

A Brief Analysis of Metro Public Art Based on Urban Culture - A Case Study of Zhengzhou Metro

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Abstract

As a significant symbol of modern cities, the spatial art design of metro systems must not only take practical functions into account but also integrate local culture to enhance regional distinctiveness and uniqueness. This approach endows metro spaces with greater individuality and recognizability, transforming them into crucial windows for showcasing urban styles and effective channels for disseminating urban culture and strengthening citizens' sense of cultural belonging. Zhengzhou, the capital of Henan Province, stands as a vital cradle of Chinese civilization. It served as the hinterland where the Three Sovereigns and Five Emperors once lived and acted, forming an axis of Chinese civilization, and bears a profound historical and cultural heritage. The city boasts abundant historical and cultural resources, including Shang Dynasty ruins, the Shang capital site, and Yellow River civilization, along with emerging contemporary cultural trends. Taking Zhengzhou Metro as a case study, this paper examines the application and expressive forms of urban culture in Zhengzhou Metro's public art, and proposes relevant suggestions on how Zhengzhou Metro can better fulfill its cultural functions and highlight urban characteristics.

Keywords

Urban culture, Metro public art, Zhengzhou metro art.

1. Introduction

Since its birth in 1863, the metro has been endowed with specific cultural connotations. It is not only a carrier of underground transportation but also a comprehensive platform for inheriting urban history, spreading urban culture, and showcasing the trends of the times. Metro culture is based on urban culture, serving as a microcosm and important component of urban culture, and an extension and enhancement of urban civilization construction. Metro culture and urban culture integrate and develop together. On the one hand, metro culture contains the cultural heritage of the city, reflects its regional and ethnic characteristics, and plays a positive role in building advanced urban cultural brands and improving urban visibility. On the other hand, metro culture subtly and profoundly influences the city's economy, society, and culture. Excellent metro culture can even lead the direction of urban culture, contributing positively to enhancing the city's core competitiveness and promoting economic development.

Zhengzhou is bordered by Songshan Mountain to the west and the Yellow River to the north, located in the "Center of Heaven and Earth". Historically, it was known as "a strategic hub controlling key passes", and has long been a transportation hub for north-south and east-west

routes in China and the East Asian continent. In the process of the origin and development of Chinese civilization, the Songshan area centered on Zhengzhou has nurtured a continuous and orderly inherited Chinese civilization, creating splendid ancient civilizations and excellent cultural wealth in Chinese history. Today, Zhengzhou Metro is not only an important pillar of urban transportation but also a key window to display the city's image.

1.1. History of Zhengzhou Metro Construction

In the new century, with the rapid economic and social development of Zhengzhou and the continuous expansion of the urban built-up area, urban transportation, especially the problem of traffic congestion in the city, has become increasingly serious. It is urgent for Zhengzhou to start metro planning and construction. On December 28, 2013, Zhengzhou Metro Line 1 was completed and opened to traffic, making Zhengzhou the 18th city in Chinese mainland to have a metro, officially entering the "metro era". In the following decade, Zhengzhou has been committed to building an open, multi-level, and integrated rail transit system with the overall goal of "Zhengzhou on Tracks", to support the construction of a "multi-center, networked, clustered, and intensive" urban spatial structure, making rail transit the absolute mainstay of the urban passenger transport system. As of December 29, 2024, the operating mileage of Zhengzhou Metro has reached 450 kilometers, quickly crossing the 400-kilometer threshold for world-class metro cities and ranking among the top 10 in China. From the initial operating mileage of 26.2 kilometers to the current 450 kilometers, from the first-day passenger flow of over 280,000 to a cumulative 3.5 billion passengers, from "a single line" to "a network", the history of Zhengzhou rail transit construction is also a history of accelerated development of new urbanization and rapid urban rise. For Zhengzhou, metro lines, measured by the city's longitude and latitude and connected by tracks, integrate north-south and east-west routes, like the growing veins of the city, constantly extending and interweaving. They play a crucial role in optimizing commuting in megacities, enhancing the functions of central cities, improving the quality of life in the provincial capital, and promoting regional coordinated development.

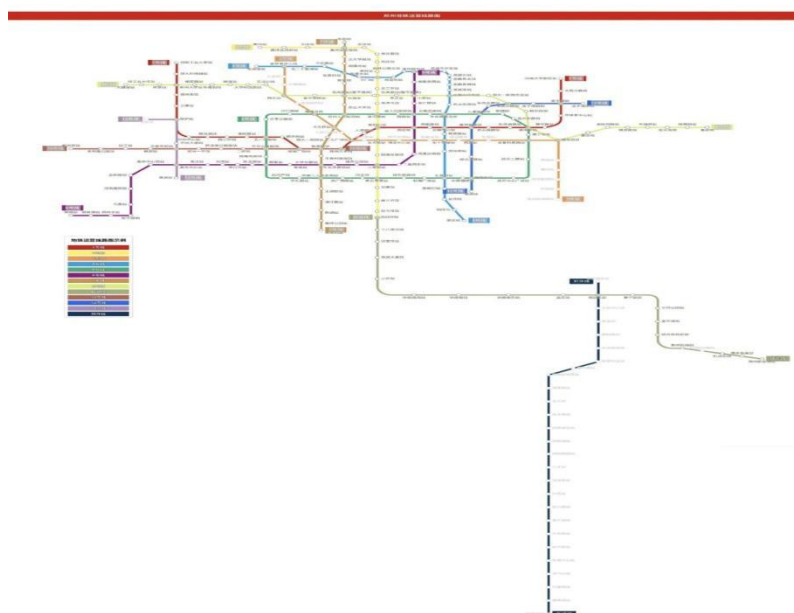


Figure 1: Zhengzhou Metro Line Map

1.2. Connotations of Zhengzhou Urban Culture

1.2.1 Songshan Culture

Songshan Mountain is an important birthplace of Chinese civilization. Historically, ancient Chinese ancestors worshipped, composed poems, built temples here, leaving countless places of interest, which have become a shining pearl in the cultural history of Zhongzhou (central Henan). The diverse cultures in Songshan can be categorized into: Culture of the Center of Heaven and Earth, Imperial Sacrifice and Fengchan (imperial worship) Culture, Three Religions Culture, Astronomy Culture, Geology Culture, Ancient Pagoda Culture, Han Que (stone archway) Culture, Ancient Architecture Culture, Twenty-Four Solar Terms Culture, Dayu Culture, Shaolin Culture, Ceramic Culture, Jinshi (bronze and stone inscriptions) Culture, Folk Culture, Temple Fair Culture, Poetry Culture, Mural Culture, Medicine Culture, Celebrity Culture, Calligraphy and Painting Culture, Opera Culture, and Farming Culture. Among these, 10 cultures with unique characteristics stand out: the Center of Heaven and Earth, Imperial Sacrifice, Three Religions, Astronomy, Geology, Shaolin, Ancient Pagodas, Han Que, Ancient Architecture, and Twenty-Four Solar Terms. These "Top Ten Characteristic Cultures of Songshan" are outstanding representatives and the essence of Songshan Culture.

1.2.2 Yellow River Culture

Zhengzhou is located at the junction of the middle and lower reaches of the Yellow River. As the hinterland of the Yellow River Basin, it is a key area for the early development of Yellow River Culture, boasting rich Yellow River cultural resources, including over 50 natural landscape resources, more than 330 humanistic landscape tourism resources, and over 300 representative intangible cultural heritage projects. The connotation of Zhengzhou's Yellow River Culture is extremely rich, covering Yellow River Water Conservancy Culture, Yellow River Farming Culture, and Yellow River Commercial Culture. Among them, Yellow River Water Conservancy Culture demonstrates the wisdom and courage of ancient people in harnessing the Yellow River's floods and utilizing its water resources; Yellow River Farming Culture reflects the simple qualities of laborers who 顺应 nature and work hard; Yellow River Commercial Culture showcases the prosperity and development of commodity economy in Zhengzhou. With a long history, Yellow River Culture is rooted in profound historical soil, still shining after years of baptism. It integrates multiple cultural elements, with rich connotations and far-reaching significance; it is inclusive, absorbing the cultural essence of different regions and ethnic groups, forming a unique and diverse cultural landscape.

1.2.3 Huangdi (Yellow Emperor) Culture

In Zhengzhou, Henan, Huangdi Culture is not only preserved in historical records and scenic buildings but also deeply integrated into the daily life of local people. Huangdi Culture is a concept of a comprehensive culture, with the most far-reaching influence on later generations in aspects such as Ancestral Root Culture, Cultural Ancestry, and Dragon Culture, including idealized social and cultural visions such as establishing a state, consolidating a unified and harmonious society. Huangdi Culture is also distinctly reflected in the folk customs of Xinzheng. Many local traditional festivals are closely linked to Huangdi Culture. For example, during the Spring Festival, many families post New Year paintings or couplets related to Huangdi on their doorframes, praying for his blessing for family safety and a bumper harvest. Some villages hold shehuo (folk) performances with Huangdi stories as the theme, where

villagers dress up as Huangdi, Leizu (Huangdi's wife), Cangjie (inventor of Chinese characters), and other figures, vividly interpreting legends of the Huangdi era through singing, dancing, and drama, attracting people from surrounding areas to watch.

1.2.4 Heluo Culture

In the pattern of prehistoric Chinese culture, the Heluo region centered on Zhengzhou and Luoyang, since at least the early Yangshao Period, Heluo Culture refers to the regional culture originating from the Heluo area, one of the sources of Chinese culture, and the origin and main vein of China's 5,000-year-old Chinese civilization. The content of Heluo Culture includes primitive painted pottery culture (Yangshao Culture) and black pottery culture (Longshan Culture), Yan and Huang ancestor culture, He Tu (River Map), Luo Shu (Luo Book) and I Ching, culture of the Xia, Shang, and Zhou dynasties, culture of the Eastern Zhou Dynasty, the first unified feudal state formed by Qin Shihuang's unification (which also became a civilized country), and Song Dynasty Luoxue (Luo School) and Neo-Confucianism. Its content involves politics, economy, military, ethics, philosophy, history, literature, education, religion, science and technology, art, ethnicity, folk customs, etc. Among them, He Tu and Luo Shu are the origin of Chinese civilization. As stated in I Ching: Xici: "The River gives birth to the Map, the Luo gives birth to the Book, and the sages follow them." The Tai Chi diagram is a natural phenomenon of the confluence of the Yellow River and Luo River, because the Tai Chi diagram resembles the vortex formed by their confluence. Inspired by this natural phenomenon, Fuxi created Tai Chi and the Eight Trigrams. It is as early as the initial stage of this century that the number of elderly population in China has reached 88.11 million. With the constant acceleration of aging in this country, the elderly population has witnessed a drastic growth. After a period of rapid growth in the early 2000s, the population of the elderly is still growing at a rapid rate of 3% per year. In the year of 2020, the number of people over 65 reached 174 million, accounting for over 12 percent of the population.

2. Expression of Urban Culture in Zhengzhou Metro

2.1. Expression of Songshan Culture

South Sihuan Station of Zhengzhou Metro Line 2 takes "the Origin of Martial Arts" as the design theme, showcasing the essence of Shaolin Kung Fu through major historical events and the footprints of celebrities; Huazhai Station designs its art wall with the Zen and characteristics of Shaolin Kung Fu as the soul, endowing the space with the connotation of Zen-Wu (Zen and Martial Arts) spirit; Beisanhuan Station takes Shaolin Kung Fu as the theme, displaying its unique charm through images of martial arts figures. The mural at "Longzihu Station" selects the most representative gateways of the Four Great Academies as the design theme, best reflecting their architectural characteristics. The mural technique is led by Professor Sun Tao from the Central Academy of Fine Arts, who created the mural series Beihai Scenery at Beihai North Station, which won the silver award at the 12th National Art Exhibition. This mural features mature techniques, exquisite production, clever conception, and gorgeous colors. These stations skillfully integrate elements of Songshan Culture and Shaolin Kung Fu Culture into the spatial art design of the metro through art walls, sculptures, etc., not only beautifying the environment but also allowing passengers to feel Zhengzhou's unique Songshan Culture and historical charm during daily travel.



Figure 2: Shaolin Culture Wall of Metro Line 2

Figure 3: Beihai Scenery Mural at "Longzihu Station"

2.2. Expression of Yellow River Culture

East Ershilipu Station of Metro Line 2 takes "the National Vein - Yellow River" as the design theme, simulating different forms of the Yellow River water, such as waves and vortices, through yellow abstract patterns to show the grandeur and power of the Yellow River; the Eternal Flow art wall in the station takes the Yellow River as the creative theme, displaying the profoundness of Yellow River Culture and the long history through modern materials and techniques, enabling passengers to feel the breadth and depth of Yellow River Culture in the metro station. The design of Yellow River Guest House Station is intended to welcome guests from all over the world, with Yellow River Culture as the background, creating an inclusive and open spatial atmosphere through the facade design of yellow stone lines; the Origin of Chinese Civilization art wall in the station takes Yellow River Culture as the clue, combined with Henan's local characteristic elements, to show the development process of Yellow River civilization and its contribution to Chinese civilization. The "Great River Bends" cultural wall at Wuyi Park Station takes the grand background of the Sanmenxia Hydropower Station as the theme. With the magnificent scene of enamel overglaze, the work depicts the grand momentum of the layers of huge waves in the great river bends. The overlapping mountains and towering cliffs on both sides make the majestic momentum of the Yellow River's natural barrier, stretching for thousands of miles, fully displayed in the long scroll. The golden dam and the towering mainstay in the middle, with the strong color contrast and visual impact with the cliffs and the great river, show the magnificent style of the new mountains and rivers.

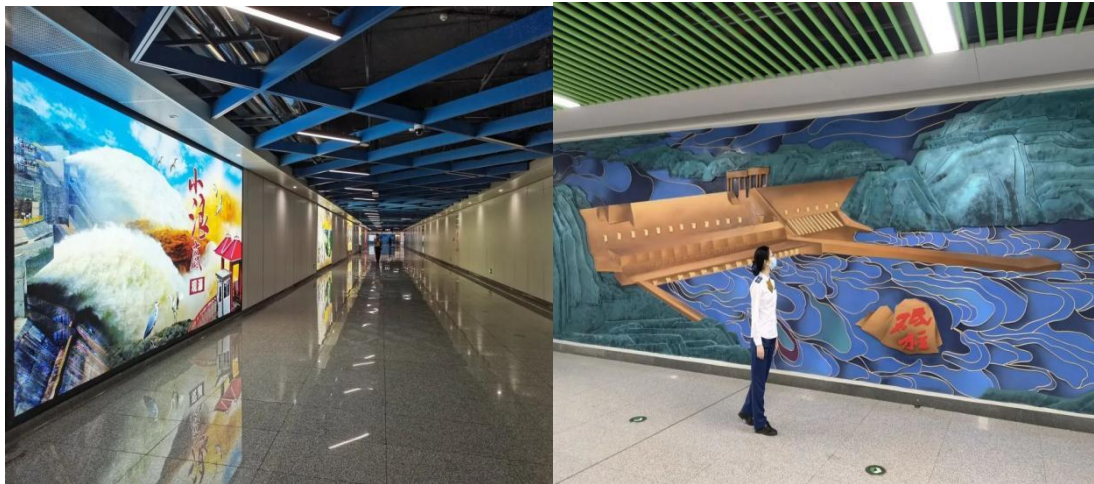


Figure 4: Design of Yellow River Guest House Station Hall

Figure 5: Great River Bends Mural at Wuyi Park Station

2.3. Expression of Huangdi Culture

The work Fuxi Creating the Eight Trigrams at Jingkai Central Square Station is based on Fuxi Culture. Fuxi is known as the first ancestor of humans, and it is said that he created the Eight Trigrams, a symbol with far-reaching influence on Chinese culture. This work uses colored glass combined with metals and other materials in a collage and inlay technique to show the story of Fuxi creating the innate Eight Trigrams inspired by the dragon horse carrying the map, by observing the sky above, the earth below, taking examples from the body, and drawing from things afar. The picture uses dynamic lines to form a swirling space, expressing the endless vitality of ancient Chinese civilization and the worldview of the mutual transformation of yin and yang. The Xuan Huang Chi Hui art wall at Yellow River Guest House Station of Metro Line 2 takes Xuanyuan (Huangdi), Huangdi, and Chiyao as the creative themes. Through the combined image of the three ancestors, it symbolizes the integration and unification of various tribes of the Chinese nation, not only a review and reflection on history but also an emphasis on the unity and harmony of the Chinese nation, enabling passengers to feel the historical context and cultural charm of Zhengzhou's close connection with Xuanyuan Huangdi Culture during daily travel. The Xuanyuan Sets Sail theme wall at Jicheng Station of Metro Line 5 takes Xuanyuan Huangdi as the core of the design, showing people's worship of nature and ancestors during the Yangshao Culture period, as well as their good wishes for future life.



Figure 6: Fuxi Creating the Eight Trigrams at Jingkai Central Square Station

Figure 7: Xuanyuan Sets Sail Theme Wall of Line 7

2.4. Expression of Heluo Culture

The Essence of Heaven and Earth theme wall at Qilihe Station of Metro Line 5 takes gemstones as the design element, using the texture and color of gemstones to imply the jade-making techniques and the pursuit of beauty during the Yangshao Culture period. The Exquisite Illusion mural in the hall of Guanhutun Station selects jade shapes unearthed in Henan, enlarging them to an unconventional scale to highlight the artistic charm of Chinese jade. The mural uses more than 30 kinds of stones from around the world, and directly uses a large number of high-grade stones such as jade from Iran and Pakistan, and rosin jade, to highlight the exquisite and translucent texture of Chinese jade. The designer combines different jade forms, using the upper and lower mirror images of jade to transform into a scene like a lake and garden. The mural at the Dahecun Ruins in northern Zhengzhou has a double-connected pot in the center, which was unearthed in 1972 in the house foundation of the Yangshao Culture site at Dahecun, with the "Great River" on the background derived from the water wave patterns of Dahecun. The whole work collects representative cultural relics and elements of Chinese pottery culture such as Dahe, Yangshao, Miaodigou, Majiayao, and Banpo, including the flame patterns and frog patterns of Majiayao, the dancing figures of Yangshao, the human-faced fish patterns of Banpo, and the stork-fish stone axe of Ruzhou.

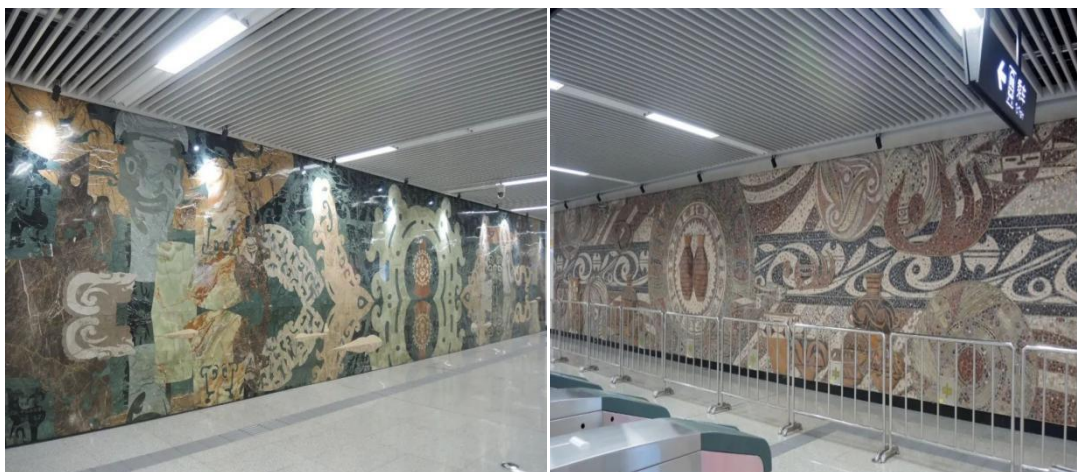


Figure 8: Exquisite Illusion Mural in Guanhutun Station Hall

Figure 9: Mural at Dahecun Ruins in Northern Zhengzhou

3. Strategic Suggestions for Spatial Art Design of Zhengzhou Metro

The LOGO design of Zhengzhou Metro takes the Chinese character "中" (zhong, meaning "center") as the main image, not only reflecting Zhengzhou's geographical advantage as the "Center of Heaven and Earth" but also highlighting the characteristics of the Henan dialect, becoming an important visual symbol for urban cultural output. However, the author found in the research that the spatial art design of Zhengzhou Metro still has problems such as lack of in-depth integration of cultural elements, lack of characteristics in spatial layout, single interactive media, and absence of cultural experience activities.

