

論文の内容の要旨

論文題目

Street affordances towards pedestrian city: A study about function, attractiveness and social involvements of streets in Shanghai

(歩行都市における街路のアフォーダンス:上海の街路での機能性・誘因性・参加可能性からの考察)

氏 名 : 陳 遙

This study is conducted against the background of the consequences of ineffective pedestrian use in Chinese cities. Due to rapid suburbanization, numerous streetscapes in China's historic city centers have presented serious problems such as over-commercialization, uncontrolled occupation, pollution, and disorder. Chinese urban design disciplines have not formed their own professional understanding regarding pedestrian street design strategies. It is necessary and urgent to conduct empirical studies for its future renewal.

The issue of pedestrian street design became the subject of academic enquiry as early as the 1960s taking Jacobs (1961), Gehl (1978), and Whyte (1980) as representative work. Later, discussions on democracy, health, and cultural interactions through social life on the street suggest the positive social function that street space can provide. Studies focusing specifically on street behaviors through a variety of observations have suggested the critical role of the street in expressing the variation in lifestyles, desires, preferences, and common values of society. Many design professionals cite a number of good street examples or provide a detailed manual to guide a living street, while other researchers follow a process of rigorous

analysis of the relationship between street behavior and specific factors, although these might be less relevant to practical application. However, as a real perceptual process, the environment is a system that is composed of environmental factors and behaviors. Hence behavior and environmental factors are no longer two opposing research objects. This is also the standpoint of this study. Much of the literature on conceptual modes of the street system discuss the issue from the designer's perspective, however, the designer's understanding may differ largely from the users' perceptions. This study attempts to investigate a street system from the everyday street user's viewpoint while introducing the theory of "affordance" as a theoretical base.

This study has three purposes. Firstly, this study develops the concept of "affordance" for an understanding of the street. Secondly, this study aims to identify the nature of streets and how they operate in real social life in the Chinese urban context. Lastly, this study aims to identify detailed problems of the street in the central region of Shanghai and suggest necessary actions to make the space and urban services more effective.

As the preliminary research (chapter 2), preparation work focuses on organizing a theoretical framework of "affordance." The challenge is to apply the concept of affordance to urban design questions, while there are discussions of affordance in industrial design, architectural design, community quality evaluation, and project control. Meanwhile, a critical preparation task includes a background survey of Shanghai, target area selection, and determination of methodology. A variety of survey methods are applied in this study. An on-site questionnaire survey is applied to investigate preference for street factors. Through statistical factor analysis, collected data is used to test whether there is a latent structure of a common understanding of the importance of street factors. Open-question interviews, street element observation, and structured behavior observation are the main methods used to investigate the real street situation while diagramming, representational drawing, and photo representations are the main analysis methods.

As shown in chapter 3, the questionnaire survey indicates that public street spaces are primarily used by specific groups sharing a common social background or lifestyle. The study attempts to understand the role of the street by evaluating its important qualities for daily use from the perspectives of everyday users. Statistical analysis is based on 803 questionnaires collected in four sample streets in central Shanghai. Nine factors have been summarized as important factors in positively increasing individuals' walking experience. Therefore, street

design should take the user background into consideration. By using the factor analysis methodology, 34 street elements are categorized into 9 factors and indicate a similarity in the order of factor importance. The three street affordances indicated are pedestrian function, attractiveness, and social involvements. Moreover, the results of the survey challenge some of the conclusions of western studies, in particular the issue of street restaurants, indicating the opposing effects that the same element might have on people's understanding. Thus this re-emphasizes the importance of empirical study when creating urban design strategies rather than merely adopting conclusions from foreign cities. In addition, this survey highlights the significance of introducing and implementing social control systems and public participation into urban design strategies for Chinese cities.

The second part of this research provides more detailed observation and description on the above three aspects of street affordances of "pedestrian function," "attractiveness," and "social involvements." Chapter 4 mainly focuses on the affordance of pedestrian traffic function in terms of dimension, height differences between building entrance and pathway, natural elements and their accessibility, plazas, and public seats. The result represents many problems that have resulted in a disordered, unfriendly, uncoordinated street environment: improper designed dimensions and uncontrolled occupation have caused streets to be inadequate in providing sufficient space for walking. The divided pathway is an obstacle that causes falling accidents, a space for uncontrolled occupation and is used inefficiently. Natural elements are not actually treated as critical by designers, as many are planted in leftover public space and used as an invisible wall to limit the site. Many public green spaces are inaccessible and lack diversity and vitality. Public seating and small plazas only concentrate on important streets while there is a serious lack of rest facilities in other parts of the region. The author attempts to provide reasons for the phenomena and suggest more awareness not only on the part of city designers, but also the city controllers, and street users.

Chapter 5 deals with street as a democratic issue — the latent functions of pleasure, delight, interest, and exploration brought about by the physical environment, which are defined as the affordances of attractiveness. The key question is about what and how factors support and afford a pleasant walking experience when the use of the street becomes more leisure purposed. Analysis focuses on the attractiveness of different categories of building facades, the problem of additional elements, the artistic level of street art, and commercial facilities. As main conclusions, western classical style facades, genealogy building facades,

building facades from the 1980s, and facades in recent times have represented distinct characteristics and attractiveness. Additional elements on the facades such as signboards, public facilities, and individual reconstructions have replaced the original facades as the main elements occupying the pedestrian's perception, and have caused a total chaos and disorder of the streetscape. At the artistic level, the street in Shanghai is still represented as insufficient and there are large gaps between regions. The three main types of commercial mode, formal street shop, open street shop, and vendors, represent both positive and negative aspects; tourist-oriented commercial streets and local residential shopping streets show a great imbalance of attractiveness for a leisure walking experience. It is also observed that the commercial regions are isolated with public green space.

Chapter 6 expatiates on the affordances of social involvements through behavioral patterns on the four target streets. The four target streets represent distinct affordances in terms of social involvements, due to their different block functions, various user groups, distinct original urban environmental qualities, and imbalanced urban development stages. While some of the spontaneously formed affordances are positive in encouraging social involvements they (outdoor markets etc.) may cause negative effects on the basic pedestrian flow function of the street. As we have indicated the basic pedestrian function is considered as the essential affordance of the street, other affordances that weaken the street affordance of pedestrian function should be carefully addressed by designers. The discussion further suggests a responsibility to keep the variations of lifestyle and guide them to a more meaningful direction for the city.

As conclusions, Chapter 7 briefly discusses the benefit of introducing the concept of affordance into urban design studies. Then it summarizes the process of establishing a system of street affordance with three layers and explicitly discussed various street phenomena in the center of Shanghai about the supportive or impeditive street affordances from common pedestrian's perspectives. Four common social and cultural reasons have been concluded closely linking to the phenomena. Additionally, based on the findings, it suggests some open and loose suggestions for the further renovation of Shanghai. Finally, it discusses the validity of methods, limitation and challenge of such kind of street studies.

Lastly, this research is supported by Kuma Lab, Architecture Department, the University of Tokyo.