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# DRUPPEL

# Reactivating Public Life through Water Lessons from the Forgotten Historical Canals in Guangzhou

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In the heart of the Pearl River Delta, the city of Guangzhou is fast-growing and prone to flooding. In history, people constructed canals based on natural waterways to deal with water problems. The canal system not only served as an important infrastructure but was also the backbone of urban life. The city was built around its canals; they were the lifelines of Guangzhou. But with the development of the road network in recent decades, the urban canals in the historical inner city have been neglected and are disappearing, losing their identity, and becoming the forgotten side of the city. Also, canal restoration projects often only address the historical canals as water infrastructure, without effectively addressing them as public spaces. These are no longer designed as socially inclusive urban spaces and therefore, play no significant role in public life anymore. Restoration projects are not really concerned with the canals or their surrounding urban tissue as a system, nor do they connect the lives of local people to the water. Therefore, the newly designed public spaces in these projects often function poorly, if at all. What can be learned from the historical situation to re-activate the urban canals as carriers of socially and ecologically inclusive urban space?

A city cannot develop without water. Therefore, having a sufficient water source is one of the important prerequisites for a city's location. The water system of Guangzhou runs through the history of its urban development, with a bearing on various aspects and needs, including urban space, ecology, the military, transportation, culture, etc., presenting the social, natural, economic and other values of the whole city in a holistic way. This can be seen in the brief review of the evolutionary history and related governance processes of the water system in the main urban areas of Guangzhou that follows.

To deal with the flooding threats and the lack of fresh water, there was a clear hierarchy in the canal system: street drainage collected rainwater into the six main canals in the city centre, rainwater then ran into the moat through sluices in the city walls before flowing into the Pearl River and, eventually, the South China Sea. The canal system was constructed based on the natural water

