A Preliminary Study of The Acoustic Analysis of Recitation of The Koran

XIAOMEI GAO and YONGHONG LI

ABSTRACT

By collecting the international standard reading speech signals of ‘Call for prayer’, we use the method of experimental phonetics to do signal tagging and parameter extraction. The fundamental parameters, basic characteristics and prosody features of speech and formant energy parameters to analyze the standard read method, the "overall" recite the prayer called the fundamental law is gradually decreased; From the energy analysis, we can conclude that the energy in the standard recitation is more concentrated.

KEYWORDS
Koran; Reading, Musicality, Acoustic research, Characteristic analysis.

INTRODUCTION

Human interpretation through imagination: truth, goodness and beauty, "the other shore to shore", emphasizing the imagination of music creation based on the reality of poetic life.

The German poet Goethe once said: "the" Koran "makes people each time be worth reading a hundred times, always feel it fresher, at first it fascinating, thrilling, finally worthy of admiration."

The music of the Koran reads from the Islamic music culture. That's why you can succeed in preaching the first step. In Arabia, music plays a very important role, Islamic culture with a deep imprint of Arabia music, but its development is a process requires a long time continuous integration and transformation, before the formation of today's recitation culture. Islamic music influences the formation of the music of the koran, From the research and data analysis, regardless of its style, structure, rhythm etc., They all reflect the style of Islamic music, but Arabic brings together cultures. Of course, the Koran itself is interpreted by reading aloud. Therefore, in the form of expression, there is no purity of music, the chanting tone of a religious ceremony. Although exhibited a certain degree of musicality. But Muslims do not fully agree that this is pure music, because compared with the solemn and inspiring Islamic spirit. The word ‘music’ cannot reveal its profound religious connotation.

Xiaomei Gao, 570566007@qq.com, Yonghong Li, lyhweiwei@126.com, Key Lab of China's National Linguistic Information Technology, Northwest University for Nationalities, Lanzhou, 730030 China.
Corresponding author: Yonghong Li
The recitation of the Koran belongs to ritual music. It is usually read at church, festival, celebration. Reading the Koran has a very powerful appeal. It was so fascinating that it made the audience happy. At present, through the study and data analysis, the author believes that Islamic music can be divided into the following categories: Islamic ritual music, Islamic religious music, Islamic secular music. Of course, because the Islamic ethnic groups are widely distributed, the customs vary from place to place. Different countries have different forms of music, performing styles and performing styles. So, if you want to refine the classification of Islamic music, the author thinks it still remains to be discussed. The Koran has a wide range of readings. Although Muslims around the world have various forms of music. However, in the recitation of the Koran, the original content and form of reading are mainly transmitted. We can through some countries, such as Turkey, Chinese provinces or some Sufi orders of musical analysis of "Koran" reading can be found. Their musical features and functions, when they are recited, clearly illustrate the musicality of reading.

EXPERIMENT

Experimental method

In the recording of the call of prayer in the Koran, the selection of pronunciation plays a fundamental role in the study of phonetics. Therefore, in the acquisition of data, the pronunciation of the high requirements, we selected a foreign institute received specialized training on reading and reciting with a profound understanding and precise control of the Imam as Admission speech signal. The pronunciation uses the proper chanting to express the true, the good and the beautiful.

Signal acquisition. A device for recording instrument (EGG), electronic larynx glottography, muscle computer instrument, external sound card, microphone and computer etc.. Recording software using Audition1.5. Acoustic analysis was performed using Praat software.

Acoustic basic analysis. The reading system of Koran was analyzed by extracting the fundamental frequency, energy and acoustic parameters of formant. Among them, the fundamental frequency reflects the speed of vocal cord vibration and the degree of control of airflow rate. Energy reflects the magnitude of the sound, that is, the magnitude of the vibration of the tones in the process of chanting. From the resonance characteristics of formant, resonance plays an important role in the process of chanting. It is an important embodiment of the system of chanting. Resonant features can make a person's voice loud, clear and penetrating.

Pitch analysis

The standard recitation of "call to prayer" is 60.54 seconds long. The standard recitation of "call to prayer" is 60.54 seconds long. These data are used to make speech data distribution statistics. Figure 1 is the fundamental distribution map of the standard chanting method.
As you can see in Figure 1, the basic frequency of the standard recitation is centered in two areas. They are between the first part of 110Hz-150Hz and the second part between the 220Hz-250Hz. From the pitch map, the standard recitation of ‘call to prayer’, its pitch is decreasing trend. From the point of view of breath control and application, reciting art attaches great importance to breathing training. It plays a very important role in pronouncing people's vocal skills. The fundamental frequency is within a certain range of time, most of them maintain a certain balance and stability, forming several range, and the fluctuations are relatively small. In rhythm and emotional changes, there will be a sudden increase or decrease, so the recitation sounds loud and vast and pleasant to the ear. Though. In recitation, there is a tightening in the throat sung by "double" overtone singing skills. This is a use of guttural singing chanting heritage. The vocal cords fit together with the throat cavity to make sounds. The tone of the vocal cords and the amount of resonance in the throat determine the tone, is vocal in ‘bernuolli’ breath of thin metal shortened like beautiful, strong, bright crisp sound. So, within a certain range. The laryngeal tension, make the chanting melody sound low and melodious, with lasting penetration and endurance.

