Shaping
Co-existence

P4 REPORT

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TUDelft

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1.1 Background: Growing Tourism

In this globalized world, spatial distance is no longer a barrier for travel. Human mobility has reached unprecedented levels. In this flowing world, tourism is promoted with people's desire of exploring unknown. Although "there is general and growing agreement that tourism has been considered a negligible element in the process of urban and economic development in the academic debate"(Pasquinelli, 2016), it has been considered as an important sector of urban change recently. Under this context, tourism becomes a pillar industry for urban development. The economic benefit is huge, according to WTTC (World Travel and Tourism Council), the travel and tourism sector contributes 10.4 percent to global GDP, and it was responsible for creating one in five new jobs over the last five years. The appearance of hotels, souvenir shops, pubs reflexes that money-first capital is shaping cities due to the massive profit of tourism.

Middle class is growing in developing countries, for them, tourism came to be seen as necessary for health, education and as a marker of class and status. Therefore, the trend of international tourism will keep non-stop. However, in the meantime, critical voices have questioned the industry - is the growing healthy for the city? Citizens wondering whether their city, local environment and the planet itself can cope with ever more visitors, holiday miles and greenhouse emissions. The dualism of tourism is now put on the table to debate while the advertisement of destinations and travel agency is still occupying our eyes in the medias.

1.4 Billion
total international tourist arrival (UNWTO, 2019)

$ 1.7 Trillion
total international tourism exports (UNWTO, 2019)

10.4%
touism GDP as a percentage of global GDP (WTTC, 2019)

319 Million
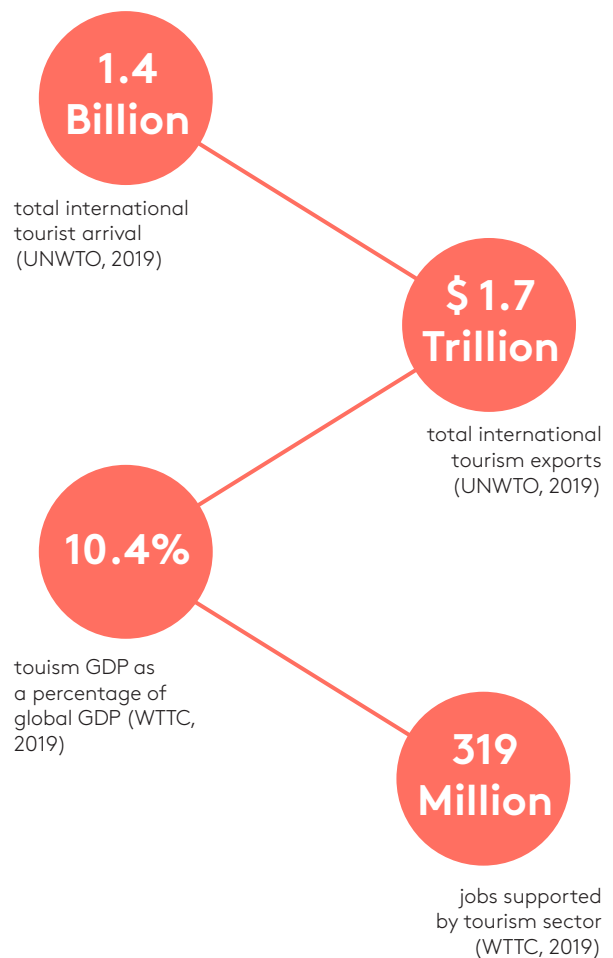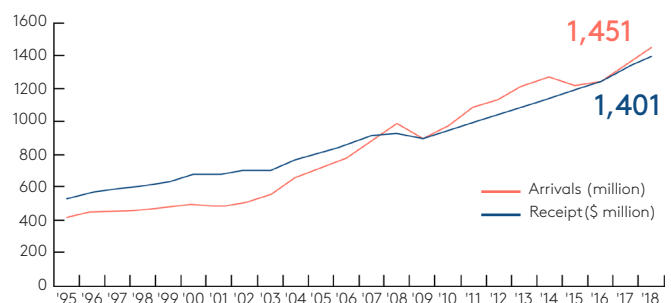jobs supported by tourism sector (WTTC, 2019)

Figure 1:
International tourist arrivals (million) and tourism receipts ($ billion)
Source: UNWTO, 2019

1. THE PROBLEM

1.1 Background:Overtourism is a global challenge

The past decade is an era of rapid development for tourism industry. A more affluent world, the appearance of Airbnb and and comparable platforms, the development of low-cost carriers, the popularity of image and video social network medias. All of these contribute to the most prosper situation for international tourism. In 2019, more than 1.4 billion people travel internationally, while this number was only 25million in 1950.

This explosive development is a double-edged sword. On the surface, we could propose more places would benefit economically from tourism. However, the explosion refers to a high concentration of the most famous destinations. In these places, especially cities, has underwent severe symptoms of tourism saturation. Host communities are concerning more about the negative impacts of tourism. Therefore, "overtourism", as a new notion, is put forward since 2015. UNWTO (World Tourism Organization) defines overtourism as "the impact of tourism on a destination, or parts thereof, that excessively influences perceived quality of life of citizens and/or quality of visitor experiences in a negative way". The exceeding tourist flow is constantly oppressing the urban carrying capacity of destinations; they colonized cities in a sense. In the meantime, the daily lives of local communities are intruded by tourists. Some residents suffer from tourism phobia; it is not hard to observe the trend of anti-tourism in these cities. This contradiction is getting more serious.

However, tourism is a labor-intensive industry, it contributes much to local economy and em-ployment. It is impossible to stop tourism and give up tourism as this will impair the benefits of those citizens who are industry insiders. Tourism is a complex layer of a city; it involves multi-ple stakeholders which have their own needs. In this contradictory context, how should city cope with overtourism becomes a global issue.

CNN travel   DESTINATIONS   FOOD & DRINK   PLAY

Venice becomes the front line in the battle against overtourism

Kara Fox, CNN • Updated 15th June 2019

The Guardian picture essay

How tourism is killing Barcelona - a photo essay

One of the coolest destinations in Europe just two decades ago, Barcelona is now so overcrowded it has become a tourist theme park - and is losing the character that made it so popular

by Stephen Burgen. Photography: Paola de Grenet

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Cities   Amsterdam   Expat   traveling

Sinking city: Overtourism and how it affects Amsterdam

By Freya Sawbridge - November 22, 2019   💬 1

the japan times

NEWS

NATIONAL

Kyoto works to disperse crowds amid fears of 'overtourism'

KYODO

The Phnom Penh Post

Thu Jan 09 2020 15:39:18 GMT+0100 (中欧标准时间)

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Overtourism still threatens Angkor Wat

| Publication date 09 September 2019 | 18:47 ICT

1. THE PROBLEM

1.2 Context: Amsterdam

Amsterdam is one of cultural capitals in Europe with its great canal cityscape and the culture of inclusiveness. Since the 18th century, Amsterdam became a worldwide trade centre, attracting merchants and sailors. To adapt the increasing population in the golden age, the city built four concentric half-circles of canals for residential development. In the meantime, the growth of wealth stimulated the growth of art. The canal system and artworks are both precious heritage which make Amsterdam a heated tourist city.

The tourism economy
In 2018, the tourist numbers reached 8.3 million. This number has increased more than 60% since 2007. The prediction by the government shows an astonishing number of 12 million by 2030. This includes overnight stays and day-trippers as a result of its great location for flight transfer and ocean cruise. This great number of tourists means it economic effect is also huge. In 2016 tourism brings 2.7 billion euros for Amsterdam. It is accounts 4.5 % of the city's economy while it creates 10% jobs as a labor-intensive industry.

Overtourism Situation
Tourism is part of the international character of Amsterdam. However, Amsterdam is relatively small city (220 km2), with 850000 inhabitants. So, the ratio of tourist to locals reaches 10:1. In the central area, building functions has been converted to souvenir shop, coffee shop and other tourism-centered functions. In recent years the positive aspects of people visiting the city are being overshadowed by the negative aspects, such as nuisance, crowding and littering. This puts pressure on the quality of life in certain neighbourhoods.

USA

17.9m
foreign tourists overnights stays (CBS, 2017)

13%
growth of international tourism (CBS, 2017)

DE, BE, UK, US, FR are the 5 largest guest countries (CBS, 2017)

24.4m
Dutch tourists overnights stays (CBS, 2017)
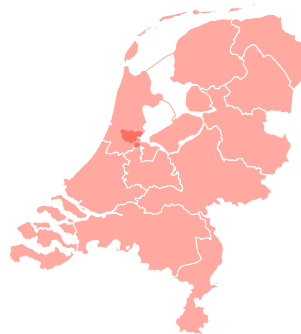
€75.7b
tourist economy in the Netherlands (CBS, 2017)

3.9%
tourist economy in the Netherlands (CBS, 2017)

641k
jobs provided by tourist sector (CBS, 2017)

8.3m
tourists visited Amsterdam in 2018 (NBTC, 2019)

15.9m
overnight hotel stays in Amsterdam hotels in 2017 (Gemeente Amsterdam, 2018)

33%
of all overnight hotel stays in the Netherlands are in Amsterdam (Gemeente Amsterdam, 2018)

1. THE PROBLEM

1.3 Personal Motivation

In the ancient time, travel was only a privilege for nobles and the rich. While now, it is a important way to entertain the life for everyone due to its growing affordability. Therefore, in the modern society, tourism is a phenomenon that we cannot ignore. In the context of rapid growth of tourism, it will surely play a vital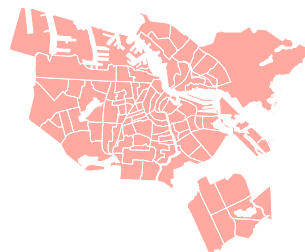 role in urban development. I am an active traveler; I enjoy the pleasure it offers, in the meantime, I am also thinking of the mechanism behind. While municipalities applaud for the economic benefits of tourism and tourists applaud for excellent experience of destinations, how does physical space shape the current tourism industry? As the impacts of tourism are large, tourism sector strives for sustainable development, UNWTO believes "tourism can and must play a significant role in delivering sustainable solutions for people, the planet, prosperity and peace."

Amsterdam is a popular tourist city which is famous for its culture and urbanity. Personally, it is one of my favorite destinations. However, it is currently going through the problem of overtourism. As an urbanist, spatial dimension of tourism is a topic that I care about. Urry (1990) believes that there is an important visual dimension to our experience of places. And this vision will finally gaze at physical space. How does physical space shape the current tourism industry? Is it possible to use spatial dimension as solution for overtourism? Tourism needs an interpretation through urbanism.

1. THE PROBLEM

1.4 Problem Field 1: Tourism put pressure on space

1.   Overcrowding Centre
There are about 200 thousand passengers arriving at Amsterdam through Centraal Station. Due to the high concentration of attractions and commercial functions, the historic centre is facing massive spatial pressure. Generally, this phenomenon can be regarded as a spatial competition between walkability and traffic efficiency according to Wei (2018). And tourism is one of the vital reasons which is intensifying this confrontation. For tourists, the centre is the main reason to visit the city; for locals, this is their best destination for shopping and entertainment. Two large human flows gather here. However, what responds on space is the narrow streets and public spaces. Tourists and locals are competing for spatial resources. Ironnically, 77% of open space is built to support vehicular transport (Waart, M.d.2017). With the growth of tourism, the centre will be more and more crowded if no action is taken.

2.   Decreasing Liveability
Although the historic centre now is a highly commercialized area, there are still many residents living here. The development of tourism is considered to have more disadvantages than advantages. Their narrow living space is invaded by tourists and the following noise and nuisance is making the liveability here worse.

No matter physical space or social space, tourism put great pressure on Amsterdam centre, the public space here cannot carry the massive human flow currently. Although the municipality wants to disperse tourists to peri-urban area to ease the pressure on the centre, the fact is that the uniqueness of this area cannot be replaced. Therefore, public space here need a transition to adapt growing amount of tourist.

1.4 Problem Field 2: Tourism put pressure on environment and resource

Tourism, in fact, despite having a role in the economy is also a catalyst for negative impacts on the environment (emissions of pollutants due to the increasing volume of traffic; increased waste; noise; consumption of primary resources; etc.) The balance between economic development and environmental protection is the main challenge that the cities that decided to invest in tourist activity, maybe more than any other, are called upon to face.

The confrontation of tourism and environment is mostly concentrating on emission. Between 2009 and 2013, tourism's global carbon footprint has increased from 3.9 to 4.5 Gt CO2, accounting for about 8% of global greenhouse gas emissions.

In the context of the Netherlands, tourism sector accounts for 10 percent of total tap water consumption, 7 percent in net domestic energy consumption and 3% of particulate matter emissions. The numbers of Amsterdam, the centre of Dutch tourism, can only be higher. To response high level of resource consumption. Tourism sector need to figure out how to enhance resource efficiency.

1. THE PROBLEM

1.4 Problem Field 3: Tourism x Urban Carrying capacity

With the rapid growth of urbanization, many metropolises worldwide have undergone concentration of population, services, production, consumption and wealth. However, the resource for urban development is limited. A host of urban symptoms induced by excessive population inflows and overdevelopment of the urban areas have been emerging and growing more severe (Abernethy, 2001, Oh et al., 2005). The urban carrying capacity concept have often been voiced when debating whether the current rate of urban development has exceeded inherent limit of the city (Wei, Huang, Lam, & Yuan, 2015). Overtourism is one of the examples that overloading urban carrying capacity. The exceeding human flow, the overconsumption and cultural invasion of tourism are threating healthy urban development.

1.4 Problem Field 4: Tourism in post corona era

In 2020, an unpredicted virus has been threating the world. Travel restrictions and quarantine policy suspend global economy. Since March, 96% of global destinations impose travel ban. One of the most damaged industry is tourism. The tourism related businesses are collapsing and employees lost jobs. Three months passed, The epidemic most countries of Asia and Europe is gradually easing. Therefore, tourism enters a stage of recovery. But the shrinking situation will still lasts for several years comparing with previous years. In this case, Amsterdam centre, where tourists usually gather, the narrow public spaces have more flexibility to tranform step by step. It is a threat undoubtedly, but it is also an opportunity to help tourism sector develop in a healthy way for the future.

1.5 Conclusion

Tourism is not only a socio-economic phenomenon, it also need the support of physical space. The problem fields above demonstrate the negative impacts that tourism put on urban spaces, which are mainly spatial pressure and environmental pressure. In the era of overtourism, this pressure probably exceeds the responding urban carrying capacity. The consequence is the expansion of negative impacts. In the post corona virus era, the environmental pressure has decreased dramatically. However, due to the 1.5m distancing principle and the urgent needs for recovering tourism, the capacity of public space will decrease; therefore, the spatial pressure will not reduce. When the vaccine is widely applied, overtourism may reappear. Amsterdam is considered one of the victims of overtourism. The temporary shrinking is not only a chanllenge of tourism sector, but an opportunity. Rethinking the interrelationship between tourism and urban carrying capacity is the main issue the project will target. This is a topic for responding the massive human flow and resource flow that will possibly reappear in the future. It is also for helping tourism recover safely in the stage of distancing.

1. THE PROBLEM

1.6 Research Aim

The project starts from the relation between tourism and space. It aims to research about how urban tourism can adapt sustainable development of a city while tourism put less pressure on urban carrying capacity as the urban population and number of tourists are growing. The research explores how spatial intervention can help the co-existence of tourism sector and urban living environment.

1.7 Problem Statement

The tourism of Amsterdam has undergone rapid growth. Despite economic benefits, this double-sided sword has also brought negative impacts such as nuisance, crowding and littering. On the contrary, the urban resource for development is limited; the carrying capacity of the city cannot handle overdevelopment of tourism. Therefore, the space and environmental resources are under the massive pressure of tourism. First, In the situation of overtourism, on the one hand, Amsterdam needs to rise the urban carrying capacity to adapt and regulate development of tourism; on the other hand, it is necessary for tourism sector to reduce the needs for urban resources. Second, in the situation of post corona virus, the shrinking situation provide more flexibility for public spaces to transform to adapt both tourists' and citizens' needs. Reflexing the actions on space, the (public) space of Amsterdam need to transit and upgrade, and it has great potential to achieve it in current low-need situation.

2.Methodology

2.Methodology

2.1 Research Questions

Main Research Question

From situation of overtourism to post corona virus, the urban carrying capacity and tourism of Amsterdam need to mutually adapt. In this case, how to transit and upgrade public space to support sustainable development of tourism?

Research Question	Sub Questions	Primary Methods	Further Methods
Scope			
Urban carrying capacity	1. What is urban carrying capacity and how does it related to tourism?	Literature review	Data analysis Site research
Design Approaches			
transit and upgrade public space	2. What are the impacts of tourism and how does them reflex on public spaces? 3. What are the principles that guiding the transition and upgradation of public spaces?	Literature review Mapping Data/GIS analysis	Scenario setting Stakeholder analysis
Aim			
support sustainable development of tourism	4. How to achieve a balanced releationship between tourism and UCC by spatial intervention?	Literature review Modelling	Section analysis Case study
Context			
Amsterdam in overtourism era and post corona virus era	5. In overtourism situation, how does tourism affect Amsterdam at spatial dimension? 6. What should be taken into consideration in terms of post pandemic era?	Mapping Data/GIS analysis Section analysis Modelling	Scenario setting Stakeholder analysis Site research

Figure 3: the connection between research questions and methods (Source: Author)

2.Methodology

2.2 Methods

Methodological framework, which consists of four phases: Research Clarification, research framing, research by design, reflection Diagram is a roadmap describing the whole research process and linkages among research questions, central steps, and methods.

3.2.1 Research Clarification

In research clarification, the task is understanding the current global overtourism phenomenon. The determination of problem field and finding supporting evidence by observing social and environmental context are the next step. This phase mainly explaines the conflict between urban development and overtourism.

