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# People's Activities Related on Physical Environment of Public Plazas in China and the United States

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### Abstract

This study focused on public plazas in Chongqing China and Boston United States, and analyses the research sites in neighborhood scale and spatial scale. Through field observations based on William H. Whyte's research, data was collected regarding people's activities in public plazas, and a discussion of how spatial factors affect people's activities was down. The results demonstrated that Whyte's elements partly applied to China, and people's activities are hugely affected by spatial factors, and also influenced by cultural background. Recommended further planning strategies of public plazas that several elements work together could strengthen an area much more.

**Keywords:** Public Plaza; Environmental Behavior; China; United States

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### 1. Introduction

Within a century, the world's population has grown at an amazing speed, and more than half of that population lives in cities. The rapid rise in urban populations in developing countries brings with it many problems and challenges such as pollutions and limited space (Gehl, 2013). The public plazas in developing countries, in particular, have more problems such as the fact that spaces are designed to be looked at, dysfunctional features and many others make plazas fail (Whyte, 1980)

China has experienced rapid development during the last several decades, and the development of modern culture has greatly influenced Chinese urban space over 30 years since the 1979 start of the Chinese reform (Gaubatz, 2008). While urban renewal in China has begun its fourth decade, the public spaces used by ordinary residents have not proportionally improved. There will be more people who need public open space but the government developed 'Window-dressing' squares and parks, the monumentality design made residents unwilling to use these kinds of spaces. The Chinese government and developers rarely consider people's participation, and they know little about the residents' desires regarding open urban spaces in the first place

Researchers in the United States such as William H. Whyte conducted design-oriented studies of human behavior in urban settings beginning in 1969. Whyte spent sixteen years walking through the streets and public spaces of New York City and watching the way in which people used space. He summarized seven key elements that are most important to a city and city life: relationship to the street, seating, sun, water, trees, food, and triangulation (Whyte, 1980). He later formed a research group and started the Street Life Project using his method of direct observation to analyze public spaces. Behavior mapping has proved a valuable tool in United States urban planning for making informed decisions about the placement and design of different facilities (Madden & Wiley-Schwartz, 2010).

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The urban open spaces in China and the United States have very many differences in culture, economy, population, social formations, etc. All these differences have impacts on the urban open space, how planners design the place and how people use the space. Moreover, every open public place is unique, they involve different cultures, interior structure, planting choice, weather conditions, nearby street and building activity, and with all these factors and many others combined they make one single space. However, there is one factor that never changes—they all full of people. Of course, people may use the same spaces to take part in different activities, but the type of activities they participate in is almost the same. Even though spaces are in different countries with different cultures, values, and views on life, the way in which people make use of public spaces have similarities. So this study intends to address the following questions: (1) whether the William H. Whyte's seven William elements also apply to China? (2) How urban public plazas used differently in the United States and China? The authors selected two cities for a case study, Chongqing in China and Boston in the United States. They analyzed these two cities in different scales and conducted the observation.

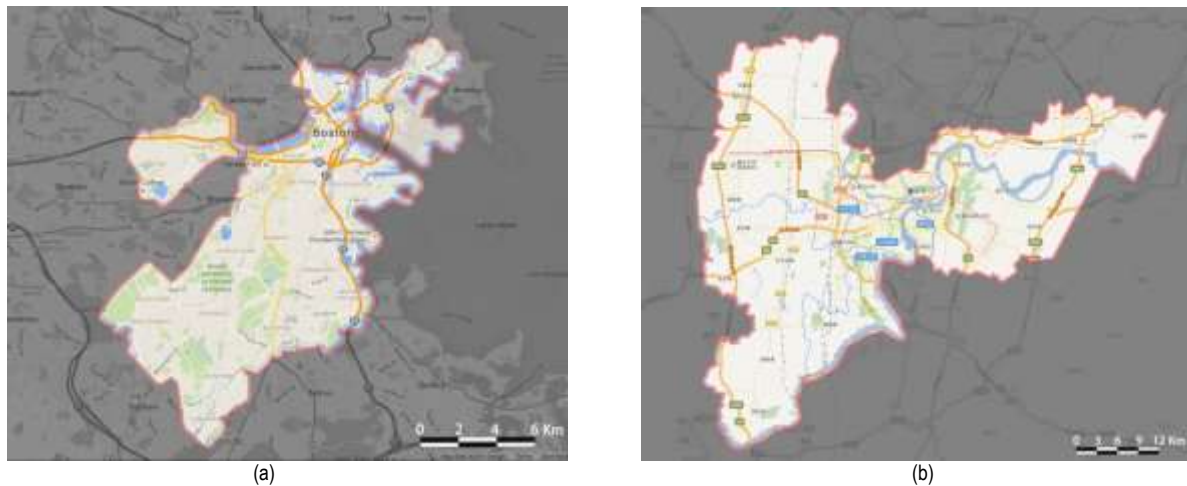


Fig. 1. (a) Main Boston Urban Area; (b) Main Chongqing Urban Area  
(Source: modified based on Google Map and Baidu Map)

## 2.0 Literature Review

China changed a lot during the last decades, and the economic growth is so fast that also hugely influenced the economy globally (Qiren, 2013). With the economy change, the urban redevelopment in China also changed a lot, and the process of the urban redevelopment is different comparing to the process in the West (Wu & Gaubatz, 2013). The economic development also lead the urban revitalization, and it is so important that it influences economic, physical and social environment also with historical and cultural of the urban area (Ramlee, Omar, Yunus, & Samadi, 2015).

Public spaces such as plazas make significant value within cities, people's needs from basic to complex are involved in the and affect people's life quality (Jalaladdini & Oktay, 2012). Plazas in the city with different location, adjacent streets, and special designs could decide how much people visit and the activities they conduct inside. Public plazas as a part of the green space in the city, the design characteristics of natural and physical are affection the social interaction level (Rasidi, Jamirsah, & Said, 2012), which is an important need for people. Other needs such as safety also involved with vegetation in space that some vegetation could generate fear among people, too dense of vegetation, for instance, could make people think about crime (Maruthaveeran, 2016). The environment significantly influences people, the interactions elements between nature and humans such as water and green space could enhance the interactions both human-nature and human-human (Omar, Ibrahim, & Mohamad, 2017). Also, the spatial relationships in the urban space could be affected by both physical and behavioral, and people's behavior in a public space could be an objective reflection of the environment (Cheshmehzangi & Heath, 2017). The relationships of physical environmental activities could provide vital information for planners and designers which could improve urban space design (Nasir, Ahmad, & Ahmed, 2016). It is challenging that to have a high quality of design in every urban public space, and the design factors could be the key to improve the vitality and the spatial experience (Wan & Zhu, 2015).

