

Study on the Analysis and Application of Aesthetic Value Model in Chorus Conducting Art Based on Factor Analysis

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ABSTRACT. *The purpose of this paper is to study on the analysis and application of aesthetic value model in chorus conducting art based on factor analysis. The artistic expressive force of a good chorus conductor never remains at the same level. For each of the songs and even the same song conducted over many times, they will continue to pursue a better performance result, and pursue the self-transcendence. And in this way they can constantly improve the aesthetic value orientation and the artistic expressive force of the choral conduction, and bring the enjoyment of the beauty to the audience. But what is to be emphasizes is that the aesthetic value orientation should be established in the aesthetic practice, but not in theory to preach. Only through our practical abilities and through our practice modes can it be built. The aesthetic value orientation is not a kind of the subject in the understanding aspect, but a kind of practice subject.*

KEYWORDS: *Aesthetic value orientation model, Chorus conducting art, Factor analysis*

1. Introduction

Solo and chorus in the vocal music art are the most common and most important of the two kinds of art forms, have been with their unique artistic charm were deeply loved by people. Solo art is the pursuit of individuality, for the center with the singer on the stage. It pays attention to the emotional expression of the individual in the works. It is one of the most direct way and characteristics of the more brilliant performance. Chorus art pays attention to integrity. It can be regarded as a multiple solo individual set of combinations. Chorus for art has its unique aesthetic presentation.

Chorus art is introduced into our country very late while it develops vary fast. Combining with Chinese national music, chorus art has formed its own style. Along with the change of the time, the form of chorus has been enriched and has made proud achievements till now. Currently, the development of chorus art in China is mixed. Because of the strong supporting of government, the number of chorus teams has mushroomed; while, at the same time, there appears a lot of problems that influence the level of chorus, such as misunderstanding compositions, not accurate music learning, irregular singing, less emotional expression and so on. As a conductor, a person needs to make an intensive study of chorus composition and train systematically to reach a certain effect.

From the perspective of philosophy, the “value” is the expression of the reflection that the value objectivity of the objects coincides with the need of the subjects formed in the activities of the humans, and produce effects. The aesthetic value contains the property of the general value, but as the value relations in the field of the aesthetics, it has a richer connotation and a more extensity, and has its unique characters. In a certain sense, the aesthetic value orientation refers to the choice of the value of the object in the aesthetic activities of the subject.

Because the aesthetic value belongs to the value form of the field of practice, as the carrier of the aesthetic practice, the chorus should enable the participants to establish the proper value systems, and make it spiritual structures improved. Marx's aesthetic practice education includes two aspects. One is the establishment of the orientation of the aesthetic value, and the other is the cultivation of the aesthetic ability. The aesthetic value orientation plays a leading role, and it has a decisive effect on people's aesthetic attitudes, aesthetic tastes, aesthetic understandings and evaluation. The aesthetic value orientation also determines the social, class, ethnic and other cultural attributes of the aesthetic education.

A series of aesthetic social effects that the chorus is produced in the process of the training, creation, performance, appreciation and other practices is also actually the macroscopic manifestation of the aesthetic value orientation. The aesthetic value of the chorus also contains the social and moral values. In the chorus, we

must develop that the chorus participants should not only perceive the distinctive perception of their voices, but also experience the complex relationship with other parts. We must establish the ability of the vertical and horizontal integration and the stereo care, which is actually a kind of the value relation between the individual and the society. Our modern society emphasizes that the talents promote the personal and the social development together, and the chorus in a certain sense is a kind of artistic relationship between the individual and the collective.

Therefore, the aesthetic value orientation of the chorus conductors has direct influence on the art expressive forces and the force of infection of the whole chorus performance. Only when the chorus conductors enhance the understanding and enlightenment of the chorus works can they grasp the connotation the works want to express, and on this basis improve the artistic appeal of the whole chorus. At the same time, the action essentials and the treatment of the details of all aspects of the chorus conductors in the conducting processes have an important influence on the artistic expression of the chorus. Therefore, it can be said that the aesthetic value orientation of the chorus conductors has important effects on the expression of the chorus art.

