Activating Public Space —Rethinking and Reforming Gothenburg Central Pedestrian Street Area

Jing Li

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Examiner: Lars Marcus
Tutor: Anna Kaczorowska

Streets should be for staying in, and not just for moving through, the way they are today.

--A Pattern Language, Alexander

Abstract

The Gothenburg central pedestrian street area has abundant public space and many city attractions and there will be no lack of pedestrians, however, they always move forward quickly to their destinations and give no intentions to stay and enjoy the street life. There are plenty of waterfront areas around to stop but they are separated from the main pedestrian streets and seem not to function well. It is even worse that those city attraction points are less accessible in places where cars and pedestrians meet and connections between public spaces are not strengthened.

The thesis aims to identify and evaluate not well functioning public space and weak connections among them, then come up with a proposal to reform these spaces and activate public life. In order to identify the weakest points in public space, it's the most active levels are examined and pedestrian moving routes are traced. In order to solve the conflict between pedestrians and cars, successful examples all over the world are introduced and studied. So the focus is putting on how to make the best use of existing public space condition to make the pedestrian street area more inviting and attractive.

The final outcome of my thesis is an urban design proposal for existing pedestrian area and tries to answer how could existing public space be examined and reformed to produce new vitality to the city. The project is meant to be an inspiration and set an example for similar urban condition, as well as provide a basis for new ideas and method into the discussion about pedestrian and public space.

Keyword: pedestrian street, public space, street life, waterfront

CONTENT

1. INTRODUCTION

BACKGROUND

An ordinary scene on an ordinary pedestrian street. Pedestrians pass through the street quickly, in a hurry to reach their destinations, street artists play their shows in every corner, people sitting in the street café see others passing by and at the same time to be seen, two passersby start to greet and talk on the sidewalk, people sitting at the waterfront area, enjoy the sun or see what's happening at the opposite bank of the canal. The dynamic of pedestrian street is influenced by a number of public space and public activities. Pedestrian streets, and public space that connect them together, public activities that may invigorate them, are investigated and contributed to the main topic of this thesis.

These dynamic conditions described above are exactly what creates Gothenburg central pedestrian street area. One sees pedestrians move along the sidewalk quickly and people sitting at the waterfront area watching cars passing on the opposite side of the river, but few pedestrians stop only to enjoy public activities. There are not many connections between pedestrians and relaxed people at the bank, because urban conditions for outdoor stay in public areas are very poor and public space is too distributed to hold the pedestrian area together. Public spaces are designed lacking in interconnection. With such condition, there is nothing much to experience in public space and to stay there as well, few activities are taken place. As a result, more pedestrians prefer to move forward quickly to their destinations or to look for more convenient place to stay. In the study area of Gothenburg, there is specific gap identified where the focus should be put to sense the missing elements of pedestrian urban structures. Therefore the design proposal will be constructed in a way to be beneficial adding design structures to the existing central public spaces of Gothenburg.

There is an assumption that the significance of quality improvement to public space can be when public space is well designed and perfectly connected with urban texture. It is shown through the research that the number of pedestrians have a great relationship with the volume of motor traffic.

The fact that the improvement of public space quality result in the improvement of public activities appeals to create a suitable framework of public space that may contribute in activating urban pedestrian area. People staying in public space become a natural life scene for people sitting at the waterfront to watch, which acts as a lively element and a powerful engine of the pedestrian district. In this condition, Streets are truly places for staying in but not just for moving through.

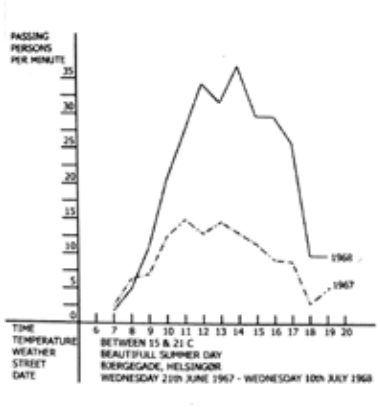


FIGURE1.1 pedestrian traffic before and after closing a street to vehicular traffic.(Bjerggade, Elsinore, Denmark).
(Source: life between buildings, Jan Gehl)

INTRODUCTION

FIGURE 1.2 (Source: Google)

FIGURE 1.3 (Source: Google map+ author: Jing Li) Stadskärna area in the urban context

WHAT?

Public space transformation proposal for the Gothenburg central pedestrian street area.

WHY?

Come up with a proposal that is comfortable to stay in or move through and makes full use of waterfront area.

HOW?

Through a transformation master plan and in-depth design. The transformation master plan will **rearrange transportation** in the site and **rebuild pedestrian and bicycle system**. The in-depth design will be focus on public space where people stay in or move through especially waterfront area.

LOCATION

The chosen site is located in Gothenburg, Sweden. The site is typical pedestrian area in Gothenburg.

INTRODUCTION

FIGURE1.4 Empty waterfront area--Brunnsparken, Gothenburg (Author: Jing Li). There is empty space and greenery in the waterfront area but not well used.

FIGURE1.5 Anonymous movement space--Basargatan, Gothenburg (Author: Jing Li). People have the desire to sit by the riverside but the stay quality is bad.

FIGURE1.6 Anonymous movement space--Basargatan, Gothenburg (Author: Jing Li). Movement space is occupied by parking. There are no space for pedestrians and view of the canal is blocked.

PROBLEM IDENTIFIED:

· Public space is not full developed.
· Lack of accessibility to public space and urban attractions.
· Space where pedestrians move and stay is divided.
· Conflict between pedestrians and cars.
· Waterfront area is not developed.
· Outdoor parking occupies public space.
These problems are further analyzed in the next chapters.

AIM:

On a large scale, the project is meant to be an inspiration and set an example for similar urban condition, as well as provide a basis for new ideas and method into the discussion about pedestrian and public space. On a smaller scale, the thesis aims to **identify and evaluate public space where people stay or move in Gothenburg and weak connections among them.** The goal is to come up with a proposal to reform these public spaces and activate public life. The intention is to improve public space quality and pedestrian situation. The challenge is to develop and activate public space as well as to create new pedestrian and transportation system.

INTRODUCTION

RESEARCH QUESTION

How can Gothenburg central pedestrian street area be reformed to comfortable stay space and convenient move space?

FOLLOW UP QUESTIONS

· How to make a connection between pedestrian streets where people move and public squares where people stay?

· How to ensure pedestrian priority in busy city center and retain its convenient accessibility at the same time?

· How to develop poor waterfront area along busy street and how to make disused waterfront area more attractive?

FIGURE 1.7 (Source: Google+ author: Jing Li) An overview of the research site.

METHODOLOGY

The thesis is based on a public space transformation urban design and it is divided into eight chapters. After the short introduction of the thesis, the second chapter presents theories of public space, pedestrian street and public square design. The third chapter shows site analysis which examines the site from many perspectives and its surrounding areas. It also shows public space pattern categories and public activities studies. In the forth chapter, problems are identified through pictures taken from the site and problematic areas are summarized. In the next chapter, identified problems are analyzed through sketches and design area is defined. In the sixth chapter, the public space transformation design for the Gothenburg central area is presented and proposals are suggested.

INTRODUCTION

FIGURE 1.8 (Author: Jing Li) The photo taken from the site shows the existing stay and move space and parking problem.

DELIMITATIONS

This is a thirty-credits master thesis in Architecture and Urban Design. Public space is all types of space between buildings in towns and other localities, in this thesis, **we only consider external space as public space**. The main focus is public space where people move or stay. The research site is not all concerned as design area in this thesis. The transformation design area is limited to waterfront along canal and main link street Östra Hamngatan. Perceptional feeling of pedestrians are not discussed.

FINAL RESULTS

The result of the thesis are transformation master plan and in-depth design.

· The master plan shows the transformation of different types of transportation and full development of pedestrian system. Skybridges are emphasized and bridges are added.

· The in-depth design is a proposal that divides existing public space into different uses and creates more comfortable stay space and convenient move space. Zebra crossings are broaden and emphasized and squares are clearly defined.

2. THEORY

2.1 ELEMENTS OF PUBLIC SPACE

If without imposing aesthetic criteria, public space is all types of space between buildings in towns and other localities. Internal space is shielded from weather and environment and is an effective symbol of privacy, while external space is seen as open and unobstructed space for movement in the open air in public, semi-public and private zones. Although they are similar in function and form, but mostly only external space are concerned as public space. (Rob Krier, 1979)

The square and the street are two basic elements of public space.

The square is produced by the grouping of houses around an open space. This arrangement has a good control of the inner space as well as building a defence against external aggression by limiting the access to square. (Rob Krier, 1979) The street is a product of the arrangement of buildings and squares. It provides a framework for the distribution of land and gives access to individual buildings. It used to be planned to the scale of the human being, the horse and the carriage, however, it is now planned even more for motor traffic. (Rob Krier, 1979)

There are several other elements of public space.

Sidewalk-- Sidewalk is a product of motor traffic street. It always locates beside the street and is separated from motor traffic.

Water feature-- In landscape architecture and garden design, a water feature is one or more items from a range of fountains, pools, ponds, cascades, waterfalls, and streams. (Source: http://en.wikipedia.org/wiki/Water_feature)

Park— Park is always a pleasant place for citizens to have a rest or go for a walk, which is always active space in city. It's always covered by greenery and contains a lake.

Beach—Beach is special kind of public space located beside the sea and fills with sands. It's a perfect place to bath the sun or do some exercise.

2.2 TYPOLOGY OF PUBLIC SPACE

The typology of public space is abstracted from urban spaces morphological series. The spatial form helps to suggest what can be learned form urban space examples and be applied to other projects. Rob Krier sketched several series of spatial forms according to the geometrical characteristics of the basic shape, which is very inspiring.

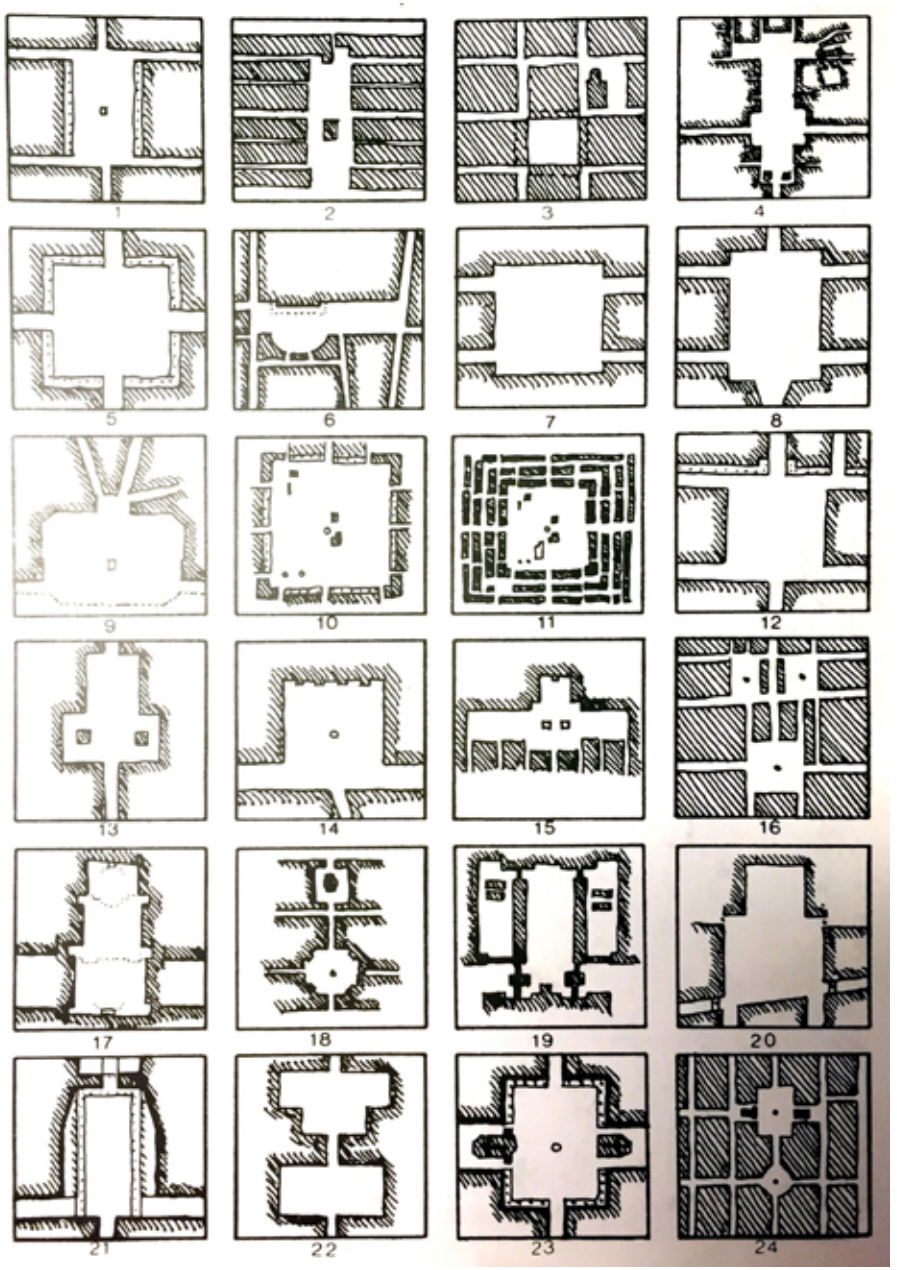


FIGURE 2.1 (Source: Rob Krier, 1979)
Typology of public space

2.3 ACTIVITIES IN PUBLIC SPACE

In 1971, Jan Gehl elaborated pedestrian space and activities and appealed to focus on the people in outdoor activities. (Jan Gehl, 1971) Later, he promoted to build urban public space to develop urban public life through the building process of pedestrian city in Copenhagen. (Jan Gehl, 1996) In 2003, his research developed to the whole Europe. He stressed the focus on pedestrians in public space and suggested to combine the public space with the development of public transportation. (Jan Gehl, 2003) In the survey of street activities in both trafficked and pedestrian streets in Sydney, Melbourne, and Adelaide, Australia in 1978, carried out by architectural students from the University of Melbourne and the Royal Melbourne Institute of Technology found a direct connection between street quality and street activity. (Jan Gehl, 2006)

William H. Whyte describes the close connection between qualities of urban public space and urban public activities and documents how often could such simple physical alternations can improve the use of urban public space noticeably in his book The Social Life of Small Urban Space. (Whyte, William H, 1980)

Several comparable results could be seen from a number of improvement of physical condition taken in New York and other cities all over the world by The Public Chance. (Fernández Per, Aurora, 2008)

Move and stay

Truly, "coming and going" activities and stationary activities are two kinds of important activities in pedestrian street. Pedestrian streets are both places to walk along and places to pass through. Jan Gehl explained his idea of stay and walk as spaces for walking-places for staying. (Jan Gehl, 2006)

Jan Gehl regards walking as the first and foremost type of transportation and a way to get around (Jan Gehl, 2006). Walking is the most fundamental and most common activity in pedestrian street. At the same time, it is the most sensitive one. Only when the pedestrian street is well-functioning with comfortable pavement surface, attractive function, pedestrian priority and dimension of streets will normal walking become an attractive and meaning, but not unavoidable one.

The fact that it is tiring to walk makes pedestrians naturally prefer to choose the shortest route.

Stationary activities are derivative from walking, among which two categories are divided- they need to stay or they want to stay. They need to stay because walking is a tiring activity. However, they want to stay only when the public space is nice and inviting. Jan Gehl divides staying condition into standing, sitting, seeing, hearing and talking, among which, standing is a stationary activity. Less demanding are required, only physical supports. The edge effect plays a very important role in standing and sitting situation, people prefer to stay along the facade or the transitional zone, then activities grow from the edge towards the middle. Standing and sitting landscape are also required.

Shared spaces

There are spaces that are accessible by cars and pedestrian-dominant to protect social space from the impact of cars, such ideas are described as shared spaces. (Matthew Carmona, 2010)

Normally, when fast moving cars and pedestrians meet in the cities, the cars overwhelm the pedestrians totally. The car becomes the king, and pedestrians always feel so small and weak.

" Shared space typically involves conventional road priority management systems and devices and the segregation of vehicles, pedestrians, cyclists and other road users, with an integrated, people-oriented understanding of public spaces, such that walking, cycling, and driving cars become integrated activities."
-- (Matthew Carmona, 2010)

FIGURE 2.2 Champs-Élysées, Paris(image from Google). It is a typical shared spaces, where pedestrian path is even wider than motor traffic lane.

FIGURE 2.3 Champs-Élysées, Paris(image from Google). The pedestian path is widen from 12 to 24m, kiosks and clutter have been removed to ensure the clear vision of pedestrians.

The keys to create shared spaces are **lower design speeds for cars** and **more attentive drivers**. Moreover, according to the research of Christopher Alexander , when pedestrian path is 18 inches above the fast-moving car road, with a low wall or railing, or balustrade along the edge, to mark the edge, and make the pedestrian path as wide as possible, pedestrians enjoy the priority over cars.

pedestrian path design reference. -- A Pattern Language, Christopher Alexander

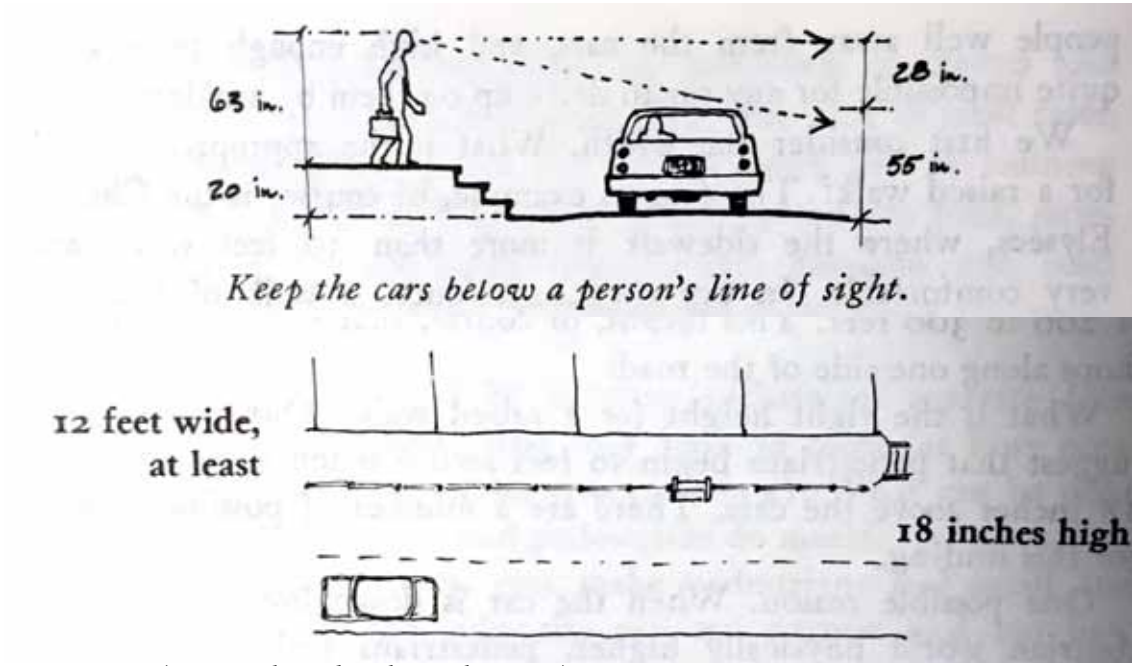


FIGURE 2.4 (Source: Alexander Christopher, 1977)

However, not every street is designed for staying in. There are many “busy streets” like the fifth Avenue in New York. It is a 11km major motor traffic street stretching from West 142nd Street to Washington Square North. It’s long and straight, with heavy traffic passing through. The situation is quite different from Champs-Élysées, the street is much more narrow and the pedestrian path is also not that wide. Despite this, the Fifth Avenue still functions well both for pedestrians and cars. In fact, most parts of the Fifth Avenue are single lanes, which help the car traffic keep flowing without cumber. Moreover, the Fifth Avenue becomes totally pedestrian in every summer Sunday.

Both of the two famous and successful streets are not forbidden for motor traffic to enter in, but they receive a great success for making the balance between motor traffic and passing pedestrians.

FIGURE 2.5 The Fifth Avenue, New York(image from Google). The car lane is much wider than pedestrian path, but still in good order. The main focus here is movement but not linger.

FIGURE 2.6 The Fifth Avenue, New York(image from Google). It’s always busy, full of cars and pedestrians, but dense road net helps to share the traffic burden and single lanes help to regulate the car traffic.

2.4 PEDESTRIAN STREET

Many architects or urban planners have written thousands of words to focus on the problem of pedestrian.

Jane Jacobs used street especially open space system consisted of pedestrian street and plaza to analyze the main basic point and regular unit of urban space and environment. (Jane Jacobs, 1961) Allan B. Jacobs summarize the approach to analyze all kinds of streets by street form, the rate of building height and street width, the material of pavement, the color of buildings, the beginning and ending space of street, the function of shadow and so on. (Allan B.Jacobs, 1993) Bernard Rudofsky firstly promoted street more closed to human beings. (Bernard Rudofsky , 1964) Louis Kahn pointed out that cities origin from public open space and street, so communication among people is the origin of city. (Louis Kahn, 1953) Jan Gehl from Denmark did research from Copenhagen to other European cities to study public space and urban pedestrian life.(Jan Gehl, 2001)

2.5 DESIGN RULES TRENDS

Four elements of thriving public spaces(Making Pedest):

a. Accessibility

Out of question, accessibility is the most important. There should be many entrance to the public spaces and many transit stops around. It's good to be connected well with public transportation, public spaces where are within 5 min walking from the bus stop are more active. Public transportation always help to bring more people together. Biking is unavoidable in pedestrian area for helping improve pedestrian volume and decrease parking. More intersections are better for creating more options for pedestrians.

b. Use

The use of public space should also be concerned to ensure it functioning well. Gehl suggested that the importance of space is determined by how people need to be brought together. Therefore, outdoor spaces are supported by activities. So it's closely related to residential density. More residents present more activities. But it's better not to be merely residential, mix use brings more people and more activities. University is a typical kind of mix use, areas around universities are usually active and full of activities. Urban attractions such as park, museum, market, theater are also a main attractive element for people living outside downtown.

c. Design

City centers are always with the most pedestrian traffic and perfect place for public spaces. Moreover, a successful public space should have clear defined center and edge. It's also very important to set a design element, such as fountain, clock, sculpture, which always attract people to stay around. The "edge effect" is very obvious in public spaces, which means people tend to stay along the edge instead of in the middle of public spaces.

