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Symbiotic Ideology in Historical Layering: Sustainable Development of Linhai City in Urbanisation

Yixuan Yang[1*]

[1]The Bartlett School of Architecture, University College London, UK

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ABSTRACT

The intensification of urbanisation poses new challenges to sustainable urban development. This paper firstly points out that the urban development of Linhai City, China, is characterised by a clear historical stratification in space, and then introduces the theory of symbiosis as a perspective for studying sustainable urban development. While using historical layering as a framework to connect time and space in order to study the use of symbiosis in the development of Linhai in different historical periods. The article will specifically analyse the cultural space, material space, and social space of Linhai's ancient city area, old city area, Dayang new city, and Lingang new city, aiming to reveal the plurality and complexity of city's development in the historical process. Its diverse urban layout not only adapts to the local conditions and respects the natural and historical heritage, but meets the needs of modern society, demonstrating the overall value and specific application of the concept of symbiosis in urban design. The article concludes by presenting the current problems of Linhai's urban development and the guiding role of symbiosis ideology in solving the problems, which will provide a theoretical and practical reference for the sustainable development of Linhai and similar cities, as well as a new way of thinking for future research on sustainable development in China.

1. Introduction

Discussions of contemporary urban development in China cannot avoid the keyword 'urbanisation' as a backdrop. Western urbanisation began 300 years ago with the Industrial Revolution, and has gone through three stages: industrial urbanisation, reverse urbanisation, and re-urbanisation. The 'S-shaped urbanisation curve' represents the evolutionary trajectory of the rate of urbanisation, according to American urban geographer Ray M. Northam. During the Second Industrial Revolution,

* *Corresponding author.*
E-mail address: yixuan.y@outlook.com

the urbanisation level of developed countries rose from 11.4% in 1850 to 52.1% in 1950. In modern China, the urbanisation level has grown from less than 20% before the Reform and Opening-up (1979) to 66.16% by the end of 2023. When comparing China with the West globally, it is not difficult to see that China has taken more than 40 years to complete the 100-year urbanisation path of the West. In terms of going straight from the agrarian era to modernisation, China has caught up with nearly 300 years of urbanisation in the West in just over 30 years [1].

In the current period of rapid urbanisation, several issues are beginning to come to the fore. Since 1990s, the outward expansion of urban land has been a feature and focus of urban development. As significant proponents of new city development, local governments frequently tend to overemphasise the economic benefits of developing new districts while ignoring the standard of construction and the rich history of urban culture [2]. As far as the old city is concerned, traditional construction is regarded as a negative factor in the rapid development of the city. It has been demolished in large quantities and replaced by new buildings with no regional characteristics. The serious imbalance between 'development' and 'inheritance' has led to the erosion and destruction of the traditional urban fabric, and many old cities have suffered from a lack of characteristics and poor appearance [3]. 'Protection' and 'development' have become a pair of contradictions. In addition, in the process of urbanisation in hilly areas, the rapid expansion of cities and the destruction of the natural landscape environment caused by disorderly growth, the gradual loss of landscape and humanistic features and the intensification of human-land conflicts [4].

Located on the southeast coast of China's fastest-growing economy, Linhai City in Zhejiang Province was founded more than 2,000 years ago as a national historical and cultural city. The emerging power of the development of the times, together with the heritage of the ancient city left by the historical legacy, has shaped the complex dual identity of modern Linhai. Driven by this duality, its urbanisation process has included three distinct trends of suburban expansion, with the construction of new towns progressively advancing eastwards along the rivers and plains (most recently by leaps and bounds), all of which have applied the concept of symbiosis to perpetuate the spatial pattern of the ancient city's landscape; meanwhile, the renewal and preservation of the ancient city have been gradually gaining traction with the development of the tourism industry in recent years. However, in general, the development of Linhai, like many other cities in China, has a long history, but with the rapid industrialisation and construction, it has lost its own cultural and landscape characteristics to a certain extent, and even fallen into the dilemma of 'cities all look the same'. However, thanks to the urbanisation of the suburbs and the emphasis on the preservation of historical buildings, the spatial pattern of the old city, its key buildings and streets are still partially preserved, which provides a realistic reference for today's research. The simultaneous construction of the new city and the renewal of the old city have led to a clear spatial and historical layering of Linhai's urban development.

In the studies of Linhai, Wu Heng [5] explores its urban form from the perspective of morphological typology, which includes comparisons between different historical periods and different blocks, but there is no in-depth study on the embodiment of sustainable development and symbiosis. Li Qi [2] studies the cultural and landscape spatial inheritance of the new city of Linhai as an example, but the study stays in the phenomenon and practice, and lacks the theoretical level as well as the analysis of the spatial pattern of mountain-water-city. In addition, Luo Yongjun, Zhang Wanrong [6] and Ma Xiahong [7] studied the spatial evolution and architectural characteristics of Linhai Old Town. Several authors [8-10] turn their attention to the protection and renewal of Linhai's urban heritage, as well as tourism development. All of these studies provide good references for this study, as well as basic information about urban construction in Linhai. However, it should be noted that there is still a lack of discussion on urban development in general, and on symbiosis and sustainable development in particular. Symbiosis is a guiding principle for solving contemporary urban problems, and its application will provide a theoretical and practical reference for sustainable development in Linhai and similar cities.

2. Methodology

2.1 Symbiotic Ideology

Sustainable development is often referred to when discussing urbanisation in a global context, as well as the design and planning of cities. Among its four basic principles are 'building on natural resources in harmony with the carrying capacity of the environment' and 'recognising the value of the natural environment'. Indeed, the interrelationship between human beings, natural resources, and the environment is an age-old issue, and their symbiosis is the embodiment of sustainable development.

The concept of 'symbiosis' was proposed by the German microbiologist Anton de Bary and is defined as the close living together of individual organisms of different species [11]. The application of this concept had a holistic vision of describing species relationships among organisms and their relationships with the environment from a systems perspective. After the middle of the 20th century, the concept of symbiosis has also been given significance in social, philosophical, and cultural fields, and has become an important theory for the study of sustainable development in a variety of fields [12]. Kisho Kurokawa pioneered the combination of 'symbiosis' of Mahayana Buddhist thought and 'symbiosis' of biology as the main body of architectural and urban design [13]. It criticises the mechanical dualism that separates the functions of cities, ignores history and culture, and emphasises the mixing of functions and more complex combinations of functions, while reinforcing the symbiosis between history and the future, technology and the environment.