2. The Factor Analysis Model and Algorithm

Chorus is an art of high synthesis, also a great art. Facing the future of modern, it needs people's all kinds of qualities' raising and the sense of responsibility to society. Chorus art development's popular level and depth reflected directly superiority of a nation's spirit and material civilization development. Chorus reflecting spirit, it is an epitome of a nation culture's value in a times. From the 80's of last century, our nation's chorus directing art developed swift just as the spring bamboo after rain. There are more and more special and no special chorus organizations. So many books about chorus directing are very pointed and clear.

The chorus is an elegant art, and is also the mass cultural activity that the broad masses are fond of and directly participate in. It can occupy a space for one person in the "sacred" palace of music, but also can echo in the workshops, fields, campus, and barracks. It is not only the art form that the important festivals are indispensable, but also enriches people's daily life. The chorus is an art to perform the sound universality, and by means of the multi chorus parts and the multi-level performance of the chorus members, it brings people the artistic enjoyment, and at the same time mold people's sentiment, and sublimate the spirits. Without doubt, the chorus art level depends on the artistic culture and the essentials of the basic music training of each member of the group. Among them, the choral conductor is the most important role. A good conductor can improve the music understanding and feeling of the chorus members, and bring the audience the wonderful performances. Therefore, there is an important influence of the aesthetic value orientation of the chorus conductors on the art expressive forces and the emotional appeal of the chorus performance.

The method of factor analysis is a kind of scientific research method that reveals internal factors of the occurrence and development of geography phenomenon, the basic framework is shown in the following figure 2. The basic equation is shown in the following equation (1)-(2):

The basic algorithm is shown as the following equation:

$$A_{mn} + jB_{mn} = \frac{E}{j6mn} e^{jm(\pi - \alpha_1)}$$

$$\left[J_n(mM\pi) \frac{e^{jn\pi} - 1}{2} - J_n(mM\pi) \frac{1 - e^{jn\pi}}{2} \right] \quad (1)$$

$$= j \frac{E}{6mn} J_n(mM\pi) e^{jm(\pi - \alpha_1)} [1 - e^{jn\pi}]$$

$$u_{p1}(X, Y) = \begin{cases} 0 & X \begin{cases} < 2\pi k + \pi - \alpha_1 - \pi M \sin Y \\ \geq 2\pi k + \pi - \alpha_1 + \pi M \sin Y \end{cases} \\ E/6 & X \begin{cases} < 2\pi k + \pi - \alpha_1 + \pi M \sin Y \\ \geq 2\pi k + \pi - \alpha_1 - \pi M \sin Y \end{cases} \end{cases} \quad (2)$$

$$\begin{aligned}
 u_{p1}(X, Y) &= \frac{A_{00}}{2} + \sum_{n=1}^{\infty} (A_{on} \cos nX + B_{on} \sin nY) + \\
 &\sum_{n=1}^{\infty} (A_{mo} \cos mX + B_{mo} \sin mY) \\
 &\sum_{m=1}^{\infty} \sum_{\pm 1}^{\pm \infty} [A_{mn} \cos(mX + nY) + B_{mn} \sin(mX + nY)]
 \end{aligned} \tag{3}$$

In the above formula

$$\begin{aligned}
 A_{mn} + jB_{mn} &= \frac{2}{(2\pi)^2} \\
 \int_{-\pi}^{\pi} \int_{-\pi}^{\pi} u_{p1}(X, Y) e^{j(mX+nY)} dXdY
 \end{aligned} \tag{4}$$

