Study on the Digital Animation Creation under the Perspective of the Reproduction of National Dance Culture

Take Tibetan folk dance as an example

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Abstract—As a constituent part of the China’s intangible culture, Tibetan folk dance contains unique national culture. Because Tibetan folk dance keep up its cultural inheritance mainly by depending on its body language, which is inconvenient to its propagation an development, however, as a new carrier, the digital media brings forth new ideas to its cultural form and realized the culture reproduction. This paper mainly discuss: through the digital animation creation, conduct the new output of the dance culture, realize the maximization of the culture propagation, and explore the better way combining the digital media technology and the dance prototype culture as well as the appropriate combination degree. The digital animation creation, which takes the Tibetan folk dance as prototype, is the innovation of its form and the culture reproduction in the new era for the Tibetan folk dance culture; in the case of national culture, it is a trial of digital recreation conducted by taking the cultural elements as the prototypes, which can provide a new possibility for the inheritance and development of the national culture.

Keywords—national dance; culture reproduction; Tibetan; folk dance; prototype; digital animation

I. INTRODUCTION

As a kind of cultural production, dance has been developing up to today. The influence of the change of era is inevitable in the process from its emergence to its evolution and classification until the separate inheritance of its variations. Since the modern times, the traditional culture is gradually falling into the cultural vulnerability, and the globalization brings great changes to the daily life, the tradition and the daily life of the public are separated, causing the missing of the national identity sense, in the era of digital media, the traditional national culture needs to be reproduced to seek new life. Bourdieu (Pierre Bourdieu) proposed the concept of “Cultural Reproduction” (Cultural Reproduction) in the early 1970s. He used the word “reproduction” to sum up the dynamic process of cultural development. The cultural reproduction allowed the culture to maintain its own balance in the changing times and to continue its development. Raymond Henry Williams, a British scholar who has also looked at the question of the culture reproduction, believes that the culture reproduction is an inherent attribute of culture, “in terms of its own characteristics, culture is actually a pattern of reproduction” [1], here, culture is treated as a constantly changing object, “reproduction” is the physical process of ensuring its normal growth. There are two main ways of culture reproduction: replication and innovation, [2] the role of both of which is to maintain the balance of the culture and continue the inheritance of the culture. The continuation first needs to connect the existing separating state, integrating the traditional culture with the digital technology is establishing a connection.

To achieve a better connection, the connecting conditions shall be created first, to open the interface again, a new powerful medium shall be found, which shall, on the one hand, be able to provide more inclusive and development space for the traditional culture, and on the other hand, be able to become an effective culture outlet. Digital animation is the most popular output medium in the digital age, which has high recognition and acceptance among the public. Kungfu Panda, which is based on Chinese kungfu culture, reflects not only the success of the animation films themselves, but also the vast user base and consumer market of digital animation. In the film, “Chinese kungfu”, as a prototype, has been transformed from a body culture into a new culture with appreciation value, its practicality is replaced by ornamental and symbolic, it can also be said that it has become a new cultural form with additional cultural value. Therefore, the digital animation of this kind of cultural theme also has the function of cultural communication and development. Chinese national dance is also a kind of “body culture” that relies on the body to conduct the continuation and propagation, which mainly interprets the cultural spirit by movements, like Chinese kungfu, it is an
exclusive cultural form of the Chinese traditional culture, carrying ancient and mysterious cultural genes. Dance is accompanied by life, reflecting human activities, compared with Chinese kungfu, the national dance shows the unique vitality and spiritual feelings of the Chinese nation through its more direct representation of scenes and more intuitive visual beauty. Therefore, the national dance has the possibility to be the prototype of the digital animation creation.

