Application of PSPL Method in Urban Street Public Space—
—An Example of Tianlin Road (Guilin Road —Liuzhou
Section) in Xuhui District, Shanghai

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Abstract. Based on Yang Gail's "people-oriented" public space theory and related
research methods, this paper applies pspl research method to Tianlin road street in
Xuhui District of Shanghai, investigates and analyzes the spatial scale of street road,
the quality of street facade and the flow of people, evaluates the quality of street space,
and puts forward some suggestions and ideas.

Keyword: PSPL, Public space, Space vitality, Space quality.

1. Introduction
With the rapid development of cities, a large number of people gather in cities. Cities begin to find
new ways to relieve the pressure brought by the rapid growth of population, especially for Shanghai,
an international metropolis. Therefore, the rigorous urban traffic network has become a "good
medicine" to solve this situation, especially the construction of fast roads has accelerated the traffic of
people and alleviated the urban traffic pressure brought by the population growth. But at present, there
is a phenomenon of caring for one thing and losing the other. At present, most city streets are reduced
to urban expressways. As a rare public space in the city, streets are gradually losing. This social
situation is worth pondering.

2. Research scope and research methods

2.1. Overview of Tianlin Road (Guilin Road -- Liuzhou Section), Xuhui District, Shanghai
Tianlin Road (Guerin Road - Liuzhou Road Section) is located in Xuhui District of Shanghai and
belongs to the Shanghai Municipal Branch Road, which acts as a link between the secondary trunk
road and the inner road of the neighborhood . Along the street to serve the local residents of the life of
service-oriented businesses (convenience stores, barber shops, clothing stores), small and medium-
sized retail, catering and other commercial-oriented areas, the streets on both sides of the multi-
bottomed merchants and rich in functions. Conveniently located, the nearest metro station is ten
minutes away and there are 6 bus lines through the section. The street is equipped with vibrant streets,
but there are few stops and stops in the street, except for shopping and necessary transportation, and
public spaces are less vibrant.
2.2. Research methods and content
Public Space & Public Life Survey (PSPL) is a kind of evaluation method aiming at the quality of urban Public Space and the Public Life of citizens. According to the activities of people in Public Space, the quality and living conditions of urban Public Space are evaluated [2].

In view of the public space quality survey of Tianlin Road (Guelin Road --Liuzhou section) in Shanghai, the research method adopted in this study is the public space & Public Life Survey (pspl) of Danish architect

The survey was conducted on March 9, 2018. The survey covers the whole day, from 9 am to 6 pm, with each hour as a time period. Each time segment records and counts the flow of people and vehicles for 10 minutes. The investigation area selected is a space with rich bottom business in Tianlin Road (Guelin Road—Liuzhou section), B space at the intersection of community entrance and exit, and C space in front of comprehensive buildings. One road section is selected for street space investigation in these three spaces (see Figure 1) [2].

![Fig. 1 Investigation scope of Tianlin Road, Shanghai](image)

3. Shanghai Tianlin Road (Guerin Road - Liuzhou Road Section) street space research.

3.1. Public space research on Tianlin Road Street in Shanghai

3.1.1. Spatial scale survey of Tianlin Road (Guelin Road Liuzhou section) in Shanghai. The ratio of street width to height is one of the important factors to form the feeling of street space. The ratio of street width distance (D) and height (H) along the street determines different street space feelings. With D / H = 1 as the benchmark, when the ratio is greater than 1 and less than 1, it will bring people the feeling of spatial alienation and close intimacy.

Tianlin road in Shanghai has a total length of 4500 m and a red line width of 18 m, including 9 m motorway and 4.7 m and 2.3 m sidewalks on both sides. The width height ratio of the whole road section is less than 1, which brings people a feeling of intimacy and liveness. There are many retreating lines in some commercial complex buildings, and the width height ratio is equal to or greater than 1. However, due to the small width scale of the red line of the road, it will not give people a sense of emptiness (see Figure 2).
3.1.2. Investigation on facade quality of Tianlin Road (Guilin Road Liuzhou section) in Shanghai.