Take the formula (2) into formula (4)

$$\begin{aligned}
 A_{mn} + jB_{mn} &= \frac{E}{6\pi^2} \\
 \int_0^{\pi} \int_{2\pi k + \pi - \alpha_1 - \pi M \sin Y}^{2\pi k + \pi - \alpha_1 + \pi M \sin Y} e^{j(mX+nY)} dXdY \\
 &= \frac{E}{j6m\pi} e^{jm(n-\alpha_1)} \left[\frac{1}{\pi} \int_0^{\pi} e^{jmM\pi \sin Y} e^{jnY} dY - \right. \\
 &\left. \frac{1}{\pi} \int_0^{\pi} e^{-jmM\pi \sin Y} e^{jnY} dY \right]
 \end{aligned} \tag{5}$$

By Bessel function,

$$\frac{1}{\pi} \int_0^{\pi} e^{jmM\pi \sin Y} e^{jnY} dY = J_n(mM\pi) \frac{e^{jn\pi} - 1}{2} \tag{6}$$

$$\frac{1}{\pi} \int_0^{\pi} e^{-jmM\pi \sin Y} e^{jnY} dY = J_n(mM\pi) \frac{1 - e^{jn\pi}}{2} \tag{7}$$

In the structure of GA algorithm, we can get the optimization equation as the following equation (8):

$$h_j = \exp\left(-\frac{\|X - C_j\|}{2b_j^2}\right), \quad j = 1, 2, \dots, m \tag{8}$$

The output of the network is given as:

$$y_m(k) = wh = w_1h_1 + w_2h_2 + \dots + w_mh_m \tag{9}$$

Assuming the ideal output is y(k), the performance index function is:

$$E(k) = \frac{1}{2}(y(k) - y_m(k))^2 \tag{10}$$

The linear equation can be expressed into the following simplified forms:

$$L(\nabla, \omega) f(x, \omega) = 0$$

$$L(\nabla, \omega) = T(\nabla) + \omega^2 \rho \mathbf{J} \tag{11}$$

$$\begin{aligned}
 u_{P3} &= M \frac{E}{6} \sin \omega_s t + \frac{E}{3\pi} \\
 &\sum_{m=1,2,\dots}^{\infty} \sum_{n=\pm 1, \pm 3, \dots}^{\pm \infty} \frac{J_n(mM\pi)}{m} \cos m(\pi - \alpha_1 - \frac{4\pi}{3}) \\
 &\sin[(mF + n)\omega_s t] - \frac{E}{3\pi} \\
 &\sum_{m=1,2,\dots}^{\infty} \sum_{n=\pm 1, \pm 3, \dots}^{\pm \infty} \frac{J_n(mM\pi)}{m} \sin m(\pi - \alpha_1 - \frac{4\pi}{3}) \\
 &\cos[(mF + n)\omega_s t]
 \end{aligned} \tag{12}$$

Then we have:

$$\begin{aligned}
 &\sin m(\pi - \alpha_1) + \sin m(\pi - \alpha_1 - 2\pi / 3) \\
 &+ \sin m(\pi - \alpha_1 - 4\pi / 3) = 0
 \end{aligned} \tag{13}$$

$$\begin{aligned}
 &\cos m(\pi - \alpha_1) + \cos m(\pi - \alpha_1 - 2\pi / 3) \\
 &+ \cos m(\pi - \alpha_1 - 4\pi / 3) = \pm 3
 \end{aligned} \tag{14}$$

When m is not the integral multiple of 3, the value is 0, then

$$\begin{aligned}
 u_A &= u_{P1} + u_{P2} + u_{P3} \\
 &= M \frac{E}{2} \sin \omega_s t \pm \frac{E}{\pi} \sum_{m=3,6,\dots}^{\infty} \sum_{n=\pm 1, \pm 3, \dots}^{\pm \infty} \frac{J_n(mM\pi)}{m} \\
 &\sin[(mF + n)\omega_s t]
 \end{aligned} \tag{15}$$



