Public Walking Space
A study of Commercial Pedestrian Streets
in Copenhagen, Stockholm and Nanjing

Blekinge Institute of Technology
Spatial Planning with an emphasis on
Urban Design in China and Europe

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Karlskrona, Sweden 2011
Abstract

This diploma work is built up around the topic on public walking spaces, based on the investigation and analysis of commercial pedestrian streets of Copenhagen in Denmark, Stockholm in Sweden and Nanjing in China. It intends to compare the pros and cons of these commercial pedestrian streets and enhance each other by extracting their positive attributes to improve the current situation and public walking space design. This work is constructed as follows:

Firstly, the background and problems of public space and public walking space are introduced, and then the history of the subject and its classification are elaborated.

Secondly, the relative theories of urban public space and walking space were investigated to provide the theoretical and scientific support to this thesis.

Besides, in the case studies, the commercial pedestrian streets in three cities are analyzed respectively, in terms of context, location, transport situation, human-scale design and culture expression.

Furthermore, regarding to how people use the public walking space, the investigations and interviews of these three walking streets were carried out. People are classified according to their different activities, and at the same time, their various relative demands for the streetscape are analyzed. 15 people from each street were selected randomly in the interview to provide feedback on four types of questions: traffic, protection, comfort, and enjoyment, which are proposed according to the 12 urban life qualities criteria of Jan Gehl's research. Their answers are gathered and referenced in the final design proposals.

Finally, Hu'nan Road, the commercial street in Nanjing is renewed in the light of all the previous studies. Through the work of the overall planning, transportation planning, and streetscape design, the author tries to solve current problems in the public walking streets, and improve the unsatisfactory status in the public walking street.

Keywords: Public walking space, Commercial street, Human activities, Streetscape renovation
Acknowledgement

I would like to give my sincere thanks to all the people who have helped me during my work.

First and foremost, I would like to thank my tutor of this thesis, Gunnar Nyström for the valuable guidance and advice. He inspired me greatly to work in this thesis and his support motivated me to keep my original idea. He has given me valuable comments on my thesis from the structure of my thesis to the finalization.

Secondly, I would also like to thank Anna Hessle, Staffan Sundström, Jona Jernberg, and Jenny Carlsson who are working in SWECO. They have offered me great help with general ideas and provided me with a lot of valuable case studies.

Besides, I would like to thank the Blekinge Institute of Technology for providing me with a good environment and facilities to complete this thesis.

Also, I would like to thank my friend Jing Zang, Hang Yin, Mohsin Kamal and other friends who have helped me collect the information of my thesis.

Finally, I would like to thank my family. I wouldn't complete my thesis without their support and encouragement.

Thank you all!
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Chapter I Introduction

1 Background

Generally speaking, space in civil society can be divided into two categories, private and public, which are opposite to each other. On the functional aspect, they have totally distinct characteristics. Private space belongs to individual person where should be close to keep their own activities without interference. The main purpose of public space is for the general public service, covering natural environments like mountains, water and so on; while in urban area, public space refers to the open area existing among the architectures where the citizens have public relations and various activities. Semi-public space is a concept between these two definitions. It's not that open to everyone, but one has to obey stricter rules to come inside. Equally they can get special rights equivalent to what they pay.

City is the product of high-speed developed human civilization, which offers the different kinds of space for living, studying, working and entertaining. Gathering people make various activities together and enhance their mutual influence greatly. Different from countryside, these gathering people are mainly strangers. City is such a place that people who have the citizen rights can stay here and have civilized life. Urban public space is mentioned about the open space existing among the physical constructions and servicing for the public events and communication. It includes streets, squares, parks, residential outdoor venues, sports venues and so on. Compared with the private space in city, urban public open space is more like city's platform which offers various possibilities of city life, as well as brings vitality and colors.

Walking has always been the most basic and necessary means of transportation in cities since ancient era. Walking is the most basic one of three-type outdoor activities, necessary activity (Gehl, Life between Buildings), and it is also the premise and foundation to generate public communication in daily life. Walking space plays great role with significant value in people’s daily activities because of such nature features of human beings. To a large extent it affects the quality of urban life, providing not only the physical environment, but also important spiritual, social and psychological environment. Walking space have become the basic elements of city image and urban landscape. Meanwhile, walking environment is also a vital carrier of urban street culture, which contains a wealth of local cultural content. Therefore, it is reasonable that the walking space can be considered as one of the most important public spaces as well as one of the dynamic and viable organs in cities. No matter how a city develops, pleasant living environment is human’s right and values in
rational and harmonious society. Regardless of how the city extends towards outside, the individual only lives in a certain area. The existing of walking space is a good way to avoid the expanding city presses inward the human space, at the same time, it should be one of the indicator of a livable city.

As Jacob said, the city is alive due to the live streets, while it will become boring because of the dull streets. Urban walking space binds various city functions and has close relation with people's life in the city (Jacobs, 1961). Streets extend public spaces from the point to the line in the urban scale. As a dynamic and integral part in need of public vitality, walking space would be the most universal and effective object to deal with in the study about urban public life, because what the space is determined to create is essentially a kind of street lifestyle that existed in the past when streets had not been eroded completely by motorized traffic.

2 Problems

During the post-industrial era, the electronic information industry grows rapidly that people can browse limitless information, talk to others within thousand miles apart, and even complete transactions just staying at home. It allows more people to throw away direct communication and public events, but contact through internet. There are only cars left speeding on the streets, while the city has become ever more indifferent. With the increased "car-based" design of street space, the outdoor platforms originally for human interaction, entertainment, leisure, chat have been deprived gradually which is a mockery of modern civilization (荆其敏，情感建筑.天津：百花文艺出版社，2004.104~10).

Since the 18th century industrial revolution, with the acceleration of urbanization process, people's lifestyle has undergone great changes. Traffic congestion is one of the common problems encountered in almost every city. The rapid expansion of city size and the fast development of motorized transport made the vehicles become the master of the city, which has brought tremendous noise pressure and exhaust pollution to the walking space. Besides, although the road are getting more and more wide, the sidewalks become more and more narrow. It is difficult to find comfortable place to walk and feel safe any more, to say nothing of enjoying leisure time in public places. Motorized traffic has continued to erode the city's landscape and space resources, and the city's traditional style has been greatly damaged. In urban planning there is a phenomenon that the motorized traffic and road design were emphasized rather than non-motorized walking space.

On the other hand, in order to meet the needs of a modern rapid transit system, a variety of city streets had been artificially straightened in a short time and transformed into a simplistic structure, even grid of streets. It seems that the convenience of transport is good for cities growth, but actually more and more facts have shown that it
did result the deterioration of living conditions, decline of city centers and disappearing of urban features. These problems have produced a series of urban environmental issues which led to counter-urbanization. People have gained the free and efficient access, but at the same time they also began to lose the last chance to walk in the city.

Since the 1990s, a lot of walking programs have been built especially in China. A large number of them were commercial pedestrian street. It indicates that people have generally pay attention to build more urban walking space to improve the status of urban traffic chaos and the overall poor environment. However, after the rise of amount, it seems that the pedestrian streets do not make people feel that the quality of urban public life has been enhanced. On the contrary, the pedestrian streets are becoming similar increasingly, only with shopping issues, what's more, walking is even considered as a commercial speculation to attract people coming, which is inevitable to bring them down. After all, the walking spaces were just constructed without more consideration in urban planning, overlooking a very important aspect which is protection of the spirit of place. It was clearly difficult to meet the diversity of social material requests and spiritual enjoyment in the future only by single-model design.

3 Choice of Subject

Commercial Pedestrian Street is a prominent representative of urban walking space, as well as the most important part of urban public space. It can be seen as a good way to look inside the whole city that embodies its style and charm, since it possesses the most active and dynamic factors for city. In this environment, people are gathered because of shopping activities which can lead to various public activities, for instance, walking, shopping, leisure, entertainment, etc., as a result it becomes remarkable concentrated environment of the urban public walking space.

3.1 Development history

3.1.1 European development

The current commercial pedestrian street originates from pure walking space. People passed a street, gathering sometimes and somewhere, and later it became a place for business activities. Then some places were further extended from the whole street, and finally it was developed by adding more necessary, optional and social activities, creating a commercial public space. It should continue evolve in a sustainable way aiming at the walkable human-based public environment.

In ancient Greece, people started to recognize the greatness and nobility of human beings and paid attention to the real world where people were living. The distribution of urban architecture was considered from the pedestrians’ perspective. From then on,
the prototype of the commercial pedestrian street was formed. The main streets of Pompeii were paved with stones with sidewalks on both sides. It can be seen the spatial form focused on western urban design at that time. But because of the undeveloped urban transport, the activities of street space were people-based, taken by mixed flow of people and vehicles, and even animals. Horse-carriage is a kind of old-style transport that was widely used around Europe. It can transport both goods and travelers. It had been applied for 1000 years since it was reformed from the original carriage in the 1st century BC.

Since Renaissance, the streets had been for walking and a few low-speed transports. There were plenty of constructions on the first floor of residential buildings besides the streets for public use and underlying service, such as stores, theaters, clubs, restaurants and cafes. The streets were convenient for residents and also very lively, since they created a unique urban public communication with great human scale.

In 19th century, modern transports like Trams, metros and cars replaced the traditional horse-carriages. The transform of transportation caused the change of urban structure.

The original train stations distributed in the city were connected by new roads, so that the inner transport became smoother, and meanwhile many other roads were built to link the whole city area because of the rapid development of automobile traffic, thus the relative junction of roads formed the city center, which had capacity of high population density and flow. It was common to see people walk in the center but not everywhere because people preferred to drive to other areas.

In Berlin, London and other European cities, spatial regional planning on a large perimeter was proposed. Peter Joseph Lenné proposed a wider regional planning named ‘Projektierte Schmuck- und Grenzzüge von Berlin mit nächster Umgebung’ (projected decorative and boundary lines of Berlin and its immediate vicinity) (Fig.1-1) (1856).

Since early 20th century, the rapidly developed urbanism has reached the edge of city. People dispersed to suburban areas, as a result the traditional urban centers declined gradually, and instead the peripheral centers were built in the outskirts. Since the large regions were connected, as following, regional rail emerged and was operated beyond the limits of urban areas, connecting cities to the surrounding towns, outside or at the outer rim of the suburban belt.
In contrary, rapid industrial development in Europe is disappointing, as the urbanization process made the functional-based space environment deteriorate, while the growing popularity of private cars also exacerbated the environmental crisis (Painter, 2004) and brought unprecedented impact on walking space. As a big problem for people’s life, walking environment was neglected in the construction in some new urban areas. In order to ensure the quality of urban life, the countries of European continent, the Netherlands, Germany, Denmark and other countries set up a ‘no traffic areas’ for walking and free activities.

From the 1960s, some European cities began to implement the street closure policy to prohibit vehicles from entering certain commercial neighborhoods, or just opened roads for transport of goods in the early morning and night. This pedestrian street idea was quickly accepted and many cities took it as part of the plans for new city development, especially in the historical centers of towns.

Today almost every Western country has built commercial Pedestrian Street. Some modern types are mainly based on commercial and leisure space; while there are also some Historic District taken as a part of pedestrian street planning and design, connecting the business activities with historical and cultural preservation activities.

At present, the western countries have more advanced study about commercial pedestrian street, especially in Europe. The core design concept development of modern commercial pedestrian street environment has gone through three stages:

- **Attract customers**
  The first pedestrian street emerged in Essen, Germany, in 1926, yet the original aim was not commercial considerations, but only as the appropriate measures to solve the problems of limited space and traffic chaos in the city center, formed from Middle Ages. The traffic control thereafter acquired unexpected commercial success that stimulated more cities to follow the innovated form in the early 1960s. Then the purpose of creating walking street is to attract customers back to the downtown. The planning focused on repairing the buildings, street paving, decorating street layout of landscape and green space, etc (Scott, 1989). Although these walking streets were welcome among citizens, the rigid design lacking of interests failed to leave a nice memory ultimately. Even worse, the environment was so tough that it left the impression like “Please leave if you don’t purchase anything”.

- **Reflect the concern to pedestrians**
  In the Mid 1960s, designers began to study the relation between human behaviors and the environment, and found that people preferred to take a rest and communicate with each other besides shopping. Therefore, the main issue of space design was changed to meet the requirements of pedestrians, reflecting people’s concern (Rapoport, 1997). The colorful pedestrian facilities appeared and the space layout tried to encourage people to use the entire street, but not just the narrow strip space in front of the store. The characteristics of Pedestrian Street, by the time, expressed the design idea which considered the comfortable feeling instead of only emphasizing the
shopping issue.

Community center

The pedestrian street development has reached a mature stage since 1970s. The designers were searching for the way to potential integration of street space for commercial trades and public activities. Although the stores were still the places where people really wanted to go, actually it was the diverse public activities on the walking street that attracted more people. During that time, the pedestrian street became the most charming walking environment which people really loved, providing social venues, public concerts, and art exhibitions and so on.

These three evolution generations of Pedestrian Street features illustrate that it actually has become people’s space, which can be seen as a multi-function social activity center and tourist attraction for some areas, or even the entire city.

3.1.2 Chinese development

China’s urban walking space has developed from pattern of ‘Li Fang’ to ‘street’ since ancient periods. These two forms were two main systems of urban spatial structure in ancient China.

During Spring and Autumn period (BC770-BC221), the ruler implemented a closed neighborhood system of the city layout called ‘Li Fang’ (Fig.1-2) (Yeju, 1985). The city was enclosed by the grid road system, and ‘Li Fang’ means residential neighborhood. The houses were thence surrounded by walls, and the citizens only walked along the line without any place to stay (forbidden to stay outside long).

After Northern Song Dynasty (990-1127), with the cities’ development, the closed ‘Li Fang’ system was not suitable for the economic development, so the walls were demolished instead of nominal cross-door structures. The original closed square evolved into the rectangular street network with opening neighborhood (Fig.1-3) (Yeju, 1985).

From that time, streets were expanded, concentrating on many trade points, i.e. markets (along the streets and open-air) which became the center of secular life (Fig.1-4) (Dunzen, 1984). However, influenced by the past rules, people went there for business-oriented activities, but merely stayed in this environment over a long time.
In other word, streets were only used as the carrier of traditional Chinese market, but not for offering people public space for enjoyment. The form of street has been kept for a very long period in China, around thousands of years.

The retailers moved their stores indoors gradually along the street layout. After a long evolution, they were combined, and sold the most common necessities of life. This kind of street was based on the overall street network, with small scale but suitable for shopping. Therefore, the traditional narrow commercial street was formed.

While Buddhism was spread into China, a number of temples were constructed almost everywhere. The flourishing of Buddhism resulted that the square in front of the temple became the gathering place for many people and created a busy market during those periods (Fig.1-5). The space pattern was not so big, composed of streets and squares, although it had certain independence and integrity.

After entering the modern period, modern traffic also has emerged in China, and the conflicts between traffic and pedestrian have become more prominent. Since 1950s, a large number of traditional commercial streets have become wider and straighter. It attracted more and more traffic, thus in that case the more center area it was, the more people and traffic gathering there. The tough fences were adopted to separate walking and car paths, and the traditional comfortable spatial scale for human walking was gone. People realized that the street mode of mixing pedestrians and cars was no longer satisfied the requirements of the modern city (Haiying, 2002).

In the late 1980s, attributed to reforming and opening-up policy, China started to introduce related commercial street theories from the West, and paid more attention to the construction of modern commercial walking space gradually. In the early 90s, lots of existing business environment was renewed. It did not only focus on trades, but also paid more attention to the impact of the surrounding landscape on people; however, it is inevitable to face many new challenges in modern civilization, such as the large-scale commercial facilities substituted for the original small commercial facilities. To a great extent, it led to the destruction of traditional characteristics of
business environment. It is hard to say which of the development or setting back since so-called modern commercial streets lost some valuable characteristics.

3.2 Classification of commercial walking space

3.2.1 By traffic

Commercial walking spaces are dedicated pedestrian shopping streets. Motor vehicles are not allowed to enter except some certain circumstances. These streets are usually related to the historical and cultural city center, as well as high density residential areas. They promote urban tourism and development of residential areas, yet still facing the increased flow and parking problems. Somehow it has a great relationship with location.

Some commercial pedestrian streets are available for both people and vehicles. There is an increasing width of sidewalk to ensure the wonderful environment for pedestrians. Commonly the vehicles don’t pose any threat to them, in contrast, the sidewalks are good for creating public space with updated facilities and green plants. It is convenience for people to come and leave with fast transport; however, the width of the enlarged street format loses some street space, which is a problem in modern type of commercial streets.

3.2.2 By spatial form

Some commercial streets take business activities in the open air without any structure above the body of the streets. This is the most common form. In the open streets, plants can grow flexibly and it is favorable to create an open and bright urban public business street environment.

With the continuous development of Commercial Street, the indoor form came out. The streets aim at creating indoor commercial street environment which is climate free inside the building. This form uses the inside construction more like an outdoor space, but actually ignores the real one. It does improve service condition for people, but is not entirely good for the original intention of public space in urban design.

4 Research Questions and Aim

China’s outside market has a long time history, but the modern walking space is still at the initial stage, which was developing from the 1990s. On the other hand, walking system research in Europe has been through a very systematic development which almost started from the early 1920s. Firstly, through studies of excellent European walking spaces, we can explore the reasons that why people are willing to go to these public walking spaces, and what are attracting them into public space. Secondly, since the general knowledge to streets is same, what’s the difference when Chinese and European people use them? It caused the author’s interest of comparison between
the European and Chinese walking streets based on different contexts and habits.

The landscape design of urban walking space is actually comprehensive, containing the typology, function, facilities and other aspects. Its purpose is to create harmonious and livable living environment in urban area. The main work of this research is to discuss how to build high-quality human walking space through three commercial-street studies in Copenhagen in Denmark, Stockholm in Sweden, and Nanjing in China.

As a saying goes, a successful public space is less about predetermined design, but more about the experience created between people and place (Veloso, 2008). A deserted place with beautiful design still means nothing. What can urban designers do to create such a perfect place where people would like to go? It requires studying what the human usually like to do in different environments. So in this thesis, the main questions raised to study are as follows:

- What current features and landscape of commercial pedestrian street are in China and North Europe?
- What are Chinese and Nordic people’s behaviors in commercial walking streets? How does the surrounding environment impact on them?
- Which advantages can be learned in the Hunan Road renewal project?

