

Study on public art design methods of metro space with Zhengzhou Metro line 1 as an example

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Abstract

In this paper, it has been researched from not only characteristics of metro public art design but also principles and methods of metro public art design. The author suggests that humanized design principle play a key role in the process, and the metro space public art design should satisfy both people's aesthetic and functional needs. The paper studies design methods employed in Zhengzhou metro for an instance, such as theme design, refining cultural elements, and one color for each line and one landscape for each station. Then the author argues that the metro public art should be regarded as a carrier, which makes people recognize cities' images and cultures.

Keywords: metro public art design, design method, design principle, city culture

1 Introduction

With the extensive development of modern transportation construction, metro station has been gradually incorporated into transportation system planning of major cities. Under such circumstances, metro station itself severs as a "name card" to show the unique culture of a city. The interior decoration, system design, information communication and space expression of such a space are playing an important role in the construction of metro transport system. Public art in the metro space can link all the aspects of this system, that's why it continues to attract increasing attention during the process of construction.

However, the design of metro stations in China is very similar over a long period of time. It is not easy to distinguish metro stations between different cities and between one station and another. As the first metro line in Henan Province, Zhengzhou Metro Line 1 attaches pretty great importance to cultural integration since the very beginning of the project. Central Plains Culture is the origin of Chinese civilization, known for its extensive and profound. How to implant the culture into the modern metro stations, let people experience the city's culture by virtue of the public art design and establish public image of the city is worth studying.

2 Definition of public art design

Chinese scholar Zou Wen believes that, "public art generally refers to arts and art activities in public space. This is defined from the perspective of art classification."^[1] Public art, as we understand, is the artistic creation conducted in an open public space which is featured by openness, environment integration and active public participation. Public art, in a broad sense, may also refers to all kinds of functional structures in the city; decoration and supporting facilities in some spaces; special artworks in the urban area; urban public information and guide sign systems, various advertisements, and some relevant art activities in

the urban space.

3 Characteristics of metro public art design

Metro public art is a component of urban metro construction. It is employed for purpose of the metro station but subject to the city's status at large. We shall regard the city as the platform and metro station as the object to study the functionality and particularity of such a space and address the physiological and psychological problems suffered by passengers in such a particular environment, thus fulfilling the functional needs of the metro station. Meanwhile, metro public art usually represents regional features, showing the mental outlook and cultural features of the local community.

The existence forms of this kind of art not only rely on the metro space to meet the functional demands of metro station, but also have to cater passengers' aesthetic needs. Besides, it should be applied to decorate and beautify the metro space, play a supplementary role in realizing the functions of a metro station, advocate the city image and culture and establish the city brand.

4 Principles of metro public art design

4.1 HUMANIZED DESIGN

Public art design in the metro space exists not only as works of art. Therefore, its functionality shall be highlighted during the design process. In order to create a comfortable travel environment, we shall adhere to the people-oriented design principles. We shall take into account some environmental factors (such as rain-proof, wind-proof, sunlight and airflow). Besides, we shall try to create a comfortable space atmosphere. For example, to create a space atmosphere that can eliminate or alleviate human behavior disorders; also to care about the disabled, women, toddlers, senior citizens, the sick or the injured as well as groups who carry heavy items and whose movement is inconvenient and slow.

For example, we can set up dedicated public phones for the disabled; auxiliary devices can be set up for the visually handicapped and the hearing handicapped. For instance, we can set up wheelchair lifts in the passageway; we can pave blind tracks on the ground; we can set up audible station reporting for the deaf. In order to provide convenience for the disabled, we shall take into consideration the access for wheelchairs while designing the transfer channel between the metro and ground transportation; we can also set up ramps and auxiliary facilities; various safety design can be adopted, such as slip resistance, voice prompt and lighting furniture.

As a designer, it is not enough to design from the perspective of the public and a bystander. A designer shall put himself into the design works and feel self-existence in the design works. Only when the designer adheres to the humanized design principles, can the public sense the existence of the designer; can the functionality and usability of the public art design be realized; can the purposes of facilitating people's life, travel, study and work be accomplished.