Visual interest is very important for square design. Square space is hard to be seen from a far distance, however, high visual interest acts as a landmark to attract visitors. Buildings around public space are also another important visual interest, which should be narrow with frequent entrance, varied facade. Most of the time, smaller scale in

public space is better than bigger one, because it's better to experience and easy to talk to and see each other. Amenities such as bench, landscape, water feature, sculpture, light and so on are important elements for public spaces, which in together form a whole idea of public space. Sittable spaces should be paid special attention, where people stay for a long time.

d. Comfort

Weather plays a very important role in public space. Public activities in public spaces differ so much in summer and winter especially in northern Europe. Moreover, European like sunny weather while Asian preferred sheltered space. Physical comfort like protection from wind, access to sun, sheltered space are required to ensure the use in any weather condition.

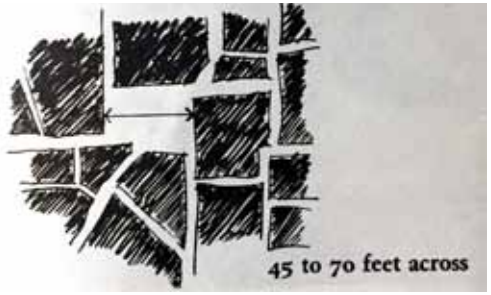
FIGURE 2.7 small public square scale (Source: A Pattern Language, Christopher Alexander, 1977)

Square design

Scale

As discussed in A Pattern Language, we have several scale for a general good square design. (Christopher Alexander, 1977) The first one is pedestrian density. A place begins to seem deserted when it has more than about 300 square feet per person. So the small squares always feel more comfortable. The second one is diameter. A person's face is recognizable only within 70 feet (about 21m) and a loud voice can just be heard across 70 feet (about 21m) under urban noise condition.

Therefore, the squares work best when the diameter is about 60 feet (about 18m), that's when they become favorite places and attract people to go there. When the diameter is over 70 feet (about 21m), the square begins to seem a little deserted and unpleasant.



Participants and activities

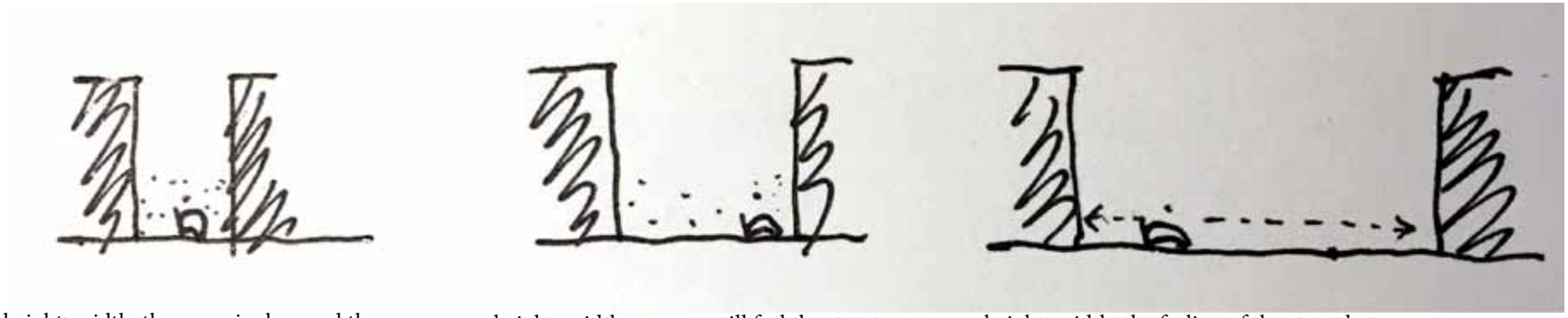
Generally, different kinds of people have different desire for public space, so it's natural to divide their requires. Men seek corners where they could spend time taking and enjoying meals and drinks; children need playground that is safe and interesting with lots of playmates; women need space to talk to other mothers and watch their children play at the same time; teenagers need corners to wait for their friends and share their secrets; the elders need corners that they can sit still to meet their old friends.

Edge

Definite shape is determinant to judge the public space is positive or negative. People seek areas that are partly enclosed and partly open. When a place with a back and a view into a larger space, people feel comfortable.

The rate of height and width

Most of the case, when width of street is similar with height of buildings or even smaller than height, the pedestrian street often enjoy a better result and more comfortable and pleasant. The street sense lost when the width is over height or even wider.



height>width, the space is clear and the sense of street is strong.

height=width, one can still feel the street.

height<width, the feeling of the street lost

FIGURE 2.8 Relationship between height of building and width of street (Author: Jing Li)

3. SITE ANALYSIS

GOTHENBURG HISTORY

FIGURE 3.1 Historical picture of Gustaf Adolfs torg (Source: Google)

FIGURE 3.2 Historical picture of Stadskärna area in 1500s (Source: Google)

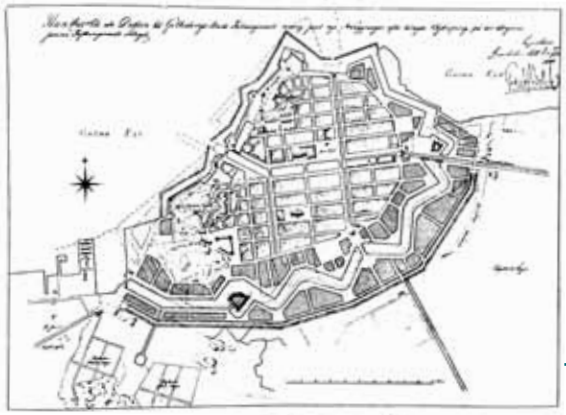


FIGURE 3.3 Historical picture of Stadskärna area in 1808 (Source: Göteborgs utbyggnad, 1977)

The history of Gothenburg begins with the foundation of the heavily fortified town in 1621. The current city center developed at that time with the development of harbor, trade men from Holland, Germany and Scotland began to build house in the north part of the canal.
Gustaf Adolfs torg was also built at that time as a square for trade transition.

1621 **1650** **1700** **1750** **1800**

In 1700s, Haga and Masthugget was developed as site for houses built for harbor workers.

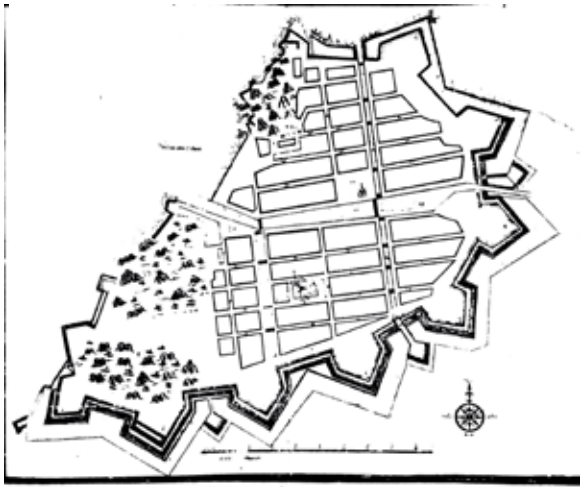


FIGURE 3.6 Historical picture of Stadskärna area in 1644 (Source: Göteborgs utbyggnad, 1977)

FIGURE 3.7 Historical picture of Haga area (Source: Google)

FIGURE 3.8 Historical picture of Haga area (Source: Google)

FIGURE 3.4 Historical picture of Stadskärna area (Source: Google)

FIGURE 3.5 Historical picture of Nordstan Shopping Complex (Source: Google)

In 1866, the first city plan competition was done for Gothenburg. It's a grid plan with broad tree-lined boulevards from Kungsportsavenyen to Vasagatan. Planners only followed part of the plan. In 1870s, buildings was began to be built in Vasagatan.

Nordstan Shopping Complex was finished in 1972.

1850 **1866** **1900** **1950** **1960** **1972** **2000**

For more than 200 years, buildings were only built inside moat, Haga and Masthugget. Between 1850 and 1900, with the growing number of population, the city expanded outside the moat to Majorna in 1868, Annedal in 1869, Landala in 1876, Gibraltar in 1877 and Änggården in 1892.

In 1960s, with the trend of pedestrian city in Europe, pedestrian street rules have been introduced to Gothenburg. Kungsgatan, Korsgatan and Fredsgatan are the first pedestrian streets. Gradually, the pedestrian district spreads to Vallgatan, Södra Larmgatan and Östra Larmgatan.

The planning of Nordstan Shopping Complex was made in 1960.

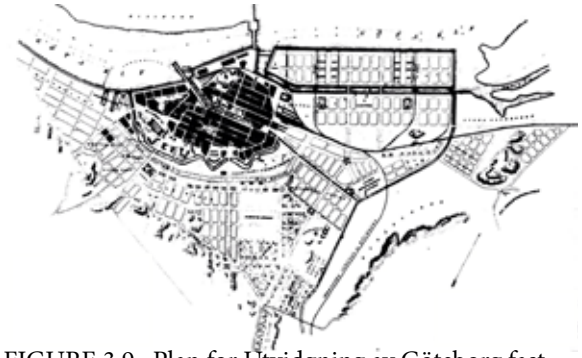


FIGURE 3.9 Plan for Utvidgning av Göteborg fastställd in 1866 (Source: Göteborgs utbyggnad, 1977)

FIGURE 3.10 Historical picture of Stadskärna area (Source: Google)

FIGURE 3.11 Historical picture of Stadskärna area (Source: Google)

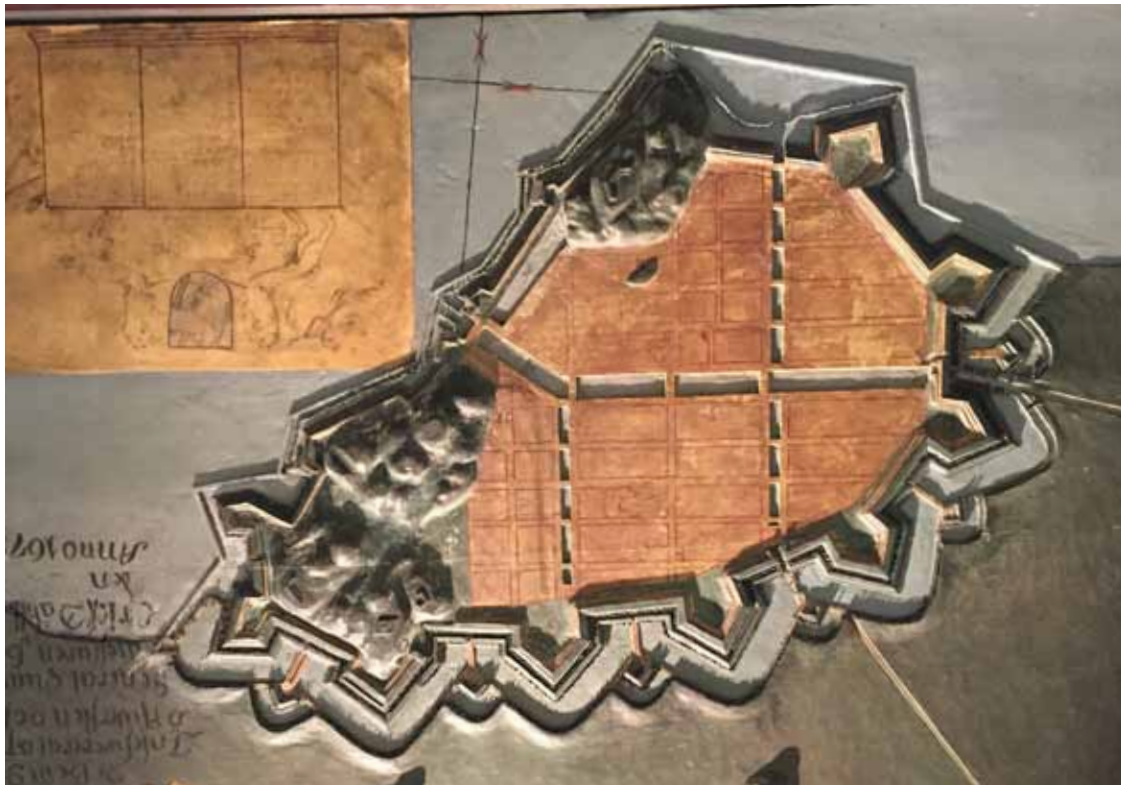


FIGURE 3.12 Plan of Stadskärna area in 1678 (Source: Gothenburg City Mu-

Historical development of Stadskärna area

Gothenburg has developed from a harbor. Harbor has always been a workplace and used to play an important role in city. When core harbor activities moved away, the harbor was no longer a place to meet and work. Quickly, car traffic took the place of workplace and city life died.

FIGURE 3.13 Plan of Stadskärna area in 1810 (Source: Gothenburg City Museum)

FIGURE 3.14 Plan of Stadskärna area in 1861 (Source: Gothenburg City Museum)

FIGURE 3.15 Plan of Stadskärna area in 1900 (Source: Gothenburg City Museum)

Historical pictures of Stadskärna area

From the mid 19th century trade of goods expanded in Gothenburg. The southern part of Östra Hamngatan was the principal shopping area. Businesses here included bookshop, furnishing store and coat factory and shop. Another lively shopping street was Korsgatan, with furnishing store and tea shop, fashion store.

Harbor
FIGURE 3.17 (Source: Gothenburg City Museum)

FIGURE 3.16 Model of Stadskärna area in 1800s (Source: Gothenburg City Museum)

Gustaf Adolfs Torg
FIGURE 3.18 (Source: Gothenburg City Museum)

Bank of Canal
FIGURE 3.19 (Source: Gothenburg City Museum)

Saluhalen Square
FIGURE 3.20 (Source: Gothenburg City Museum)

The contrast of historical pictures and current pictures

FIGURE 3.21 (Source: Gothenburg City Museum)
Kungstorget in 1850

FIGURE 3.22 (Source: Gothenburg City Museum)
Kungstorget in mid 1800s

1850.Kungstorget used to be one of the city's oldest square. The square was a workplace, a place to sell and transport goods.

FIGURE 3.23 (Author: Jing Li) Kungstorget in 2015

FIGURE 3.24 (Author: Jing Li) Kungstorget in 2015

2015. The same square occupied by parking most of the time. Sometimes, there will be flowing market selling flowers and plants there.

The contrast of historical pictures and current pictures

FIGURE 3.25 (Source: Gothenburg City Museum)
Kungstorget in 1800s

FIGURE 3.36 (Source: Gothenburg City Museum)
Kungstorget in 2015

1800s. The harbor canal used to be filled with boats transporting goods and streets were occupied by carriages.

2015. The same canal is no longer used to transport goods but visiting channel for tourists nowadays. Streets are divided into vehicle lane and pedestrian pavement.

FIGURE 3.27 (Source: Gothenburg City Museum)
Kungstorget in 1800s

FIGURE 3.28 (Source: Gothenburg City Museum)
Kungstorget in 2015

1800s. Gustaf Adolfs torg has long been a market of the city. Then Brunnsparken was only an island in the middle of Hamnkanalen.

2015. The same place becomes the busiest traffic hub in Gothenburg and people move here day and night.

LAND USE AND BUILDING USE

From the land use and building use we conclude that most buildings are commercial or mixed use. Moreover, greenery and waterfront areas are abundant in the study site.

FIGURE 3.29 (Author: Jing Li)

FIGURE 3.30 (Source: Google map+ author: Jing Li)

BUS STOPS AND TRANSIT HUBS AROUND THE SITE

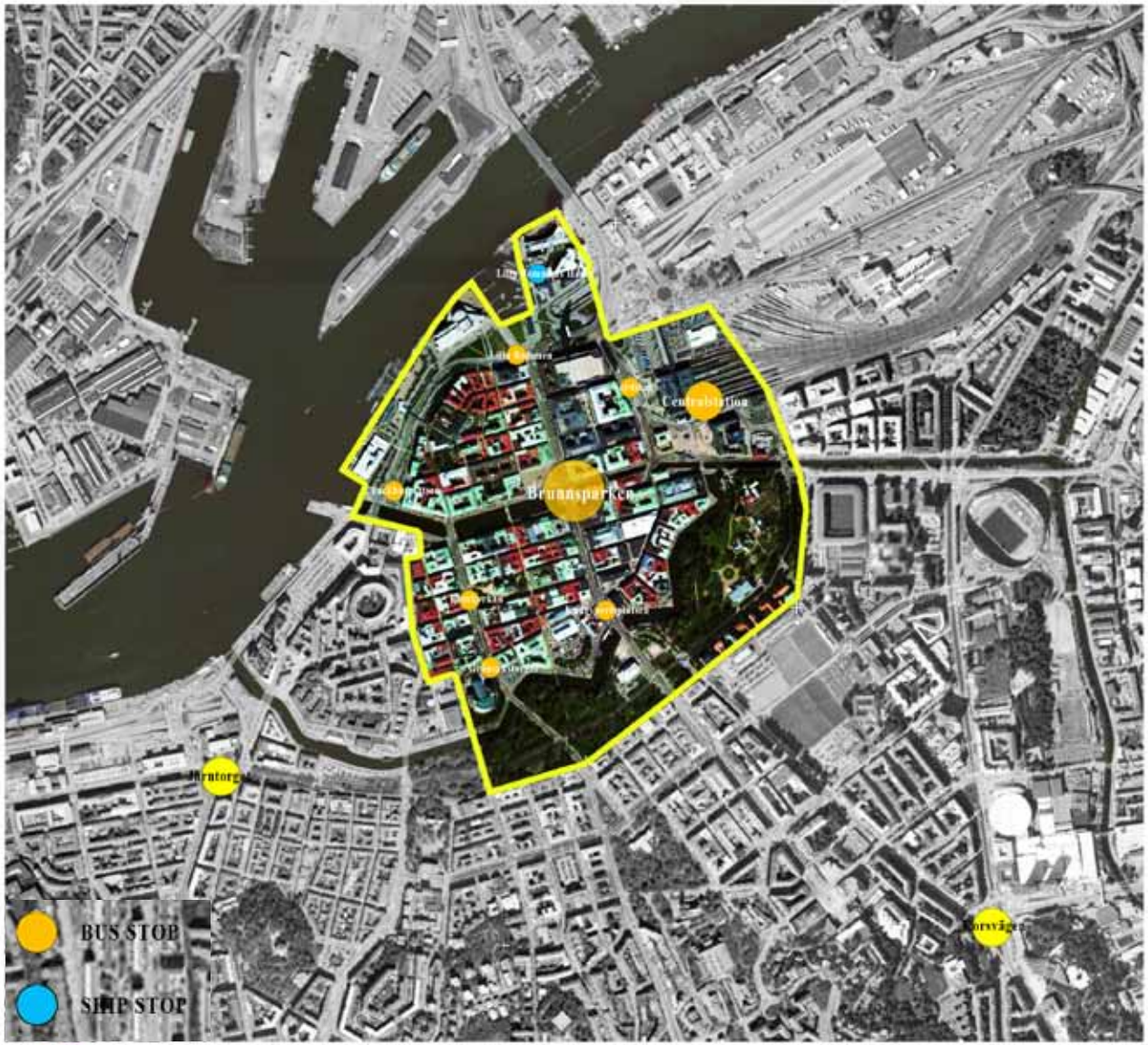


FIGURE 3.31 (Author: Jing Li)

Pedestrian street development in Stadskärna area

Three earlist pedestrian streets in 1960

Nordstan Shopping Complex began to be transformed as an indoor shopping mall in 1972

The pedestrian priority area extends a lot until now

There is a complete and highly effective public transportation system in Gothenburg. There are several main traffic hubs: Brunnsparken, Centralstation, Korsvägen, Järntorget, which form a public transportation net in Gothenburg and connect the whole city together tightly. There are six other small bus stops in the site and a ferry terminal, which makes the site easy to be reached by visitors.