There are many units, entrances and exits of buildings and some stay space along the street facade, which provides people with the visual and sensory feelings of the building, making the whole space rich and diverse and bringing vitality and security to people. The team of Jan Gail has put forward five standards for the evaluation of facade quality of buildings along the street.

From the field investigation, it can be found that the commercial functions of the bottom floor of buildings along the street of Tianlin Road (Guilin Road Liuzhou section) are varied and have certain service performance. However, most of the buildings have single facade function, low interest and lack of design, which is the main reason why the road section has certain vitality but few people stop or lack activities. According to the five standards proposed by Yang Gail's team, the quality of the first floor facade of buildings along the street in Tianlin Road (Guilin Road Liuzhou section) can be divided into: active interface, friendly interface, general interface and uninteresting interface. Among them, 10% have active interface, 20% are friendly interface, 50% are general interface and 20% are boring interface. In order to improve the vitality of Tianlin Road (Guilin Road Liuzhou section), it is the first to improve the facade quality of buildings along the street (see Figure 3).

3.1.3. Spatial quality survey of Tianlin Road (Guilin Road Liuzhou section) in Shanghai.

The investigation on the space quality of Tianlin Road (Guilin Road Liuzhou section) in Shanghai mainly focuses on the public space, sidewalk pavement, street landscape greening, public facilities and street landscape lights in front of commercial complex buildings.

1. the public space in front of commercial complex buildings such as Lianhua supermarket and Tianlin hotel can have a good attraction for people to stop in Tianlin Road Street (Guilin Road Liuzhou section). But because these open public spaces lack systematic design, they are not fully utilized and the quality of street public space is reduced. 2. The pavement of sidewalk has certain
suitability with the surrounding architectural style, and the skid resistance of paving brick is also considered at the beginning of design. However, some existing problems have been found after on-the-spot investigation: serious damage to the surface of paving bricks, loosening of bricks, ponding in rainy days and poor landscape. 3. According to the direct observation of the structure of Tianlin road street, we can see that the landscape greening of Tianlin Road (Guilin Road Liuzhou section) is seriously lacking, and the overall space environment is lack of livability. The improvement of street landscape greening will greatly improve the overall space quality of Tianlin Road (Guilin Road Liuzhou section). 4. The public facilities in Tianlin Road (Guilin Road Liuzhou section) are extremely lacking. The street can not provide people with space to stop or rest, which is one of the main factors causing the low vitality of the street. 5. In terms of lighting, most of the lighting in Tianlin Road (Guilin Road Liuzhou section) is the indoor and outdoor lighting of building bottom business, which lacks the outdoor landscape light source of interaction with people.

3.2. investigation on traffic flow of Tianlin Road (Guilin Road Liuzhou section) in Shanghai
According to the traffic flow survey of Tianlin Road (Guilin Road Liuzhou section) in Xuhui District of Shanghai, the method adopted is field counting method. First of all, the two spaces a and B of the street are selected for the statistics of the pedestrian flow and vehicle flow at each hour of the day, and then they are shown in the form of charts to analyze the traffic carrying capacity of this section (see Figure 4).

From the chart, we can find that: 12:00-13:30 and 17:00-18:00 are the low tide period of traffic flow; 13:30-14:30 is the peak period of traffic flow. These three periods of time with large fluctuations correspond to people's commuting time. In the rest of the time, both the passenger flow and the traffic flow are relatively stable, which indicates the public life, social interaction and transportation of people in this section It has certain pattern and stability. During the period of 14:00-16:00, there is a high flow of people in the day. When holding some special cultural or commercial activities, this time period is the best (see Figure 3).

In addition, it can be seen from the chart that the number of people passing by motor vehicles and non motor vehicles per hour in Tianlin road section is about 7 times that of pedestrians, and its carrying capacity cannot be underestimated. Generally speaking, the traffic condition of the road section is good and the bearing capacity is large. The reconstruction proposal is to retain the original appearance of the traffic road.