William H. Whyte as a pioneer researcher studied public space in New York City many years before and used direct observation method in a systematic way which is important in assessing physical activities and identifying activities. Whyte also proposed seven elements that required for good public spaces, and the fowling are elements that he pointed out. 1) The relationship to the street: A good plaza starts at a street corner, so the relationship to the street can be one of the most important aspects of space and the area where the street and plaza or open space meet is a key to space's success. 2) Sitting space: People will sit almost anywhere between a height of one foot (30cm) to three feet (90cm) as long as the seating is physically comfortable and socially comfortable is also important. 3) Sun: it provides warmth which in summer people generally sit in the sun as well as in the shade, but in cool weather, people will actively seek the sun. 4) Water: People love to have fun in and enjoy the water, it works as a sound buffer against other noise such as that from street traffic. 5) Trees: it can help the people beneath them feel comfortable and protected by the enclosure. 6) Food: it can attract people, which will attract more people, so they are a perfect place for social interaction. 7) According to Whyte's definition, triangulation is a "stimulus" as well as an interaction between people; they are conversation-starting things people like to talk about when they walk by.

Some researchers also applied Whyte's method in other countries and could get some agreement (Helden, 2015). Moreover, this study is also based on Whyte's research, analyses the study area in different scale and conduct observation in both China and the United States.

### 3.0 Methodology

To achieve the research objective, the methodology in this study has two main parts, the analysis of the research sites and direct observation which is based on Whyte's study. The analysis part has two steps: 1) regional analysis 2) neighborhood analysis, 2) spatial analysis. These two steps of analysis start from city scale to spatial scale in the study sites. Through the analysis process, researchers could have both a general understanding of the research area and detail spatial information. After the analysis, researchers could conduct the observation systematically.

#### 3.1 Regional analysis

The regional analyses analyzed two cities, one in the United States and one in China in several different ways. The regional analyses help to decide the target cities, which could share some similar properties. The two cities in this study are Boston, MA in the United States and Chongqing in China.

Boston is the capital and largest city of the Commonwealth of Massachusetts in the United States. It is one of the oldest cities in the United States, founded on Shawmut Peninsula in 1630 by Puritan settlers from England. After gaining independence from Great Britain, the city became an important port and manufacturing hub, as well as an educational and cultural center.

There are lots of colleges and universities in the city which make Boston a center of international higher education. The nation's oldest institution of higher education, Harvard University, is located in Cambridge. With Massachusetts Institute of Technology, they have been ranked highest in the world. The city of Boston is the economic and cultural center of the substantially larger metropolitan area called Greater Boston. The transportation system in Boston includes subway, roadway, regional rail, air and sea options. Bus, subway, water ferries and short distance rail are operated by The Massachusetts Bay Transportation Authority (MBTA). Amtrak provides the rail service mainly from northeastern cities. The South Station works as a major bus terminal served by several intercity bus companies.

Chongqing is a major city in Southwest China, and one of the five national central cities in China is also one of China's four direct-controlled municipalities. The 2015 population of Chongqing was just over 30 million; this makes Chongqing the most populous Chinese municipality, and also the largest direct-controlled municipality in China. There are two rivers in the city; the Yangtze River meets its major tributary stream, Jialing River in the central Chongqing, so the city is surrounded by water and located on a big syncline valley. River ports in Chongqing work with numerous luxury cruise ships that end at Chongqing, cruising downstream along the Yangtze River to Yichang, Wuhan, Nanjing and even Shanghai. Also, due to the construction of the Three Gorges Dam, the port has been improved access by large cargo vessels, which makes the transport of goods along the Yangtze River possible. The public transportation in Chongqing has three main forms; CRT metro, intercity railway, and the bus system

#### 3.2 Neighborhood analysis

The research has three sites in both cities. Neighborhood analysis is based on the sites in the city and analysis space around the sites. Each pair of sites could share similar neighborhood around the space.

The following shows the location of each site in city Boston and Chongqing.



Fig. 2. (a) Three sites in Chongqing China; (b) Three sites in Boston the USA  
(Source: modified based on Google Map)

##### 3.2.1 Boston City Hall Plaza and Chongqing People's Square

Boston City Hall Plaza is an unadorned Plaza in the Government Center area of the city with Boston City Hall behind it. The planning of City Hall, the spatial arrangement of the plaza and other structures around Government Center was the responsibility of I.M. Pei (A Chinese-American architect), commissioned by Edward J. Logue. The City Hall and the Plaza were constructed between 1963 and 1968, and the plaza consists of red brick and concrete with irregular shapes and multi-levels, which may make some people consider it a seedy area.

Chongqing People's Auditorium, which could be translated as Great Hall of the People, is behind the Chongqing People's Square and located in central Chongqing. The Great Hall of People was established in September 1951, completed in January 1954, and its exterior resembles the Temple of Heaven in Beijing. It was built in June 1997, the same time when Chongqing became a municipality



directly under the central government. From then on the site became a public pace and the Auditorium also holds public performance. Green surrounds the square, and due to Chongqing's mild climate, flowers bloom all years round. Almost every evening, citizens self-organize hundreds of people in the square to dance and do exercise.



Fig. 3. (a) Boston City Hall Plaza; (b) Chongqing People's Square  
(Source: <https://goo.gl/qHF3RQ> and <http://goo.gl/9Hr1Ph>)

### 3.2.2 Boston Faneuil Hall Marketplace Center and Guanyinqiao Commercial Pedestrian Streets

The Faneuil Hall was built in September 1742 by artist John Smibert and is located in between today's Government Center and the waterfront. It has worked as a marketplace and meeting hall since 1743. Now the place provides space for fast-food and food-stalls. Boston Faneuil Hall Marketplace is a popular place for workers in downtown to have lunch, with seating areas not only provided inside the building but also around the building in the form of stone benches, moveable tables, and chairs

Guanyinqiao Commercial Pedestrian Street is in Jiangbei district. Construction work was started in April 2003 by Longfor Real Estate. The commercial area consists of three parts: Jialing City Park, Guanyinqiao Plaza, and Guanyinqiao Commercial Pedestrian Street. The resulting area is intended to combine natural beauty, tourism, shopping, and entertainment. The pedestrian street, along with food stores, provides seating space which allows around 2000 to people sit and enjoy their food.



