Research on the Protection and Utilization of Urban and Rural Heritage in the Plateau Valley Area of the Yellow River Basin

Take Hainan Tibetan Autonomous Prefecture as an Example[1]

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Abstract

In the eastern valley of the Qinghai-Tibet Plateau, there exist numerous historical towns and settlement heritages. Over time, they have been enriched and evolved against the backdrop of the compact natural landscape of the valley, creating a unique, dense living space where nature meets humanity and history merges with modernity. Herein, taking the Hainan Tibetan Autonomous Prefecture as example, this study presents a comprehensive solution to the challenges of urban-rural development and heritage preservation in the region. At the macro level, GIS technology is employed to analyze the historical evolution of spatial distribution patterns of settlements. This helps elucidate the historical factors contributing to the coexistence of modern settlements with ancient sites. At the intermediate level, a segmented approach to development is proposed, taking into account both natural environments and human settlements. At a micro scale, based on the interplay between contemporary living spaces and heritage sites, urban-rural settlements are categorized into nested, overlaying, overlapping, adjacent, and distant types, and distinct developmental trajectories for heritage preservation and utilization are delved into. Furthermore, a coordinated development strategy is mapped out for the Yellow River source area, which includes both the safeguarding of cultural heritage and the development of urban and rural construction.

Keywords
Heritage Protection, Protection and Utilization, Yellow River Basin.

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INTRODUCTION

Since the inclusion of canal heritage and cultural route heritage in the "Operational Guidelines for the Implementation of the World Heritage Convention" in 2003, the protection of basin cultural heritage has emerged as a significant and increasingly popular area of research in academia. Related research mainly focuses on basins of varying sizes, with the goal of achieving sustainable preservation and utilization of the historical and cultural heritage within these basins. The research demonstrates the characteristics of interdisciplinary integration. Following this development trend, the construction of a national historical and cultural space system based on river basins has become an effective way to protect and inherit cultural heritage in the new era.

Hainan Tibetan Autonomous Prefecture is a typical area in China characterized by a multi-ethnic population and the confluence of various cultures. There are numerous river systems, including the sources of the Yellow River, running through it, forming a north-south and east-west corridor. A network-like spatial system has been established to facilitate the formation, migration, integration, and development of the Chinese nation. Along this system, countless towns and villages have evolved, persisting to the present day, and have left behind rich historical and cultural relics. However, the rapid economic construction in recent years has led to the increasingly prominent contradiction between urban and rural development and heritage protection in the region. Historical and cultural heritage have either been protected in isolation, or has been entirely sacrificed to urban and rural development needs. This has resulted in a reciprocal constraint between the preservation of ancient sites and the advancement of urban-rural construction. Therefore, integrating the protection and utilization of ancient sites with urban and rural construction under the ecological background of the source of the Yellow River is an urgent priority. It is imperative to promptly devise practical strategies that facilitate the adaptive protection and utilization of heritage resources to meet the needs of contemporary social life.

At the same time, research on the evolution of settlement spatial patterns in Hainan Prefecture is still blank, and there is a lack of comprehensive understanding of the urban and rural development context of the Yellow River headwaters plateau valley area represented by Hainan Prefecture. To this end, this study, from a historical perspective, summarizes the spatial distribution characteristics of rural and urban settlements in the region. The results shed light on the fundamental reasons for the multi-layered superposition of ancient and modern settlements in the plateau valley area of the Yellow River, also forging a historical foundation for sustainable protection and utilization of heritage resources in this area.

OVERVIEW OF THE STUDY AREAS

The Yellow River originates from the Bayan Har Mountains in Qinghai, with a total length of 5,464 kilometers, flowing through nine provinces (autonomous regions). Hainan Tibetan Autonomous Prefecture is located in the upper reaches of the Yellow River and the northeastern

corner of the Qinghai-Tibet Plateau, characterized by an average altitude exceeding 3,000 meters. The Yellow River mainstream in the prefecture is 411.3 km long and flows through all five counties in the prefecture. Despite the harsh natural environment and climate, archaeological sites such as Hongshanzui and Layihai demonstrate that human activities in the upper Yellow River region, where Hainan Prefecture is situated, could date back to the Middle Pleistocene Paleolithic Age. This indicates that this area is the birthplace of the culture in the upper reaches of the Yellow River.