Fig.1 The Map of the Chorus Conducting Art

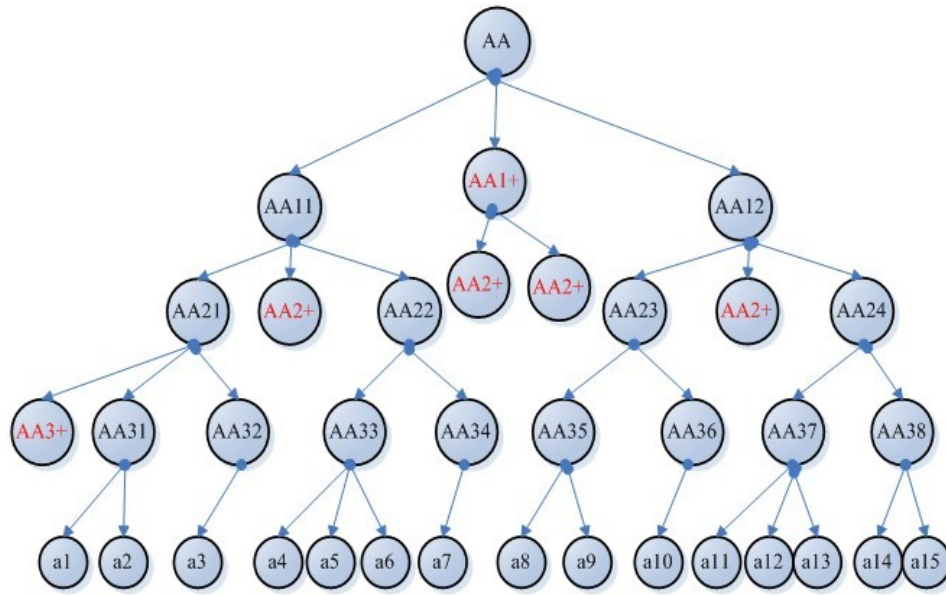


Fig.2 The Model for the Factor Analysis

We can conclude in equation (16)-(18):

$$w_{i,t} = (1 - \alpha) \times w_{i,t-1} + \alpha \quad (16)$$

$$\mu_{i,t} = (1 - \rho) \times \mu_{i,t-1} + \rho \times X_t \quad (17)$$

$$\begin{aligned} \sigma_{i,t}^2 &= (1 - \rho) \times \sigma_{i,t-1}^2 \\ &+ \rho(X_t, \mu_{i,t-1})^T \times (X_t - \mu_{i,t-1}) \end{aligned} \quad (18)$$

From the perspective of philosophy, the “value” is the expression of the reflection that the value objectivity of the objects coincides with the need of the subjects formed in the activities of the humans, and produce effects. The aesthetic value contains the property of the general value, but as the value relations in the field of the aesthetics, it has a richer connotation and a more extensivity, and has its unique characters. In a certain sense, the aesthetic value orientation refers to the choice of the value of the object in the aesthetic activities of the subject.

3. Experiment and Suggestions on Promoting the Aesthetic Value Orientation of the Choral Conductors

The chorus needs “blend”, which is the minimum requirement, and also the highest standard. The “blend” includes the audio blending, the sound blending and the feeling blending. The tone blending refers to the accuracy of the pitch, rhythm, speed, and strength, and the clearance of the harmony and the texture, and the phonological agreement. And the sound blending is the unification of the singing state, the unification of the tones in the voice, and the harmony and unity between multiple voices. The emotional blending is the understanding of the works, and the master of the style. From the image building, the depiction of the mood, the creation of the atmosphere, to the music rhythm of the thought, and the emotional connotation, the overall atmosphere is highly consistently interpreted and delicately and accurately reflected. The music and sound blending is the means, and the emotional blending is the objective. The quality of the means directly affects the objective accuracy. In the chorus training the teachers should set up a correct orientation of the aesthetic value of the team members. Taking the technical ability “Vocal Method” of the chorus for example, we know that the “vocal method” of the chorus is the base of the chorus ability training. The technology in the chorus training requires some of the breath support, so that the voice is mellow and full, with the perfection and extension of the vocal timbre, volume, range, and resonance.