Fig. 4. (a) Boston Faneuil Hall Market Place Centre; (b) Chongqing Guanyinqiao Commercial Pedestrian Streets  
(Source: <https://goo.gl/V9ePXx> and <http://goo.gl/i9PIF2>)

### 3.2.3 Boston Columbus Waterfront Park and Chongqing Chaotianmen Square

Columbus Waterfront Park originally opened in 1976 and is a historic park that located close to City Hall Plaza and linked to Faneuil Hall Marketplace. Sasaki did its original design and won lots of awards including ASLA (American Society of Landscape Architects) Centennial Medallion Award in 1999. It is also one of American's earliest waterfront parks of the modern era. There is a delightful playground for kids in the park and the Greenway just across the street where kids can hop on the Carousel.

Chaotianmen Square is in Yuzhong district, where Yangtze River meets its tributary Jialing River. Around 314 BC, Ba County's city gate was located in Chaotianmen, which was later transformed into a wharf and extended in 1927. The Square, which was commissioned by Yazhi He, was constructed in 1998.



Fig. 5. (a) Boston Columbus Waterfront Park; (b) Chongqing Chaotianmen Square  
 (Source: <http://goo.gl/okWTuZ> and <http://goo.gl/d4WnaD>)

### 3.3 Spatial analysis

The spatial analysis examines the details in the sites such as size, sitting space, food vendor, green space, and entrances. Analysis map created based on satellite images, and build the foundation for the on-site observation.

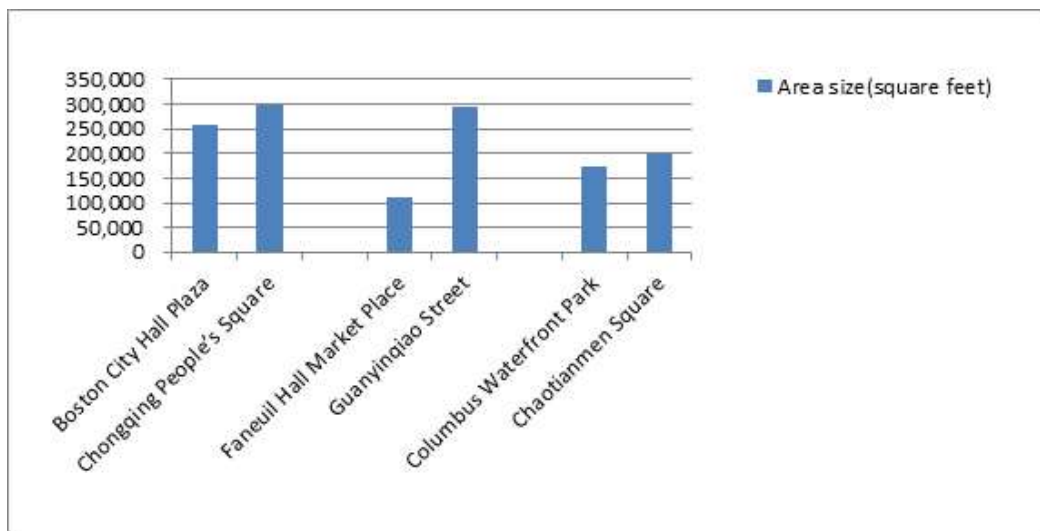


Fig. 6: Area size of each pair of sites

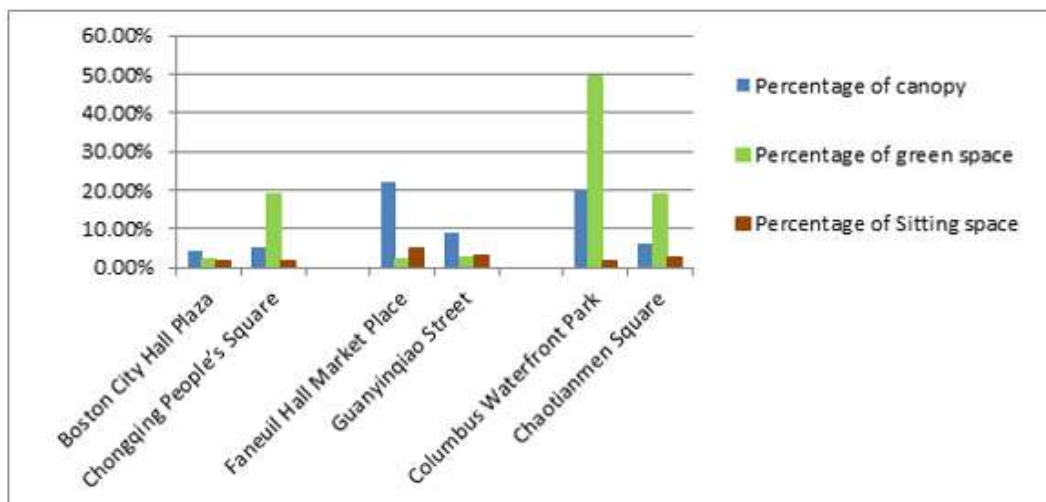


Fig. 7: Percentage of the canopy, green space, and sitting space

#### 3.3.1 Boston City Hall Plaza and Chongqing People's Square

These two spaces are both in front of Government buildings, have several restaurants and shops around, and people can access both sites by bus or subway. The sites have big open plazas with some tree canopy coverage. A factor that has a huge influence on people is using shakkei. Chongqing People's Auditorium is a traditional Chinese building style which resembles the Temple of Heaven in Beijing and is used only for events. On the other hand, Boston City Hall is a controversial and prominent example of the brutalist architecture style and work as a place for people to conduct business with various municipal agencies.





Fig. 8: Boston City Hall Plaza Spatial Analysis  
(Source: modified based on Google Map)