The central issue of the project is the pressure caused by growth of tourism sector impacting urban carrying capacity for sustainable urban development from spatial and environmental perspective. In this issue, the project put current situation of Amsterdam tourism: overtourism- post corona virus recovery- possible overtourism in future as research context. The research object is the transition and upgradation of urban public space. One of the research aims is exploring the balance point between tourism growth and urban carrying capacity to achieve sustainable development of tourism.

Methods

To answer SUB Q1 and SUB Q2, the project uses multiple methods. First, literature review helps to understand the universal problem of tourism industry. This is the base to qualitatively study the impact of tourism on cities. Then the spatial expression of these impacts can be related with urban carrying capacity theory. Site research is a subjective way to observe the overcrowded and impacting situation of tourism sector in Amsterdam. Other methods, mapping, data analysis are used for supporting and understanding the urgency of the problem. This also initially answer SUB Q5 by visualizing and locating the impacts.

3.2.2 Research Framing

Undertaking the first phase, this phase is to research key concepts and factors of key theories. Providing theoretical support for later analysis and design is also a target.

This phase includes conceptual framework, theoretical framework and analytical framework. Conceptual framework is to explore the link and interaction among key concepts. Theoretical framework explains related theories and destruct them into vital factors, which deeply analyses the research questions. This helps provide an initial idea about the solution. Analytical framework translates the conflict points into space and then determines critical locations.

Methods

In this phase, by literature review, SUB Q1 and SUB Q2 get further detailed answer; SUB Q3 is also answer in a overall view. In analytical part, the project integrates theories and data/GIS analysis while mapping is the visual outcome. Site research and section analysis elaborate the understanding of urban carrying capacity at targeted location, which paves the way for spatial intervention.

3.2.3 Research by Design

The aim of this phase is to interpret spatial design as a partial solution. By concluding previous theories and analysis, the project proposes design strategies.

This phase includes vision and spatial intervention. The vision part targets at overtourism and the recovery from current shrinking by corona virus; it hopes to proposes a time-phased vision and possible scenarios in the future. Spatial intervention part explains how to translate supporting theories of design into physical space. The project believes transforming public space at Amsterdam centre is a feasible way to achieve the balance between tourism growth and urban carrying capacity.

Methods

In this phase, the project first uses modelling to simulate the change of spatial capacity under 1.5m distancing principles; together with scenario setting the project provides a possible answer for SUB Q6. And the different scenario settings also provide several ideas for SUB Q3. Spatial intervention will elaborate from theories to answer for SUB Q4, this is the most important part of answer for the main research question.

2.Methodology

2.2.4 Reflection

Reflection phase is a self review of the whole thesis. This phase concerns the possible impacts of design and its versatility. This phase includes design reflection and research reflection.

Design reflection uses stakeholder analysis to discuss the feasibility of spatial intervention. Then a next step research of time span will help to answer SUB Q6. The research reflection includes societal relevance, scientific relevance and the ethical consideration.

2.Methodology

2.3 Research Framework

Phases   **Contents**   **Methods**

1. Research Clarification

SUB Q1
SUB Q5

Problem Field
Context Introduction
Problem Statement

- Overtourism
- spatial pressure: overcrowding and decrease of liveability
- environmental pressure: over consumption
- Urban carrying capacity
- Amsterdam in era of overtourism and post COVID-19

Literature review
Data analysis
Site research

Research Aim

- improve sustainability of tourism industry from a perspective of public space

Research Question

- mutual adaptation between tourism sector and urban carrying capacity

2. Research Framing

SUB Q1
SUB Q2

Conceptual Framework

- Main concepts and their connections

Literature review

SUB Q1
SUB Q2
SUB Q3

Theoretical Framework

- Flows of tourism
- Urban carrying capacity
- Design-based theory

SUB Q5

Analytical Framework

- The existing pressure, resource flows, street profiles and public space

Literature review
GIS/Data analysis
Section analysis
Mapping

3. Research by Design

SUB Q3
SUB Q6

Vision

- Spatial expression and image expression

Modelling
Scenario setting

Main RQ
SUB Q4

Spatial Intervention

- More public spaces with higher resource efficiency by the potential of canals and new technology

Modelling
Case study

4. Reflection

SUB Q6

Design Reflection

- Feasibility: Time span & Stakeholders

Stakeholder-analysis
Scenario setting

Main RQ

Research Reflection

- Connection between research and design
- Study relevance, limitations, and ethical consideration
-Personal reflection

Figure 4: the roadmap of methodology (Source: Author)

2.Methodology

2.4 Conceptual Framework

Urban carrying capacity is supporting the development and the well-being of citizens in the city, including tourism sector. In the meaning time, tourism sector is growing rapidly, which puts much pressure on urban carrying capacity. If it keeps growing at a unlimited stage, it will threat urban carrying capacity which will also threat the development of other sectors. Therefore, there are two major ideas to solve this situation. One is rising the urban carrying capacity at spatial level to adapt growing number of tourists. Another is limiting the grow of tourism sector at resource level to adapt the limited capacity for urban development.
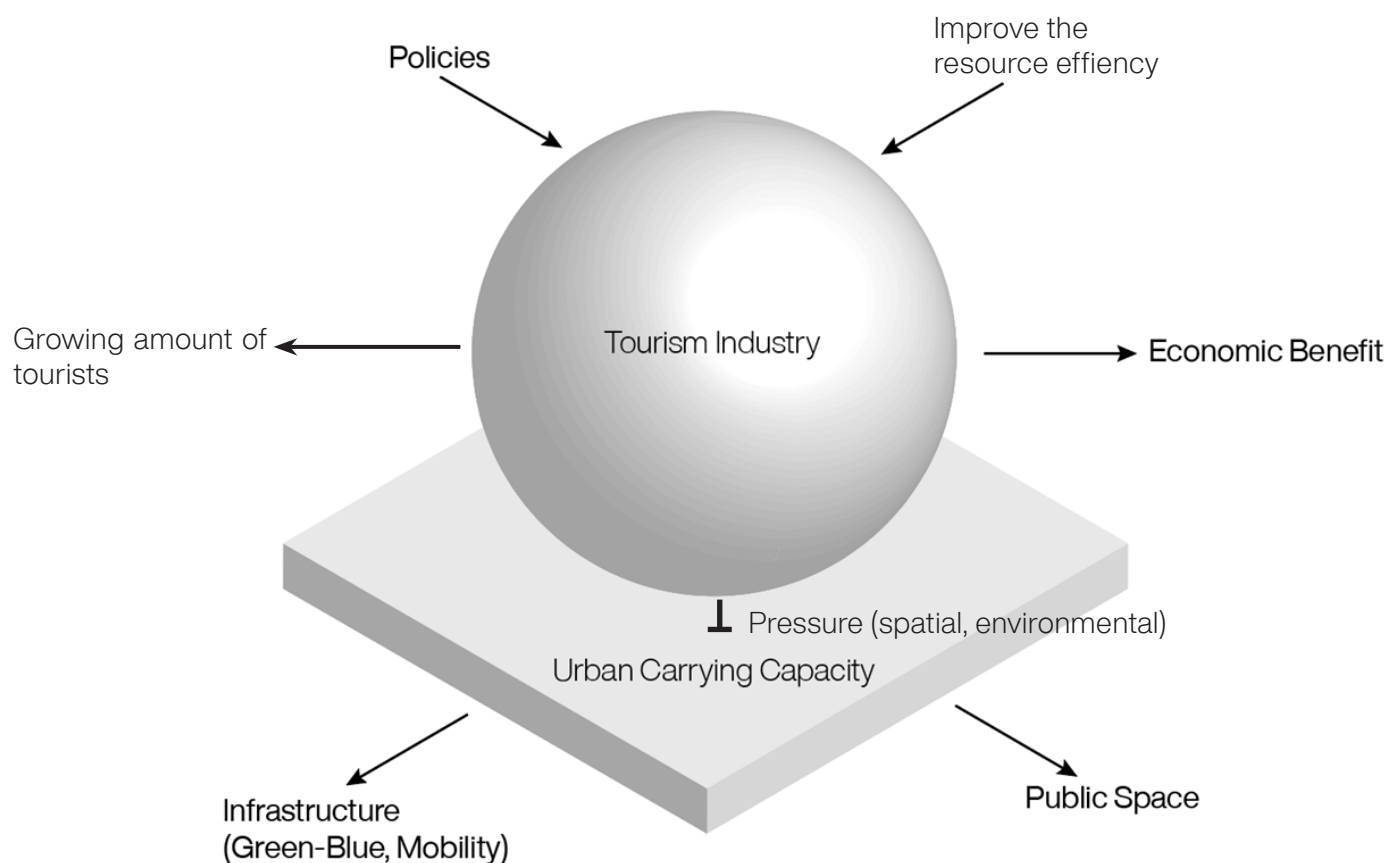
Figure 5: Conceptual Framework (Source: Author)

2.Methodology
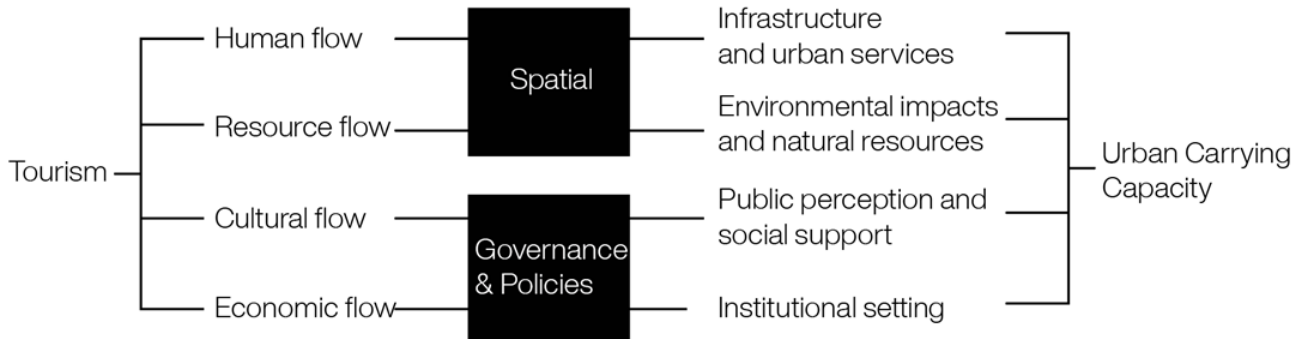
2.5 Flow of Tourism

3.5.1.   Human Flow

Tourism essentially is a spatial-temporal movement of human from home to destinations. This flow has a spatial interaction between places. In the past decades, most academic research discovered tourism from economic-social dimension. However, the spatial relationships and expressions are still one of the base of tourism.

Generally, human flow of tourism can be destructed to transit component and destination component, which represent the dynamic view and static view of human flow.

3.5.2   Resource Flow

As mentioned, human flow is the foundation of tourism, which means there is a need of carriers to support it. Therefore, tourism is an industry of mobility; it is now at a stage of speeding up environmental impact. The growth of arrival numbers and average distances travelled results in larger and more intense resource flow. S. Gossling (2015) believed that In the consumption of water, energy, and food, demand for land, and emissions of CO2, tourism's impact will double within 25-45 years. But on the other hand, tourism relys on stable resource flows and healthy ecosystem. There is an urgency to improve the resource efficiency of tourism.

Therefore, according to how tourism sector using resources, two main characters of this process can be recognized: consumption and externalities.

3.5.3   Cultural flow

Despite the physical flows of tourism, the intangible flows of tourism is now drawing more attention. From the view of itself, tourism is a modern commercialized culture which offering romance, paradise and imaginary holidays. From view of larger society, this is a communication platform of different cultures and lifestyles (positively); However, this globalized industry is a strong socio-cultural system that it might intrude the local cultures. Generally, culture evolves much faster in this globalized world; tourism is a carrier of cultural flow which stimulates cultural revolution worldwide. The destination and tourist culture are both transformed and produced through tourism.

3.5.4   Economic flow

Why tourism grows so fast is not only because the will of tourists, but the great economic benefits. It is considered a method of providing jobs, income, tax and capital inflow. This economic flow spread to various sectors: accommodation, transport, restaurants, retail and entertainment. However, this unlimited expansion of tourism is affecting the destination in a negative way. The current aim is to finding a balanced point between the economic flows of tourism and local well-being.

2.Methodology

2.6 Urban Carrying Capacity

3.6.1 Definition

Carrying capacity is defined as the maximum number of individuals that can be supported in an environment without the area experiencing decreases in the ability to support future generations within that area (Chung, 1988) from the ecological point of view. This means the carrying capacity for each species is limited. There's a balanced point for the maximum their survival and proliferation. Similarly, when a city develops at an exceeding level will results in negative impacts. Therefore, the concept of carrying capacity can support the sustainable development of a city.

Urban carrying capacity is initially proposed as "the maximum level of human activities—e.g. population growth, land use, physical development, etc.—which can be sustained by the urban environment without causing serious degradation and irreversible damage." However, urban system also consists of social, cultural, economic aspects. Therefore, urban carrying capacity has more dimensions than ecological carrying capacity.

3.6.2 Components of UCC

According to the research of Kyushik Oh (2006) and Yigang Wei (2016), The components of urban carrying capacity are based on the purpose of application and spatial setting. Both researches agree on four main components: environmental and resource, Infrastructure and urban services, public perception and social support, and institutional setting. Four components can also be divided into two categories : Spatial (first two) and governance (last two).

Environment and resources: Usually, natural resource is the foundation of urban development; and the environment is able to digest waste and pollution. But the capability of the above two is limited. If the level of human activity is exceeding, the livability of the city and the endurance of the environment will be scarified.
This component has two further interpretation: assimilative capacity and resources availability of the natural environment. (Wei, 2015) Assimilative capacity means the capability of the environment to assimilate waste while keeping its well-being. Resources availability refers to the productivity that the urban activities require or generate.

Infrastructure and Urban facilities: This means the infrastructure and urban services can support the

degree of human activity in specific area while the quality of life is maintained. There is a need for supply-demand balance of infrastructure and urban services. If the demands of residents (and tourists) exceed supply, the infrastructure needs to enhance its capacity to ensure the balance. The most important infrastructures include housing, transportation system, municipal engineering, public spaces, education and health care.

Public perception and social support: The amount of activity or degree of change that can appear before recognizing the visual or psychological quality of environment differently than previously perceived. This part is to assess if the changes of the city exceed psychological expectations from perspective of citizens, which makes the urban carrying capacity have more democratic support.

Institutional setting: The administrative/financial condition of a city for maintaining the optimal scale of urban development towards public goals. This means the decision making process of the government has great influence on urban planning and city performance.

3.6.3 The corresponding relationship between tourism and urban carrying capacity.

By analysing the flows of tourism and components of urban carrying capacity, we could observe that tourism poses pressure in physical level and intangible level. The topic of this project is to mitigate the negative impacts of tourism by intervention on physical space. Therefore, upgrading related infrastructure and improving the level of resource efficiency are the main goals. The two goals can be achieved by spatial intervention in urban public spaces

2.Methodology

2.7 Conclusion: A balanced view of tourism sector and urban carrying capacity
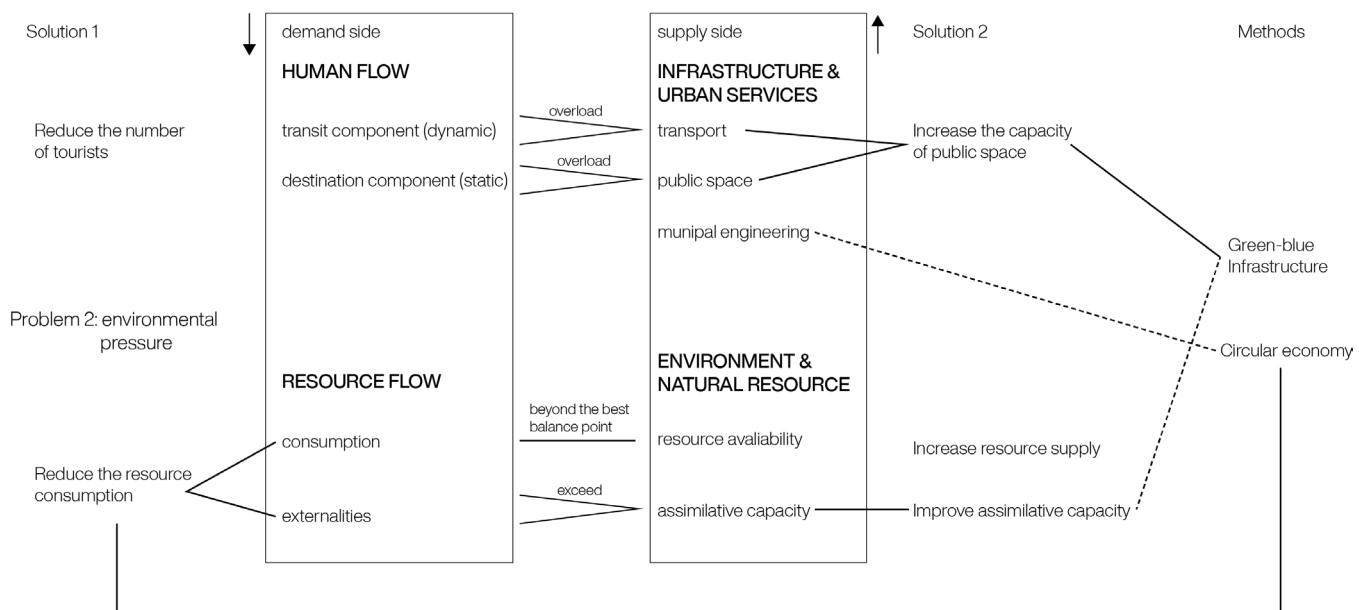
3.7.1 From "city in balance" policy

The municipality of Amsterdam had recognized the negative impacts of tourism. In May 2018, it introduced policy of city in balance, which expressed its ambition of arriving at a new equilibrium of focusing on residents. A balance between quality of life and hospitality should be established. The balanced idea can also be taken into the relationship between tourism and urban carrying capacity,

3.7.2 Demand-supply balance between tourism and urban carrying capacity

For the problems caused by tourism, we can comprehend them from the perspective of demand-supply balancing. In this case, tourism sector is the demand side and urban carrying capacity is the supply side. The spatial pressure is because that the growing human flow exceeding the capacity of urban infrastructure (transport, public space), this imbalance

leads to overcrowding and decrease of livability. The environmental pressure, on the one hand, is a result of resource consumption exceeds the best balance point of resources availability which means over consumption; on the other hand, it is also a result of the externalities made by resource consumption overweigh the assimilative capacity of nature which means pollution and waste. Solving these imbalances, the general idea is clear: reduce demand and/or increase supply. Translating it to the project are reduce the amount of tourists and improve resource efficiency (reduce demand); increase the capacity of public space and rise resources availability (increase supply). From the spatial point of view, improve resource efficiency (demand side) and increase the capacity of public space (supply side) are feasible ideas. In this case, the project put forward applying circular economy for resource efficiency and using blue-green infrastructure for capacity of public space. These two methods also have an interrelationship.

