

Inheritance and Innovation of Regional Cultures in Architectural Designs of Yichang

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Abstract Against the background of outstanding traditional Chinese culture and the innovation-driven development strategy, this study analyzed regional cultures of Yichang where ancient Ba and Chu cultures met and blended, proposed regional architectural designs adapted to modern conditions, fully clarified the design concepts of “deeply exploring, highly condensing, making the past serve the present, inheriting and innovating” through analyzing the design cases in many regional architectural projects. The paper aimed at further inheriting and developing the outstanding traditional Chinese cultures, and provided theoretical references for future designs.

Keywords Regional culture, Ba-Chu culture, Traditional architecture, Inheritance and innovation

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Traditional folk dwellings in China have embodied the philosophical wisdom and aesthetic taste of “man-nature harmony, modeling after the nature”, the structure, form, materials, and decorations have shown the perfect integration and utilization of local climate, terrains, resources and environment, also reflected human activities such as production and life, folk customs, spiritual beliefs, and historical context, thus they are the essential carriers of outstanding traditional Chinese cultures. To inherit regional architectural designs and traditional cultures innovatively, it is essential to trace back the roots, fully explore regional cultures, integrate with modern technologies and designs, and manifest connotations of regional cultures from many aspects of architecture such as site, form, material, plane, facade, component, decoration and so on.

1 Overview of regional cultures in Yichang

Yichang lies adjacent to Chongqing in the west, and Jingzhou in the east, the hinterland of the Three Gorges region where Ba and Chu cultures met, and has been known as “the throat of Chongqing and Hubei”, “portal to the Three Gorges”. For being long influenced by both Ba and Chu cultures, the compound Ba-Chu culture with the combined characteristics of both Ba and Chu cultures and its own special features has been formed. Ba-Chu culture shows similarities to Ba and Chu cultures in many aspects, but also has distinctive cultural connotations, specifically shown in respecting the nature, worshiping ancestors, offering sacrifices and believing in supernatural

mystery, romantic weirdness. These unique cultural connotations have been highlighted in local social life and humanistic features, and also in local traditional architectural designs^[1]. Traditional folk dwellings have also shown the integration of stilted wooden buildings of the Tujia and Miao nationalities with brick-wood mixed multi-yard buildings in Jiang-Han Plains. From the perspective of historical development of the city, Yichang once was the wharf and army base built by the Yangtze River for the military and economic activities. Since semi-colonial and semi-feudal Yichang was opened as a trading port, its shipping industry has witnessed rapid growth and prosperous economy, which also has promoted the integration of the Three Gorges region, Jiangnan culture and Jing-Chu culture. Moreover, western architecture such as consulates, Catholic churches, warehouses, trading companies built by the Yangtze River have mixed with oriental architectural cultures in the local area. Therefore, local architecture and regional cultures are different from those in other regions, showing the unique all-inclusive charm of co-prosperity and symbiosis.

2 Modern regional architectural designs

In the new era of promoting ecological civilization, realizing carbon peaking and carbon neutrality goals, and developing intelligent construction, modern architects' mission and responsibility is to explore and refine traditional cultural symbols based on local historical context and regional characteristics, fully integrate advanced concepts and construction techniques of “local energy-consumption, digitization,

assembly type, intellectualization”, so as to comprehensively show functional, cultural, ecological and artistic quality of architecture.

2.1 Respecting and utilizing topography and landforms

Adjusting to local conditions and integrating into environment is the optimal manifestation of “man-nature harmony” philosophy in traditional architecture. Stilted building by water and mountain uses the construction wisdom of overhanging eaves and building on stilts, to balance the properties of safety, comfort, function, art and cost (adapting to actual conditions, dampproof, ventilation, cooling, flood prevention, avoiding insects, storing, appearance, and saving cost), showing the Tujia ancestors' relying on and conforming to the nature. Traditional Tianjin dwellings with compact structures also show northern courtyard architecture's adaptation to climate and terrains in the hot and wet southern regions. In addition, it has also functions such as natural lighting, ventilation, defending, water collection and discharge, as well as the wishes for accumulating fortune and prosperity.