Upon transitioning into the feudal society, this region continued to maintain its status as the core of the culture in the upper reaches of the Yellow River, largely due to its geographical advantages. On the transportation front, the Silk Road and the Tang-Tibet Ancient Road intersected and extended along the northern bank of the Yellow River in the area around Riyue Mountain. Historically, Hainan Prefecture witnessed many historical events such as the alliances, peace treaties, and the "tea-salt trade" and "tea-horse trade"; From a military perspective, this region held an extremely prominent strategic position in history. It was once a key battleground where central dynasties fought against minority ethnic regimes in western regions for control. Frequent wars significantly hastened cultural exchanges, rendering making Hainan Prefecture one of the most typical areas of multicultural integration in China. Geographically, this area serves as a crossroads between agricultural and pastoral zones in Qinghai Province. It is a place where Han, Tibetan, Mongolian, and Islamic cultures peacefully coexist, with multiple ethnic settlements intertwined throughout the region.

MACRO LEVEL - SPATIAL DISTRIBUTION OF SETTLEMENTS IN THE HISTORICAL PERIOD

The historical stages of Hainan Tibetan Autonomous Prefecture can be divided into 5 stages according to its historical and cultural characteristics: the Stone Age (3800 B.C. - 2000 B.C.), the Bronze Age (2000 B.C. - 220 B.C.), the Qin, Han, Wei and Jin Dynasties(220 B.C. - 589 A.D.), the Sui, Tang, Song and Jin Dynasties(589 A.D. - 1234 A.D.), and the Yuan, Ming and Qing Dynasties(1234 A.D. - 1911 A.D.). In this study, the settlement sites in prehistoric and historical periods were compiled based on literature such as The Atlas of Chinese Cultural Relics, Research on Ancient Cities in Qinghai, and Investigation Report on the Ming Great Wall Resources in Qinghai Province, totalling 664 settlement sites in various periods.

STONE AGE (3800 B.C. - 2000 B.C.): A MULTI-CLUSTER LAYOUT WITH THE GUIDED BASIN AS ITS CORE.

The Yellow River culture in Hainan Tibetan Autonomous Prefecture can be traced back to the late Neolithic period around 3800 BC, represented by the Zongri culture. There are a total of 195 ancient settlement sites of various sizes, including ancient civilizations such as the Majiayao culture, Zongri culture, and Qijia culture concentrated in this area, forming a vast belt of ancient primitive settlement sites.