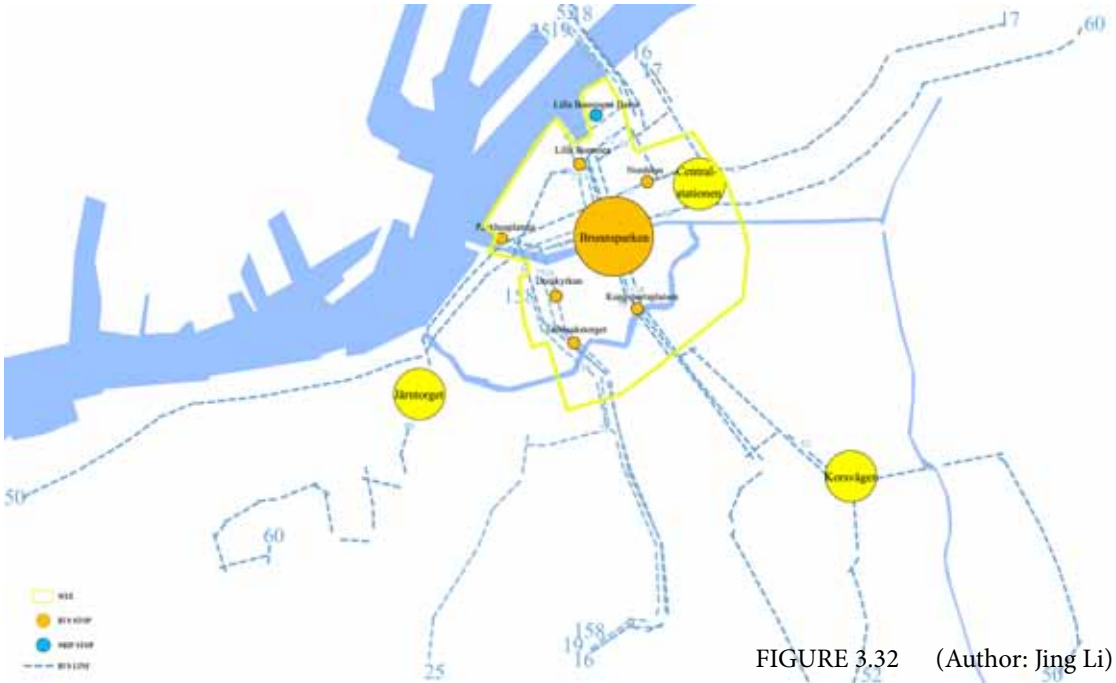


FIGURE 3.32 (Author: Jing Li) Bus lines

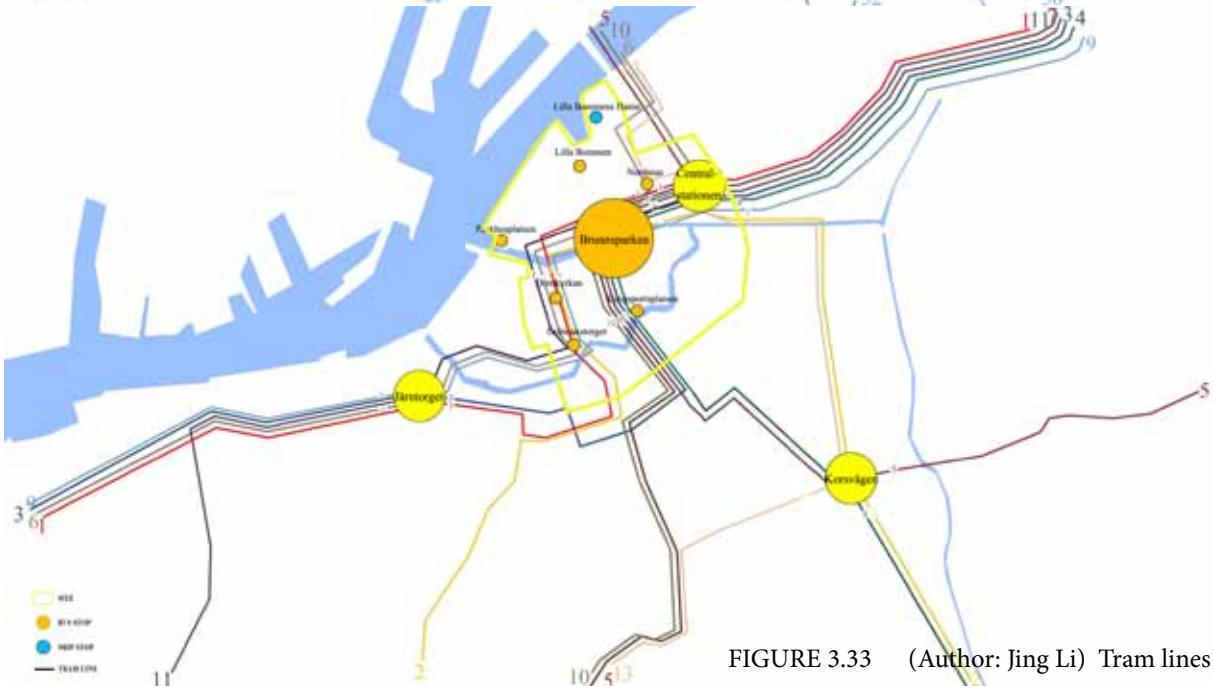


FIGURE 3.33 (Author: Jing Li) Tram lines

BUS LINES AND TRAM LINES THAT CONNECT THE SITE WITH THE WHOLE CITY

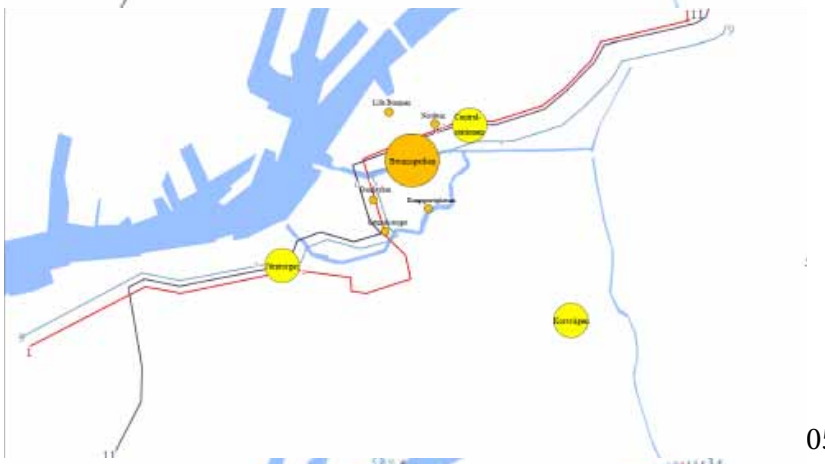
In central Gothenburg, there are nine exsiting bus lines, eleven tram lines and two ship lines, which connect the whole Gothenburg city tightly with the city center. People nearly from every corner of the city could get to the city center conveniently, mostly within half an hour. Moreover, the public transportation is highly accessible not only in distance but also in timetable. The public transportation in Gothenburg is accurate and most of the lines come every 15 minutes, even within 10 minutes in rush hours. I list out the bus lines and tram lines to check the accessibility of the study site at midnight. It shows the site is easily accessible even at night.All these contribute to the full usage of public transportation and the safety, vigor and success of the pedestrian area.

WEEKDAY

23:00

03:30

00:30



05:00

02:00

05:30

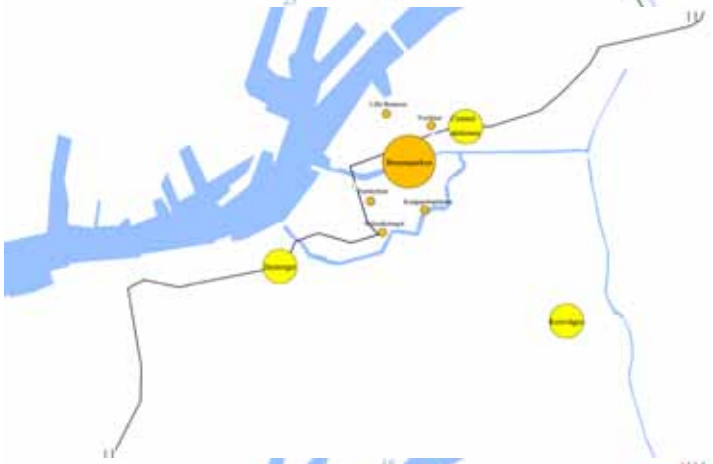
FIGURE 3.34 (Author: Jing Li)
Tram lines and bus lines that you can still take at different time in midnight

WEEKEND

23:00

03:30

00:30



05:00

02:00

05:30

FIGURE 3.35 (Author: Jing Li)
Tram lines and bus lines that you can still take at different time in midnight

THE EXISTING TRANSPORTATION PATTERN IN THE STUDY SITE

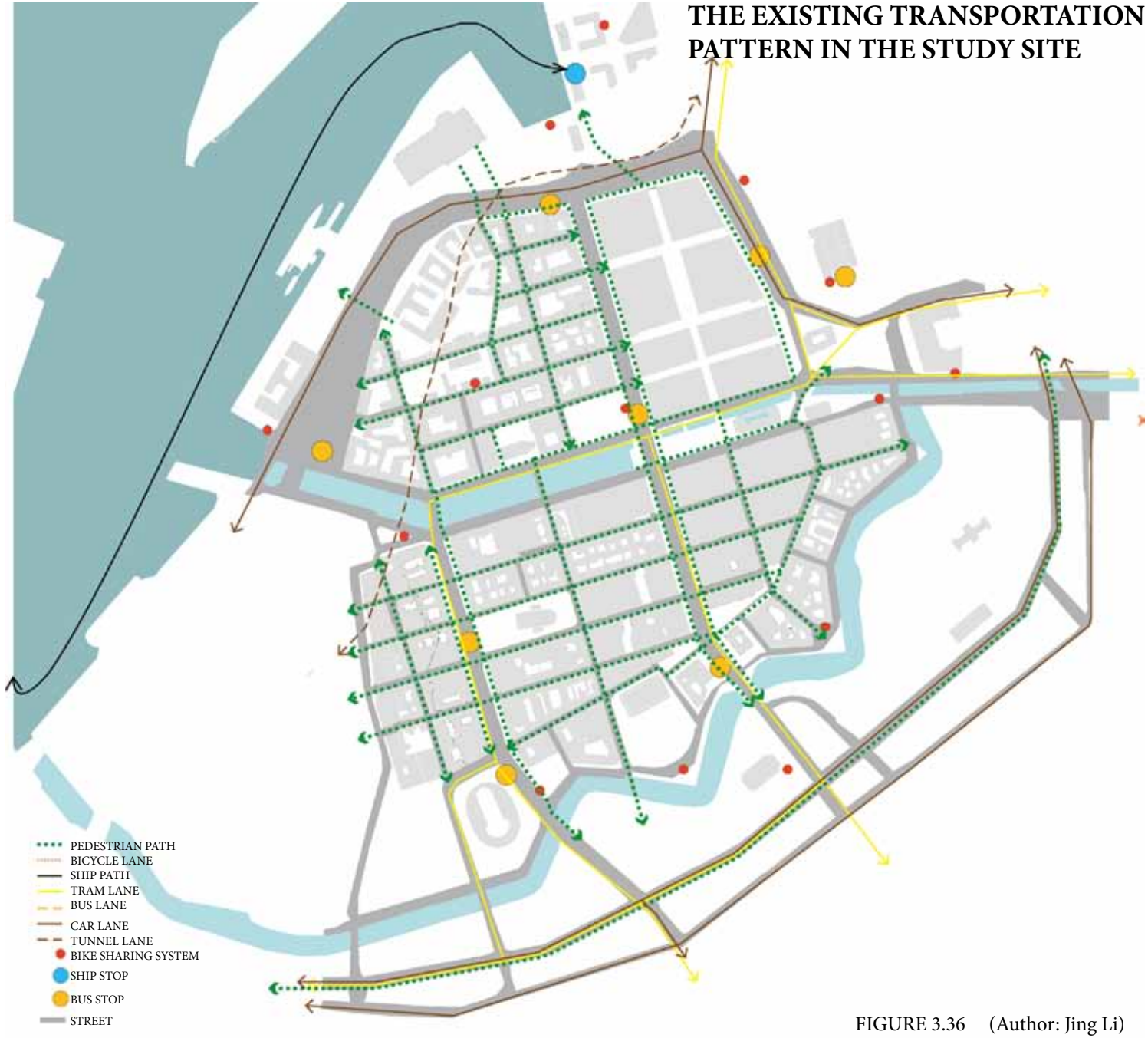


FIGURE 3.36 (Author: Jing Li)

FIGURE 3.37 Gothenburg traffic zone system plan ,1960s. --(Source: Göteborgs utbyggnad, Chalmers Tokniska Hogskola, 1977)

The motor traffic especially car traffic in this area is strictly controlled from 1960s together with developing the three earliest pedestrian streets. The traffic zone system plan was made at that time to solve the conflict with pedestrians and reinforce pedestrianism. The Stadskärna area was divided into five parts, the motor traffic interconnection among them were blocked. Main streets inside the circle were only accessible for buses and trams, while car lanes were guided around the circle. In that case, a safe and lively pedestrian environment was created to insure the further development of larger pedestrian area.

THE EXISTING TRANSPORTATION PATTERN IN THE STUDY SITE

FIGURE 3.38 (Author: Jing Li) **Pedestrian path**

FIGURE 3.39 (Author: Jing Li) **Bicycle lane**

FIGURE 3.40 (Author: Jing Li) **Ship route**

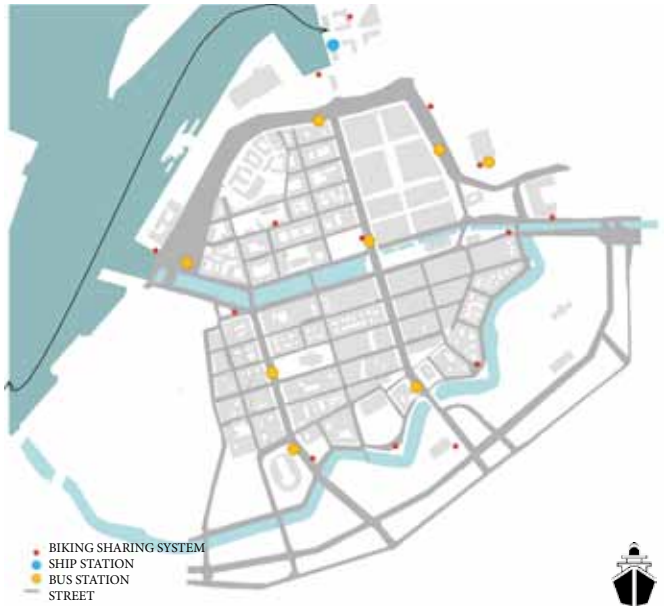


FIGURE 3.41 (Author: Jing Li) **Space where people stay or move**

FIGURE 3.42 (Author: Jing Li) **Tram lane**

FIGURE 3.43 (Author: Jing Li) **Bus lane**

THE EXISTING TRANSPORTATION PATTERN IN THE STUDY SITE

FIGURE 3.44 (Author: Jing Li) **Car lane**

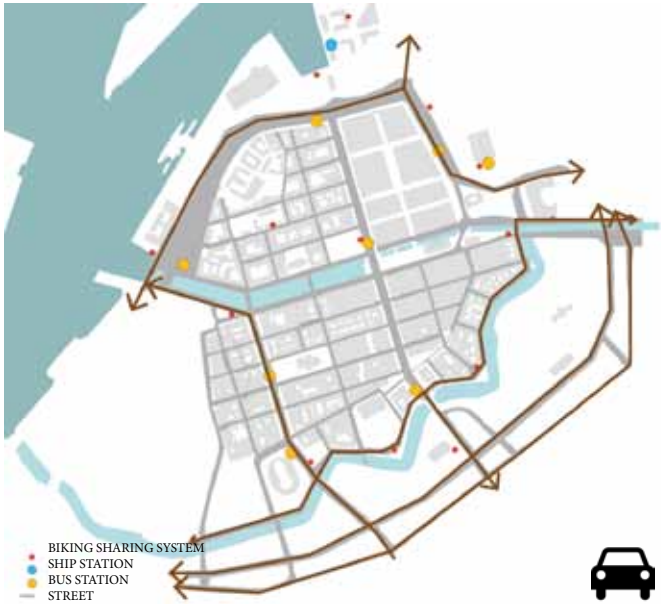


FIGURE 3.45 (Author: Jing Li) **Tunnel**

PUBLIC SPACE PATTERN

Public activities can be divided into two big categories – move and stay. Basic activities such as walking, standing, sitting, as well as seeing, hearing and talking are used as a starting point for they are the basis of nearly all the other activities. Pedestrian paths are always regarding as moving action, while squares, public buildings, inner yards, parks, parking are for staying in. There are numerous types in each section of city center, representing different environment condition and accessibility level.

PEDESTRIAN PATH

Pedestrian path in the building

Semi-public pedestrian path

Pedestrian street Drottninggatan

Pedestrian path along the canal

Pedestrian bridge Bazarbron

Footbridge over Ostra Hamngatan

SQUARE

Market square near Kronhuset

Gustaf Adolfs torg near city hall

Square in the Domkyrkan Göteborg yard

Waterfront square in Brunnsparken

Waterfront square in Brunnsparken

Waterfront square in Lilla Bommen

Market square in Kungstorget

Market square in Magasinsgatan

PUBLIC BUILDING

Gothenburg Opera

Gothenburg City Planning Exhibition

Domkyrkan Göteborg

Saluhallen

Gothenburg Museum

PARKING

Kungstorget

INNERYARD

Inneryard in commercial block

Inneryard in residential block

PARK

Trädgardsföreningen on one side of canal

PEDESTRIAN PATH

Pedestrian bridge over the canal

WATERFRONT AREA

Along the canal

FIGURE 3.46 (Author: Jing Li)

ABSTRACT PUBLIC SPACE PATTERN ICON

MOVE

PEDESTRIAN PATH

1. indoor path,
with door, opening time
Mon-Fri, 10:00-19:00
Sat, 10:00-17:00
Sun, 12:00-16:00

2. half-indoor path,
with shelter, accessible all the time

3. outdoor path,
building+building,
accessible all the time

4. outdoor path,
building+waterfront,
accessible all the time

5. outdoor path,
waterfront+waterfront,
accessible all the time

6. skyover,
over motor traffic street,
accessible all the time

STAY

SQUARE

1. kronhuset,
christmas market
with fence, opening time

2. Gustaf Adolfs Torg,
exhibitions/leisure,
accessible all the time

3. Gothenburg Cathedral,
no activities,
accessible all the time

4. waterfront square,
stage/leisure,
accessible all the time

5. waterfront park,
transit hub/leisure,
accessible all the time

6. waterfront square,
leisure/boat station,
accessible all the time

7. flowing market square,
flowing market/parking,
accessible all the time

8. Kungstorget,
flower and vegetable market,
accessible all the time

9. waterfront square,
leisure/lack of activities,
accessible all the time

10.playground,
skate board/ rock climbing,
accessible all the time

PUBLIC BUILDING

1. opera house,
opening time

2. urban planning exhibition,
opening time
Mon-Thur, 15:00-19:00
Fri-Sun, 11:00-15:00

3. church,
opening time

4. saluhallen,
indoor market,opening time
Mon-Fri, 09:00-18:00
Sat, 09:00-16:00
Sun, closed

5. Gothenburg Museum,
opening time

INNER YARD

1. residence,
with fence, opening time,
limited entry

2. public function,
with fence, opening time,
limited entry

3. cafe,
accessible all the time

PARK

waterfront park,
accessible all the time

PEDESTRIAN PATH

7. bridge,
outdoor cafe/walking,
accessible all the time

PARKING

parking along the street
or in the square

ABSTRACT TYPE OF PUBLIC SPACE

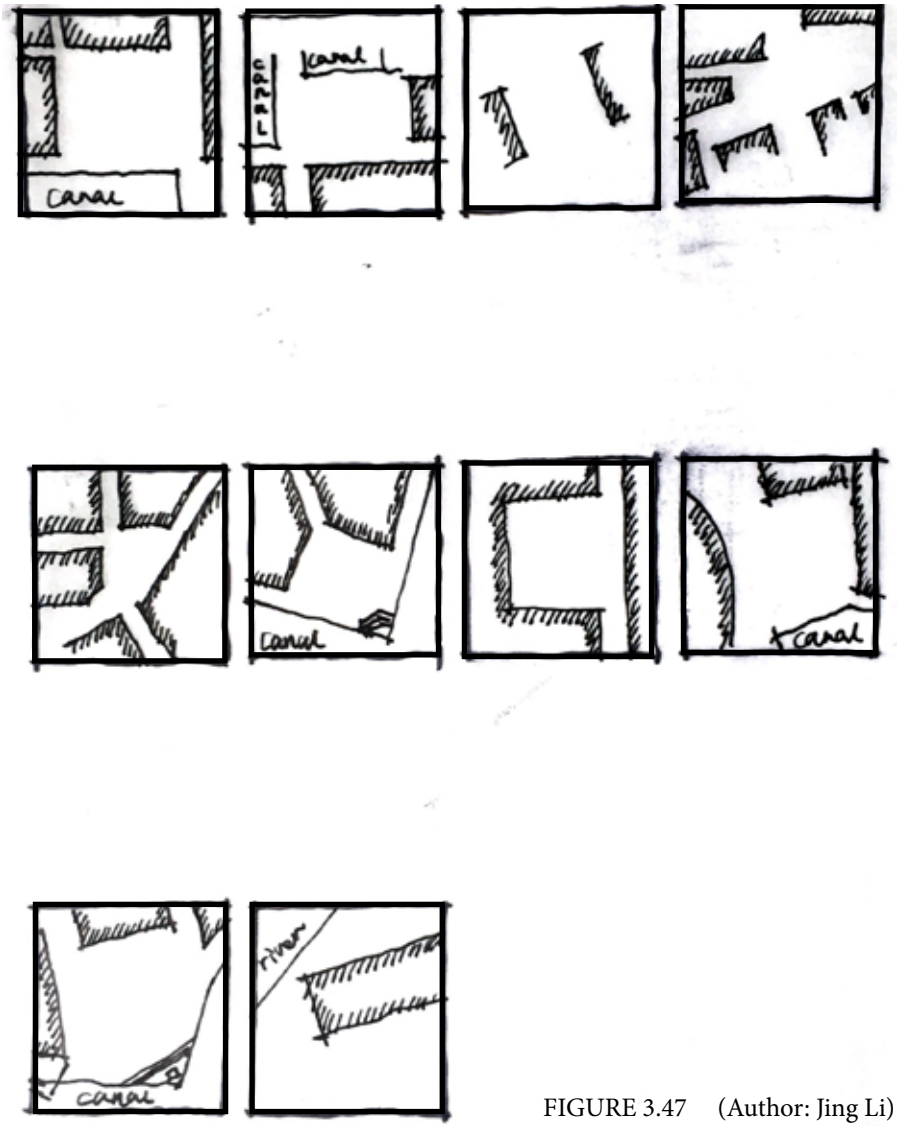


FIGURE 3.47 (Author: Jing Li)

I abstract public space pattern in this site. Some of them are clearly defined by buildings, street and canal, some are just broaden streets without clear definition. All squares are of the same scale.