Problem 1: spatial pressure

| Solution 1 | demand side | | supply side | Solution 2 | Methods |

HUMAN FLOW — INFRASTRUCTURE & URBAN SERVICES

Reduce the number of tourists — transit component (dynamic) — overload — transport — Increase the capacity of public space

destination component (static) — overload — public space

munipal engineering

Problem 2: environmental pressure

RESOURCE FLOW — ENVIRONMENT & NATURAL RESOURCE

Reduce the resource consumption — consumption — beyond the best balance point — resource avaliability — Increase resource supply — Green-blue Infrastructure

externalities — exceed — assimilative capacity — Improve assimilative capacity — Circular economy

2.Methodology

2.8 Design-based theories

2.8.1 Public space x Green-blue infrastructure: the city needs to adapt growing amount of tourists (and citizens)

The concept of "Green Infrastructure" was initially put forward in the USA. Benedict & McMahon (2006) defined it as an "interconnected network of protected land and water that supports native species, maintains natural ecological processes, sustains air and water resources and contributes to the health and quality of life for America's communities and people". Now this method is combined with blue infrastructure, which extends its meaning to regulate air temperature, air quality, water storage and drainage, and noise reduction. Based on the definition and content of green-blue infrastructure, there are three major elements: vegetation, surface water and habitat. These elements contribute much to the ecosystem services, well-being of citizens and urban built environment. Especially in the case of this project, in the city center of Amsterdam, most of the ground is paved, the green elements are only street trees. The canals are also lost their ecological functions now. With the problem of overcrowded situation, the public spaces and streetscape can be transformed through the concept of green-blue infrastructure to adapt growing amount of tourists and restore the ecological function of canals.

2.8.2 Public Space x Circular Economy

Ellen MacArthur Foundation (2011) defines circular economy as an economic system of closed loops in which raw materials, components and products lose their value as little as possible, renewable energy sources are used and systems thinking is at the core. In the recent research, the circular economy is guided by three major principles: reduce, reuse and recycle (3Rs). In a further vision, there are two more principles: redesign and remanufacture.
In the case of tourism sector, one of the biggest issues is the overconsumption. In this case, the ultimate aim is to improve resource efficiency. Therefore, the concept of circular economy can be applied to the resource management of tourism sector to achieve higher level of reduce, reuse and recycle. Also, circular economy concept can reflex on public spaces to stimulate collaboration of tourism related facilities and build a network of resource utilization through different scales.

3. Analytical Framework

3. Analytical Framework

3.1 Spatial Pressure - Internal factors
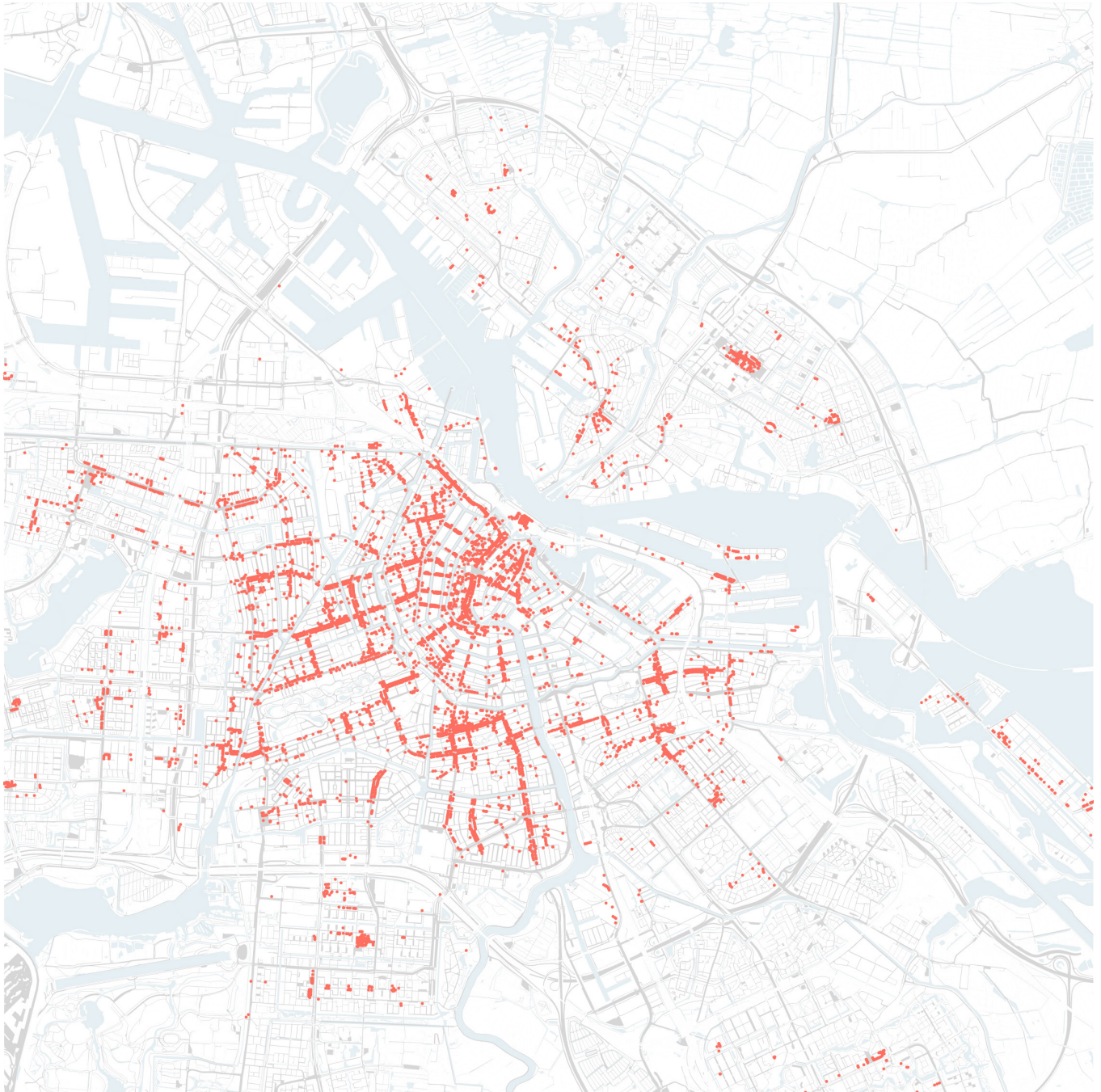

Cultural Attractions

Legend | ■ Cultural Attractions
■ Festival Locations

Source: Google map, www.amsterdam-tips.com/festivals

3. Analytical Framework
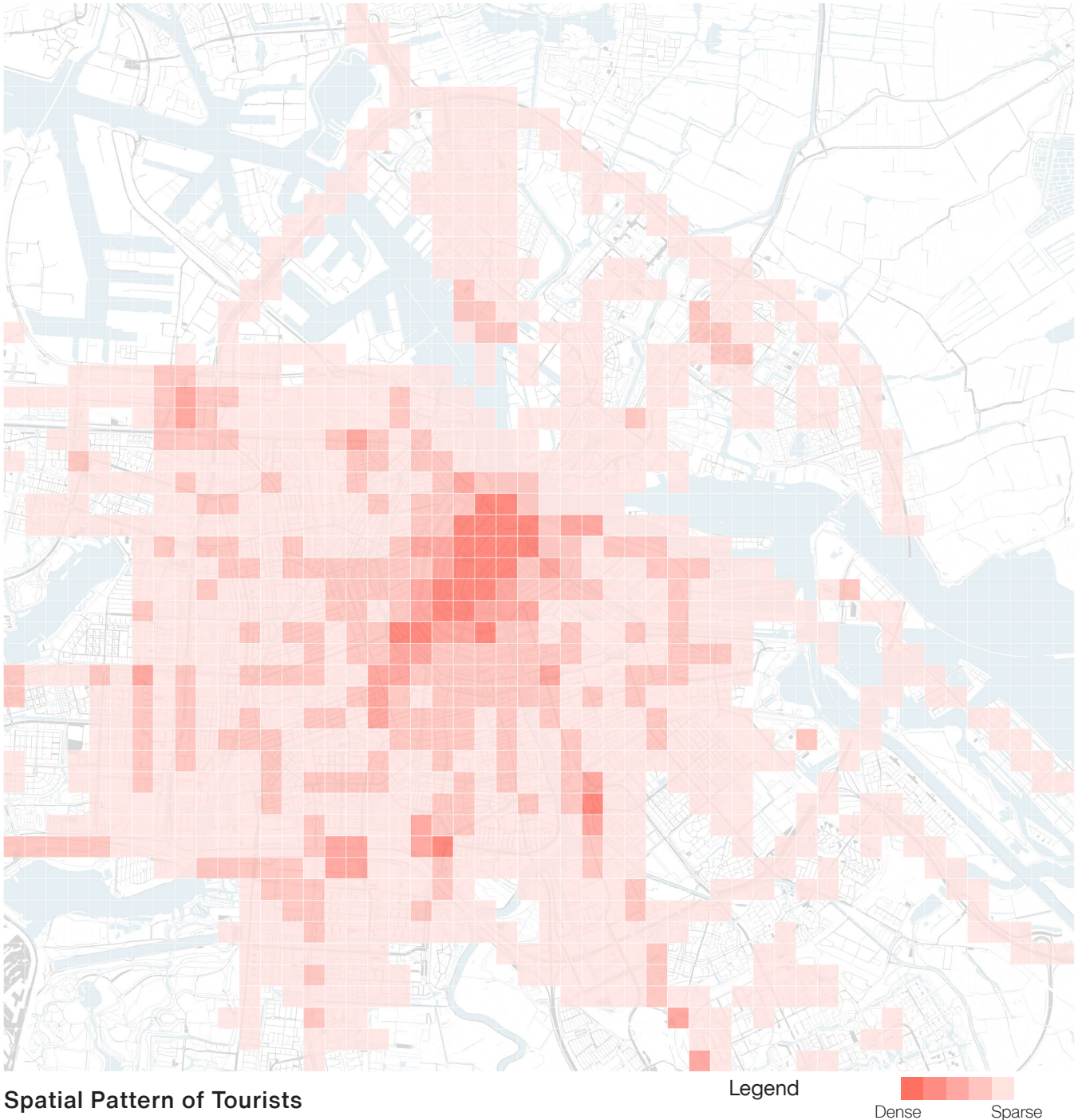
3.1 Spatial Pressure - Internal factors

Retail

Legend ● Shops

3. Analytical Framework

3.1 Spatial Pressure - Internal factors

Spatial Pattern of Tourists

Legend

Dense   Sparse

Source: Eric Fischer's research. (2019)

3. Analytical Framework

3.1 Spatial Pressure - External factors

Public Transport

Legend

— Metro

— Tram

— Bus

---- Ferry

Source: Gemeente Amsterdam (2019)

3. Analytical Framework

3.1 Spatial Pressure - External factors
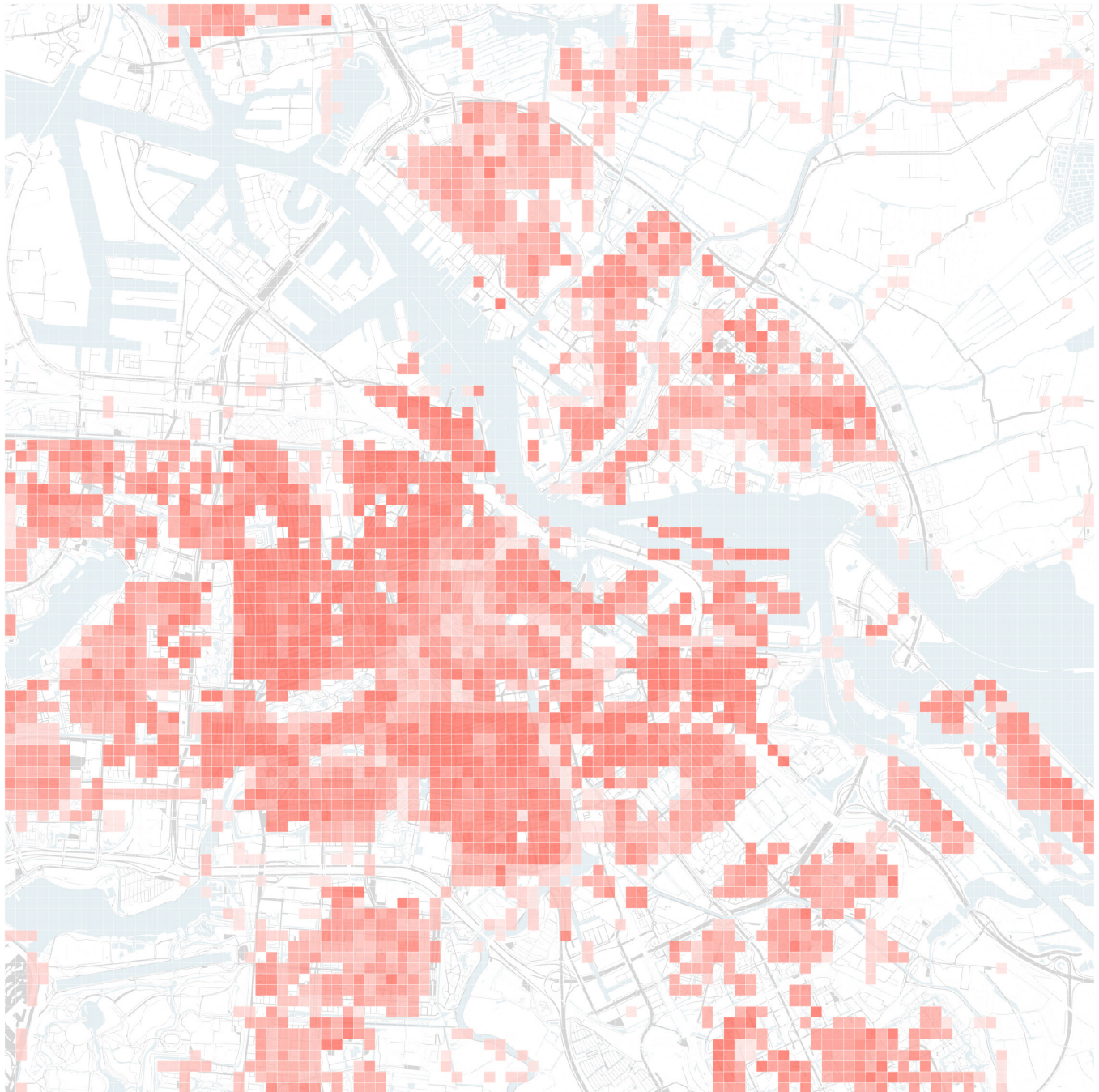
Population Density

Legend

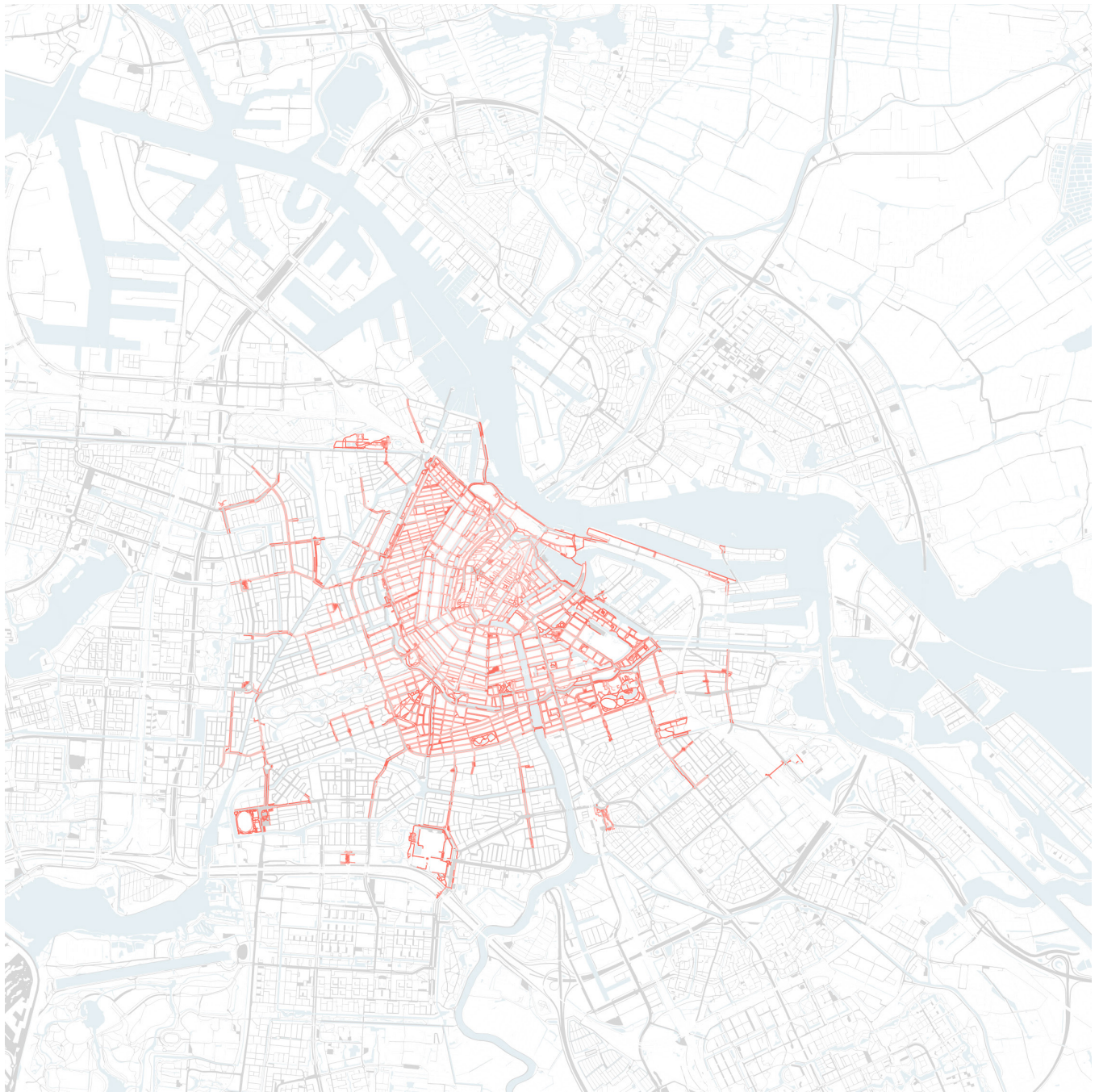| Color	Range
	>250
	150-250
	100-150
	50-100
	20-50
	10-20
	5-10
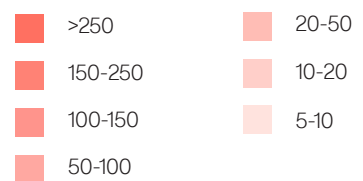
Source:
CBS (2017)