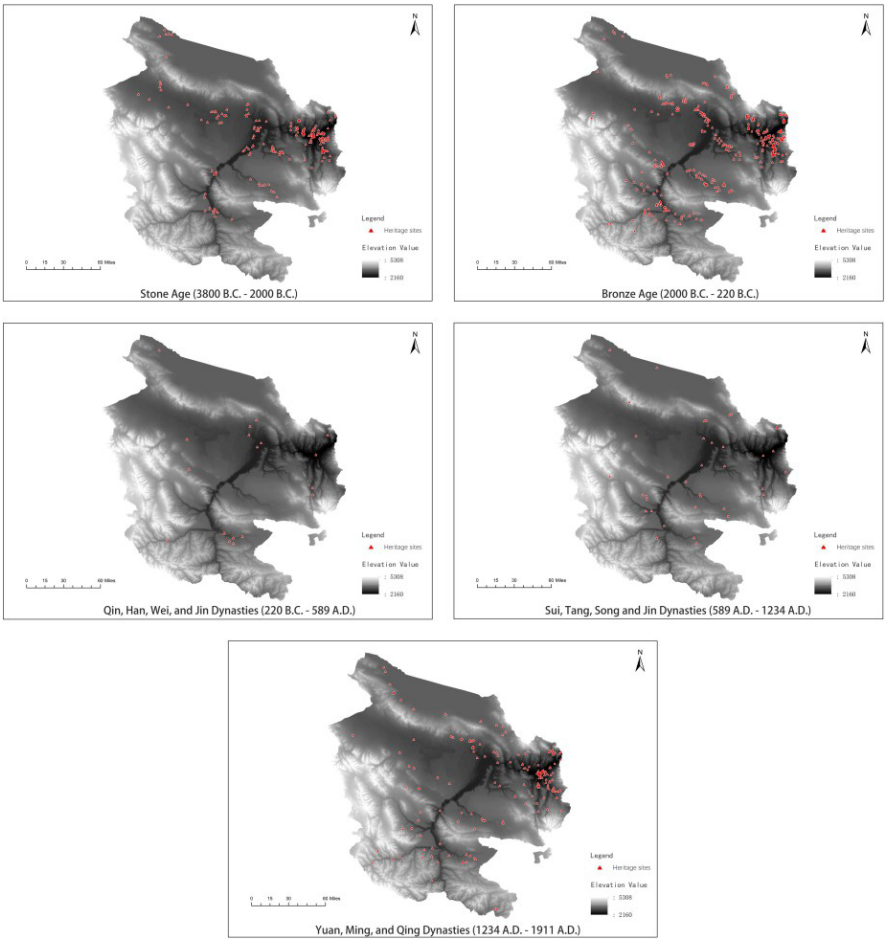


Fig. 1. Evolution of Settlements Distribution in Hainan Prefecture

From a regional perspective, the distribution of settlements during this period formed a spatial pattern with the Guide Basin as the core cluster, with other sites scattered along the main stream of the Yellow River and its tributaries. The spatial distribution pattern of the primitive settlement site with a "single central nucleus radiates to multiple scattered clusters" indicated that the Gonghe-Guide Basin in Hainan Prefecture had become a population gathering place at the source of the Yellow River on the Qinghai-Tibet Plateau during the primitive society period.

BRONZE AGE (2000 B.C. - 220 B.C.): THE EXPANSION OF THE FOUR LINEAR SETTLEMENT BELTS CONTINUES UNABATED

Approximately 4000 years ago, the region now known as Hainan Prefecture entered the Bronze Age. During this period, ancient sites represented by the Kaya Culture site existed, and

their existence coincided with the Western Zhou period in the Central Plains region. Judging from the artifacts unearthed from this period, the cultural characteristics of the Tibetan ancestors, i.e., the ancient Qiang people, gradually emerged. The number of ancient sites from the Bronze Age increased significantly, with a total of 301 ancient sites recorded.

The Bronze Age sites in Hainan Prefecture carried on the basic spatial distribution pattern of the Stone Age sites, with concentrations on the terraces flanking multiple tributaries of the Yellow River. Settlement sites within the Guide Basin continued to spread to surrounding areas. During the Neolithic Age, clusters of sites emerged along the valleys of the Yellow River's tributaries, resulting in four linear belts of site distributions. This demonstrated the valley areas as the optimal settlement locations within the context of the ancient plateau environment.

QIN, HAN, WEI, AND JIN DYNASTIES (220 B.C. - 589 A.D.): A DISPERSED LAYOUT REPRESENTED BY THE CAPITAL CITY.

Before the Qin Dynasty, the region now known as Hainan Prefecture was home to the Qiang and Rong peoples. During the Han Dynasty, there was an increase in interactions and connections among various ethnic groups in the Yellow River and Qinghai basins. The Qiang people began to migrate inland, while Han Chinese from the interior regions began to migrate into Qinghai for military service and land reclamation. Some areas of Hainan Prefecture were incorporated into the administrative system of the central dynasty for the first time. In the early 4th century AD, the Xianbei people migrated into Hainan Prefecture and established the state of Tuyuhun, which lasted for over 300 years. During this period, a total of 20 physical sites and historical structures were recorded.

During this period, the distribution of sites predominantly remained in the Yellow River valley, with two minor clusters emerging along the banks of the Qiabuqia River and Shagou River. At the same time, Shudun City and Fuxi City served as royal cities during different periods of the Tuyuhun regime. The substantial scale of these cities indicated that the Hainan Prefecture region held a strategic position in controlling the entire northeastern part of the Qinghai-Tibet Plateau at that time.