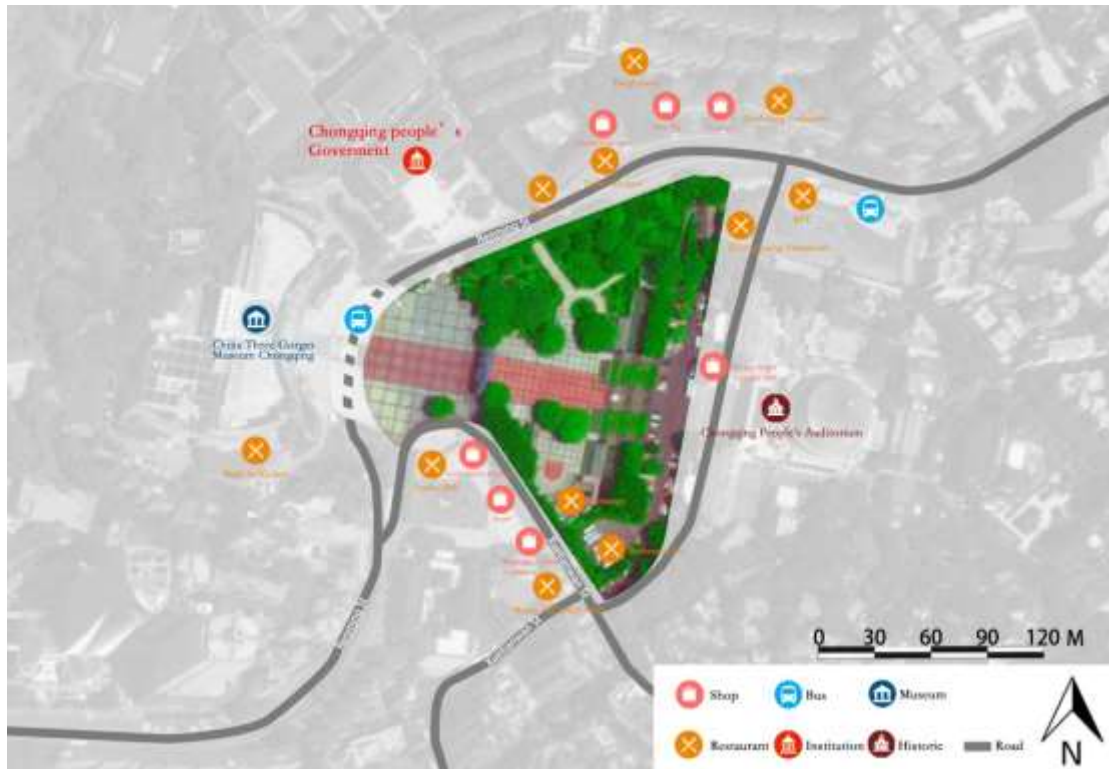


Fig. 9: Chongqing People's Square Spatial Analysis  
(Source: modified based on Google Map)

### 3.3.2 Boston Faneuil Hall Marketplace Center and Guanyinqiao Commercial Pedestrian Streets

These two sites are both commercial spaces people can walk through. People can walk into Faneuil Hall Market Place from the City Hall Plaza, and the bus station is at the west entrance. In Guanyinqiao Commercial Pedestrian Street, though the subway/LRT (Light Rail Transit) entrance is in the site, so most people access it by the subway. On both sites there are stores and restaurants all along the

pedestrian streets and sitting space is provided under the tree canopy. Food stores also provide food for people along the street. However, Faneuil Hall's food court is in the middle of two parallel pedestrian streets, and Guanyinqiao Commercial Pedestrian Streets have one single huge pedestrian street in the middle, and those mall buildings are along the street. Since Guanyinqiao Commercial Pedestrian Streets was built just around ten years ago, the trees do not have the same canopy as Faneuil Hall's.

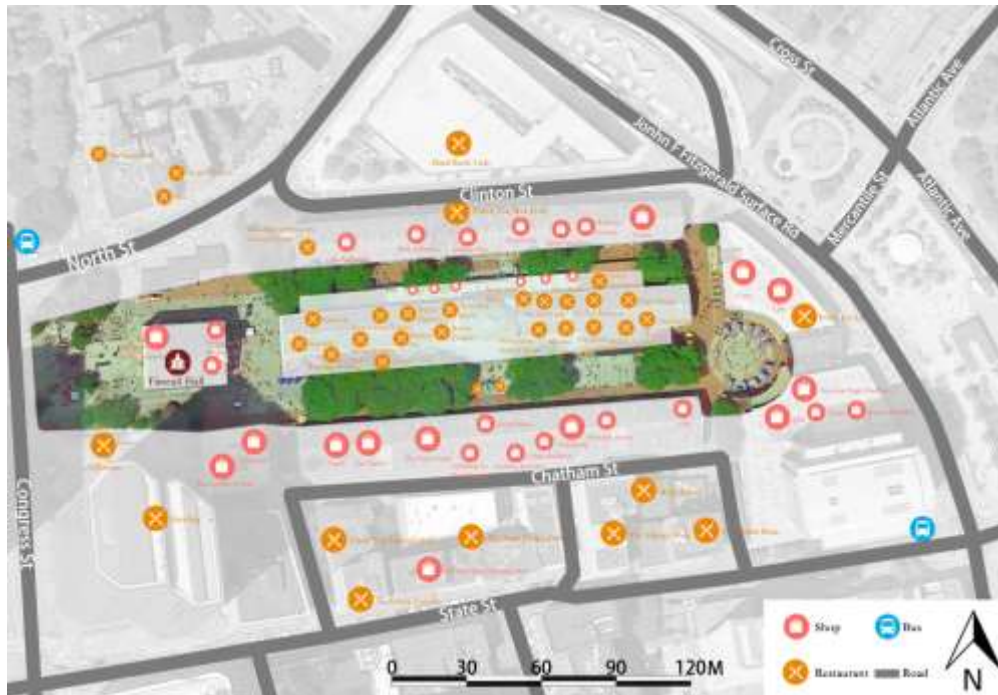


Fig. 10: Boston Faneuil Hall Market Place Center Spatial Analysis  
(Source: modified based on Google Map)



Fig. 11: Chongqing Guanyinqiao Commercial Pedestrian Streets Spatial Analysis  
(Source: modified based on Google Map)

### 3.3.3 Boston Columbus Waterfront Park and Chongqing Chaotianmen Square



These two sites are both close to water, and both have ferry terminals nearby. Also, they surrounded by stores and restaurants. Lots of people especially tourists in the Columbus Waterfront Park come from the Faneuil Hall Market Place; the bus station is near the entrance, and the ferry terminal in the east also bring people to the place. Most people access Chaotianmen Square, however, by bus and tourist especially foreigners come from the ferry terminal in the north and not get into this site.

Another difference is that Chaotianmen Square has far more “stores,” they are “pop-up” stalls or street vendors, so their number is affected by the weather and the time of year. Similarly, more food vendors will appear in the morning, lunch time and dinner time. It is hard to count them because they are changing every day, but they play a very important part around and in the space.



Fig. 12: Cho Columbus Waterfront Park Spatial Analysis  
(Source: modified based on Google Map)



Fig. 13: Chongqing Chaotianmen Square Spatial Analysis  
(Source: modified based on Google Map)



### 3.3 Direct observation and site analysis

The following direct observation is based on William Whyte's research. To reach the research goals, the observations were conducted in a systematic way which is important in assessing physical activity and identifying activity. The data was collected using behavior mapping and counting; the two methods work together at the same time.