By studying of these three streets’ statuses and people’s activities, the author tries to summarize some experiences in different kinds of commercial walking streets. Most importantly, the advanced points are determined to be referenced in the improving proposal of Hunan Road, a current commercial walking street in China.

5 Delimitation

In the thesis, one type of walking spaces, commercial pedestrian street, will be introduced. Since it is a comparison research, the cases are picked from Europe and China. Cases in Europe are chosen from Stockholm and Copenhagen in the North Europe, Scandinavia. Stockholm is the capital of Sweden representing the main character of Sweden. Copenhagen is the capital of Danmark, very famous for its walking system. In China, the areas are selected from Nanjing which can be considered as a big city. Due to my limited knowledge and the restriction of this paper, it is hard to investigate other places which could be more typical and representative.

The second limitation in this paper is the application of the method which is mostly learned from Jan Gehl's research. The samples are picked from North Europe and China which have totally different cultures. People who answer the questionnaires come from different streets with universal background, and the original answers are definitely subjective. Besides, only 45 participants’ views are collected during the survey. This is not so big subject group, including both professional and unprofessional people, thus the final conclusion might not that accurate.
6 Methodology and technical approach

In this paper, Chinese and European cases will be analyzed separately at first, and the general impressions and problems of current commercial pedestrian street will be found. Then, the differences among these streets will be compared. Thirdly, the interviews of human behaviors in three streets will be studied to explore what people really need. After the analysis, the author will propose the renewal ideas for Hunan Road in Nanjing, China, by referring to the analysis results. Some important methods that can be used in this thesis are as follows:

- Interdisciplinary Research Methods
  This study is not only about simple space concept, but also contains behavioral psychology and spatial theories. They all provide strong support for the research of humanity urban space. During the analysis process, the psychological theory and anthropological knowledge enrich the life in street space.

- Field Research Method
  The typical commercial pedestrian streets both in China and Europe will be investigated and analyzed, making the problems more specific. Theoretical evidence will be offered.

- Comparative Analysis
  The comparison of these cases will be carried out in many aspects, and thus reveals underlying causes leading to different impression of commercial walking spaces, which can be used in the final design proposals.
Chapter II – Theories research

1 Definitions and relevant theoretical perspective

1.1 Concept of space

In Chinese philosophical field, space is a part of a concrete thing, and form of movement (Baidu, 2009). It can be known but not felt, until it is represented as a definite place. Hence, space is the understandable object abstracted from the concrete things. It has two characteristics; one is named infinitely that is without direction, and the other one is eternal, with no start or end of time.

In the urban developing history, space is a very important concept. In people’s mind, it really exists in their life. The interest in space is somehow due to our original source of living. We are always pursuing what we need in the true relations between nature and human, and trying to find the meaning and order in activities and time. From this point of view, it can be said that human behavior has spatial aspect.

Norberg Schulz introduced ‘existing space’ concept in his book Existence, Space and Architecture (1971). He believes that the reason why space is interesting is that people have known and caught their roles living in the environment full of events.

1.2 Concept of public space

A public space is a social space such as a town square that is open and accessible to all, regardless of gender, race, ethnicity, age or socio-economic level. The concept of public space is often raised compared with private space, and we can notice that it allows everyone to come into the place emphasizing equality and sharing. Public space is not only a geographical concept, but what more important is that people who can enter such space should be the main role, and how to offer the opportunity of participation, communication and interaction widely.

Urban public space consists of roads, squares, green space, buildings, ground environment, facilities, elements, and so on. Generally it is formed according to people’s living requirements during the process of economic and social development in cities. In addition to a variety of functional requirements, the number of urban public spaces is closely related to the size and population of a city. The more urban population, the more demand for urban public space, and the more complex functions are expected.
1.3 Meaning of place spirit

Place is a vast and complex concept, because human behavior and experience can occur frequently in related places. Norberg Schulz has mentioned that the most specific statement of environment is place. The nature of the place, he defined, is the entire specific site including shape, texture and color. The sum of these contents determines the character of an environment that is the essence of a place.

The concept of place is not only understood in the physical environment aspect, but also composes social and cultural elements, which are mutually interacted with human psychological action. The spirit of place is the sum of people’s specific experience of excitement, stimulation and joy in special places.

In short, place is a product of interaction between people and environment. This shows that place arouses people’s interest and attention first, and then it encourages us to have some kind of emotion with it. Place is created according to our own special purposes, so that every place has its particular range and unique spirit.

1.4 Definition of urban walking space

In Jan Gehl’s book Life between Buildings (1996), the concept of walking is defined as a primary type of traffic, a way of moving, and also an easy approach to access public spatial environment. So he considered that walk is very necessary and the most common public activity.

The initial target of city streets is mainly walking people. As the most fundamental and primitive mode of transportation, walk needs the appropriate space to support people’s behavior. This paper aims at studying this kind of space-urban walking space. It refers to such urban places that take the foot act as the main mode of transport and allow pedestrians to have priority of traffic, so that it can ensure walk as the normal behavior in daily life (Bacon, 1976). Bacon held that walking environment in Walking Street (district), Boulevard, Life Square, air and underground Pedestrian Street (road), and other typical contents. They are significant elements of urban space organization, among which commercial walking street is the most typical one.

Michael Gage and Maritz Vandenberg agree that walking spaces can create walking network connecting various types of open spaces dispersed in the city (1975).

Design for urban walking space involves multi-faceted, multi-disciplinary, and multi-level works. Its integration can be reflected from architecture, landscape, sculpture, lighting, art pieces in urban walking environment, municipal facilities, traffic facilities and signs, business advertising, and environmental sanitation facilities.

The ideal concept of urban walking space can be summarized as that it is a space full
of natural landscape and other useful facilities that everyone has right to enjoy their activities regularly or temporarily, without interference and hazards from automobile traffic.

In modern cities, walking environment becomes increasingly systematic. It combines series of walking spaces such as streets network, urban centers, commercial areas, transport hubs with underground or air walking space to form three-dimensional space network.

2 Relevant theories of walking space

2.1 Theories of modern urban roads development

From 1960s, the rapid expansion of city size led to destruction of urban ecological environment. Finnish architect Eliel Saarinen put forward the theory of Organic Decentralization (1942), which has significant impact on Europe and the United States to rebuild the old city and build on the new city. One principle from this theory is that the individual's daily life should be based on walk. It also argues that it is the poor urban functional organization that makes a city paralyzed.

In 1963, Professor Buchanan (1999) from UK proposed the theory of Traffic Calming in the report Urban Transport. The general view is that sidewalk and the driveway in the traditional street should be merged as one so that drivers would have the own visual impression just like courtyard. This kind of feeling can be strengthened by green, seats and other design measures, forcing the vehicles’ speed down to human walking speed. Meanwhile walking and cycling are promoted. It is good to reduce the number of traffic accidents and the negative impact on the walking environment, and to create the street space with humanity.

During 1980s, the research of Sharing Theory began among Western auto society. The relationship between people and vehicles has undergone a qualitative change so that the concept of separation of people and vehicles has been replaced by the concept of equal coexistence. They thought that it was more favorable to improve the neighborhood’s vitality and communication between people in such a sharing way, compared with the current separation way. The essence of this theory is to restore the human scale of the road without limiting traffic to unacceptable levels.

In 1990s, facing the over spread of low-density suburbanization, New Urbanism raised a new mode taking walk and public transport as the main ways. Calthorpe (1993) proposed a mode called Transit-Oriented Development (TOD) in his book The Next American Metropolis. TOD is a mix-used land with walking distance as the radius. It relies on public transit, and takes bus stops as the gateway. Public squares and commercial service facilities are around the bus stations forming a community center.
2.2 Theories of public urban life

Le Corbusier, representative of modernist planning in 20th century, thinks that the status of the building density along the streets should be changed. He also suggested increasing road width and spacing of buildings on both sides, and reducing the intersection to build three-dimensional tissue layer traffic.

He demonstrated further that the central idea of city planning is to evacuate the city center, improve the density and the traffic, in order to provide green, sunshine and adequate space (1935). It seemed that this thought could solve the problem between people and motor vehicles, and also return walking space to people, but actually the extremely strict functional division caused terrible consequences. City streets and squares were transformed, replaced by roads, parking and large tracts of green area. Streets and squares lost their original function of humanistic space; however, the new roads and green space were destroyed by functional division, and would not be the open space for public communication. In short, the development of modern transport impacted on the walking environment significantly.

In 1960s, taking sustainable and multi-block streets as the basic characteristics of new paradigm, urban street design was developed gradually. After 1970s, this urbanism design paradigm grew up rapidly around European and American cities, thence, urban regeneration plans, street plans of city life, and urban design projects were started in succession. Street was therefore shifted from simple traffic channel into diverse and complex space.

In 1961, American urban writer Jane Jacob had a profound discussion on the city's activities. She believed that the basic characteristics of the city's activities were human activities which were always taken along the line. The city streets play particularly important role as the most dynamic public places in cities. Thus, open space system posed by streets, in particular, pedestrian streets and squares was the main point she judged in urban space. The primary task of modern urban renewal and transformation, she indicated, was to restore the diversity capability of the street space (1961). According to her views, the design of pedestrian streets has to meet four basic conditions:

1. The streets should be integrated with various functions, and the public facilities have to be interoperable in different times and under different requirements.
2. Most streets should be short, while it is better to have as many turning points as possible to make the streets winding.
3. If the buildings are mixed with different ages and different conditions, the old house should be considered well to take quite much proportion.
4. A certain using density should be maintained among the flow. The concepts of density and congestion are different.

Gehl (1996) advocated a sensible, straightforward approach to improving urban form:
systematically documenting urban spaces, making gradual incremental improvements, and then documenting them again. On the one hand, he focused on studying and evaluating the quality of urban and residential public space from the perspective of people and their activities’ requirements. On the other hand, he also studied on how to attract people entering the public space for walking, rest, and recreation and arouse the public communication by detail analysis of spaces in all aspects in urban area (1996).

Gehl took a couple of decades to conduct survey and record of public life in Copenhagen. The study recorded the characteristics and scale of public life of different parts of the city, from downtown squares and streets to the suburbs and new town. Through these surveys, it reflected the dramatic changes of the life characteristics in public space while the overall social environment and the lifestyle had taken place. Within this context, it indicated the signification of public space’s quality (2005).

In Asia, Nobuyoshi Ashihara, from Japan, was very famous for his streetscape theories. He argued there are two ways to create urban space, one is by addition, and the other is by subtraction. For the former, it has to determine the internal area and then establish order toward external area. It is good for the inner parts which can be taken care of well, but in contrary it is hard to control the result if it expands. The latter way is based on the general city scale that can hold the overall planning, although somehow it restricts the inner development. So he is in favor of using the subtraction during the design process, starting from the whole application, and then focusing on the local scale to create streetscape (1975). Successively, he mentioned that street scale should be between city and the individual buildings, considering both the integrity of the city, and the humanity of single building. Likewise, concepts such as the first contour lines of building, the second contour lines of building, and inside corner were all created by him (1989).
Chapter III – Cases studies

Talking about commercial pedestrian street, Strøget in Copenhagen, Denmark is one of the most famous streets in Europe. In the capital of Sweden, Stockholm Drottninggatan is also always mentioned as the commercial pedestrian character. Hunan Road is also a well-known shopping walking street in China. For one thing, the reputation must be result of their own advantages. For the other hand, a good commercial walking space has to stand through the test of time, because it should lead the public space around it develop together, rather than decline slowly over time. So what are the statuses of these commercial walking streets which have gained success? Through the analysis from the different aspects which will express below, the reasons of their successes can be explored, and at the same time the conditions which cannot meet the current requirement can be found.

Firstly, commercial pedestrian street does not mean that it excludes traffic, but the traffic should coexist with commercial activities. The transportation design should be adapted to the local conditions. (Hou, 2002)

Secondly, it needs to be considered carefully from many fields to improve the quality of commercial walking space, such as architectural design, landscape design and environmental design to make the space more rational and suitable for shopping. In the process of pedestrian street design and implementation, people is always the subject who use such place, while walking is the basic way of a variety of activities, so human-oriented is a successful foundation of commercial pedestrian street. What people think in the street is very important, for instance, what they want to see and do. Only through human scale and detail design, the physical and psychological consideration for people can be seen.

Thirdly, although the main purpose of commercial pedestrian street is about commercial services, a variety of public activities could be reflected here to attract people with different needs. Multi functions of the street can avoid its single shopping feature and they can coordinate with each other, so that people can get as much as satisfaction in a relative short period. Therefore, cultural expression is a good way to explain how people use these spaces with their passions and the interpretation of place spirit.
1 Case study in Copenhagen

1.1 Contexts of Copenhagen

1.1.1 History

Copenhagen is the capital and largest city of Denmark. Its founding can be started from 1167, originated from a harbor and a place of commerce, but now it has become the economic and financial centre of Denmark (Danmarks Statistik), as well as strong business and economic centre in the Scandinavian-Baltic region.

The Finger Plan (Fig.1-1) (2002) was hold in 1947 to raise a strategy of Greater Copenhagen developed from the very center area and green wedges were provided between each ‘finger’. But during the late 1950s and early 1960s, the rapidly increasing number of private cars tended to dissolve the former finger-structure of the city, and the idea of the Regional Plan was proposed in 1973. It mentions a multi-center structure, with future growth, both housing and industry, to take place along corridors of transportation and other infrastructure, far away from the existing built-up areas.

Since the summer of 2000, a toll bridge (Øresund Bridge) was built to link Copenhagen and Malmö in Sweden, which carries railway and automobile traffic. The construction of the bridge brought many changes to the public transport system and extensive redevelopment of south of Copenhagen. Copenhagen has become the centre of a larger metropolitan area which spans both nations (Fig.1-2).

1.1.2 Transport

Copenhagen has a well established transportation system, with airport, harbor, roads, and slow lane. The local transportation systems are mainly public, combined train systems, Metro, and several types of buses. There is a main ring road around inner city, while the railway and roads cross each other evenly so that it is very easy to access the central area (Fig.1-3).
Copenhagen is known as one of the most bicycle-friendly cities in the world. Copenhagen’s well-developed bicycle culture is reflected from the use of ‘Copenhagenize’ to describe the practice of other cities adopting Copenhagen-style bike lanes and bicycle infrastructure (Media Release, 2005). The inner city is constructed as a walkable district. Different types of roads for pedestrian, cycling and drivers are well built as traffic roads, mixed-use roads among the medieval type of buildings, and also the walking only streets for commerce and recreation.

1.2 Strøget

1.2.1 Background

Strøget is a carfree zone in Copenhagen, Denmark. It is the longest pedestrian shopping street in the centre of town, even in Europe. But before its transformation into pedestrian street, it used to be the most crowded traffic streets. Strøget is not a name of a specific street, but consists of four streets named Frederiksberggade, Nygade, Vimmelskaftet and Østergade, which are connected one by one.

1.2.2 Location and edge

Strøget is located in the center of the inner city. It starts from the City Hall Square Rådhuspladsen in the west and ends till Kongens Nytorv (The King’s New Square) in the east.

The street is about 1,600m long. The long linear space creates a clear and continuous boundary, and the space bound by the 3or 4-storey buildings can make people get the gathering sense with explicit direction. In contrast, winding streets can make the space more compact, but it is not easy to view the panorama in front, thus becoming an external motivation for walking.
According to the Jan Gehl’s spatial theory (2005), the spontaneous activities and the social activities are casual and uncertain. Urban space design has to provide certain conditions for these activities as much as possible. The squares in the nodes alternate in the pedestrian street link the close and open spaces with rhythm which become the active essential factor to bring dramatic public spaces. The pedestrian streets and squares’ combination makes the spatial structure harmonious and stable (Fig.1-4).

Copenhagen University is located in the center of commercial pedestrian street, whose presence is to some extent beneficial to the development of the streets. From the perspective of human beings, the students are potential consumer groups, and their existence can inspire the new business types, such as bookstores, galleries and cafes. Meanwhile, the stream of students in the streets at peak hours has increased prosperity and also avoided deserted scene during the off-season.

1.2.3 Transport services

Traffic is the big deal for commercial Pedestrian Street. Only by limiting the entry of motor vehicles, can the passengers feel safe, and in this case, more lively activities happen here. As Jan Gehl (1996) proposed “return back to humanity city”, the main task of commercial pedestrian Street is also to change motor vehicles oriented into walking and non-motorized.

1.2.3.1 Public Transport

The municipality of Copenhagen didn’t change the original road pattern, for instance increasing and widening roads to solve traffic problems, but instead, they have developed public transport and bicycling. Limiting motor vehicles in the city can reduce traffic density and encourage the relocation of urban functions to suburban areas. Copenhagen has convenient bus, metro and train systems, which allows the citizens and tourists to reach the city center conveniently and on time. The Centrum station is about 700m away from the western entrance of Stroget, and around the street, especially the two main entrances, there are some buses and metro stops.
distributed, which are convenient for people to access (Fig. 1-5).

1.2.3.2 Cycling

Danish people have cycling tradition which originated from early 1970s. Since then, the government has been committed to make the cycling traffic safer and more popular. The excellent bike transportation system in the center of Copenhagen has expanded the scope of non-motorized commercial district effectively.

Visitors can use public bicycle parking in certain places with coins and return them in any parking and get the coins. Copenhagen might be the only one providing free use of bicycles in the city, and the convenient bicycle policy increased the attractiveness of the downtown commercial district. The downtown commercial district is also divided into bicycle paths and pure walking pedestrian, and in the most important commercial street, bikes are not allowed to enter. It can be shown by different kinds of signs and ground surfaces (Fig. 1-6).