SUI, TANG, SONG AND JIN DYNASTIES (589 A.D. - 1234 A.D.): MILITARY SETTLEMENTS EVENLY SCATTERED ALONG THE RIVER VALLEY

Starting from the Sui and Tang dynasties, this area became the forefront of mutual conquests between the Central Plains Empire and Tibetan Empire. During the Northern Song Dynasty , the Tsong-Kha regime dominated by Tubo established Xige City in Heyin Town of present-day Guide County. Throughout this period, numerous military settlements sprang up due to warfare, with military defense emerging as their most important functional attribute.

In this phase, a total of 41 ancient sites and historical structures were recorded. Military settlements predominated as the main form of settlement in Hainan Prefecture, mostly situated in strategic locations such as river valleys with local topographical advantages. This further underscored the significant influence of military defense on settlement locations.

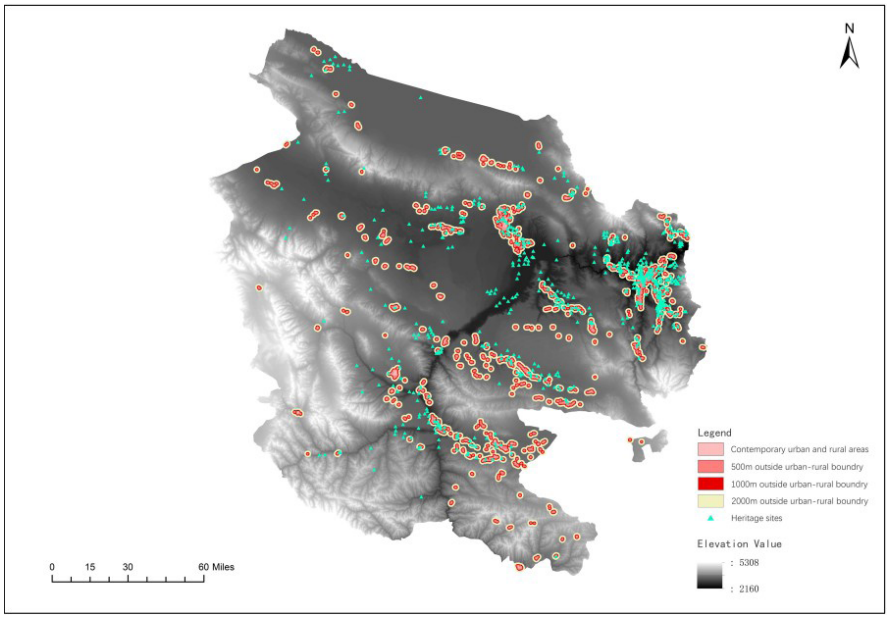


Fig. 2. Analysis of Spatial Coupling Between Contemporary Settlements and Heritage Sites

YUAN, MING, AND QING DYNASTIES (1234 A.D. - 1911 A.D.): INTEGRATION AND COEXISTENCE OF MULTI-ETHNIC SETTLEMENTS.

The Yuan Dynasty achieved unprecedented unity in China, transforming the region where Hainan Prefecture was located from a border area to an inland area. The Yuan Dynasty established Guide Prefecture in this area, which was subordinate to the Tubo Pacification Commissioner. The stability of the political situation laid the foundation for cultural dissemination. Following the Yuan Dynasty, religion became the core factor driving the development and evolution of settlement clusters. A group of settlements centered around Tibetan Buddhist temples was formed. The stability of the political situation also accelerated the concentration of resources such as population towards the regional center, making the Guide Plain once again the center of this region.

During this stage, more than 100 sites of various types were surveyed. The distribution of settlements during this time was centered around the Guide Basin and sporadically scattered along the banks of several river valleys. The types of settlements shifted from military settlements in the previous stage to religious settlements as the main focus. The Guide Basin exhibited significant features of cultural integration, with multiple ethnic settlements coexisting, while the Saizong Mountain area demonstrated pure Tibetan Buddhism cultural characteristics, with Tibetan Buddhist temple settlements as the main type of settlements.

