Protection and Communication Strategy of Traditional Culture from the Perspective of Digital Humanities — — An Example of Digital Dunhuang Project

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Absrtact: Based on the digital humanistic perspective, the paper explores the protection and communication strategy of traditional culture, and communication path of innovation of the traditional culture .Digitization is the trend of culture communication, which promotes the development of traditional culture. More and more attention is paid to the combination of technology and product development.Taking the "Digital Dunhuang" project as an example, this paper explores the means of protection, technological path and communication strategies of traditional culture.The research shows that digital humanities innovate the presentation means of traditional culture, and can better achieve the promotion and dissemination of culture.

1. Introduction

Chinese traditional culture with its excellent deposits and rich connotation has become the splendid cultural crystallization of the Chinese nation.General Secretary Xi Jinping has mentioned on many occasions the strategy of carrying forward Chinese traditional culture and implementing the strategy of strengthening China through culture.[1]In the digital era, traditional culture is promoted, which is reflected in policy support, wide dissemination and communication carrier innovation.Traditional culture relies on digital technology to form a new knowledge landscape with sound, image and more digital means.In terms of protection and communication, digital technology applies human history and presents it in the form of data visualization to form a new cultural pattern, which is essentially the focus of digital humanities. Dunhuang culture provides numerous historical materials and cultural heritages for exploring traditional culture, which plays an important role in the history of cultural research.With the continuous advancement and evolution of technology, its presentation and transmission path are also constantly evolving and innovating.The paper takes the digital humanities theory as the starting point and the "Digital Dunhuang" project as the research object to discuss the technical path and communication strategy of traditional culture protection and communication, so as to put forward solutions to the communication difficulties of traditional culture in the digital age.

2.The Research of Digital Humanities and Traditional Culture

2.1. Digital humanism

In 1949, Roberto Bootha compiled the works of Thomas Aquinas，then computational thinking had already appeared in the study of humanities.Humanities scholars begin to cooperate with the scholars in the field of computing. The digital media environment formed by the development of computer technology, the big data environment formed by the accumulation of digital texts and the humanistic problems studied by the use of computational analysis tools promote the emergence of digital humanities.[2]

Digital humanities is an extension of traditional humanities, and an innovative research method in the cross field of digital technology and humanities.The digital humanities can be divided into two types: one is to regard the digital humanities as a kind of material and tool, a kind of "construction" of humanistic knowledge; the other is to confuse the subject identity, and the humanities has reshaped itself in technological innovation.[3] The development of digital humanities has gone through several stages:in the first stage, computational methods are added to the humanities, and a computer database and digital tools are established; in the second stage, the original digital products of digital humanities are explored and an environment and tools are created for them; and in the third stage, the demonstrative power and literal

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criticism of digital humanities are explored.

At present, digital humanities involve literature, history, library and information, and other disciplines, and its characteristics include: the use of digital corpus, the use of quantitative or model research, the selection of disciplines to establish projects, a variety of technical integration operations.[4] The current issues in the field of digital humanities are mainly focused on the following aspects: firstly, relying on digital technology to solve the problems in the field of humanities; secondly, studying the new problems brought by digital technology; thirdly, studying the tools used in the research of digital humanities.[5] With the introduction of digital humanities technology, humanities has entered a data-driven era; with the development of technology to a certain degree, digital humanities research has changed the problem orientation of traditional humanities research,[6] It changed and reshaped the pattern of humanistic knowledge,[7] New cultural phenomena as well as social ethics such as digital bias, digital discrimination appear.

2.2. Research on Digital Humanities in Traditional Culture

Digital humanities is both a theory and a method. The digital humanities research in the protection and communication of traditional culture, with a new research paradigm to look at the digital humanities, the humanistic characterization of things to digital work,[8] It's a kind of technological practice applied to cultural communication.

The study of digital humanities in traditional culture is changing from basic perception to digital. Digital software plays an important role in shaping culture by controlling senses,[9] The idea that data serves the humanities will lead to more efficient results.[10] From the impact of digital on the development of traditional culture, the integration of modern information technology has changed the acquisition, representation and research of humanistic knowledge, Finding out more digitized research directions and clues with difference and regularity,[11] which is a feasible method to protect and spread traditional culture.

The "Digital Dunhuang" project is a comprehensive research project integrating the digitization of grotto information, digital asset management system, permanent storage system and digital resource database. Starting from the spiritual connotation of Dunhuang culture, the "Digital Dunhuang" project makes Dunhuang culture present new knowledge representation and communication patterns by using various technical tools from the perspective of big data. Based on this, this paper takes the "Digital Dunhuang" project as an example to analyze the digital technology path of traditional culture and its communication strategy.

