

# Research on Space and Environment Design of University Entrance Area based on Behavioral Psychology

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**Keywords:** Behavioral Psychology; University Entrance Area; Space; Environment

**Abstract.** The design of university entrance area has begun to focus on the space and environment design from one-sided emphasizing on the form. However, behavioral psychological design didn't get enough attention In the process of this development. Therefore this paper suggests that in space and environment design of university entrance area, human should be the starting point, people's behavioral and psychological needs should be respected, the artificial environment that we created should be advantageous to the consumer behavior, humanity conception should be strengthened in design and the relations between and among campus, city and people should be coordinated well.

## Introduction

With the rapid expansion of the urban construction, under the background of education geared to the needs of society and market, the university campus construction has been rapid development in recent years. The relationship between campus and city has become much closer. At the same time, there also appeared a lot of new problems. Therefore, university entrance area as the contact part of campus and city, its research has very important significance.

“University entrance area” is the area around the campus main gate including inside and outside surrounding area. It is the channel linking campus and city, the buffer zone of city space transfer into the campus space, and also the carrier of material and information communication between university and society.

However, the contribution of university entrance area is more than establishing a space. At present, many universities' entrance areas are facing the problems of complex and mixed pedestrian flow and traffic flow, which leads to teachers and students' insecurity while crossing it. At the same time, in some cases, the blindly construction of huge gates and large squares leads to the lack of kindness. In addition, there are many other problems such as lack of necessary stay facilities, lack of proper landscape and so on. The existence of the above problems means that the current space and environment design of university entrance area has not been good enough to meet users' various requests. Therefore, this article puts forward that the design and construction of university entrance area should regard people as starting point, emphasize human nature concept and pay attention to psychological and behavioral aspects of user demand.

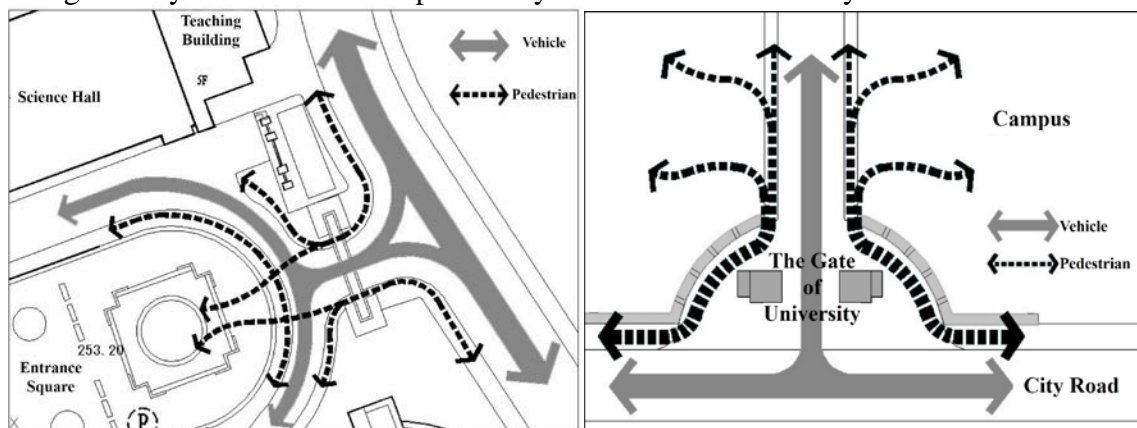
## The Psychological Needs of Users in the Entrance Area of University

Firstly, design should create sense of security during moving. University entrance area is the place where people stream and traffic is mixed and concentrated. Among them, the stream of walking people is in slow motion state. This state brings relaxed and comfortable psychological feeling. The relatively high speed and strong position of vehicle traffic can bring great insecurity, instability and psychology nervous feeling to people in slow motion state and even threaten the safety of human life. At the same time, the access stream of people at university entrance area has the characteristics of paroxysmal and large scale, which is very easy to cause traffic accidents without proper handling.

To solve the problem of people and cars' mixing, the most effective method is to realize the separation of pedestrian streams and vehicle streams. Usually we take two ways below:

three-dimensional layout and plane layout. Three-dimensional layout can be realized by setting underpass or overpass, such as the underground passage between Chongqing University campus A and campus B. This method is suitable in meeting the demand of pedestrian traffic between two campuses separated by urban road instead of solving vehicle mixed problem in ordinary university entrance area. Therefore, for the majority of ordinary college entrance area, plane layout of vehicle flow plays much more practical significance.