From the aesthetic form of value, it is the pursuit of the emotional expression of the vocal nature, and in the sound chorus, we choose this method because it is in line with the essence of the chorus--harmony. The essence of the artistic activity is the aesthetic, and the musical aesthetic is a kind of pleasure and inspiration. In the aesthetic education we choose this art form of the chorus because the aesthetic value of the chorus is based on

the vocal beauty of the chorus and is reflected in people's emotional power, and is performed with the social life as the contents, and it also can embody the humanistic spirit. The pursuit of the esthetic values is the unique characteristics of the human nature, and is also the driving force behind the people to a higher level of development. The aesthetic relationship of the people has been always the value relationship.

A series of aesthetic social effect produced in the process of the choral training, creation, performance, appreciation and other practices is actually the macroscopic manifestation of the aesthetic value orientation. "The emotion occurs inside and the sound finds a vent from the outside". The human society cannot always do without the music, and it is the very natural and indispensable way using the music to communicate emotions, and to combine the subjective world and the objective world together. Music resorts to the emotional feelings, and the emotional feelings are the reflection of the humans in the objective world, which will inevitably have their own subjective standpoints, viewpoints and attitudes. Only when the subjects and the objects integrate into one and the emotion perfectly combines with the sense can we reach the realm of intellectual perception. Whether in the sense of the realization of the music cognition, aesthetics, and the education function, or from the perspective of the unity of the people's common work, the exercise of the conducting work with the humans is far beyond the music art category.

The aesthetic choice of the conductors will affect the aesthetic pursuit and the experience of the choral participants. The elegant, noble, and vivid charming works will improve the aesthetic taste and ability of the chorus participants. On the contrary, it will make the chorus participants in the aesthetic numb state of a low level of the works that "cannot be feeling for the long time smelly". In addition, the choral conductor must be faithful to the original texts and the thoughts and the connotation of the author, so that he can accurately reproduce the work, and successfully realize the re-creation. The aesthetic choice of the conductors will affect the aesthetic pursuit and the experience of the choral participants. The elegant, noble, and vivid charming works will improve the aesthetic taste and ability of the chorus participants. On the contrary, it will make the chorus participants in the aesthetic numb state of a low level of the works that "cannot be feeling for the long time smelly". It can be said that the aesthetic value orientation plays a role at the beginning of the chorus.

In the course of conducting the chorus, especially in the polyphonic chorus with different melody rhythms, the conductors should use the "score reading" method, rather than using the single melodic concept to conduct the singing in unison. Use the score reading method to put out the voice of melody cascade them together. This reading method is good to help the conductor to get familiar with the people in each voice section.

The basic actions of the conductor from the schema view are divided into the attachment style, the straight line method, and the point line style. From the relations of the two hands, it has the use of the two hands and the use of the left or the right hand alone, and from the view of the bat it is divided into the original beat, the sub-beat, and the on-beat. From the perspective of the region of the gesture activity, it is divided into the median, the high-order position, and the bottom position, and the transverse position to play to the right or the left and from the nature of beat there is the reality pats and the imaginary parts.

The conducting design of a song should make full use of the appropriate types of actions. To be a chorus director we must have an understanding and processing capacity of the songs, which requires certain music literacy, and know the basic knowledge. The sub part rehearsal requires us to have some knowledge of the music and sound, and let the obligato coordinate with the conductor and the chorus members, which is the basic requirement of the chorus. The highest state of the chorus is the sound blending, the voice blending and the feeling blending. The tone blending refers to the accuracy of the pitch, rhythm, speed, and strength, and the clearance of the harmony and the texture, and the phonological agreement. And the sound blending is the unification of the singing state, the unification of the tones in the voice, and the harmony and unity between multiple voices.