3.The Technology Path of Traditional Culture Digitization

3.1. Digital storage

From the perspective of archaeology and cultural communication, digitization provides a new way to preserve traditional culture.Digital technology can be used to recreate the exhibits, 3D modeling, data measurement and so on, record the data of the exhibits in the form of digital information.

Taking "Digital Dunhuang" project as an example, the Dunhuang Research Institute has introduced a variety of technical means to improve the accuracy of photographic images, collected a large number of cave images and established a murals color management system. Dunhuang frescoes represent and preserve pigment color and other information in the form of data,[12] And adopt the form of catalogue in different districts to construct the database of color mark,[13] In order to save the mural information objectively and accurately, sensory data should be defined with reference dimension index.

Compared with traditional culture, digital humanism constructs a new knowledge storage system. Data information doesn't change and die out with time. Data can be rendered, processed and fused. Digital storage means break through the limitation of time and space.

3.2. Digitization from the Perspective of Digital Humanities

After connected to the internet, the digitization of traditional culture has opened the era of information opening and sharing on the basis of protecting the original cultural relics.Influenced by the idea of digital humanities, a great deal of text of humanistic knowledge is normalized and built into an open database, and researchers all over the world can access, query and analyze the knowledge and logic contained in this data information by remote connection.[14]

The "Digital Dunhuang" project has constructed a digital asset management system (DAMS) for the purpose of protecting and studying the Dunhuang grottoes. The resource library reprocesses the collected data and information to create a connected knowledge map of the Dunhuang grottoes.

Digitization is the process of computing and analyzing data dimensions by quantifying research objects.[15] Digitizing the integrated domain knowledge in the form of knowledge units and constructing a knowledge environment to simulate domain applications.[16] The "Digital Dunhuang" resource database includes the functions of panorama browsing of caves, high precision images of murals, content retrieval, etc., as well as the hardware and software architecture of databases, operation and maintenance of platforms, etc., which aims to gather a large number of professional and rich contents in the platform and

realize the accurate presentation of resources and the display of diversified achievements.[17]

In the protection of traditional culture and the construction of knowledge, information can be transformed into a detached data structure, and users and managers can realize the transfer and sharing of resources by continuously maintaining the system dynamically.[18] Data flow in deeper research and become a powerful basis for exploring the characteristics and logic behind traditional culture.

3.3. Interoperability of digital technology

The digital technology used in digital humanities includes not only storage technology, but also digital presentation technology and interactive communication technology. AR, VR and other technologies develop the presentation form of traditional culture from static plane display to dynamic, real-time and interactive innovation form.

The Digital Dunhuang Project digitally collects the mural scenes of the Mogao Grottoes, and then integrates the collected data into a panoramic view, so that users can enjoy the physical scenes of online visits to the representative scenic spots of Dunhuang culture without leaving their homes, and can interact with the scenes to a certain extent.

Interaction has a unique charm for users. The two-way interaction brought by technology is a kind of mutual infiltration and mutual shaping between users and culture. Through the optimal combination and organic integration of different traditional cultural achievements, digital presentation realizes the transformation from rational data information to perceptual visual art.[19] Compared with the traditional presentation, the new interactive presentation changes the one-way information into two-way flow, which greatly improves the efficiency of traditional culture as knowledge.

3.4. Generation of Cultural Fictitious Images

The cultural virtual image has constructed the vivid, affinity people's personification image, the cultural propaganda representative character starts from the real person to the digitized virtual character transformation. The Digital Creative Technology Joint Laboratory, which was established by Dunhuang Research Institute and Tencent, used real-time drive technology supported by game engine, combined with motion capture and real-time rendering to optimize clothes and motion algorithm to establish the virtual character Jiayao, which was based on the model of Mogao Grottoes fresco divine bird.

On the one hand, we can customize the characters according to the characteristics and needs of traditional culture, on the other hand, we can avoid the risk of real people. Jiayao, as the cultural ambassador of Dunhuang image, will carry out cultural and science popularization, virtual live broadcasting, cooperative propaganda and other activities in the future in the

"Digital Dunhuang" project to realize real-time communication and interaction with the audience, which will greatly enhance the reality of the virtual image and draw the communication distance with the audience.

4.Transmission Route of Traditional Culture Digitization

4.1. Mobile platform propagation

Dunhuang Research Institute in the WeChat platform launched a small program "Cloud Tour Dunhuang", small procedures are divided into home page, exploration, tour, protection and new creative five sections.