Currently, in many layout mode of pedestrian and vehicle separating, the design ordinarily set two entrances for people and cars separately, without considering whether they are interweaved at entrance area inside. In the case of the entrance area of Chongqing University area B shown in Figure1 (a), the vehicle entrance and pedestrian entrance are set in juxtaposition. This does not realize traffic diversion in the moment of passing through the entrance, but because of people's "habit" of walking straightly, the pedestrian flow often pass through the entrance square disregarding intersecting the vehicle flow. Therefore, keeping the two traffic flows going in parallel separately in a certain distance and dispersing pedestrian flow gradually in this distance have very important significance. In the case of entrance area of Chongqing Teachers' University shown in Figure1 (b), pedestrian and vehicle are separated appropriately, people walk into the campus along both sides of the traffic flow and keep going in parallel with it in a certain distance where the pedestrian flow is dispersed gradually. This reduces the possibility of crossover effectively.



(a) Case of Chongqing University area B

(b) Case of Chongqing Teachers' University

Fig.1. The analysis of pedestrian and vehicle stream in university entrance area

Secondly, design should satisfy the demand of adaptability of psychological transition. Compared with the urban environment, the campus is a quiet, and peaceful place. People from urban space to enter the campus space, often feel delighted, relaxed and natural. But when they come into urban space from campus, people often need a psychological adaptation in a certain transition process and the quality of this process directly affects people's perception of the city.

People's psychological transition is completed gradually accompanied by the entrance space transition from inside to outside. In this process, the gate plays a suggestion role on the transformation of environmental attributes. However, only suggestion is not enough. City space system should be actively integrated into the campus space. People's psychological state needs natural adjustment and transformation to adapt to the environment of city better. Therefore, to realize the integration of city and campus, realize the psychological transition from the campus to the city, an effective mean is drawing the campus gate backward to form a certain space separated from city road by green, which can not only solve both the traffic and landscape problem, but also satisfy the needs of psychological transformation from campus space to urban space.

Thirdly, design should create feeling of intimacy. Improve affinity to users is an important aspect on showing the openness and sociality of university entrance space. Affinity helps in alleviating people's nervous psychological state in this modern society and creating comfortable, non-compulsive and humanized space environment.

One of the key elements of entrance space is balance. Modern cities tend to have larger spatial scales, which can make people feel oppressed and then lose their balance. This feeling comes from the proportion of the height of the human space (H) and the depth of the plane (D). When D/H is

equal to 1-2, the space is the most balanced and applies the strongest affinity; when D/H is much larger than 2, people will feel empty and have a sense of alienation; when D/H is less than 1 gradually, people will have a sense of urgency.

In the design of university entrance area space, the height of space is often determined by the gate while the depth of plane is limited by the size of site inside and outside the door such as squares and roads. This requires the contact interface of entrance area towards city should be commensurate with the scale of the city space, and the other side towards campus should fit the scale of the campus space. The design of the entrance area of Beijing Foreign Studies University reflects the two-way spatial scale adaptability well as shown in Figure 2. The Elevated fast road passing in front of the campus gate. So the gate will be invisible or unclear for people on the other side of road or on the upper fast road if its scale is not huge enough. And it will look tinier in contrast with the big fast road. On the other hand, the entrance space inside the campus is limited and the buildings surrounding is not tall, and most people coming into the entrance is from the narrow side-road without a fine psychological preparation for the visual impact of a huge entrance space. Therefore, the entrance gate needs a huge volume to suit the city scale and a small volume to suit the campus scale at the same time. The design found a smart way to solve this contradiction. It designed a gate with three levels and the levels scale is reduced gradually from outside to inside. The level towards city is 15 meters high and the level faces to campus is reduced to 9 meters with a transitional level between them. This method helps the entrance gate realize harmony and balance relationship with both inside and outside environment.



Fig.2. The entrance area of Beijing Foreign Studies University

The other key elements of entrance space is penetration. From a psychological point of view, stiff entry interface will produce a sense of resistance, the strong contrast brings psychological pressure. At the same time, in order to meet the needs of psychological transition from campus into city, the design of entrance area should as far as possible soften the entrance interface into virtual interface by methods like permeability, building frameworks and adopting glass materials and so on. All the ways above is to make people receive the city atmosphere early before they go out the gate, thus avoid suddenly facing a completely opposite space at the moment.

In addition, due to the land restrictions in some university entrance area, the scale of buffer space outside is hard to reach balanced proportion. Designers can try to increase the entrance area's permeability to enhance the feeling of depth and alleviate the psychological pressure.