1.2.3.3 Pedestrian

Strøget is located in the preserved medieval building area, and private cars and bicycles are forbidden to enter. The main squares offering places for resting are attached to the absolute pedestrian streets. On the one hand, they are good to be connected with pedestrian, and create a complete walking space, because square is to some extent a kind of extension for street. On the other hand, such arrangement can avoid vehicles' interference from people's leisure. Along Strøget, there are many mix-used streets distributed, which are for both pedestrians and vehicles, but the speeds are limited. This kind of streets has relative effective traffic and is more flexible.
In principle the cars and bicycles have to be parked along the two sides of Strøget. In the 1km central area, more than 20 different degree walkable streets and alleys have been woven into pedestrian network restricted motor vehicle traffic, though pedestrian street is not the only constituent element, but also some city squares (Fig. 1-7).

Walking is not only a form of transportation, but also means taking exercise, breathing fresh air, experiencing recreation and social interaction. Therefore, an important issue of pedestrian traffic is provision of adequate rest space, which relates to the leisure activities directly. Seats, cafes chairs, steps, base of monument and edge of sidewalk all could be the rest places (Fig. 1-8).

1.2.4 The human scale and detail design in pedestrian space

1.2.4.1 The Relationship between buildings and street

The concept of single level city has promoted the shaping of human scale. The main outdoor activities of Copenhagen concentrate on the ground area, but no underground commercial street, underground pedestrian walkways or other
three-dimensional systems. In the Nordic cities with sparsely population, this single-level city’s spatial characteristics are very favorable for gathering people and other kinds of activities. Its ground spatial scale is the most human psychological characteristics.

The central area of the inner city retains medieval basic pattern of narrow streets, so does Strøget. It is only 11 meters wide, and the buildings on both sides are around 4-storey. It is such linear flowing space that has urged this prosperous avenue, and also has highlighted the gathering encircled square space and broad feeling in the middle. The facades of Strøget are composed of many different types of form. It is compact and varied. In the street-level storey mostly there are shops, restaurants, cafes, art galleries, craft shops, souvenir stores and so on. This part of buildings focuses on the facade design, because it plays a key role in creating an interesting street. If the external walls and windows are carefully designed, people are willing to stop and pay attention to show windows and signs naturally, because the location and scale make people feel warm and relaxed.

Yoshinobu Ashihara (1989) described the impact of width and height of streetscape on the scale feeling in his book The Aesthetic Townscape. D is defined as the distance between buildings on both sides of the street, and H is for the height of the adjacent buildings. He argued that when D/H>1, with the increase of the ratio, the feeling taking away would be raised, and the broad sense brings up when it becomes 2. When D/H<1, with the ratio of decrease, the feeling of getting close can be produced. When D/H=1, the height and width are balanced, and apparently it is a turning point of spatial essence (Fig. 1-9).

Overall, the ratio of the street and the buildings on both sides cannot be deviate too much. If the streets is too wide, with big open space, the integral business atmosphere on both sides would be separated and appear as hollow and cold, otherwise, if the street is too narrow, it would be easy to be dark and congested, that is not conducive to the public place with large number of flow. According to the width and height scale of Strøget, its value D/H is around 1 which is

Fig. 1-9 Diagram of height and width ratio (Ashihara, Y. 1989)

Fig. 1-10 Section of Strøget
appropriate, neither too much crowded, nor excessively spacious (Fig.1-10).

The architectures in Europe are generally made by masonry and the facades can highlight the clear and strong boundaries. Wherefore the streets are easily defined by the surface of walls. The firm structure of European architectures reduces the probability of demolition due to part of damage; as a result, it is possible to maintain the composition of streets for long time.

The ratio of width of each building (W) and the width of the street (D) is an important indicator to ensure rich spatial rhythm of the street sides. When D/W<1, it is easy to produce the various facade effect due to the recurring of the street stores, while it could maintain a sense of rhythm for the whole street by several shorter sections if the building has a large frontage. In Strøget, each entrance of stores is very small, and the door is about 2-3meters wide that is much shorter than the width of the street, so that it definitely has created kind of lively environment full of activities.

In a commercial street, taking an eye-catching advertisement is the most direct way to attract customers. In Strøget, the advertisements of each brand are basically placed on the second layer of the buildings (Fig.1-11). One reason for it is because of geometry. The comfortable human viewing angle is approximately 27°, and \( \approx 167° \). Strøget's street width and building height are mostly similar; in that case, settle the brands on the second floor (about 4m high), people can easily see the brand view when they are walking in the middle of the street.

The other reason is that it is a façade landscape plan by limiting billboards’ position. The messy advertisements create the second level of buildings’ boundary that will confuse the outline of the building itself. Strøget keeps medieval style, so this way of advertising arrangements is also cultural protection that not impacting the whole façade views. People can experience the traditional European feeling, which is valuable resource of the city, but not created by deliberate design.

The buildings’ first layer of walking street usually has a big chance to relate people. As the base level of the commercial street, it should attract the customers maximally. Since it is based on historical protection, the façade can be somehow redesigned to attract potential customers effectively. What’s more, a good facade decorated streets will be benefit to improve the...
streetscape. The store in Strøget plants ivy on its façade to create a lively vertical effect. The leaves change from green to red by different seasons, and bring certain fresh street life, so that people are more likely to stay here and enjoy the scene (Fig.1-12).

As we know, the walking space is enclosed by three dimensions. When the two-dimensional urban planning is turned to three-dimensional urban design, it is mainly reflected in the control of the city skyline. 4-5 storey buildings of Strøget are closely linked, which limit the vertical development of the street effectively. Sky is a varied and unique natural charm of the top dimension. It provides sunshine and seasons changing scenery for people, which is vital to the outdoor activities. The 3 or 4-storey architectures in Strøget can expose ubiquitous sky easily, which has become necessary condition of outdoor Pedestrian Street. In addition, the low-rise buildings are available for separating winds in the small atmosphere efficiently so that it is more moderate and comfortable than the outside environment.

One of the traditional architectural features of the architectures is the pilasters and niches attached on the facades that can create the strong concavity. These corners become very small spaces where people like to stay, especially on the side with sunshine. From it we can find that the non-straight facade can increase the area that pedestrian can reach so that it can offer more opportunities to arouse social activities and be more interesting. As to Yoshinobu Ashihara’s theory, internal corner and exposed corner can avoid extremely neat and rigid facade and produce strength of rough edges.

1.2.4.2 Pavements

The pavement in Strøget looks simple yet quite comfortable. It expresses senses for different spaces by using several types of materials, which basically followed the traditional pattern of medieval streets. The main parts of the streets are paved by flat strip stones (about 30cm width) which are suitable for those with baby strollers, kids playing rollers, as well as women in high heels. The street is divided into a couple of spaces for different speeds by the lineal pavement made by small dark square stones (about 100cm²). In the middle of the street, there is a special path particularly for the blinds, since the flow would be smoother in the middle part, then they will not be stuck often. From the section, the gentle slope can be noticed, and the lowest points on both sides are used for drainage that is necessary for raining days (Fig.1-13).
In some special areas, like small square, junctions, the patterns can be changed into different fabrics with the same materials, while, of course, in certain important plots, there are professionally designed pavements that become an important symbol of such areas, resulting in a strong sense of place (Fig.1-14).

**1.2.4.3 Street furniture**

Lights in Europe are usually hanging in the sky between both sides of buildings, so does Strøget (Fig.1-15). There are no particular types of lamps standing on the ground, but only the simple type. Most shops in the commercial street are open during the daytime, and in the nights the people flow would be reduced, so that it is not very urgent to have too many lights. Hanging lights can basically meet the needs of pedestrians. In addition, most shops keep some lights opening through the transparent windows, while they are closed. On the one hand, they can provide light for the people passing at night; on the other hand, it is also a good advertising to show the commodities to them (Fig.1-16).

The main activities in commercial streets are based on foot, so the resting and recreational facilities are quite necessary. Generally the popular area for staying is along the building façade, or the transitive place linked two spaces (Fig.1-17). Along the 1100m long street, the public resting nodes are provided in two small squares, a street junction and a place besides the street, providing the opportunities for people to stay and have communications. Firstly, each of them is dispersed in the whole street line roughly even among 100-400 meters. In people’s daily walk, they can commonly afford walking 400-500 meters, so the walking distance between resting areas in Strøget is acceptable, and passing the whole street is not that hard. Secondly, the location of these sites is followed by the principle of The Edge Effect (Skole, D. L. & C. Tucker. 1994). This kind place is favored, apparently because the edge of space offers the best condition for observing the surrounding, and at the same time people are not in the center of the environment, not exposed too much, so that they will get a certain safe sense psychologically, and feel more calm and comfortable to enjoy the
leisure activities (Fig.1-18).

It is also worth noticing that there is very little green scene of the whole street; however, all the seats are settled next to the green area without exception. Some are made to encircle the trunk, while some benches are set up just under the tree’s shade which borrowed from out of the streets. At least it implies that people are still willing to get more chances to be closed with natural and fresh things once they stop to rest, although the main purpose in the commercial pedestrian street is about human activities.

1.2.5 Cultural expression

While constructing urban public space, it is vital to respect the city's historical context and its traditional lifestyle. Strøget and even the whole district are carried on the medieval unique forms, without much change till now. The both sides’ buildings are well preserved in their original style, but still, the shops, restaurants and other kinds of stores at the bottom of the buildings are changing following the social and commercial activities’ development, rather than planners’ personal ideas. Instead, they fully respect people’s real lifestyle and retain all the traditions and the original meaning of urban life. The development in Strøget is a kind of natural and benign process which returns prosperous vitality and endless charm; therefore, more interesting urban culture and life have been generated.

As always, the place with sunshine is people's favorite, especially for the Northern European. It displays in the people’s spatial use, that the one side of street and the square toward the sun mostly have lots of coffee places outside, and also attract many customers. The open air cafe has become static places for daily public life, encouraging more people to stay in the public space. Gradually coffee culture has formed in Denmark, even the whole Northern Europe (Fig.1-19).
The winters in Scandinavian are very cold and windy. Even so, almost every restaurant or café places the tables and benches carefully outside along the wall, with pots, candles, and even blankets. It does represent an attitude in their lives. There are always some seats left outdoors for people in spite of bad weather, no matter whether people going there or not, because in their minds, sitting is part of the public daily life, so the chairs and tables have become a symbol of this kind life. Occasionally when the sunshine comes out, people would like to be there, taking some drink, watching people, listening to the music, and enjoying the leisure time. To some extent, this kind public life is very simple, but comfortable, and more important, it is easy to gain the satisfaction, and feel the love of the city.

Different from open-air market, business activities in Strøget are oriented indoors; shops and restaurants are on the first floor of buildings (Fig.1-20). With more and more people coming, a variety of goods on store shelves are displayed besides the door, which in turn virtually extends indoor activities into the street life. People don’t need to consider if they have to enter into the store with window shopping firstly, instead these goods are exhibited more directly and closely to people, thus increasing the probability to be sold out, and also it enriches the original monotonous street activities.

1.3 Summary

1.3.1 Successful points

In the overall construction process, the history, the original street-based system, and people’s psychological feelings were respected, so that there was no big scale demolition and reconstruction.

Firstly, the success of Strøget contributes to the people’s affection and participation in the public life in this city. Simultaneously, the decision makers endeavored to transform it into a friendly public commercial pedestrian street, by deep research of investigation and analysis over four decades. It is success that has attracted numerous tourists all over the world. More and more reputation evolved it into a valuable cultural heritage of Copenhagen. It is helpful to pay enough attention to the preservation and development of Strøget positively. Since the purpose of urban design is to create a dynamic experience in public space, rather than a static product, it is inevitable to meet some problems during the development process. Even such famous model as Strøget also has some shortcomings which can’t keep pace with the social development. Only with continuous and reasonable maintenance and renewal, can it become the public space deserving people’s love.
Another stupendous point of Strøget is that it is the great start of the walking system in Copenhagen, and links more streets to create a pedestrian network. Roger Trancik (1986) who proposed the integration in urban design is looking for the human public domain back from the fragmental urban space, so as to create a vibrant urban space. Strøget with the surrounding walkable streets and squares is the best portrayal of his theory, as well as the vital part of a thriving public life. This gradual development model using used for a commercial pedestrian street can avoid blind construction according to the feedback from the public needs. In addition, the commercial pedestrian street extends the local culture of the new harbor effectively.

1.3.2 Shortcomings

In principle, motor vehicles and bicycles are forbidden to enter the pedestrian street, but because of the branch roads which are mix-used, it is the truth that the transport has to pass through Stroget; however, there are no relative facilities like traffic lights to provide necessary security. In some mix-used streets, the pedestrian is too narrow without and security from the car paths (Fig.1-21, 1-22).

People love the outdoor space, standing besides the wall for sheltering, communication, and so on. Smoking has become another common phenomenon except the coffee culture. People like to talk gathering near the entrance, because it is a very close place to the public, with no need to get out that far away. Naturally countless cigarette butts would be left embedded in the stones and that is detrimental to the environment, and also difficult to clean up. As in Figure, the flowerpot was used as cigarettes container without the real ash tray, so it is necessary to set some ash trays in the required places (Fig.1-23).

2 Case study in Stockholm

2.1 Contexts of Stockholm

Stockholm is the capital and the largest city of Sweden. It is located on the west coast of the Baltic and the south-central east coast of Sweden. As a part of The Greater Stockholm region, the city area is distributed around 14 islands that are continuous
with Stockholm archipelago, attached by more than 70 bridges, which have become historically important. As the largest city and transportation hub in Scandinavian Peninsula, Stockholm has very developed traffic system. It is famous for the architecture, abundant clean and open water, and so on. It is sometimes referred to as Venice of the North (CNN, 2009). Since 13th century, Stockholm has become the political, cultural, economic and transportation center of Sweden.

2.1.1 History

Founded around 1250, Stockholm was built because of trading among the water. The city houses were rather simple, manufactured in wood, yet fires were common in those days. The burnt down houses were soon replaced and built in a similar fashion, therefore, the narrow streets and high buildings still give a medieval impression. Stockholm was, during the 18th century, known as a cultural centre and an important trade centre. During the 20th century, the city had been transformed into a large cosmopolitan city with several additional areas, all of them counted as the Greater Stockholm. In 1998 Stockholm was ‘the Capital of Culture in Europe’ (sverigeturism, 2010). After thousands of years evolution, it has long been one of Sweden's political, economic, cultural, and media centers.

2.1.2 Transport

Stockholm has an extensive public transport system, and the traffic network of the whole city consists of public transport, private vehicles, bicycles and pedestrian. It consists of the Stockholm Metro, two urban rail systems, a suburban rail system, three light rail systems, a tramway, a large number of bus lines, and the inner-city boat line, while in the inner city, walking is also a easy way to reach the center within 30 minutes (Fig.2-1) (Stockholmstad, 2006).

Stockholm has a congestion pricing system, Stockholm congestion tax (Swedish Road Administration. 2007), in use on a permanent basis since August 1st, 2007. The City Centre is within the congestion tax zone. All the entrances and exits of this area have unmanned control points operating with automatic number plate recognition. The congestion charge has changed the road and reduced emissions of air pollutants. Traffic over the charge cordon has fallen by 15-20%.

Bicycle use is increasing steadily in Stockholm since bicycle and pedestrian traffic burden on the environment and is also good for the health. The shares of public transport journeys are high. About 75 percent of trips to and from the inner city during rush hour are by public transport.

2.2 Drottninggatan

2.2.1 Background

Drottninggatan (Queen Street) is a major pedestrian street in Stockholm, Sweden.
The major part of the street is car-free and lined up with numerous stores and shops; therefore, it is the most visited pedestrian street for shopping on the mainland of Stockholm. During the warmer months, there might be musicians or magicians entertaining the crowds.

2.2.2 Location and edge

Forming a parallel street to Vasagatan and Sveavägen, it stretches north from the bridge Riksbron at Norrström, in the district of Norrmalm, to Observatorielunden in the district of Vasastaden. It is around 1.5 kilometers long, intersected by 19 streets. Since the street is a north-south orientation, there’s enough sunshine during most time of the day either in summer or winter, and the adequate natural light is what it needs.

Separated by Klarabergatan which is a main traffic road, Drottninggatan takes two parts with instinctive functions. The northern part is a luxurious street with many fashion and high-class shops along the way, for example, Åhlens city, H&M, Rolex, Buttriks, pharmacy and so on (Fig.2-2). The southern part ends up till the old town (Gamla Stan) which keeps the ancient townscapes of Stockholm, thus, recently the shops in the street are imported nearly with various kinds of souvenirs for the tourists (Fig.2-3). The whole street is straight, but because of some degree of topography, the different vertical elevations create some small slopes that make the path interesting.

The location of a commercial pedestrian street is very important, since it has to bring vibrant impression and offer more opportunities for the customers and tourists. Meanwhile, the good site is available to provide convenient access to the central area comfortably and safely.

The city planning has always tried to improve the city center shopping environment and offer more human service as the most important issue. The core of city near the historic area was planned as the Traffic-Free Zone where private vehicles are banned, so that it is good to protect and develop the central district as a modern district. The location of Drottninggatan is near the Central station and the city Terminalen which could be seen as the busiest traffic distribution center in the city. It is obvious that the advanced transportation supports perfect accessibility, while also ensures adequate flow of population. Surrounding it, there is the famous old town and a variety of art exhibition centers that make this region immersed in very rich cultural atmosphere,
mutually reinforcing Drottninggatan’s development. Besides, it is close to the political center of Stockholm, such as city hall which has powerful influence to some extent. In addition, there are a number of small squares and green parks arranged not far away from this street. As the main route, Drottninggatan becomes the line to connect the series of leisure places to achieve a very good systematic effect (Fig.2-4).

2.2.3 Transport services

2.2.3.1 Transport accessibility

One of important prerequisite of walking space construction is the transport accessibility between commercial pedestrian street and its original traffic. It is the external conditions for urban design, and also the factor joining in the working process. To some extent the transport accessibility level determines the land use. In addition, it affects the development of new traffic pattern through the support of human behavior in the pedestrian street. The continuous traffic improvement is not only the aim in urban planning, but also the first conditions to achieve human walking space (Fig.2-5).