Yichang is a city in the low hilly area should take inspirations from the core concept of “man-nature harmony” of local traditional architecture, comprehensively understand, respect and utilize terrains and landforms in the construction land area and the neighboring regions, follow the principle of “using first, then reforming, balancing earthwork, and planning layouts reasonably”, so as to match the buildings with elevation and environment, avoid the uniform processing of construction land and destruction of natural landscape patterns.

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2.2 Reproduction and innovation of architectural forms

Traditional folk dwellings, whether wooden or brick-wood buildings, consist of 3 parts in appearance, i.e. roof, body and base. The structure of all these building types is wooden structure with beam, stand column and stone base as the stress components, while brick and wooden walls are only for separating spaces, thus the old saying goes “the walls fall, the house stands”. In south China, traditional buildings have double-slope hanging roof to facilitate water drainage. The building is always square and regular with the living room in center and axial symmetry for worshipping ancestors, while fireplace and wing-rooms on both sides, the internal and external spaces are different. Folk dwellings mostly use Chuandou (column and tie construction) structure, on the gable walls of both sides, there are columns and architraves higher than the walls, they are structural components but also special decorations for the walls because of their beautiful lines^[2]. In humid and hot south China, bluestone strip footing and plinth are often used to separate the house and column with the ground for the safety of building and moisture protection, they are the natural plinth ornaments.

No matter in the restoration of old buildings or construction of new regional buildings, modern structural materials and decoration materials such as reinforced concrete structure, steel structure, glass curtain wall, hyperbolic aluminum sheet, concrete casting slab, as well as advanced construction technologies can be applied in addition to representing the construction characteristics of traditional folk dwellings, to make the renovated and newly-built folk dwellings not confined in their original features^[3].

2.3 Regeneration and inheritance of local materials

Limited by transportation and construction cost, traditional folk dwellings always follow the principle of using local materials, thus the mostly-applied materials are timbers, bamboos, stones and raw soil easier and cheaper to get in the local areas. The best timbers are from cedar that are straight and tall, soft and light, elegant in color and easy to process; bluestones are mainly for wall and column base; brick (earth) wood buildings often use cedar and pine as the framework, raw soil bricks and blue bricks for building walls or loam walls. Traditional folk dwellings using local materials can perfectly integrate into the natural environment in texture and color, which not only balances the economic

principle and convenience, but also obeys the ecological principle.

In modern regional architectural design and construction, it is not suitable to use too many timbers, raw soil materials and natural stones for protecting ecological environment and ensuring the safety and durability. However, the protective restoration and functional renovation of traditional buildings require the maintenance and recovery of original architectural structures and materials; or during the deconstruction and rebuilding, the old local materials can be recycled as the decorations, pavements or facing of new buildings or affiliated spaces, which will not only maintain the originality of local culture, but also save cost and reduce energy consumption. In addition, the application of modern decoration materials such as rammed earth hanging plates, bamboo mold fair-faced concrete, ashlar PC brick, wood-imitation aluminum hanging plates, and stainless steel wood grain pipes can better represent the regional and ecological characteristics of traditional folk dwellings, but also reduce the consumption of natural materials and save the cost, and more importantly greatly improve the safety and durability of the buildings, which can also be regarded as the “inheritance and development” of local materials in modern architecture.