3. Analytical Framework

3.1 Spatial Pressure - External factors

Walkability

Legend

——	Bad
——	Mediocre
——	Good
——	Excellent

Source: Gemeente Amsterdam (2019)

3. Analytical Framework
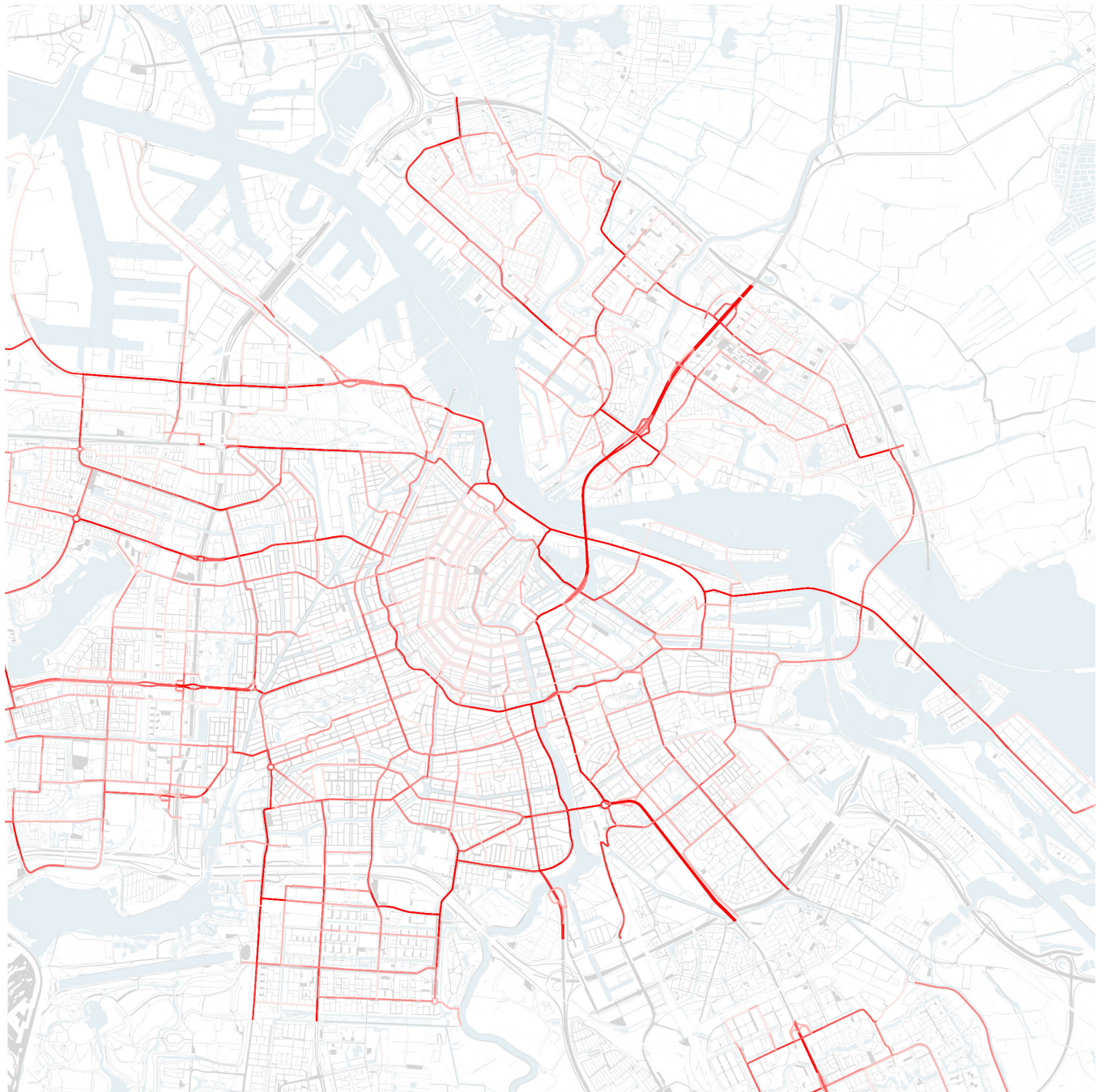
3.1 Spatial Pressure - External factors

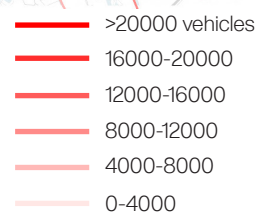**Cyclability**

Legend ——— Bike Lanes

Source: Gemeente Amsterdam (2019)

3. Analytical Framework

3.1 Spatial Pressure - Impacts

Traffic Intensity

Legend

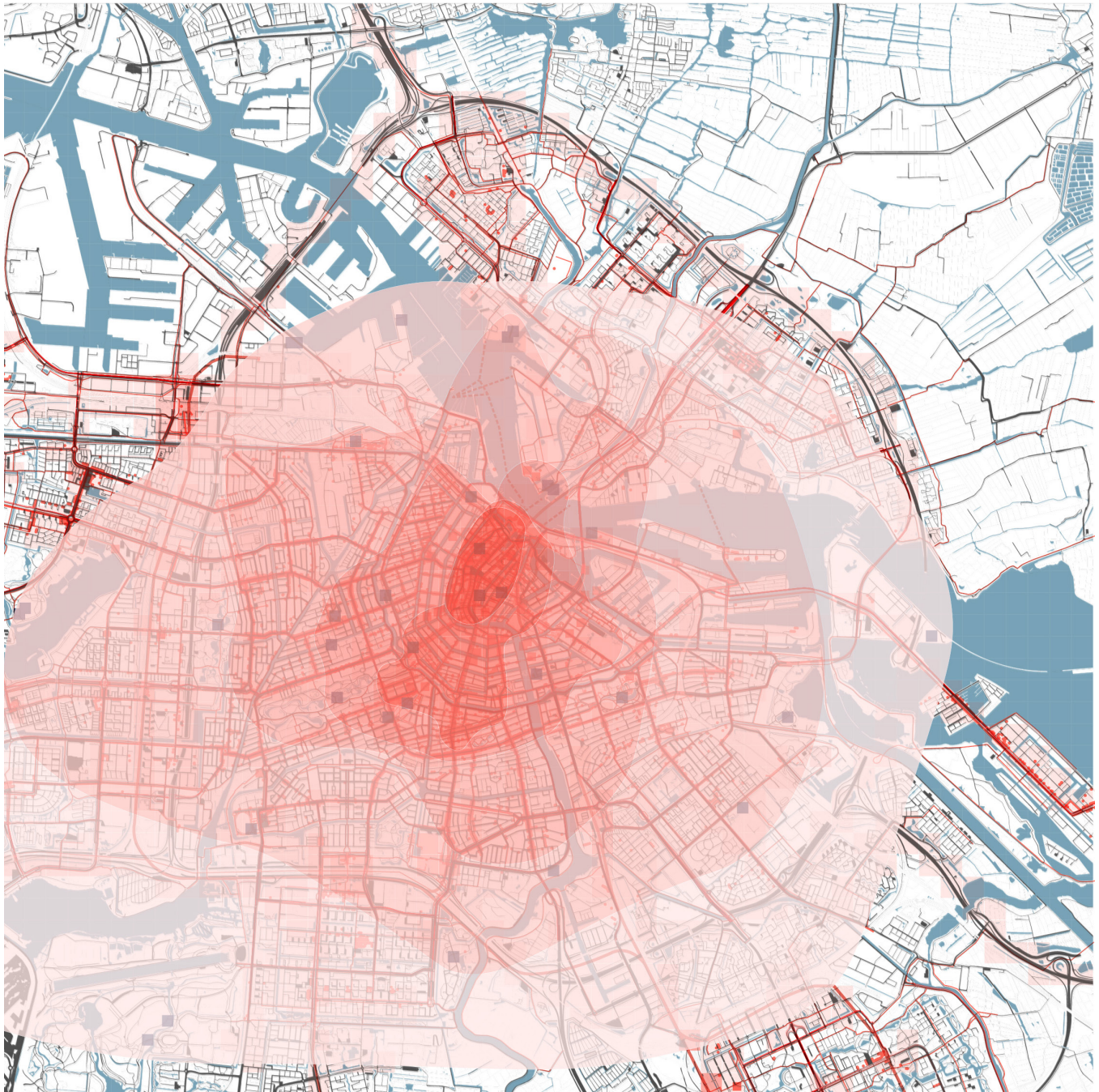|	
▬▬▬	>20000 vehicles
▬▬▬	16000-20000
▬▬▬	12000-16000
▬▬▬	8000-12000
▬▬▬	4000-8000
▬▬▬	0-4000

Source: Gemeente Amsterdam (2019)