Spatial Relationships	Spatial Distance between Settlements and Heritage Sites	Number of Settlements
Overlaying	0	25
Adjacent	500m	102
Neighbor	500-1000m	110
Other	1000-2000m	181
	2000m	286

Table 1. Classification and Statistical Table of the Relationship between Urban-rural Settlements and Heritage Sites

CONTEMPORARY URBAN-RURAL SETTLEMENTS OVERLAPPING WITH HERITAGE SITES

Hainan Tibetan Autonomous Prefecture comprises 5 counties, 36 townships, and 426 administrative villages (including over 700 natural villages). it can be observed that there is a significant overlap between ancient and modern settlements within Hainan Prefecture, by inputting heritage resources and current urban-rural settlement spaces into the ArcGIS platform and establishing spatial connections (Figure 2). This is attributed to the absolute advantage of living conditions in the valley area compared to other regions of Hainan Prefecture, making it a

high-density distribution area for ancient and modern settlements. Analysis (Table 2) reveals that there are 25 places where modern urban and rural settlements directly overlay with heritage sites, while nearly 400 instances have relatively close proximity between modern urban and rural settlements and heritage sites, accounting for approximately 60% of all modern settlement locations in Hainan Prefecture. The analysis uncovers a highly complex interplay between ancient and modern settlements in this region. Thus,it is imperative to designate strategies for the sustainable conservation and development of heritage resources at the micro level, based on the different spatial relationships between urban-rural settlements and heritage resources, which will promote the organic integration of urban and rural development and heritage conservation..

MESO LEVEL - SEGMENTED DEVELOPMENT STRATEGY BASED ON NATURAL GEOGRAPHY AND HUMAN SETTLEMENT ENVIRONMENT

It is suggested that this river section could be further divided into several river segments, considering of the spatial distribution and its natural geographic characteristics of the settlements along the banks of the Yellow River in Hainan Prefecture. Then, tailored planning strategies will be proposed for each river segment to address the main challenges in particular area.

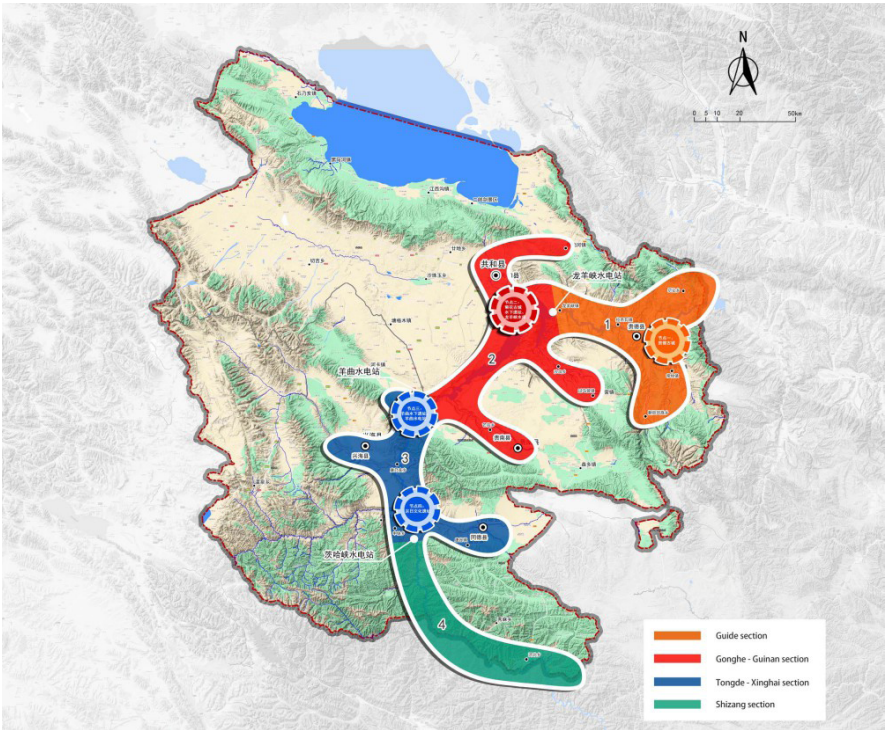


Fig. 3. Segmented Planning of The Yellow River in Hainan Prefecture

The Guided section represents the most densely concentrated area of ancient sites in Hainan Prefecture, and spatially overlaps with the contemporary Guided County. In terms of conservation, it is imperative to comprehensively protect the historical environment pattern characterized by “three rivers encircling the city” and to enhance the connectivity between Guided Ancient City, Yellow River (north side), and Nanhai Temple (south side). This will contribute to establishing an integrated “river-city-mountain” spatial corridor while regulating building heights along this pathway. With regards to development, distinctive cultural elements such as cultural worship, ancient city sightseeing, and ethnic customs should be highlighted through integration of “cultural tourism content,” thereby serving as a model for preserving and utilizing this renowned highland city.

