

# Case studies on walking space of station squares in East Asia (Part 2): characteristics of pedestrians and public space design

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## Problem

In urban design, we should better address the cultural implications of place-making. However, there has been little previous research that discussed pedestrian's behavior in some cities of East Asia. It is necessary to clarify the differences of pedestrians' characteristics in dissimilar cultural contexts.

## Theory

In this research, we discuss the problems through the following theories.

### 1. Lewin's equation:

The Lewin's Equation,  $B=f(P,E)$ , is a psychological equation of behavior developed by Kurt Lewin. It states that behavior is a function of the person and his or her environment.

As we know pedestrians' choices do not exist right or advantage at all time. One add one add one people...their behavior will cause a traffic jam, become a lively cocktail party or a wonderful symphony. We are difficult to change pedestrians' behavior but we can change their environment through our design. It likes we don't need cut the feet to fit the shoes, we just need choose appropriate shoes. It's the work we must finish in urban design task.

### 2. Personal space:

Interpersonal space refers to the psychological "bubble" that exists psychologically when one person stands too close to another. Research has revealed

that there are four different zones of interpersonal space: (1) Intimate distance, (2) Personal distance, (3) Social distance, (4) Public distance. (Engleberg, 2006)

The station square is a pedestrian-intensive area. Especially during the rush hours, pedestrian streams from various directions swarm into the station square. For keeping personal space and walking safe, pedestrian's avoidance behavior happens frequently on these crossings. Accordingly, avoidance behavior is a key point of personal space research in walking space, and the patterns of pedestrian movement, more specifically how they avoid bumping into each other, must be analyzed.

### **Objective**

When considering the cultural implications of place-making in public space design, it is important to discuss pedestrians' avoidance behavior and the different characteristics of pedestrians in dissimilar cultural contexts. The main purposes of this research are as follows:

1. To clarify the characteristics of pedestrians' behavior on walking space of station squares.
2. To clarify different characteristics of pedestrians' behavior in dissimilar cultural contexts.
3. To discuss methods of public space design, in order to make walking space more suitable for people's behavior.

### **Methodology**

We took the five station squares in five cities of East Asia as examples. They are in Beijing, Shanghai, Wuhan, Taipei and Chiba. These squares have steps and flat. This research is under natural conditions. We took videos in spare time and rush time on these station squares. We then investigated and analyzed the situation of pedestrian streams in the spare time and in the rush time. Though analysis of images from these videos, we drew pedestrians' pathways. Therefore we could get the information of avoidance behavior and compare pedestrians' behavior by these pathways.

### **Main results**

After data collection and analysis, the characteristics of avoidance behavior on public space of station squares in East Asia were as follows:

Direction and time period are very important correlative factors of avoidance behavior. In the further work of simulating avoidance behavior, we should sufficiently consider pedestrian streams from various directions and changes of pedestrian streams during several time periods.

The characteristics of pedestrians in dissimilar cultural contexts in East Asia were as follows:

Pedestrians in some parts of China adopt shortcut rather than fast walking for quickly reaching the destination, but pedestrians in some parts of Japan more adopt fast walking.

The discussion of public space design were as follows:

1. We must use some obstacles to divide walking space and vehicle space in order to avoid vehicles park into pedestrians' square in China. We can change the shape of the verge of flower beds, and make it comfortable for pedestrians. They are very small measures, but they will get better effects.
2. Some station squares did not make any measures to induce the pedestrians who wait traffic signal lamps and the bus in Taipei. This square use a lot of hard landscape but not green. It lacks green among my object places. The same problem presented on other station squares in Taipei.

### **Contribution**

In China, as population growth, the government supports more people to use urban public transportation. We can make the station environment more comfortable through the results of this research. And what's more, we can use the results from this research in wider fields, and extend to other spaces in cities.