

Analysis of Information Graphic Design of the Shu (Sichuan) Area Culture -- Taking the Sanxingdui Ruins Site as an Example

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Abstract. With the advent of the digital age, the development of Chinese excellent traditional culture has been in heated discussion by all walks of life. As an important part, the Sanxingdui culture in the Shu (Sichuan) area also needs to be paid more attention, so as to better inherit and develop. As a new information display method, information graphic design can effectively continue the complicated and boring traditional culture visualization science. Taking the Sanxingdui Ruins site, a representative site of Chinese Shu (Sichuan) area culture as an example, through literature analysis and case study, this paper discusses an effective scheme to convey Shu (Sichuan) area culture in the field of information graphic design. In the process, it was found that there are some problems in the information graphic design of the Sanxingdui Ruins site, including a lack of integrity and innovation, single expression form, and a lack of interaction. In order to improve the effect and quality of information graphics, various solutions such as dynamic and static combination, two-dimensional and three-dimensional unification, and cross-design are put forward in the conclusion, with a view to contributing to the spread and protection of Shu (Sichuan) area culture and providing help for the promotion and publicity of Sanxingdui Ruins site and the analysis of information graphic design.

Keywords: information visualization, Shu (Sichuan) area culture, information graphic design, Sanxingdui Ruins site.

Information graphic design is a technical means of static and dynamic information dissemination and interactive information dissemination through graphics by using different technical forms. Nowadays, the explosive growth of information has become the norm, and the information people acquire is often fragmented, which makes the traditional way of presenting information unable to meet individuals' needs. In a concise and efficient way, the information graphic visualizes the complicated traditional cultural knowledge, so that people can get accurate information more quickly and get a more relaxed and focused reading experience.

1. Research on the Development of Information Graphic Design and the Value of Shu (Sichuan) Area Culture

1.1 The history of information graphic design

The research on information graphic design in China is far less mature and trendy than abroad. Tracing back to the source, we can find that information graphic design first started in foreign countries. In the Paleolithic period, a series of analysis pictures of bison running in caves in southern France were the earliest information graphic design found so far. In *The Commercial and Political Atlas*[1] and *Statistical Breviary* [2], as the earliest information icons, the histogram (as shown in Figure 1) and pie chart (as shown in Figure 2) invented by William Playfair provide people with more intuitive and effective information acquisition methods. Charts created by Harry Baker to describe the route of London were regarded as a model of traffic map. In the middle of the 20th century, the concept of visual information graphics was put forward for the first time, which laid the foundation for the later information visualization design.