The Gonghe - Guinan section hosts China’s largest photovoltaic power generation base and the largest artificial reservoir in the Yellow River Basin. The construction of the Longyangxia Reservoir has not only propelled regional economic growth but also led to the submersion of numerous historical and cultural sites. Advancements in technology have made it feasible to conduct underwater archaeology at Longyangxia using deep diving equipment and to develop underwater archaeological tourism. Planning for this area can involve establishing a digital and virtual heritage exhibition and experience center, fostering the development of new industries associated with digital heritage conservation.

Sections	Length of the Yellow River Main Stream	Human Settlement	Natural Geography
Guide section	87.9km	Dense	Broad river valley plain
Gonghe - Guinan section	98.3km	Normal	Vast expanse of water
Tongde - Xinghai section	67.3km	Dense	Stepped valley terrace
Shizang section	152.8km	Sparse	River valley

Table 2. Segmentation and Characteristics of the Yellow River in Hainan Prefecture

The Tongde - Xinghai section is an area characterized by a dense distribution of rural settlements and heritage resources, with the presence of several hydropower stations. The objective is to capitalize on the spatial connection between the hydropower stations and historical sites, by developing a "heritage + hydropower" tourism cluster. This initiative is designed to boost the economic growth of nearby rural regions and to promote a synergistic approach where rural revitalization is integrated with the preservation and utilization of cultural heritage.

The Shizang section features a narrow channel, with minimal distribution of villages and towns along its banks. Nevertheless, the area is intersected by several national-level nature reserves and national parks, showcasing abundant and distinctive natural landscapes. The strategy entails prioritizing ecological preservation while fostering eco-cultural tourism. It includes integrating historical and cultural assets such as Shizang Temple to establish an ecological tourism demonstration zone that amalgamates natural landscape exploration with immersive experiences of sacred mountain culture.

MICRO LEVEL - CLASSIFICATION DEVELOPMENT STRATEGY BASED ON THE RELATIONSHIP BETWEEN ANCIENT AND CONTEMPORARY SETTLEMENT SPACES

URBAN AND RURAL SETTLEMENT DEVELOPMENT POSITIONING

Due to the constraints of the terrain and landforms in the Plateau Valley Area, urban-rural settlements and historical-cultural heritage in Hainan Prefecture exhibit various juxtaposition relationships within a limited space. In general, it can be divided into three categories, including "Included", "Overlayed", and "Separated". It can be further divided into five categories, including "Nested", "Covered", "Overlayed", "Adjacent", and "Distant" (Table 3). Given the varied interactions between urban and rural settlements and cultural heritage spaces, along with disparities in public service facilities among these settlements, it is of considerable significance to implement distinct development strategies tailored to the unique "settlement-heritage" combinations.

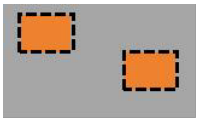
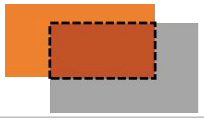
Spatial Relationships		Figures	Features	Development Paths	
				Urban settlements	Rural settlements
Included	Nested		Basically no tangible remains, or scattered fragments embedded in modern spaces	Integrating heritage into everyday life through information labeling	Leveraging intangible cultural heritage to drive rural development
	Covered		Heritage area including modern area, with a wide distribution range	/	Great site museum, Rural cultural and tourism complex
Overlayed	Overlayed		Modern space overlapping with the cultural heritage space	Coexistence of the past and the present, Zone guidance	Coexistence of the past and the present, Rural cultural tourism
Separated	Adjacent		Heritage area and the modern area being close in distance	Construct interactive channels, Undertake advanced supporting facilities	Construct interactive channels, Undertake basic supporting facilities
	Distant		The distance between the site area and modern area being relatively far	Transit supply	Feature positioning