Further, in the planning for pedestrian street with longer distance, the transport accessibility of the street itself should also be considered. It is difficult for people to walk completely in the commercial pedestrian streets longer than 1000 meters like Drottninggatan, if it is all closed without any entrances. Therefore it is necessary to have some measures that allow for the limited vehicles, but guaranteeing the safety of pedestrian street. Starting from the south direction, at the roughly 1/3 part, there is the
main traffic road Klarabergsgatan crossing it as a ‘break’ for the long trip. The other secondary roads in parallel are controlled as low-speed traffic, as their width only allows one bus to move lowly without affecting the pedestrian street seriously.

### 2.2.3.2 Traffic network

As the fundamental traffic form, pedestrian street can somehow adjust the more developed traffic pattern effectively. Walking Street provides more reasonable access to the city center, and this is more convenient and flexible than before. Thence the greater contribution of pedestrian street is to reform the old city traffic layout, dividing vehicles and people’s activities, and enhance the right of walking zones that provides a clear direction and convenient facilities for people.

Drottninggatan is a completely pedestrian street, with some other types of vertical or parallel roads distributed around it. Mix-used roads are both capable for vehicles and pedestrians, although it controls the traffic conditions by limiting the width of roads and the speed of vehicles. It is worthy to say that through the walking street, there are many crossing points, and most of them have obvious traffic lights and signs, no matter how narrow the distance is to pass across, which indeed improves the pedestrian safety effectively (Fig.2-6). The main traffic roads are less interspersed through the pedestrian street, but most of them are only surrounding it to provide convenient transportation conditions.

In addition, the provision of adequate parking has always been a problem in the city center that cannot be ignored. The construction of pedestrian does take a lot of urban
space, making the parking problem worse objectively (Fig.2-7).

### 2.2.3.3 Public Transport

There are numerous public transport sites around the street, including bus stops, metro stations, ferries, which easily links to the road network. The pedestrian street is able to improve the transport capacity in the central business district, because it has much comfortable conditions and the most attractive tools to send staffs, customers, tourists and residents (Fig.2-8). That’s why public transport is so important to the pedestrian street. On the one hand, it brings convenience to the street, and on the other hand, it is sustainable to reduce the pollution in the urban environment (Fig.2-9).

2.2.4 Green and blue structure

Stockholm’s green and blue structure is a part of the unified regional structure. The areas in the neighboring municipalities which are particularly important for Stockholm are defined. The overall green structure is supplemented locally by a network of smaller parks, park stretches, nature areas and open areas close to housing and workplaces. The qualities which these give to their districts are important to defend and where they do not exist today then new ones should be created. Many parks and nature areas have both special nature and cultural values to which attention needs to be given (Fig.2-10, 2-11).
2.2.5 The human scale and detail design in pedestrian space

2.2.5.1 Relationship between buildings and street

The building regulation in downtown of Stockholm retains medieval basic pattern of narrow streets. The streets are mainly around 11 meters wide, while the buildings of both sides are basically 4 or 5 stories and most buildings still keep the old modes. The ratio of height and street width is about 1:1, similar to Strøget in Copenhagen in a harmonious relation. Walking out straighly from the palace in Old Town to Drottninggatan, it is necessary to maintain such solemn circumstances by the historical building regulation (Fig.2-12).

From the other direction, besides the intersection between Drottninggatan and the traffic road Klarabergsgatan which is about 26 meters wide, there is a famous modern Freedom Square (Sergels Torg). Along Klarabergsgatan it is also full of modern buildings, with the large advertising signs almost occupied 3 floors. Compared with it, the relative narrow width of Drottninggatan is not that obvious. However, in such junction, perhaps it supposed melt in the modern surrounding, the original buildings on both sides of Drottninggatan are turned into modern facade, and the old stone structure is replaced by the new style, with transparent glass walls (Fig.2-13).
What’s more, the height of the buildings are increased by 5 times, i.e. 10 floors, thus D/H is about 1/2 in one side, so that the narrow sense is further highlighted. As the entrance of this street, it is easy to ignore the street space among such large-scale space (Fig.2-14).

### 2.2.5.2 Pavements

The pavement is made of gray and white glossy tiles, 35cm × 35cm, that echo to the ground on the Freedom Square. It reflects the fashionable atmosphere in central business district as well, taking white as the leading color, and arranging strip as the pattern, simple and modern (Fig.2-15).

Starting from the north section of Barnhusgatan, the pavement retains the original form, which is featured by asphalt in the middle, and small square stones of 100cm² lying on both sides. The drainage is formed by gradient slope. But there are no particular materials for blind path along the street (Fig.2-16).

### 2.2.5.3 Street furniture

There are several forms of lighting facilities, in addition to the type hanging in the air. In the main section most post lamps stand along the path and some are fixed on the wall (Fig.2-17), so that not only is the lighting function is met but also visual effects characteristics are added. In winter, many rows of smaller chandelier are decorated for festival celebration. Matching with the lights in the glass walls, the scene is so warm that it can bring some happy but not cold feeling (Fig.2-18).

The seats are set in the middle of the street, as forward to the two sides, so that it can arrange in the whole street regardless the position along the building. Besides, the seats are back to back, playing an edge effect to some extent. The ash cans and bulletin posters are mainly close to the benches, as this is necessary in the rest environment. There are many cultural venues around Drottninggatan, and the official bulletin board can provide enough information in time (Fig.2-15).
But in fact the utilization of seats is not so high. Instead, people walk in a hurry, only very few people sitting there. It might be because the benches in the middle are not that free compared with those along the side. Another reason for sitting and having a rest is to watch people pass by, but the view from the middle of street is not as broad as the side location where one can watch the entire street sight from where the entire street is in sight. The last but important point is that the street life must be attractive enough to make people stay, or else no one can enjoy such public space only with hurried footsteps.

The two funny stone lion statues lying on each entrance of the street left a profound impact, as the symbol of Drottninggatan. In addition, some parts of the buildings retain the old style sculptures that are impressive in the streetscape (Fig.2-19).

2.2.6 Cultural expression

The public activities are the most interesting events that can attract people's sight, full of passion. This kind of culture expressing is instant, that has different characteristics from the coffee culture which is infiltrates people's daily life. Drottninggatan could be a worldwide street that can cause the resonance of people around the world. People want to come here experiencing the local culture, and also joining in and using it to express their unique ideas by its popularity (Fig.2-20, 2-21).
2.3 Summary

2.3.1 Successes

Stockholm is an international developed city, with advanced roads network. Drottninggatan can stand out among so many streets are mainly due to its two characters. The first feature is that it has an excellent location in the inner city. As a very important transport hub, it can gather lots of people, and also unlimited business opportunities, so naturally it is planned as a commercial Street. Shopping has become the largest label, and the street itself also has become a new cultural heritage for this city. When it is mentioned, the first thought is definite shopping, because it is full of modern stuffs and the commodities adequate readily. The street provides both rich sight and unexpected surprise.

Secondly, as one of the few pedestrian streets in Stockholm, Drottninggatan has great significance to this city famous for its modernism. It is also one path leading to the Old Town preserves the traditional features, however, the change of Old Town itself is considerable. Constructed many years ago, there’s not enough modern traffic planning in Old Town, but only buildings and paving made of stones. On the one hand it is possible to preserve the traditional walking patterns, but on the other hand, it has brought many problems for emergency rescue due to the limitations of building models. As a complete pedestrian street, Drottninggatan is the best embodiment of returning to nature from the transportation in the modern city, and also it considered the emergency passage. It connects the ancient history on one side, and is so close to the nature on the other side, while in the middle of the junction, it is located in the Sergel's Square. It may also imply the real spirit in the design—harmonious development—in heritage, nature, and modern civilization.

2.3.2 Shortcomings

Unfortunately, since there are plenty of cultural areas in Stockholm, Drottninggatan is mentioned only for shopping on most occasions, and referred as a corridor sometimes. Characters other than shopping are rarely concerned. It somehow is not easy to keep people in the street. More often, people prefer to visit places with more historic meanings. Even when they are walking here, the public street life is usually ignored, resulting in a relatively single-functional commercial feature.

3 Case study in Nanjing

Within very different culture, history and philosophy from the West, the performance of urban space is not same. It used to have few public spaces like the European city squares, even necessary open communication spaces, so that People's various public activities were concentrated in commercial or entertainment places. Some open outdoor spaces where probably meet human's material or spiritual needs usually
appear in these arenas. Therefore, as a commercial street in the city center, only with
the integration of a variety of functions, are people willing to go to these places, and
consequently the city will reflect as much more vitality. Walking is the prerequisite to
restore the historical period of multi-functional center and because of its important role
in the public space, the construction of public walking space in commercial streets has
become big issue in urban design.

3.1 Contexts of Nanjing

3.1.1 History

With a long history around 6,000 years of civilization and 2400 years of foundation,
Nanjing is well known as the ancient capital of six dynasties, and also one of the most
famous four ancient capitals in China. Located along Yangtze River which is seemed
as the origin of Chinese civilization, Nanjing is an important industrial city, economic
center and cultural center in China, as well as an important hub in East China (Baidu,
2011).

Over the years, the ecological environment construction were emphasized, in
particular, the municipality built the strategy of Green Nanjing in 2002 and tried to
developed with better environmental sustainability. It has won the awards such as
National Garden City, National Green City, National Environmental Protection Model
City, and so on.

3.1.2 Transport

Nanjing has an advanced transportation system with its own international airport, train
stations, metro stations and numerous bus stops. Since located besides Yangtze
River, there are also ferries operating in and out of the city.

There are already 5 train stations distributed around the city, however, the south
station would be available in June, 2011. The rail links are excellent to Shanghai,
Beijing and so on. The main long distance bus station is near the train station in the
north of the city.

The transport in the city itself is usually quite easy and there are ample taxis around
town, and also a good bus service, although the price of public transport is very
cheap.

The first metro in Nanjing started in September, 2005, and the current mileage is
about 85km. By the end of 2014, Nanjing will have lines within 240 km, and it will
create a rail transit network including 17 metro and light rail lines till 2030.
3.2 Hu’nan Road

3.2.1 Background

Hunan Road is one of the four main business districts in Nanjing, including Xinjiekou, Confucius Temple and Zhuijiang Road. Founded since 1990s, Hunan Road is a new commercial street, with toughly 238 all types of shops, and totally 87,000m² of business area. The position of Hunan Road is slightly lower than Xinjiekou, yet surrounded by entertainment such as karaokeOK, it can attract large numbers of students and young people to be there. People who come here searching for delicious food is another major group, and they usually gather in the branch roads Lion Bridge Street and Mataijie, located in the middle of Hunan Road. In March 1997, Hunan Road was awarded as National Demonstration Civilized Street, and after more than 10 years development, it became one of Top 10 Business Street in China.

3.2.2 Location and edge

Nanjing Hunan Road commercial pedestrian street is located in the west-north area of the inner city. In the west side, it begins as a public square, attaching Zhongshan Road, the most important green corridor in Nanjing (Fig.3-1). From the east direction, it starts from Zhongyang Road, where is close to Xuanwu Lake Park, forwarding to the purple mountain, with unique natural environment. The whole street is about 1100m, and with 30m width. After 2000, the commercial street layout shows as an obvious trend of expansion, focusing on the development from the west side to east along the street.

3.2.3 Land use

There are a number of scenic reserves around Hunan Road, and along this street, the buildings are primarily used as big shopping malls, offices and residential areas. The square is only in the west side, and no where else. It can be seen from the figure that the feature in the whole street is a little bit single, and the public activities here are for shopping (Fig.3-2).

3.2.3 Transport services

On both west and east sides of Hunan Road, there are respectively metro stations Line 1 and Line 5, which is very convenient. The public transportation system is also very convenient that almost every street has the bus routes, in addition to Shiziqiao, the totally pedestrian street.
Hunan Road used to be an entire pedestrian street during 6pm to 11pm in the weekends due to its prosperous business. In this so-called ‘night market’ commercial street, it is full of advertising light boxes, and Light Art Tunnel across the street. There were more than 500 night market stalls along the street one by one, really flourishing. People were walking, watching, and experiencing the lively street atmosphere. It was
not only about business, but also a kind of living attitude in such public space because people could be totally free that everyone could talk no matter they knew each other or not. They were invited to come in the friendly environment, encouraged to walk freely here, and really enjoyed in the pedestrian street. Two days a week, it became the necessary part of the whole week life, not only for our local citizens, but also for the tourists (Fig.3-3).

But unfortunately all the night markets were closed since 4 years ago, and heavy traffic were restored once again (Fig.3-4). Pedestrian areas were limited to areas along both sides of the walk, although it was not that narrow. The municipality said the problem of pedestrian street for night markets were attributed to that it operated with low-grade business, blocked traffic, affecting the surrounding residents' normal life, and what's worse, it had affected the civilized image of Hunan Road badly. The current pedestrian is about 7m wide, but the effective width is only about 4 meters.

3.2.4 The human scale and detail design in pedestrian space

3.2.4.1 Relationship between buildings and street

The total width is about 30m, including vehicles road and pedestrian streets. The buildings on both sides both sides are mostly around 7-10 stories, with 20-30m high, and D/H is about 1.5:1, so that the open space would be seemed stronger, however, walking people are constrained in only 4m-wide effective walking space (Fig.3-5).
What they can see is only the view inevitably in front of them, and the overlooking façade view across the street, nevertheless, the fast heavy traffic blocked much good view. In this case, the advertising signage has to be as large as they can to make people notice them (Fig.3-6). As the saying goes, there’s no lively street with broad width. Widening road somehow can alleviate traffic problems, but it also takes away the fresh life and lot of beautiful memories within human scale.

3.2.4.2 Pavements

Typically, the pavements along the whole pedestrian street are mainly gray tone to give a fresh and clean feel, so that walking people can also focus on the surrounding environment (Fig.3-7). In Shiziqiao, the paving materials are changed as relative smaller rectangular marble tiles, as well the colors are enriched with orange strips and black dots. The appropriate participation of warm color can to some extent mobilize people's emotion well and increase the excitement with warm feelings (Fig.3-8).

Nodes along the streets are important stages that not only offer rest places but also could be the strategic points of the whole street. Connected to the intersections and as the turning points of the road structure, the nodes can give the feeling of entering and leaving (Fig.3-9). So in such small open spaces, people can linger, rest and recreation. As a basic interface, the pavement is also an important and direct part in the landscape which would also attract people's attention with its texture, shape, color and so on. In the intersection of Yunnan Road and Hunan Road, the small square node are designed as the interesting irregular pattern composed of black, white, gray and orange stones, rendering the rich atmosphere by creating interesting changes. The other example is in the east entrance of Hunan Road. The ground is covered with
small square tiles and arranged 3-level low stairs that can provide effective awareness to people that it is the special location of the street through the material and morphological changes as a reminder, to tell people to the location of the end of the entire section (Fig.3-10).

3.2.4.3 Street furniture

Overall, the seats in Hunan road are not many, and most of them are with old quality. There’s also the same situation like Drottninggatan that people walking through the street are normally prefer just go ahead, instead of sitting so that it makes us suspect that whether the seats are essential here or not, since they are merely used. Thinking about that, the issue would be involved into a vicious circle that due to its low frequent usage, these facilities will be ignored arbitrarily, and consequently, without such kind of invitation, people would never like to stay here. Actually the point should be always positive to pay attention to the quality of the facilities through human design to offer more opportunities for staying.

The ironic phenomenon is that it seems that people would like to sit in the edge of flowerbeds, since the current benches are without back, and neither any edge effects both with the sidewalk and the vehicles road. It is hard to guarantee enough safe and comfortable sense through these poor seating conditions, and this is probably why people don’t want to take long time sitting there. But actually sitting along the flowerbeds is not always allowed because it is mostly regarded as uncivilized behavior.

The various types of lights on Hunan Road could be one of the major features. There are not only normal modern-style street lamps, but also very unique traditional Chinese red lanterns (Fig.3-11), as well as advertising neon lights on the wall, welcome bridge across the road and Light Art Tunnel (Fig.3-12). The whole street full of the lights is decorated as Non-night Street, and reveals a deep sense of both modern and antique characteristics, much more than the basic need of security. The bright view also creates the possibility for public activities during the dark time.
The art sculptures are mainly concentrated in Shiziqiao, which are also interesting to attract people. People spend more time wandering in this street, more focusing on the surrounding landscape in addition to shopping. The life size models of old time street vendors are vivid and wonderful, one is blowing sugar sculptures (Fig.3-13), and the other is selling snacks, truly representing how they run their business (Fig.3-14). But the interesting places are only for visiting, without enough invitation for staying longer. If there are some benches nearby, it might be better for deep looking and experience.

Some sculptures are settled in front of the shops or banks as the welcome and guider symbols, as well as increasing the quality of landscape. For example, some stores arrange the two stone lions in front of the main gate, which are abstracted from the traditional ancient Chinese mythology. It can express about the business owners wishes for safe, lucky, and great life easily, as the result of same understanding of the origins (Fig.3-15). So it is worthy to think about that design of sculpture should be related to the surrounding and even the general understanding with majority group of people, so that it can resonate between designers and experiencing people. On contrary, there’s a not good example from this street shown in Sculpture 4 (Fig.3-16). The high golden art work stands in a small open square, but It is hard to find some relationship between it and the surrounding environment, no matter from the theme,
shape, color, or scale, etc. The unclear meaning somehow make people confused about it, and the embarrassing thing is that the place is seemed designed well but actually it can't provide a friendly space where people can enjoy in a good atmosphere. Therefore, even if design small as the minor part of sculpture, it should be fully analyzed of many aspects, with a responsible attitude.

3.2.5 Cultural expression

For Chinese people, it is a gradual process going outside and taking public activities from the interior spaces. Street markets are the traditional outdoor trading activities since ancient time, and it is well preserved till modern life (Fig.3-17). In the east side of section, the outdoor markets are often held there, and the relative performances for promoting are conducted during weekends which can attract a certain crowds. Besides, a new casual form of open air café has emerged are become more and more popular in the big cities of China, since we learned from the Europe. It indicates that the use of outdoor space is increasingly emphasized; however, from another angle it also exposes the class of space usage. Most of these cafes such as Starbucks are still kind of high-level consumption in China, and usually only those who have higher income or foreigners can afford the expensive drinks (Fig.3-18). To some extent it limited a large part of people to join in such public activities, so that it can not belong to the truly meaning of public space yet, and it is still not the real popular part of public life in China (Fig.3-19). In addition, some other new activities are arising, such as outdoor photography, taking the unique landscape on the streets as the background (Fig.3-20).