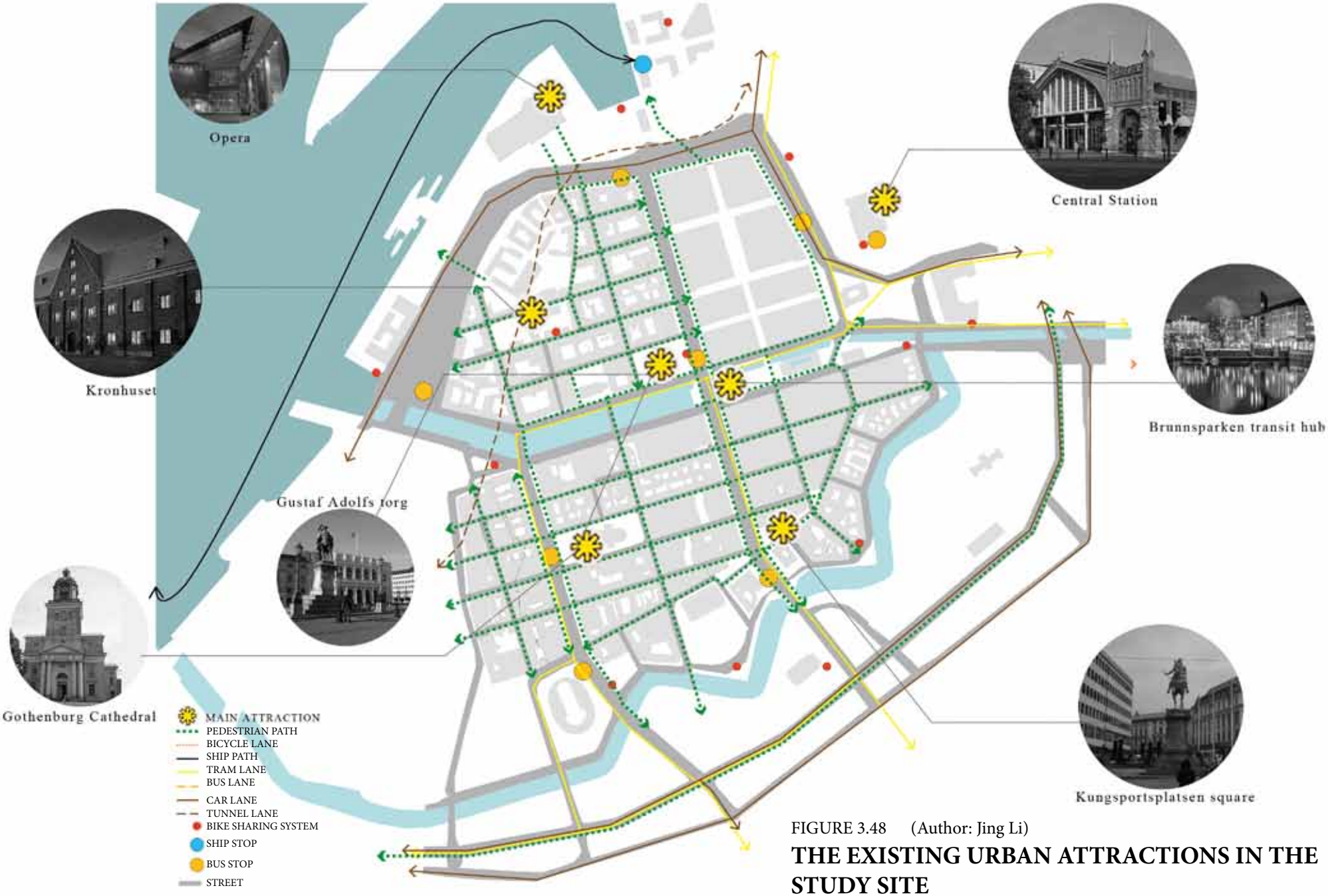


FIGURE 3.48 (Author: Jing Li)

THE EXISTING URBAN ATTRACTIONS IN THE STUDY SITE

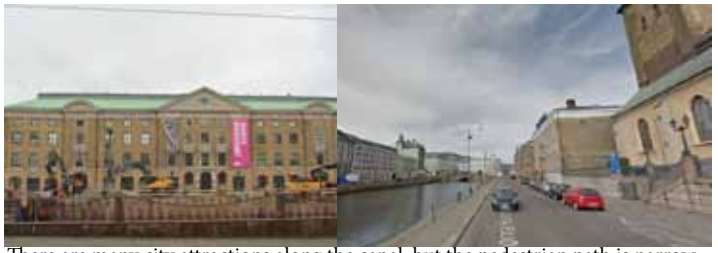
Urban attractions are attractive source that draw people's attention.

4. DEFINING THE PROBLEM

IDENTIFIED PROBLEMATIC SITES

FIGURE 4.1 (Author: Jing Li)

The dock has excellent view but is empty.



There are many city attractions along the canal, but the pedestrian path is narrow and the waterfront strength is not functioning at all.

The comparison situation of two sides of the canal is obvious. The park side is full of trees and grass, as well as a paradise for burning the sun and resting oneself.

Pedestrians along the other side of the canal have the desire to stop and have a rest but there is not enough space. so they sit along the edge.

the transit hub is an unavoidable passway and there is canal and woods as well. But few people are willing to stay.

The sink platform used to offer a place to get on and off the boat, but is useless nowadays.

The sink square along the canal is lively gives a chance to get close to water, but it's hardly noticed from the street.

Defining the problem and sensing the gap

After analyzing pedestrian and public space situation and identifying a number of elements of Stadskärna area in the previous chapters, it was a consequence to define the problem and reuse the gap in the area and its most significant places.

Then I selected the most significant places in central Gothenburg. There are as follows:
1.waterfront area: Göta älv, next to the canal
2.urban nodes of attractions: traffic hub node, central station square
3. connections between nodes

1. Waterfront area

1.1. Waterfront area of Göta älv

The whole area is closely related to waterfront area, so it is necessary to be able to have a good communication with water and waterfront, and without being interrupted by motor traffic and streets. While the waterfront area is not functioning well here, especially along the river Göta älv, the quality of spaces to stay here is not attractive enough and the accessibility from the other side of the road Sankt Eriksgatan is weak. People visit the site to go to the Opera and sit down to enjoy waterfront views. Nevertheless, the area around the Marine Museum is far less developed. So the problem here is to strengthen the connection of the two sides of the street Östra Hamngatan and improve the passing quality as well as to redevelop the potential public space around the Marine Museum area. This is important to create easily accessible and attractive waterfront area.

1.2. Waterfront area of the canal

The problem of canal part is that the space is used in a different way as the other areas of the city center. People lying on the slope bank of the canal have an intention to watch people moving. As is mentioned by Alexander, public life is a place where you can go to see people and to be seen, which means every one has an intention to sit down to be the audience and to play the role of their daily life. (Alexander Christopher, 1977) While on the other side of the river, there exists only motor cars and few pedestrians for the path is too narrow and public space along the river is of poor quality. Moreover, the resi-

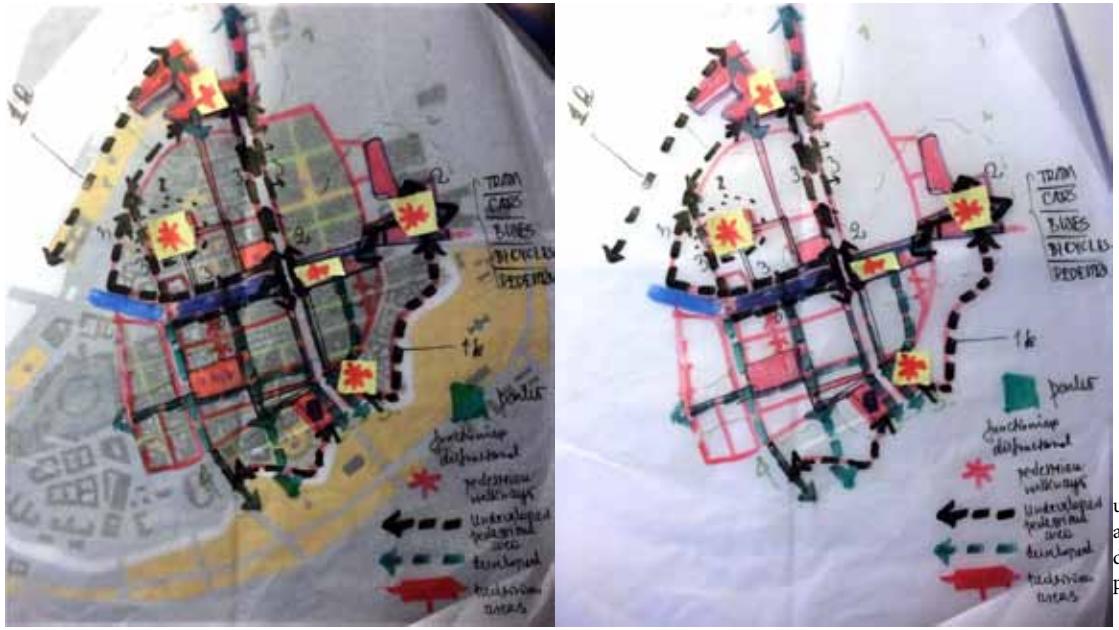


FIGURE 4.2 Site analysis sketches (Author: Jing Li)

dential function are in conflict with commercial activities. Residential buildings block the view of the canal.

2. Urban nodes of attractions

2.1. Traffic hub node

The main attractions of the Stadskärna district include Gothenburg city hall, Gustaf Adolfs Torg, Gothenburg Museum and so on. Naturally, the node that contains Gothenburg city hall, Gustaf Adolfs Torg, waterfront square, the main road Östra Hamngatan, Brunnsparken bus stop and traffic hub becomes the very important node and accommodates the most diverse problems.

The square in front of Nordstan and besides the bus stop Brunnsparken is a waterfront square with big green trees and traffic hub as well. It is situated along the canal. At the same time, it links Fredsgatan with Nordstan and locates at the opposite side of Gustaf Adolfs Torg, however, the main road Östra Hamngatan is always full of cars and buses, which makes it quite difficult to pass through and adds difficulty for pedestrians to move around freely around the node.

2.2. Central station square

Large amount of pedestrian volume comes from and to central station, which causes conflicts with motor traffic on the intersection.

3. Connections between nodes

Among such nodes, some pedestrian connections are strong, some weak. There are large volumes of pedestrians along Kungsgatan, Västra Hamngatan, Korsgatan, Kungstorget, Fredsgatan, Norra Hamngatan in front of Nordstan and Östra Hamngatan from traffic hub to Kungsportsplatsen. While connections from traffic hub along Östra Hamngatan to opera, along the two sides of the canal to Gothenburg Museum, along Sankt Eriksgatan, Smedjegatan and all the way along the canal opposite of the park part are quite weak and not functioning well. Obvious phenomenon in these streets have been noticed: sidewalks are narrow with few pedestrians walking on and none of them stopping or staying along the street.

It is particular important to identify connections between public space pattern in the pedestrian area. Only when attraction nodes are closely related to one another can there be integrated into public space framework and lively street life.

Detail analysis of the site

The site can be divided into eight parts.

The riverside area represents rich waterfront area resource and attractive public architecture including opera, maritime museum and city planning exhibition hall. But there are still few people staying there. This part is particular separated from the other public spaces because of the busy urban street. It is a leftover part of this area, which determines less pedestrians passing by. In that case there should be more attractive activities added to the site.

The city hall area is mixed with residential housing and public architecture such as museum, city hall, exhibition hall and church. Most of the time, this part of the site is not crowded. Commercial activities are never the theme of this area, while residence always plays an important role. This part of the city is full of blocks and there is little space left for greenery. Although it is close to the canal, the waterfront part has not been developed much. Moreover, the space of pedestrian path along the canal is taken by the motor traffic, which makes the path from the

square to museum not attractive to walk through.

The Magasinsgatan area occupies the west side of the central area, and it is separated from the other parts of the site by the main street Västra Hamngatan. While crossing the intersection, the pedestrian flow is not obstructed by the motor traffic, which is under control here and the speed is restricted. Pedestrians could still have a dominant role.

The Gothenburg Cathedral area is highly occupied by commercial activities. The Cathedral is the main attraction in this part of the city and pedestrian street here is highly equipped. This area contains two earliest pedestrian streets, which are fully developed as heated paths that will never be frozen even in cold winter. The design seems to be more useful in the Northern Europe, because the winter here is long and cold. Visitors can walk from the park to Korsgatan to the city hall through two bridges, where they can also get a close look at the canal. The fact that the Gothenburg Cathedral area is located between two canals, the waterfront area is empty and used by the motor traffic and parking most of the time. Pedestrian activities could be more introduced along the canal.

The Nordstan Shopping Complex area is the biggest indoor shopping mall in Northern Europe. The idea of providing a solution for shopping street is practical in Northern Europe, however, indoor shopping area is quite different from the traditional pedestrian street. It isolates the relationship between pedestrians and urban public spaces and forbids pedestrian flows to waterfront area. It lies opposite to the Central Station, from where large number of pedestrians enter. An underpass was designed from the station to Nordstan to avoid the conflict between pedestrians and motor traffic, which works pretty well.

The Brunnsparken transit hub area is a typical waterfront area as well as an unavoidable path from Fredsgatan to Nordstan. This location is very important here, as it functions as the connection as well as in-between space among blocks. It is also the sight attraction when coming from the Central Station square that attracts people to enter the building. The location is excellent, but it doesn't provide enough sitting area or open space for activities.

The Fredsgatan area is half commercial and half residential. The inside part of the area is more lively because there are shops along the street, while the outer side is much more quiet. These residential buildings block sight connections with the canal, so few people pass through to the waterfront.

The park area is active all the time especially during summer when it's sunny. The slight slope of the bank provides a perfect place to enjoy the sun and good perspective to view the canal. Disappointed, the other side of the canal is not attractive enough. People sitting on the slope share the same feeling as people sitting in the street coffee, they want to see people and to be seen at the same time. So there is a huge potential to connect the two sides of the canal together.

Summary

Seen from the analysis above, pedestrians in the Stadskärna area move forward without stopping. They stop mostly because of physically tired. While the resource around the area is abundant, it will be a great waste if they are not perfectly used. Therefore, it is a

DETAIL ANALYSIS OF THE SITE

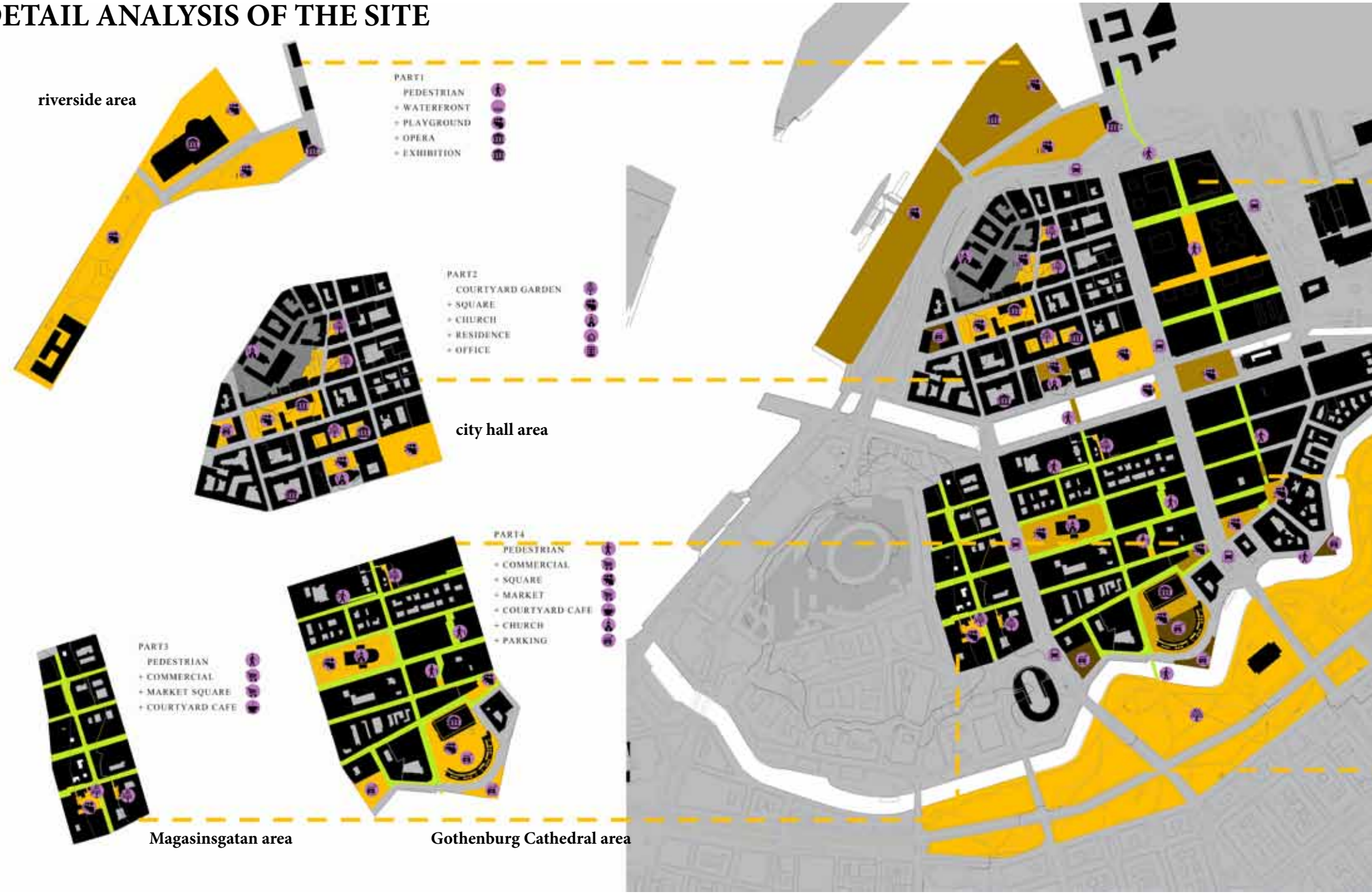


FIGURE 4.3 (Author: Jing Li)

great potential to make full use of the resource, in that case, the whole pedestrian area will beactivated and great vitality will be created. As it is mentioned in the beginning part, Streets should be for staying in, and not just for moving through, the way they are today.

In conclusion, there are plenty of public space here, including squares, parks, waterfronts, museums, markets and so on, and some of them are quite attractive. So the biggest problem of this area is that **these urban attractions are less accessible in places where cars and pedestrians meet** and **connections between public spaces are not strengthened**.

5. THE PROBLEM ANALYSES

DIAGRAM OF THE GAP

I sense the gap and mark them out in the sketch.

The heavy traffic road and viaduct Sankt Eriksgatan is a big gap blocks the connection with the dock area and obstructs pedestrian flow. Two pedestrian bridges above avoid the conflict but don't receive much result.

The second heavy traffic road Nils Ericsonsgatan is also a big gap blocks the relationship with Central Station. There is a sink square just in front of Central Station as underground entrance to Nordstan.

The residential housing blocks along the canal is a huge barrier block the entire commercial street from the waterfront.

In total, the inside commercial pedestrian area is blocked in three directions, consequently, it becomes totally introverted.

The main street Östra Hamngatan is not a barrier, but it interferes the connection of the two sides. Then, they seem to be two loops.

Most waterfront area is deserted because of poor quality of public space.

FIGURE 5.1 (Author: Jing Li) Gaps of the site

FIGURE 5.2 (Author: Jing Li) Gaps of the site. Busy streets and residential buildings block the waterfront and make the site introverted.

INTROVERTED

FIGURE 5.3 (Author: Jing Li) Gap inside the site. The main street affects the connection of two sides but not too much.

TWO LOOPS

PROCESS

FIGURE 5.4 (Author: Jing Li)
The diagram shows the main pedestrian lines that have large amount of walking people. Most pedestrians walk along Östra Hamngatan, the north side of canal and three original pedestrian streets.

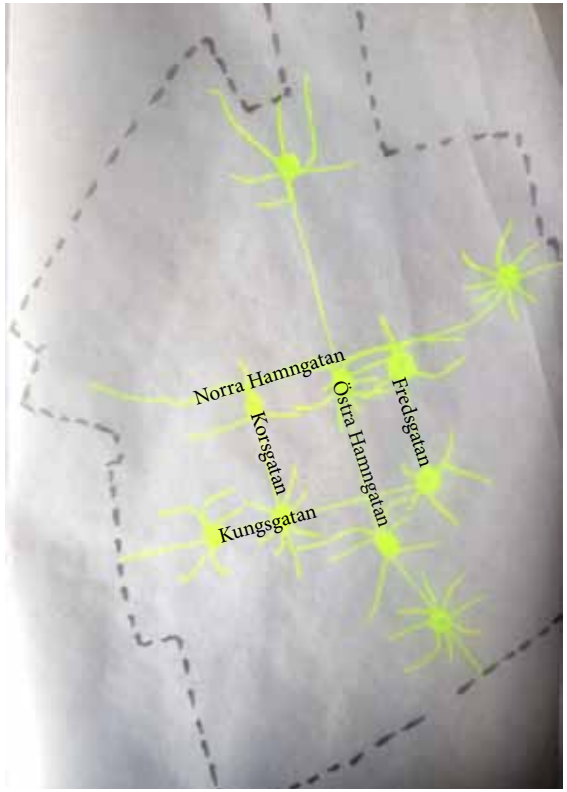


FIGURE 5.5 (Author: Jing Li)
Activity nodes are spots that are surrounded with a combination of supportive facilities and comfortable public space to ensure public activities functioning well. Bus stop Lilla Bommen, Brunnsparken, Kungsportsplatsen and park entrance are the activity nodes along Östra Hamngatan. Gothenburg Museum, Christinae Kyrka and Nordstan, Central Station are the activity nodes along Norra Hamngatan. It shows that activity nodes attract more pedestrians.