3. Analytical Framework

3.1 Spatial Pressure - Overview
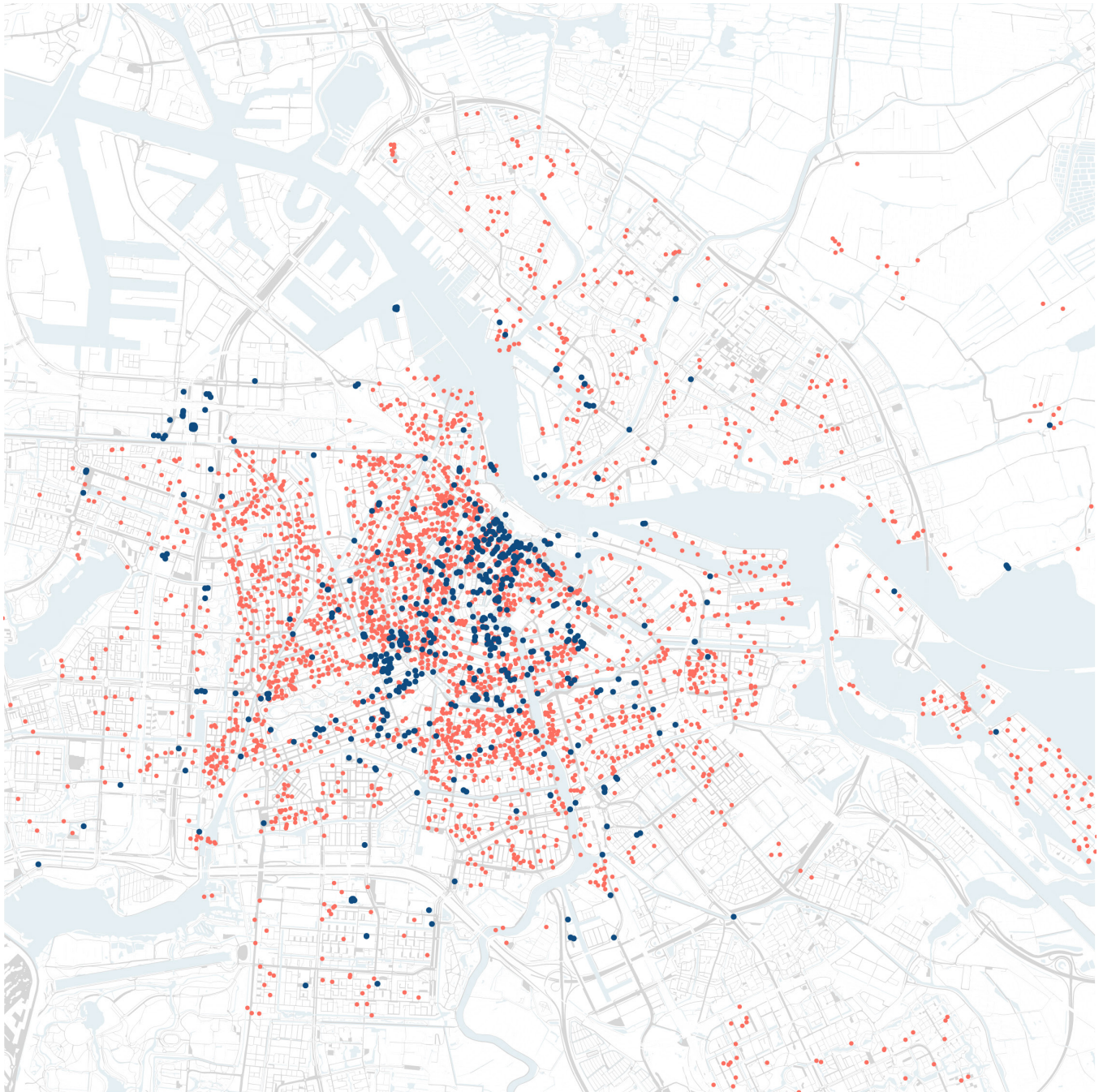

Overlay of factors

Legend

More pressure   Less pressure

3. Analytical Framework

3.2 Environmental Pressure - Internal factors
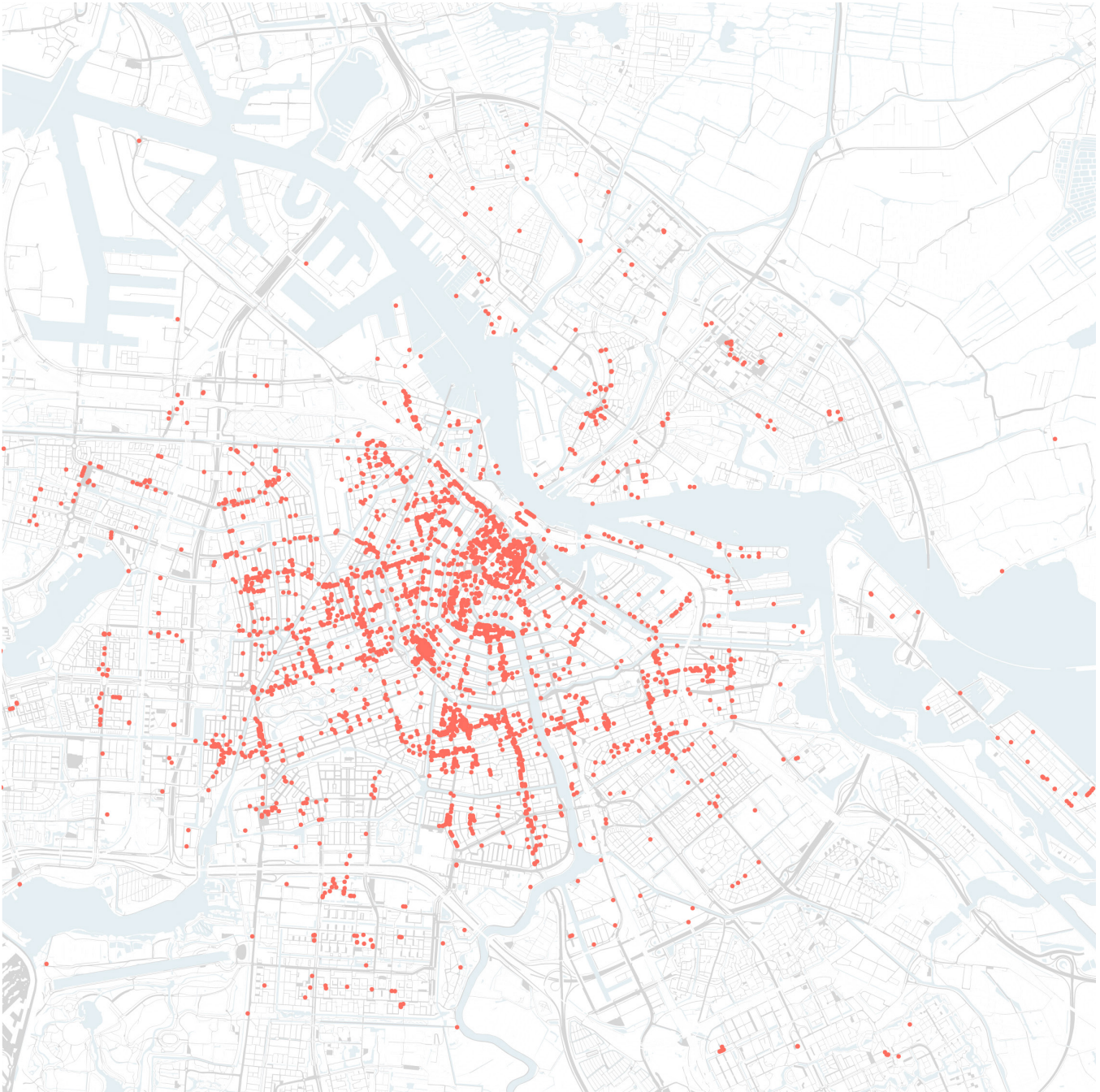

Hotels &Airbnb

Legend ● Airbnb rooms ● Hotels

Source: Gemeente Amsterdam (2019), insideairbnb.com

3. Analytical Framework

3.2 Environmental Pressure - Internal factors

Catering

3. Analytical Framework

3.2 Environmental Pressure - External factors

Green Structure
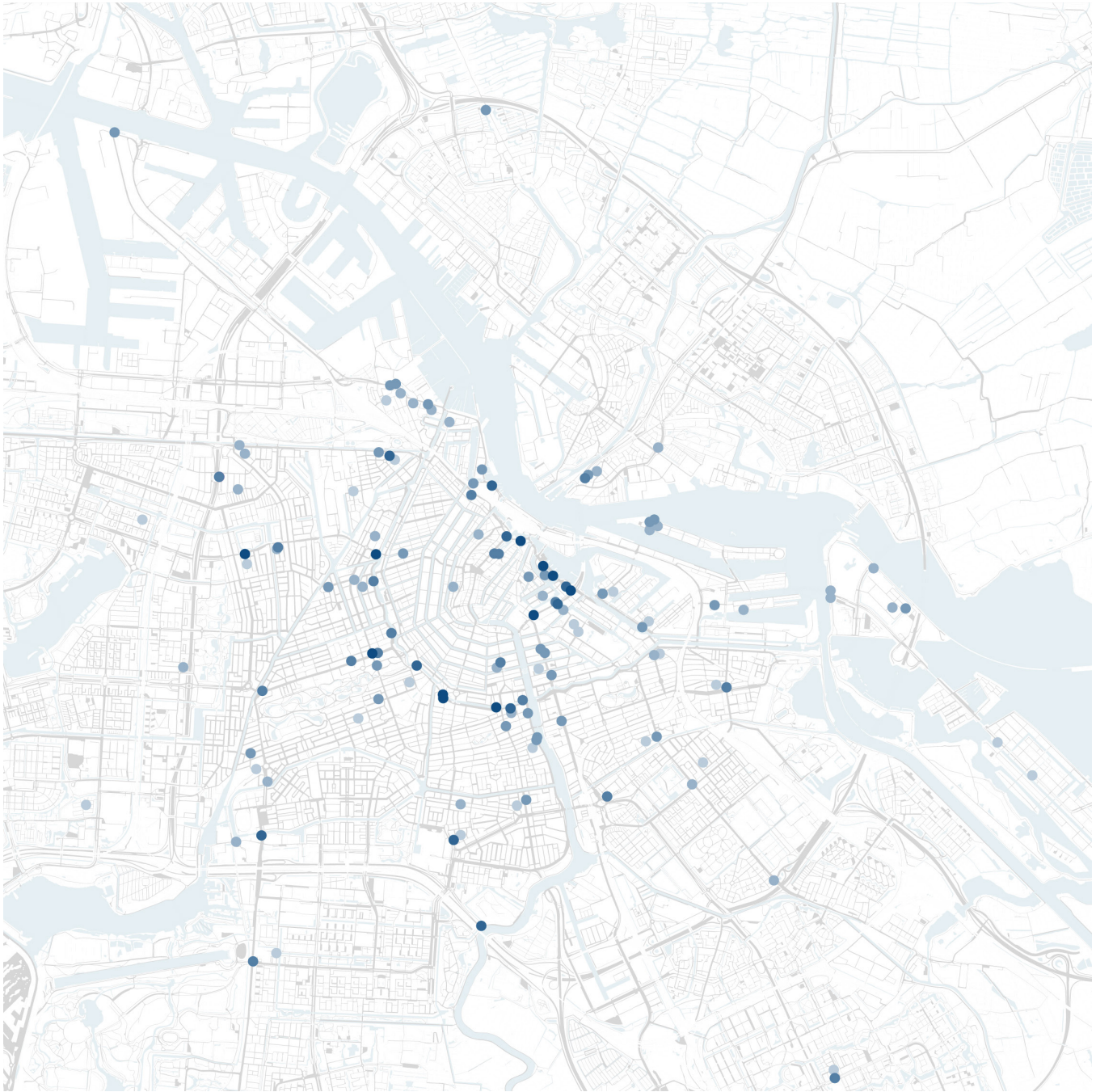
Legend

Ecological structure

Main green structure

Source: Gemeente Amsterdam (2019)

3. Analytical Framework

3.2 Environmental Pressure - Impacts

Air Quality (NO2 Density)

Legend

- >40 µg/m3
- 35-40
- 30-35
- 25-30
- 20-25
- <20

Source: Gemeente Amsterdam (2019)

3. Analytical Framework

3.2 Environmental Pressure - Impacts

Noise Pollution

Legend

- >70 dB
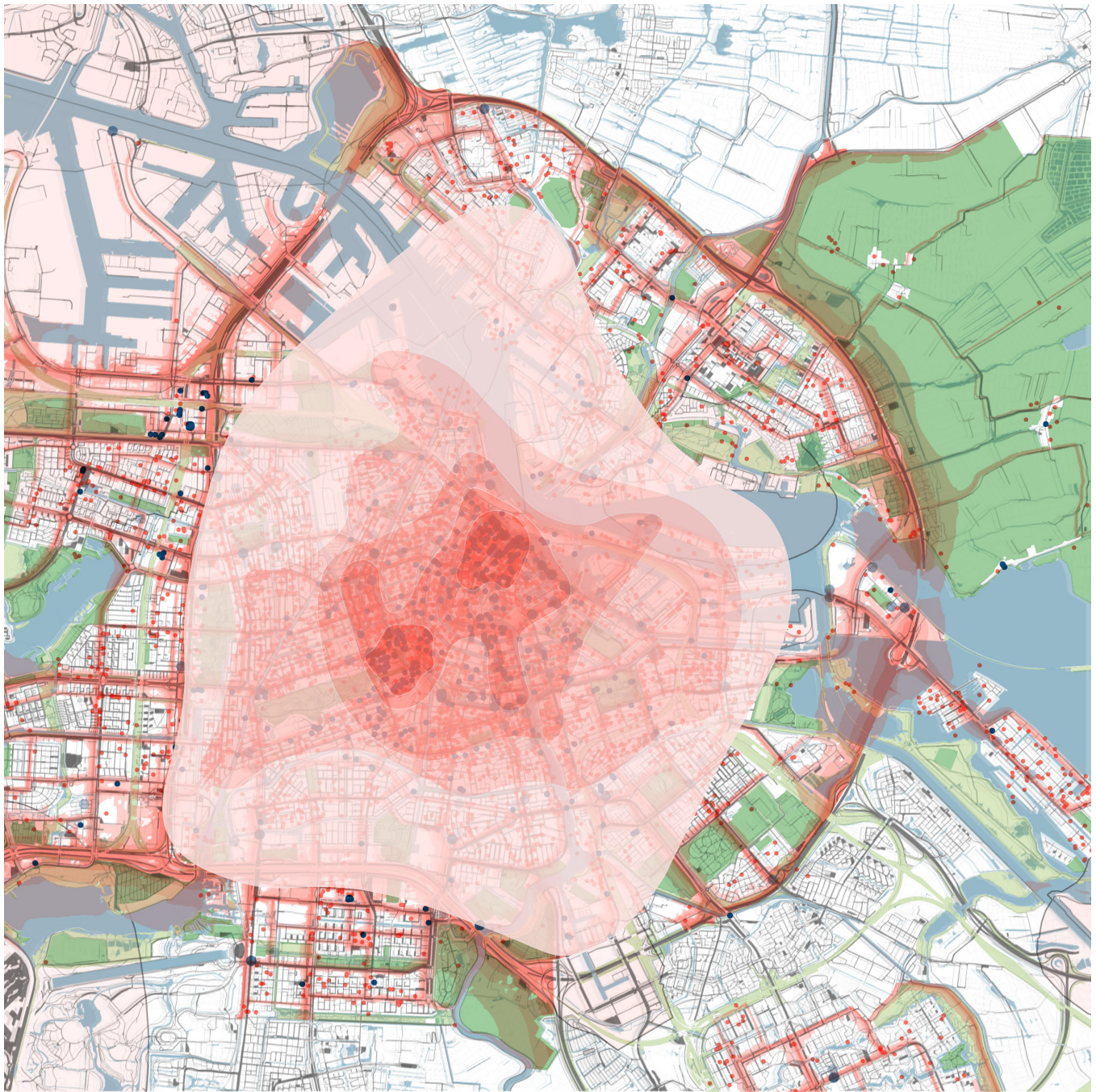- 65-70 dB
- 60-65 dB
- 55-60 dB
- 50-55 dB
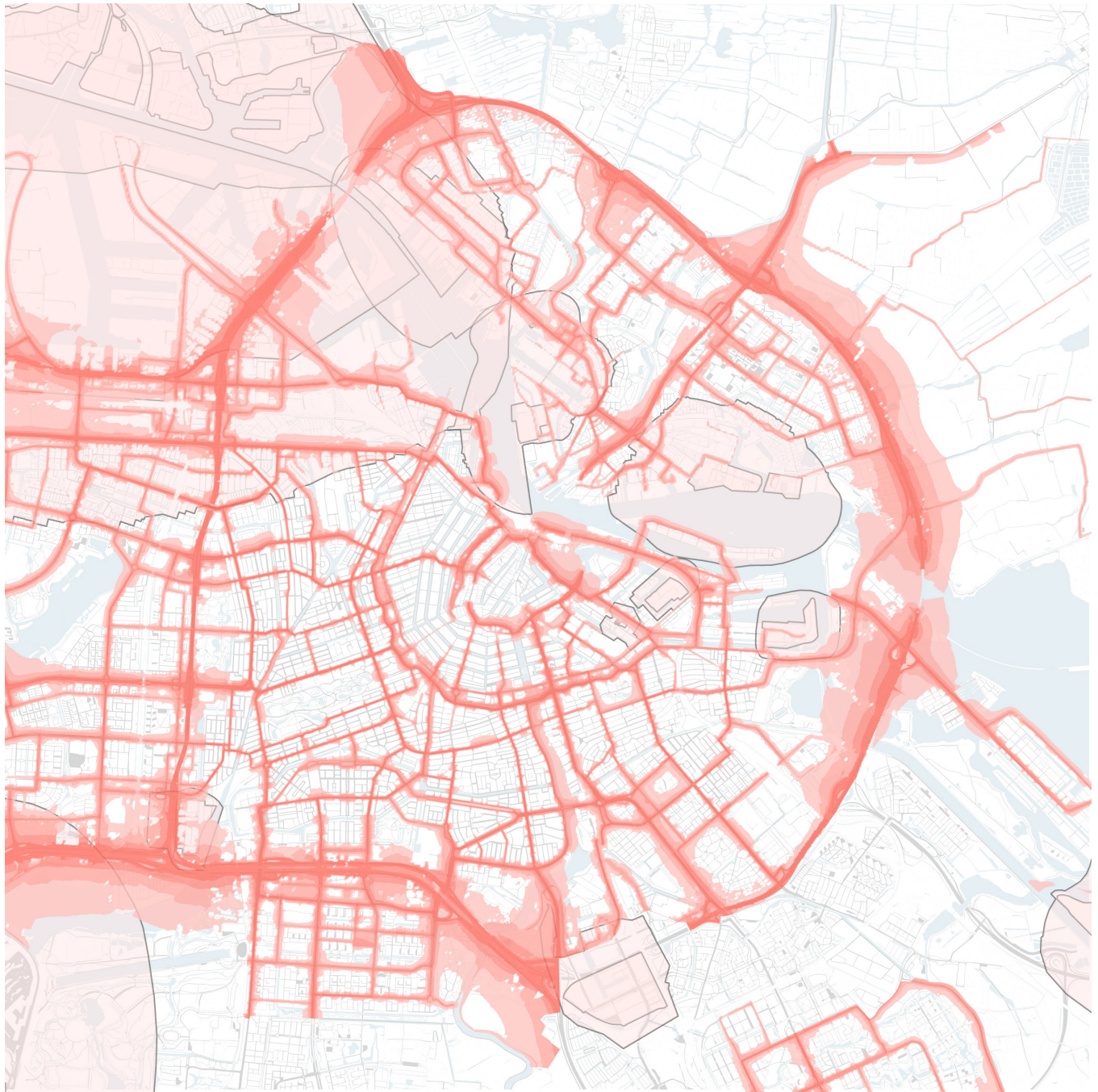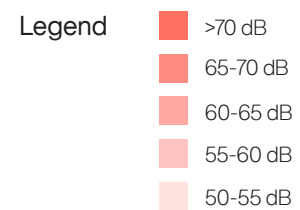
Source: Gemeente Amsterdam (2019)

3. Analytical Framework

3.2 Environmental Pressure - Overview

Overlay of factors

Legend

More pressure   Less pressure

3. Analytical Framework

3.3 Conclusion

By the analytical framework above, we can deeply understand the two major pressures that tourism poses: spatial and environmental. The pressures spread all over the city and undoubtedly concentrate on canal rings, where Amsterdam centre locates. From the perspective of physical space, for spatial pressure, the factors of attractions, retail, population density are difficult to control and transit relatively. But the factors of public transport, walkability, tourist activities are relatively easy to improve. Similarly, for environmental pressure, it is hard to "shut down" hotels or catering, but we can help them achieve higher resource efficiency by spatial intervention. In the meantime, the broken green structure of city centre can be repaired to gain better air quality or quiet environment.

These are the ideas of this project: ease the spatial pressure and environmental pressure by transform the public space of centre, where tourists gather. The problem is, in the narrow historic centre, public spaces are highly commercialized and motorized, which is one reason for overcrowding. It is also a crisis of representation, we blur the perception that who the urban public space serve. In addition, old buildings are hard for waste management and the implementation of clear energy which makes the commerce here tend to choose an unsustainable business model.

Therefore, the design of the project includes two parts: First, transforming existing spaces to make them a platform of coexistence of tourists, and residents and a platform for collaboration to improve resource efficiency. Second, exploring potential spaces (mainly on the canal) to provide more public spaces while complete green structure to restore the ecological function and living function of the city centre.

4. Detailed Analysis

4. Detailed Analysis

4.1 Streets

4.1.1 Damrak

7.5m	2m	6.4m	3.5m	1.5m	10.2m
Pedestrian	Bicycle	Tram	Vehicle	Bicycle	Pedestrian

Crowdedness
Tourification
Facilities
Walkability
Greenery
Sustainability
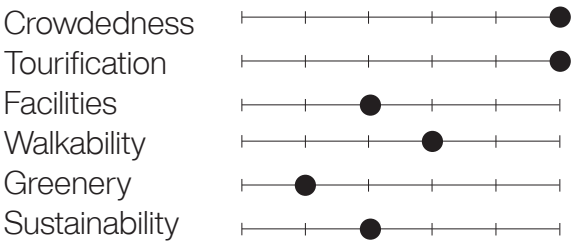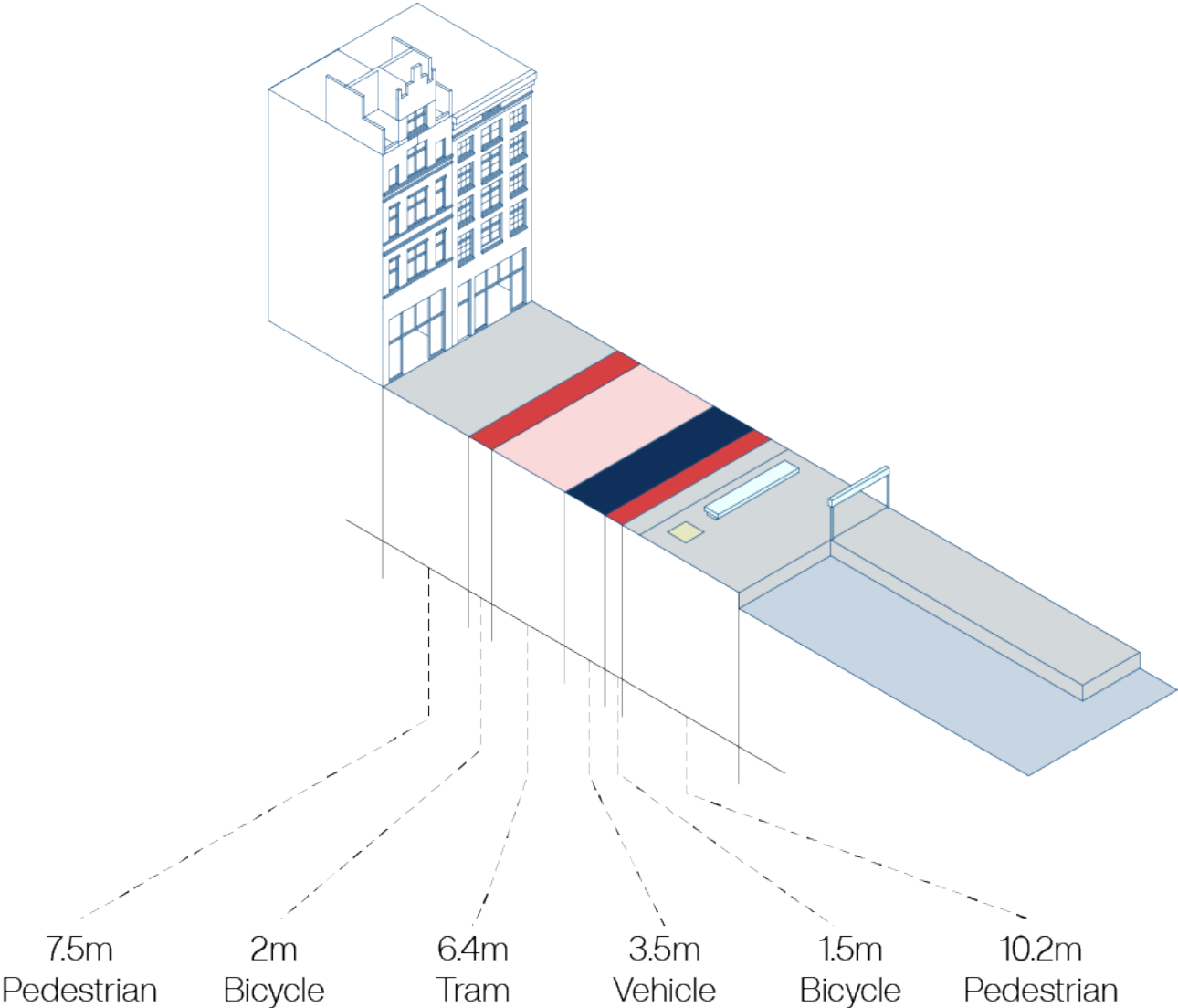
4. Detailed Analysis