Fig. 3-17 Public market
Fig. 3-18 Cafe staying
Fig. 3-19 Weekend activities
Fig. 3-20 Outdoor photography
3.3 Summary

It is difficult to form the large scale pedestrian street network in every city such as Copenhagen. So the new goal of construction for modern cities is to build the sustainable harmonious pedestrian environment coexisting with people and vehicles. Hunan Road is such a challenge in Nanjing.

3.3.1 Successful points

During the passing decade, Hunan Road has developed significantly into a civilized commercial pedestrian street from an unknown path. It should contribute to various efforts. Firstly, honesty, modern and stylish are considered as the primary principles which are both benefit for customers and the road’s growth that help it own the great reputation. Secondly, among 10 years, the new street landscape was generally built, and the overall environment has been transformed from the original narrow streetscape (only 5 meters wide). Now it has become busy shopping place during daytime, while brightly in night, including multi commercial functional such as trade, finance, catering and entertainment. It has become one of popular shopping area in Nanjing that can attract many customers from other cities.

3.3.2 Shortcomings

As a highly used pedestrian street, it actually still can not meet many aspects of needs. Firstly, the transport function doesn’t match with the commercial distribution pattern. Along the street it has accumulated a large number of commercial units that brought a lot of flow. On the other hand, as the urban secondary road, Hunan Road plays an important role in the city traffic system, particularly in the morning and evening peak, there are always full of heavy traffic flow. So the conflict between its traffic function and the layout of business along the street led to the problems such as poor walking environment, traffic congestion and so on.

Secondly, there are many historical and cultural resources around Hunan Road, but unfortunately it doesn’t take much advantage of these precious heritages. There is fragmentation of landscape features that the art works, landscape facilities, and some other landscape elements lack of certain unique characteristics in the entire system to make deep impression.

Thirdly, lack of green areas is a big issue since there is too much sunshine in hot summer in Nanjing. The concentrated green place is only in Shanxi square and the mainly trees are distributed in west Hunan Road unevenly. In some sections, there are no plants.

4 Extraction from studies

Through the study of the commercial walking streets in the three cities, we can find
some ideas sparking and successful examples which are worthy to be considered seriously and learned in the walking space, even the whole process of urban design.

4.1 Protection of historical and cultural heritage

Sustainable development to a city is, on the one hand, about the protection of historical and cultural heritage, and on the other hand about the protection of the local behaviors. The formal is visible, while the latter is non-material and need more endeavor to reserve. From the cases in Copenhagen and Stockholm, it can be seen that the historical trails are preserved very well although the cities are under the advanced situation. Nordic cities are always concerned about the overall coordination of the urban landscape, and persistent to maintain their own traditional city styles.

China is experiencing an important period of fast development and rapid urban expansion. Most time the historical and cultural heritages have to subject to development needs. Unfortunately these precious resources cannot be reproduced. When we focus on the management of urban land resources, we should be well-managed and our cultural assets. We are the owners of our cultural resources, and simultaneously we must take the responsibility to protect them not to be invaded and destroyed, after all, the real city is represented by its history, experience, and also, the ultimate goal of our city is to evolve its real cultural identity.

4.2 City transport, the protection of the traditional neighborhood

The public transport in Nordic cities can be the best way to embody its people-oriented spirit. There are advanced and comprehensive public transport systems, and urban roads are classified very clear, including walkway, cycling path, public transport ways and tram runs. In addition, the regulation is very strict that even when the public roadway is not being used, the other vehicles cannot cross the line. The public transportation is relative low efficient, so it needs the strict traffic policy to mitigate this conflict. The majority of the people can respect the traffic law that is a good manner to keep the traffic orderly. So that is why there is no serious traffic congestion, even if the train station is located in the central area of the city. The clear division of the traffic lines can keep the ordered operation of the whole city, and also provides the most stable protection for the development of pedestrian space.

4.3 Concerns on regional and human

Region cannot be copied, so its significance is how to use its uniqueness to create the strongest sense of place to people. Scandinavian climate determines that in the majority time of year, people can not have rich outdoor activities and contact like southern Europe, which led to their ‘family atmosphere’, and affection and enthusiasm to nature and public activities. So the streetscape design is mostly concerned to the human scale and nature, which reflects their attitude of life, comfortable and practical, as the primary purpose. At the same time, the character of the Scandinavian nations
has decide that they are always trying to improve the existing problem, rather than looking forward to new things. Nordic landscapes focus on the pragmatic way, yet they are also related to the aesthetic scene and romantic mood. The landscapes are formed by simple and peaceful way, but they can express the most real feeling to get people’s resonation.

Streetscape is consisted of the architecture, nature, culture and the dynamic activities. In the Hunan Road, the commercial function are emphasized all the time, however, the other three aspects are ignored usually. The scale is increased, as well as the density of buildings, but the natural landscape is shrinking. In fact, it cannot meet people’s basic desire. For Chinese, crowd people in the street means unsafe, uncomfortable and unhappy. In a word, the reason is because they don’t trust the public space, and they cannot feel a sense of belonging, not only to the landscape, but also to people around them.
Chapter IV – People’s usage in public space

People’s activity is the result of sustained and stable interaction of human biological, social and cultural characteristics in social environment (Chang, 1995). In the public space of commercial pedestrian street, normally people have similar way to understand the environment which are formed in a particular situation within long-term. On the other hand, these actions will turn into a regular response to the certain kind of public space, so they can have some effects on creating friendly public space environment. Therefore, the investigation of public activities on the streets and the interviews to people who are using the space can insight deeply how human and the surrounding interact specifically. As both a theoretical and applied disciplines, in the process of urban design, how people doing in the physical environment can be observed to test whether the abstract theories apply to an environment so that a series of practical design and planning theories would be developed to serve for people better.

1 Survey method

The investigation sites are the same as what were analyzed in Chapter III. In this paper some sociological research methods will be introduced, such as participant observation, and interview; trying to explore the mechanism of urban space’s operation, and the valuable information for the future urban design from the users’ subjective dimension.

The contents of the survey are divided according to the categories of people and how they use the commercial walking space, as well as the questionnaires from these three areas. In the first part, through observing the current activities in the street, the general groups can be differentiated. In the second part, the questions are consisted of four parts, including traffic, protection, comfort, and enjoyment (Gehl, 2005), and the interviewees who are currently in the streets can express their real feelings by their direct and intuitive answers. It can also somehow reflect the conditions of the streets from three cities. For choosing evaluators, the more samples, the more precise the results would be. However, due to the restrictions, it is hard for me to choose many people being tested, so that 15 people chosen randomly from each area were asked the questions. In addition, it is impossible to make the same people answer questions about other sites, which might seem not object to the whole investigation. In this case, people would not be told that it is a comparison study between Europe and China so that it can somehow limit the cognitive biases caused by the unconscious comparison.
2 Categories of people in commercial pedestrian streets

2.1 People for shopping

It is obvious that the most people in commercial pedestrian streets are those coming for shopping. They have clarity of purpose to be there, alone, with friends, or with family. Some high-pressure office workers used to take the convenience as the first choice for shopping to save time, while some housewives and SOHO with flexible time prefer to search for some fun and enjoy the time by shopping.

Young people are the main group among shoppers. They have various kinds of psychology during such age span, for instance, for fresh pursuit, firstly, and sensitive to fashionable issues. Secondly, because they are fond of pretty appearance, the commodities’ appreciation and artistic value are important. In addition, some young people keen on high brands in mental, as most time they don’t really need the stuffs they bought but only seek psychological satisfaction that let them feel they are more distinctive than others.

Middle-aged people have more mature and realistic psychological thoughts. In their mind, the goods should be practical with actual value. Commonly the discount articles are sold well, as long as the price is affordable. Those who have this kind of psychological motivation are likely with lower incomes (Fig.4-1). At the same time, in some degree, they also have some common values with young people.

The elder group usually requires conservative goods. Their colors and styles don’t have to be too fancy, but the goods themselves must meet the needs of their ages. In other words, they buy for real value. Actually, they don’t have as much desire for shopping as people in other groups, and on many occasions, they don’t even think it is necessary to shop in the commercial streets.

2.2 People for experiencing public life

Quite a lot of people like to come to walking street, watching people around and feeling the public life. Sometimes when they feel lonely, anxious or depressed, joining in the giant public crowd is a good means of psychological self-treatment. It is actually a sense of hiding or escaping that makes them drowned in the stream of flow. But most time the reason for their coming is very simple, just to be one of the public life, feeling others or being felt. That can make them have the sense of existing and happy to be accepted by the city.
2.2.1 People for entertainment or public events

As a place with a large number of people, the commercial pedestrian street is a good promotional platform. In some specific sections, it is allowed for funny shows and art performance like acrobatics or musical displays to entertain themselves as well as the public people. It is also positive to organize some public events that advocate others their spirits. All the issues are composing the liveliest scene in the public place.

2.2.2 People for showing themselves

For some people, especially women, mostly, consumption is not that important, comparing with showing them in the public space. Somehow it should be considered to create some display space for groups with such desire to present themselves (Fig.4-2).

2.3 People passing through

It is reported that most people like to go through the roads with shorter distance. There is a group of people passing through the crowd walking street only considering it as a convenient traffic access. They might have other destinations such as rushing to watch movie, or just for working issues. They don’t care how beautiful and amazing the scenery is, and they don’t pay attention to people. What they prefer is how smooth and safe the street is.

2.4 Some other people

This group includes some problematic people like homeless, scavengers with ragged coats, or beggars. This part of people has very low income or even no income at all. What they are more concerned is if they can get some few economic benefits from here. But unfortunately they are not that welcome to come up in this environment because they are thought to interfere in other people.

3 Using characteristics of different groups

Normally, what people doing in commercial public space can be summarized as strolling, which represents walk, stop, experience, exchanges and some other multiple behaviors. These activities are often intertwined, although only walk and rest can not be taken at the same time. On different occasions, people’s own state, and the leading activities are not same. Thus, people in commercial pedestrian streets have would use the space with different characteristics depending on different purposes. Generally, there are six types summarized as follows:

- People for shopping are usually walking, sometimes taking a rest, chatting and
People who want to experience public life more like to walk around and search for interesting things without an explicit destination, or sit somewhere secure enough to watch the surroundings.

People entertaining others or organizing events need enough open space to display and attract people to come.

People showing themselves like to walk around playing areas or conspicuous places, and also they like watching others.

People passing through are mostly hasty walking passers who occasionally take a rest.

Problematic people are usually wandering aimlessly, taking rest, or staying at some busy place begging.

Among all of the above groups, only the first group does the shopping consciously while all the other groups are in passive attitude for shopping. However, the needs of people can be inspired since their demands are dynamic. For instance, one goes to the walking street in his/her spare time, perhaps at the moment he/she doesn’t have demand for any commodity. However, in a certain atmosphere, his/her latent demand can be stimulated. One more example is that consumers go shopping for clothes, but during some period, they will have desire of food recreation, or something else. These demands are dynamic and could be shifted continuously. Only when people meet certain situation, will the consequent needs come. In these cases, it can be found that the old style of pedestrian street that only has a single shopping function has been out, yet more generally, the street style should be with complex features, apart from its basic commercial value. Carrying the role as the public space in urban area, it also has to be able to meet the various needs of different groups of people, which is the real existing meaning for the modern commercial pedestrian street.

4 Landscape requirements of different ways

As it has been said in above, people’s actions in commercial pedestrian streets can be divided into walking, resting and communicating. Each type of them has the relative psychological demands on landscape.

4.1 Walking people

Walking is the most basic and common thing people doing in the street, since nearly all of the people need it. Differently, they are searching for the target to determine the next steps while walking.

4.1.1 Walking with intention

People already have the destinations that, i.e. some specific places in a commercial street, such as cinema and restaurants, or they just pass through the street to any other destination. In this case, they generally choose the best way to reach the place,
and bypass the obstacles along the way. They would not stay long and are less affected by any external interference. Meanwhile, since these places have definite entrances, the flow to be there would not interfere in other people too much.

4.1.2 Walking without intention

When people walk without exact destination, they usually walk incoherently with slow rhythm. Most of them like to take a short halt, look around and then walk again (Fig.4-3). The routes and directions of such people are affected by different attracting places. When they meet the obstacles, they prefer to stop for a while. Most time the landscape level can influence them to some extent, such as the clean environment, flow direction. Therefore, it is easy to bring up the imbalanced flow along the street.

4.1.3 Psychological demands on landscape

No matter what kind of purpose people walking in the street have, they all have characterized physical and psychological requirements in the landscape.

First of all, since it is a path for walking, the street’s distance should not be too long; otherwise people will feel tired and want to stop the trip in advance. The walking distance means, on the one hand, the actual physical distance, and on the other hand it refers to the distance in mind. Generally speaking, most people can accept a walking distance within 500m, but people might not feel tired when the routes are varied, with rich landscape and spaces, and pedestrians would like to travel further. In other words, the perceived distance is relatively shortened.

Easy walk is a vital quality to measure the landscape function. The accessibility from one place to another refers to the liquidity in the street, which is affected by the density of walking people, the presence of obstacles, the ground conditions and somehow weather conditions, etc. Also it requires a certain amount of walking space, so that it is not easy to be disturbed by the crowd, and the routes would not be disrupted to be circuitous (Fig.4-4). The visual guide signs in the landscape help people find and decide the right way in a wide range of background, which is particularly important in a complex environment. Under the congestion that they can bear, European people prefer to stay in the crowded places.
People in the streets and squares tend to walk along the edge of space, especially in the open space with large scale. One reason of the phenomena is people’s nature to seek for asylum and the psychological sense of security, and the other reason is possibly that people is constantly searching for the goal they are interested in, so that the rich buildings, windows along the street and surrounding plazas are useful to attract pedestrians.

In addition, the surface of the street should be flat and clean, which is particularly important to the special group including the disabled, the elderly and children.

In summary, the shoppers may be very concerned about the facade, windows, and advertising signs. Those for recreation pay more attention to the recreational and leisure facilities. Tourists might focus more on the symbolic landscape, street sculptures and some art performances. In a word, people’s feeling in the street depends on the visual environment and walking conditions. Definitely it is boring if there’s no change, however, the landscape changes lack of continuity will also make people uncomfortable.

4.2 Resting people

4.2.1 Temporary rest

Almost all the people need rest in the process of moving in addition to those just crossing the road. Temporary rest can be triggered by many factors, such as waiting to cross the road, meeting friends by accident, resting during shopping or observing something noticed occasionally (Fig.4-5). It can happen at any time, and generally very short, so it doesn’t have very high demands on the surrounding environment.

4.2.2 Rest for recreation

People usually like to choose sitting as the way for longer rest, because sitting is more helpful for eliminating fatigue, especially after long-distance walking. According to behavioral psychology, one practically would not stand as long as it is possible to sit. In commercial pedestrian streets, a considerable number of people come to meet friends, but not for shopping. They sit somewhere together, eating, chatting, playing cards, or just looking around (Fig.4-6). Since it takes longer time, the surrounding environment should have
relative higher quality.

4.2.3 Psychological demands on landscape

People often find a support (Fig.4-7) with them when they are in public spaces; for example, they prefer to rely on the column, walls and other vertical supports when they are talking with others. Steps, flower beds, fountains and other lateral edges are the good objects for sitting. Of course, comfortable chairs and benches are more popular.

People ordinarily stand or sit near the edge of space, transition zone transfer, or small space separated from the large one, such as surrounding walls, along edges of flower beds or the pool, under a tree, etc (Fig.4-8). These spaces create various sub-spaces or semi public spaces by changing the layout to adapt to people’s different needs. For one thing, these strip edge areas make one feel comfortable, for the other, it can bring the best view with sense of security. Whenever people stand or sit, they love the position with relying, rather than being surrounded by walking people, and absolutely, no one wants to be watched. Hence, along the edge area, people can face the public space, putting back towards the background that can both avoid excess observation by others, and watching others carefully.

4.3 People with exchange

Exchange is the behavior to obtain information and psychological satisfaction through participating public activities. Conversation is the most basic way of communication, and it could occur among all types of groups in the commercial pedestrian street.

4.3.1 Conversations with companions

There are many proper locations for these people, because they are familiar with each other. Generally it could be besides a street, along the steps, or benches where they can communicate side by side.

4.3.2 Conversations with encounter

People would stop shortly to talk with acquaintances or friends met on their way (Fig.4-9). This is related to the certain environment. In the survey, it is found that generally they only have some greetings if it is so crowded, and they don’t care about
the surroundings. In contrast, if the environment is relatively relaxed, they would like to take a while for chatting. Of course, it depends on whether they have enough free time for that. If they all prefer to take longer time, they would like to move to somewhere else easier for conversation to continue the pleasant meeting.

4.3.3 Conversations with strangers

Chatting with strangers is not as easy as with a familiar person, so usually this only happens when the environment is comfortable, when people are in a relaxed mood, or when they have some common interest. Therefore, the leisure places in commercial streets provide more opportunities for conversations with strangers. Some typically examples are asking for the direction, doing some research interviews and discussing current events. Since it is not a common way of public activity, if one cannot accept this kind of communication, the conversation will end immediately.

4.3.4 People’s demands on landscape

Basically, there are two requests of surrounding environment for all the three types of conversation. One is that the ambient noise cannot exceed 60dB, otherwise people have to shout because they could not hear each other clearly. What’s worse, the talk will therefore be shortened or stop. In addition, if the place is quite safe with less interference, such as somewhere can sit, rely or under the tree, it would be easier for people to accept the conversation, and the time might be extended.

4.4 People for experience

People in the commercial pedestrian street are experiencing the current scene and atmosphere in front of them, actively or passively. They can catch the information from outside world directly by visual, auditory and tactile senses.

4.4.1 Visual experience

Visual experience is the most direct way to feel the environment. In the visible range, the visual sense produces the first impression for the general landscape. In Commercial street space, the main content of visual experience includes morphology, color in the streetscape and some other activities. People would have some responses from these elements and
this consequentially results in many psychological and physiological needs.