Dance is a kind of “body language art”, as the culture of human body creation, it directly shows the life vitality and emotion essence of human being and reflects their living condition and life experience, it has extremely beautiful dancing posture, moving rhythm and powerful appeal, which provides the viewer with a full range of audio-visual feelings and emotional experiences. It is an art itself, which can naturally touch people’s psychological feelings. More importantly, the national dance records the unique history and culture of each nation, and shows the fresh vitality of various nationalities, it is exactly this kind of life force that makes its culture attractive. There are 56 peoples in our country, which has very rich and varied cultural prototype materials with unique ethnic characteristics, which can completely be used as the prototype library to support the culture reproduction and provide cultural genes that are ancient and full of national soul.

II. CULTURAL REPRODUCTION OF TIBETAN FOLK DANCE AS AN ARCHETYPE

A. Analysis on the Tibetan Folk Dance As An Archetype

Tibetan folk dance, produced by religious culture and local special farm and herd culture, is used for daily singing, dancing, entertainment or celebration. Its dance style is free, and its movements are simple and lively, whose keys are the participation of the masses and the warm atmosphere of dance. And because its meaning gives the more forms of aesthetic sense for itself, this dance has many dancing types, which have the unique charm in national dances. The Chinese national dance pays more attention to the reproduction of artistic conception. Tibetan folk dance is derived from the life, and the dance movements are also from the daily life which show the Tibetan national life in all respects. With the simple image and high enthusiasm, this dance has no extra emotion and is just to feel the feelings of nature, showing the essence of spiritual yearning. Due to this pure and highly inspired dance performance, the Tibetan folk dance culture can be quickly perceived. In addition, compared with other national dances, the public is more familiar to Tibetan folk dance, so that people can better accept and receive new forms of dance culture. Tibetan folk dance includes not only the special scenes of life and the ways of production and work, but also its costume, the character images of Tibetan nationality itself and the huge spiritual system hidden behind these concrete objects.

The way to achieve a good development of a culture is to maintain its uniqueness and diversity. However, in view of the self development of Tibetan folk dance, there are many adverse factors besides the reduction of national identity. On the one hand, due to the differences in the growth environment and lifestyle of every ethnic group in China, the dominant national boundaries are formed, which constitute the uniqueness of national cultures. But now, it is difficult for the nation to be immune from the social and economic environment, and the culture omnivore is produced. Once the cultural environment that Tibetan folk dance culture is rooted in is changed, it means that the development of culture itself is in a rootless free state and is not stable. In this way, another kind of thinking should be changed to reconstruct the new cultural space limit so as to get the sustainable development of national culture.

On the other hand, it is reflected in the public’s attention and low awareness. Although the phenomenon of cultural default is now getting better, people have gradually had a sense of culture ascription, but they are just in a state of distant wait-and-see. When studying “identity and difference”, Woodward found that symbolic representation gave us the cognition of self attribution, so we marked and maintained the identity through culture, and showed differences among groups. [3] People always hold the attitude of differentiating from the other through self culture symbolic signs. When dealing with the inheritance and development of culture, most people hold the unconscious cognition that only the nation itself has the obligation and responsibility to protect and inherit. To achieve the diversified development of culture, we must attract more public foundations, get social concerns and create the sense of identity; and at the same time, culture will have other roots.

The premise of attraction is interest. In the era of Internet information flooding the public life, people are also willing to accept the transmission of network information, and digital animation is undoubtedly a good choice which is close to the daily life of the masses and is accepted by the masses for the role to provide entertainment. Digital animation as a window of contact between traditional dance culture and modern people, is a way that we can try for cultural diversity development. While culture is taking advantage of the new media, it also brings new added value of culture for digital animation. Looking at the development of all kinds of cultural industries, it is not difficult to see that culture can create greater development space for products and bring higher business value, which also achieves the integration of tradition and modernity.