In the West, late modernist implied to some extent the dissolution of regional characteristics and local culture, and this approach to the severance of people from the city, the environment, and history, as well as an attitude of indifference to the harmonious relationship required between these elements, led to the later rise of urban morphology, 'spirit of place' theories, critical regionalism, and so on [14, 15]. These theories are not lacking in their concern for territory, place, history and nature, and they include references to the modern concept of symbiosis.

In traditional Chinese thinking, the harmonious coexistence of heaven, earth and humans embodies a kind of symbiotic ideology. Ji Xianlin, a master of Chinese nationalism, once pointed out that traditional thinking in the East lies in synthesis, 'The so-called synthesis is to connect all parts of a thing into a unified whole, emphasising the universal connection of things.' This wholeness and connectedness is expressed in the concept of 'harmony between man and nature', which originated in the *Zhou Yi* (late 9th century B.C.) and appeared in Zhang Zai's *Zhengmeng* (1076 A.D.) of the Song Dynasty. Ancient Chinese people paid particular attention to the integration with nature in the construction of the environment, and presented a structural and ecological wholeness in the subsequent development. This leads to 'learning from nature', which is mainly environmental integrity and spatial ecology [1]. The former includes the wholeness of architecture and the wholeness brought about by the hierarchisation of space, while the latter takes the natural environment as the reference coordinates for construction activities, building in the appropriate environment or incorporating nature into the site.

In the history of Linhai, the construction of different eras has embodied the concrete practice of symbiotic ideology to a certain extent, so this paper takes it as a perspective to peep into the sustainability in the urban development of Linhai.

2.2 Framework: Historical Layering

The concept of layering originated in geography to describe the phenomenon of accumulation and covering of layers in geology. In urban history, it first appeared in the 2011 UNESCO Recommendation on the Historic Urban Landscape which defined as 'an urban area in which cultural and natural values and attributes have been historically layered' [16]. This provides a broader way of thinking about city as a layered effect of nature, culture, and society in a process of temporal and spatial

transformation [17]. As early as the 1960s, Conzen, the founder of the urban morphology school, pointed out that cityscape is the sum of various events and historical layers occurring in a specific spatial place, and has a unique 'spirit of place' [18].

Historical layering correlates temporal and spatial characteristics of urban heritage, encompassing a cognitive shift from traditional static slices to dynamic historical layering. Using it as a framework to build up the cognition of Linhai's urban development, it can clarify the urban pattern in a certain time slice in space, summarise the circle structure of the city, and understand its environment and historical background, and excavate the sum of values under the current spatial and temporal characteristics, emphasising wholeness and co-temporality. In terms of time, it emphasise the dynamic perspective of urban development, and time feature it focuses on is beyond the historical connotation of a certain period, including accumulation of value of heritage from its creation to the present, which is characteristic of ephemerality. Exploring ephemeral is a prerequisite for understanding co-temporal, and at the same time, co-temporal is a reflection of the ephemeral. Only by taking into account the ephemeral process and the co-temporal characteristics can we better understand the continuation method and value of symbiosis theory in Linhai's urban development [16]. Historical layering, as an epistemological view of continuity and development, not only pays attention to the interaction of urban development in time and space, but also emphasises the value attributes of both material as manifestation and cultural as connotation in the evolution of the city, i.e., the combination of tangible (explicit) and intangible (implicit) values, which together constitute a spatial and temporal panorama for the study of sustainable urban development.

The article uses historical layering as a framework to describe four processes in the development of Linhai's urbanisation and explores the specific use of natural symbiosis in each process, to uncover the deeper meaning behind the concept, and develop a holistic and systemic approach.

3. Result

3.1 From Ancient to the Present: Pluralism and Complexity in Historical Development

Linhai has an overall natural pattern of being surrounded by mountains, facing the sea, and with rivers flowing through the city, forming a situation where towns are distributed along the water system and the sea, and in the foothills of the mountains. The many hills together form the base of the overall landscape pattern of wider city area, serving as an important ecological space and landscape interface, creating a characteristic townscape with mountains as a backdrop (Fig. 1). In water system, the Ling River and its tributaries form an overall skeleton that runs through the city and connects mountains and sea. The urban waterfront area serves as a dense urban area, forming a carrier for inheriting history and culture and highlighting the city's characteristics. The city's history and culture are in harmony with the natural landscape, forming unique humanistic features and landscape characteristics.

In the centre of Linhai, urban development is closely integrated with natural elements, forming a spatial pattern of 'mountain-water-city'. The downtown is mainly built on plains, surrounded by hills, with the Ling River running around the city from the west and south. The surrounding mountains are at a higher altitude, and the plains space determines the three directions of the city's main development (Fig. 2) [5]. The city has a dense water network, which, in addition to Ling River, includes artificial waters such as East Lake and Ling Lake (Fig. 3).

Historically, Linhai's urban development has a close relationship with Ling River, forming a 'back of the mountains, facing the river, the combination of mountains and water' of the ancient city pattern. At present, the well-preserved ancient city wall and the Jin Mountain inlaid therein together form a unique cityscape. With economic development, the city space is expanded, Linhai has experienced two times of development along the river to the east based on the ancient city, and formed a new city centred on the renovated Ling Lake, and the pattern of mountain-water-city is further expanded. In the

two urban leapfrog developments, the construction of new districts highlighted the concept of combining urban construction with nature.