4.2 COMBINATION OF AESTHETIC FUNCTION AND USABILITY

In metro public art design, ecological factor, aesthetic factor and social factor shall be well coordinated, thus realizing the combination of aesthetic appreciation and function in the metro public art. The public art in the metro space can be divided into aesthetic public art and practical public art. In fact, aesthetic public art shall not only meet the visual needs, but also carry the city culture and shoulder the responsibility of promoting the city image. The practical public art shall not only meet the utilization requirements but also have the visual aesthetic perception. Therefore, the aesthetic public art and practical public art shall be coordinated, making the expression theme in line with the design style. The practical public design shall have the aesthetic value while the aesthetic public art shall have some practical functions. Only in this way can we design this art which combines the aesthetic appreciation and function in a perfect manner.

4.3 DISPLAY OF CITY CULTURE

In metro public art design, aesthetic demand is one of the design tasks that must be fulfilled. Monotonous design will not reflect regional features and may cause aesthetic fatigue and psychological boredom. Public art design without innovation will cause people to feel that "they have seen the art design somewhere before"; public space without cultural characteristics will result in visual blindness and psychological emptiness.

Different regional cultures will bring up different cultural characteristics among cities, and different cultural attributes reflect different urban cultural characteristics. In metro public art design, we shall try to reflect the characteristics of city cultures and regional cultures; we shall try to reflect the city's personality and features; try to display the city culture and shape the city image, making the metro satisfy the traffic function while promoting the city image.

5 Study of metro public art design methods

5.1 THEME DESIGN

Many factors have to be considered in the theme design of metro space, such as the coordination among the city's economic development, cultural development and ecological development as well as objective factors like urban construction. Theme design can also be endowed with the city's cultural connotation. In this way, all the stations can have the unified association. Take Zhengzhou Metro Line 1 for example, it runs from east to west, connecting Zhengzhou's central area and surrounding areas; in the metro public art design, it represents both the past and the present, covering ancient historical sites in Henan Province and new areas representing the modern image of the city. Selection of sites is carefully planned.

The theme of Zhengzhou Metro Line 1 is "Dignified Central Plains". Firstly, it can indicate the important role of Zhengzhou as a geographic center and railway center in China; secondly, it represents the abundant historical deposits and cultural connotations of Henan Province as the cradle of the Chinese nation civilization; finally, it implies that Zhengzhou will develop into an important city not only in China but also in the world and will have a bright future.

5.2 CONSIDERATION OF CULTURAL INTRODUCTION

After studying metro stations of difference places, it is found that it is not appropriate for the metro public art design to disengage history and culture as well as the regionalism for a city like Zhengzhou with a long history as this may lose city personality and recognition. However, too many decorative elements will result in visual confusion in the metro space, affect continuity of the function and space of the guide sign system and do not meet the design requirements of heavy traffic space. Therefore, only a few cultural elements can be introduced into the design and 20-30% will be appropriate.

5.3 REFINEMENT AND EXPRESSION OF CULTURAL ELEMENTS

The creation material of metro space shall echo people's modern life and the city's history and culture. It is one of the basic research contents in the design process. Good collection and refinement will enhance the cultural connotation and improve the artistic effect, and may determine whether the design scheme will be recognized and accepted by the public or not. It shall be extracted from the resources in the city, mostly from the cultural resources.

The culture of a city is subject to the particular region and local humanistic spirit and can be expressed in various ways. The culture of a city can be expressed as material culture and non-material culture. The former consists of historic buildings, natural landscape and so on; the latter consists of folk art, mythological allusions, folk traditions and folk customs, historical figures, religious beliefs, dietetic culture, literature and poems, etc. We shall seek recognizable culture characteristics and embody the distinctive culture by artistic creation. We shall achieve this

by refinement and expression of cultural elements. For example, there are many historical sites in Zhengzhou as the capital of Shang Dynasty such as the origin of characters--the inscriptions on bones or tortoise shells; the origin of currency-- money cowrie and jade ware; the origin of bronze ware. There is also Henan opera, Jun Kiln, word-formation technology and painted pottery. Many such elements (such as shapes and colors) can be derived from these cultural resources and used in the public art design of Zhengzhou Metro Line 1, to show the regional characteristics and make the artistic effect recognized by the public.