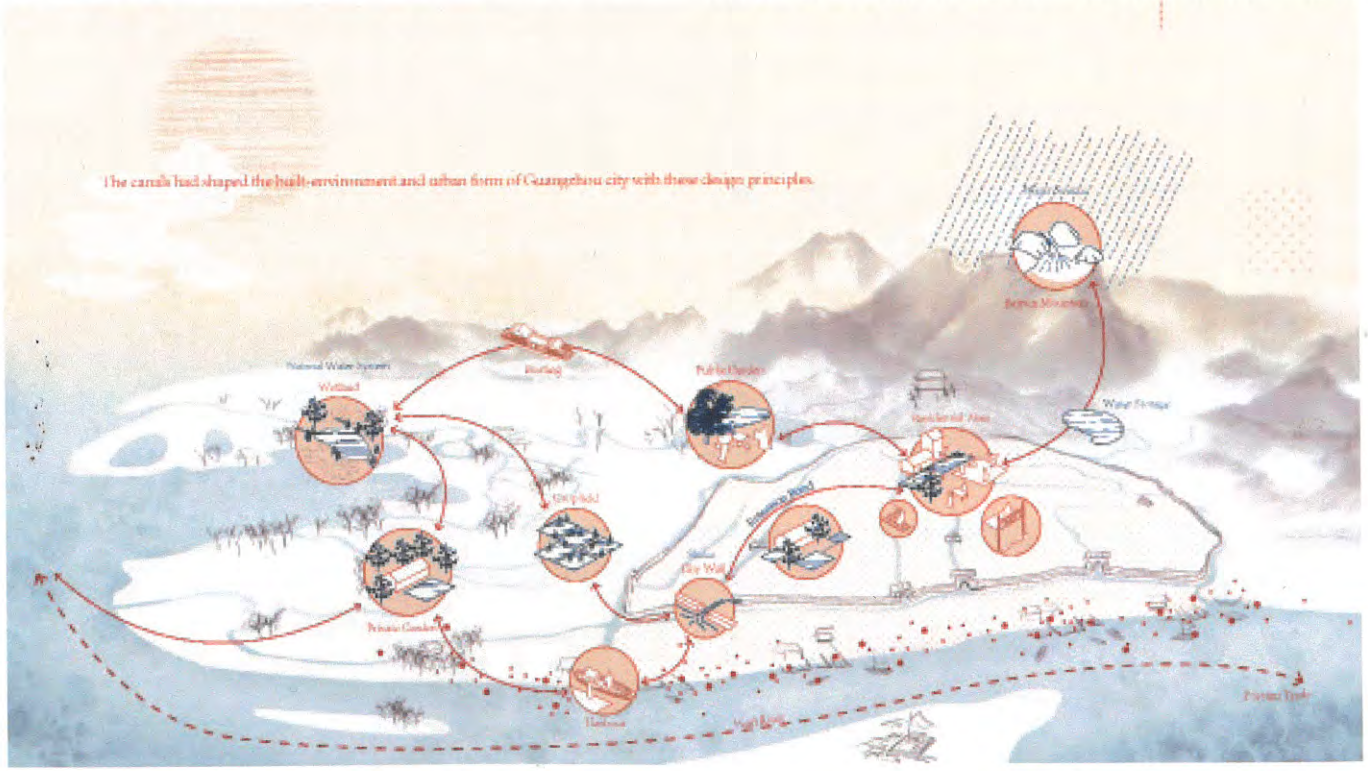

*Figure 1. Guangzhou's historical canal-based urban system (drawing by Yu Zheng).*

system, connecting the lake and wetlands around the city, which were a buffer zone for flooding and had ecological functions that greatly improved capacity for water storage (Fig. 1).

This systematically arranged water system worked as the backbone of the urban public space. The relationship between landscape composition, urban areas, and the canal system illustrate the city's different functional forms based on geographical conditions, the natural environment and their location within the city. Water influenced the form of streets, cities and gardens, and it provided (and enriched) the urban canal landscape which formed the ancient city of Guangzhou. This socially and ecologically inclusive urban environment was built on the city's water management system and resulted in three types of waterfronts.

> "What can be learned from the historical situation to re-activate the urban canals as carriers of socially and ecologically inclusive urban space?"

## 1 Waterfront Commercial Zones

Waterfront commercial zones developed from a natural harbour with a drainage function into a diverse riverbank that influenced the street pattern. The urban canal system supported the city's production and trade functions, which were the lifelines of Guangzhou's commercial development. Many strip-like waterfront commercial spaces were formed inside and outside the ancient city of Guangzhou, basically relying on the development of ports along the Pearl River, or on the main waterways of the city (Fig. 2).

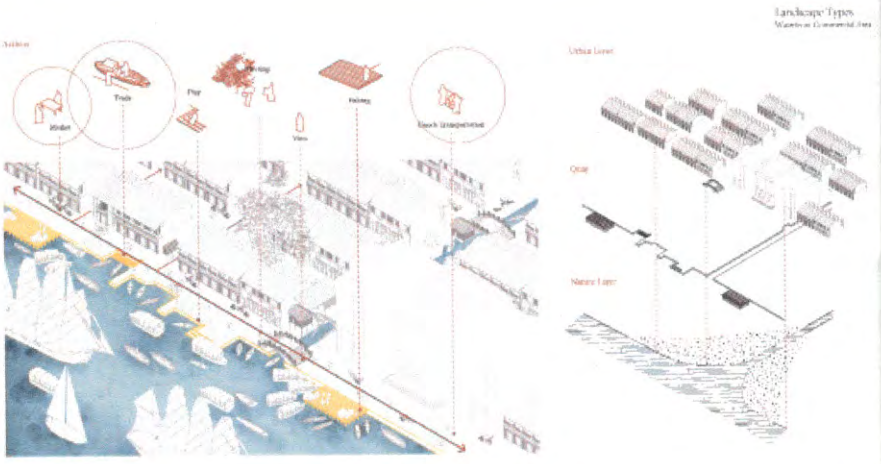

*Figure 2. Design Principles in Waterfront Commercial Area, (drawing by Yu Zheng)*

## 2 Waterfront Residential Zones

Compared to the commercial areas, the waterfront residential zones had a more intense street pattern and use of public space. The canals were the backbone of these areas, acting as a transportation network connecting the different layers of these public spaces. The narrow canals also made the relationship between people, the built environment, and the water more intense. The built environment, together with the canals, were the backdrop for various lively activities. The waterfront residential zones in the ancient city of Guangzhou were initially concentrated in the inner harbour and wharf at the centre of the urban canal network. Various types of buildings, such as