The yellow highlight area shows where most pedestrians move through. We can see clearly the main street Östra Hamngatan is the busiest area with lots of motor traffic and pedestrians. Only parts of pedestrians choose to cross the street Sankt Eriksgatan, so the waterfront of Göta älv is always empty. The pedestrian streets Kungsgatan, Vallgatan, Korsgatan and Fredsgatan are full of shops and always crowded with pedestrians. The path from Central station through Nordstan, Gustaf Adolfs torg , Gothenburg Museum to the waterfront area is full of urban attractions and always busy.

Good promenades are part of a path through the most active parts of the area, they are suitable as destinations for a short walk. It's also very important to put main points of attraction at the two ends to keep a constant movement up and down.

Such blocks exist because of poor public space quality.

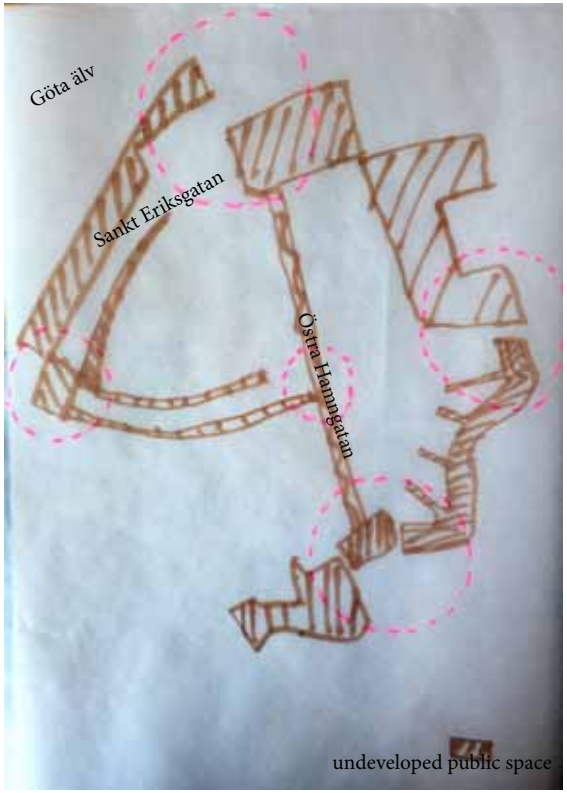


FIGURE 5.6 (Author: Jing Li) The diagram shows the poor public space quality area around where natural resource is excellent but not functioning well currently. Such blocks exist because of poor public space quality.

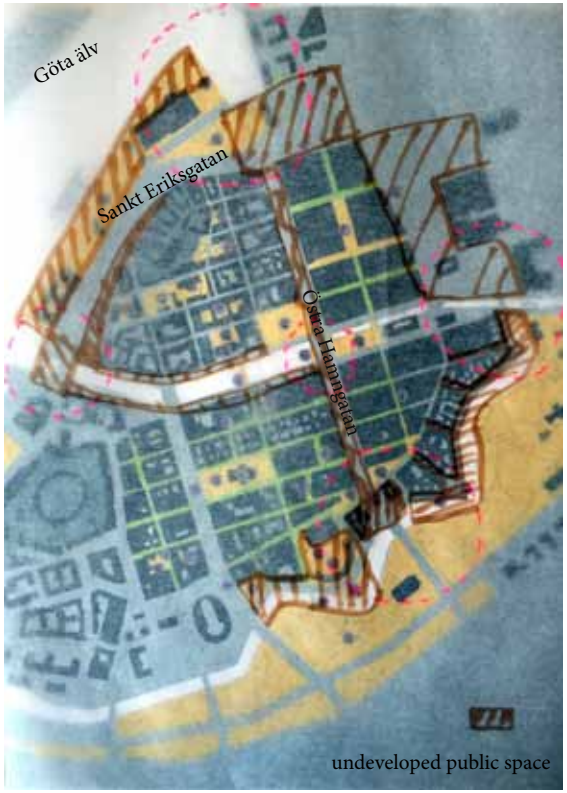


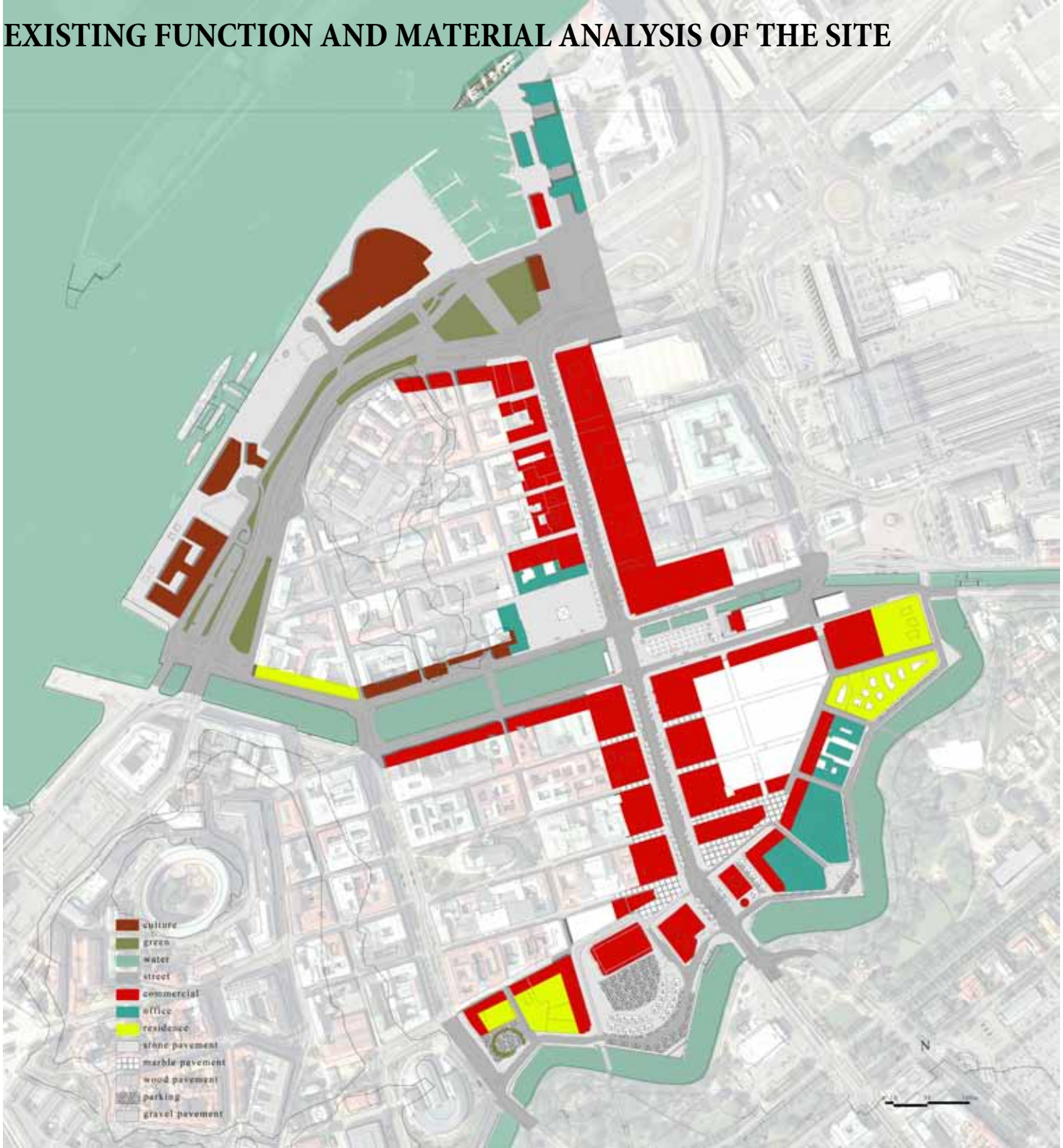
FIGURE 5.7 (Author: Jing Li) Five conflict nodes are stressed.

In the diagram I highlight the undeveloped public space in the site. They are mostly in the waterfront area and beside the busy street, which are of high potential to develop. So the next step, I will focus on **waterfront area** and the connection street **Östra Hamngatan** in between to develop a proposal.

I highlight the design area, which is mostly waterfront area and their main connection Östra Hamngatan.

FIGURE 5.8 (Source: Google ; Author: Jing Li) This is the existing satellite map from google, showing the urban context of the study site.

EXISTING FUNCTION AND MATERIAL ANALYSIS OF THE SITE



This diagram shows the detail analysis of the site, including the function of the buildings on the two sides of streets and the ground material. We conclude that buildings along the main street Östra Hamngatan are mainly commercial, while buildings along Basargatan and Stora Nygatan are residence and office.

Ground material also play an important role in distinguishing the street for different uses. Stone pavement is usually used for walking, wood pavement for staying, marble pavement for squares and gravel pavement for cars.

FIGURE 5.9 (Author: Jing Li)

The situation of the two sides of Östra Hamngatan is a little different.

In the western side, the blocks are mostly residence and streets are largely occupied by parking. Two squares facing the canal and waterfront park are also occupied by parking. Parking along the street take the place of pedestrian pavement, which forces pedestrians to walk on the vehicle lane. Worse still, it blocks the view of the canal and forbids the possibility to stay. There are no bike and foot route here, cyclists and pedestrians have to ride or walk on vehicle lane.

FIGURE 5.10 (Author: Jing Li) People sit on the edge of the canal in the sun even there are no seats.

FIGURE 5.11 (Author: Jing Li) Car parking take the place of pedestrian path and block the canal view.

FIGURE 5.12 (Author: Jing Li) There are no exclusive bike route here, cyclists have to ride on the vehicle street.

FIGURE 5.13 (Author: Jing Li) The overview of the street Basargatan.

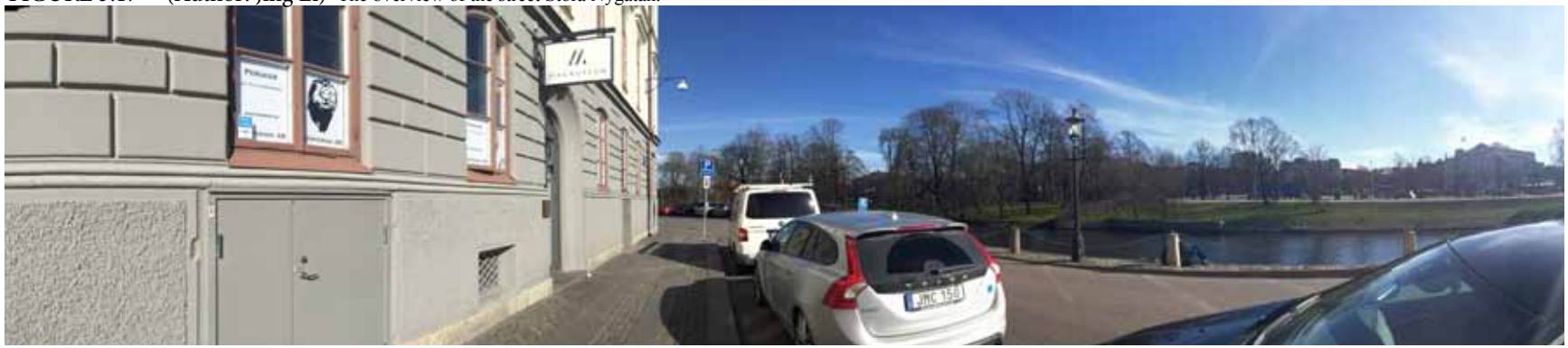
In the eastern side, the blocks are office and residence. The street here is narrower than the other side, there are parking along the buildings and leaves the rest of the street for passing. There is only one side pedestrian path along the building, between buildings and parking cars.

FIGURE 5.14 (Author: Jing Li) Car parking exists only in one side of the street.

FIGURE 5.15 (Author: Jing Li) Fences forbid pedestrians to enter in.

FIGURE 5.16 (Author: Jing Li)People also sit on the edge of the canal in the sun.

FIGURE 5.17 (Author: Jing Li) The overview of the street Stora Nygatan.



SPACE WHERE AND WHY PEOPLE STAY

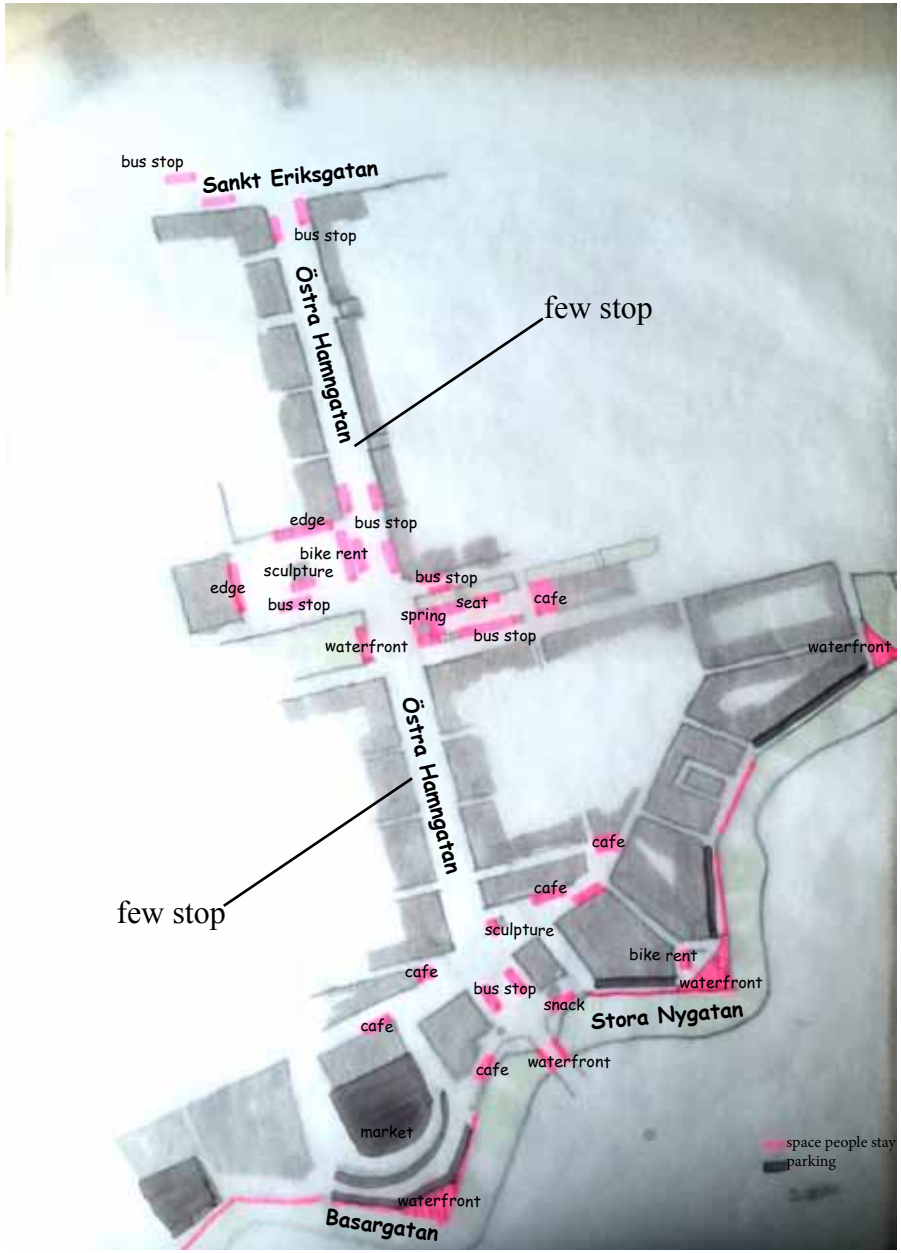
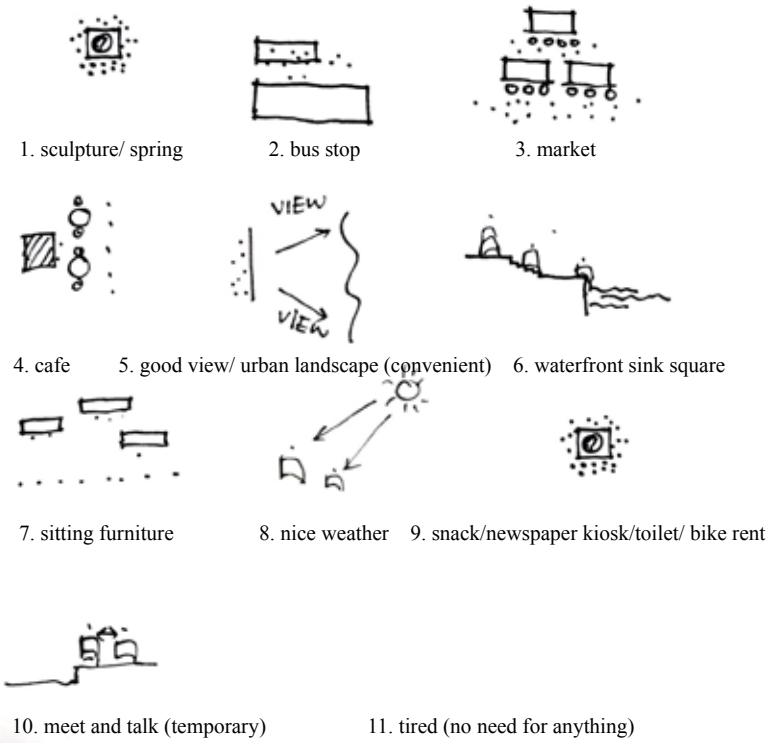


FIGURE 5.18 (Author: Jing Li)

I mark the space where people stay along Östra Hamngatan through observation, then classify the reason they stay.

Through the analysis, we find out that people mostly stay around the crossing where square and public space exist, while few stop point along Östra Hamngatan. And we find where people stay have a close connection with urban facilities such as bus stop, seats, bike rent and so on. Moreover, “edge effect” is obvious in squares.

Why people stay



1. sculpture/ spring
2. bus stop
3. market
4. cafe
5. good view/ urban landscape (convenient)
6. waterfront sink square
7. sitting furniture
8. nice weather
9. snack/newspaper kiosk/toilet/ bike rent
10. meet and talk (temporary)
11. tired (no need for anything)

FIGURE 5.19 (Author: Jing Li)

FIGURE 5.20 (Author: Jing Li) lower waterfront square

FIGURE 5.21 (Author: Jing Li) seat facility

FIGURE 5.22 (Author: Jing Li) canal edge

FIGURE 5.23 (Author: Jing Li) snack/ newspaper kiosk

FIGURE 5.24 (Author: Jing Li) meet and talk

Stay activities and space where they happen. There are usually specific space to hold these activities, except for temporary meet and talk by the street side.

SPACE WHERE AND WHY PEOPLE STAY

CANAL ACTIVITIES

As we all know, Gothenburg is similar with Amsterdam in canal planning, but canals in Gothenburg are not protected well as Amsterdam, many canals are filled to make broad roads. Let's have a look at our near neighbor what they do in Amsterdam canals, maybe we could get inspired.

Canals are never merely used for boat visiting, it could be a place to drive one's own boat or play with friends, chat or have meals on boat, and a perfect place to sunbathe and hold sail boat matches, even a place to hold concert, parade, show, carnivals, read books, even skating in winter. Canals

are not treated as water route only, they are other patterns of street, allowing a different perspective to see the city.

FIGURE 5.25 (Author: Jing Li) parade

FIGURE 5.26 (Author: Jing Li) motorboat family time

FIGURE 5.27 (Author: Jing Li) have meals with friends

FIGURE 5.35 (Author: Jing Li) sunbathe

FIGURE 5.28 (Author: Jing Li) concert

FIGURE 5.29 (Author: Jing Li) motorboat match

FIGURE 5.30 (Author: Jing Li) reading

FIGURE 5.31 (Author: Jing Li) skating

STAY ACTIVITY ANALYSIS

PARTICIPANT	ACTIVITY	WHEN	WHERE
-visitor from out-side the site	-short talk -stop for a rest -coffee -visit the park	-any time -sunny -sunny -weekend	-corner/ sidewalk -waterfront/landscape -cafe -park
-officer working inside the site	-coffee	-fika time	-cafe
-shopper inside the site	-shopping -stop for a rest -coffee	-all day -any time -any time	-shop -waterfront/ square -cafe
-tourist from other cities	-visiting -stop for a rest -coffee	-all day -any time -any time	-attraction -waterfront -cafe
-residence inside the site	-stop for a rest -meet and talk -coffee	-any time -any time -regular time	-square -any where/sidewalk -cafe

TABLE 5.1 (Author: Jing Li)

FIGURE 5.31 (Author: Jing Li) The view of the noisy street and parking.

FIGURE 5.32 (Author: Jing Li) The view of nice quite park.

There are lots of people sitting at the edge of canal especially when it's sunny. There are no special design to activate this kind of urban life, there are no café, plants, activities, functions, even no seats. Still, lots of people would come to have a rest or just talk with friends.