Firstly, it requires a coherent overall landscape (Fig.4-10). Our vision does not stay in one place; instead it is roughly in the iterative process of glance and pause to create a general impression. So the landscape should be in continuous sequence with certain rhythm which probably can control the flow, as well as people’s mood. Therefore, the contents in the space cannot be crowded and trivial, or excessively monotonous. Too many visual targets and empty vision can both result in irritability and physical fatigue.

The vision can neither be with too much obstacles, nor glance up at one sight. It is hard to reach the target in tortuous space and people would lose easily sense of direction, with impatient mood. On the other hand, undue straight streets probably make people feel tedious and lose exploring interests.

In people’s eyes, it is always easy to catch the distinctive objects, and create relationship among them to produce a sense of order. In that case, the landscape elements in the pedestrian space could be somehow changed within the uniform theme. Otherwise, the disordered layout is likely to cause a sense of panic. Hunan Road is a little bit wide for pedestrian, and it is separated by the traffic roads in the daytime. So the light bridge can somehow link the two sides to create a relatively entire streetscape together.

Living in a social background, human beings are always interested in how others doing and observing others in group activities, yet, they are seen, at the same time, by others. It is an interesting phenomenon that requires some interacting space in the landscape, i.e., arranging some rest space around the place which can attract people.

4.4.2 Auditory experience

The background music in the modern commercial pedestrian street has great influence on people’s mood and behavior, although it is easy to ignore the auditory environment in urban commercial space. People’s attitude towards some certain sound mainly depends on its volume, quality, and the content. Mostly the moderate volume, gentle tone, the wealth of information or the natural sound is more easily accepted.

People can capture the beautiful melody consciously, but don’t wish to hear loud disordered noise. The intense music is not suitable for people in the street because it can make them upset and escape as quickly as possible. Traffic noise around crossroads mostly can cause a feeling of resentment. Another unpleasant sound is the loudspeakers playing music and advertising repeatedly. All these sounds may cause people in the street to change their plans, leaving such noisy place, even the street.

On the contrary, pleasant and relaxing sounds are more likely to hold people staying
with desire to listen, observe and participate, like soft music, cheerful sound of talking and smiling, birdsong, the sound of water, sometimes even the sound of the leaves rustling, and so on.

4.4.3 Tactile experience

Tactile experience is also a very common way to feel the material world, which can be reflected by any part of the body, as senses like warm or cold, rough or smooth. It is will have a sense of contact, feeling warm or cold, rough or smooth, which is in the form of experience.

People are interested in stuffs with strange shapes, or some interesting characters. They take active touch as the further understanding. The desires of children are particularly prominent, because they are more curious about the external environment and try to learn unconsciously. Shape and texture of the object are usually the two features attracting people’s attention most. For example, we have cool sense to water; sometimes the mobility of the water can attract people to experience by hands, feet or even the whole body (Fig.4-11). The dynamic or static water, fountain or pool can bring totally different experience that makes people love such places. In a commercial space, it is a good way to let people stay, through designing more spaces possible to use tactile experience.

Moreover, once the human body touches any objects, it will have relative sense, no matter whether it is willing or not. The passive tactile experience occurs at any time, such as feet touching the ground, body relying on the walls, hands meeting the railings. In the crowded commercial pedestrian street, the unpleasant touching should be avoided, for instance, the rough ground, the materials cold in winter but hot in summer, and dangerous edge plants (Fig.4-12). So the place possible for passive tactile experience must be considered with human design and suitable material. For example, as an important element of barrier-free design, blind path provides information completely through the sense of feet.

Safety and comfort are the general mental and physical requirements of tactile sensations in the landscape. The former requires the non-toxic and ecological environmental material used for protection. For example, the allergenic plants should be grown in the busy area. What's more, the shape of facilities should be designed
safely but not with sharp corners or other potential dangerous structures. The second requirement requires that the material should not be too rough or sharp with negative effects that make people feel uncomfortable.

5 Interview analyses

Decision makers in the development of urban space are generally from many fields such as architecture, economics, politics. They could be collectively considered as urban designers, from the sequence of ‘knowing’ to ‘not knowing’ (Carmona, 2007). The group of ‘knowing’ refers to those practitioners with expertise of urban design from the narrow sense, while the ‘not knowing’ group means the others who might not understand the real value of the decisions. Public participation could belong to the latter one, since people all have the basic and real sense of the city life as a citizen, although they have various backgrounds. It is instrumental in providing the necessary valuable judgments of urban space, through establishing cooperation and communication with them to raise the public awareness. Their answers can reflect directly what kind of public space is interesting to attract them.

5.1 Establishment of questions

The whole questions would be separated into four groups. As a walking space, traffic level is an essential premise, so the first part in the questionnaire should be about the traffic condition. Meanwhile, according to Jan Gehl’s study in Copenhagen, his 12 key quality criteria for city space (2005) summarized as 3 catalogs of protection, comfort and enjoyment is one important support for my interview.

In transportation geography, it emphasizes more on the concept of walking traffic such as traffic walking coherence level and if there are obstacles interfering, because the most important function of walking is to offer the perfect situation for travel.

Any unsafe environment would have a negative impact on its users, and affect the duration of people’s lingering there. In the commercial walking street, both of their economic and social benefits will be influenced. Human security is always the primary principle in pedestrian space design, thus protection for people’s safety must be considered carefully. It refers to the traffic safety primarily, since the modern motor traffic somehow brings the high-frequency horrible accidents. It is the pedestrian street that plays a vital role in urban area to return the free and safe feelings in public space to us. Secondly, a friendly public walking space should offer such safe conditions to lower the chances of crimes, especially during the dark time when there are not so many people staying there. On the one hand, the high security can guard the basic right for people staying outside, and on the other hand, it is good to extend the usage of these places which can be used longer in the day. Thirdly, since it is possible to have activities when people stay there, the facilities protecting these people in some bad weather conditions reflect human consideration.
Regarding comfort, we mentioned both the visual appreciation about streetscape and how well the public services are offered. Commercial pedestrian street also needs to be seen as walking space integrated into the overall space in the city, so that it should consider landscape quality of pedestrian environment through the planning and landscape design. At the same time, whether there are enough opportunities to sit, stand, or have a rest, and how it cares about those who need help can also reveal the quality of the walking street. The humane care to various groups equally can make people feel respected and would like to stay.

The highest level that can evaluate in the walking street is whether people can enjoy the experience there. The degree of interests and cultural characters of walking space can be reflected by scale, cleanness and a series of different effects by steps. As Jane Jacobs said, when we think about a city, the first appeared impression in our mind is the streets. The city will be lively if the streets are full of life, or else, the city will be boring (1961). For the users, a walking space with good landscape quality and detail outstanding designs is attractive and also can to large extent drive energy for consumption in Commercial Street.

5.2 Cognitions from interviews

During the interview process, people’s behaviors of communicating with strangers in the walking streets can be observed, to some degree, regardless in Denmark, Sweden, or China. It is definite that the interview cannot be accepted every time, however, most people don’t want to be disturbed there, unless they are really relaxed. People rejecting the interviews are commonly those who are just passing, coming with focused intentions, elderly people, sitting alone, or waiting for others. Generally single individuals are more likely to have psychological alert, and they usually refuse to talk to strangers, just hinting by smiling. On the contrary, those approached easily are ordinarily accompanied by friends, or coming for experiencing city life, because it seems they are encouraged by companions to come with opener mind in the street.

5.3 Results analysis

For each street, 15 candidates were chosen randomly. Since the street is available for everyone, it should meet the requirements of all groups, as a result, in the following diagrams, the data from different groups of people are combined together, so that the results can reflect comprehensive and integrated responses, as well as their expectations.
5.3.1 Strøget

Among the interviewees, most of them who are living in Copenhagen come here on average at least twice per month, although of course the tourists only come here once. The main aim of most people is just to come here watching other people, or something new and enjoy the lively street life, while some of them is purely shopping (Fig.5-1).

First of all, due to the recent construction and other issues, some road obstacles are brought out. Sometimes people have to bypass such obstacles, and even more, some parts of the streets are blocked to a certain extent, however, most people don’t think it is a big problem for them, because commonly they support and have the optimistic attitude to the city construction, and of course are looking forward to a better city life. So they would not complain too much.

Secondly, in the section of Protection, it shows that people are generally satisfied with the current protection measures for passing.

- The existing facilities are good for crossing the street, such as the detectives and green/red lights which can reduce the possibility of the accidents efficiently. The other good point is that usually the drivers and walking people respect each other, so that everyone keeps such good space with orders consciously.

- However, as it is mentioned before, around some intersections, as well as the mix-used streets, the implements of entering with limited time are not carried so well, and some big vehicles enter the pedestrian, without slowing down.

- Unfortunately, the relative separation facilities are not enough or not in place, so that it may lead to a certain threat to the walking people.

- Lights during the dark time and those behind the glass windows on both sides of
the stores constitute quite nice night view, although in some places the chandeliers are too dim, as the illumination is weakened by some broken ones. Such a famous street is not dangerous, since there are many restaurants and some other units distributed in the main street and its branches where are still possible for access in dark. However, dark corners are more common in less popular streets, potentially offering chances for crime.

- Along this street, there are rarely sheltered facilities. But people’s attitude to that is not that strict, because they thought that the main aim of a commercial street is for shopping, so if it is bad weather, then it is better not going out, while if they meet a suddenly changed weather outside, there are many ways to be sheltered, and mostly they would like to stay inside the stores. It is also a good way to improve the chances of shopping. So some people believed that these facilities are not necessary, or even worse. However, almost every interviewee from Asian countries such as China and Pakistan insisted that sheltered facilities are very important especially when it is snowing.

Thirdly, it can be seen from the figures that people in Strøget are content with its comfortable aspect.

- The entire streetscape was considered to be fresh and beautiful, yet there is some pollution like cigarette butts on the ground. It seems it has become one of the European street characteristics and therefore it did not affect the overall landscape seriously.

- As they said, the advertisings on building walls and other trademarks for a commercial street are necessary to play a guiding role during shopping, but too many advertising clutters would be disgusting and make them annoyed. For this point, Strøget has a good protection for the historic buildings, and takes restrictions of the advertising in a limited area to preserve the main scope of traditional features.

- For the street surface, a lot of people said they didn’t pay much attention to it. Instead, they concerned more about whether the material is comfortable and flat enough. Connecting with the local characters, most of them thought that the situation is quite nice. As long as the color is not too bright, it can be suitable for the ancient type of atmosphere.

- Almost everyone thought that it is a good resting place, because in this street it stands for many opportunities for them to stay. Some benches are placed along the two sides, and several squares are linked by the street. These places all have good locations, full of sunshine, and the distances between each other are suitable for tired people. Besides, the resting place is not only limited to concrete benches. The edge of fountains, stairs of squares or even the floor can all be considered as the proper places. There are many such kinds of places in the streets. People can stay there freely, and take activities, watching people and something new.

- The directing guide and signs for public services for people have some problems. For tourists, if they have the maps, it would be easy to understand the guiding.
However, sometimes the continuous streets crossing a couple of plots use the same street name for such a long distance, thus making people confused, and even get lost. Fortunately, people here are so nice and friendly and they are pleased to give the effective help as best as they can.

- The blinding path is set in the middle of the street, although we just met the blind people passing there once during the investigation. But it is common to see the elder people and those who come by wheelchair or with baby carriages. People often give them respect, but the current facilities could be better for them as they said.

Finally regarding whether people can get enough fun in the street, their answers were positive.

- There are comfortable spatial scales, neither binding, nor too large. During holidays, it would attract lots of people coming. Most people do not reject such crowded surroundings, yet somehow can stimulate their desire for public space. This might be due to the background of Nordic with fewer people but vast land, so that people are pleased by the crowd. However, due to the directing issue, the whole street space is submerged in the shadows for a long time in winter bringing certain discomfort.

- It is acknowledged that there is very little greening, with only several trees scattered along the 1,000 meters long street. Some people think that as a commercial street, greening could be negligible, and conversely, too much green would occupy the walking space. It is a little bit surprising that Chinese people are always taught that the greening is important.

- Not so many creative sculptures are found, but the fountain and the status in the nodes and the detail sculptures on the buildings can reveal the conservation of local historical heritages.

- Even a small issue can express the culture intact. Regarding the special features of this street, a lot of people answered that they didn’t experience anything special, but while walking in the street, they could feel the typical Nordic style, because everything here had melt into the entire cultural atmosphere of the city. That’s why people are full of passion and affection to come here.

5.3.2 Drottninggatan

It is found that people in Drottninggatan are in a hurry, walking at fast pace. The interviewees in the south part of the street are mainly tourists going to the souvenir chain shops, while in the north part there are also a considerable number of local people because of the two rows of shopping malls. Their main purpose coming here is clearly for shopping, since compared to many other cultural monuments in Stockholm, the prominent feature of this street is its business character, but there are few people who want to sit and stay here (Fig.5-2).
For the Traffic part, since the paving and other relative facilities in the street are complete, the continuous walking level is good. Due to the same construction issues like in Strøget, there are some normal obstacles, and on most occasions, they would like to detour around them. But perhaps because of the fast pace, complaints about the crowd are common, instead. They want to get more but not so embarrassing public space.

For the Protection part, people are satisfied with the recent condition of the crossroads, and could also be free in the street space, instead of worrying about vehicles' interference.

- In the existing street intersections, there are complete traffic lights, zebra stripes and some obvious signs. Usually people and cars can have basic respect, so the public order is maintained with common consciousness.
- However, in the junction with Klarabergatan, the traffic is so busy and heavy. Safety hazard may occur when some pedestrians don’t obey the traffic regulations. This also has certain psychological impact because they cannot walk freely on the street.
- There are various types of lights, such as chandeliers, lamp posts, and wall lights. But many people said they did not care about the arrangement of light, because basically they would not come here at night. The restaurants in the street are only open during the daytime; meanwhile there are no enough stores or restaurants that can attract people around the branch streets in the evening when crimes are more likely to happen. That is why they didn’t want to be there at night considering security problems, which implies the limitation of the streets usage.
- The resisting facilities for bad weather are only the shelters above the windows, but no more else. Most people thought it was not very important because most time they preferred to go into the shopping mall, instead of staying in the outdoors, just for feeling public life here.
It can be seen from the figures that generally speaking, people felt comfortable in Drottninggatan, but compared to Strøget, the ratio is a little lower.

- The overall streetscape is full of modernization, and links with so called Freedom Square, Sergels Torg, that can result in positive landscape effects. But some people felt that its modern style is not that suitable with the traditional old buildings to some extent.
- The facade is filled with a variety of commercial billboards, some messy, and in some places it is difficult to identify the ancient architecture. Even some disordered advertising looks annoying in their eyes.
- Most people didn’t concern the street surface, and the current series of pavement design has got their approval.
- There’s a phenomenon that people tended to walk fast, and were reluctant to stay here for too long time. This is because they didn’t think that this street provides good chances for them to rest. On the one hand, even though the benches are well-equipped throughout the street, they are yet mounted in the middle of the street, thus making people anxious. On the other hand, it is boring to just watch other people passing by on both sides while one sits in the middle of the road, besides having a short rest. What they expected to see is the colorful and interesting life around them. In addition, some benches are made of stone which makes them feel cold after sitting there too long.
- The main street is straight, so it is easy to understand the guiding signs without getting lost. But for public service guiding, most people said they don’t think it is very convenient for them to find them.
- The humane facilities’ settings for people who need help are rarer. It is irrational that there is no blind road in such a well-known and busy street. For the elder people, it is common to see them there, and the condition is OK for them.

Peoples’ answers were more or less conservative when they were asked whether they could get enough fun in the street. If it is just regarded as a commercial street, there are as many as brands they want. But as a public walking space, it has many problems when modern civilization collides with the ancient culture. For instance, these issues can be found in buildings and street relationship, greening, sculptures and so on. The designers tried to create unique cultural atmosphere by utilizing some modern way, such as post-modern style lion status. However, the function is relatively dull, so that people still prefer the shopping feature here, but they haven’t been aware of the real meaning of the street. Its natural, historical and cultural heritage can’t impress people yet. Sometimes there are even a lot of unique cultural characters. For foreign tourists, it is not always possible to them without a local Swedish people who can explain some history of the old building or some culture. Otherwise, they can only feel the local culture from the typical Swedish souvenir stores. Therefore, for the tourists, Drottninggatan is not the very outstanding street that they must visit during their traveling in Stockholm. Especially if they don’t have enough time, other places with more cultural characteristics would be better options. As a commercial street, it is
to some extent similar to business districts anywhere, with same brands and stores display, and that’s why people don’t regret not going there.

5.3.3 Hunan Road

Hunan Road is one of the few commercial pedestrian streets in the inner city of Nanjing. It has good geographical location, and many opportunities for business and communications; however, it is found in the survey that most people (all respondents live in the urban area of Nanjing) came here just when they had specific intentions. There were also a lot of people coming here only occasionally. The main purpose for most people is shopping and dining, while some other people are just passing here. There was only one person who came for experiencing the public space. From the pie charts, it can be noticed clearly that people’s satisfaction level for this street was significantly lower than the former two streets. From this point it could be said that Hunan Road is facing many challenges if it would be a real popular commercial pedestrian street with complex function of public space. From the diagram (Fig.5-3), it also can be found that the black parts are obviously more than in Strøget and Drottninggatan, which means quite a number of people cannot satisfy or be attracted in this walking environment.

![Fig.5-3 Interview in Hunan Road](image)

In Traffic part, it was said that ordinarily it was ok for passing, but in holidays the flow would be very heavy. As far as they were concerned, they were not content with such busy crowd, because they can see people everywhere, but don’t want to stay in such busy place any more after workdays. Coincidentally, the street is also under renovation recently, and to a certain extent it affects the accessibility of the street. It is possible to bypass the obstacles, but the interviewees all expressed their negative attitude. For the past 20 years, Nanjing has been suffering from endless constructions. It has to be recognized that it is the decision makers’ wrong decision and some
difficulties of coordination with different departments that led to the repeated construction in the same place. It is really hard for the citizens to keep patient to endure living in a dust-filled cities for so long time. In their deep heart, everyone is looking forward to seeing a better Nanjing, yet under huge sacrifice.

In Protection, there are both pros and cons.