3.3. investigation on the standing space of Tianlin Road (Guilin Road Liuzhou section) in Shanghai
As an important indicator of street activity space, the standing space is an important indicator to measure the street activity. Stop is divided into necessary activities and selective activities to stay for the purpose of behavior. Selective activities are related to the quality of street space. The higher the quality of street space and the more pleasant the environment, the more attractive people will be to carry out some selective activities (see Figure 5).

According to the survey, most of the unnecessary stopping activities are for the elderly to sit down and the middle-aged people to rest against the building facade, which are mainly distributed in the street green space at the gate of Lianhua Supermarket in Tianlin Road Street (Guilin Road Liuzhou section) and near the entrance and exit of the community. In the investigation, it is found that the necessary activities occupy a large proportion. In the investigation, it is found that most of the people who stop and stay are resting on the building facade. The reasons for this phenomenon are as follows: part of the reason is that the boundary effect - resting against the wall or at the edge of the site can bring people a sense of security; another reason is the lack of public rest space and facilities in the street space, which leads to the low vitality of the street and no one to stop Direct factors.
4. Research summary
Tianlin Road Street (Guilin Road Liuzhou section) in Xuhui District, Shanghai has convenient transportation, prosperous commerce, pleasant street space scale and good geographical location, but the street activity is low; there are many bottom businesses along the street, with various functions, but the facade is plain and lack of detailed design, which makes the overall quality of street space low; the traffic flow is relatively stable, the road is smooth, and not too crowded The traffic mix is serious, the safety factor is low; the green landscape of street space is too few, and there is no good rest space, so the public space participants can not feel the comfort and pleasure.

5. Spatial optimization strategy of Tianlin Road (Guilin Road Liuzhou section) in Shanghai
Based on the problems found in the research, the following optimization strategies are proposed.

In the future street planning, the functions of Tianlin Road (Guilin Road Liuzhou section) should be developed in multiple directions. In addition to some commercial activities, some non-profit facilities can be added to make it have unique commercial charm, improve travel safety, and improve the quality of public space and street activity. The specific measures are as follows:

(1) In terms of street space construction, the street green space at the gate of Lianhua Supermarket in Tianlin Road Street (Guilin Road Liuzhou section) and the hard square in front of Tianlin hotel can
be systematically planned, such as transforming into street green space or introducing some micro Park elements to enhance the vitality of street public space.

(2) In the aspect of street landscape greening, considering the street space and improving the street landscape, local street trees and mobile flower boxes can be added to improve the street environment quality. Tianlin road street is a service street, so it should be considered to combine landscape greening with people's activities to enhance the functionality of street landscape and form a new vitality area by landscape greening.

(3) In the aspect of street public facilities, leisure seats and garbage cans should be added in the right position. The boundary effect should be considered when the rest seats are added to meet the safety psychology of people.

(4) In the aspect of street safety, pavement materials with high friction force should be used in the pavement of street walking and building; the management of vehicle driving should be strengthened to avoid mixed traffic of people and vehicles, so as to improve the driving safety awareness.

(5) In the aspect of improving the closed wall of the street, we should combine the traditional and community culture to paint the wall, or use the landscape wall to replace the traditional full closed solid wall, which will make the street more interesting.

6. Summary
Street is the carrier of character flow, a necessary social space and the generator of people's social activities. It can support, promote and improve public life. It is a necessary supplement to people's private, family and work space. For many urbanites, streets represent outdoor activities. People rely on streets to meet their functional needs and carry out social and leisure activities, such as travel, shopping, entertainment, meetings and interaction with others, and even relaxation.

However, for the convenience of transportation, the idea of "car oriented" has not been fundamentally changed in road planning and construction management. Many streets have become expressways serving cars, and there is less space for people to provide urban public life. On October 18, 2016, Shanghai issued the general notice on printing and implementing the guidelines for street design in Shanghai. At present, Shanghai has been deeply aware of the importance of livable streets. Improving the quality of street public space, enhancing the vitality of street public space and increasing people's public communication and activities have become an eternal topic of Urban Street Renewal in the 21st century.

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