4.1 Streets

4.1.2 Rokin

7m	1.8m	6.6m	3.5m	1.8m	5.2m	24.5m	3m	8.5m
Pedestrian	Bicycle	Tram	Vehicle	Bicycle	Pedestrian	Waterway	Pedestrian	Mixed

Crowdedness
Tourification
Facilities
Walkability
Greenery
Sustainability

4. Detailed Analysis

4.1 Streets

4.1.3 Leisestraat

2.5m	4m	3.5m	27.6m	4.5m	3.5m	4m	2.1m	5.6m	2.6m
Pedestrian	Vehicle	Pedestrian	Waterway	Pesdestrian	Vehicle	Pedestrian	Pedestrian	Train	Pedestrian

Crowdedness
Tourification
Facilities
Walkability
Greenery
Sustainability
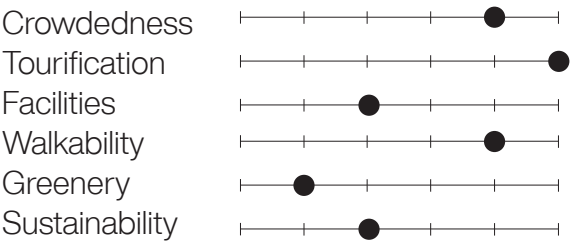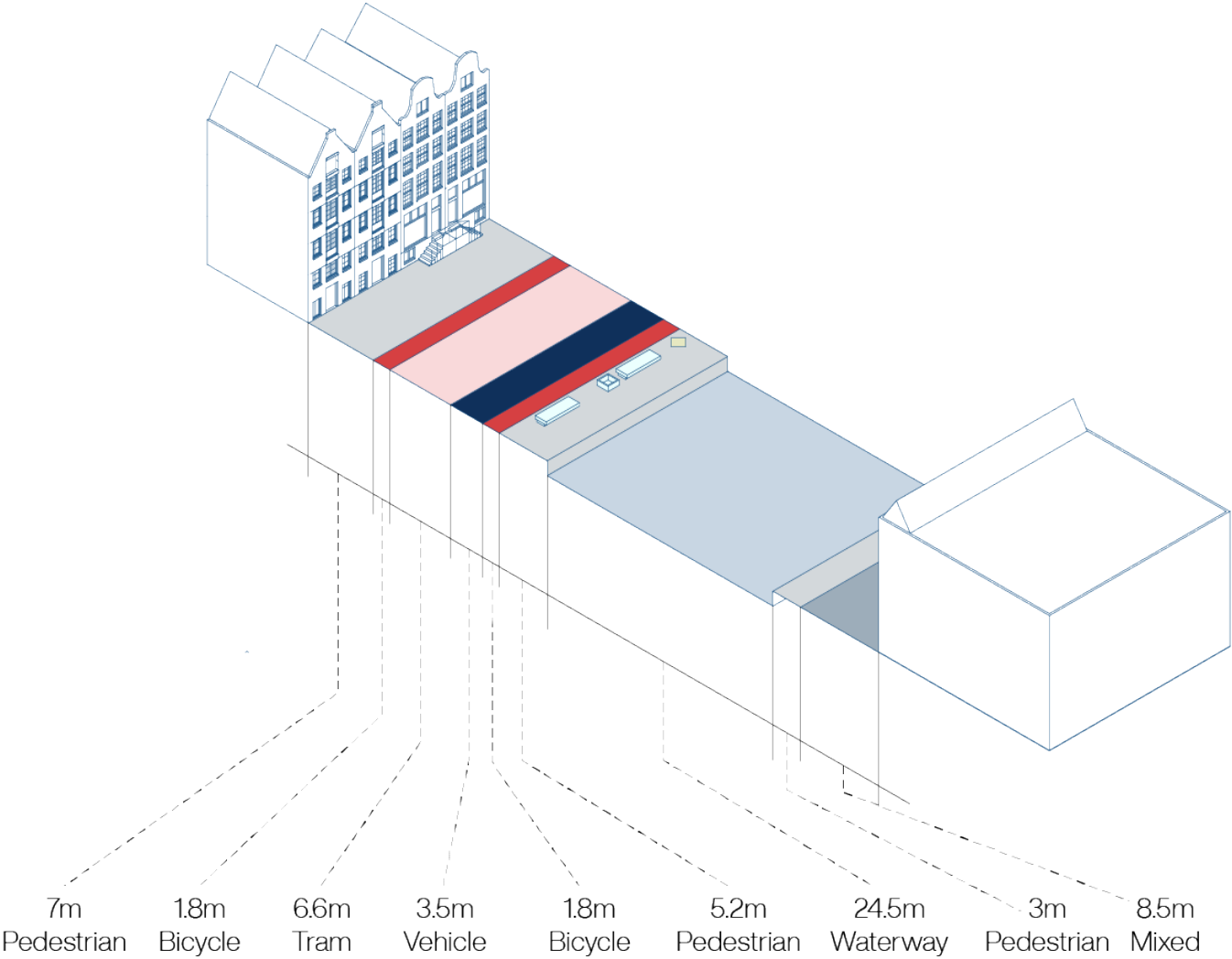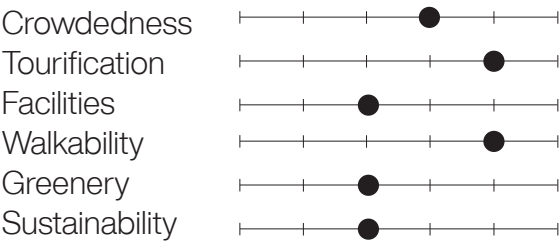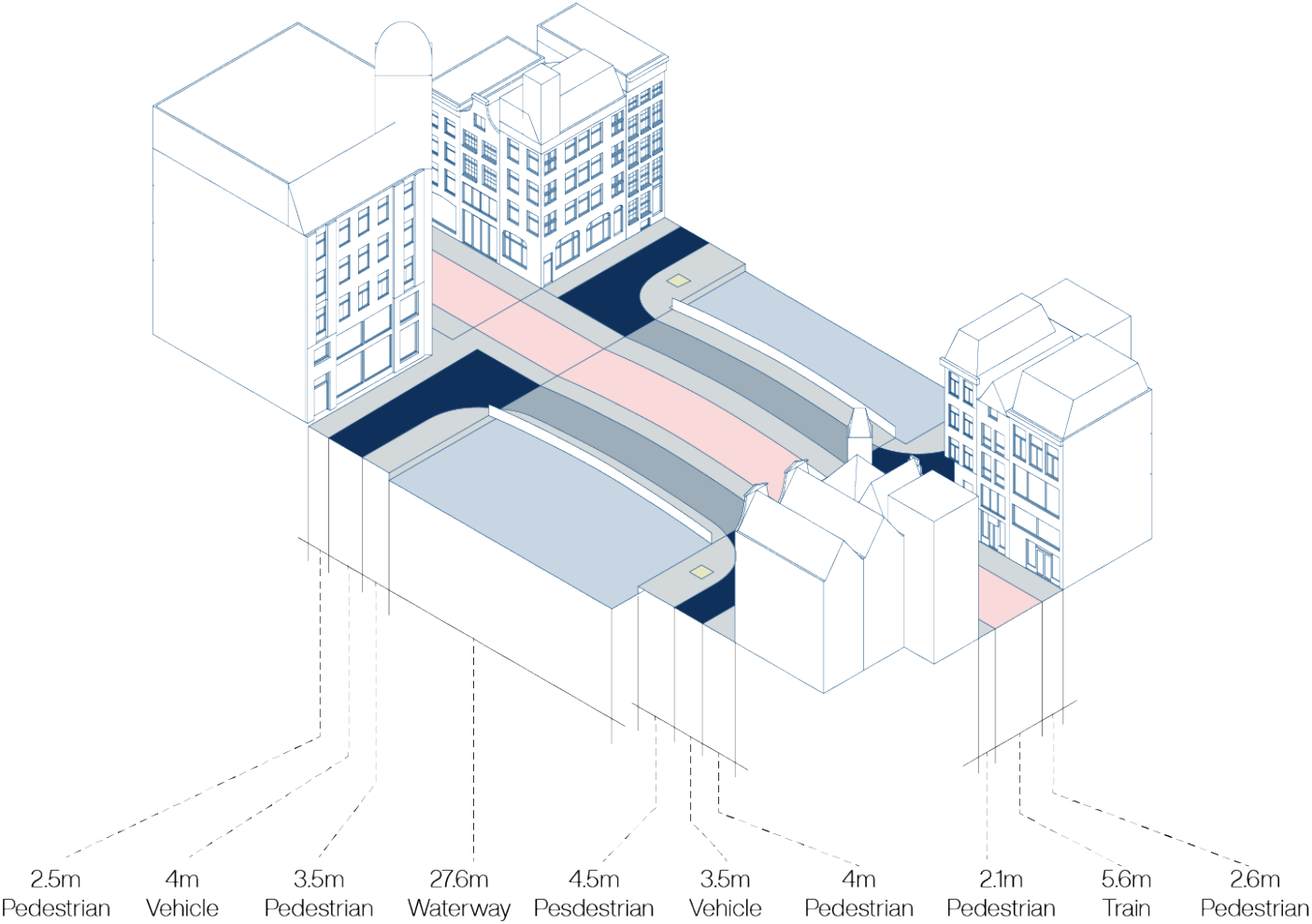
4. Detailed Analysis

4.1 Streets

4.1.4 Oudezijds Voorburgwal

2.2m	3.5m	2.5m	19.6m	2.7m	3m	2.5m
Pedestrian	Mixed	Parking &	Waterway	Parking &	Mixed	Pedestrian

Crowdedness ●
Tourification ●
Facilities ●
Walkability ●
Greenery ●
Sustainability ●
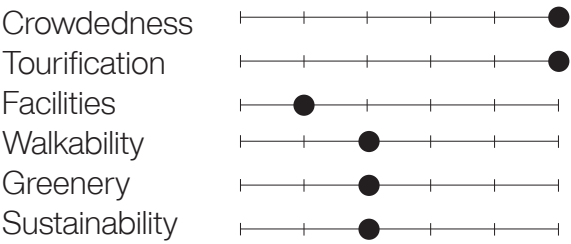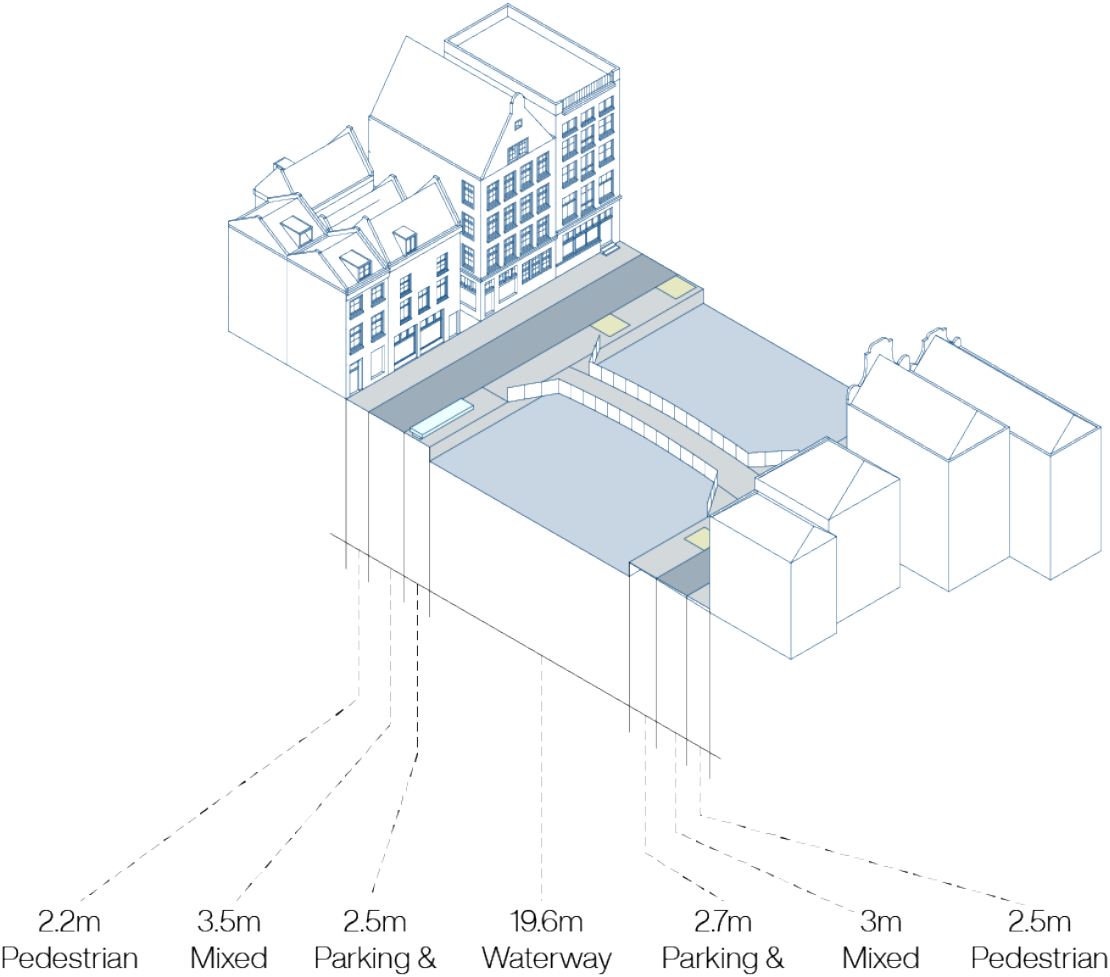
4. Detailed Analysis

4.1 Streets

4.1.5 Singel
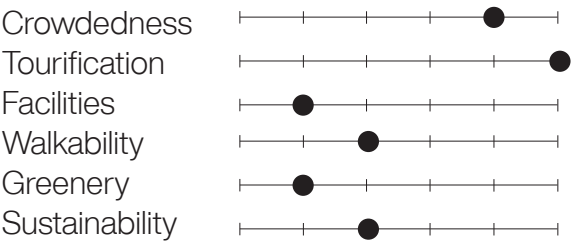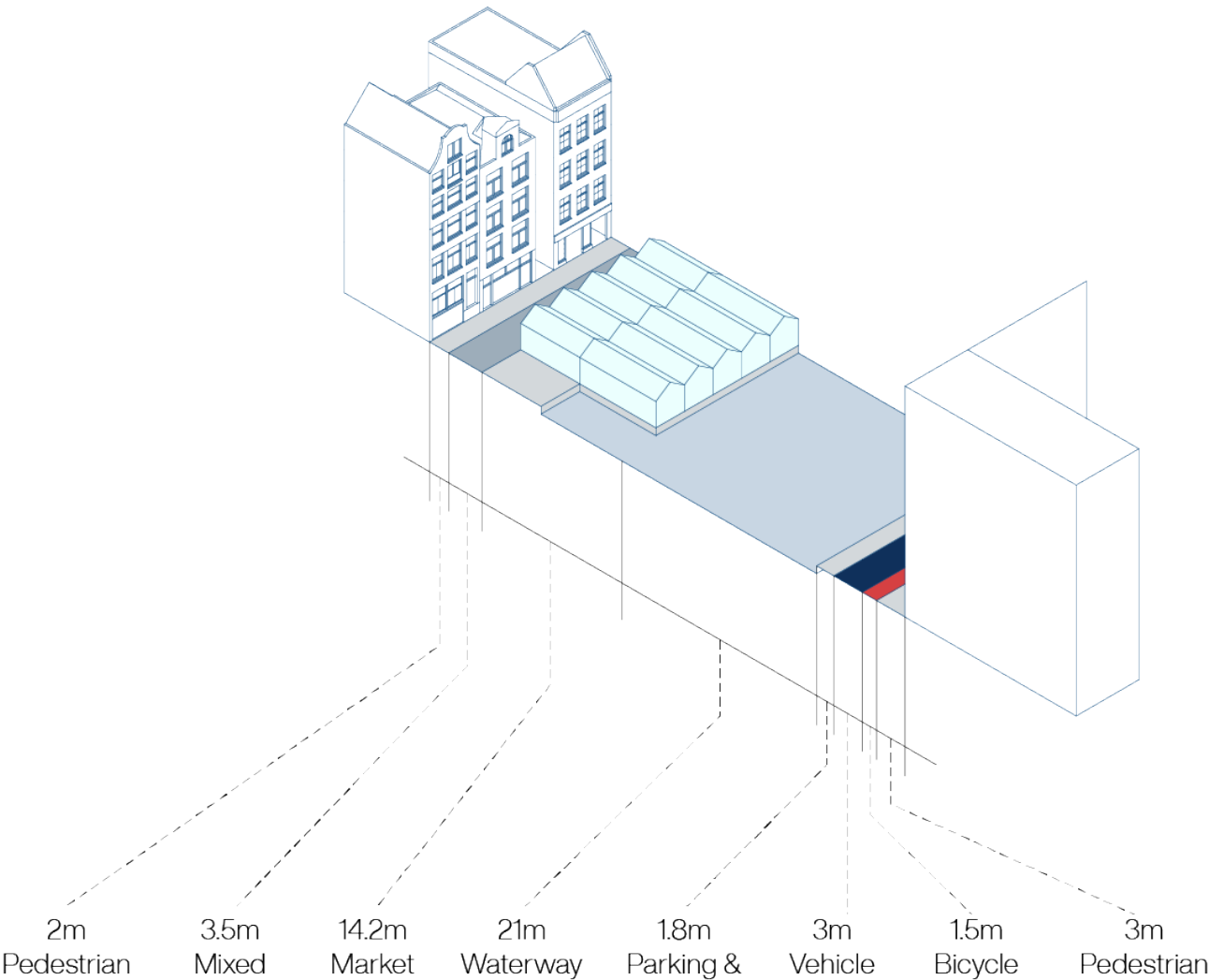
2m	3.5m	14.2m	21m	1.8m	3m	1.5m	3m
Pedestrian	Mixed	Market	Waterway	Parking &	Vehicle	Bicycle	Pedestrian