The home page has used the day sign's prop to obtain plays the law, through stimulating user's collection psychology to enhance the user stickiness. The Exploration section combines several themes of excavation, allowing users to explore and explore the grottoes at their own discretion, in terms of time, space, or theme. Tour plate combines the wisdom of Tencent Scenic Area, in LBS technology based on the user's personalized guide recommendation and planning route guidance. The protection board, in combination with Tencent Public Welfare, released the "Dunhuang Digital Donor Public Welfare Project", gathering public forces to help the digitization of cultural relics.

The program integrates the key technology of digital humanities. After browsing the contents of the applet, users can choose "want to go", "to go" or "to collect". And through the user's circle of friends, Weibo and other relationships for interpersonal communication, which has greatly expanded the user-node transmission path, effectively enhance the transmission efficiency.

4.2. IP cooperative propagation

The promotion of technology provides the possibility of a low-level architecture, and digital humanities can also be disseminated in the traditional culture by means of multi-party cooperation, with scattered cultural content as the basis for cooperation projects, and exchange and discussion, cultural research and activity planning. Traditional culture with its own unique cultural IP as the starting point for the content of publicity, with animation, games and other new forms of communication carriers of cultural propaganda chain.

In the narration of digital humanities, the new digital media relies on digital tools, databases and other technical means to change the traditional narrative structure and form a new cultural form.[20] In 2020, the Dunhuang Research Institute made a special animation on the theme of Nine Colors Deer and put it on line to the small program of Cloud Tour to Dunhuang.

On the basis of watching the animation, users can choose the sound drama and choose the role of interactive dubbing. The project evokes memories of

the 1981 animation Nine Color Deer and adds a variety of narrative styles, transforming cultural propaganda from one-way content to two-way exploration.

Moreover, the new narrative method of combining digital humanities and traditional culture is also manifested in the strategic cooperation between the Dunhuang Research Institute and Tencent's game "Glory of the King", which uses the concept of "science and technology plus culture" to collaborate with singers to create the theme song "Meet the Flying Heaven", and to create the Dunhuang series of character skin with the flying images in the murals of the Mogao Grottoes.

The use of text, pictures, videos and other forms of narrative product stories, to arouse the user's emotional resonance of traditional culture. The Animation, games and other forms of a stronger entertainment and user stickiness, in the positive emotional blessing, in the direction of diversification, innovation and co-creation, from museum sales of souvenirs to online shopping, from physical products to the birth of derived digital collections.

4.3. Cultural creative communication.

The development of digital humanistic technology supports the bottom logic of design and provides the possibility for the rebirth of literary creation. The creative development of traditional culture integrates typical elements into the process of product design, production and publicity by extracting the unique content of traditional culture. With the help of the convenience of the Internet, the development and sales of online derivative products have been expanded, and cultural creativeness products have developed in the direction of diversification, innovation and co-creation, from museum sales of souvenirs to online shopping, from physical products to the birth of derived digital collections. The cultural creation is no longer a one-way cultural output. The real-time interactive information feedback of digital technology realizes the possibility of co-creation of user and culture.

For example, in the new creative section of the small program "Cloud Tour of Dunhuang", there are many peripheral products with Dunhuang cultural element. The Dunhuang Poetry Towel, as a creative project, is inspired by the caisson pattern of Dunhuang frescoes. Through digital collection and production, users can freely choose patterns and design silk towels according to their preferences, and can also try on the products designed by the virtual experience. This new creative form gives users a great deal of freedom to create, two-way interaction is easier to explore the user's point of interest, and stimulate the desire for independent action.

Dunhuang licensed mural elements to commercial groups in a variety of fields to produce makeup, clothing, stationery and other products that combine the characteristics of both sides. On the one hand, the attention of ordinary buyers will be transferred to cultural propaganda, and on the other hand, the emotional support of people who love traditional culture will be converted into purchasing power.

5.Predicament of Digital Communication of Traditional Culture and Its Solution Strategy

5.1. Cultural discounts: Consider multiple perspectives and reduce cultural discounts

Cultural discount is a concept put forward by Hoskins and Milus, It refers to the loss of the value of cultural content in the process of cultural communication.[21] Although the "Digital Dunhuang" project has an obvious effect on the promotion of the youth group, after the digitization of traditional culture, some audiences only pay attention to the use value of cultural and creative products rather than the cultural connotations behind them.

The information transmitted by digital communication should be considered from the perspective of users. The communicator should explain the information completely and accurately, and make accurate positioning according to the level of the audience groups, and adopt different ways suitable for different groups to carry out publicity.

If Dunhuang culture wants to go out of the special group in the public field of vision, it needs to expand the popularization scope. In order to create an immersive cultural atmosphere, cultural products are produced from shallow to deep, and emotional content is introduced into intellectual elaboration.