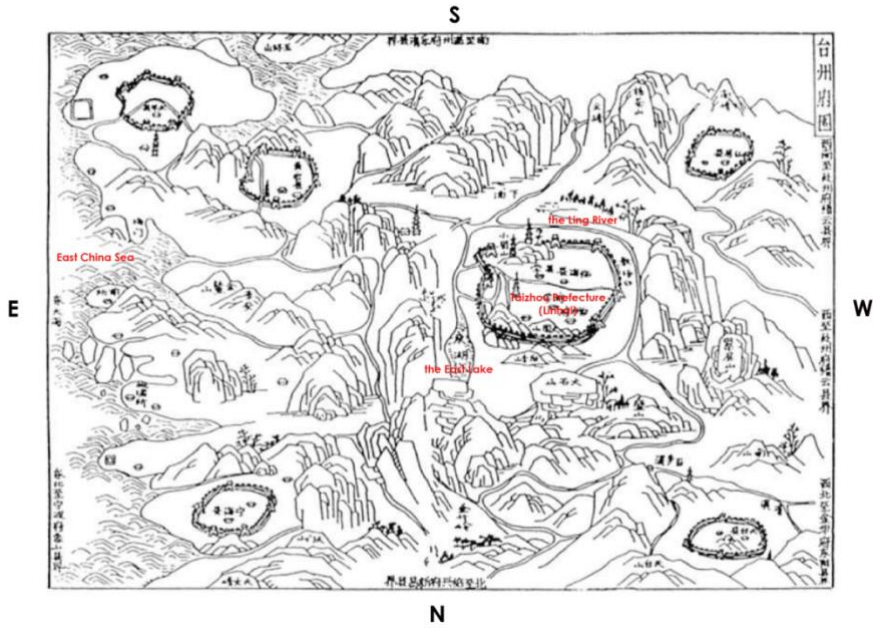

Fig. 1. The regional map of ancient Taizhou. Taizhou Prefecture has close connections with surrounding towns in terms of mountains and rivers (Source: Wang Dehua adapted from Qianlong's *Zhejiang Tongzhi*, 2002)

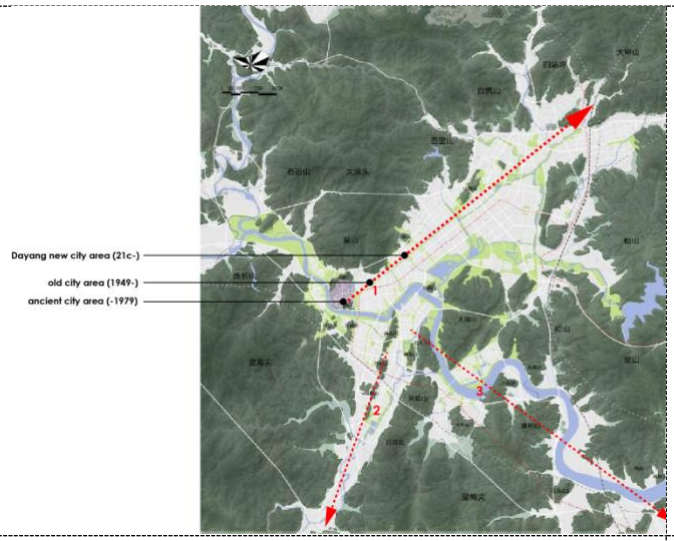

Fig. 2. Urban development direction

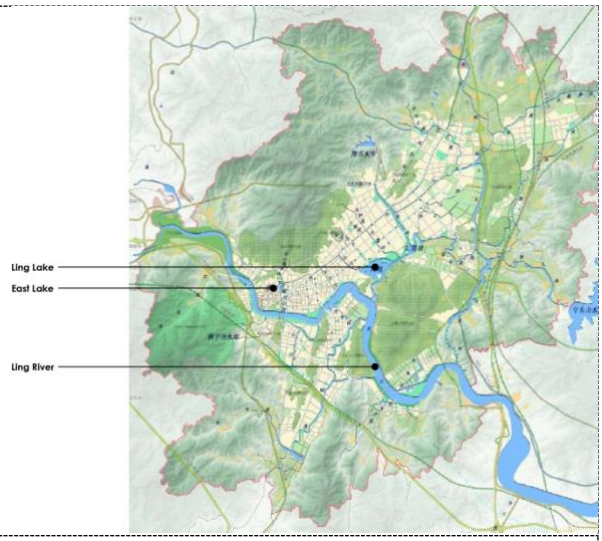

Fig. 3. Current situation map of water system in the central urban area

3.1.1 Ancient City Area (before 1979)

The ancient city of Linhai was built in the Eastern Jin Dynasty (317-420 AD) and underwent many expansions, with its pattern taking shape in the Song Dynasty (960-1279 AD). According to *Jiading Chixing Chronicle*, which was written in the Southern Song Dynasty (1223 AD), the landscape pattern of the ancient city can be seen from the diagram, showing the natural location conditions of being surrounded by mountains in the north, by the Ling River in the west and south, and near the East Lake in the east (Figs. 4 and 5). At the same time, the map also depicts the boundaries of Taizhou Prefecture:

the city wall is built along the Ling River from Jin Mountain on the southeast side to the west and north, and follows the topography of the terrain, going up along the ridge of Beigu Mountain from northwest to northeast, and then finally turning southward to East Lake until Jin Mountain, forming the closed outline of the city. As a whole, the city is built against Beigu Mountain, with Jin Mountain and the two towers as the counter view. The city wall follows the topography and makes full use of the natural elements such as mountains, rivers and lakes as natural barriers to Linhai for defence - in line with the principles of urban construction advocated in *Guanzi* (770-476 BC), which advocates harmony between city and natural environment, and adapting the city to the local conditions.