Crowdedness
Tourification
Facilities
Walkability
Greenery
Sustainability

4. Detailed Analysis

4.2 Squares

4.2.1 Beursplein

Crowdedness	
Tourification	
Facilities	
Walkability	
Greenery	
Sustainability	

Building Functions   Crowdedness

Commercial   Accomodation

Meeting & office   Others

Residential
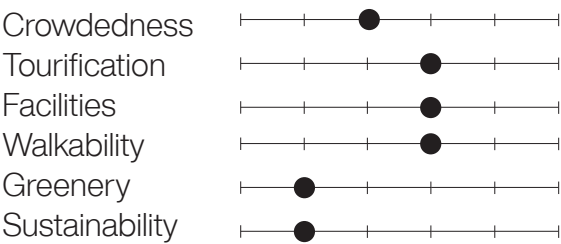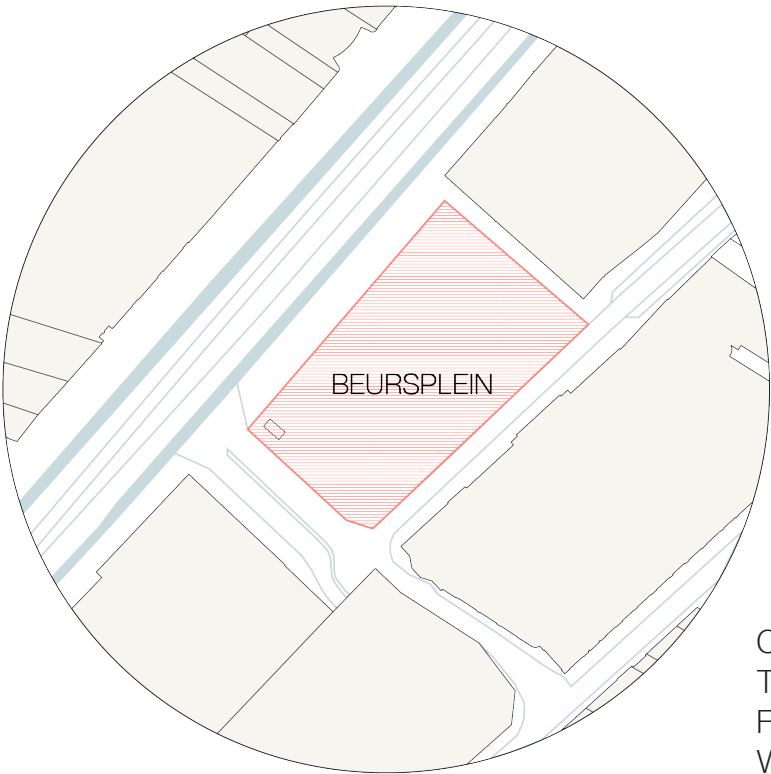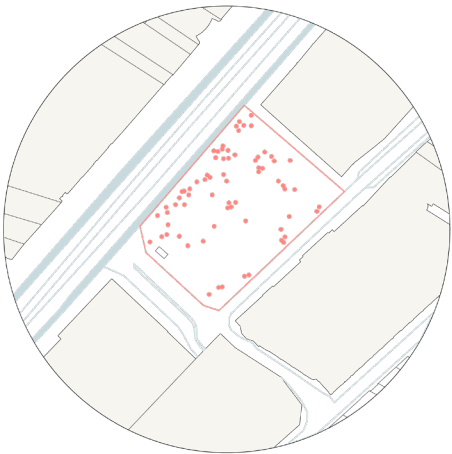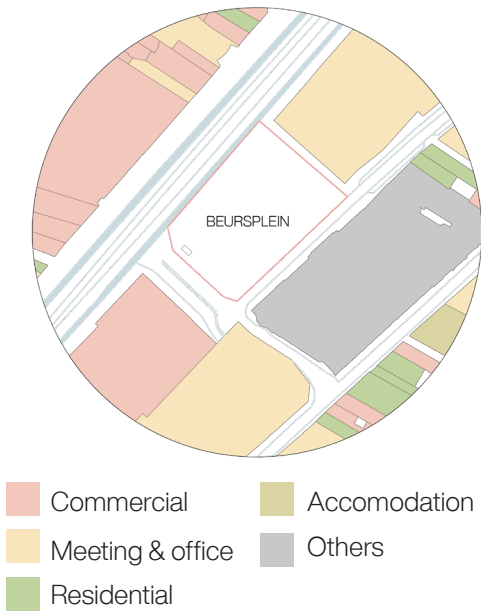
4. Detailed Analysis

4.2 Squares

4.2.1 Beursplein

Facilities

Bicycle parking   Bin
Lights   Fountain
Seats

Traffic

BEURSPLEIN

Vehicle
Bicycle
Pedestrian
Tram

Sustainability

BEURSPLEIN

> 1.000.000 m3
500.000 - 1.000.000
200.000 - 500.000 n
100.000 - 200.000 n
50.000 - 100.000 m:
20.000 - 50.000 m3
10.000 - 20.000 m3
< 10.000 m3

Greenery

BEURSPLEIN

4. Detailed Analysis

4.2 Squares

4.2.2 Leiseplein

Crowdedness

Tourification

Facilities

Walkability

Greenery

Sustainability

Building Functions

Crowdedness

- Commercial
- Meeting & office
- Accomodation
- Residential

4. Detailed Analysis

4.1 Squares

4.2.2 Leiseplein

Facilities

Traffic

Facilities legend:
- Bicycle parking
- Lights
- Seats
- Bin
- Fountain

Traffic legend:
- Vehicle
- Bicycle
- Pedestrian
- Tram
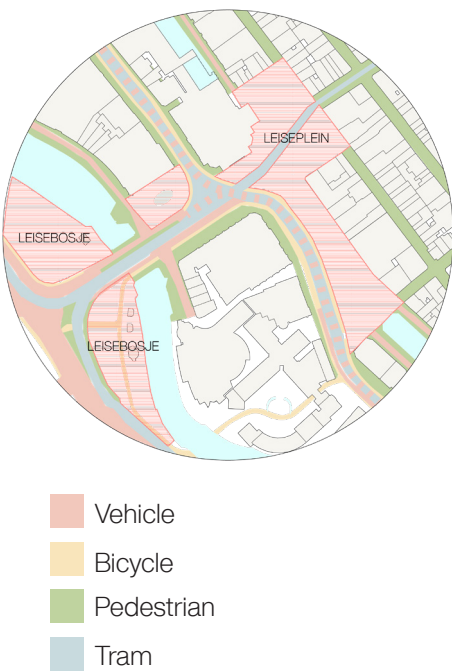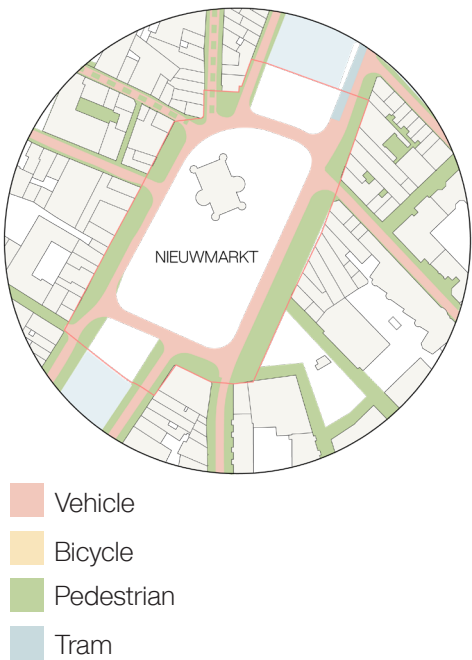
Sustainability

Greenery

Sustainability legend:
- > 1.000.000 m3
- 500.000 - 1.000.000
- 200.000 - 500.000 m
- 100.000 - 200.000 m
- 50.000 - 100.000 m3
- 20.000 - 50.000 m3
- 10.000 - 20.000 m3
- < 10.000 m3

4. Detailed Analysis

4.2 Squares

4.2.3 Nieuwmarkt

NIEUWMARKT

Crowdedness						●	
Tourification					●		
Facilities					●		
Walkability					●		
Greenery			●				
Sustainability					●		

Building Functions

Crowdedness

NIEUWMARKT

NIEUWMARKT

■ Commercial ■ Accomodation
■ Meeting & office ■ Residential

4. Detailed Analysis

4.1 Squares

4.2.2 Leiseplein

Facilities

🟥	Bicycle parking	⬜	Bin
🟨	Lights	🟦	Fountain
🟫	Seats		

Traffic

🟥	Vehicle	
🟨	Bicycle	
🟩	Pedestrian	
🟦	Tram	

Sustainability

🟥	> 1.000.000 m3
🟥	500.000 - 1.000.000
🟥	200.000 - 500.000 n
🟥	100.000 - 200.000 n
🟥	50.000 - 100.000 m3
🟥	20.000 - 50.000 m3
🟥	10.000 - 20.000 m3
⬜	< 10.000 m3

Greenery

4. Detailed Analysis

4.3.1 General needs for public spaces

Different groups of people use public space in different way. They also have various expectation on public space. In this project, tourists, residents, municipality, commerce are considered to analysis what are their vision for public space in general.

4.3.1.1 The needs of tourists

In cities, places that attract tourists most tend to distinctive features. These features usually relate to their functions, such as greenery, concentrated commercial block, waterfront area, etc. Also, they can be relate to their cultural attributes, like museum and historic buildings.

In Tony Griffin's (2008) research, they conclude what types of public spaces are tourists' preference by researching existing literature, observation and interview. Overall, the public spaces are divided into 3 types: Facilitating functions; External or place-connecting functions;
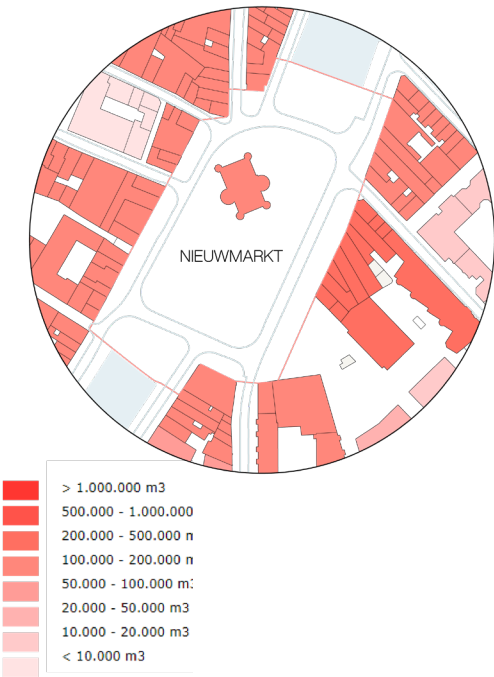internal or state-of-mind functions. Under this classification, the project get 7 features that tourists prefer combining with Griffin's conclusion.

1. Meeting places
2. Places of orientation
3. Places of respite or refuge,
4. Place with local characteristics
5. Place reflects their desires as a tourist
6. Place for encountering and communication with locals
7. Place for wandering and explore

1 Meeting places
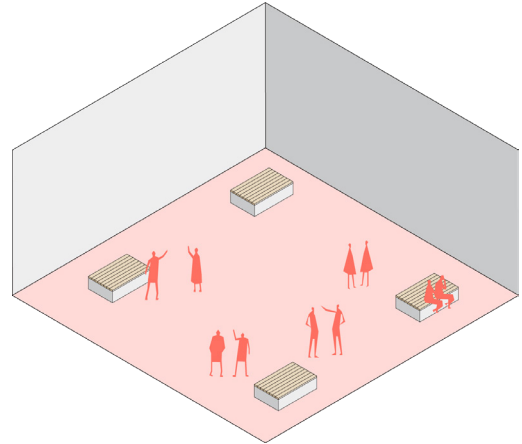
2 Places of orientation
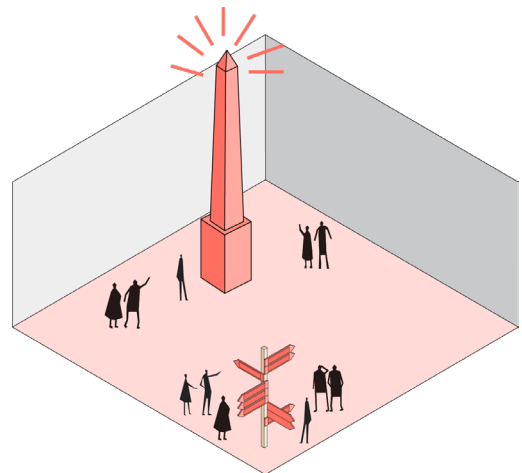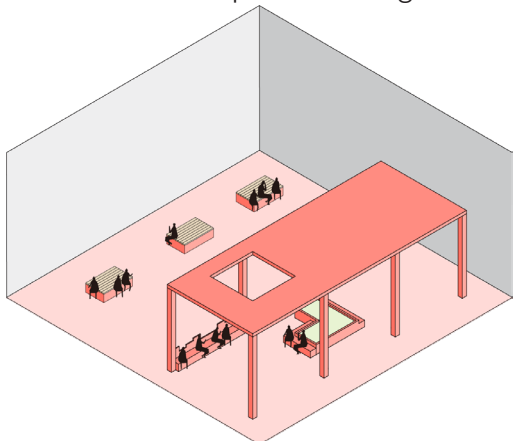
3 Places of respite or refuge

4 Place with local characteristics
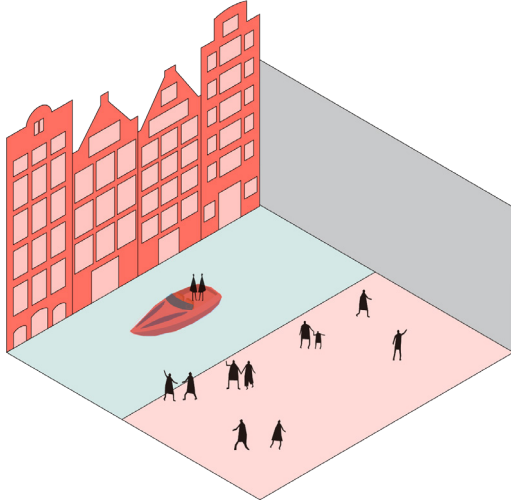
5 Place reflects their desires as a tourist
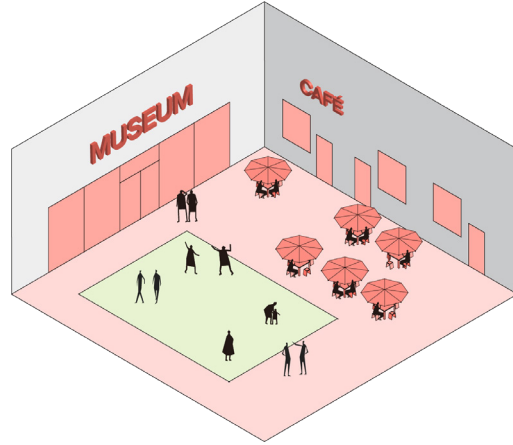
6 Place for encountering and communication with locals
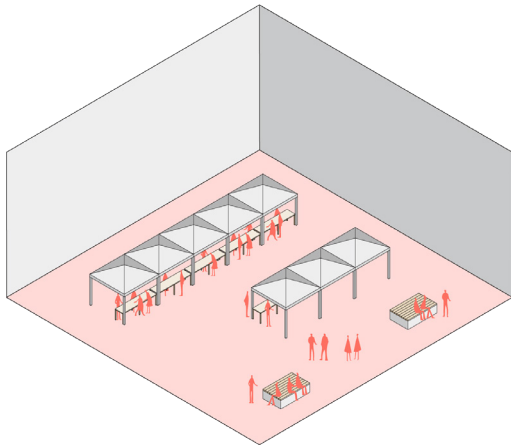
7 Place for wandering and explore
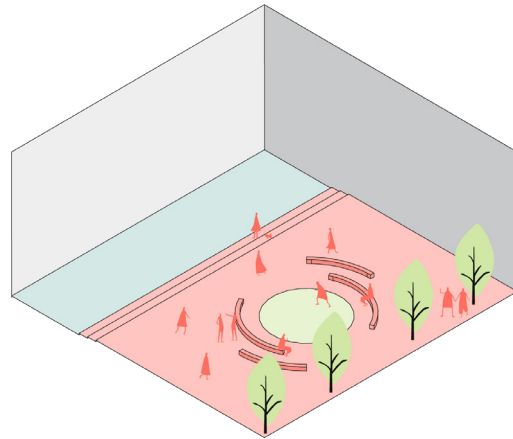
6. Detailed Analysis

4.3.1.2 The needs of residents

Although in Amsterdam Centrum, commercial is the main function, there are still many citizens live here. They are the most important users of public spaces as tourists only use them temporarily while residents' use is daily routine for them. Therefore, when we transform the public spaces in the centre of Amsterdam, residents' needs must be taken into consideration.