Data are collected on three weekdays and two weekends, one Saturday and one Sunday. To get better data, the observations were conducted avoiding holidays and on days with good weather. According to William Whyte's research, one site needs at least six periods of time to collect the data. So in this research, they are 8:00-8:30, 10:00-10:30 12:00-12:30, 15:00-15:30, 18:00-18:30 and 20:00-20:30. Many different activity types and numbers of people for each activity are represented, and each observation period has its' own time sheet.

Every site has observation points for data collection (see Fig.21 in the appendix). This helps the observer to locate the data not only in time flow but also spatially. Since information of age is too personal to ask, the age data in this research collected by the speculation of people's appearance. Since China has more people and a higher density of population in the city, there are more observation points in China's sites. The category of activates in the form is based on people's behavior preference and different from site to site; this makes the collected data more reliable and correct.



Fig. 14: Boston City Hall Plaza Site Analysis  
(Source: modified based on Google Map)

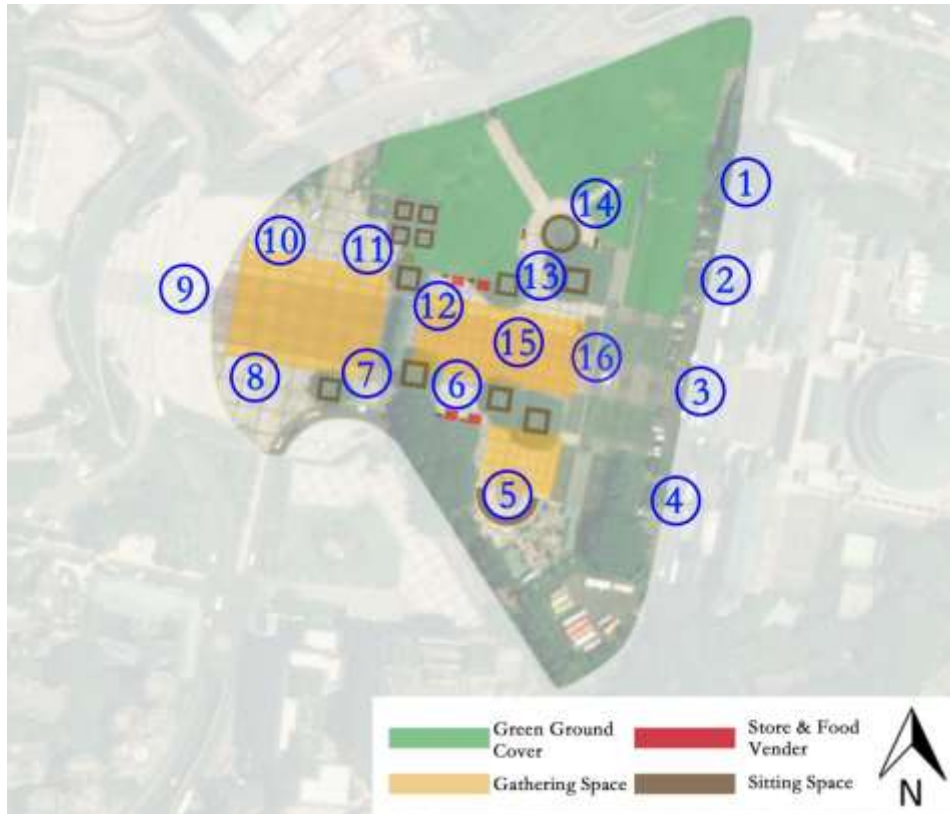


Fig. 15: Chongqing People's Square Site Analysis  
(Source: modified based on Google Map)

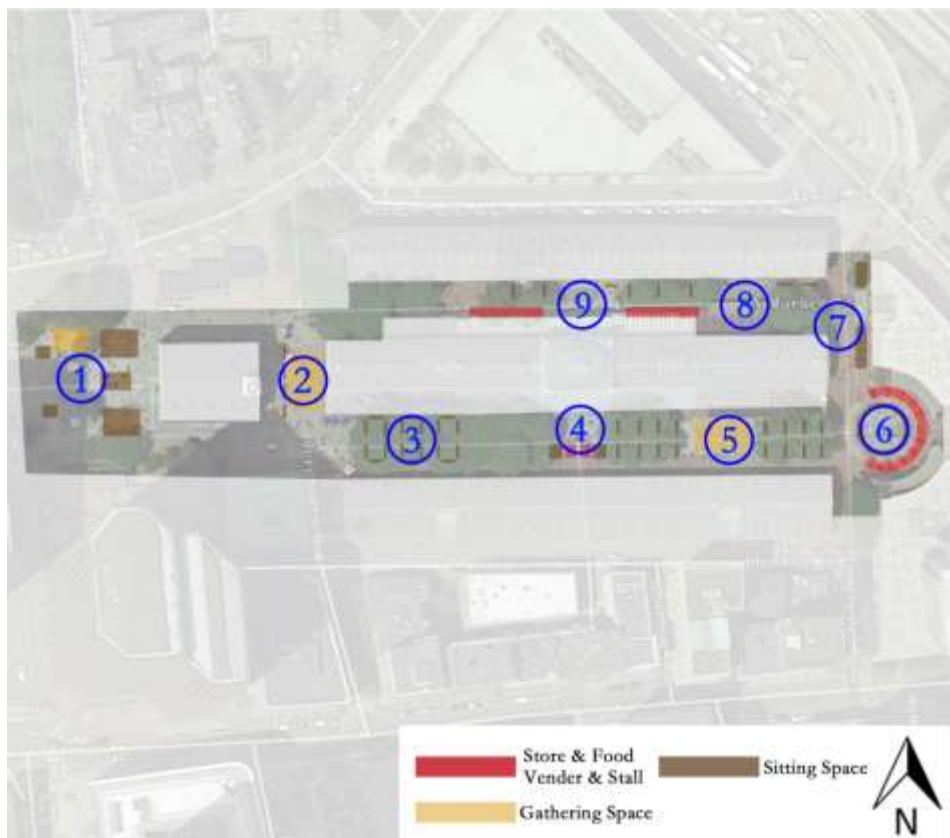


Fig. 16: Boston Faneuil Hall Market Place Site Analysis  
(Source: modified based on Google Map)



Fig. 17: Guanyinqiao Commercial Pedestrian Streets Site Analysis  
(Source: modified based on Google Map)