Fig. 4. Map of State Cities in the Song Dynasty
(Source: *Protection Plan for Linhai Historical and Cultural City*, drawn from the *Luocheng Map* at the beginning of Chen Qiqing's *Jiading Chicheng Chronicle*)

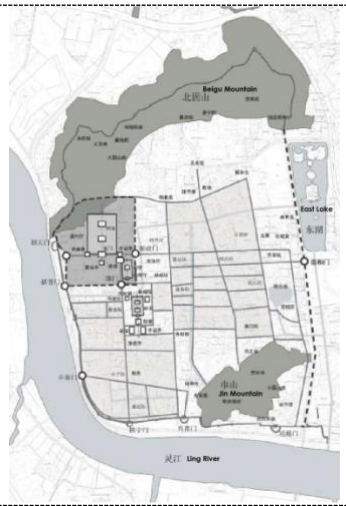

Fig. 5. The Layout of Taizhou City in the Song Dynasty
(Source: drawing from *Luocheng Map* at the beginning of Chen Qiqing's *Jiading Chicheng Chronicle* by Wu Heng)

There is another kind of classic city planning idea in the study of traditional Chinese cities, namely, the layout principles in *Zhou Li - Kaogong Ji*, which embodies the traditional feudal system and ethical thinking: the emphasis on the symmetrical layout, north-south axis, etc. This is a microcosmic examination of the interior of the city, compared with the overall landscape pattern as a telephoto view. Compared with the overall landscape pattern as a telephoto view, this is a microscopic examination of the inner part of the city. Specifically, the Song Dynasty Taizhou Prefecture has basically formed a relatively perfect street framework and clear functional zoning. The streets in the city were mainly in the east-west and north-south directions, of which the north-south road was the main street running through the city, connecting Beigu Mountain in the north with Ling River and Jin Mountain in the south, with traffic, landscape and fengshui considerations. While the east-west road was mostly a connecting street linking the Ling River (in the west) and Donghu Lake (in the east). In the Song Dynasty, the T-shaped main street through the city gate was formed in Zicheng, while the cross-shaped axis was formed in Luocheng, which was juxtaposed with the axis of Zicheng. These axial streets continue to this day as important living roads. As a tangible linear vein, streets connected the natural elements outside the city within city walls, and thus formed an invisible visual corridor and landscape corridor, which became the skeleton of city that echoed landscape pattern of periphery.

Although the construction of Linhai was largely motivated by political and military purposes, the formation of ancient city pattern was not a simple response to functional needs (Fig. 6), which fully embodied the examination of the landscape environment in the ancient Chinese idea of planning and camping (Fig. 7), i.e., the ideal pattern of city sitting in the concept of fengshui - negative yin, embracing yang, with the mountains at the back and the water at the face. The natural environment has

a strong restrictive effect on urban construction, especially in hilly areas with complex topographical conditions, where the way of responding to environment often becomes the key to determining the overall characteristics of the urban form. Therefore, when we turn the perspective to the external landscape pattern to explore the relationship of mountain-water-city, we can trace back from *Guanzi*, and know that the choice of the site for the construction of the Linhai is in line with the above principles.

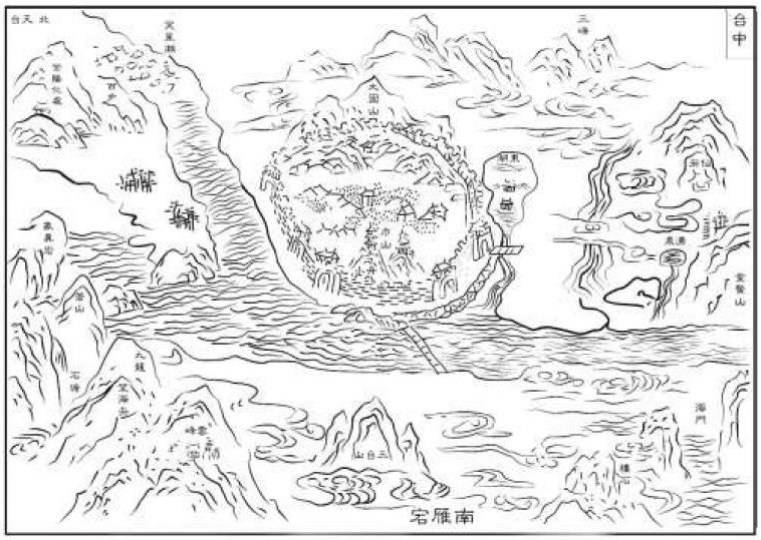

Fig. 6. Taizhou City Map
(Source: Wang Shixing (Ming)'s *Wuyue Youcao*)

Fig. 7. In ancient China, the ideal place for selecting towns based on fengshui examination of environment

3.1.2 Old City Area (from 1949)

Although Taizhou Prefecture was formed in the Song Dynasty, the city did not undergo any major expansion to the periphery (suburbs and villages) until 1950s. In the period after 1949, most of new dwellings were constructed on the vacant land within old city, and from the perspective of layer accumulation, the new buildings merely complemented the originally blank layers (land). In addition, it is in response to the replenishment and restoration of built-up area within the old city, creating a complex situation with multiple functions and forms. In other words, after land within old city was filled up, the acupuncture type of urban renewal (plot redevelopment) began to take place, which is divided into three main types: building replacement, building adaptation, and new building (Fig. 8). Specifically, corresponding to three concepts: buildings are replaced by brick structures to form new forms, courtyard open spaces are constructed with buildings of lower heights, and construction on vacant lots (or vacant lots after old buildings are demolished) [5]. From this point of view, all of this subtle urban regeneration was carried out from the functional needs, taking into account the form, without extensive destruction of the old city's texture, maintaining the overall appearance of old city, achieving the effect of integration and revitalising the neighbourhood.

During this period, it is worth noting that more than 1,000 metres of the city wall on the east side of the original ancient city were removed in 1958, marking the beginning of urban construction breaking through the constraints of the city wall. However, it was in the 1980s, during the rapid development of the city's economy and social transformation, that Linhai's urban construction broke through the confines of the city wall to the hinterland on the eastern side and entered a phase of large-scale expansion (Figs. 9 and 10). Previously built roads ran from preserved city gates through entire hinterland surrounded by Ling River to the north-east to outskirts of city, connecting to main national highway. Great number of orientated houses began to be built along both sides of the road, at a time

when the main commercial activities were still concentrated within old city. The new roads began to become wider and neighbourhoods larger than in the old city. Roads perpendicular to this main road, as well as roads parallel to the river, were built in the flat eastern part of old city, forming a vertical orthogonal road network (Fig. 11). On the one hand, the main road in a southwest-northeast direction serves as an axis of development between mountains and Ling River. On the other hand, roads perpendicular to it serve as a sub-axis of traffic linking mountains and river as a scenic corridor, and the accessibility of city to nature is greatly increased. This more modern road layout, on one level, echoes the trend of outward development of the ancient city, adapts to the limitations of geographic space, inherits the overall landscape pattern, and perpetuates the cultural lineage of the site.