Table 3. Differentiated Protection and Development Framework

Urban settlements have significant advantages in infrastructure and supporting services, mainly undertaking high-level supporting functions such as transportation and accommodation. For the Nested urban settlements, due to limited physical remains and historical records, it is necessary to excavate contextual information based on the limited material remains and historical literature. At the same time, while respecting the current status of the urban built-up area, limited restoration projects should be carried out, focusing on mentioning historical information in a symbolic way and integrating cultural heritage into the daily life of citizens. For the Overlayed settlements, where urban areas overlap with archaeological sites, a reciprocal relationship is established: urban areas offer essential facilities to the sites, while the sites enhance the urban economy by generating tourism revenue and creating jobs for residents. Regarding superimposed areas, the key lies in sorting out historical patterns and creating historical scenes, injecting interactive experience projects centered on folk culture. Non- superimposed areas play a more supportive role in providing ancillary services. For the Adjacent settlements, urban settlements leverage their well-equipped facilities to create a cluster of service facilities and establish interactive channels between the settlement area and the archaeological site. Additionally, urban settlements that are distant from historical and cultural resources primarily fulfill roles as transportation hubs, lodging centers, and supply bases.

Rural settlements possess significant advantages in terms of natural and landscape resources, as well as open space. For the Nested rural settlements, it is imperative to leverage limited material foundations and historical literature for extracting cultural heritage information and creating employment opportunities for villagers through the exploration of unique intangible cultural heritage. For the Covered settlements, a model emphasizing large-scale site protection should be implemented to establish a comprehensive site park or archaeological museum complex that integrates sightseeing, archaeology, research, education etc. Meanwhile, emphasis should be placed on promoting community participation in daily management and encouraging villagers to engage in site protection and restoration efforts. For the Overlapped settlements，historical and cultural resources can be utilized to develop rural tourism，which incorporate tourism sightseeing, inns, and other amenities, aiming to achieve coexistence between rural settlements and sites. For the Adjacent settlements with close spatial proximity to heritage resources, interactive channels between settlement areas and heritage sites should be established, and rural settlements should be fully utilized to provide essential support services for these areas. For settlements far away from heritage resources, although the possibility of direct interaction between the site and the settlement is relatively small, they can still combine their own characteristics to create cultural and tourism industries such as homestays, farmhouses, and outdoor exploration etc. , thereby attracting spillover tourism resources from the core tourism areas.

INNOVATIVE INTEGRATION AND DEVELOPMENT STRATEGIES OF CONTEMPORARY URBAN-RURAL SETTLEMENTS WITH HERITAGE SITES

The strategy of symbiotic development between Urban & Rural Settlements and heritages is further proposed at the architectural level, based on the principles of sustainable preservation and development of urban and rural cultural heritage. By formulating construction design strategies with diverse overlay relationships in urban and rural contexts, the interaction between historical and cultural heritage and modern life is shifted from a binary opposition to one of mutual symbiosis. (Table 3)

Faced with the existing overlap between urban spaces and heritage sites, the previous strategies of either isolating preservation or ignoring them altogether have been abandoned. Instead, efforts are being made to reassess the potential for three-dimensional urban development. This involves repurposing existing buildings in built-up areas through methods such as overhead spaces, sunken spaces, and glass display covers to create exhibition space for heritage sites. This fosters a three-dimensional symbiosis between the city and its historical landmarks. Regarding waterfront heritage in river valley cities, consideration is given to connecting multiple sites with linear heritage sightseeing routes along water systems and facilitating interactive water tours. Additionally, urban waterfront parks are being developed to invigorate public spaces by revitalizing the use of heritage resources.

In response to the current situation of rural space and heritage overlay, an open-space strategy is also employed to address diverse overlay relationships with varied spatial patterns. This includes promoting the coexistence of agricultural and heritage spaces using methods such

as three-dimensional agriculture and ecological landscapes. While safeguarding the supply of agricultural products and boosting the income of farmers, heritage conservation initiatives are being woven into the rural landscape. This involves creating exhibition spaces that seamlessly blend community public services with the preservation of heritage sites. For underwater heritage, consideration is given to establishing underwater heritage museums or diving bases. By enhancing community education and guiding villagers in participating in site preservation and management, the exhibition and interpretation of these sites can serve as a catalyst for rural revitalization. This approach can stimulate the development of rural infrastructure and elevate the living standards of the villagers.