5.4 EXPRESSION FORMS AND MATERIALS

With the development of media and materials used for artistic creation, we can choose a variety of expression forms and materials, which are no longer limited to stone and wood used for creating murals and sculptures. Some new materials, such as synthetic plastics and ceramics with bright colors, are easy to replace and suitable for mass production. They can be used for wall and ground decoration of public facilities. At the same time, these new materials can also reduce the processing difficulty and construction costs, decrease creation time and is conducive to the subsequent update and maintenance.

For decorative lighting, energy-saving and environment-friendly LED lighting technology can be adopted. Under the control of computers, three colors (red, yellow and blue) may form various light and color combinations, creating a rich dynamic change effect and a variety of images. These technologies can be adopted to create a beautiful and colorful light environment, making people feel the scene atmosphere. For example, many high-tech means are utilized in the design of Shanghai Bund Tunnel such as sound, light and electricity, displaying various patterns (reflecting figures, culture, history and scenes) and background music, forming dynamic landscape in the circular tunnel. This kind of design will enrich passengers' visual experience, provide fun and entertainment for passengers and leave them a good memory.

In metro space, we shall consider the application of colors, construction costs of works of art, as well as the environmental-friendliness and safety of materials. Take the O'Hare metro station in Chicago, U.S. for example. The wall design on both sides of the platform is of line of beauty. Glass blocks on the wall are colorful under the irradiation of light, serving not only the purpose of lighting but also the purpose of eliminating platform noises.

5.5 ONE COLOR FOR EACH LINE AND ONE LANDSCAPE FOR EACH STATION

For metro space, the design of routes shall be based on the needs of passengers. The signage system in metro space shall help passengers identify routes, the position of the station and make clear the stations along the route. We can use the traditional method (site naming) to do so. Besides, colors can be used to distinguish different metro lines, which is also a scientific and reasonable way.

Zhengzhou Metro is composed of 6 lines, with a structure of "three horizontal lines, two vertical lines and one circular line". Six different colors can be used to for each of them. Color identification for each metro line shall be displayed not only in the metro traffic map and but also in the metro operation space, transport facilities and service system. Colors for distinguishing metro lines shall be applied in all aspects of public art design of the Metro. One color for each line can distinguish characteristics of different routes in the most direct and effective manner.

Different stations shall be named separately and may be endowed with cultural themes, establishing their own images and features. This can be summarized as "one landscape for each station". Each station has its own cultural features and shall be in line with the theme culture of the line.

Take Zhengzhou Metro Line 1 for example. Its starting station is Henan University of Technology in High-tech Zone and the terminal station is International College of Henan University in Zhengdong New District. There are 7 transfer stations and 30 stations. Each metro station has its unique surroundings and history and culture of this region. Take Zijingshan Station for example. Zijingshan is part of the old town site of Shang Dynasty, dating back to about 3,500 years. Most of the city walls are buried underground as a result of wind, sand accumulation and flooding. In the actual design, the designer adopted simple and dignified wall surfaces, which reflect the characteristics of the city walls of Shang Dynasty, to highlight the dignified feeling of the Central Plains culture. Taotie pattern elements are also introduced into the design of Zijingshan Station, which are endowed with modern interpretation by use of new materials and new technologies.

These measures provide different cultural themes for different stations and increase the recognition of each station for passengers. In addition, the ancient culture of Zhengzhou may demonstrates a new look and a new city image is established without losing the traditional culture heritage.

6 Conclusions


In an era of rapid development of transportation, metro has become an indispensable tool for people to travel because it is convenient, safe and fast. We can appreciate the mental outlook of the city and feel the city's cultural heritage by the public art in metro space. Metro is of great significance to city development. It is an important component in urban spatial environment and humanistic environment. Metro can not only integrate the regionalism, integrality and cultural deposits of the city but also display the city's personality from another aspect and enhance the overall competitiveness of the city.

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