The emotional blending is the understanding of the works, and the master of the style. From the image building, the depiction of the mood, the creation of the atmosphere, to the music rhythm of the thought, and the emotional connotation, the overall atmosphere is highly consistently interpreted and delicately and accurately reflected. The music and sound blending is the means, and the emotional blending is the objective. As a choral conductor, how to apply and hold directly affects the objective accuracy, and the chorus level differences lie in this. For example, "the Yellow River cantata" is the creation of Xian Xinghai in 1939 when the Chinese people's war of resistance was the most dangerous. This works inspired the Chinese people's morale against the Japanese aggressors at that time. As far as the spirit level of this work, its profound connotation and the broad and strong spirit all are connected with Xian Xinghai's aesthetic taste and the aesthetic value orientation. What Xian Xinghai appreciates most is majestic, magnificent, noble, and other beautiful works of art which can reflect the main spirit of the subjects, and what he likes to perform most is the living state and the ideal pursuit of the people. Under the action of the orientation of the aesthetic ideal and aesthetic value, Xian Xinghai refused the

request of the Kuomintang government and some capitalists that he should write the musical works with the secular interest. His unconventional attitudes made him lose a rich reward, but increased the fine arts of China. When doing the works command, the choral conductor must understand the background, connotation as well as the expressed emotions and meanings of the creation and thus most incisively express the connotation of the works. In order to become a good choral conductor, and to enhance the artistic expressive forces, we must pay attention to all kinds of information behind the musical notes in the music works, do well the desk work before the performance, and analyze the works as deeply and accurately as possible.

At this stage of preparation, the choral conductor should complete the dual tasks of the transformation of the notes and the marks on the surface of the spectrum into the auditory images of his heart, and then the individual inner auditory images to the actual sound. The contents and methods of the performance front desk not only differ from man to man, but also have some common characters, namely the common path which the previous art practice has proved to be effective. We think that we should start with the background of the authors and the works, from the theme and genre of the works, from the analysis of the structures of the works, to think and to grasp the essence of the music and the style, and to perfect the re-creation. During the show, the choral conductors mainly rely on the schema and the actions to convey their intentions. These schemata and actions cannot be improvised, but should be designed through in-depth study and pondering the performances of the songs and after careful consideration.

In the design of the schema and actions, the choral conductors should try to avoid the mechanical repetition and do not do the meaningless movements. The choral conductors should also timely record the elaborately designed command actions, and communicate well with the choral members, and train skillfully, so that in the rehearsal and the actual performance they can conduct according to the fixed schema and actions, thereby enhancing the performance effects, and improve the artistic appeal. We should pay attention to details during the show, and constantly strive for perfection. The dress rehearsal before the show should be the same as the formal performance. The rehearsal quality plays a key role in the successful show or not. In general, the rehearsal time should be fixed on the day prior to the show, and if possible, we can also invite our colleagues to attend, and ask for their opinions. The rehearsal place in general should be elected in the formal performance occasions, so that the chorus can be familiar with the stage environment in advance, and adapt to the sound effects. In addition to the performance of the rehearsal contents, we also should do the inspection work, pay attention to chorus position and formation, as well as the appropriateness and the reasonableness of the location of the accompaniment. We need to confirm the compliance of the lights and the sets of the stage with the performance, and whether the makeup and the costumes meet the performance requirements.

4. Conclusions

In this paper, the author discussed the aesthetic value orientation model of chorus conducting art based on factor analysis. The chorus director is not only the organizer of the choir, but also the creator of the expressive force of the choral art. Therefore, continuously improving the chorus art expressive force is an important way to promote the development of the chorus art. Therefore, the commanders should do well the desk work before the command, have the necessary art processing of the song singing, rationally design the command actions, to make the beauty in the form submit to the inner beauty of the music emotion, and pay attention to the details during the show, and constantly strive for perfection.

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