Fig. 8. Types of Parcel Redevelopment in Taizhou Municipal City, drawn by Wu Heng

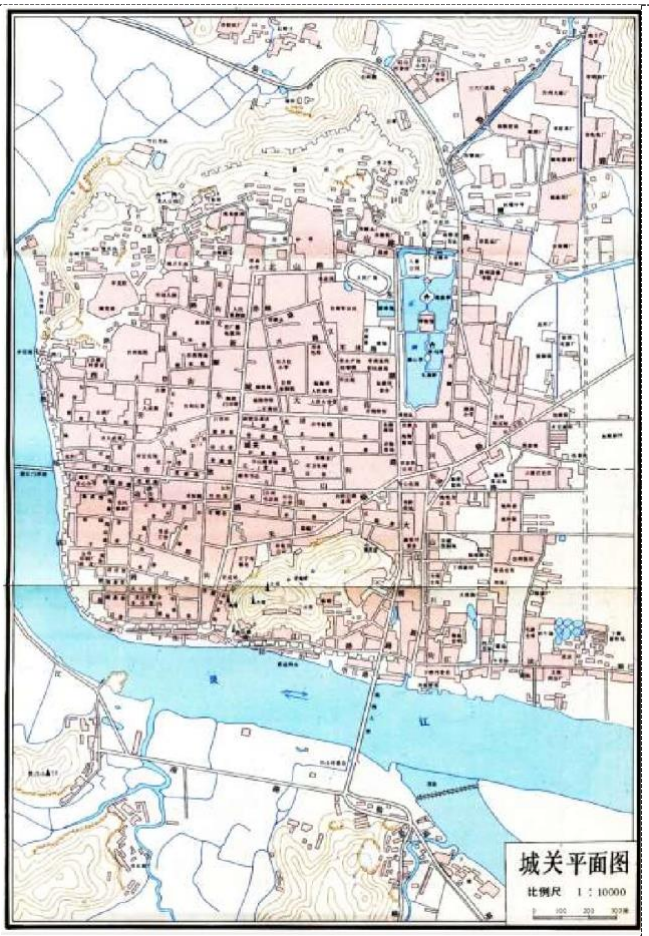

Fig. 9. Linhai City Map before 1989 (Source: *Linhai County Annals*)

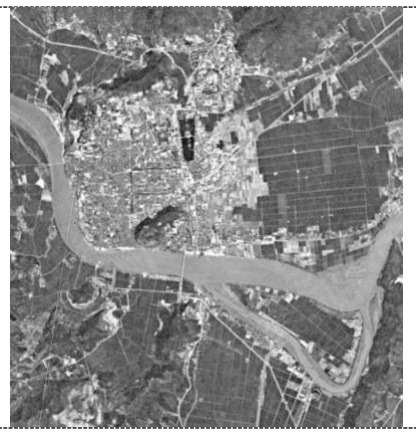

Fig. 10. Satellite image photos of Linhai in 1980

Fig. 11. Satellite image photos of Linhai in 2024, ancient city and old city area

The East Lake was also restored during this period. Due to the expansion of city to the east, East Lake, which was originally used as a defence together with the city wall, gradually became an inner landscape of city, and its nature of water storage began to dissolve. East Lake and the mountains to the north and south of lake, which used to be the boundary of the city, were connected with Ling River in a wider pattern and became a landscape vein in the centre of the city from this time onwards.

3.1.3 Dayang New City Area (from 21st Century)

Until the beginning of the 21st century, expansion of new city continued to the northeast along original main road from Chonghe Gate of old city (Fig. 12). The construction of Dayang new city was less dependent on the already built-up areas, but instead first selected peripheral farmland areas with simple conditions in their current state for construction, and was characterised by extension and leapfrogging along the main road of the new town - in line with the general pattern of new town construction in China at that time.

The centre of development during this period was located approximately 3km from old city. Similar to previous phase of development, the geospatial development of Dayang new city is still limited by natural conditions such as geomorphology and topography. Due to enclosure of mountains in the north, west and south directions and the limitation of the national highway in the east, the development of Dayang new city is geographically located along the main road of the urban area mentioned above in the form of a belt in a southwest-northeast direction.

As a strategic spatial expansion of Linhai into the 21st century, its spatial pattern still takes into account elements of the overall landscape environment (Figs. 13). Specifically, on the outside of central area, natural mountains on the south and north sides have retained intact green vegetation and extended into construction area of new city, closely integrating with urban space. U-shaped channel of Ling River on its south-east side has been developed into Ling Lake, which serves as a tourist attraction, a reservoir for floods and a regulator of city's microclimate, and whose green space, water system and bargebanks blend with nature to form city's boundaries. Inside the city, public function centre is combined with the core spatial axis from the north side of mountain to Ling Lake to form a unique urban space. The main road retains wide road greenery, together with the original crisscrossing water system, integrating natural resources inside and outside of the city, which together form blue-green spatial network inside the area, and become capillaries of outer mountain and water network inside the city.

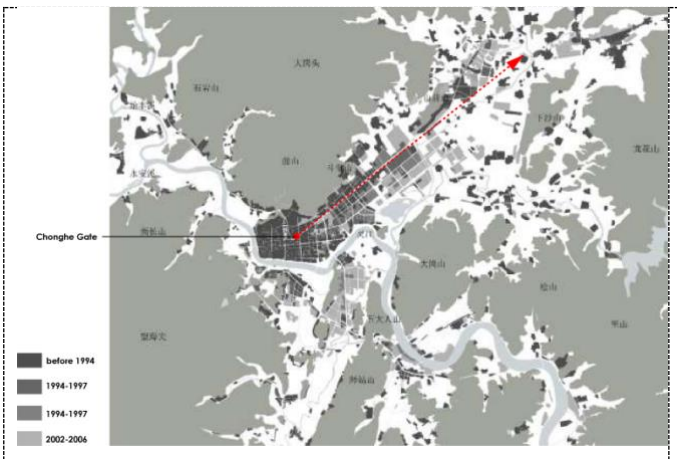

Fig. 12. Linhai Urban Forms in the Exploratory Development Phase (1993-2006), drawn by Wu Heng