- Hunan Road is a mix-use type of pedestrian street, and the wide street also brings some problems for crossing. The transportation system is not very reasonable and tends to cause traffic jams and chaos at crossroads. The traffic is very complex, especially during peak time. But unfortunately, the drivers and pedestrians cannot obey the traffic rules all the time, making the traffic conditions more complicated, and as a result, people would be irritable and anxious due to safety issues.

- In some existing street intersections, although there are traffic lights, many people said the complex light signals can’t give them good guide but always make them confused. What's more, the duration of green light is too short for such a wide road and some elderly people can not even walk before it changes red. Almost everyone mentioned and complained it.

- The main road and the pedestrian street are separated by some facilities, such as wood fence or bicycle parking spaces, and most people felt that it could make them feel safe and free to walk.

- The night lighting project is a major feature in Hunan Road, and almost everywhere is bright at night. As the capital city of Jiangsu Province, the life in Nanjing lasts very late in every day. For Chinese people, evening after dinner is good leisure time for walking outside, so that the flow of people in dark time is much higher than the Nordic cities. In addition, the 24-hour patrols of police give people enough security to have outdoor activities.

- There are also merely sheltered places, but different from European people’s opinions, most Chinese people are rather disappointed in it. Because when the weather turns bad suddenly, they prefer to go back after standing in a temporary outdoor shelter, waiting for a while. If they encounter unexpected conditions, they would be restless but are not satisfied with the entertainment. They want to be back home as soon as possible which can provide warm and protected space in their minds. Therefore, such transition places should be offered for them, not only limited in the shopping malls. The adequate facilities of protection and other emergency measures for people enjoying the public space and outdoor life are so important to express the human way of thinking in modern public space. Somehow it could be a good way to gain people’s approvals by their heart.

In general, people can adapt to the public space, but the current conditions are far away from the very comfortable requirements.

- Due to the complex and busy traffic, the whole street scene is a bit messy, noisy, and sometimes brings intensive feelings. Of course pollution is a big issue on the other side. The constructions did increase serious environmental problems such as poor air quality.
The buildings along Hunan Rd. are all big and tall, with modern style. The large commercial billboards are a little bit disordered. Most of the stores on the street level floor take the thick metal doors for security. When these doors are closed, the building’s overall appearance is badly affected. This form is hard to create the intimacy in the streets.

The patterns of pavement have some changes, but still lack of elegant design and unattractive. In some sections, the pavements are damaged, and it is terrible that the underground polluted water is splashing while being stamped.

Rest place is another problem worth consideration here. There are seats along the street, but the usage is very uncommon. Most people don’t want to sit there as they said, unless they are really tired, because they don’t feel comfortable staying there. But in Chinese traditional detained concept, only seats can be used for rest. For instance, the lawns are prohibited from entering. Sitting on the floor is thought to be utterly uncivilized, and edge flower beds and other places are usually too dirty to sit down. Lying down for a rest is mostly treated as indecent public behavior. After all, there are many conventional rules that we can’t break, which might be the reason why the public space is not really free.

Signs here are still clear, so it is not very easy to get lost.

The blind path is arranged but often occupied by bicycle parking. The facilities for vulnerable groups, e.g. wheelchair ramps and drinkable water are not obvious.

Most people don’t think the street is interesting and full of fun; instead, they only focus on whether they can complete their own issues.

For the street scale, it is generally thought a bit large, so that people would get a sense that they are so small in such big space. Just because of giant space scale, their range of vision is limited to the stores magnified in front of their eyes, as well as the huge advertising posters on the other side of the road. It is depressing to stand in the big space yet with confined sight.

The greening is mainly distributed in Shanxi Rd. Square, the west side of the street, while there are only two rows of not very good looking trees along the street. People generally agreed that green in the commercial pedestrian street is very necessary. On the one hand, it is beneficial to landscape effects, and on the other hand it can create plenty of shade during the summer since most people don’t want to be exposed to the sun. Walking in a commercial pedestrian street, people might not require the greening so much because they are more concerned with shopping issues, but if they need rest, the surrounding trees become significant.

With regard to sculpture, there are hardly any sculptures except for a couple of interesting ones along the Lion Bridge, while some others look quite ridiculous. Such kinds of sculptures are actually not favored by most people. In contrast, the light torch of Hunan Road has become an impressive landmark. There are few innovative street designs, no regional characteristics. The key meeting points are missing.

In general, people thought that there is nothing interesting here except for shopping. Most of them said that this place is boring and they didn’t want to stay
here too long while being asked if they are willing to come here. However, if the night market is not cancelled, most of them are willing to experience the marketplace and enjoy the lively bargaining process. But at least, the Shanxi Road citizen square is a nice place for resting where both senior citizens and children can be found. Some are basking in the sun while some others are playing games. Everything is vivid and full of fun.

It is rather difficult to notice any unique culture here. However, it is a pity that the historical sites leading to Yunnan North Road are ignored, thus almost nobody knows their history. Besides, one can enjoy the traditional Nanjing flavor snacks on the Lion Bridge. But this is far from enough to be the culture of a city.

5.4 Summary

First of all, objectively speaking, not everything from Western style is correct and advanced. With the development of the whole society, there must be something that can’t keep up with the fast paces and thereby arise some problems. From the answering of the interviewees, we can find what people need currently in public space, and learn from both the good and poor experience.

The Exterior of the building can somehow reflect the aesthetic orientation and its basic spirit of a city and taste. It indicates obviously from the above three-street analysis that the Nordic countries tend to focus on the conservation and sustainable constructions during their environmental city development process, while China still remains such fast speed to establish a new modern society, yet overlooking the precious local history and culture. The more modern cities become, the harder people can recognize them, and get lost here.

Chinese people have a very different philosophical background compared with the European way of thinking. Now China meets a big challenge that facing the unified model of urban construction, of course including commercial walking street. The overall copy regardless of their own characteristics would definitely lead to failure.

There are series of questions for the designers. Either in China or European countries, the users’ thoughts are not always consistent with designers’ ideas. The citizens have the most authentic practical experience, but because of their limited professional knowledge in this field, sometimes they would have kind of narrow mind. In contrast, designers are sometimes too idealistic and ignore people's ideas. So, how to combine them reasonably? Follow the users’ concepts, or change them? The designers also have to study how to use the rational thinking to guide people towards a more harmonious urban space.
Chapter V – Design proposal

No matter how the theoretical principles are mentioned, and what kind of idea should be built, as long as there is no specific design implementation, people would hardly feel the real plan the designers want to achieve. The design principals of Hunan Road will be based on the sites analysis and interviews in the previous chapters. Some successful experiences can be learned, and extracted to be used in the proposal; meanwhile some shortcomings which have been mentioned by the interviewees should be avoided.

The proposal can be started from general planning of the surrounding with extensive environment plan and transportation context. The overall design idea is following the different human scale and detail design aspects of the praxis, trying to find the improving way from those. Then in the specific areas proposals where are selected by the functions of commercial walking space, the design will be related to the particular situation and focus on their own characterizes.

1 Plan proposals - Overall description

It is inevitable that the intense shops have to face fierce competition, as the customers are already familiar with similar display of store pattern, styles of shopping malls and brands of commodities. If the current situation cannot be changed, people would be bored to go to such places which might lead to vicious competition. Due to this unpleasant condition, urban public space becomes dull and boring under the identical business characters. The renewal of Hunan Rd. commercial pedestrian street should emphasize on its special characteristics and the pursuit of distinct development, avoiding the homogenization with the other commercial streets in Nanjing.

1.1 Orientations

1.1.1 Vitality

For shopping
Integrate shopping malls, small stores, specialty restaurants, and so on to build a prosperous and interesting street space which is vibrant and appropriate for walking. With well designed facades, try to create a diurnal colorful fresh looking streetscape that attracts and stimulates the potential consumption.

For experiencing
Combine the design elements from metropolis and nature, and improve the human-oriented traffic and transport, as well as safe and comfortable street space.
1.1.2 Cultural heritage

Create a streetscape with unique style which can represent Nanjing, by taking advantage of the traditional local architectures (1912-1949) and cultural characters (such as Lion Bridge), and establish an ordered landscape style by associating series of small street design. Produce some special landmark design that could be interesting for the street.

1.1.3 Green life

Construct an environmental and sustainable streetscape as a green corridor, taking Green Nanjing as the background of this street. Build a comfortable public street space suitable for walking by the continuous shade of green corridor. Utilize water design to build a lively pedestrian space atmosphere. In addition, create various and interesting landscapes in four seasons with the change of vegetations’ colors.

1.2 Illustration of plan proposal

1.2.1 Green corridor

The entire road will be built as a green corridor to connect the shade of the public square and Xuanwu Lake, as well as the road connecting the west and east sides in order to improve the problem that it is lack of greening nowadays (Fig.1-1).

1.2.2 Functions

Hunan Road can be separated as three main themes, which are for commerce, communication and experience (Fig.1-2).

- The left part of the road is related to Zhongshan Road, one of the most important green roads in Nanjing, which brought plenty of business opportunities, so it will be planned as the business representative of Nanjing in the future, and a lot of shops would be gathering here to create a very dynamic commercial street with high quality commodities.

- In the middle of the road, it is defined as bustling central area since it has the relative concentrated location which can bring some climax sense. The
intersection links the pedestrian streets on both sides, especially the well-known Shiziqiao (Lion Bridge) Street, which has historical heritage, therefore it is great for communication life.

- The right side extends to Xuanwu Lake Park and another green road Zhongyang Road, which has a good sight toward the nature and great landscape. So it is relatively quieter than the other two parts, but it is possible to plan it for both local life and cultural tourism.

1.2.3 Five axes

According to the functions, the branches of the road can be arranged with different meanings. From this figure, it can be found that the general roads perpendicular to Hunan Road are classified as 5 axes including multi-function, pedestrian, and green from west to east. (Fig.1-3).

1.2.4 Land use

As Kevin Lynch said, node is a point of intense activity in the image of the city (1960). So does it in the street. Along Hunan Road which is around 1km long, it is reasonable to set four nodes as a core, exchange and landmark (Fig.1-4).
The public square already exists, and from the interview it can be seen that people prefer to spend more time there compared with staying in the street. So it is necessary to find some other places along the street to create more interesting places, one in the central area, and the other one on the east side, which could be considered as the new life square (Fig.1-5).

1.3 Traffic planning

Since people have become accustomed to fast-paced modern life, the accessibility of the streets is particularly important, regardless of the entrance of shops, bus stops, metro stations, or parking. The busy flow and heavy traffic interference bring safety threat to pedestrians. The current traffic chaos in Hunan Road is to a large extent because that traffic cannot be shunt well. It is noteworthy that we often just focus on the street design itself, but ignore the traffic design.

In this figure, the lines of different colors show the main roads network. The red lines are two main roads, and between them, Hunan Road is the secondary road. The dotted line represents the planning new road which is parallel to Hunan Road, and can play a shunt traffic role during the rush hours, thereby, it is possible to restore the fully walking function in Hunan Road again (Fig.1-6).
1.4 Overall Idea

1.4.1 Overview

Through the series of renovation, such as traffic, façade, pavement, green and other details, Hunan Road will become a coherent street with multi-functions (Fig.1-7).

1.4.2 Guideline for the facade renovation

Under the buildings’ function and the current situation of elevation, the façade will undergo renovation with different degrees. Some with good façade can be maintained, such as the higher floors of the buildings. Some need simple remediation; while some others with messy outlook should be improved on large scale. It is mainly for the advertising, signage clutter on the first and second floors. In addition, some façade in the middle and east parts of the road can be decorated by climbing plants, enhancing the landscape impressions (Fig.1-8).

Advertising signs is good for creating a business atmosphere, but in Hunan Road and the surrounding areas, there are a huge number of various commercial advertisings, some combined with the shops, and some settled on top of the buildings bringing pressure sense. The arbitrary and unreasonable setting leaves this business district disordered and chaos impression. Thus, these signs need to be reset uniformly. In the
part focusing on commerce, it could be encouraged to set up a variety of outdoor advertising, while in the general part, especially where mainly for visiting and experiencing, it has to be limited, because too much advertising will make people annoyed.

There are generally five types of advertisings, which are on top of the building, vertical advertising, lying on the wall, shop signs on the first floor, and shops' vertical advertising (Fig. 1-9).

In the part mainly used as commerce, most of the buildings are shops, and they need many chances to publicize the brands, so all the styles of advertisings can be utilized orderly.

In the central area, the overall streetscape is more important, so it is not allowed to use so many kinds but limited as the shop signs in case of interfering the overall landscape effect.
In the east part where the aim is not only about shopping, but also experiencing, shops are usually like relative big shopping mall, and it would be better that the street-based floor are not filled with shop advertising, however, the big scale advertising could be hanging on the wall.

1.4.3 Pavement

The pavement designs are various related to different parts, trying to create a uniform landscape with charming diversification. Some common stripe texture is added to the junctions in order to make the changes more natural and smooth (Fig.1-10).

In the commercial part, the pavement materials are wide stripes with bright colors to set off the wide-scale sidewalk and heighten bustling commercial atmosphere.

In the central area, the pavement should be related to the background of street construction, and the ground is paved by stripes materials with high-quality to increase the prosperous and modern atmosphere.

In the visiting area, the pavement is in harmony with the dignified calm atmosphere related to the water design. In Phoenix Plaza the materials are square shape and bright, which can somehow show people the static feeling, and it seems to invite people staying.

In the pedestrian streets, the warm colors and elegant design can cause people’s interest in shopping, sightseeing and also increase their enjoyment.

1.4.4 Lighting

As Chinese people are like to go out during the night time, the lighting landscape is important to affect the night streetscape. In different areas of the whole street, various colors and lighting effects of illuminations are used according to the regional characteristics respectively, such as lamp posts, lanterns, light bridges, and light tunnel. Generally the colorful and flowery lights can reflect the bustling feeling, while the soft light is benefit to render the gentle and quiet atmosphere (Fig.1-11).
In the west side of the square, as the beginning of the road, the soft lighting with a strong symbol is used so that person can be attracted to come.

In the commercial part and pedestrian streets, the stylish and elegant lights are used to bring the high-quality of nightscape. On the both sides, the facade and the shop signs could be decorated with colorful lights, reflecting the prosperous and bustling commercial atmosphere.

In the center section of the road, the traditional cultural characteristics can be reflected through the rows of lanterns, which express the lively and exciting sense to lead people enter into the pedestrian streets.

In the north side of the road, a branch of the pedestrian, there is a light tunnel. The rainbow color can inspire people’s positive attitude and make them relaxed walking under it.

In the eastern part, it mainly expresses the peaceful and quiet atmosphere during the night, so the light could be cold color which is soft. As well, it can be connected with the water and green features to reflect the quiet atmosphere.

1.4.5 Greening design

Taking green corridor as the premise, the greening design is divided by different zones. Combined with the spatial characteristics, various species of plants are selected according to their configurations and the adaptability of their habit characters to the climatic conditions in Nanjing (Fig.1-12).

- At the beginning of the road, it is appropriate to use the evergreen trees with big canopy to create the impressive landscape, such as Cinnamomum camphora and Melia azedarach.

- In the central area, the trees with big flowers can be selected to heighten the flourishing atmosphere, such as Magnolia denudate and Magnolia grandiflora.

- In the eastern part emphasizing on visiting and experiencing, the species which can change colors by seasons are more adorable, such as Sapium sebiferum, Zelkova serrata, Ginkgo biloba, and Acer palma.

- The Flower beds are arranged between the traffic road and sidewalk, which can
render the colorful atmosphere. The herbs are changed with the different seasons, such as *Salvia splendens* and *Bellis perennis*.

1.4.6 Culture expression

An important factor to make the walking street attractive is the details design. The art work might not with big scale, but its creative idea can stimulate people’s interests and inspire them with more emotions to stay and love this place.

The sculptures and detail designs could be followed by the local historical and cultural background of Nanjing. Lion is possible to be the representative of this road, since Shiziqiao (Lion Bridge) is very well-known. In addition, the new identification of elements design can be applied into variety of public facilities which can be seen as the new symbol of Hunan Road (Fig.1-13).

2 Specific areas proposals

2.1 The commercial area

In a commercial street, the main purpose of people is shopping which is the basic demand, so in this part, the stores are concentrated one by one, yet big ones are excluded, so that people can focus on the coherent shops, because the enjoyment they get here is from this kind of activity and the mood of looking forward to surprise
from the next shop. Thus, most people's behaviors here are keeping moving; however their requirements for the surrounding environment are not so high. But for the designer, how to inspire their potential consumption willing by the landscape design is very important.

2.1.1 Street plan

Effective width of the road for walking is extended to 7m from the original 4m. Between it and the vehicle road, there is a buffer zone which is 3m wide. It is used for the separation between people and vehicles, passengers’ temporary stay, and some public facilities such as bicycles parking, street lamps and billboards. The row of flowerbeds in the middle of the sidewalk can give a visual isolation from the buffer zone (Fig.2-1).

2.1.2 Street general section

The best way to avoid disturbing the pedestrian street is to plan a high quality traffic condition around it which can provide a safe and convenient walking environment. Having learnt the transport model from the commercial street in Stockholm, in this street the public transport like bus and taxi is along the edge of the road, which is dedicated to fast-track, not being occupied by other forms of vehicles. The cars’ path is in the middle of the road, and it is forbidden to stop here. Cycling is between the ways of public transport and cars, and there are designated bicycle parkings besides the intersection, from where people can enter the walking street (Fig.2-2).
2.1.3 Perspectives

The street lamps are combined with the advertising signs of Hunan Road, as a way of propaganda. (Fig.2-3, 2-4).
2.1.4 Shop facade

Now all the shops in the street use the metal rolling doors that somehow effect the protection badly by destroying the hospitable atmosphere. It would also increase the crime at night. In addition, the construction of this kind of doors is not coordinated with the exterior of the buildings. While it is closed, it is nothing from outside, without any information communication between people passing by, which will affect them to decide whether to come back or not (Fig.2-5).

Therefore, the stores’ rolling shutters on the first floor can be replaced by a layer of transparent glass, and special frames can be added to the windows and doors (Fig.2-6). In addition, the coherent colors painted on the walls can make the stores have continuous landscape.