B. Methods of Culture Reproduction

Culture is the dominant boundary of the uniqueness of each ethnic group, which is distributed in a plane form. The protection of culture is the determination of the boundary and area of the plane. For the issue of national cultural heritage, based on preserving the cultural space bound, it is necessary to achieve a highly extended development, so as to achieve the effect of the increasing volume of national culture. Based on the floor space of the bottom culture divided by ethnic characteristics, only under this circumstance that the surface area is not reduced, the whole national cultural space body is likely to continue to rise steadily. Blindly inheriting and conserving the tradition bring artistic conservatism, which is lack of modern aesthetic consciousness and current art service. Blindly developing and innovating bring the “rootless” dissociation and lack of support from traditional culture. [4] Therefore, if the cultural reproduction sets up the culture space of Tibetan folk dance, there are two different levels of
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Inheritance way restricts the efficiency of cultural background at that time, and constantly use the new individuality of the carrier. Under such circumstances, as far as the dance culture itself is concerned, the role of copy is to reproduce the cultural form of the original ecology and to protect the culture. First of all, we need to enhance our national self-confidence and obtain the national identity, so that the masses can spontaneously protect and inherit Tibetan folk dance culture, and ensure that the soil of Tibetan folk dance culture is not lost. Then, we should strengthen the preservation of digitalized cultural records and set up the original reference that can be used for reference and comparison, that is, as a prototype material library of non original ecological development. Of course, aside from other external factors, as far as the dance culture itself is concerned, it must have some changes. Because the traditional folk dance, which is inherited by human body movements, is limited by different places, different times, different characters and various factors. And this will result in a slight change in the form of the movement, the increase or decrease of the number of movements, the release and contraction of movement range and the change of speed and strength during the process of inheritance; and due to more or less emotional factors of the inheritors themselves, the culture is integrated into some new forms and content. In the process of inheriting the folk dance, the loss is a natural and inevitable thing because of the individuality of the carrier. Under such circumstances, as far as possible, it shall conform to the dance expression forms in the cultural background at that time, and constantly use the new digital media equipment and technology to record and update the reproduction process of dance itself in real time.

At present, the development of this kind of "body culture" is mostly limited to the "copy" level. This body-medium inheritance way restricts the efficiency of cultural communication and the coverage of culture. Although there are some dance video materials, they can play the role of the protection and propagation of dance culture, but they still have little significance for the preservation management, propagation and development of dance original culture materials, and the audiences are also limited. If we want to achieve a variety of development, it is necessary to integrate the elements of the times and enter the public view in a way that the masses are willing to accept.

2) Innovation

"Non original ecosystem" is the derivation of "original ecosystem", whose key is to develop rather than inherit. Under the influence of the times, we should take some fresh elements as new media to create new culture. The development trend of non original ecological Tibetan folk dance culture requires more possibilities excavated from the dance culture that more cultural forms highlighting the charm of Tibetan folk dance are applied to the public. Regardless of the traditional form of dance, we only need to use the unique artistic appeal of Tibetan folk dance to depict the full character, portray specific cultural scenes, and most importantly present the Tibetan people's thoughts, feelings and mental outlook.

The combination of digital animation and traditional folk dance is the discussion on the path of "non original ecology" of traditional culture innovation and development, which is based on the work of "original ecology". Therefore, in the process of innovation, it is necessary to comply with the culture type, cultural system and cultural connotation of the culture as a prototype. In recent years, the films of various cultural themes emerge in endlessly. For example, the animated film "Mulan" was adapted and created from a Chinese folktale "Hua Mulan" that because of her filial piety she went to the army for her father, and finally she realized her self-value. The movie reflects the typical Western-style Chinese culture. The spiritual connotation of Mulan's character is interpreted by western style, dismantled, fused and re-molded. For Chinese audiences affected by Chinese culture, the deep culture is misunderstood. But it is the product of global multicultural convergences, not only the national nature. In Chinese culture, the inner "Spirit" is very important, and the external "form" is only a characteristic form of expression. More precisely the "similarity in spirit" is the thing to give people the spirit association and spiritual experience, but not a representational and realistic one. "Form" can form a new upsurge of reference, but after the visual fatigue, people will lose interest to unsound shapes as insipid ones make. Therefore, when cultural elements are taken as the prototype, it is necessary to dig deeper from the culture surface and explore the cultural connotation through the whole creation. We should not exaggerate the cultural color for catering to the market, and we should pay more attention to the misuse of cultural symbols which may distort the cultural connotation. Once the public receives the wrong or biased cultural information, it will form a wrong cognition of the culture, which is not only harmful to the inheritance of traditional culture, but is harmful to its survival and development. This is equivalent to that, the reduction of grass-root cultural space causes the instability of the foundation, and the rise of high level will only accelerate the collapse of cultural space.
III. DIGITAL ANIMATION CREATION BASED ON TIBETAN FOLK DANCES