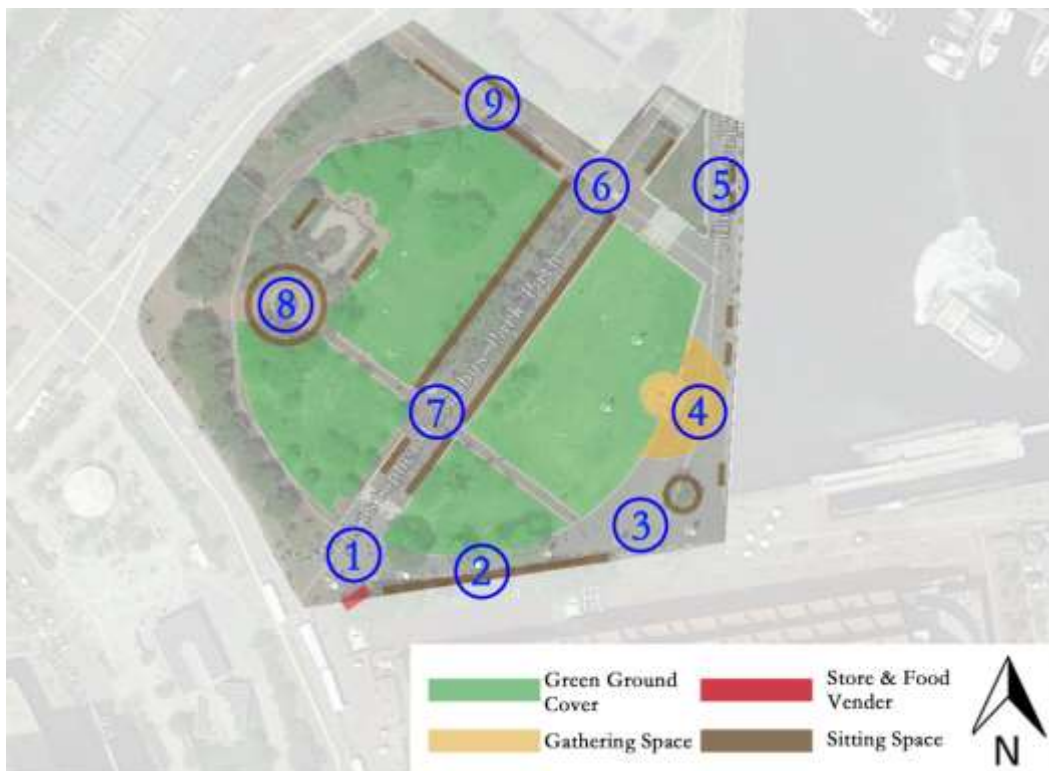


Fig. 18: Boston Columbus Waterfront Park Site Analysis  
(Source: modified based on Google Map)



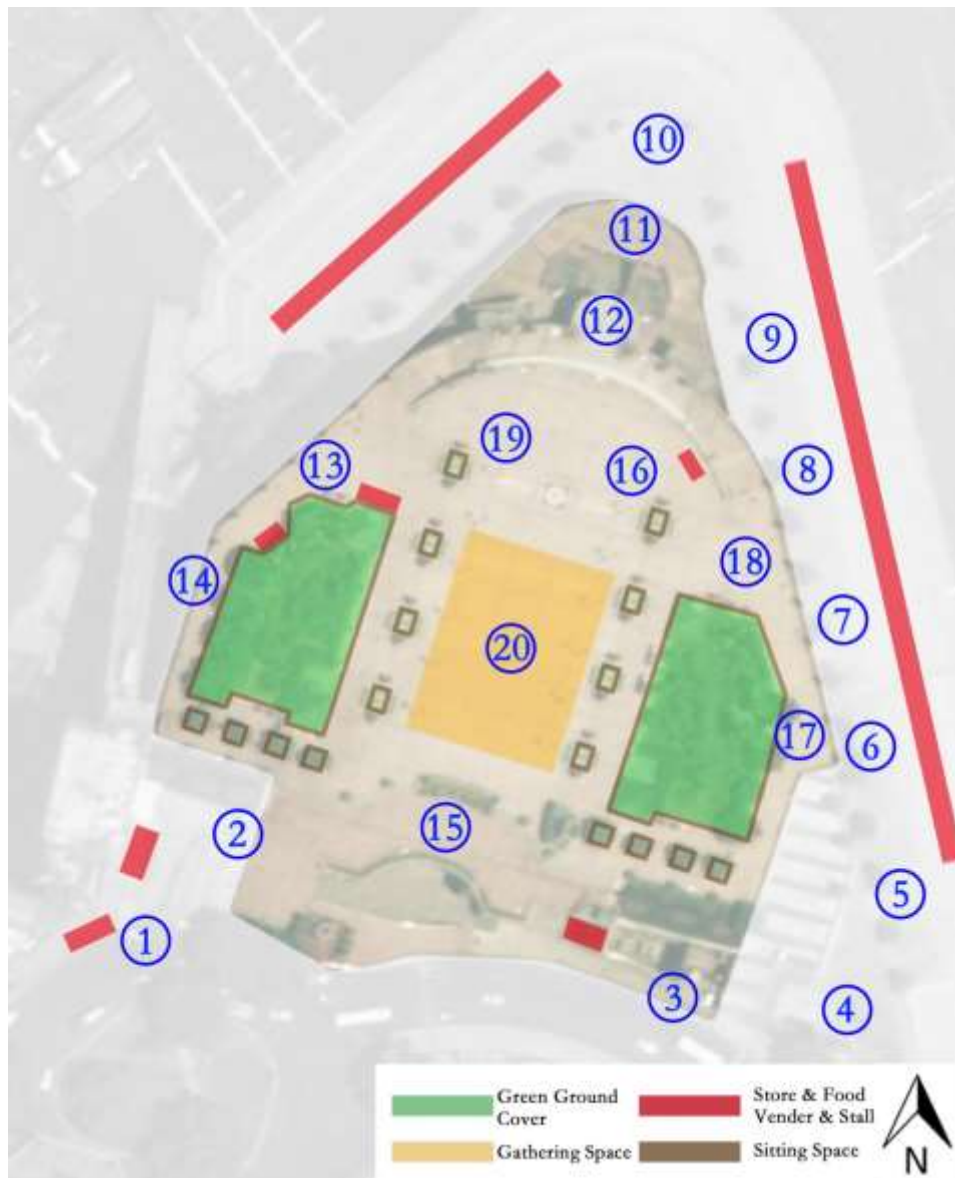


Fig. 19: Chongqing Chaotianmen Square Site Analysis  
(Source: modified based on Google Map)

#### 4.0 Data Results

The data present in this part is analyzed in the context of the Boston and Chongqing. Because China has much more people compared to Boston, the number of people in each site is compared in percentage and accounts for the total number of people over the five days. All the data works with neighborhood analysis and spatial analysis.