Fig. 13. Dayang new city uses the natural resources to build an ecological network and integrate with the urban space

The construction of new city makes use of natural resources to divide different areas, paths and nodes, thus linking up various elements within the city. The use and creation of its landscape space relies on nature through protection, utilisation and transformation of ecological elements, and is organically integrated with city construction to build up urban framework: backed by mountains on the north side, the south side faces Ling River and Ling Lake, hills on the two sides of lake form a classical Chinese garden-like counter-view, internal water system serves as a subtle natural vein, and a few individual mountains become the nodes in city [2]. From ancient city to old city, and then to Dayang new city, Linhai has always emphasised integration of mountains and water in its urban construction ideas throughout the temporal and spatial development along highway, topography, and natural patterns to the north-east of ancient city. The concept of organic integration is emphasised between urban areas built at different times, within urban areas, and with surrounding natural ecology.

3.1.4 Lingang New City Area (Present)

Lingang new city has been underway since the 2020s on the East China Sea waterfront. Its development has broken away from the trend and framework of gradual expansion in geographic space, breaking through the constraints of hilly terrain. Although Lingang new city faces the wider ocean, it still maintains the connection with Ling River at the macro level (Figs. 14). More importantly, its spatial pattern of 'mountain-water-city' inherits symbiosis on a larger geographical scale, forming an organic system.

The bay along the coast of Lingang new city deserves to be noted as the perspective shifts from the natural pattern of the region on a large scale to the interior of the city. In the current situation, the 'one pond and three mountains' around bay form a natural 'mountain-water' topology of city's waterfront, achieving a balanced and harmonious situation of blue-green symbiosis. The bay area has also become control point for construction of new city, and subsequent planning and construction of rivers, green areas and wetlands will be carried out with this as the centre (starting point), so that external nature will penetrate the inner part of city (Figs. 15).

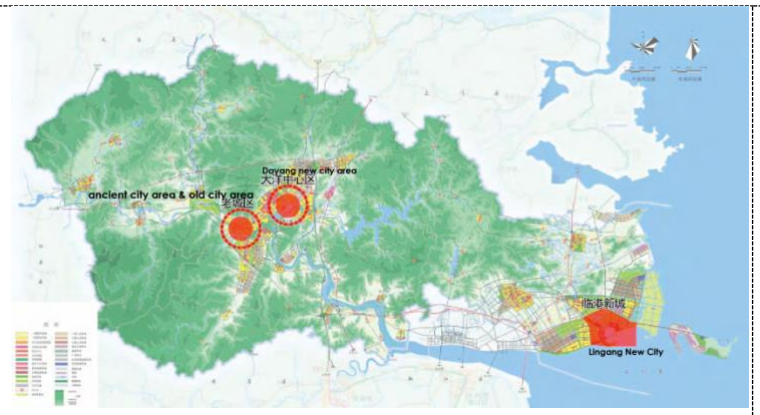

Fig. 14. Location relationship map of different city areas

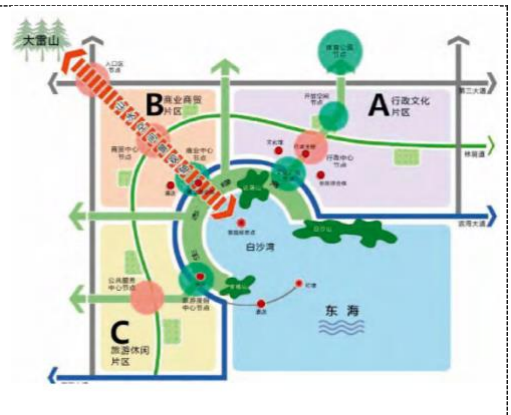

Fig. 15. The overall spatial pattern in which the mountains and the sea contrast with each other

On the whole, the construction area of Lingang new city is between the mountains in the northwest and the sea in the southeast, presenting a spatial pattern which inherits the characteristics of mountains and water corresponding to each other. With the expansion of urban construction area to the Sea, landscape space has also been expanded in geographical scale. From ancient and old city, Dayang new city, to Lingang new city, the relationship between landscape and the city has been inherited, and the

characteristics of this pattern are considered to be rooted in the spirit of city and based on the current natural conditions [2] (Figs. 16).

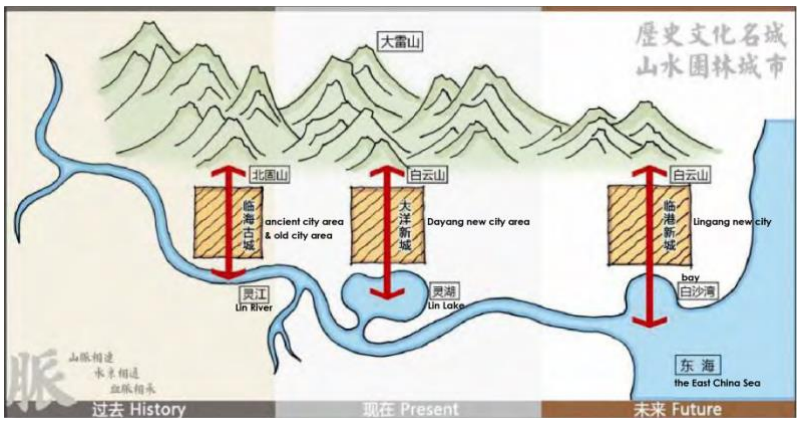

Fig. 16. Illustration of spatial heritage of nature

3.2 Symbiosis: as a Strategy for Sustainable Development

3.2.1 Symbiosis of Nature

In the above analysis of Linhai's urban development map in the context of geographic space, the historical evolution of Linhai is discussed while focusing on symbiosis, which brings attention to elements related to natural ecology. Firstly, this is because the natural ecology as a carrier is the best way to express symbiosis in urban space of each period. Secondly, the landscape network remained relatively stable when exploring urban spatial patterns from a long-focus historical perspective - especially before the Industrial Revolution, when the population did not have a strong will and ability to transform nature. Crucially, the ancient Chinese method of siting and building cities was influenced by various ideas, including geomancy, and always maintained a harmonious relationship with nature, which is the best and easiest way to embody the concept of symbiosis.