**Intensity analysis**

Intensity represents the height of sound. It represents the magnitude of the air flow and the magnitude of the amplitude of the vibration in the process of chanting. In energy analysis, the energy values of each recitation are extracted by using Praat software. Then use SPSS19.0 to do data distribution statistics. Fig. 2 is the intensity distribution map of the standard recitation method for "call to prayer". It can be seen from figure 2, the maximum intensity value of the standard recitation method in "call to prayer" is 78.95dB. The minimum value is 7.44 dB, The average value is 67.08dB. The whole intensity is centered between 60dB---75dB. In the whole chant, the intensity tends to be steady and the fluctuations are not very large. The intensity of recitation shows an "arch" trend in the diagram. Rise first, then fall. Although the intensity is not high, the performance is very concentrated.
Recite resonant peaks

In the recitation, the Arabic language is distinct, the pronounced part of the 28 letters of Arabic very dynamic, melodious sound loud. A guttural, ‘whistle’ or the ‘s’ sound. Having a tongue Trill and a belly tone, when the tongue is pronounced, the tongue is rapidly vibrating in the mouth, when the sound out, form a cheerful rhythm. Especially in recitation of the Koran, there is a different kind of rhythmic beauty. This is mainly manifested by formant and vibrato abdominal sounds. Because resonate is a very important factor in sound production. It is also the main expression in recitation. The use of Arabic to recite into a three-dimensional language. Read it sounds, it sounds beautiful, sonorous and forceful.

As can be seen from the graph. The resonance peak F1 is mainly in the middle of 500---1000Hz, and the resonance peak F2 is mainly around 2000Hz. F3 and F4 resonant peaks produce a great penetrating power of high frequency resonance peaks around 3600Hz---4500Hz. General chant is long cavity, the so-called slow sound long chant. Chant follow the emotion, so there is a rhythm to the change of feeling. The singer understood according to his own understanding, always control the sound level, strength, speed, and change clearly. So, the singer lengthened his soundtrack, extended the pharynx cavity, resonance peaks are enhanced. Therefore, the sound of the whole recitation has a penetrating power, full, low and melodious.

CONCLUSION

The recitation of the Koran is a form of music for the public, but for Muslims, it is more than just a musical form. It is a kind of Islamic spirit in the mind. From its basic acoustic features and its own characteristics of recitation. From these two levels, the acoustic physiological characteristics of speech are analyzed, and some conclusions are drawn.

But the definition and concept of Islamic music are rather vague. Moreover, the Islamic cultural system is complex, the geographical distribution is vast and scattered.
From the data collected, Academic research on Islamic music is ambiguous. It is not yet possible to refine and grasp the functions, forms, and actual readings of religious music. The author's own research is only based on the acoustic characteristics of the recitation rules of Islamic religious music analyze from a limited point of view. The conclusion is inevitable, incomplete, not detailed and superficial. We hope that scholars from all walks of life can tolerate and understand it.

At present, Islamic countries and Muslim communities in our country have organized the recitation of Koran every year. But people who read accurately and sweetly are rare. Like me, most people just have simple rules for reading, or a simple imitation. This will cause a different size error in reading. Simply put: if a person has never learned to sing, and music accomplishment is not high, then how can he interpret the soul of music? So, the Koran reads like music. It requires a full range of study and exploration. Not only from the literary sense of language, but also pay attention to the feeling and method of reading aloud, and learn to join music properly. No matter from the atmosphere, intonation, emotion and will be of great help. This will be an urgent question to protect the continuity of recitation and to explore the essence of recitation.

ACKNOWLEDGMENTS

The work if financially supported by Open Project Program of Northwest University for Nationalities & Project of Central Universities of NWUN: Prosodic features and acoustic analysis of the chanting of Hui nationality (Yxm2016127) and Multi-mode Phonetic Research (31920160002)

Corresponding Author: Yonghong Li, Email: lyhweiwei@126.com

REFERENCES

2. Ladefoged, P., Some physiological parameters inspeech. Language and Speech. 1963
7. Lin Junqing. The scientific basis of singing pronunciation [M], Shanghai, Shanghai music publishing house, 1962