5.2. Visual masking: strengthening content management and guarding against technology coercion

Technique is the means and ability of human beings to share knowledge, solve problems and create conditions. Technological innovation makes it possible to model knowledge system and spread new knowledge.[22] In recent years, the Digital Dunhuang project has increased various channels of propaganda, but distortions may exist in the process of rendering by using digital technology, such as the distortion of the scene rendering caused by the change of the angle of view when the VR panorama is used to observe the cave scene, and the lack of reality of the material when the 3D printing technology is used to restore the three-dimensional model image of buildings.

For example, the Mogao Grottoes Digital Center in Dunhuang produced the 3D spherical screen film Dream Buddha Palace, which uses a variety of technologies such as a spherical screen and a Wide-angle lens to present pictures. The public's attention will always remain on the visual surface, unable to reflect on the communication intentions and to explore more valuable content. Then it just presents a brilliant visual performance for the audience and fails to achieve the expected dissemination intensity.

Technology is an extension of perception, and the

core goal of using new tools and means of communication is still to enhance the influence of content. Dunhuang culture should be appropriately combined with digital technology, enhance content review efforts, strengthen the construction of publicity content, and enhance their own digital literacy. Technology and culture should be organically combined on the basis of clear subject and goal to create works that integrate the values of both sides and present them to the public.

5.3. Image risk: strict vetting mechanisms to improve business standards

The capital injection of commercialization gives the traditional culture some financial support and impetus, but the positive image of the traditional culture is affected by the commercialization.

The Dunhuang Museum and the brand of e-cigarette have been controversial. E-cigarette products are in a special regulatory field. Advertising and selling such creative products may have a negative impact on the physical and mental health of young people. The quality control, marketing mode and brand image of cooperative commodities will become the inducement of traditional culture spreading effect, and the negative behavior of pursuing interests will cause the image risk of the whole cooperative project.

When cooperating with a commercial institution, a sound examination mechanism shall be established and perfected to make a comprehensive investigation and judgment on the qualification, history, image and other aspects of the commercial institution, so as to clarify the commercial relationship of the cooperative enterprise and prevent the infiltration and involvement of enterprises with bad records in the process of cooperation.

In the joint projects of Dunhuang Museum and E-cigarette, the cooperative parties shall be selected prudently at the stage of topic selection, highly sensitive to information in the process of implementation, taking into consideration the perspectives and opinions of multiple parties, prudent selection of public copy writing, marketing means and publicity strategies, and timely termination of joint projects with negative impact.

5.4. Narrowing Thinking: Expanding Communication Ideas and Exploring New Ways

With the development of media technology, the rapid pace of communication of traditional culture has given birth to the trend of homogenization of communication means, expression and visual aesthetics. Copying the success stories of other cultures without considering the local cultural characteristics will lead to narrowing of thinking and falling into the vicious circle of advocating effect.

The current "Digital Dunhuang" project publicity platform only rely on small procedures, websites and other fixed platforms to promote content, activities and lack of day-to-day operation. The interactive content of the small program in Yunyou Dunhuang is updated slowly, and the content form is single, which is easy to weaken the user's stickiness established before.[23]

Culture communication should break the stereotype of thinking and explore new ways to seek ways to break the circle. Create a representative image for the traditional culture IP, using the unique, widely known or popular cultural elements to narrow the distance between communicator and audiences.

With the proposal of the concept of the meta-universe, block chain technology generates digital assets similar to traditional collections. Although Dunhuang Academy has not yet involved in this field, it can be regarded as an innovative attempt in a new era if the value of communication in new fields can be explored after a comprehensive investigation.

6. Conclusions and revelations

The traditional culture is the witness and trace of the thousand-year history of China, which enforces the era to protect, develop and inherit it. The proposal of the strategy of cultural power has provided policy support, and technology has promoted the continuous integration and iterative innovation of humanities research. The technological path and communication path of traditional culture are in urgent need of expansion and communication. The rise and development of digital humanities provides a new way to promote the digital protection and communication of traditional culture. Explore digital, interactive, artificial intelligence and other technological paths, with the advantages of net platform, traditional culture broke the barriers of circle, realized the interaction and sharing in the process of communication, and thus burst out new inspiration.

There are still dilemmas in protection and communication of traditional cultural. Technology brings convenient means of retention and inquiry, immersive space with the presence of the body and more vivid visual experience. However, we should also be wary of such problems as the weakening of cultural connotation and excessive commercialization. We should use various means to stimulate the interest of the audience, make them t understand and inherit the culture.

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