While on the other side of the canal, where is more designed with beautiful greenery and seats, to our surprise, few people choose to sit here.

The interesting phenomenon shows the following:

- People choose to stay in where it's convenient. It's better if it's just aside the way, if one need to cross a bridge to rest, the space is vacant most of the time.
- It is necessary to face a good view. The place to stay is the place to calm down to themselves and get rid of the noisy urban life for a moment. So the quite nice park is much better than the crowded street and parking landscape.
- People stop to take a rest when it's necessary and nice, sometimes they could create place to stay spontaneously if they really want to.
- Northern European people love sun, they choose to sit where sun shines. This habit makes a big difference between place in the sun and in the shadow.
- Canal edge and stepping with stone pavement is more suitable to sit than wet grass slope when it's not summer. People choose to sit where it's convenient and suitable.

SWOT ANALYSIS

	STRENGTH	WEAKNESS	OPPORTUNITY	THREAT
MOVE	-large amount of pedestrian flow -developed pedestrian street system -abundant city attractions -complete public transportation system and busiest transit hub	-conflict with motor traffic at some point -pedestrian paths are narrow and uncomfortable, even occupied by parking somewhere -accesses to some urban attractions are not convenient	-focus to solve the conflict at crossing -reorganize traffic lanes, including pedestrian path and bike path, design specific lane for each one	-could make public transportation and traffic lane here more complex -the pass way across two busy streets are hard to solve
STAY	-excellent waterfront resource, good view of canal and dock -abundant public space of diverse categories -numerous café everywhere -mixed use function	-some public space are isolated and not connected with others -some public space are of less use -sometimes, public space are occupied by parking, large amount of parking -there are places where people have the desire to stay are still undeveloped -the waterfront resource have not been made full use	-fully develop waterfront resource -connect public space together and form a net -create the link between move and stay, meet the require of seeing and being seen	-could allow less car traffic -could allow less ground parking

TABLE 5.2(Author: Jing Li)

6. IN DEPTH DESIGN PROPOSAL

STRATEGY TO WATERFRONT AREA

FIGURE 6.1 (Author: Jing Li)

Water is a rich resources and great strength in the site, however, it is not fully used. Activities in the canal are only limited to boat visiting in summer. It's wholly a waste to leave the canal alone without getting close to it. Worse still, the contact with water is dull, diverse possibilities to get close to water are not provided, the only way to see the canal is sitting on the rough edge of the bank far above the canal.

- **current situation-- visitors sitting on the edge are too far from the water**

- **methods to get close to water**

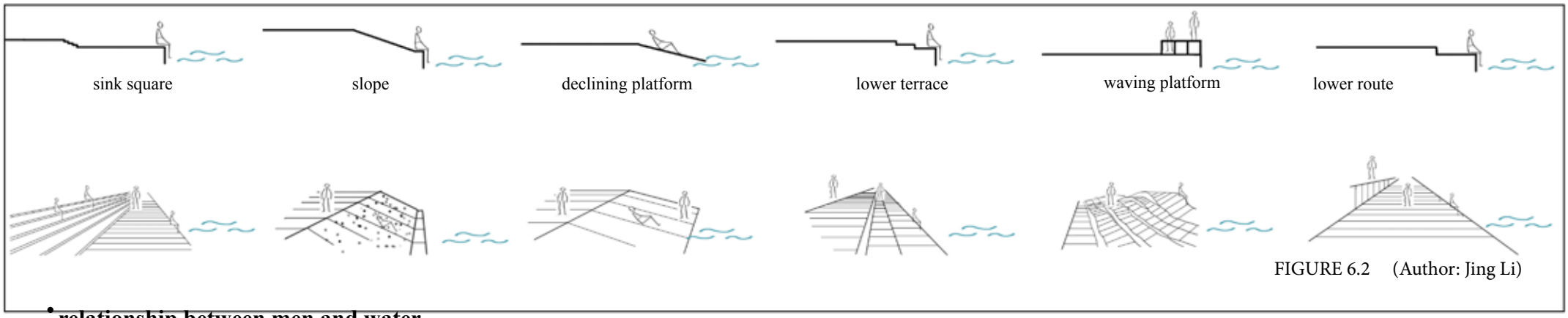


FIGURE 6.2 (Author: Jing Li)

- **relationship between men and water**

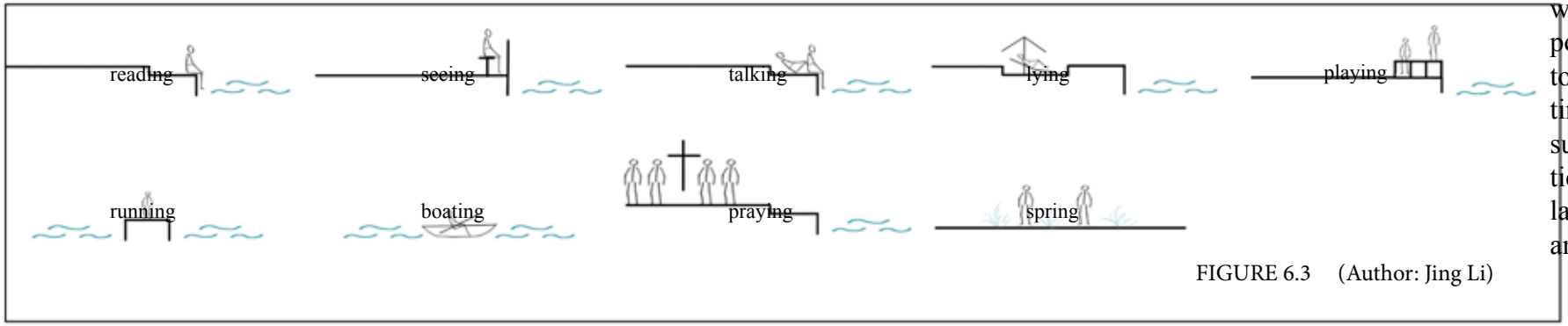


FIGURE 6.3 (Author: Jing Li)

So I work out several ways to create different possibilities to get close to water. And the same time, I classify and summarize canal activities, as well discover relationship between men and water.

PROCESS

I sense out the existing active public space in the study site and their access through observation. Easily seen from the diagram, they are dispersed and not connected tightly with each other.

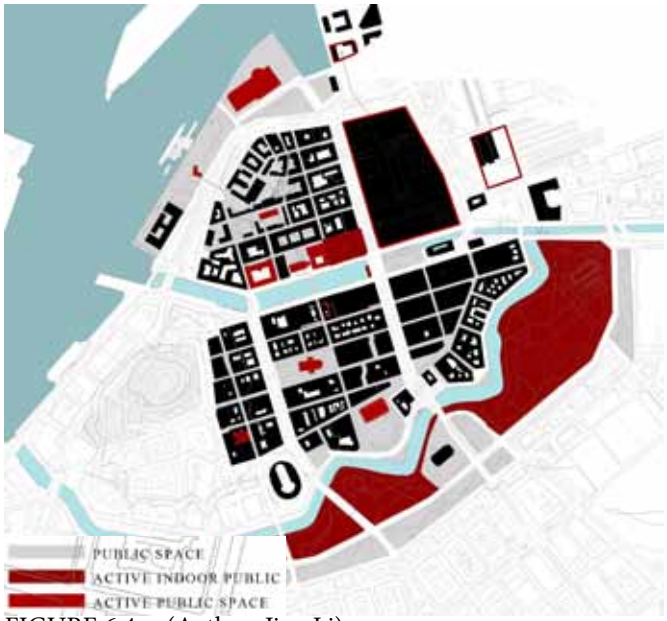


FIGURE 6.4 (Author: Jing Li)
The red area shows public spaces that are lively currently.

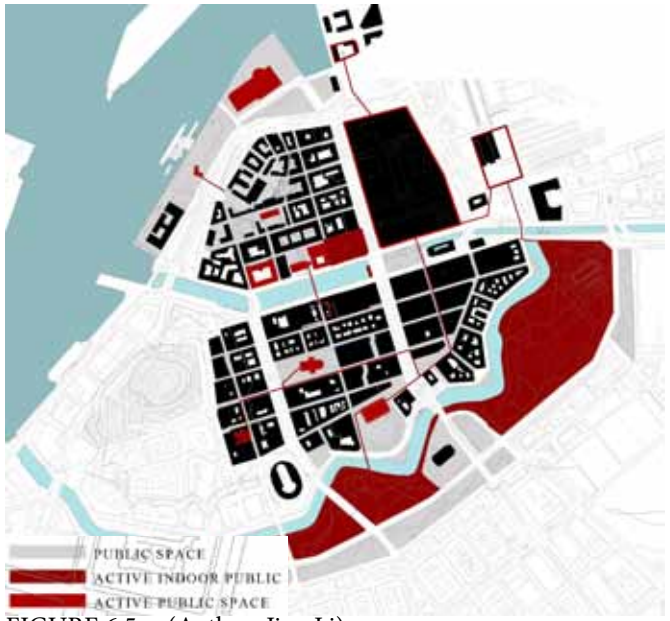


FIGURE 6.5 (Author: Jing Li)
The current accesss to these attractions through my observation.

However, the area around the existing lively public spaces have great potential to be developed. They usually have good location and are close to urban attractions. If the surroundings of these active public space are activated and more access are added, the site will be linked as a net and become extremely convenient.

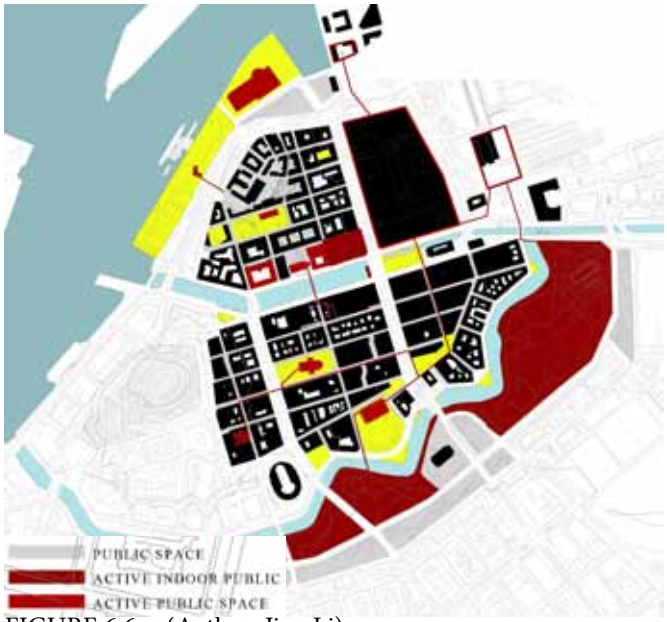


FIGURE 6.6 (Author: Jing Li)
The yellow areas show public spaces that need to be activated.

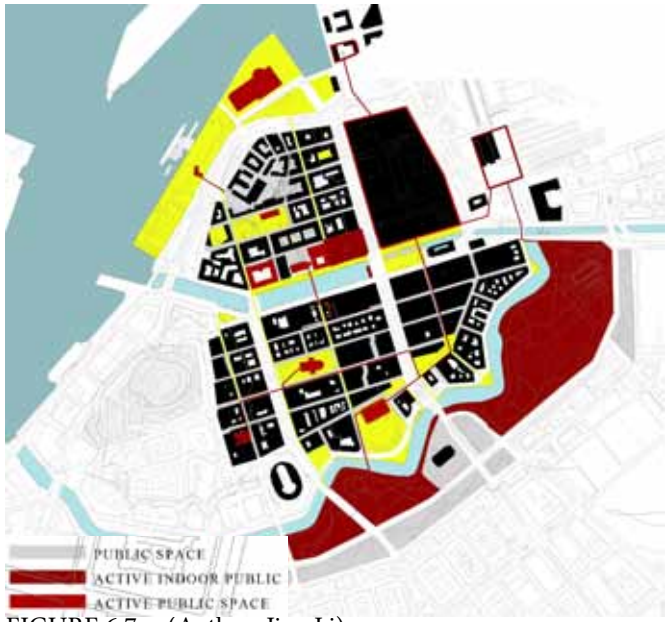


FIGURE 6.7 (Author: Jing Li)
More access should be added.

TRANSPORTATION STRATEGY

EXISTING

FUTURE

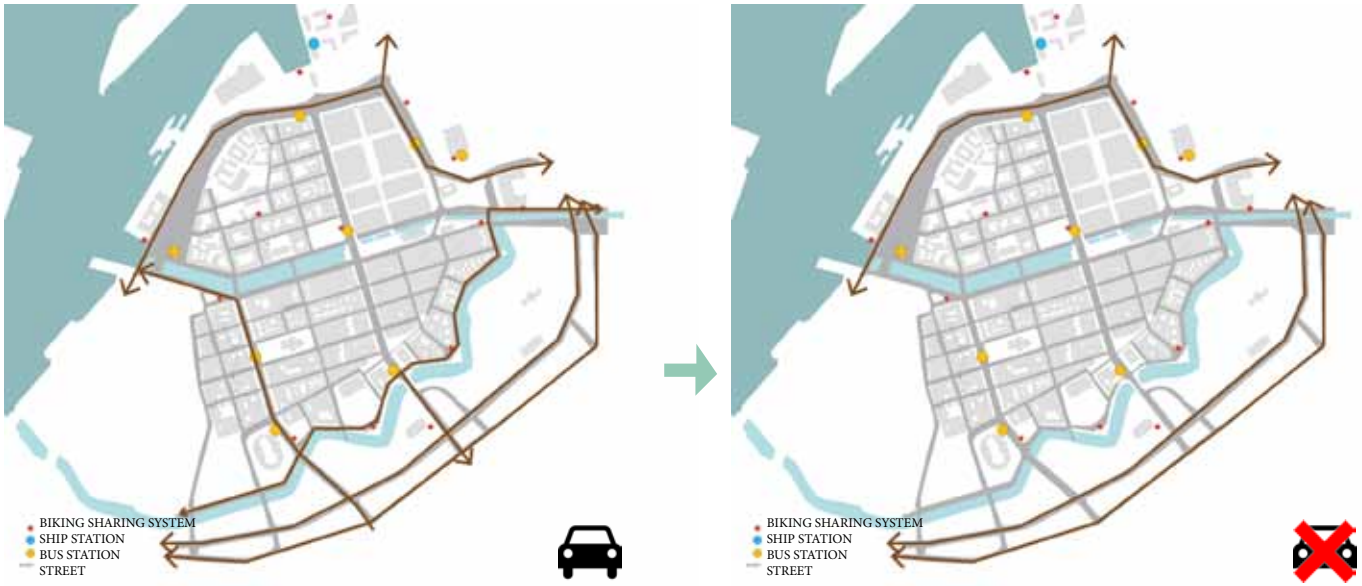


FIGURE 6.8 (Author: Jing Li) **Car lane**

Cars are forbidden to enter the central pedestrian area.

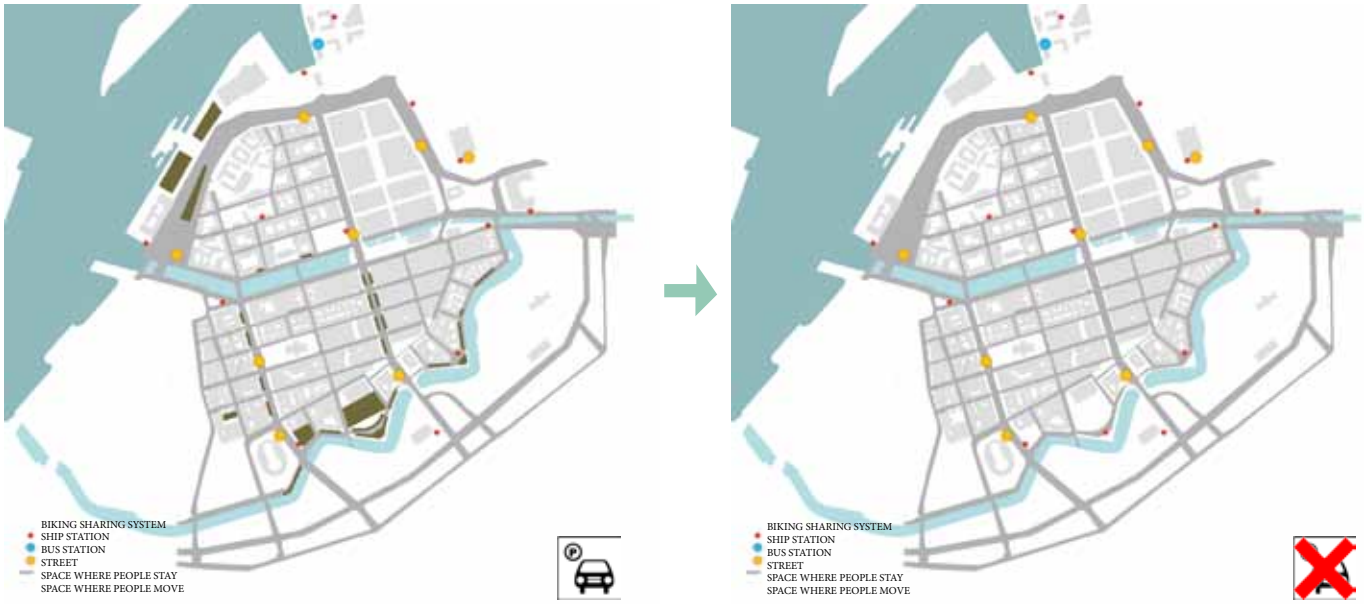


FIGURE 6.9 (Author: Jing Li) **Outdoor parking lot**

Outdoor parking lots are also removed from the site.

TRANSPORTATION STRATEGY

EXISTING

FUTURE

FIGURE 6.10 (Author: Jing Li) **Pedestrian path**

Pedestrian paths are emphasized and taken as priority among so many transportation methods.

Skyovers are stressed and one bridge is added.

FIGURE 6.11 (Author: Jing Li) **Bicycle lane**

Bicycle routes are rebuilt as a system.

TRANSPORTATION STRATEGY

EXISTING

FUTURE

FIGURE 6.12 (Author: Jing Li) **Bus lane**

Speed is limited in central pedestrian area.

Bus lane through Brunnsparken is altered to transform the street totally for pedestrians.

FIGURE 6.13 (Author: Jing Li) **Tram lane**

Speed is limited in central pedestrian area.

Tram lane through Brunnsparken is also altered to transform the street totally for pedestrians.

EXISTING

FUTURE

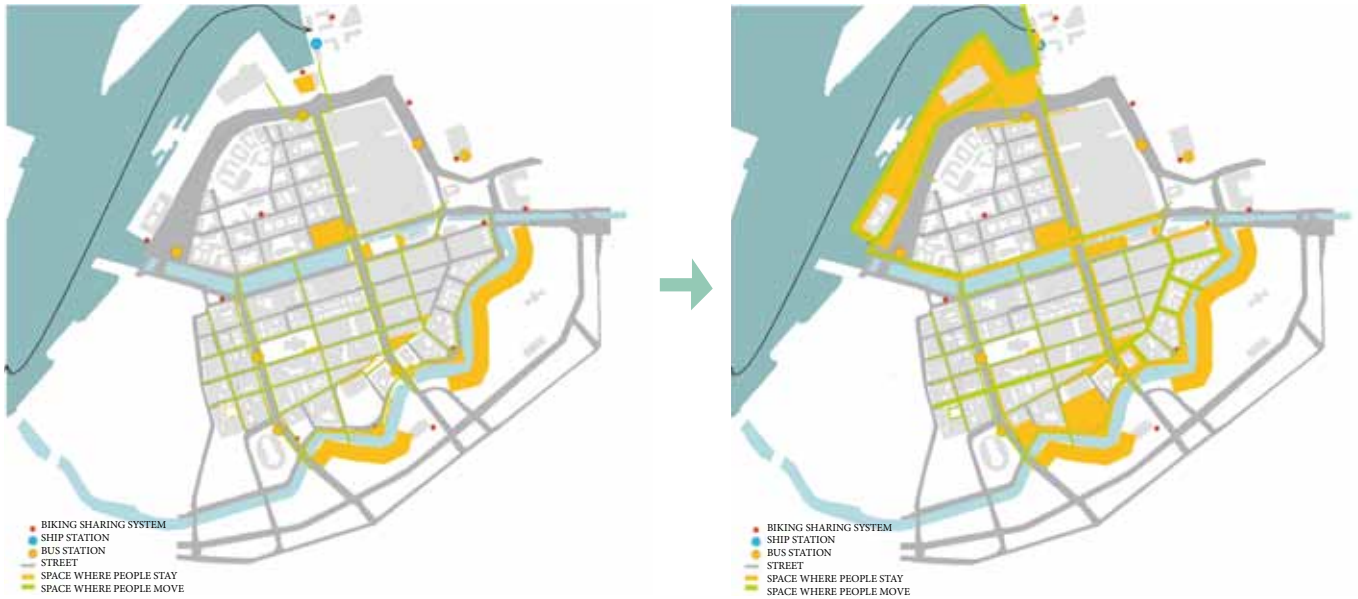


FIGURE 6.14 (Author: Jing Li) **Place where people stay or move**

Move spaces are wider and more comfortable, while stay space areas are largely in-creased.

MODEL OVERLOOK

FIGURE 6.15 (Author: Jing Li)
This kind of flower market and snack selled with truck still can be seen in Gothenburg nowadays.

In the proposal, these markets are gathered together to activate Kungstorget.

FIGURE 6.16 (Author: Jing Li)
It's a special landscape in Gothenburg that the tram runs on the top of grass. It takes use of the rail lane and adds to landscape area, which is sustainable.

This special landscape is introduced in the new proposal.