The shop signs above the doors are a little messy; some are big, so it can be rearranged more orderly. In addition, the green line of herbs on the signs can highlight the advertising space and decorate the wall of the buildings (Fig.2-7, 2-8).
2.1.5 Separation facility

The separation facility design could introduce some traditional Chinese patterns in architectures, such as Cracking Ice and Four-petal Flower (Fig.2-9).

2.1.6 Lighting

The posters of the street lights also follow the traditional style of Cracking Ice. The two flags hang on both sides, showing the latest news or advertisings (Fig.2-10).

2.2 The Meeting areas

Besides its business function, the commercial walking street is also an urban public space, having plenty of meeting opportunities and social exchanges. So there are mainly shopping malls where people can do shopping inside, but in the outdoor space, they will pay more attention to the landscape and have all kinds of entertainment.

2.2.1 Phoenix plaza

Phoenix Plaza is situated in the eastern part of Hunan Road. It links the external large scale environment, as the entrance of the road. Different from the commercial
features on the western side, it should create relatively relaxing and peaceful atmosphere, and also can play as a landmark through its special characteristics. Meanwhile, in the internal environment of the road, its function is to offer leisure and entertainment to both local people and tourists.

The commercial activities here are mostly held inside. For instance, there are Babaiban Shopping Mall and Phoenix Bookstore which occupy almost all the buildings. In the outdoor walking space, it is used as a public space inviting people to stay and experience the public life (Fig.2-11).

![Fig. 2-11 Layout of Phoenix plaza](image)

### 2.2.1.1 Pavement

The materials of the pavement are light-gray square granites, which can reflect the appropriate but not exaggerated atmosphere. This kind of shape and color tend to make people have peace of mind and stay, and the blind path has a gray stripe with nails on it (Fig.2-12).

![Fig. 2-12 Pavement in Phoenix Plaza](image)
2.2.1.2 Perspective

This space is defined by the separation facilities and a series of stone balls. In the intersection, the clutters of Chinese cultural posters stand in the opening area, as a landmark of this section of the whole road. The several levels of shrubs can separate the walking space as sidewalk which is for those who only want to pass by here directly and such staying space (Fig.2-13).

The shop distribution is not so dense, so they don’t have so concentrated targets, and they don’t need to walk fast. Instead, it offers good conditions to stay and sit. In the middle of the street, there are a row of water platforms combined with wooden play ground. In summer children can play with the water, while in the cold season they can lay on the wood stage and enjoy the sunshine. Next to the buildings, the outdoor-café is offered in a more common way, so that everyone can join it, sitting there and watching what is happening here (Fig.2-14).
In front of the buildings, there is a relatively opener space which can be seen as the center of this area, so in the middle, a fountain is settled, and men can sit around it. There are also many possibilities to be seated in the surroundings. The benches besides the shrubs have good background support, and create sub-open spaces by the plants’ curve lines. The access of stairs to the shopping mall is also available for sitting, and enjoying the sunshine, especially for young people. Sometimes it can also be used as a stage for performance. In addition, the two lines of green beds can also be used for the roller skaters’ exercises (Fig.2-15).

2.2.2 Traditional area- Shiziqiao

This part of the road is called Shiziqiao which means Lion Bridge in English, because there was a lion bridge built by the emperor during Ming Dynasty, and it became the landmark of this area. It is covered by the new road, but the name is kept till now. So in the same area, this cultural element is reused into the landscape design, and the bridge is restored with an abstract image. The function of communication is not only mentioned among people, but also about the communication with the cultural heritage. We are creating new city images and new culture, while the historical treasures should not be forgotten (Fig.2-16).
2.2.2.1 Traditional façade

Some historic heritages are located along Hunan Road, however it is regrettable that these traditional buildings are not developed, still blocked by thick wall. So it is considerable to remove the wall, and that will not only increase the public space for people’s visiting and communication, but also highlight the cultural and historical significance of this area. What’s more, the relative buildings can be designed in the similar style to combine such characteristics. The height of the buildings around Shiziqiao should be controlled under 5 stories, and their façade can be transformed into the traditional style of Chinese architecture. In the image, the modern buildings are decorated with the traditional roof style of Ming and Qing Dynasties, combining the modern architectures and ancient cultural elements (Fig.2-17).

2.2.2.2 Pavement

The pavements of the ground correspond to the roof, so the sidewalks are used by
wide gray and black granite strips, which embody a sense of simplicity, but still keep
its grandness as the centre of the road (Fig.2-18).

The pedestrian of Shiziqiao is around 20 meters wide as a car-free path, and it uses
the relatively warm color of granites, with the glass floor lights across it (Fig.2-19).

![Fig. 2-18 Pavement of sidewalk of Hunan Road.](image)

![Fig. 2-19 Pavement of pedestrian of Shiziqiao](image)

### 2.2.2.3 Perspectives

The memorial archway already exists, and in the renovation the stone balls are added
in front of it to define the space. As an entrance of the pedestrian, it is widely used by
many people, so the balls can be considered as the support or the edge of this
traditional area. Behind the archway, the bridge and the pool are directly in front of the
gateway, which can be an interesting place and attract more people coming
(Fig.2-20).
Since this entrance is more special than other places, of course it is a good chance to keep people, and then the outdoor seats are set on the two sides. On the one hand, it can form a small square for people’s communication, and on the other hand, this location has good view sights of Hunan Road and the pedestrian itself (Fig.2-21).

2.2.2.4 Lighting facilities

This street lights in this part are designed as the traditional Chinese lanterns, which can reflect the local folk customs. In addition, the very unique red color expresses the festive and passionate atmosphere, and it can make people walk here with
relaxed mood (Fig.2-22).

2.2.3 Small node

In current situation, the small square is a little bit crowded because the flowerbeds are arranged like labyrinth. Now it is redesigned as a more open and concentrated space. A small circle place is around the flowerbeds, and inside there are some seats so that people can gather here for recreation (Fig.2-23).

![Fig. 2-23 Layout of small node](source)

2.2.3.1 Green ornamental facade

Utilization of vertical greening is an alteration of the facade. The climbing plants are kept on the walls and gables. This idea is about to create vertical green space by the green wall on two sides (Fig.2-24).

![Fig. 2-24 Green façade](source)
The glass walls with temporary advertisings on some parts of the first floor are a new design for this street floor landscape. It can divide the shopping and walking spaces, and the transparent material does not block the overall sight. The design of the yellow structure also plays a role in resisting bad weathers. The wall and door of it are both made of glass, offering a good viewing possibility for people inside (Fig.2-25, 2-26).

2.3 Traffic area

The premise of a perfect pedestrian street is depending on if it has advanced external transport condition. From its traffic function, in these traffic areas, there should be some approaches which can alleviate the existing traffic problems to some extent. From the aspect of landscape, since this kind of areas are generally located at the starting, end or some nodes of the road network, it can be designed in an
eye-catching way, showing the visual sensory cues.

### 2.3.1 Entrance section

At the entrance location of the two directions, the rainbow light bridge and the torch shaped sign are used to identify this street and give people a deep impression. One side of the walking area is widened 15m, providing more spaces to increase the walking range, and exchanging the busy flow (Fig.2-27).

![Fig. 2-27 Section of entrance](image)

### 2.3.2 Parking organizing planning

Apart from maintaining the existing roads, in this road system, the parking areas are planned. From this figure, it can be seen that in Hunan Road, none of the heavy traffics are allowed to park, except public transport. The cars can be parked around the road. The red lines show the parking areas on both sides of the streets. They are not far away from Hunan Road, but don’t have too much traffic flow, so that it is possible to park and relief crossing traffic (Fig.2-28).
2.3.2.1 Street parking

In the secondary roads marked as red lines in the figure above, the parking spots are distributed along the streets, some horizontally, and some vertically, utilizing the edge space of the road effectively (Fig.2-29, 2-30). In addition, the parking area can also define the car street and walking space, as a separation.

2.3.2.2 Bus stops reconstruction

The current bus stops are on the sidewalk, and sometimes people prefer to stand on the road waiting for the bus. This is one of the reasons of the traffic jam. The platform is now designed in a trapezoidal shape, next to the buss-only access. So the bus doesn’t need to turn to the roadside, but only goes straightly and stops. It can save the stopping time efficiently; and people are safe, standing at the same but specific place now (Fig.2-31).
2.3.3 Traffic facilities

The existing traffic lights in Hunan Road are not so clear, and the duration of green light is not long enough to cross the road, especially for the elders. So touch-style facilities, which are more flexible according to the flow of pedestrians, can be considered (Fig.2-32).

3 Summary

In the high-paced modern society, people are eager to take a short walk during their free time to release the fatigue. Most streets are occupied by cars and this makes the outdoor environment unsuitable for staying, but people still want to stay outside close to the nature, and a convenient environment. So what exactly attracts people to come into public walking space?

In my opinion, the popularity of a place depends on whether it has considered the detail designs reflect human care and concern, such as comfortable rest places, food stalls, trees and lawns, fountains and sculptures, rest seats, advertising signs, and other street furniture. When people, especially the Chinese people have realized that open space and nature are important in our life, actually what we are searching for in such environment is still the feeling like at home, having chairs when we are tired, and having food when we are hungry. Sunshine and fresh air are definitely great elements in the enjoyable environment. People are totally relaxed but not anxious, and are willing to experience the city life in the most natural way.

People’s behavior can generate from the interaction between people and environment. Human beings are an important factor in environment, and combine the environment as a whole. A good public space can regulate people’s behavior; conversely, the one cannot meet people’s behavior and their psychologies will inevitably decline.
1 Conclusion

In the part of streets cases study, I understand more about the North European and Chinese styles of public walking space, and how the local municipalities carry the policies to protect the local streetscape and the historical cultures. This part of study is emphasized on exploring how the decision makers use the professional way to maintain the street, and how the current situation is. For example, how they express the exterior design and the aesthetic of townscape to create the streetscape, as mentioned in Ashihara’s theories.

In Strøget, the success is contributed to protection from both government and local people. The decision makers endeavored to transform it into a friendly public commercial pedestrian street, paying enough attention to the historical preservation and its development positively. The well kept human-scale streetscape from Middle Ages and more and more surrounding walkable streets form the new walking streets network and the thriving public life in the city.

Different from Strøget, Drottninggatan is transformed into more modern style. Its great location in the inner city supports it to be a popular pedestrian street with unlimited business opportunities. The shopping character has become its largest label and the new cultural heritage in Stockholm. Besides, this street links Old Town and the natural park on the two directions, and it is the best embodiment of returning to the ancient history on one side, and close to the nature on the other side. That is the spark of this street, the harmonious development with heritage, nature and modern civilization.

Hunan Road has developed significantly into a civilized commercial pedestrian street in recent decade, because it maintains the honesty, modern and stylish commercial principles which have own great reputation. It has become one of popular shopping area in Nanjing that can attract many customers from other cities. In addition, the streetscape is under going continuously. But still, there are plenty of problems which cannot meet the requirements, such as the messy traffic, lack of human-scale environment, as well as historical and cultural expression.

These three examples have shown the important aspects in the interesting public walking space, for instance, city transport, protection of historical and cultural heritage, and concerns on human-scale, although there are also some shortcomings which cannot follow the street development. Objectively, not everything from Western style is correct and advanced, but we can learn all the experience and abstract the merits used in the study in Hu’nan Road, the renewal proposals.
Through the investigations of the human behaviors, I studied the public walking space from the opposite direction, the aspect of users. What their behaviors are definitely according to the function and landscape of street environment. So from the interview, we can know their response for the street conditions, and understand what the most important things they need are in the public walking space. The questions are based on Jan Gehl’s research about the new city life, generally divided into 4 parts, that is traffic, protection, comfort and enjoyment.

In the final design of Hu’nan road, my understanding to a good commercial pedestrian street was transferred into the proposals from the overall planning to the specific areas design. As far as I thought, the interesting commercial walking street should be multi-functional to attract people shopping and also staying, so the specific areas are selected as its commercial, meeting and traffic characters. Generally, the renovation is followed by the principles of the elements in streetscape.

2 Further studies

If I were to perform this study once again, with my current knowledge, I would have definitively spent longer time on research and analysis with a greater understanding and a larger number of accumulation data.

Firstly, the relative theories were not enough for this study, and I only chose some of the most important theories which could support my thesis, for instance, Jan Gehl’s research about city life, and Yoshinobu Ashihara’s research about streetscape. Taking a general review of European and Asian urban development process, there are plenty of excellent theories helpful to the development of urban design. Actually the knowledge gathering should be broader. A general review of European and Asian urban development process, there are many excellent theories which play positive roles in promoting urban design, worthy of deeper study.

In the study of three commercial streets in different cities, due to my lack of knowledge about thorough Scandinavian history, politics, planning evolution, and the language problems, my analysis and the results might not be right, only according to my personal opinions. I am aware that it is not objective to give comments from an Asian’s perspective.

In the detail observation and interview work, many parts cannot be completed in such short period. For example, the investigation in the same locations should be repeated depending on different periods, and the groups of people are also more specific to the concrete ages. But in my thesis, the groups were only classified by their general behaviors. These detail factors are very important to continue the deeper analysis of how every single person has the performance in these open spaces. In addition, the number of the interviewees is absolutely not enough to support the results. Therefore, the investigation should be more scientific and meticulous in each aspect.
In the final specific design proposals, I carried out some renovations which were in accordance with the study and analysis of interviews in the previous two chapters; however, there are still many deficiencies because of my limited knowledge. For example, from the interview I summarized what people are not satisfied with, and then followed their concerns to re-design the specific sites. But in these new designs, how do we determine if they can really meet peoples' interests and satisfy them? It also requires more theory-based methods and new interviews in the future.
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Appendix

Questionnaire of Commercial Pedestrian Street
Name_________ Gender_________ Age_________ Nationality_________
1. How often you come to this street?
A. Usually.
B. Sometimes.
C. Occasionally.
D. Other opinion:

2. What’s your aim to come to this street?
A. Shopping, eating.
B. Watching people and experience public activities in public space.
C. Only when I pass through for other aim.
D. Other opinion:

3. How’s the condition of continuous walking level? Do you feel bad when you are stopped by crowded people?
A. Walk smoothly; not forced to be stopped.
B. Walk smoothly; forced to be stopped occasionally.
C. Walk not smoothly; stagnated usually.
D. Other opinion:

4. How’s the degree of access obstacle-facilities (such as street furniture)?
A. Obstacle-facilities do not influence me.
B. I have to detour through when I encounter obstacles.
C. The obstacle-facilities influence me badly.
D. Other opinion:

5 How’s the situation when you go crossing road?
A. There is short distance; easy and safe to cross the road
B. There is long distance; not that easy to cross the road
C. There is complex traffic condition; low safety
D. Other opinion:

6. How’s the rationality of crossing facilities?
A. Facilities setting for crossing are effective to prevent the accident.
B. Facilities setting for crossing are rational.
C. Facilities setting for crossing are not effective to prevent the accident.
D. Other opinion:

7. How are the separation facilities between people and vehicles?
A. Separation facilities are great; I can walk freely.
B. Separation facilities are not obvious but still work; I can walk.
C. Separation facilities are not in place; there are potential safe risks.
D. Other opinion:

8. How’s the lighting condition during the dark time?
A. It is perfect; bright, and no dark corners.
B. It is good; there are some dark corners, but don’t matter.
C. It is bad; there are dark corners and very dangerous.
D. Other opinion:

9. How do you think about the condition of facilities for resisting bad weather?
A. It can provide good condition against bad natural situation.
B. It provides shelter against bad natural situation partially but not enough.
C. There is no facilities for resisting bad weather.
D. Other opinion:

10. Do you think facilities for resisting bad weather is important in commercial street?
A. Very important.
B. Important.
C. Not important.
D. Other comments:

11. How do you feel about the whole streetscape?
A. It has fresh and positive view, non-waste pollution.
B. There is some pollution, but it doesn’t affect the overall landscape.
C. It has serious pollution, and the environment is poor.
D. Other opinion:

12. What’s your impression on the Facade view? Are advertisement views bad?
A. The overall facade is impressed with clear boundary.
B. The facade is good and neat.
C. The facade is confusing, with second boundary by advertisements.
D. Other opinion:

13. How’s the pavement quality?
A. It is beautiful, with fine pattern, and material balanced with the space; good surface.
B. It has good effects on the whole landscape, some materials are broken.
C. It is ineffective, abrupt, and not integrated with surrounding environment.
D. Other opinion:

14. How do you like the conditions for resting?
A. There is enough and very pleasing open space for resting such as comfortable benches.
B. It has spaces for resting, but not good to stay long.
C. There is no pleasing open space for staying.
D. Other opinion:

15. How do you think about the directing facilities for guiding and public services?
A. It is easy to find and understand.
B. It is not obvious.
C. There is a few directing guides, and easy to get confused.
D. Other opinion:

16. Do you think it is convenient for old people and disabled?
A. It is very convenient for them and the public facilities are humanity for them.
B. It is convenient for them somehow but the barrier-free facilities are not enough.
C. It is not suitable for them walking here.
D. Other opinion:

17. How do you feel the scale with buildings and people in the street?
A. I feel very comfortable in this place.
B. I feel good in this place.
C. I don’t feel so good in this place.
D. Other opinion:

18. How do you think about the greening level?
A. Greening is much and excellent.
B. Greening is ordinary and could be more.
C. Greening is poor, and it is important in such environment.
D. Other opinion:

19. Do you think greening is important in commercial street?
A. Very important.
B. Important.
C. Not important.
D. Other comments:

20. How do you think about the sculptures?
A. It is an interesting view with strong impact, and integrates with environment.
B. There is little sculptures, but they are good creative art works.
C. The sculptures are ridiculous to stay in the street with no sense.
D. Other opinion:

21. Do you think this street is Interesting? Why?
A. It is very interesting; I’m willing to come and stay here often.
B. It is interesting; I’m willing to come or stay here occasionally.
C. It is with no fun; I don’t want to come or stay here.
D. Other opinion:
22. How do you feel the culture in the street?
A. It is full of the unique cultural characters of this city. I can feel it mostly.
B. It has some cultural characters of this city.
C. It has very few cultural characters of this city and very similar to other commercial street.
D. Other opinion: