

# The Development and Transition of Urban Walking Grey Space in China, based on a Unique Model "Langpeng"

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**Abstract**—With the rapid economic growth in China over the past three decades, urban development has been evolved from simple to optimized expansion in many coastal cities. Urban revitalization has become the main theme during the second phase of the construction boom. In the thick of globalization, how to inject new vitality into the old, historical building blocks while preserving the traditional image of cities that lost in the process of modernization has become the strategic measure by which China tries to avoid similarity of all the cities. In this paper, taking the city of Hangzhou as the model, the author identifies the vernacular of walking grey space, “Langpeng”, a spatial typology consisting of roofs on the street. By analyzing the factors such as climate change and commercial values, and summarizing variation applications of the typology, this paper asserts that Langpeng will become an important component of the city’s urban and economic revitalization.

**Keywords**—walking grey space; Langpeng; urban renewal; climate; commercial.

## I. HISTORICAL ORIGINS

IN Southern China, these shops along the streets used large pieces of cloth as means of makeshift roofing from the rain and sun. This feature became popular especially during the rainy season. Throughout day and night, the streetscape becomes adorned with cloth of different size, shape and colors, forming a very unique and interesting view.

Soon after, Langpeng has emerged from the simple idea, replacing fabric with hard construction materials. Easily built and attached onto existing building, Langpeng was later widely accepted as form of urban expansion that connects seamlessly with rivers, shops and housing. Langpeng helps cooling down the street during hot summers and keeping it dry in rainy days. It becomes a popular gathering space for locals and tourists, and is the prototype of walking grey space. As is shown in figure 1, the traditional Langpeng in Xitang, with irregular features, is a spontaneous type. After unified planning, the construction of Langpeng in Xiaohe Road appears



Fig.1: Different model of Langpeng in Xitang Town, Xiaohe Road and Wu Town

natural and orderly. In Wu Town, according to the topographical features of dense river system, endless bridges with a roof in the pedestrian system increase the climate protection effectiveness.

## II. THE ROLE OF CLIMATE AND COMMERCIAL FACTORS

### A. The needs for climate protection

The harsh climate environment has a significant negative impact on people’s travel particular in Eastern China. It discourages travel and time of outdoor activities in rainy and summer to avoid being exposed to the weather. Weather protection is an important factor in the design of Langpeng. The essence of weather protection is deal with negative factors reasonably, improving the comfort of the local micro-climate environment, to achieve the purpose of attracting pedestrian. In other words, its essence is that an open street forms the semi-enclosed pedestrian environment responding to climate. Researchers have analyzed climate factors that impact the livability of the urban environment. According to the relation of human activities and climatic factors, they selected 20 climatic elements divided into 5 sub-systems including temperature, humidity, wind, sunshine and special weather, and establish an index of climate habitability evaluation. Basing on the actual research, the author concluded that during summer climatic factors impact the comfort of walking space in Eastern China as following. As the following table , walking grey space decreases the negative effects of bad weather in most of indexes, and create a more comfortable pedestrian environment.

### B. Promotion of commercial values

In traditional Chinese cities, walking was the main mode of traffic pattern, so there were many commercial activities along various streets. Streets are named with respect to their commercial activities, such as “Leather Market Lane” and “Rice Market Lane.”

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TABLE I  
THE COMPARATIVE ANALYSIS OF SPACE COMFORT IN LANGPENG AND STREET

	Temperature	Humidity	Sunshine	Wind force	Rain
At street	High	High	Large	Small	Much
In Langpeng	Low	Low	Small	Large	No
Reason	No direct sunlight	Good ventilation	No direct sunlight	Form air passage	Keep out rain

Traditional Langpeng is a common pattern along streets, forming walking grey space before the two-layer small stores. Langpeng helps to improve the walking environment, so it is bound to attract visitors and to increase commercial business. Driven by commercial interests, more and more shops built Langpeng and eventually into one unified gallery, from a spontaneous and competitive act turned into a general act that benefits the public, and further promoted the competitiveness of whole commercial streets.

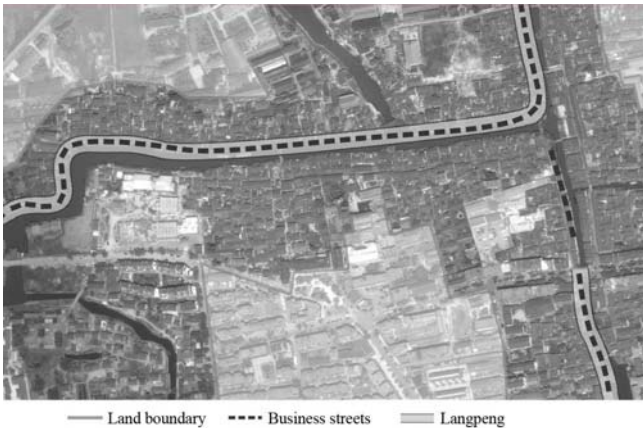


Fig. 2 The relationship of Langpeng and commercial streets in space

In figure 2, red line is the land boundary of one existing ancient town Xitang, about 1 km<sup>2</sup> in size. It is found that the Langpeng and Commercial Street highly overlap in space in the ancient town. In the ancient towns with stable spatial structure, basically the large-scale business streets have complete Langpeng, reflecting the popularity and its role in promoting the business.

III. DEVELOPMENTS AND TRANSITION OF LANGPENG

A. State of development

The modern functional development and application of Langpeng is almost stagnant. With the rapid growth of population in China cities over the last six decades and urban renewal, a number of Langpeng and other traditional architectures are demolished relentlessly. In contrast, the northern cities in China continue to develop walking grey space that takes the glass arcade as representative. The Europa Square in Harbin, with sky roof covering the two adjacent buildings in the sky, is popular with residents as it makes an

open space in a semi-indoor place for leisure, entertainment and shopping in the winter.

As people re-recognize traditional city culture and try to stimulate the vitality of old block in modern cities, Langpeng plays an increasingly important role in the revival of traditional block. Now the construction of Langpeng in China has the nature of landscape, sign and culture. Langpeng generally rely on protection of historic districts or tourist areas protects, such as Xiaohe Road and Qiaoxi Road in Hangzhou. In table 2, it can be found that most of urban renewal projects have Langpeng and its proportion of total length is considerable.

The main reason for this phenomenon as follows. Firstly, Langpeng is a unique image of East China, so it has the irreplaceable status. "Value came from scarcity". The sharp decline in the number of Langpeng make it from a general building into a landmark building, with unanimous approval by the public. Secondly, the efficiency of grey space still exists in use and attracts visitors and residents, so Langpeng is a new gathering place for leisure activities.

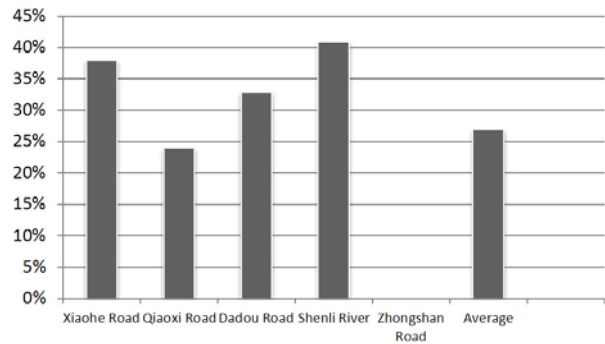


Fig. 3 Langpeng In All Urban Renewal Projects Of Hangzhou Proportion

In recent years, Hangzhou attaches more importance to the quality of urban life than before. Most of urban renewal projects manage to maintain and restore the original scenes and architectural forms, as well as introducing the characteristic service to achieve the objective of industrial upgrading. Under the Beijing-Hangzhou Grand Canal applying for World Heritage, Xiaohe Road Historic Districts, being awarded as "China Human Settlement Environment Award" by the Ministry of Construction, is a major urban renewal project. It is not only for the economic interest of business and tourism, but also for protecting the commercial port that demonstrates the trajectory of urban development. Therefore, 60% of the indigenous people continue to live in historic districts, for maintaining and protecting the culture of civilians living, productive work and canal navigation. It is widely praised because the balance of housing, tourism and services.

B. The transition of urban model

Langpeng is a typical symbol of Eastern grey space, reflecting in the Chinese streets compared with European square. Although oriental traditional cities have a clear hierarchy, the thought of urban space function is weak. While in the traditional European cities, the exterior space is filled with the function order, people pray in the church and play in the

square. Therefore, the oriental traditional space generally has no square, the streets undertake the function of the important transition space.

The traditional Langpeng tends to be decay, their essence can be summarized as the decline of traditional models. The success of the glass arcade in China cities is the impact of the European modern cities model. As urban management needs order and function division is clear, what the city needs is the walking grey space of Western pattern.

Except civic culture transformation, on the other hand, the urban spatial structure changes hugely along with the time going. First of all, the urban land expanding request for higher speed and the mobile transportation. In the second, the rapid growth of population density put a greater pressure on the road system, so it pushes forward heightening the proportion of road space, expanding street width, increasing density of urban streets. Finally, the accelerated pace of life makes people tend to linear transportation that is point to point, urban policy-makers also value agility and convenience of motor traffic, neglecting a slow moving environment over a long period of time. These factors cited above make the commercial streets relying on the traditional mode of transport significantly decline, "with the skin gone, what can the hair adhere to ", then Langpeng and other walking grey space loss living space.

#### *C. The transition of climate protection*

The poor weather condition will reduce resident's proportion of journey, but along with improvement of transportation and dependence on mobile transportation in arrival process basically, therefore the restriction is generally in the psychological and destination. Therefore, various forms of walking grey space are to improve climate condition of destinations, as well as encouraging people to shopping.

As mentioned above, improving the micro climate condition is the basic function of Langpeng. With the increasing demands of climate protection, the technique for improving micro-weather environment develops unremittingly. The main features of walking grey space for climate protection as following: easy to fixed, natural to artificial mechanical, solid to permeability, summer to winter. Since the air conditioning and other mechanical ventilation technology are applied, the internal environment of large commercial buildings is greatly improved by creating a comfortable shopping environment, temperature, and gradually replaces the commercial pedestrian street and becomes the main trend in past decades.

But it can't be neglected that the large commercial building is criticized by environmental groups and individuals because of it large energy consumption. During the summer season in Hangzhou, there's a surge in electricity demand between the months of July and August. At this time, the city government requires the temperature of large shopping centers higher than 26 ° and prohibits opening door against the loss of energy waste. Under the low-carbon background, the significance and prospects of some traditional and natural means of protection are of re-accreditation.

#### *D. The transition of climate protection*

Overall, Langpeng belongs to the public pedestrian system and has to depend on the development of commercial street. In

modern times, the status of commercial street in the business activities have ups and downs. After shopping mall predominated the market over a long period of time because convenience and constant temperature, people has been dissatisfied with the artificial environment in general. So a few shopping-malls introduce plants, pools and other outdoor landscapes into the indoor space. The traditional commercial street supplements a single shopping-mall model as an important business model because of landscape, openness and more freedom. The business models diversify gradually.

Traditional Langpeng has an advantage in combining commercial and residential patterns. There are shops on the first floor and bedrooms on the second floor. It maximizes the value of property along the street, and also makes bedrooms avoid wet. However, restaurants and other business open on the second-floor at the best locations in the protection street area.

### IV. DEVELOPMENT TREND

Overall, although traditional Langpeng still construct and develop in the modern urban, they are different with the original features and orientation. While the functions of traffic and climate protection are faded, the society has entrusted with Langpeng new function. Langpeng become to landmark cultural buildings from general buildings, while the space under Langpeng transform into a recreational site. The tourism and cultural values replace the commercial and social value of Langpeng. From the case of Xiaohe Road, it is concluded that Langpeng has become a new gathering place for leisure activities. It is found that there are more people gathering under Langpeng than in general sunny streets because Langpeng has good viewing conditions and comfortable sunshine.

#### *A. From flowing space to staying space*

In the past, the main transportation model of traditional towns was walking, so Langpeng is a flowing space. Although they are often equipped with "The Beautiful Chair" in the wide place for rest, the quantity is few. Now, the entire street is equipped with "The Beautiful Chair", and increase the width of Langpeng significantly to contain more people. So the walking grey space becomes to the staying room.

#### *B. From traffic space to tourism and leisure space*

In the traditional cities, Langpeng are an important part of the road system. In general, however, the governments build Langpeng with traditional Chinese architecture in order to protect the landscape of the historic district for tourism in urban construction. Therefore, Langpeng have already become the important carrier of tourism and leisure activity in the traditional block from the construction goal.

#### *C. From general living space to high-quality characteristic space*

In Chinese cities, the significance of Langpeng in East China, as Hutong in Beijing, is the soul of the city. In final analysis, Langpeng is the leading elements of the space in the city. Intricate rivers and scattered Langpeng definite the urban image of East China from two-dimensional and three-dimensional. With modern urban development, high-rise buildings destroy the original fabric of cities. Like Hutong, a lot of the most

popular living room, similar but not identical, became a rare landscape in the city. In fact, the traditional public space still has the huge attraction for the public and should not be simply regarded as a worn-out town that has no economic and social value. As long as through scientific planning, Langpeng will become a high-quality and characteristics new space by introducing of a suitable tertiary industry.

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