2.4 Application and symbolization of architectural colors

Since the ancient times, Tu people as the offspring of Ba people have been keen on black, and good at dyeing using gallnuts, thus black has become the background color of Tu people's brocades and costumes, which also reflects their solemn and resolute temperament. Red, a strong and festive color, in Tu people's heart is able to dispel evil spirits and represent their hospitality. Moreover, Tu people also figure out the 3 pairs of strongly complementary colors from nature, “red-green, yellow-purple, blue-orange”. Therefore, black cloth with red patterns and complementary color decorations constitute the intangible cultural heritage of Tu people—color rules of Tu's Xilankapu (brocade beddings). On the other hand, as the descendants of Chiyou (a mythological warrior engaged in fighting with the Yellow Emperor), and Jiuli tribe, Chu people worship the Red Emperor Zhu Rong (God of Fire in Chinese myth) as the ancestor, they prefer fire and red, and the secretive, quiet and dense black can better highlight red, the color of flame. Therefore, black and bright red, supplemented with yellow and brown, decorated with gorgeous star-like smooth patterns, is the main color coding of Chu lacquerware, symbolizing

“nirvana and rebirth”, reflecting Chu people's understanding of the theme “life and death”. Ba and Chu cultures happen to be the same in color preference.

Considering modern technologies, color application in architecture is basically not limited by materials and technique, while color occupies the dominant place among all visual elements in transferring messages, thus it is an effective approach of inheriting and representing culture and history of nationalities to understand color preferences of Chu and Ba people, and applying color combinations in both buildings and affiliated spaces during the regional architectural designs.

2.5 Refining and simplification of decorative symbols

In addition to color, decorative modelling and patterns of traditional buildings are also vivid portraits of regional cultures. Traditional folk dwellings focus on economical efficiency and practical functions, but also integrate architectural ornaments with structural units, particularly in parts such as rafter head, column base, pendant, main ridge, cornice, door frame, rail and so on, giving them artistic and aesthetic beauty. Tu people have long lived in the huge mountains, they believe in animism, or “everything has its own soul”, in addition to the White Tiger totem that transformed from Binjun, the ancestor of Ba people, after his death, therefore, all things from nature such as plants, birds, beasts, even weathers can be the theme of their architectural ornaments and patterns, and often abstracted into concise geometric figures, these ornaments and patterns are widely applied in buildings and brocades. Chu people, as mentioned above, also worship the Sun because “the Sun is the fire spirit”, and the legend goes that three-legged gold crow lives in the Sun, which has gradually evolved into the totem of fire phoenix, the representative pattern of Chu people^[4]. In addition, Chu people also respect the nature and believe in Si (sacrifice) and Wu (witchcraft), they widely use decorative patterns such as cloud and mist, fierce beast, gorgeous flower, and Panli (a dragon-like legendary animal), and also dragon patterns because of the influence of Han culture.

Through exploring and selecting traditional decorative modelling and patterns, and redesigning them into modern architectural decorations, it will form the comparison between simplicity and complexity, enrich architectural facades, pavements and interior decorations; or through highly abstracting and refining them, it will make new pattern styles integrating the

history, nationality and contemporaneity, which is a reliable innovative inheritance of traditional decorative symbols in modern architecture^[5].

3 Practices of modern regional architectural designs

3.1 A community service center in Yuan'an County, Yichang

Yuan'an County lies in the northeast of Yichang City, getting its name of "Liju" (close to Ju) because of the Jushui River nearby, it is endowed with outstanding natural ecological resources. Leizu Town, under the jurisdiction of Yuan'an County, is the hometown of Leizu, the Mother of Chinese. The legend goes that Leizu invented silkworm breeding, reeling and weaving silk, these crafts greatly promoted the development of ancient Chinese civilization. Leizu culture is not only a significant part of Chinese culture, but also a representative of regional culture in Yuan'an and Yichang. The design of this building uses the story "Leizu reeled silk".