#### 4.1 Boston City Hall Plaza and Chongqing People's Square

Trees are the main factor that affects where people stay according to William H. Whyte's seven elements. From the Spatial analysis, point 1 in City Hall Plaza is a place covered with tree canopy with stone benches. This place, however, has fewer people compared to the other three points in the plaza. While in Chongqing People's Square, point No.13 and No.14 are near trees, and people preferred to stay and conduct other activities under the tree canopy. All the events held in Boston City Hall Plaza are scheduled by the government or another kind of organization. Point 2 in City Hall Plaza is the place to hold all kinds of events, people will only gather there, however, when there is an event. However, since this place does not have many events, usually there are no people in that area. On the other hand, people in Chongqing People's Square hold their events every day such as sword dance or tai chi in the morning and dance together after the sunset.

The public plaza is a good place to do exercise and socialize with other people. Almost half of the people in Chongqing People's Square are over 50, most of them are retired, so they have time to enjoy their life. Elderly people care more about their health and have so many kinds of exercise in China, many of which are outdoor activities. This could be a cultural difference as you may never see anyone sword dance in American public plaza but still shows people use public spaces very differently in the United States and China.

Food supply is a key factor in William H. Whyte’s seven elements. There are three stores that sell food and drinks in Chongqing People’s Square, with stores that also sell all kinds of toys for kids. While there is no store in Boston City Hall Plaza, the closest restaurants are in the west. There are a few tree canopies in the Boston City Hall Plaza, but the planting beds are too high for people to sit on.

Table 1. Number of people and percentage at research sites’ each observation point

Observation points No.	Boston City Hall	Chongqing People’s Square	Boston Faneuil Hall Marketplace Center	Guanyinqiao Commercial Pedestrian Streets	Columbus Waterfront Park	Chongqing Chaotianmen Square
1	303(19.19%)	1262(6.81%)	2920(25.27%)	2806(14.82%)	288(14.40%)	1698(8.29%)
2	344(21.79%)	723(3.90%)	2332(20.18%)	3255(17.19%)	147(7.35%)	1183(9.20%)
3	443(28.06%)	975(5.26%)	754(6.25%)	2584(13.65%)	355(17.75%)	2234(1091%)
4	489(30.97%)	442(2.38%)	807(6.98%)	2499(13.20%)	266(13.30)	776(3.79%)
5		1856(10.01%)	1185(10.25%)	3003(15.86%)	179(8.95%)	1131(5.52%)
6		1360(7.33%)	1450(12.55%)	2450(12.94%)	281(14.05%)	1417(6.92%)
7		1011(5.45%)	881(7.62%)	2333(12.32%)	224(11.20%)	1978(9.66%)
8		759(4.09%)	545(4.72%)		167(8.35%)	1904(9.30%)
9		1408(7.59%)	682(5.90%)		93(4.65%)	1825(8.91%)
10		739(3.99%)				1766(8.63%)
11		1103(5.95%)				690(3.37%)
12		1073(5.79%)				288(1.41%)
13		1398(7.54%)				478(2.33%)
14		1309(7.06%)				364(1.78%)
15		1534(8.23%)				408(1.99%)
16		1591(8.58%)				327(1.60%)
17						290(1.42%)
18						271(1.32%)
19						391(1.91%)
20						355(1.73%)

**4.2 Boston Faneuil Hall Marketplace and Guanyinqiao Commercial Pedestrian Streets**

Commercial areas hold events to attract people to come so that people will shop in their stores. In Guanyinqiao Commercial Pedestrian Streets, people will organize and hold events by themselves. Faneuil Hall Marketplace provides space, moveable chairs, and tables, for people. Guanyinqiao Commercial Pedestrian Streets also have open spaces for people, but there are no moveable tables and chairs. Unfortunately, moveable chairs and tables could be stolen by people especially if they are made of iron or steel. As such, people who use the open space to play Chinese chess will bring their plastic chairs and use the planting beds as tables. So people in Guanyinqiao Commercial Pedestrian Streets can create their sitting space by using their plastic chairs. Guanyinqiao Commercial Pedestrian Streets have only been open for about ten years, while Faneuil Hall Marketplace is a historical site. So trees in Faneuil Hall Marketplace are tall and provide huge shadows which can cover the entire street. On the other hand, trees in Guanyinqiao Commercial Pedestrian Streets are small, and their branches cannot cover the street.

Table 2. Age distribution in each site

Age	Boston City Hall	Chongqing People’s Square	Boston Faneuil Hall Marketplace Center	Guanyinqiao Commercial Pedestrian Streets	Columbus Waterfront Park	Chongqing Chaotianmen Square
0-6	62(4.26%)	1478(7.93%)	479(4.42%)	919(2.94%)	113(6.03%)	668(3.33%)
7-18	35(2.40%)	679(3.64%)	1082(10.00%)	235(0.75%)	117(6.25%)	468(2.33%)
18-34	114(78.31%)	3107(16.67%)	7583(70.12%)	12107(38.75%)	1381(73.77%)	6221(31.02%)
35-50	167(11.46%)	4045(21.71%)	1150(10.63%)	8017(25.66%)	208(11.11%)	6461(32.21%)
51-65	41(2.81%)	5925(31.79%)	401(3.71%)	5822(18.63%)	40(2.14%)	4497(22.42%)
over 65	11(0.76%)	3402(18.25%)	120(1.11%)	4147(13.27%)	13(0.69%)	1742(8.69%)

Table 3. Number of people and percentage at research sites’ each observation point

Activites	Boston City Hall	Chongqing People's Square	Boston Faneuil Hall Marketplace Center	Guanyinqiao Commercial Pedestrian Streets	Columbus Waterfront Park	Chongqing Chaotianmen Square
Sitting	151(9.83%)	1663(11.10%)	2151(17.48%)	4892(15.94%)	381(18.70%)	2010(9.82%)
Walking	1260(82.08%)	6409(42.78%)	4998(40.61%)	15840(51.62%)	1135(55.71%)	8191(40.01%)
Eating	2(0.13%)	91(0.61%)	494(4.01%)	2221(7.23%)	26(1.28%)	526(2.57%)
Dog Walking	15(0.97%)	318(2.12%)	87(0.71%)	150(0.49%)	74(3.63%)	157(0.77%)
Social	81(5.27%)	1365(9.11%)	614(4.99%)	3366(10.97%)	173(8.49%)	2755(13.46%)
Jogging	7(0.46%)	148(0.99%)	17(0.14%)	0	35(1.72%)	70(0.34%)
Cycling	5(0.32%)	0	9(0.07%)	0	60(2.95%)	0
Tourist	16(1.04%)	0	624(5.07%)	0	36(1.77%)	0
Event	0	0	3312(26.91%)	0	117(5.74%)	5588(27.30%)
Dance&sing&chess	0	4187(2.78%)	0	4124(13.44%)	0	1119(5.47%)
Taiji&Kongfu	0	801(5.34%)	0	90(0.29%)	0	54(0.26%)