Following after texts and designs, digital animation is a media form that integrates sensory effects including vision, hearing and narration, and the quite direct dynamic manifestation and real graphical experience have made it better in transmission, teenagers and young people are main users and consumers of digital animations, for the generations in China who are in a serious lack of culture, digital animation is an effective way to instill traditional culture into them. This article first introduces the possibility of making Tibetan folk dances as cultural prototype, followed by methods of cultural reproduction, in order to transfer Tibetan folk dances to digital animation creation, it will need a series of digitalized process. During the extraction and conversion of cultural elements, what to be considered first are preservation and extraction of national characteristics.

A. Create A 3D Database of Tibetan Folk Dance Movements

In order to create a 3D database of dance movements, a movement capturing technique should be adopted to collect the Tibetan folk dance movements. With regard to dancers, with all factors considered, famous folk dance teachers in professional dance schools are the best choices, and full efforts should be made to capture the optimal folk dance movements. Some scholars attempt to preserve essences of folk dances through screen recording, creating minority dances database, which provide an accurate platform for protective researches on minority dances, screenwriting and movies. [7]. Compared to such dance video data platforms, 3D digital database platforms can capture clearer and more accurate data for direct application in animation and game creation, providing much improved and multidimensional service systems.

For the construction of three-dimensional data database, first use the optical capture lens to set three-dimensional motion capture system and to make the action capture. Optical capture lens - motion capture device of photoelectric technology (motion capture: Vicon system), shown in “Fig.1”, can make a real-time capture of the dynamic images of highlight reflective marking ball at the speed of 1/30 seconds that are pasted on the key parts of the moving objects, and record the complete original data, as shown in “Fig. 3”. Three-dimensional motion capture system, shown in “Fig. 2”, uses the advanced motion capture point model, accurately calculates the position of the joint point, records the trajectory of the skeleton, and makes precise calculation of the free movement, greatly improving the accuracy of joint extraction. Advanced technology ensures the integrity of the dance data and ensures the cultural prototype, that is the national feature does not distort or disappear during cultural reproduction.

Then, the data processing is carried out. After the motion data is captured, it is inevitable that some of the collected raw data are lost in the key frames, which will cause the distortion of dance movement, so a necessary correction is required. The action data correction software produced by Vicon Company can be used to make a manual repair of frames one by one, so as to get the complete dance action data. Finally, we can output the dance movement data files collected and corrected to MotionBuilder for production of skeletal animation. According
to the flow of "input movement capture data file — bind Actor model — drive role model — output skeletal animation", as shown in "Fig. 4", we can complete it. We can further expand the construction of the database, making it include the traditional ethnic dance of 56 ethnic groups in China, and make a detailed classification and sorting to enrich the resources of the dance data platform, so as to facilitate the storage, promotion and commercial sale of traditional Chinese intangible culture, get the roles in the times and make it meet the human life.

B. Cultural Symbol Extraction of Tibetan Folk Dance

More comprehensive collection and treatment work of data need to be carried out for cultural symbol extraction of Tibetan folk dance. Including the external cultural symbols of Tibetan folk dance, such as the steps of the dance, clothing accessories, musical instruments and music, etc. Still more the inner cultural symbols of the Tibetan folk dance namely the spiritual connotation. On the one hand, it is the record and untangling of culture and it can be expanded to the data prototype warehouse. On the other hand, it is the basis for the creation of subsequent digital animation. Be aimed at the extraction of the cultural symbol, namely to extract the most ethnic elements in the cultural prototype Library. It will facilitate the subsequent transformation of cultural symbols, that is, the creation of specific digital animation.