FIGURE 6.17 (Author: Jing Li)
People in Northern Europe enjoy a sunny day. It gives them immense pleasure to catch some sunlight at a waterfront area, even just for five minutes or even in winter.
This activity is sensed and kept in the proposal. Cars and parking are removed from the road behind, and stay environment is developed. All these will contribute to better stay quality.

LOCAL ELEMENTS ARE RETAINED

SKYBRIDGE IS MOVED AND EMPHASIZED

BRIDGE IS ADDED

BRIDGE IS ADDED

FIGURE 6.18 (Source: Toronto Waterfront, Toronto, Canada, 2007- , HtO park, Central Waterfront) Reference of riverside.

FIGURE 6.19 (Source: Toronto Waterfront, Toronto, Canada, 2007- , HtO park, Central Waterfront) Reference of riverside.

FIGURE 6.20 (Source: Toronto Waterfront, Toronto, Canada, 2007- , HtO park, Central Waterfront) Reference of riverside.

FIGURE 6.21 (Source: Baietan Urban Design Master Plan, Guangzhou, China, 2010- , SOM) Reference of canalside.

FIGURE 6.22 (Source: Indianapolis waterfront, Indianapolis, USA, 1999- , Sasaki Associates) Reference of canalside.

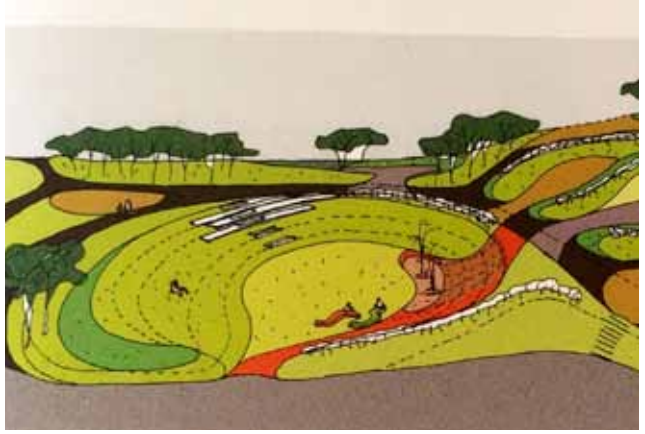
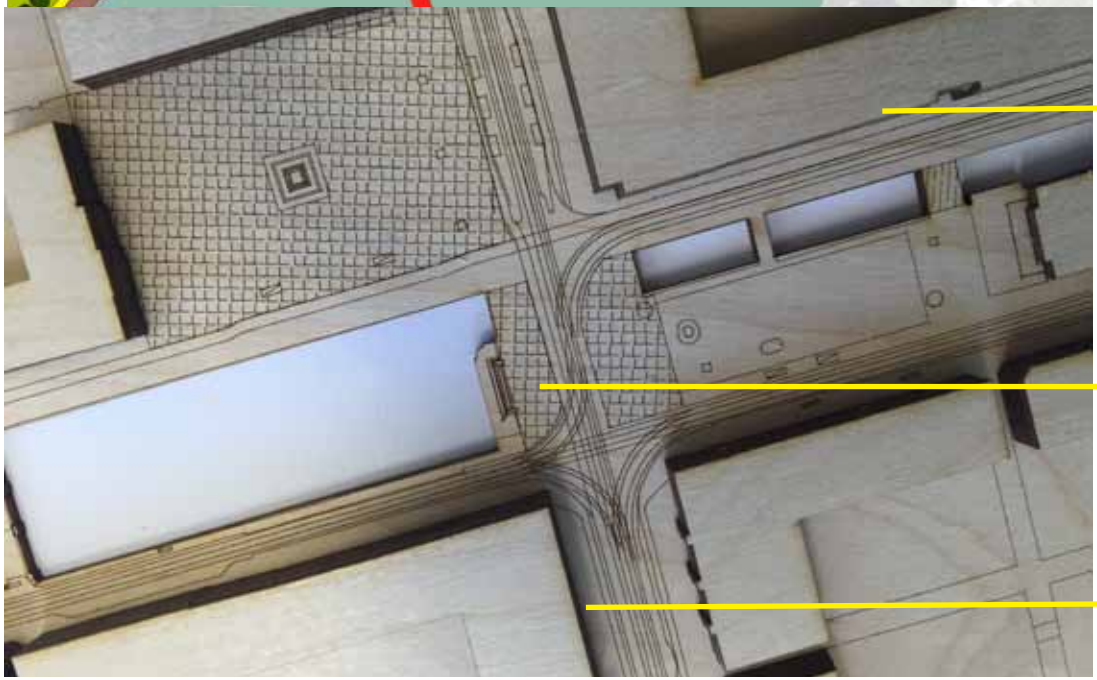


FIGURE 6.23 (Source: Kroken Park, Tromsø, Norway, 2004-, David Franco, Renata Sentkiewicz) Reference of square.

FIGURE 6.24 (Author: Jing Li) Potential of bigger market square



Norra Hamngatan is transformed into pedestrian street.

Platform of the canal is broaden and clear defined by trees.

The pedestrian path is transformed to clearly defined path with wider stay area.

MODEL OVERLOOK

FIGURE 6.28 (Author: Jing Li) Cars are forbidden to enter in, so Basargatan transforms to a pedestrian street with pleasant waterfront stay area.

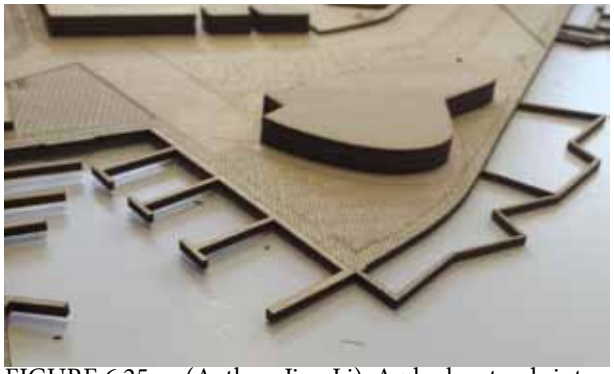
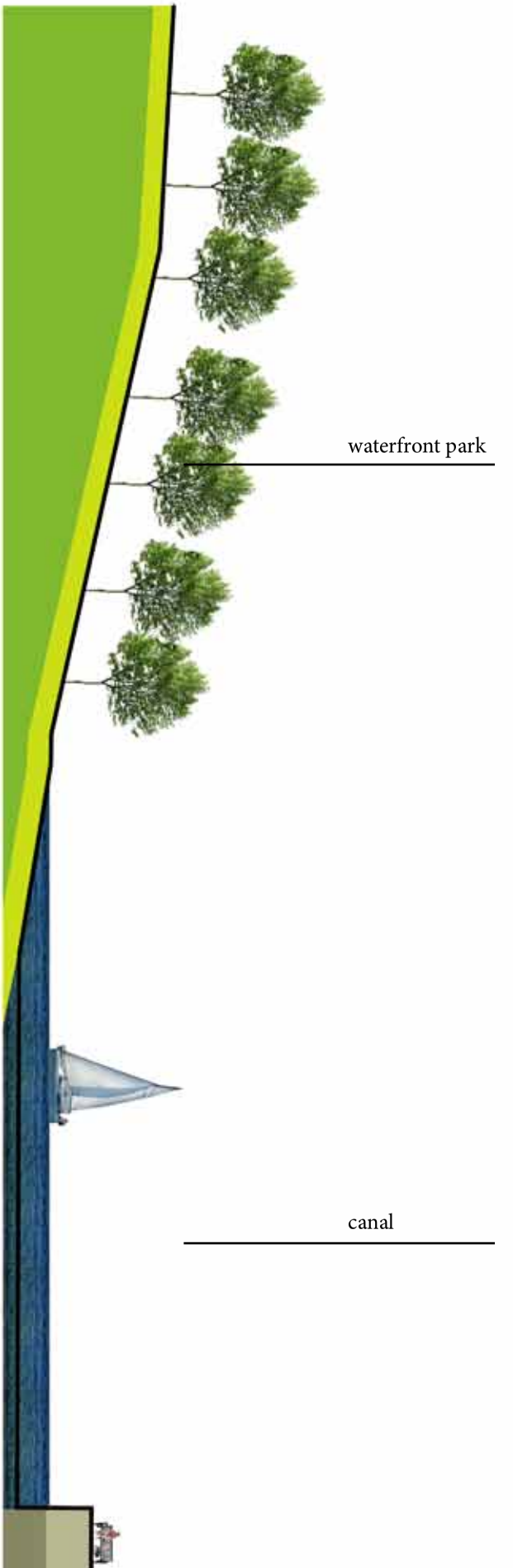
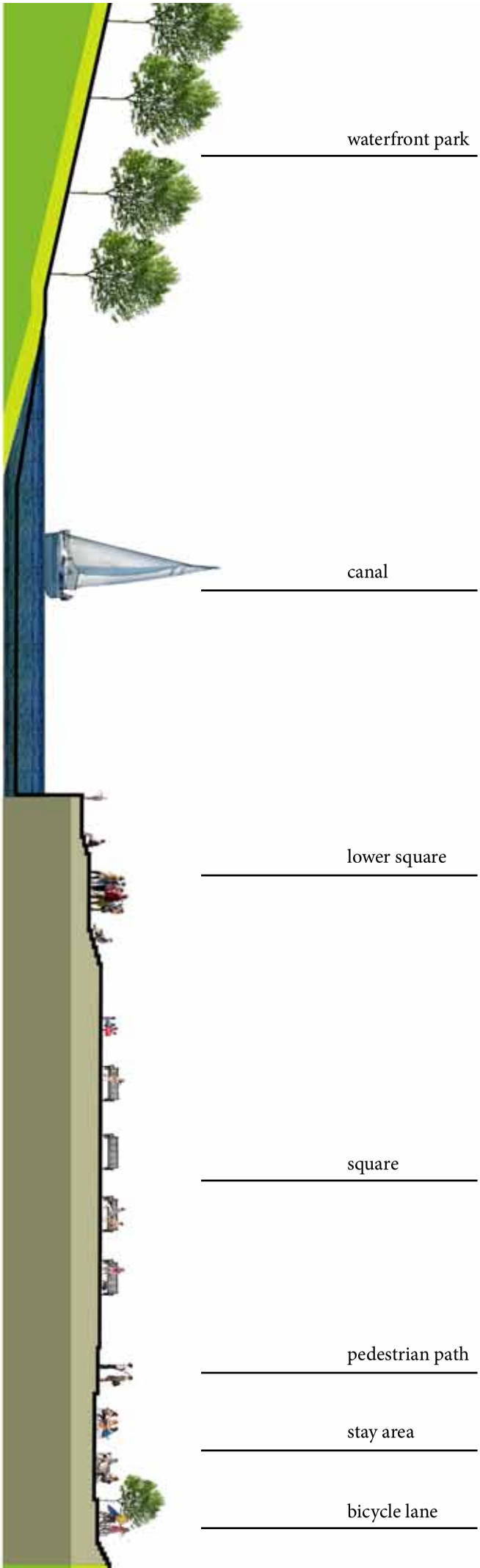


FIGURE 6.25 (Author: Jing Li) A plank extends into Göta älv to develop a place more closed to water.

FIGURE 6.26 (Author: Jing Li) Riverside area is divided to develop diverse waterfront space.

FIGURE 6.27 (Author: Jing Li) Pedestrian area is enlarged, while street for motortraffic is narrowed, as the shared space in Champs Elysees.


waterfront park
canal


waterfront park
canal
lower square
square
pedestrian path
stay area
bicycle lane

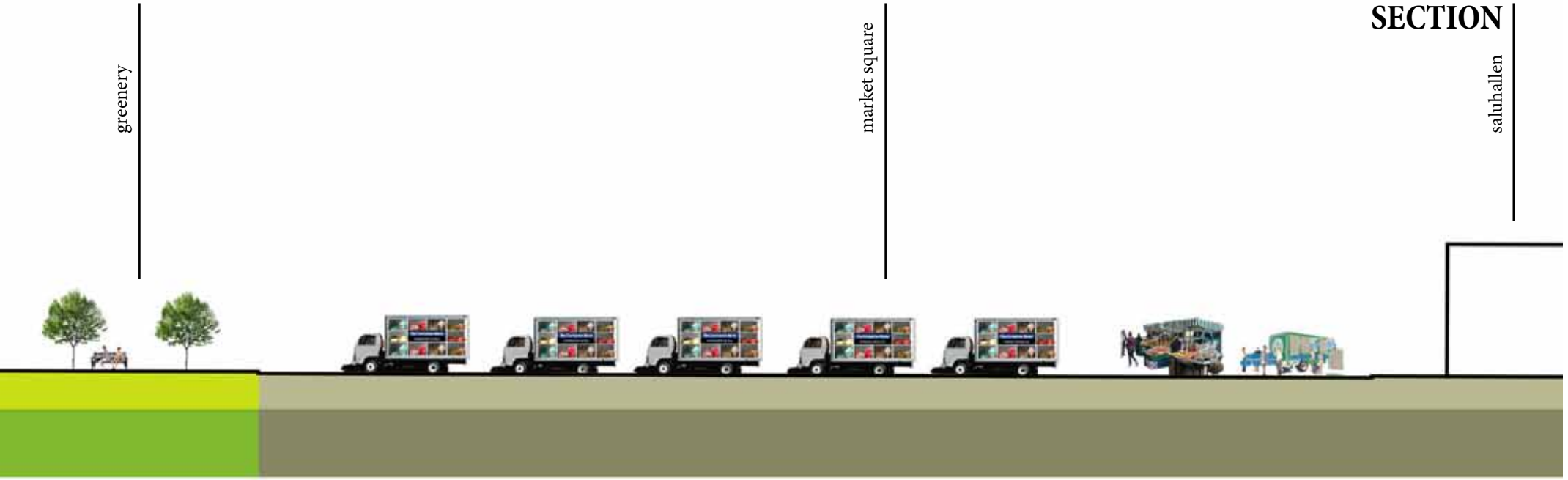


FIGURE 6.29 (Author: Jing Li) SECTION FOR KINGSTORGET 1:400

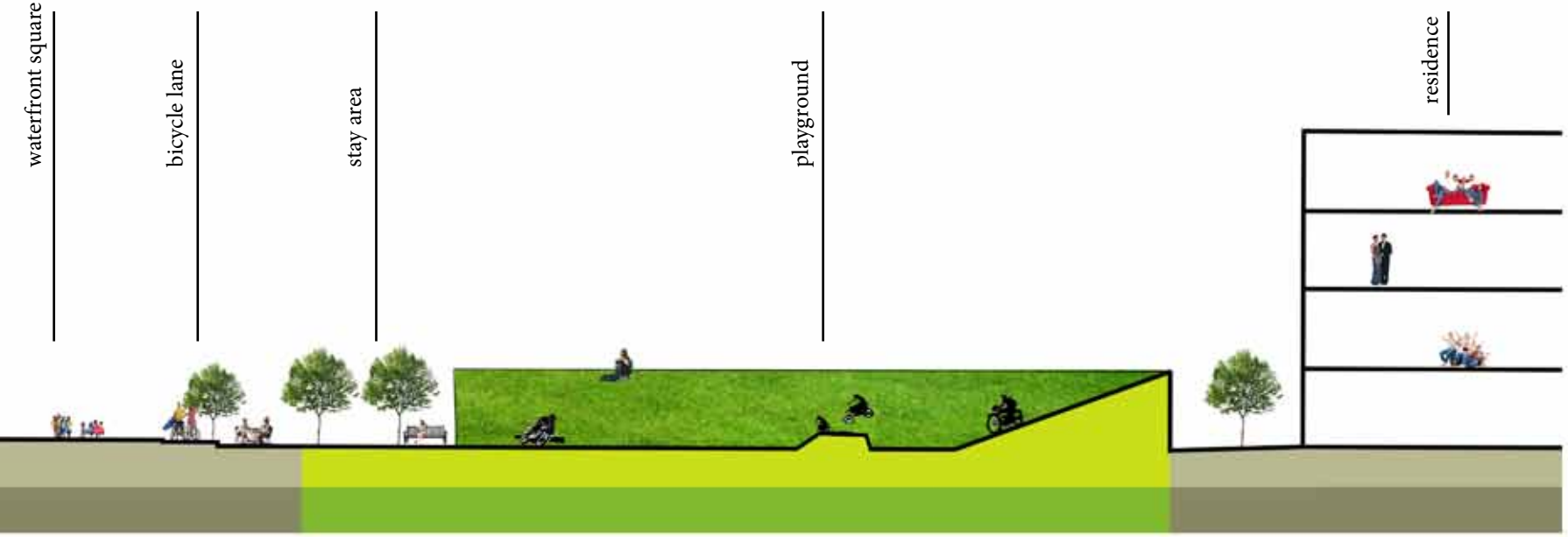
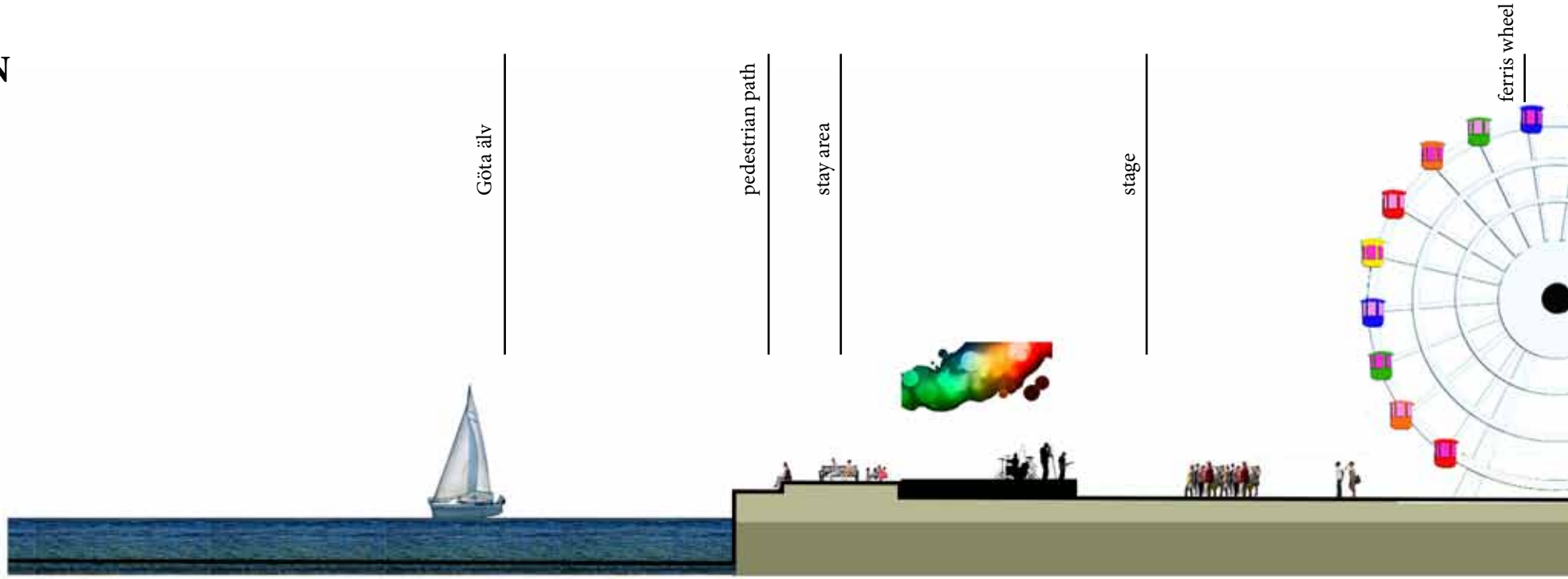
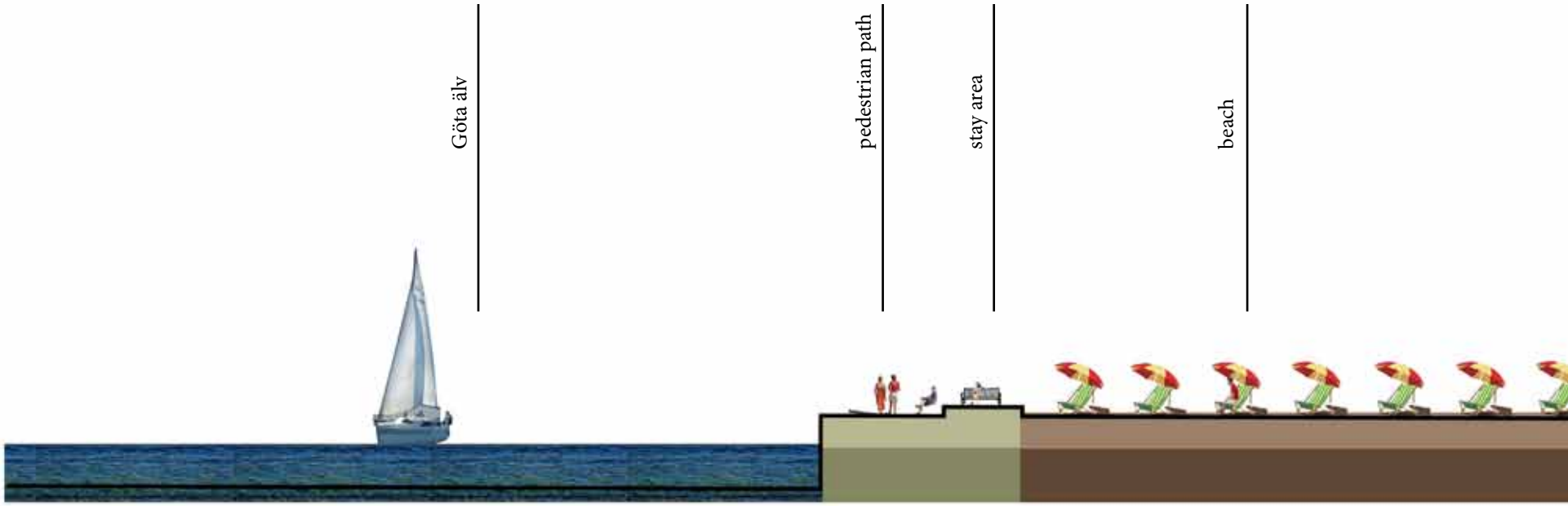