The building consists of 2 independent units, the main functional spaces include administration hall, culture and entertainment area, reading area, rest area, office and so on. It adopts a large-span steel structure as the dominant framework, as well as bionic design concepts, takes the theme of silkworm breeding and silk reeling in all form element designs of architectural modeling, facade detail, pavement, and landscape sketches, which ensures the uniform style of "building—site—indoor" and the visual integration. The oval-shaped building resembles the cocoon for reeling silk, curved heat-reflective glass curtain wall is used for the facade design, which eliminates the boundary between roof and wall, keeps excellent transparency and natural lighting. The exterior metal grids simulate the soft and dignified silk. The retaining wall profiles of landscape facilities such as tree bed and flower bed, as well as the pavement textures natural transit the 3D "silk" into the 2D form, helps form the integrated visual landscape, perfectly matches the building with the site, makes the boring site more vivid and energetic. It is an attempt of concreting and visualizing Leizu culture in the design of regional architecture and landscape sites (Fig.1).

3.2 Architectural design of a villagers' committee in Dianjun District, Yichang

The village is located in Lianpeng Town, Dianjun District, embraced by mountains on three directions with gorgeous natural scenery. As a village of Han people in the low hilly area, the villagers' committee is located in the

valley between two ridges with natural water sources, it is a perfect site for designing regional architecture of Jing-Chu culture. The two-storey building fully uses the advantageous location that faces water and backs on mountains to handle the relationship between building and site. The planar layout adopts 2 singular rectangles to make an embracing pattern along the mountains and guides the vision properly. The architectural form matches traditional brick-wood building of Han people with the stilt building of Tu people, uses wood-imitation columns to create the main visual image of the facade, as well as a perfect semi-open space for overlooking the distance. Grey-green tile slope roof of traditional local folk dwellings is applied, and the overhanging eaves that symbolize "a flying bird spreading its wings" are maintained at the cornices. For rails on the external corridors, phoenix totem and flower-grass pattern with strong decorative properties are used to enrich the building facade, and form the comparison between virtuality and reality, complexity and simplicity. Moreover, natural light is fully used to decorate the wall and floor through the hollowed-out work, to create visual expansion, and beauty of Chinese classical garden.

The front square of the building can be divided into entrance area, recreation area, fitness area, performance area, gathering area and waterscape area, according to its progressive relationship and functional needs. In the processing of square pavements and facility facade, phoenix totem patterns, hollowed-out patterns, flower-bird pattern, dragon pattern, and Taotie pattern from Chu chimes are properly applied to further integrate symbols of Chu culture with the building site and landscape facilities. The building adopts reinforced concrete structure, black and red from Chu lacquerware as the main decorative color, grey-green tiles and red columns, and white walls to reconcile the strong color comparison, which creates the artistic conception of Chinese painting, "wall as paper, carvings as drawing". In terms of overall layout, the building, site, facilities, greening, and waterscapes perfectly integrate into the low hilly terrains, pavilions, corridors, pergolas echo with the mountain, water, wind and wood, showing the concept of "unity of man and nature" in Ba-Chu culture (Fig.2).

3.3 Architectural design of a village fossil museum in Yuan'an County, Yichang

The village is located in north of Yuan'an County, as the portal to Hekou Town. It is the first village in China that devotes in the village-

level protection of fossils, known as "No.1 Fossil Village of China". The village is endowed with precious geographical relics resources, the unique Hubei Crocodilian fossils of 247 million years ago, the earliest ichthyosaur and sauropterygia fossils of the world. Taking 2 characteristic themes of "ancient marine fossils" and "sea-land transition", the village plans to build its rural cultural tourism featured by science popularization education, rural aesthetics, and cultural and creative arts.