1) Movements and step

The dance movements of Tibetan folk dance come from daily production, life behavior and imitation of nature. Different types of dances, different regions or races have different styles and aesthetic requirements. But the unity is the essence of the Tibetan culture. The spiritual belief of the Tibetans is formulated. There are internal relations and therefore common morphological features and action rhythms is existed. The main action techniques of Tibetan folk dance are: Rolling, leg turning, kicking, fruit harmonic, crossing leg rotation, jumping span rotation, turning millstones rotation, kneeling, tucking, positive and reverse, twist screw reversing, anti cross transfer, turn over and step over. [8] In specific dance movements, combined with the head, hand, waist, and leg movements, such as the "Table I". Eulogize the nature of heaven and earth, awe of life and praise a good life by the most simple rhythm. The most common instruments are guitar, horn and human voice are the main body of the accompaniment. A lively dance atmosphere requires only a simple rhythm. Therefore, the general Tibetan folk dance epitomized an element that must be retained in the transformation of cultural symbols.

2) Clothes and decoration

The Tibetan dress is the same as the dance movement. As a material carrier to highlight the Tibetan folk dance culture, it has its unique characteristics and representativeness, such as “Table II". Taking the Tibetan dress as an example, the basic characteristics are long sleeved, wide heavy and colorful cloth. The usefulness of clothing is taken in the first consideration. The material of clothing comes from cattle and sheep. For a long time it has formed an inherent dress culture and continued. The most distinctive feature of the Tibetan costume is the size of the left and right sleeve is different, sometimes only a sleeve is worn. This is in order to reduce the temperature or facilitate the activity in the summer or during labor. In addition, large and small necklaces in the whole body, is also one of the more obvious symbols. Tibetan decoration throughout the body, including the headdress, jewelry, waist, foot ornaments, etc. [9] The worn part of the ornament is from the head to the foot, especially adornment. There are specific rules of cultural etiquette and custom. For different age, marriage, etc, there will be some differences. You can't wear it easily. The unique aesthetic view and life interest of the Tibetans have given the distinctive national characteristics of the Tibetan dress. This is an element that must be retained in the transformation of subsequent cultural symbols.

3) Musical instruments and music.

The Tibetan culture is bubbling with enthusiasm, free and easy. Of course, this cultural feature is also incorporated into the music. Most Tibetan folk dances have no specific music accompaniment. A lively dance atmosphere requires only a rhythm. Therefore, the general Tibetan folk dance epitomized in singing to praise the landscape of hometown, sing the life of labor, wish people auspicious and happy. To ease contingency by pedaling or calling out simple Tibetan passwords in the intermittent period. Such as the "folk dance", people dance around a bonfire or a cooking pot to amuse themselves, singing and dancing. There is also an accomplishment with the traditional instruments. Add a voice to a short sentence with a simple rhythm. The most common instruments are guitar, horn or urheen. The guitar is also called “TRAMO Nie”, is a popular folk instrument in the west area of Tibet. [10] The music is melodious and pleasant. Just like the green grassland in the Tibetan area, it gives people happy and relaxed. In the creation of digital animation, pay attention to the music.

| TABLE I. CHARACTERISTIC TABLE OF TYPICAL MOVEMENTS OF TIBETAN FOLK DANCES |
|---------------------------|----------------------------------|--------------------------|
| **Action**               | **Features**                     | **Symbolic Meaning**     |
| Point heel step          | Relax and slow rhythm, carefree and content | Horses, cattle, and sheep staggered on the prairie |
| Point tremor step        | Fast rhythm, large range of action | The fast running horse and the rough cattle |
| Stomp step               | Move forward and back quickly    | The well developed cow, horse running on the ground |
| Step up                  | A warm and strong rhythm         | The movement of the legs during the moving of a simulated animal |