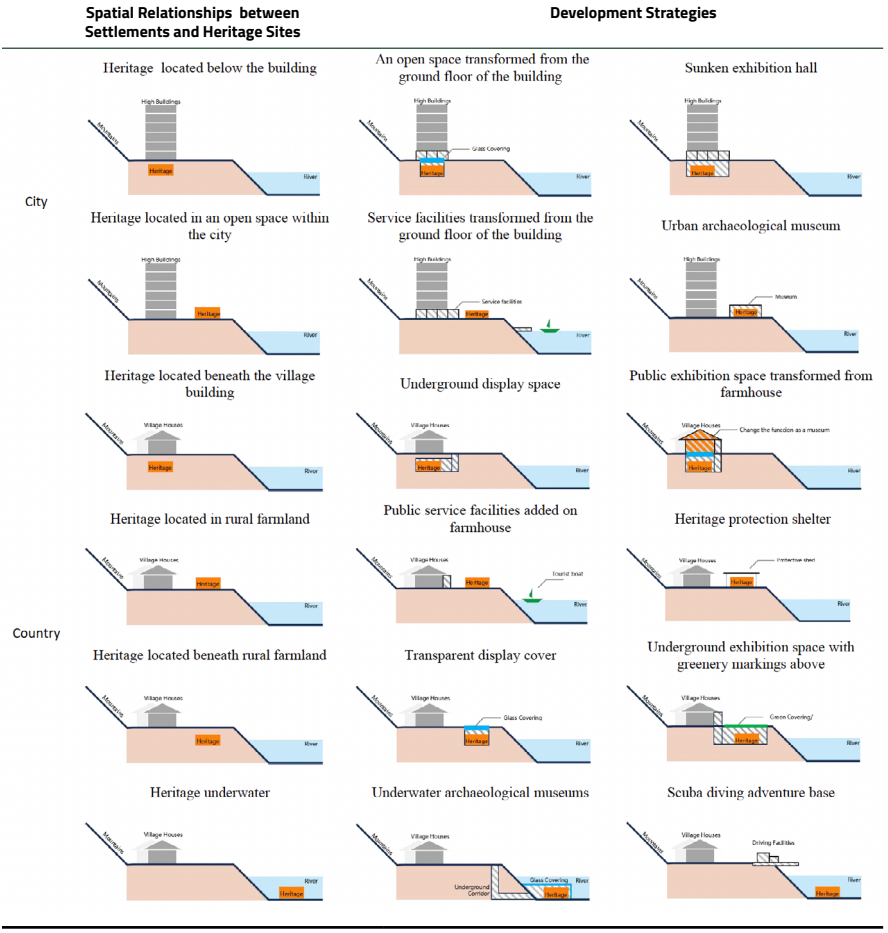


Table 3. The Symbiotic Development Model of Heritage and Modern Living Environment

CONCLUSION

This paper proposes a systematic approach to heritage conservation and sustainable development in the upper reaches of the Yellow River valley using Hainan Tibetan Autonomous Prefecture as a case study. At the macro level, historical data and diverse sources are integrated to summarize the spatial distribution characteristics of settlements across different historical periods in this region. It also points out the reason for the dense coexistence of ancient and modern heritages in the region of Hainan Prefecture is the absolute advantage of production and living resources in the river valley area , by using Arcmap for the spatial connection between modern Urban & Rural Settlements and Historical & Cultural Heritage. At the same time, it proposes the necessity of classification, protection and utilisation for the diverse scenarios of spatial overlap. At the meso level, distinct segments along the Yellow River section within Hainan Prefecture are identified based on natural geography and settlement distribution, indicating segmented planning positioning. At a micro level, considering variations in urban-rural settlement relationships with historical cultural heritage spaces and disparities in urban- rural infrastructure conditions, classifications for urban-rural settlements are established. Based on these classifications, innovative strategies for cultural heritage protection and utilization are proposed. Collectively, this systematic, multi-level approach that merges historical research with planning design offers a beneficial framework for guiding future studies and initiatives in this domain.

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IMAGE SOURCES

Figure 1,2,3 Author's own drawing.
Table 1,2,3 Author's own drawing.

ENDNOTE

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