The evolution of spatial pattern of mountain-water-city in Linhai has a consistent attitude of humility towards natural ecology from ancient times to the present, in which a dynamic balance has been maintained between utilisation and transformation, which has enabled the inheritance of the mode of living in symbiosis with nature.

The ancient restraint on transforming nature was a result of the importance that the people attached to security. In traditional Chinese thinking, destroying nature on a large scale would result in a backlash against one's survival in terms of climatic disasters, food harvests, and so on. This is the reason why the people (including the emperor) remained obedient to nature, emphasising the need to avoid harm and adapt to local conditions. Similarly, when there are now enough technological means to transform local landscapes and resist natural disasters, livable cities and ecological resilience are beginning to be mentioned, echoing the integrity of landscape patterns and the stability of ecosystems, respectively. In other words, urban ecological service capacity, ecological vulnerability, ecological risk, and ecological security patterns began to be incorporated into the indicators of urban construction. This is not only a paradigm evolution of rationalisation of ancient thought, but also a care for natural symbiosis in modernisation, all of which have a humanistic tendency.

As the most easily perceived symbiosis, nature symbiosis relies on real space, and its specific mode and practice are influenced by concepts and endowed with cultural connotations. Therefore, starting from the symbiosis of nature, and then exploring the spatial pattern of mountain-water-city, the typical interactive influence pattern of 'space-nature-humanities' can be clarified.

3.2.2 Symbiosis of Space

Examining the urbanisation process from layering perspective, we can not only summarise the cultural inheritance under spatial pattern of mountain-water-city by analysing natural ecology. Focusing on the expansion of land use, we can also find that flow direction of Ling River is actually a spatial metaphor for direction of urban development.

Throughout Linhai's urban construction history, combined with the origin and development process of mountain-water-city spatial pattern. It can be seen that the city construction combining landscape environment to focus on the interweaving of nature and artificiality, the dual attributes of nature and humanity, and the interactive relationship between human settlement activities and natural environment in the long-term symbiosis and integration [4]. Urban space as a material element interacts with topography and river systems to form a unique spatial organisation pattern in Linhai, and space also becomes a carrier of nature, and the two are interdependent.

Understanding the space beyond nature will be explored the city and its architecture. The overall structure of the city, the road grid and the form and scale of architectural assemblage have varied greatly from one period to another (Figs. 17), or to be more precise, from one stage of development to another - especially in recent decades. The boundaries of different textures and scales are not clearly visible, but rather this integration promotes progressive development of neighbourhoods, eliminates overemphasis on centrality in leapfrogging, and achieves a symbiosis between spaces of new city of different eras.

Fig. 17. Differences in urban space over time

The dramatic change in scale that occurs when expansion is observed in a layered perspective is closely related to economic efficiency and needs of people to use the space. The densification and complexity of flow of people and information in urban space reinforces the social nature of space, and emergence of openness and diversity emphasises urban space as a place where events take place. Thus, space can be understood at a more abstract level as a carrier of culture. Contemporary perspectives tend to emphasise urban culture and spirit of place, which involves a symbiosis within social spaces or social arenas, which is a cultural interaction.

3.2.3 Symbiosis of Cultures

By discussing the two elements of ecological environment and physical space in the development of Linhai city and focusing on the interaction between them, one direction has been made clear, i.e., the humanistic attributes of urban development in the spatial pattern of mountain-water-city.

The regional culture formed since ancient times, together with urbanism, has shaped the symbiotic ideology of local in development, and consciousness can be passed on has largely intervened in implementation of behaviours, including spatial and temporal behaviours and urban construction.

Specifically, under the influence of cultural concepts, the landscape situation is fully utilised, and important humanistic spatial elements are placed at focal points of natural pattern. Therefore, idea of humanity is embedded in order of material space, i.e., the intangible values and social networks are carried and manifested through tangible urban material space form. In dimension of long-term urban development, the mountain-water-city pattern has the role of adaptive regulation.

Consciousness-influenced behaviour can shape order in space, including social networks and human order. In context of globalisation, development of pluralism, and integration of ideas, combined with economic development and technological progress, culture can be integrated into spatial strategies to a greater extent by activities, which can then be transformed into perceived, understood and revenue-generating economic spaces. Ancient cultures are also revitalised by social and natural spaces.

The excessive pursuit of economic growth tends to dissolve purity and non-profit nature of culture, and development of cultural space under utilitarian and functionalist orientation often tends to be kitschy and cheap. Therefore, culture should not simply be a function of city, but should be valued as soul of city, even under the control of power. Cities need to transition from mere material transformation to deep cultural creation. Cities must also have the material carriers to match their culture, which will help them transform from functional cities to cultural cities, and achieve a symbiosis between nature, space and culture to form a sustainable development trend.

3.2.4 The Road to Tomorrow: the Symbiotic Ideology in the Wave of Urbanisation

Currently, Chinese cities are facing problems of sustainable development, such as loss of culture and convergence of landscapes. The same wide streets, tall reinforced concrete buildings, and bright glass curtain walls - these unique representations of ‘modern’ cityscapes - can be found everywhere, and are essentially homogenised [2]. Under this trend, the diversity shaped by urban scale, geographical location, locality, and cultural characteristics is covered by the same landscape, or even dissolved. As a result, in modern rapid urban development, especially in the construction of new towns, urban space is increasingly losing its historical and regional characteristics.

The reasons for this are, firstly, under urbanisation and globalisation, the flow and influx of information and capital have broken down the inherent cultural barriers, and convergence of values has had an impact on traditional culture and its inheritance. Secondly, construction speed of modern cities has exceeded original natural growth rate and development mode, and has become more intense under stimulation of strong external economic policies, so that cultural accumulation cannot keep pace with speed of urban construction, resulting in the lack of cultural connotations of new cities. Finally, there are man-made cognitive and practical misunderstandings, where rapid expansion have destroyed the natural, loss of humanistic features and intensification of human-land conflicts, which has led to problems in sustainable development of cities.