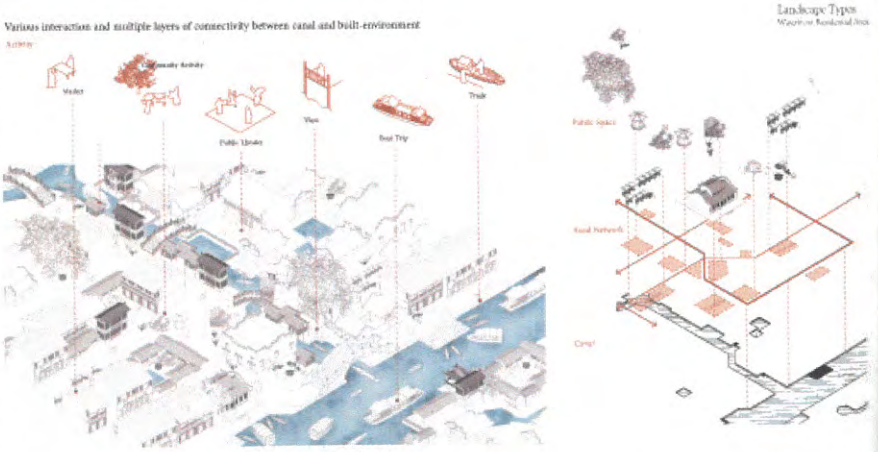

*Figure 3. Design Principles in Waterfront Residential Area (drawing by Yu Zheng).*

inns, temples, businesses, and community centres were formed along the waterways. The canals were the backbone of the urban public space structure. Not only were there many buildings standing next to the water, but there were also public spaces, especially at the bridgeheads, such as small piers, performance stages, old trees, temples, etc., making these zones of the social and cultural centre of the old city (Fig. 3).

## 3 Waterfront Gardens

Waterfront gardens include public, private, and royal gardens. There used to be harmony between the built environment and nature in ancient Guangzhou. People could enjoy panoramic views as well as store or drain water in the dynamic waterscape. Waterfront gardens were the most abundant water landscape in ancient times and were mostly distributed around the waterways. The waterfront yard connected to