3.1. Strengthen In-depth Excavation and Integration of Urban Culture

Construct a "time-space longitude-latitude" cultural element database, and systematically sort out the cultural context from the Shangdu ruins to the modern city by cooperating with institutions such as the School of History of Zhengzhou University and the Henan Academy of Social Sciences. Implement the "one station, one theme" differentiation strategy in station design: Erqi Square Station can deepen the expression of red culture, using red gradient glass to etch historical scenes of the Erqi Strike on platform columns, and designing the top chandeliers as retro steam locomotive head shapes; stations in the Longzihu area, combined with the characteristics of university towns, can create the concept of "future study", designing waiting seats as bookshelf shapes, embedding touchable e-book terminals to display university research results and students' original works. At the same time, pay attention to the modern expression of intangible cultural heritage elements, set up dynamic paper-cut projection walls in public spaces such as transfer halls, and transform the images of door gods and lucky dolls in Zhuxianzhen woodblock New Year paintings into interactive light and shadow installations. For the core IP of Yellow River Culture, the ground materials imitating the texture of the old Yellow River course can be laid at stations along the Yellow River route, simulating the four-season landscape of the Yellow River basin through light changes, allowing passengers to feel the magnificent artistic conception of "the Yellow River's water comes from the sky" while walking.

3.2. Innovate Interactive Experience Design

Build a "virtual-real integration" interactive system, set up an AR navigation system on the platform layer, where passengers can scan platform signs to trigger virtual tour guide explanations and simultaneously display the cultural stories of the station. Create a "time tunnel" in the transfer passage, using 360-degree circular screen projection technology to cyclically play images of historical changes from the Shangdu to the national central city. When pedestrians pass by, induction devices will be triggered, and their figures will be superimposed with historical scenes in a virtual-real way. Regularly plan themed cultural activities, cooperate with the Henan Art Museum monthly to hold "Metro Art Season", set up replaceable modular exhibition racks on the platform layer to display paintings, calligraphy, and sculptures by local artists; launch "Intangible Cultural Heritage Experience Day" on holidays, inviting inheritors of intangible cultural heritage such as Bian embroidery and clay cuckoos to perform on-site, and passengers can participate in simple handicraft production. Introduce the concept of "sound museum", embed pressure-sensitive sound-generating devices in elevator handrails, and passengers touching different positions will play local folk arts such as Yu opera arias and Henan Zhuizi (ballad singing).

3.3. Introduce IP Cooperation to Create Internet Hits

Establish an IP resource matrix, give priority to cooperating with "Only Henan·Drama Fantasy City" to create an immersive drama segment performance space, set up a mini rammed earth theater at adjacent stations, and perform classic drama segments regularly every day; cooperate with the Henan Museum to launch "cultural relic blind box" themed carriages, transform the images of cultural relics such as "Fu Hao Owl Zun" and "Jiahu Bone Flute" into carriage paintings, set up cultural relic knowledge question QR codes on the back of seats, and those who answer correctly can accumulate points to exchange for museum tickets. Develop exclusive digital IP for the metro, design "Zheng Xiaodu" (a cartoon image integrating Erqi Tower and metro elements) series of emoticons and cultural and creative products, and set up

blind box sales points in platform vending machines. Plan the "metro check-in challenge" activity, set up hidden photo spots at key stations, and passengers uploading check-in videos with the topic #ZhengzhouMetroCulturalCode# to social platforms can participate in monthly lucky draws, with prizes including joint tickets of cultural and tourism IPs and customized peripherals. In addition, establish a long-term IP cooperation mechanism, set up an IP operation alliance composed of metro groups, cultural and tourism enterprises, and design institutions, regularly release annual cooperation plans, ensuring the authenticity of cultural IPs while feeding back cultural inheritance through commercial development, forming a virtuous cycle of "cultural communication - traffic conversion - economic benefits".

4. Conclusion

Urban culture is the soul of a city, not only shaping the unique personality of the city but also being the source of residents' identity and cultural pride. The design of metro spatial art based on urban culture can not only showcase the city's historical heritage and unique charm but also improve the quality of public space and meet people's pursuit of a better living environment.

Acknowledgements

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