Based on the exploitation site of ancient marine fossils, the size of original in-situ protection museum can be expanded, sound and light facilities, VR technology can be used to enable visitors to experience the process of exploiting fossils and sea-land changes in an all-around way, as well as the "new local style" fossil museum design. The design takes the theme of "returning", integrating multiple connotations of "historical changes of time, ancient marine life returning to the sea, back from the busy city to rural wilderness, blending modern construction technology with regional cultures". The museum consists of 3 independent units, fully relies on the original terrains of slopes and plains, reasonably arranges the functional spaces such as entrance area, display area, storage area, rest area, recreation area, digital exhibition area, cultural and creative experience area, specialty restaurant and so on, to naturally form the hierarchy of building facade, the proper transition between indoor exhibition and outdoor sightseeing, and the echoing between square and roof garden. The building adopts reinforced concrete structure and steel structure, the decorative materials are mainly those modern ones that perfectly match with local natural environment, local materials and regional cultures, such as slate stone-simulation exterior wall cladding, wood-simulation aluminum cladding, fair-faced concrete cladding, wood-simulation curtain wall aluminum rectangular tube, heat reflective glass, and double curved surface fair-faced concrete. Concise geometrical shapes and strong and soft profiles interpret the evolution history of "sea and mountain" and comparison between virtuality and reality, integrate tradition and technology, nature and technology, ecology and culture in modern regional architectural design (Fig.3).

4 Conclusion and prospects

Spaces for folk cultures and daily life are specific spatial backgrounds for traditional cultures, folk dwelling cultural system is a part of social cultural structure, deeply influenced by



Fig.1 A community service center in Yuan'an County, Yichang



Fig.2 Architectural design of a villagers' committee in Dianjun District, Yichang



Fig.3 Architectural design of a village fossil museum in Yuan'an County, Yichang

(To be continued in P74)

cultural scene supported by big data mining and machine learning is more accurate, which can significantly improve the travel decision-making of the audience, and willingness formation and behavior realization of cultural consumption.

(2) Technological innovation and cultural creativity are deeply integrated to innovate cultural consumption scenes. Science and technology provide technical support for innovative cultural consumer products, increase the content of cultural consumption, and expand the scope of time and space of cultural scenes through online and offline linkage. Meantime, it enhances the experience and interaction of cultural consumption projects, and innovates multiple ways of playing. With the deep integration of cutting-edge technology and culture such as 5G, AR, VR, and holographic projection, the application of immersive space, innovative retail, virtual entertainment, and virtual idol in the cultural and entertainment industry has become popular. Science and technology investment can effectively promote the upgrading of cultural consumption in cultural scenes, and cultural scenes relying on high-tech and equipment can better meet people's immersive high-quality cultural experience.

(3) Scientific and technological means represented by new media and new media value-added service platform can expand the influence and communication power of cultural scenes, and enhance the radiation ability of cultural scenes. The production, dissemination and interactive sharing of online cultural consumption content through new media technology can effectively stimulate the willingness to experience offline cultural scenes, and create a perfect integration with immersive and walk-in scenes of offline physical space. Online cultural scenes can achieve the acquisition and interactive communication of audience content, and convert virtual flow into visits to offline cultural scenes, while offline cultural scene experience can provide materials and inspiration for audience content production, and finally online cultural scenes will share and disseminate personalized creative content. It is necessary to make good use of short video platforms such as Tiktok, Kuaishou, cultural exhibition and performance cloud platform, Himalaya, Dedao and other knowledge sharing platforms, and operate them as important online virtual spaces for cultural scene, so that online and offline cultural scenes will continue to integrate and

promote each other, thus achieving continuous innovation of cultural consumption content and new upgrading of cultural experience.

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cultures, customs, and behavioral modes. Spatial form of architecture undoubtedly corresponds to culture^[6-7].

Architecture is an outstanding carrier for human material civilization and spiritual civilization, the philosophy, social ethics, construction wisdom, history changes and features of nationality contained in traditional Chinese architecture represents the indigenous culture of a region, as an essential part of traditional Chinese culture. "Deeply exploring, highly refining, using the past for present, inheriting and renewing the old" is a basic principle for modern architects in designing regional architecture, to avoid "all cities, towns and villages in the same mode". Moreover, they should pay more attention to the innovation-driven development strategy and, carbon peaking and carbon neutrality goals, integrate the

innovative inheritance of regional architectural cultures with the tendencies of this industry, such as "green architecture, intelligent architecture, digital architecture", so as to develop outstanding traditional Chinese cultures in an innovative way, and make urban plannings and architectural designs for future.

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