### **The Behavior Needs of Users in the Entrance Area of University**

Firstly, people have a natural characteristic to get close to nature. To meet this needs is an important aspects in human friendly design of university entrance area's space and environment.

In the specific design, the combination of university entrance area's space environment and nature includes two aspects below.

One aspect is making full use of the natural environment provided by nature, setting buildings conforming to the landscape situation, and creating changeful entrance space environment. National Sun Yat-sen University is located in beach area in Taiwan, having large sea in front of its entrance area as shown in Figure 3. The campus planning draws all the campus backward deliberately to hold the sea into its arms and leads people and cars into the campus via a seaside road. When people

get into the university entrance area, the broad seascape and fresh sea breeze naturally arouse their pleasant feeling of meditation academic avoiding the hubbub of city life.



Fig.3. The entrance area of National Sun Yat-sen University, Taiwan

On the other hand, the entrance area is lack of natural environment resources which can be directly used, thus creating pleasant natural environment as much as possible is an important task in design. In the entrance area design of Huxi Campus of Chongqing University shown in figure 4, designers distilled the theme from various natural ecological elements, and formed green space with five ecological environment themes from north to south includes: mountain, forest, bridge, river and lake. The design objectives is to provide an ideal place for distribution, stay and rest to people from both inside and outside of the campus, thus to advocate the importance of protecting natural environment.



Fig.4. The entrance area design of Huxi Campus of Chongqing University

Secondly, human is social being with strong needs of contacting and communicating with other people. As a special community, the campus community, each university is a concentrated small “society” with large number of teachers and students, complex campus lives which create rich and colorful communicating activities in university campus.

As mentioned earlier, as a part of campus public open space, the university entrance area often has strong recognition and identity sense, and thus becomes a place where contains variety of activities such as assembling, talking, dating and viewing. In addition, as the obligatory way for teachers and students, the university entrance area has more possibility of sporadic met, thus the frequency of conversation and communication behavior increases correspondingly.

However, there is certain contradiction between complex traffic function and pedestrian’s interaction requirements in campus entrance area. If simply considered from the angle of traffic, the design should not support the crowd gathered in this area to avoid traffic confusion and blocking. Therefore, we need to divide the entrance area into several functional partitions in design to reduce people’s communication behavior’s adverse influence towards traffic environment. In many university campus, the entrance square plays a positive role to solve this contradiction.

In addition, we should especially pay attention to pedestrian flow inside the campus which has

characteristics of huge quantity and paroxysm accompanied with various activities such as conversation, resting, waiting, watching or reading. Therefore, ideal pedestrian space of entrance area should be a combination of static space and dynamic space. The design need to consider behaviors of both walk and stay to reduce the conflict between moving people and stayers. The author thus introduces a design idea of “composite space” in this article. Designers can appropriately enlarge the walking space. On the basis of ensuring appropriate walking width, we can set stay facilities such as seats, platforms and frames in surrounding space, and create gray space by methods like planting large crown trees and setting up structures, so as to depart stay people from the main pedestrian movement and to avoid conflict and interference between moving and staying activities.

## **Conclusion**

The essence of design is to put people first, respect people psychological needs and create the artificial environment which is favorable to user’s behavior. This is the basic requirements from view of human nature in space and environment design of university entrance area. In many currently cases of universities’ entrance area design, humanized designing ideas has gain more and more approvals of designers and managers.

But we also find that due to various reasons, some behavior with one-sided pursuit of management efficiency has seriously affected people’s normal activities. For example, for the convenience of vehicle management and the so-called “management modernization”, some university set automatic telescopic door at entrance area blocking the pedestrian channel beside the vehicle channel, which led to the intensification of traffic mix. This is the result of “management based” thoughts.

“Management based” thoughts reflects an executive consciousness, while “people-oriented” idea reflects a humanized mood of serving people. I hope both designers and managers can take human needs as the starting point of design and management and make the entrance area be a place with both activity and order.

## **Acknowledgement**

In this paper, the research was supported by the National Natural Science Foundation of China (No. 51438009).

## **References**

- [1] Jan, G. *Life between Buildings*. Beijing: China Architecture & Building Press, 2002.
- [2] Lan, B. *Responsive Environments*. Dalian: Dalian University of Technology Press, 2002.
- [3] Georgia, B., & Lan, B. *Identity by Design*. Beijing: China Architecture & Building Press, 2010.
- [4] Huijun Tu. *Campus Integrated Design*. Beijing: China Architecture & Building Press, 2007.
- [5] Zhengfan Hu, Yulian Lin. *Environmental Psychology -- Environment Behavior Research and Design Application*. Beijing: China Architecture & Building Press, 2012.