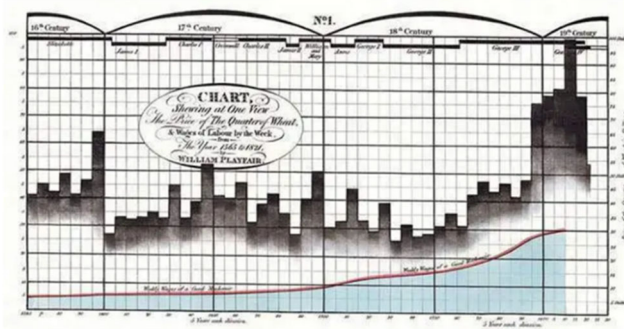


Figure 1. The histogram invented by William Playfair

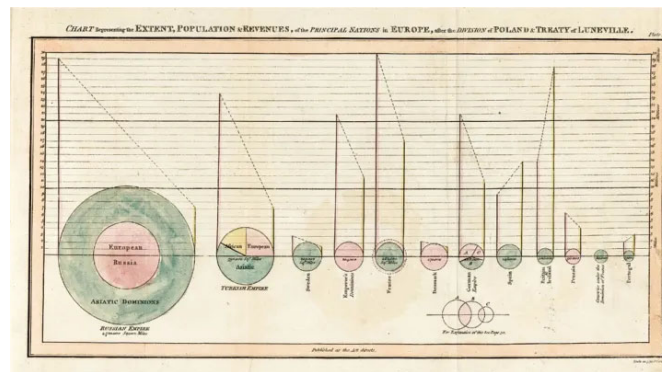


Figure 2. The first pie chart in history

Turning the perspective to China, graveyard pictures dating back to the pre-Qin period are the most representative information graphic that people have learned, and it has become stylized planning and design drawing by combining balanced and symmetrical painting expressions (Figure 3). In the 1990s, *Introduction to Design*[3] published by Yin Dingbang integrated the chart design and layout design and improved the logic of information graphic design. Since then, information graphic design has been included in visual communication design and has become a new way of information dissemination.

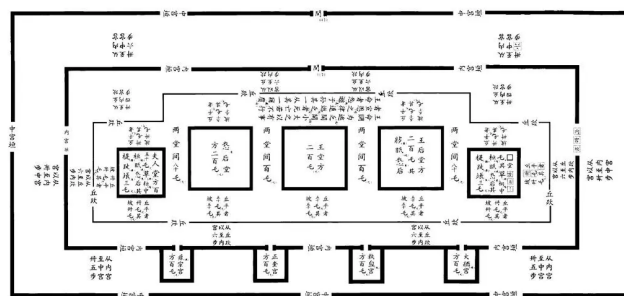


Figure 3. The graveyard picture of Zhongshan Mausoleum

Although the development of information graphic design in China is still in the exploratory stage, in recent years, more and more scholars have devoted themselves to the research of information graphic design (Figure 4). In the era of big data, information graphic design can not only establish interactive relationships with users but also make information transmission more intuitive and convenient. This paper attempts to use information graphic design to visually express the Sanxingdui Ruins site so that the audience can understand the culture of the Shu (Sichuan) area more clearly and efficiently through graphic information[4].



Figure 4. General trend of the literature on information graphic design

1.2 The characteristics and importance of the culture of the Shu (Sichuan) area

Nowadays, the cultural atmosphere of all-embracing and eagerness for openness has gradually formed in the Shu (Sichuan) area, and many foreigners have entered Sichuan to integrate cultures and create a cultural grand occasion at present. As an important part of the overall pattern of “pluralistic integration” of Chinese civilization, Shu (Sichuan) area culture has also contributed to the prosperity of the Chinese nation and the great Chinese dream of national rejuvenation.

In the development of the Shu (Sichuan) area, the cultural heritages of Sichuan, such as Sichuan brocade, Shu embroidery, and woodboard New Year pictures, are rich and have become the symbols of the Shu (Sichuan) area culture. Sanxingdui culture mentioned in this paper is also an indispensable part of Shu culture and a representative of ancient Shu cultural sites.

1.3 Sanxingdui Ruins site in the value of Shu culture

Since the Sanxingdui Ruins site was discovered, bronze treasures have become the cultural symbol of the Shu (Sichuan) area. There are a large number of bronze wares unearthed at the archaeological site with strange shapes. At the same time, the round sun pattern bronze ornaments unearthed are also recognized as landmarks and presented in every corner of the city^[5]. Sanxingdui Ruins site has created a mysterious and interesting atmosphere for the culture of Sichuan, showing the diversity of the culture of Sichuan. Understanding the religious beliefs and artistic achievements of the Shu (Sichuan) area culture through the Sanxingdui Ruins site, and deeply excavating the characteristics and values of Shu culture have played a positive role in inheriting the splendid cultural treasures of China^[6].

1.4 The application and research status of information graphic design in the dissemination of the Shu (Sichuan) area

According to the search results in CNKI, it can be found that the literature quantity on the Shu (Sichuan) area culture is increasing year by year (as shown in Figure 5), and the public pays more attention to the culture in Shu (Sichuan) area. However, the application of information graphic design in cultural communication in Sichuan is less, which cannot make the audience intuitively feel the charm of the culture in the Shu (Sichuan) area. The literature on the Shu (Sichuan) area culture mainly focuses on red culture, intangible cultural heritage, and other topics, lacking the information visualization design to explore the Sanxingdui Ruins site (Figure 6).