| TABLE II. CHARACTERISTICS OF TIBETAN DRESS |
|-------------------------------|----------------|
| **Type of Clothing** | **Features** |
| Tibetan clothing          | About cangpao skirts, left, right collar, labor, the right collar fastened at the waist |
| Tibetan hat               | Felt hat, leather hat, gold silk flower cap, hat, etc., the style and environment are closely related |
| Tibetan shoe              | Many of them are boots, and the length of the legs, the typical features and the tip of the shoes are pointed and slightly warped |
| Hairstyle                 | Mainly with braided hair mainly, each place presents rich and colorful, the style very different characteristic |
| Accessories               | Wear all kinds of gold, silver or jade jewelry, string into beads. More and more beautiful. |
elements. To use the local instruments or local music form as far as possible.

C. The Creation of Digital 3D Animation

Animation creation is the specific transformation of cultural symbols extracted, is the verification of the actual application value of the database, is also an important attempt to achieve the existence and development of the intangible cultural heritage of ethnic dance in the form of visualization and digitalization. The combination of art and science makes the national dance culture keep pace with the times. Use advanced digital technology to inherit the future generations and spread the Chinese dance culture to the world. This is in line with the development direction of the digital content industry and it is more conducive to the inheritance and innovation of traditional folk dance.

The creation of digital 3D animation based on the prototype of Tibetan folk dance, taking “Dancing dolls” as an example. The “Dancing dolls” is a 3D animation set aimed at children. Give a certain storyline and display the Tibetan folk dance. Firstly, build story script and design the original painting such as role, scene, etc. There will be some art abstraction in this part, but we should ensure the correctness of national characteristics.

On a sunny morning, Ji Ji and Zha Zha freely chased in the blue sky and the sleepy city is slowly awakening....

They flew on the windows of the little friend's room curiously and inadvertently activated the puppet on the table.

With the rhythm of the Tibetan nursery rhyme “Ma Lan ballad”, they danced with joy. Bring us into the snow mountain meadow momentarily.

With regard to the design of animation characters, aimed at children users, the visual image of cartoon characters with 3 heads is presented. This fits the user's aesthetic and preferences. Character design based on the cultural symbols of the Tibetan folk dance, long braids, beaded headdresses, long sleeves, waist, boots, and collars, such as “Fig. 6”.

![Fig. 5. Storyboard design.](image)

![Fig. 6. Animated characters.](image)
Binding of three-dimensional model. The principal part uses MAX to bind from the character studio skeleton. Secondary objects use bone to bind. Using the skin system, the skirt is made with the cloth system; the role head is independent to bind, and use the bone skeleton to build an expression system, such as the “Fig. 7”. After binding the processed dance action data to the model, the first output of the animation is completed. Continue to complete the design and binding of other roles, objects, and scenes and carry out multi scene test, light test and lens test for many times. Then add special effects and lights to render, edit, and synthesize the final product output of the digital dance animation. For digital animation creation process, see “Fig. 8” and for final effect, see “Fig. 9”.

IV. CONCLUSION.

The development of dance culture urgently needs to be integrated into modern life wider. Therefore, a connection between culture and life needs to be established to create a new interface between national culture and life in the new era. Using the rich cultural archetype of our country, taking a variety of development modes of “original ecology” and “non original ecology” to innovate the content of culture and renew the media. Depended on the new form of expression and the cultural spirit of the times, the national charm is fully displayed. What is more, it attracts more people to return to national culture. With the advent of the digital information age, modern digital technology can help the traditional dance culture to dig out more possibilities outside the “culture itself” as the fastest and most effective media introduction. We took the Tibetan folk dance as the prototype and discussed the transformation of digital animation for Tibetan folk dance. It is the combination of the most advanced digital technology and traditional culture, providing a new heritage carrier for traditional national culture, and providing a new way for the preservation of intangible culture. It provides a new way to preserve and carry forward the traditional cultural heritage of
our country and has very important academic and practical value.

REFERENCES