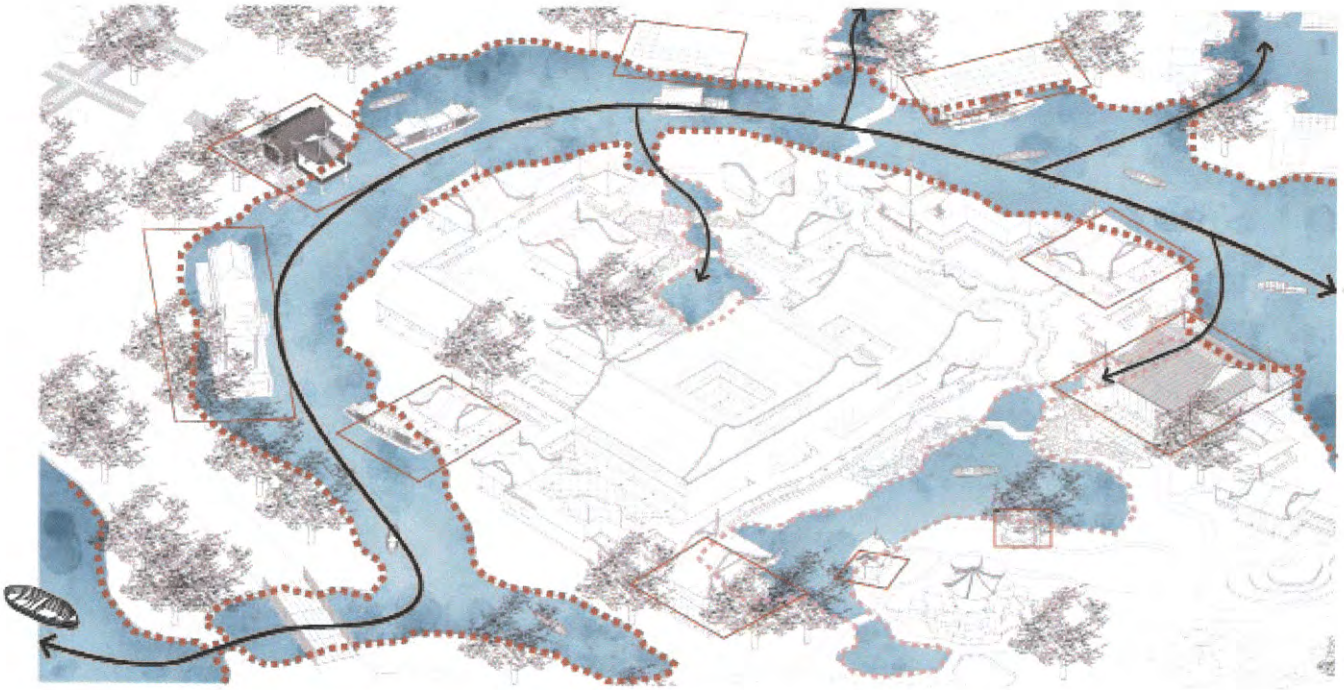

*Figure 4. The system waterfront gardens in Guangzhou (drawing by Yu Zheng).*

the urban water system, which not only prevented the water from drying up, but also played a role in reducing temperature and preventing drought during intense heat, and, more importantly, it could drain flood water quickly during the rainy season. The inclusion of trees and plants were also beneficial to the microclimate of the garden, and simple adjustments could enhance the practicability and convenience of the water court. The waterfront garden was the centre of the green structure of ancient Guangzhou (Figs. 4 and 6).

What can be learned from the historical situation to reactivate the urban canals as carriers of socially and ecologically inclusive urban space? Design principles learned from history are divided into two separate but interconnected aspects: landscape and water management. The connectivity between public space and water is a key aspect of Guangzhou's urban landscape. The analysis of the city's management of its water network throughout history provides the

“There used to be harmony between the built environment and nature in ancient Guangzhou. People could enjoy panoramic views as well as store or drain water in the dynamic waterscape.”

base for spatial design principles (Fig. 5). The analysis of waterfront commercial area shows the diverse interface brought variety to water as public space. The analysis of waterfront residential area shows how the systematic water network worked with natural water purification system and artificial retention pond. These offer a template for sustainable water management in the city in the future. Both aspects, landscape and water management, should work with the natural environment to play their role in improving the spatial quality of the city and increase its capacity to resist flood and drought.

In conclusion, this study of the city's history shows how canals have shaped the built environment, and these design principles, based on the canals that worked so well in managing Guangzhou's water system in the past, should also ensure the creation of good quality space, with both space and water playing important roles in people everyday lives.

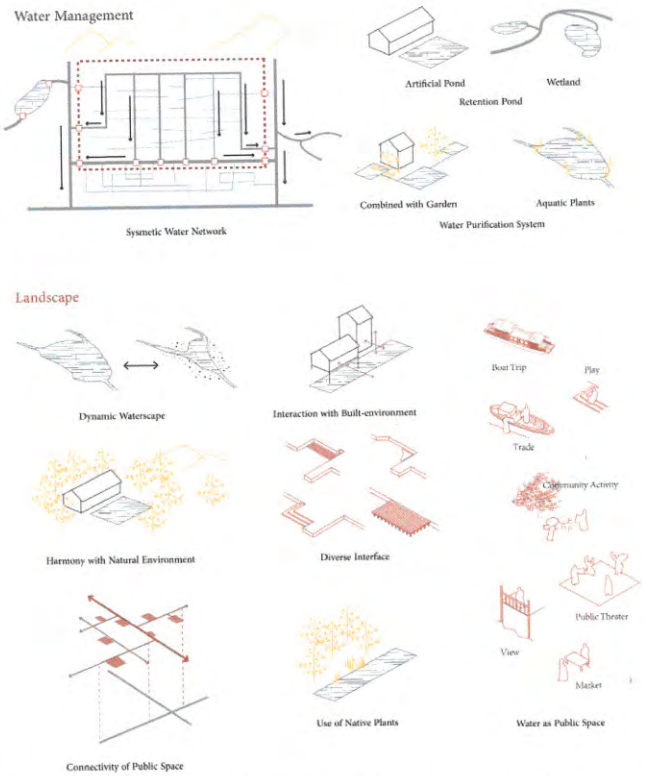


*Figure 5. Design principles learned from historical analysis (drawing by Yu Zheng).*



*Figure 6. The waterfront gardens of Guangzhou as recorded by the English architect Thomas Allom around 1850 (private collection Steffen Nijhuis).*

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