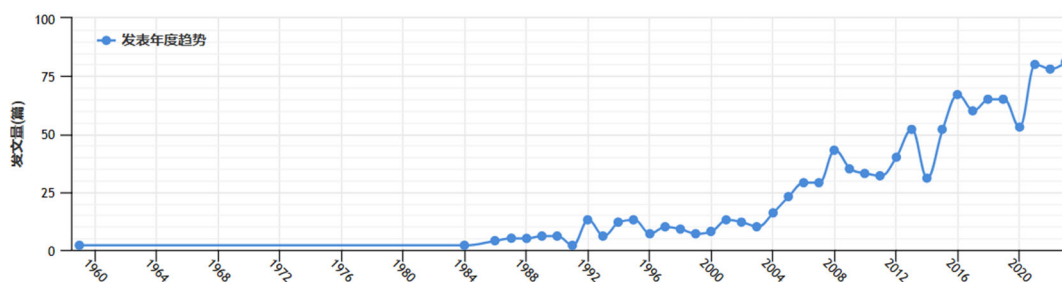


Figure 5. The main distribution of literature topics about the Shu (Sichuan) area culture

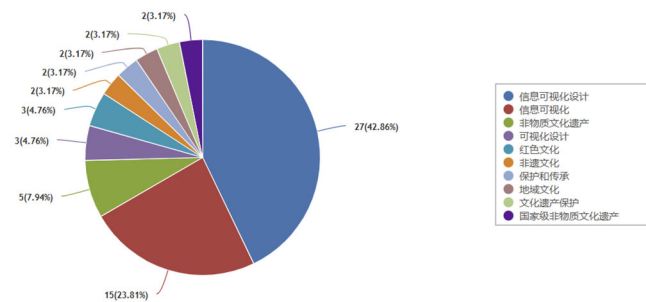


Figure 6. The main distribution of literature topics in information visualization design of the Shu (Sichuan) area culture

1.5 Practical research:

Through case analysis, it is found that there are some problems in the information graphic design of the Sanxingdui Ruins site. The information graphic design of Shu (Sichuan) area culture is mainly aimed at creating a hot pot, Sanxingdui, Shu brocade and Shu embroidery (as shown in Figure 7), but the information graphic design of Sanxingdui Ruins site does not integrate the information of Sanxingdui Ruins site in all directions, and most of them are about the cultural relics unearthed from Sanxingdui Ruins site, which rarely reflects its history, value and significance. This paper mainly analyzes and solves the existing problems, and works out the information graphic design works with the modeling elements and pattern elements of the Sanxingdui Ruins site as the main elements, supplemented by the development context, so as to integrate traditional culture into life, narrow the distance between Sanxingdui and the public, and make more people understand Sanxingdui and ancient Shu (Sichuan) area culture again.



Figure 7. Case of information visualization design of Shu (Sichuan) area culture

2. The Analysis and Discussion of Information Graphic Design

2.1 The historical and cultural characteristics of the Sanxingdui Ruins site

Lothar von Falkenhausen, Professor of Archaeology in Germany, has said that “Sanxingdui is unique in many important aspects, and some unearthed cultural relics are unprecedented in China and East Asia in this period”. This site dates back to ancient times about 4,000 years ago and is connected with the culture of the Shang, Zhou, and Spring and Autumn Dynasties, which is a symbol of ancient civilization. Meanwhile, the Sanxingdui Ruins site is also a very important religious center, where a large number of statues and sacrificial objects have been unearthed. This is an important milestone in the archaeological history of China[7].

