectral graph is from Richard Horne.

of the minimum of normal male. Those numbers are almost equal to the drum of USA special crossed effects.

Similar monophonic rhythm was found in previous studies as [Ritmos yumanos](#), and by analyzing audio tracks of open videos. For example, constant [drum beats with chorus Navajo](#) these sounds are still played in the state of Arizona and are very similar to some of the Apaches and even in [Canadian Aboriginal Festival](#), where nearly 150 beats/minute or 2.5 beats/second exist. They could generate the same electric infrasonic Delta frequency range in the brain.

Other open audio tracks from wax cylinder from different tribes and uses were found with similar rhythm. For example, the rhythm of the drum accompaniment of [Dance Song of the Thompson River Indians](#)⁷, which is nearly 150 beats/minute.

That discovery had already been found in other monophonic recordings of northwestern of *America Mexicana*⁸ and several analyzed from Argentina and Chile to Canada, but all characterized rhythms were generated in the Delta and Theta range (1-8 kHz), corresponding to our state of deep relaxation or meditation, and awareness relaxed, as it was shown in [Ritmo de la sipíraka](#), [Danza del venado](#), [Ritmos yumanos](#), [Ritmo kiliwa](#), [Ritmo de la danza del venado](#), [yaqui pascola](#), [Ritmo del rapador rarámuro o sipíraca](#), [Grabacines de Edward S. Curtis](#) and [Ritmo de un canto selk´nam](#) of ceremonial, medicinal or shamanic uses.

Considering the findings, the special effects of the characterized constant rhythms may be the main cause of their use by many indigenous ethnicities of millenary origin of our continent and it is believed that those sounds are what more united and still may unite them. The constant rhythms or beats could be the first cultural and social sounds practiced, even before the development of their languages. Some ancient rhythms still are used by many indigenous ethnic remaining groups⁹.

The URL of the Curtis consultation draft was sent to the institutions related with that collection of first recordings and other specialized known forums and researchers, but institutional feedbacks were not received. [Simon Wyatt](#) commented, "I am amazed at other lack of interest!" This consultation paper also was sent to several [staff members of the Smithsonian Folkways](#) and some specialized known institutions, forums and researchers.

⁷ Description. Dance song of the Thompson River Indians, recorded on phonograph cylinder by Professor Franz Boas, British Columbia. Saved in the *Berlin Phonogramm-Archiv*. Date. 1897. Source. Music! 100 recordings-100 years of the *Berlin Phonogramm-Archiv*. Author. Traditional song.

⁸ So were called the *Estados Unidos Mexicanos*, before the states north of the border were separated. The *Virreinato de la Nueva España* covered more territory to the north and south, and the indigenous of millenary origin lived in all the continent.

⁹ There are still tens of millions of indigenous people in the Americas, despite the devastation resulting from the invasion, induced diseases, colonization, inquisition, plunder, slavery, murder, "ladinización", discrimination, etc. Although it is not possible to even know how many of them are and many remain confined as prisoners of war or living conditions, extinction or annihilation. Many of them are not alive.

Unfortunately, It has not found interest from institutions in these formal works of sound analysis, although it could also be used to capitalize on the great resources incurred for their recording, registration, conservation and guarding and to honor and remember the ethnicities uses of their ancient sounds and the researchers who recorded them with great effort for many years of their life, as Curtis, Hornbostel and many others. They can also serve to test and find sound therapies of current application at very low cost.

It was commented that there are national and international institutions and multi-million dollars projects and archives to preserve the wax cylinder records and of other materials, including their digitalization, but technical studies on the rhythms of the hundreds of thousands of ethnological soundtracks recorded in the past century around the continent are unknown. It could be originated, because there are many organizations and specialists on recording, documentation, engineering, processing, broadcasting, publishing and marketing the world's audiovisual heritage¹⁰ and production, but very few recordings are available open and free and the technical analysis of the ethnological sound signals was not found in the open literature.

This paper may be presented in the next [20th MEXICAN INTERNATIONAL CONGRESS ON ACOUSTICS](#), Taxco, Guerrero, Mexico, 30 September - 3 October, 2014, and in other forums that could be interested. It was posted in my web site as other open consultation document.

Feedbacks and other presentations.

[Nancy Rumbel](#) sent the following e_mail:

Hi Roberto,

You will find this fascinating! Maybe the scientists would enjoy being in touch with you. It would be great to see what the chimps do when they listen to Curtis or Hornbostel recordings!!!

Enjoy!

Nancy

[Chimps like listening to music with a different beat – ScienceDaily](#)

[Chimpanzees Prefer African and Indian Music Over Silence-- APA PsycNET. American Pscicology Association](#)

Yes, it is fascinating and interesting to know that chimpanzees prefer silence to Western music, but it seems that Western scholars prefer silence to American Indian beats and their papers. The URL of this consultation pdf was also sent to Science Daily and APA PscycNET, as a feedback to see what the journalists and

¹⁰ The world's audiovisual heritage is about two hundred million hours.

scientists do when they listen to similar beats of the first American Indian recordings and know their numeric characterization like Rhythm of War Dance Song.

This paper was included in the [Programm](#) of the [20th MEXICAN INTERNATIONAL CONGRESS ON ACOUSTICS](#),

[Yumanos rhythms](#) was posted in Youtube.