### 4.3 Boston Columbus Waterfront Park and Chongqing Chaotianmen Square

These two sites are both close to water. The Boston Columbus Waterfront Park is next to the ocean, while Chongqing Chaotianmen Square is in between the Yangtze River and the Jialing River. The number of shops, vendors, and stalls is a huge difference between these two sites. There is only one store inside Boston Columbus Waterfront Park, and it sells T-shirts, so people cannot get any food or beverages inside the park. This makes the entrance and two intersections three places that have the highest number of people on the site. In and Chongqing Chaotianmen Square, performers also prefer a place close to the river; small bands and other entertainer star their shows at the riverside. There are also several food vendors in Chongqing Chaotianmen Square around point No.13. They serve noodles, ice-creams, and other food, which make point No.13 have a high number of people inside of the square. Another difference between these sites is their green spaces. Green spaces in the United States are often lawns that people are allowed to walk, have sports such as Frisbee and walk their dog on. However, in China, lawns are rarely found in public open space. This results in people participating in different activities in China versus the United States. While people prefer activities like jogging and dog walking in the United States, dancing, Kung Fu, Tai Chi and Chinese chess are preferred in China.

### 5.0 Discussion and Conclusion

Public plazas and open spaces in the United States are designed to serve people, they all have William H. Whyte's seven elements and those elements also applied to China to some degree. There are several differences between China and the United States that make people's activities and use of public plazas vary.

A huge number of the public plazas and open spaces in China were constructed in the past ten years. Vegetation inside the space is usually young and provides less shelter for people, and the lack of lawns space means people participate in activities different from the activities in the United States. People in Boston may prefer jogging and cycling, while in Chongqing China, people more like to do Tai Chi, sword dance in the morning and dance after sunset. This could be a cultural difference, but the environment of the public open space also matters. Large paved surfaces are more suitable for activities such as dancing.

The events held in public spaces are also different. Events such as dance, sword dance, and Tai Chi in China are usually conducted in groups, and tons of people dance at the same time. Events in the United States are usually shown with performers in the center with people around, and most of those events in the United States are well organized or programmed by a certain organization or authorities. On the other hand, most events such as Tai Chi and dance in China are self-organized. People who dance will come in groups, and the group leader will decide where to dance on the site. They bring their audio player, speaker and power supply in several trolleys. However, more people take part in the event than who stand aside and watch. People's age distribution in the public plaza could partly explain the different events in China and the United States. There are more old people in public open space in China. Jogging and cycling are sports more suitable for youth or middle age, senior people in China try to preserve their health through lower impact activities like dance or Tai Chi. People in the United States also dance together, but they conduct these kinds of events inside of buildings called "The Third Place." The third place is a space outside of work and home and creates the connection among people who live in a community (Jeffres, Bracken, Jian, & Casey 2009). As such Americans have indoor spaces that function as a third place to conduct the group dance, but China does not have many places work as third places, so the urban public space become their only choice.

Sitting space in public space provides people a place to rest, eat and participate in other activities such as chess. Moveable tables and chairs allow people to decide where to sit in designed sitting areas. People's in China tend to create their sitting space by bringing their chairs to the site; plastic chairs and folding chairs are light in weight and easy to move around. So there are much more sitting spaces in China's public plazas compared to the plaza's master plan. Places under trees, near green vegetation or other factors that attract people could be potential sitting space. This kind of sitting space is located in the best place where people like to have their events, and those chairs only appear during the events. After the event, space is restored and serves its original purpose, which makes space become multi-usage.





Fig. 20: People bring their plastic chairs in Guanyinqiao Commercial Pedestrian

Food vendors in Boston are usually well organized, and they are always in the same place, while there are more vendors in China's open spaces such as Chaotianmen Square. They are not organized, and may not come to the same site every day. There are food vendors who only appear during lunch time or dinner time that, and bring their chairs and tables. They come to the site periodically, which can become a factor that attracts a huge number of people.

Green areas in public plazas are designed in different ways between China and the United States. Lawns are usually open to people in United States plazas so that people can picnic, rest, play Frisbee or other sports on the grass, while lawns in China are surrounded by low shrubs two feet higher than the ground to keep people from stepping on them. The density of population could be one reason that designers in China do not want people to step on lawns. There would be so many people using the grass space if the lawns area were open to the public and it would damage the grass or make the lawn area hard to maintain.

Several elements working together can get an unexpected result. Water as one of William H. Whyte's seven elements, and attract people both in Boston and Chongqing. Water in Chongqing Chaotianmen Square also works with food vendors and performers. People attracted by food and performers next to the river. The harmony of these three elements strengthens this part of Chaotianmen Square and attracts much more people.

This thesis explored the use of public plazas in China and the United States, where people like to stay in the plaza and how people's activities relate to the physical environment, all through the use of direct observation. Direct observation is one way to measure the differences, but there are other methods such as short interview and video recording. The interview could get more subjective opinion from people in public plazas. Possible interview questions could include "where would you like to rest in the plaza?" or "what kind of activities you like to do in the plaza?" The interviewer could get very detailed responses and thus make it easier for people to make any future changes to the plaza. The video recording could also provide a way to get a better understanding of how people's activities change with time.

Another important point for future research is a culture difference. People's activities in the public plaza are hugely affected by the local culture. For examples, in the United States, it is hard to find people sword dancing or playing chess in plazas. However, people could find a public space full of tables and benches in the center of Boston China town with people playing Chinese chess even though they lived in the United States for decades. As such, having a better understanding of local culture would be very helpful in finding the differences in use of public plazas and factors that attract people in different countries.

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Appendix

Point		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Total
Sex	M																
	F																
Age	0-6																
	7-18																
	18-34																
	35-50																
	51-65																
	over 65																
Activities	Sitting																
	Walking																
	Eating																
	Social																
	Public dancing & Singing																
	Taichi, Soward dancing & Kungfu																
	Chinese Chess																
	Tourist																
	Etc.																

Fig. 21: Example of Behaviour mapping and data collection form