Sanxingdui Ruins site unearthed a large number of cultural relics with a wide variety, which constitutes a brilliant crystallization of the Sanxingdui civilization. Its unique shape and abrupt eyes also reflect some characteristics of the ancient Shu civilization, revealing the ancestors’ reverence

and awe for the unknown world. The exaggerated modeling and cultural connotation of Sanxingdui cultural relics have left many mysteries for future generations, which are intriguing and will be introduced in the cultural relics in the following section[8]. Taken from Shu pottery, Bashu symbols are composed of a large number of irregular patterns and symbols, which is one of the important ways for us to understand the culture of Shu (Sichuan) area culture. These irregular symbols will be reflected in this design work (Figure 8).

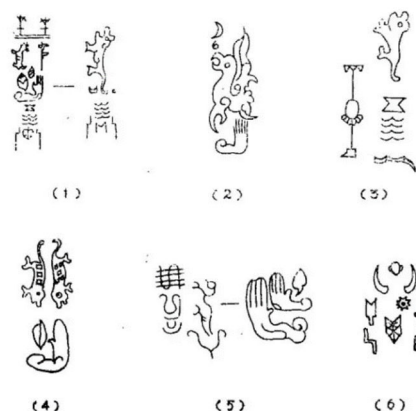


Figure 8. The early characters of Bashu symbols

2.2 The analysis of the existing information graphic design of the Sanxingdui Ruins site

It is not difficult to find out that there are some problems in the information graphic design of the Sanxingdui Ruins site, including the lack of integrity and innovation. In a few Sanxingdui information maps, some works lack new ideas, which are old and single. In terms of the content of the information graphics, there are many designs on the appearance, production, and function of the bronze (restoration) of the Sanxingdui Ruins site, but there are few works to explain the historical development of Sanxingdui Ruins site bronze, the introduction of typical bronze or jade, the historical and cultural values and the influence on later design works. Many works lack interaction with the public, thus lacking feedback data and unable to innovate and transform in time. Information extraction and graphic design of cultural symbols are not intuitive enough, which makes the public unable to intuitively feel the core content.

3. The Optimization Scheme of Information Graphic Design of the Sanxingdui Ruins Site

3.1 Accessing information and selecting the theme

Since the strategy of “going out” was put forward, China has devoted itself to spreading traditional culture and precious culture, shaping a great image, and constructing a national discourse system[9]. Previous studies showed that Sanxingdui culture characteristics are heavy, and the cultural relics unearthed from the Sanxingdui Ruins site, such as “Godlike human face”, “personal fish” and “string cube geometric patterns”, are with characteristics that ancient civilizations do not have. In addition, there are many symbols and images related to myths and religious beliefs in Sanxingdui culture, and there are many myths and legends associated with them, which can be regarded as unique artistic and cultural characteristics in Sanxingdui culture. Therefore, with the theme of “Secret Symbol of Shu (Sichuan) Area”, through graphic visualization design of the information about Sanxingdui’s history, cultural relics, sacrificial pits, value, and so on, this study provides a new way for the public to understand the culture of Sanxingdui.

3.2 Analysing data and conducting logical reasoning

Drawing on the related literature, the main content of information graphics is the core and the main problem that we should consider[11]. According to people’s cognitive order, the core content of the Sanxingdui Ruins site is sorted out by mind map (as shown in Figure 9), which makes the information data of Sanxingdui more logical and authentic. This data collection mainly focuses on three aspects, namely, discovery, exploration, and induction, and expands each part in detail so as to show the contents of the works in the future. At present, Sanxingdui’s cultural and creative design mainly focuses on the literal representation of shapes and patterns, with a relatively simple form. Most cultural and creative products only stay in the direct transformation and use of shapes, lacking innovation in form. Based on this, through excavating cultural connotation, following design aesthetics, and guiding diversified design methods, the summarized elements are deconstructed and rearranged to form new graphics, so that cultural relics can attract public attention with brand-new visual forms. The reorganized patterns are extended to various information graphic designs to meet the spiritual and cultural needs of the audience as much as possible and provide them with various forms of information visualization design products.