FIGURE 6.30 (Author: Jing Li) SECTION FOR GRÖNSAKSTORGET 1:400

SECTION


Göta älv
pedestrian path
stay area
stage
ferris wheel


Göta älv
pedestrian path
stay area
beach

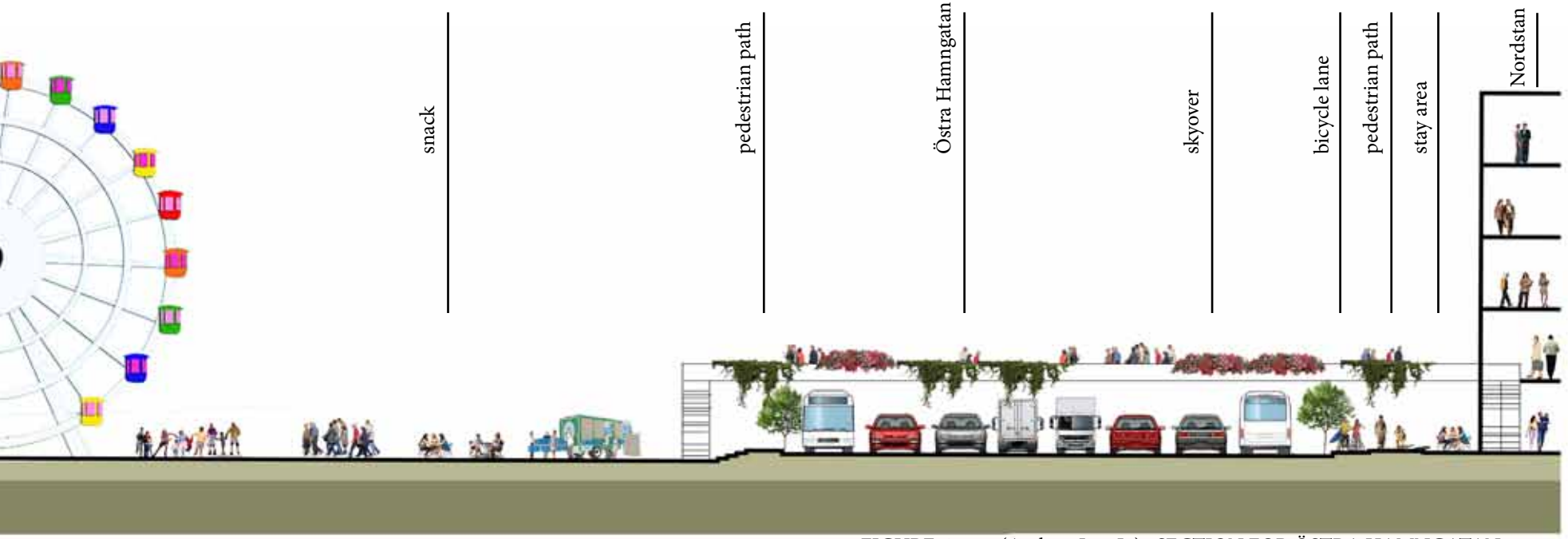


FIGURE 6.31 (Author: Jing Li) SECTION FOR ÖSTRA HAMNGATAN 1:400

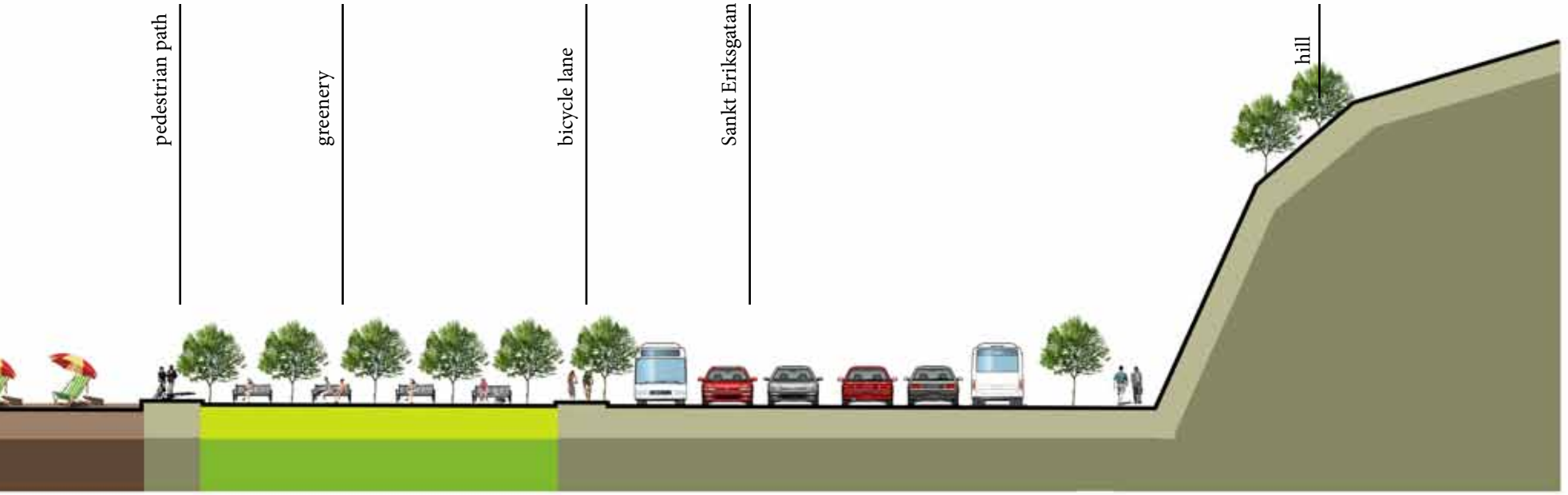


FIGURE 6.32 (Author: Jing Li) SECTION FOR SANKT ERIKSGATAN 1:400

SECTION

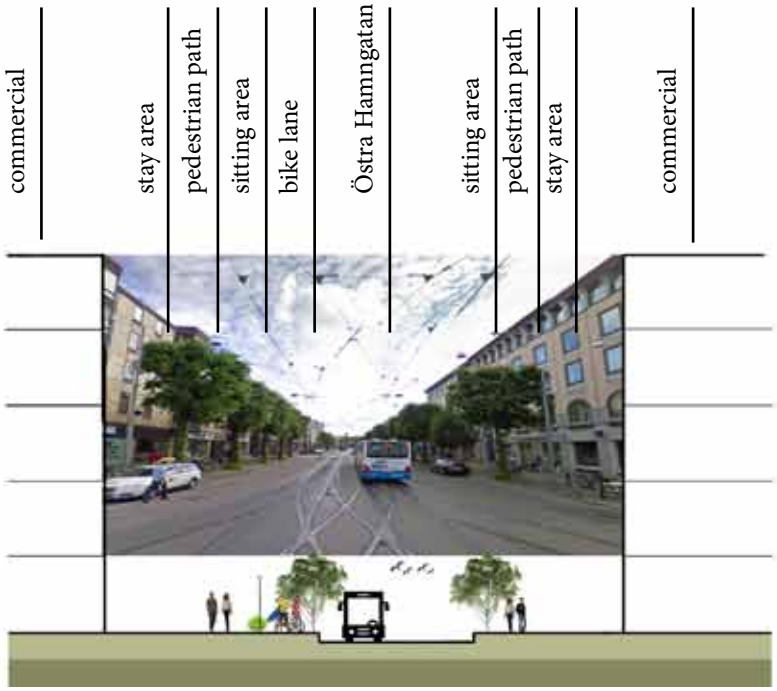


FIGURE 6.33 (Author: Jing Li) SECTION FOR ÖSTRA HAMNGATAN 1:400

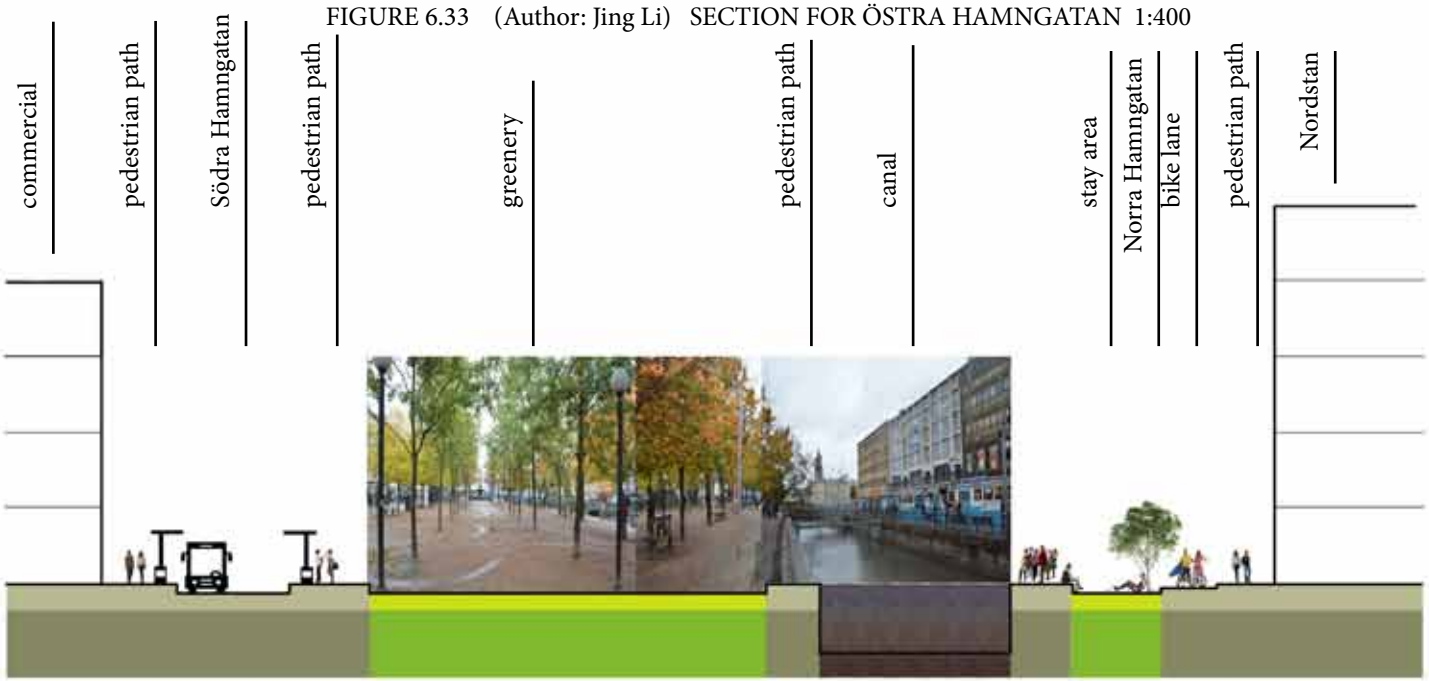


FIGURE 6.34 (Author: Jing Li) SECTION FOR Brunnsparken 1:400

FIGURE 6.35 (Source: Google) The existing Kungsportsplatsen

FIGURE 6.36 (Author: Jing Li) The proposal

1. Zebra crossings
Zebra crossings are broaden and emphasized, which make pedestrians have the priority when crossing Östra Hamngatan. Moreover, crossings are divided with green tree islands, which make the passway seem shorter and more pleasant.

2. Squares
More stay spaces such as cafe and more greenery are added to squares.

FIGURE 6.37 (Source: Google) The existing Brunnsparken

FIGURE 6.38 (Author: Jing Li) The proposal

1. Zebra crossings
Zebra crossings are also broaden and emphasized as Kungsportsplatsen.

2. Squares
Squares are clearly defined with pavement material and trees to ensure a comfortable and safe stay area.

PERSPECTIVE

FIGURE 6.39 (Author: Jing Li) The proposal for GrÖnsakstorget

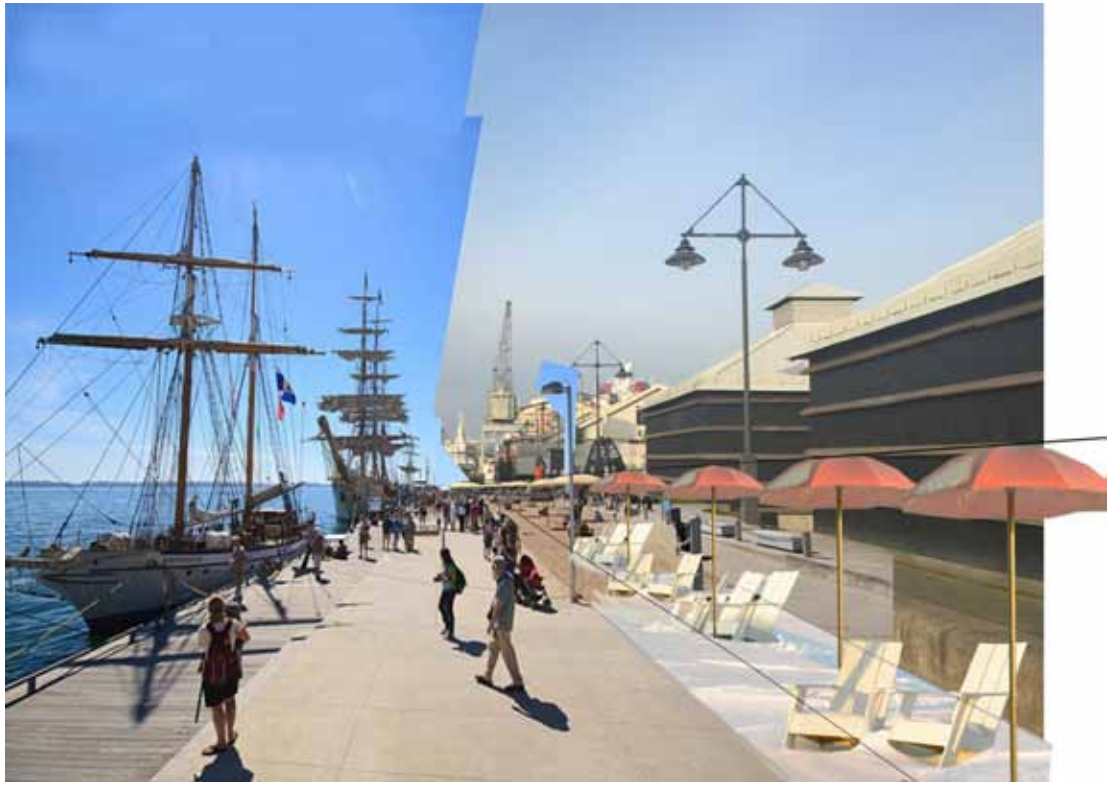


FIGURE 6.40 (Author: Jing Li) The proposal for riverside area

7. DISCUSSION

The fast development of car industry as well as the fast-expanding cities making it more difficult for pedestrians to retain their convenience in moving around and enjoy street life nowadays. Pedestrian street plays a very important role in rebuilding street life and regaining city center attractions. The Master Thesis is focused on the Gothenburg central pedestrian district, trying to sense the existing problems and come up with a new proposal.

In this Master Thesis, public space is seen as the main focus of site analysis and design development, while space where people move and stay is a possible starting point for learning the thesis. As we know, pedestrian space has a close connection with public space, where public life happen, while public space can be divided into move space and stay space. So there is a possibility to develop proposals for pedestrian street through analyzing and learning move and stay spaces.

Beginning with the central pedestrian area of Gothenburg, the goal of the Master Thesis is to come up with a proposal by deep site analysis and case studies to solve the existing problems.

With a profound analysis of the site and its local context together with a design rearranging pedestrian and bicycle system and reforming public space, the result is a project that makes full use of the existing waterfront resource and create a good balance in moving forward and staying pedestrian space.

With a combined program of waterfront area and public space development, the site has a good possibility to become a pleasant place to walk and stay.

In the research section, I start with the concept of public space and its elements. It helps me to distinguish public space with interior space and make a definite research area. I start over to observe and analyze public space through its elements such as streets, squares, waterfront area, park and so on, which helps me to find the immediately. Waterfront resource is emphasized in the master thesis for it offers potential place to active public space.

Then I read Urban Space written by Rob Krier. The method he used to catalyze and abstract public space inspired me a lot. Although there are lots of public spaces in the site, there are only a few types. I painted buildings in blame, while public spaces such as squares and streets in white so that the relationship between buildings and public space is easy to read. You can feel the sense of space by reading these diagrams. As a result, you can read the scale of public space and find its potential.

From the study Jan Gehl, I realize that the vitality of public space is determined by public activities and participants. People come to public space to watch what others are doing and being watched. So it becomes my focused point to study public activities. Through observation and discussion with friends, I identified different kinds of public activities and marked the place they occur. Spontaneous public activities should be treasured and retained, while stay space quality around should be developed.

Through the design criteria for

square designs and successful square cases studies, I learned how to make good square designs. Firstly, squares should be defined clearly to ensure its space. Trees are added in the edge and pavement materials are designed to make a definite boundary. Since I tried to keep the most of existing buildings and squares and make the least change, I am trying to solve the problem by rearranging transportation approaches and inserting public activities. Move and stay qualities are the main focus of the master thesis. Similar methods are learned from Copenhagen. Buildings are not changed at all, however, the pavement materials and the partition method of existing space are redesigned to make a better sense of space and to create more pleasant story quality.

The result fits my original assumption. Public spaces are classified and developed for more public activities. Move spaces are redesigned to create comfortable and pleasant walking experience, while stay spaces are more developed to improve stay quality. Public activities are considered as the judging criteria of public spaces, so more activities are created to activate public spaces.

The proposal focuses to solve the conflict between pedestrians and cars in the crossings. Skybridges are built and stressed, while zebra crossings are also broaden to make pedestrians easier to cross the street. Cars are forbidden to enter in the central site and speed of buses and trams are limited. All these contribute to the priority place of pedestrians over cars.

Existing site is analyzed through pavement material and building functions. Weak points are sensed out and made a change. Pedestrian system and bicycle system is rearranged to offer convenient access to all public spaces.

Waterfront area is the focus area in proposal. They are divided into different sections to create different possibilities. Public activities are also added to provide more option to stay. In this way, the waterfront area is made full use, so move space and stay space is not divided as nowadays.

The approach to study public spaces and the process to sense the existing problems can be inspired and learnt. It's also a good way to catalyze public space as move space and stay space, which helps to fully analyze public spaces.

8. REFLECTIONS

Working in public space with the site of Gothenburg is a big challenge for me. Public space is a really broad concept and every one has his own idea, so it's very difficult to get a whole understanding of public space.
In the master thesis, I spent lots of efforts in site research, from history, transportation method, city attractions, public space, land use and building use to ground material of public space. I found it's a very good way to get a quick knowledge of the site and it also helps me to begin the analysis. However, the concept of public space is still broad, it's nearly impossible to talk about every aspect. So it's extremely important to pick up the focus area. Through A Pattern Language, Alexander's idea of move and stay space impresses me a lot, which fully explain the function of public space.
Although I am aware of the difficulty, I am happy with my final result. The final result reaches my expectation partly. The site analysis is clear and completive, which gives readers a whole impression of the site and background. But the design proposal section is not fully developed and only slice changes are made. The transformation of transportation method is well developed, but it still need to be discussed if bicycle riders will be a conflict with pedestrians. If I can fully develop the thesis, the design proposal should be put more efforts. If I can continue with the master thesis in the future study, I'd like to pick up another site from Chinese cities which has a similar population and geographical site condition as Gothenburg. Then I will apply the same site research method to China and make a comparison study. I'd like to find out if the same method could also be used in China and what can be learned from Europe pedestrian streets system and public space.
During the process of master thesis, I have many problems and limitations. The first one is cultural difference. At first, it added difficulty in finding the problems and analyzing the site, although it gave me a new perspective to read public spaces and pedestrian streets. Secondly, I don't know Swedish, but most books or references about Gothenburg are written in Swedish. So the language is also a big obstacle in understanding the background as well as gathering information. It's also very difficult to find a method to look into the problem and analyze the site. I need a lot of literature review to get a whole idea of what I am studying now, which takes a lot of time and sometimes useless. When I got an idea of the theory and method, I need to skim over lots of cases to get inspired and acquire their strength. More and more contents need to be contained. The research seems no ending, however, time is always limited. It's too hard to finish the whole research in half a year. But it already gives me a beginning to do the research and I have the interest to make it more completed.

However, one might question the possibility to reform a better pedestrian situation with the proposal. In my opinion, the starting point of the master thesis is finding the existing problems and give appropriate solutions. Maybe I have limitation to make a big change in the whole pedestrian system in Gothenburg, however, with the deep site analysis and literature review, I can reach a proposal to solve the problem of stay and move space in Gothenburg central pedestrian area. One might also question whether the proposal raised in this master thesis is suitable to other public space activation and pedestrian street reformation cases. Without a doubt, the cases in different urban context and historical

background as well as cultural convention must be different, and they also have different problems. But the process from the problem to proposal and the method of site analysis is always the same. One can still get inspired from the process and method in the master thesis, while I develop my own research method to sense and solve the existing problem through the master thesis study.
In the process, I sensed many details of public space and get a very quick understanding of public space, which may be my talent to study public space. As an architect, I have always know how important public space and pedestrian situation is to street life. That's also why I chose this master thesis. In the following career, I'd like to apply what I learnt from the master thesis to improve pedestrian situation.

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