As far as Linhai City is concerned, although ancient area has been protected, tourism development has been carried out to promote economic development; ecological pattern of large landscape has been promoted and inherited in different stages of urban construction; and natural environment has not yet been destroyed by blind development. However, in new city areas, especially Dayang and Lingang, the problem of cultural loss and the convergence of styles is still unavoidable.

If these problems are approached from perspective of sustainable development, symbiosis can provide a solution. Taking Linhai as an example, the ecological thought in Chinese traditional culture and the urban construction layout under its influence have important guiding significance. In addition, the vision should be expanded to a more complete system including space, nature and culture. Space carries nature and culture, and landscape pattern and regional culture influence urban space at the same time. Therefore, taking them as relatively independent but mutually influential symbiotic modules, exploring their sub-divisions and specific elements for different cities, and then studying symbiotic

patterns among them to form a method or strategy for urban renewal or future construction can, to a certain extent, solve current urban problems.

4. Conclusions

China's urban development under the rapid urbanisation process has revealed some problems, among which the over-development of ancient cities and the loss of their landscape, as well as the convergence of new city construction and the lack of cultural connotations have been widely discussed recently. Linhai, as a typical case, is a well-protected ancient city, and the ecological pattern of 'mountain-water-city' has been inherited in development and construction of city, but specific construction of urban space is still a common problem in modernisation of Chinese cities. Based on evolution of urban development and concern for place' spirit and culture, it would be a way to find appropriate solutions from the history of Linhai's urban development. Therefore, examining Linhai with layering theory can reveal historical evolution of its urban space and explore symbiosis contained therein. A more specific understanding and application of symbiosis between nature, space and culture in socio-cultural contexts can lead to a local and targeted sustainable development strategy that responds to the problems faced by contemporary Chinese cities in the context of urbanisation, and even by cities in the global South. In future research, this aspect of the discussion needs to be combined with interdisciplinary knowledge in order to form a rational, quantitative analysis, including but not limited to GIS, big data, space syntax and other technical means, as well as geography, ecology, environmental behaviour and other disciplines of thought, and through the use of these methods and thinking, in order to come up with more scientific conclusions to guide practice.

References

[1] Wan, F., (2017). *A Study on The Rehabilitation of Urban Historic Buildings Based on The Symbiotic Ideology*. Guangzhou, China: South China University of Technology.
[2] Li, Q., (2017). Cultural and landscape spatial inheritance in new urban districts: an example of the development and construction of new districts in Linhai City, Zhejiang Province, *Beijing Planning Review*, vol. 05, pp. 119-124.
[3] Chen, J. and Tian, Y., (2015). Morphological evolution of new villages constructed in Guangzhou under the perspective of morpho-typology, *Huazhong Architecture*, vol. 04, pp. 127-131.
[4] Wang, H. Zhou, G. Zhao, W. and Wu. G., (2024). The analysis framework and research prospect of 'mountain-water-city' spatial pattern, *Acta Geographica Sinica*, vol. 79, pp. 1-25.
[5] Wu, H., (2018). *Research on the City Form of Linhai Based on Morpho-Typological Analysis*. Beijing, China: Tsinghua University.
[6] Luo, Y. and Zhang, W., (2019). 'Study on the historical evolution of space in the Ancient Taizhou City'.(eds.) *Proceedings of the 2019 Annual Conference of the Chinese Society of Landscape Architecture (Second Book)*. pp. 656. doi:10.26914/c.cnkihy.2019.064663.
[7] Ma, X., (2018). Exploring the architectural features of Ziyang Street. *Beauty and Times (City Edition)*, vol. 10, pp. 27-28.
[8] Zhang, R., Chen, L., and Xu Y., (2022). Research on the protection of humanistic image based on environmental-behavior studies: a case of Taizhou Ancient City. *Urbanism and Architecture*, vol. 11, pp. 180-183. doi:10.19892/j.cnki.csjz.2022.11.40.
[9] Li, Y., Shen, X., and Tang, R., (2023). The courtyard-based tourism development path of historical towns based on the organic renewal theory: a case study of Taizhou Ancient City in Linhai. *China Ancient City*, vol. 03, pp. 32-37. doi:10.19924/j.cnki.1674-4144.2023.003.005.
[10] Wang, L., and Fen, S., (2019). Study on the protection of Linhai City, Taizhou, Zhejiang Province. *China Ancient City*, vol. 03, pp. 68-74.
[11] Oulhen, Nathalie & Schulz, Barbara & Carrier, Tyler. (2016). English translation of Heinrich Anton de Bary's 1878 speech, 'Die Erscheinung der Symbiose' ('De la symbiose'). *Symbiosis*. 69. 10.1007/s13199-016-0409-8.
[12] Yang, L.,(2010). The application of symbiosis theory in the field of social sciences, *Social Science Forum*, vol. 16, pp. 149-157. doi:10.14185/j.cnki.issn1008-2026.2010.16.018.
[13] Kurokawa, K., (1991). *Intercultural architecture : the philosophy of symbiosis*. London: Academy Editions.

[14] Rossi, A. and Eisenman, P., (1982). *The Architecture of the City*. Cambridge, Mass: MIT Press.
[15] Rowe, C. and Koetter, F., (1978). *Collage City*. Cambridge, Mass: MIT Press.
[16] Zuo, L. Qiao, Y. and Li, H., (2022). Research on organic renewal method of historical urban area based on urban historical landscape feature recognition, *China Ancient City*, vol. 36, no. 2, pp. 53-59.
[17] Wu, L. Luo, X. Xie, J. You, B. and Luo, H., (2023). 'Research on the technical path of Xiamen historical landscape census based on historical layer analysis'. *Proceedings of the Annual Conference on Urban Planning in China 2023*. Wuhan, China, vol. 09, pp. 808-815.
[18] Conzen, M. R. G., (1960). *Alnwick, Northumberland : a study in town-plan analysis*. London: George Philip.