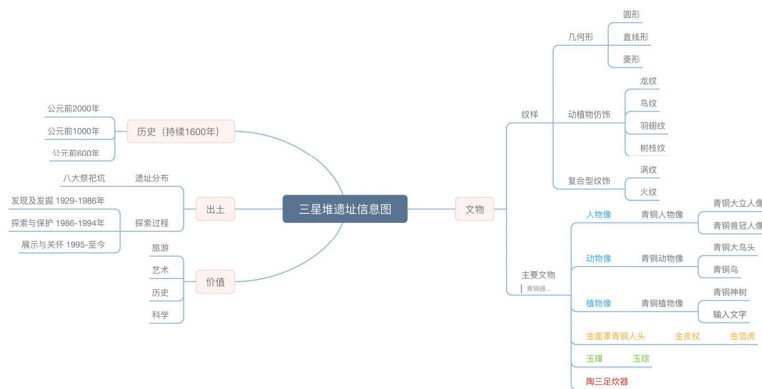


Figure 9. Data analysis of the Sanxingdui Ruins site information graphic

3.3 Screening information and reorganizing materials

Sanxingdui Ruins site has a long history. From the late Neolithic period to the end of the Shang Dynasty and the beginning of the Zhou Dynasty, it lasted for nearly 2000 years. When integrating the historical information of the Sanxingdui Ruins site, we should screen these time points, record the most representative historical time points, and sort them out through the time axis, so that people can see them at a glance. In the aspect of cultural relics unearthed in the Sanxingdui Ruins site, the most distinctive and valuable cultural relics are selected for information integration, the main cultural relics such as bronze vertical masks and bronze portraits are systematically introduced, and the main design elements such as head patterns and bird patterns and some traditional patterns of bronze objects are extracted and summarized. Sanxingdui Ruins site has eight sacrificial pits to map the sacrificial culture at that time. Through the brief detailed description of each sacrificial pit, this design work makes the audience immersive (as shown in Figure 10).

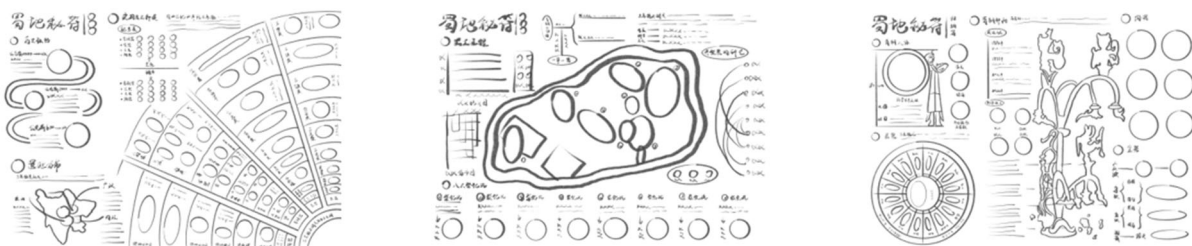


Figure 10. Sketch of Sanxingdui sacrifice information visualization design

3.4 Drawing creative sketches by computer

This design work summarizes the Sanxingdui Ruins site through three pictures, with flat style as a whole, retro color as the expression form, combined with traditional bronze patterns, and draws information graphic design works with the help of computer software, which makes this series of works more beautiful and novel. In this information graphic design work of Sanxingdui, the unearthed cultural relics will be visualized in the form of figures and charts, and the historical changes will be displayed by using the time axis, and the content will be further displayed with illustrations. We also systematize the data by means of the scatter plot. The multi-level part that reflects the cultural relics of Sanxingdui, is introduced through the Sankey diagram, which is convenient for sorting out each level (as shown in Figure 11).



Figure 11. Information visualization design of Sanxingdui sacrifice

3.5 Discussing and landing the plan

After the completion of this work, it is considered to optimize the integrity and structure of the work, and at the same time, the law of formal beauty is innovatively integrated into this design to make it more beautiful. The application of cultural symbols and elements of bronze in the works is more characteristic of the ancient Shu (Sichuan) area, allowing the audience to immerse themselves in it and feel the charm of Sanxingdui culture.

4. Designing Principles of Information Graphic of Sanxingdui Ruins Site

4.1 The design orientation of the information graphic

The audience of this work aims at young people aged 18-30, and introduces the Sanxingdui Ruins site to young people with the help of retro color matching and traditional patterns, hoping to attract more young people to pay attention to and inherit Sanxingdui culture through this graphic design of information and explore the unsolved mysteries together. Sanxingdui culture is representative of the mysterious symbols of Shu (Sichuan) area culture, so “secret symbols of Shu (Sichuan) area” is the theme of this series of works. Through this work, the public’s interest in Sanxingdui culture will be enhanced, and the boring historical knowledge will become novel, interesting, and more fashionable through new ways. Simultaneously, the relevant information is more integrated and logical, so that audiences can pay attention to, understand and explore Sanxingdui culture.

4.2 Data information transformation

Before creation, we consulted a large number of documents about the historical origin, cultural relics characteristics, sacrificial relics, and cultural values of the Sanxingdui Ruins site, collected data, extracted core contents, reduced complexity, made data information easier to handle, and designed it graphically, so as to ensure that the information expressed in the work is accurate in logic and clear in thinking on the premise of unified expression[12]. To transform data information, first of all, it is necessary to standardize the information, narrow the data to the scope of Sanxingdui culture, and extract information in the form of numbers, words, images, audio, etc. Secondly, these data are processed and transformed by means of calculation, sorting, classification, and making charts. Finally,

according to the transformed information, the graphic design is carried out, and the picture is supplemented by the main text to complete the transformation of the final data information.

4.3 Color matching of information graphic

This information graphic mainly uses retro colors, highlighting the historical sense of the Sanxingdui Ruins site. In order to ensure that color matching is easy to identify and distinguish, it is necessary to increase the brightness difference between colors and improve the diversity of color matching, so that the audience can easily combine words and information and connect with each other. When necessary, we also changed the color tone, so that the audience's color perception is more relaxed and can enjoy it in a comfortable environment. When choosing excessive color matching, we avoid making audiences feel abrupt.

4.4 The font and layout of the information graphic

The title of the information graphic is redesigned, which is related to the thick and mysterious history of the Sanxingdui Ruins site. The text is in bold, the subtitle is highlighted with background color blocks, which makes the whole work more unified, and the English part is in cultural serif, which is more decorative and detailed. In the whole work, the secret symbols of the Shu (Sichuan) area are highlighted, decorative patterns are appropriately added for beautification, the text part is combined with graphics, and the font size is used to distinguish the primary and secondary relations of different information, thus increasing the layering of the whole information graphic. The layout of the information graphic is mainly based on the mode of "text + chart + graph", and the combination of graphics and text can achieve the effect of visual unity, reduce the boring feeling of information and increase the agility and intuition of the work. The border of the information graphic is drawn with traditional patterns, and gold is used to increase the texture and enrich the picture. The background of the work is uniform in color, mainly green, interspersed with textures and patterns for decoration and embellishment. The content of the information graphic needs to be distinguished by spaces, and decorative elements are applied to divide the information graphic into primary and secondary.

4.5 The artistic style of the information graphic

The artistic style of information graphics is mainly flat style, adding classical elements. When introducing the historical origin of Sanxingdui culture, we should design it step by step through a time axis and rose diagram, highlighting key time points and major historical events, so that the audience can understand and analyze according to the process of time development. When introducing the characteristics of cultural relics, behind-the-scenes tidbits and details are presented to simplify the modeling of cultural relics and highlight the value and historical significance behind them. In terms of sacrificial relics, a map design is adopted, depicting the unearthed cultural relics and discovery time of each part of the sacrificial pit.

5. The Publicity and Promotion of Information Graphic

5.1 Online promotion

When combing the information of online publicity and promotion of infographics, we can find that most information graphic designs only stay in the flat expression such as posters, and can only provide the audience with the information they want to express unilaterally, without interactions, which cannot make audiences feel immersed. The expressions of two-dimensional visual space are gradually enriched in recent years, which are very readable. If two-dimensional and three-dimensional are combined, it will be more appropriate to contemporary people's curiosity about new things and can transmit information quickly and effectively. With the development of networks and digital technology, information content is supported by "graphic + technology", which makes information interaction become a reality. Interactive information has changed the single transmission mode of

information, and users are the recipients and senders of information. Interaction breaks the limitation of time and space and has multi-dimensional transitivity, time fluidity, and a two-way process[13].

From the perspective of extension, MG animation can be used to interact with users through “graphics changing shape with time” and add narrative with dynamic symbols, thus serving the content of this work. On this basis, dynamic information graphics and quick response (QR, henceforth) codes can be added to increase interest in the works. Through three-dimensional visual expression, the audiences are provided with a new perspective and an increase in the experience sense, which conforms to the contemporary people’s curiosity, and stimulates the audience to feel and identify information from a new perspective, thus achieving the purpose of publicity and promotion.

To promote from the perspective of platform, we need to change from single media to multiple media, from visual communication to multi-dimensional transformation such as audio-visual, and increase information dissemination channels through five-sense design, so that information can be transformed from single communication to interactive communication. We can also add small games to some key information points to increase the audiences’ memory, which plays a reading-guiding role in the promotion of core content.

5.2 Offline promotion

From the perspective of extension, it can be integrated into installation art, interactive devices, packaging, and other related designs to enrich communication channels. Information graphic fusion packaging design or device design can create a unique and attractive appearance, enhance the competitiveness of products, and arouse consumers’ interest and curiosity. Through the application of information graphics, packaging design or device design can clearly present the key information of products, such as brand name, outstanding advantages, product functions, etc., and at the same time, innovative design elements, such as QR code and interactive devices, can provide consumers with additional user experience and value, which can not only facilitate consumers’ choices but also enhance consumers’ trusts in products. Carefully designed packaging or devices can convey the brand values and image, create an attractive and professional brand image, and further enhance the brand’s credibility. Through the fusion design of information graphics, the added value of products can also be improved. Because the design itself is cross-cutting, the information graphic is integrated into AR technology or VR technology to tell the story behind the information graphic design of Sanxingdui, convey related concepts, further increase the attractiveness of products, and increase the sense of user experience, so that the information has two-way interaction. This design can also broaden the audience so that audiences of different ages can feel the charm of Sanxingdui culture[14].

To promote from the perspective of the platform, it is necessary to cooperate with relevant publicity departments and establish the connection between departments and works, so that the audience can more easily resonate with the information graphic. We can also hold exhibitions offline to attract more visitors to promote Sanxingdui culture. In addition, the information graphics will be placed in the subway station or bus station with a large number of people, which will increase the communication effect and enhance the awareness and memory of the audience.

6. Conclusion

Taking the Sanxingdui Ruins site as an example, this paper discusses the information graphic design of Sichuan culture, analyzes the information graphic design from the perspective of visual communication design, understands the cultural value of the Shu (Sichuan) area, explores the present situation of the Sanxingdui information graphic design and makes scheme innovation, and further explores the application status of Sanxingdui Ruins site in information graphic design. Although this research puts forward the optimization scheme for the relevant information graphic design works at present, there are still limitations and deficiencies. In the era of big data, how information graphic design can make the audience have a better immersive experience from the perspective of visual communication still needs to be further investigated. At present, the graphic design of plane

information lacks rigor, so it can be integrated with AR and VR technologies to improve its professional performance. Relevant data show that most people who make information graphic design are engaged in art design. In order to further improve and develop information graphic design, more researchers are expected to participate in, integrate art and technology, and finally effectively spread information.

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