According to Van Perlo's (2013) research on the determining residents' preferences for public squares in towns. Residents prefer public spaces with aesthetic needs, multiple purposes, greenery, seating, availability for events and meeting place.

Jurkovic (2014) worked on how citizens expect about green public space. Her research demonstrates that they want greenery with good accessibility, connected system, cycling routes, green streets, resting space and sport function.

In Brookfield's (2016) research, she believe that a good living environment should have walkable amenities, peaceful environments, sociable spaces and leafy locales.

Based on three researches above and the actual situation in Amsterdam Centrum, the projects conclude that residents' need for public space have 7 factors.

1. Aesthetic needs
2. Multi-functional
3. Greenary
4. Flexibility
5. Sociability
6. Rest function
7. Accessibility

1. Aesthetic needs
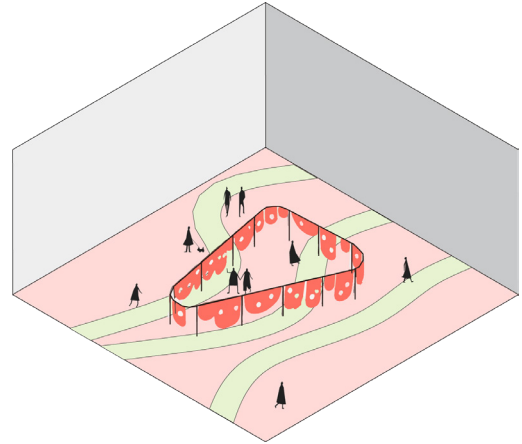
2. Multi-functional
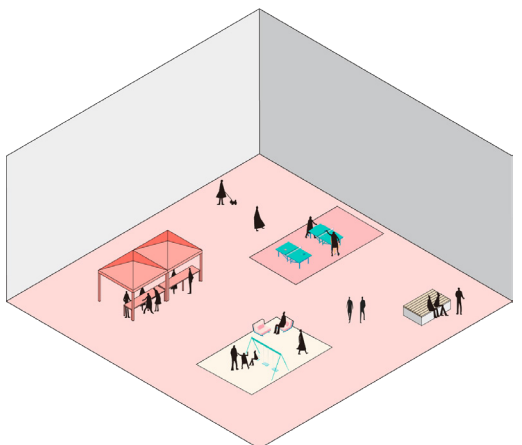
3. Greenary
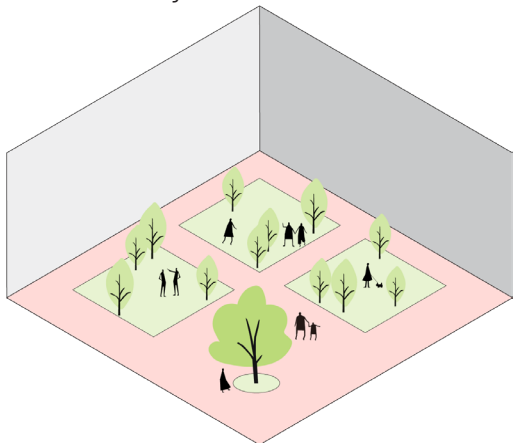
4. Flexibility
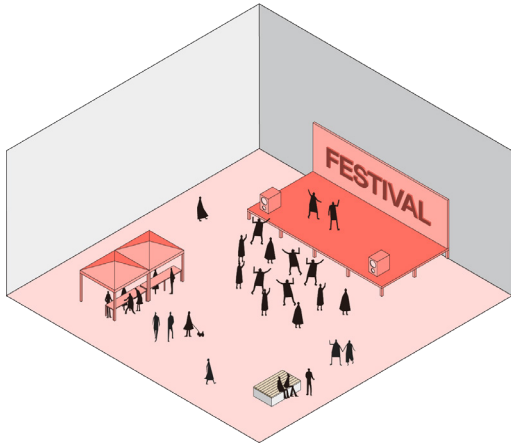
5. Sociability
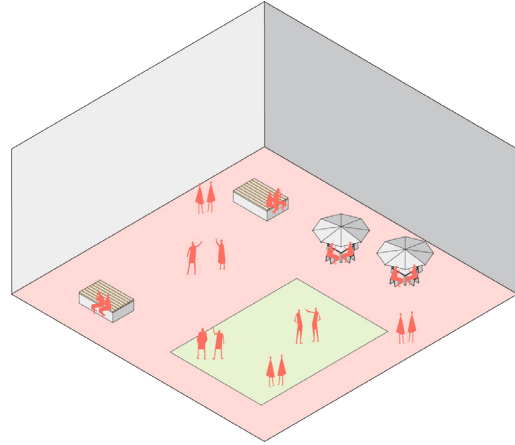
6. Rest function
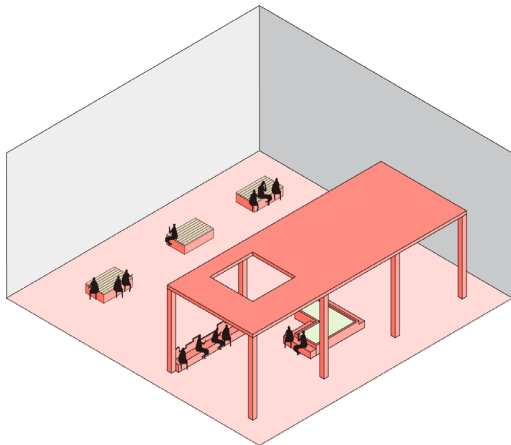
7. Accessibility
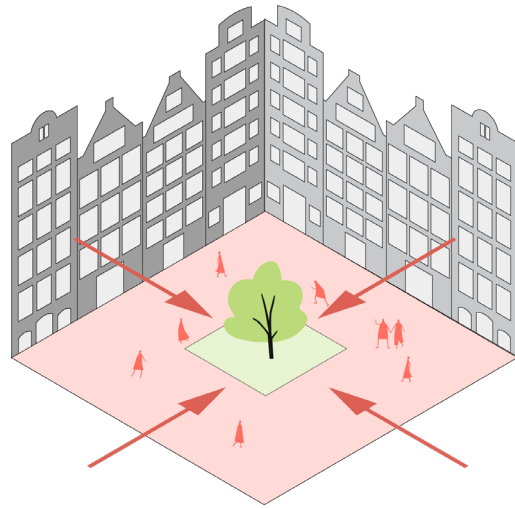
6. Detailed Analysis

4.3.1.3 The needs of Municipality

The municipality of Amsterdam introduced "city in balance" strategy to cope with existing overtourism situation, which aims to balance the relationship between tourists and residents. This strategy bundle includes governance perspective, economic perspective, technological perspective and more important, spatial perspective.
Ambition 2: Attractive mixed-use development;
Ambition 3: More space on the street and on the canals;
Ambition 5: Sustainable recreation and facilities
Ambition 6: Dispersing visitors

These four ambitions provide vision for how the public spaces in city centre will develop in the future.

Ambition 3: More space on the street and on the canals;
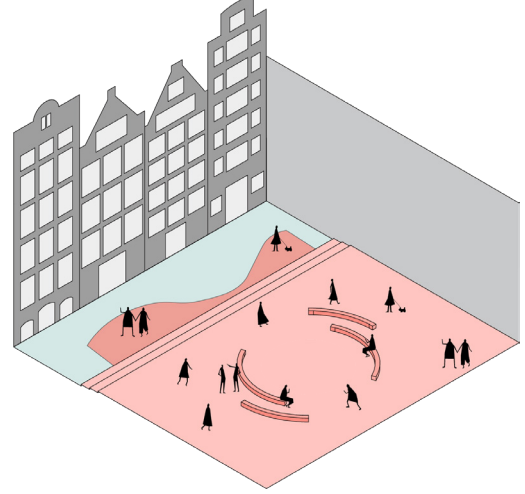
Ambition 5: Sustainable recreation and facilities
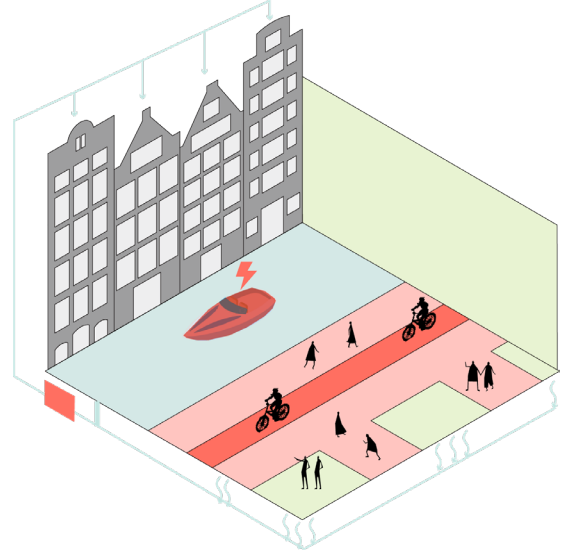
Ambition 2: Attractive mixed-use development
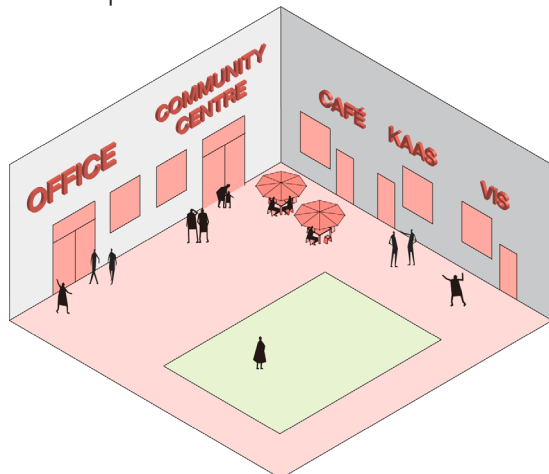
Ambition 6: Dispersing visitors
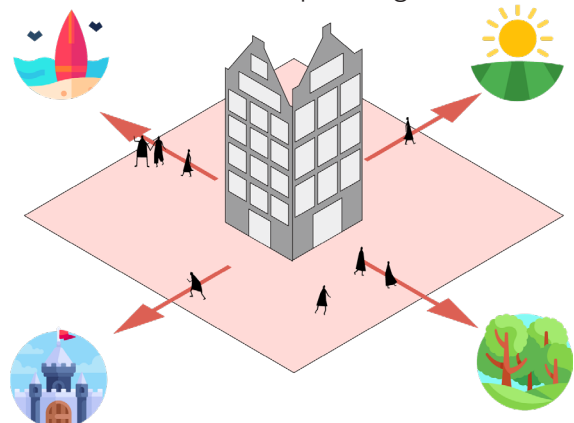
6. Detailed Analysis

4.3.2.4 The needs of Commerce

There is no doubt that commercial function is the leading function in city centre. But the needs of commerce are usually negative for the experience of tourists and residents; which are also going against municipality's ambitions.

According to PPS (2003)'s research on the relationship between commercial and public space,
every commerce is more focusing on profit. Therefore, they want to:
1. Invading some public spaces for larger business area.
2. Public spaces can support more consuming activities.
3. The quality of public space can be improved so that more consumers are attracted.

1. Invading some public spaces for larger business area.
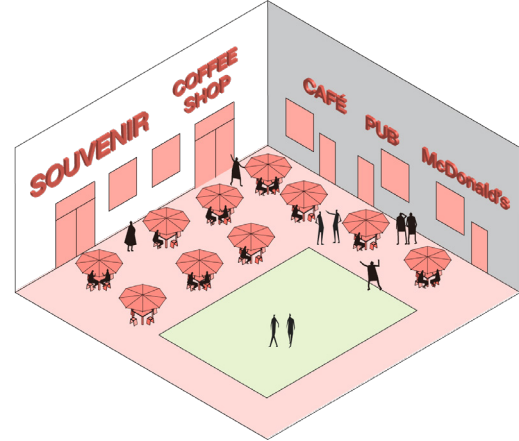
2. Public spaces can support more consuming activities.
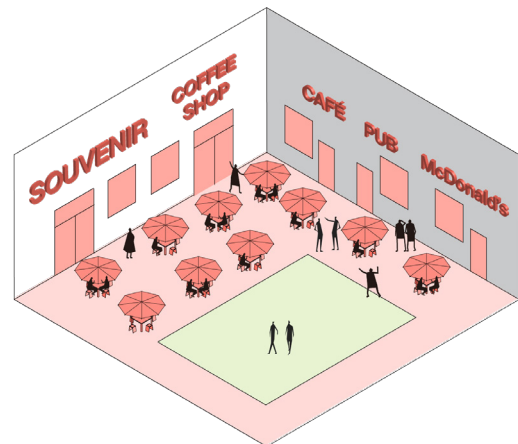
3. The quality of public space can be improved so that more consumers are attracted.
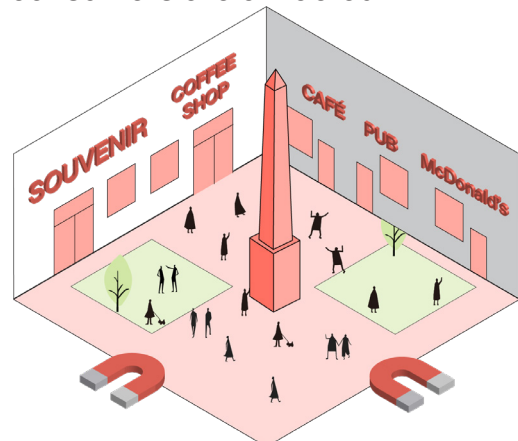
6. Detailed Analysis
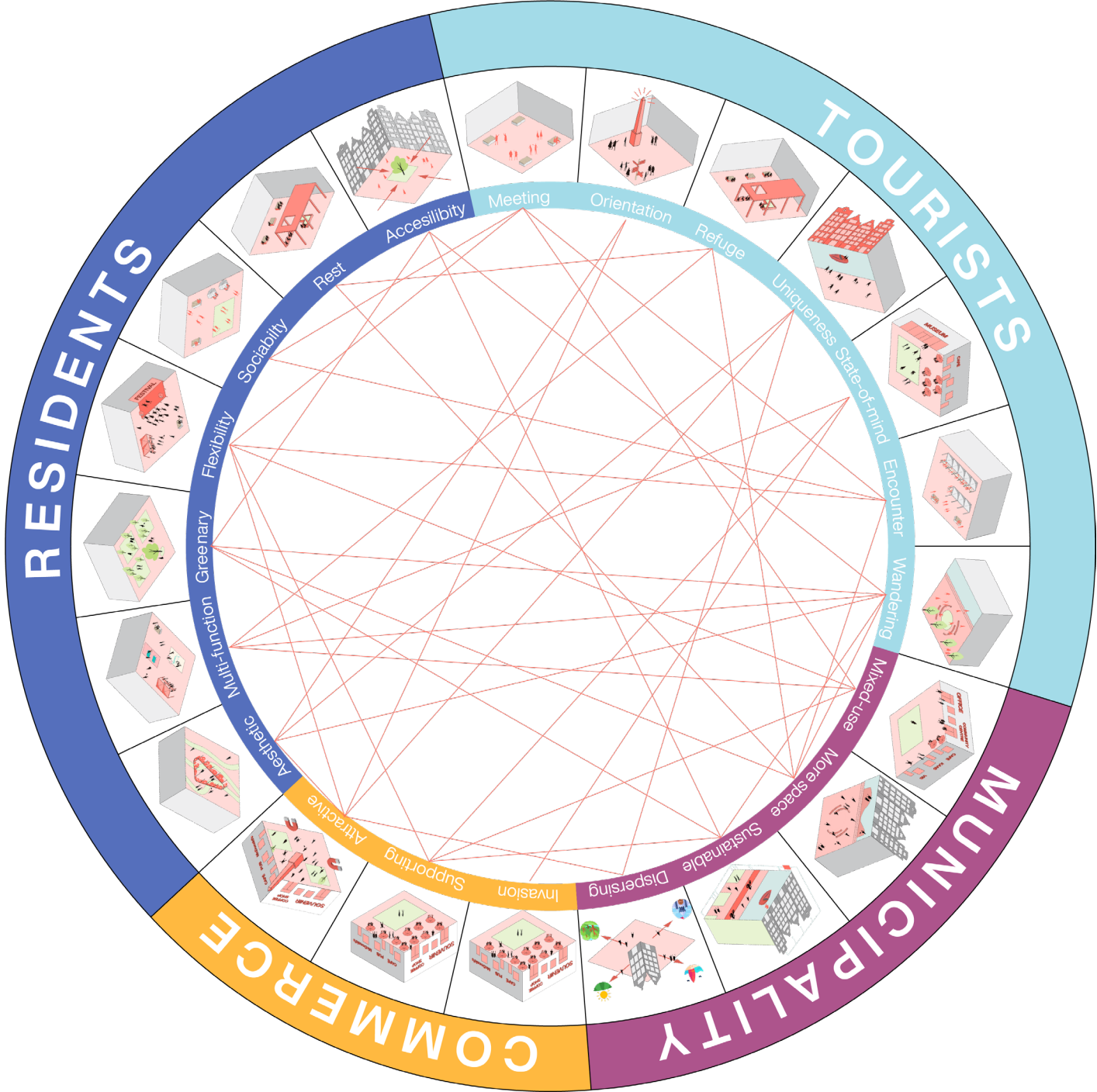
4.3.3 Conclusions

According to the analysis above, the needs from four sides have both difference and similarity. For residents and tourists, their ideas are subjective and more about personal experience; therefore, these needs have smaller scale. For municipality, they are focusing on regulating the future trend. Therefore, these ambitions have larger scale or they are cross-scale. For commerce, they just want the public space to be more attractive so that they can earn more money.

By interconnecting all the needs, the project concludes the most overlapped and important needs; so that the guiding principles for design can be formulated. They are:

1. Larger capacity (The main aim)
2. Sociability
3. Multi-functional
4. Sustainable
5. Greenary
6. Flexibility
7. Rest function

2. Sociability
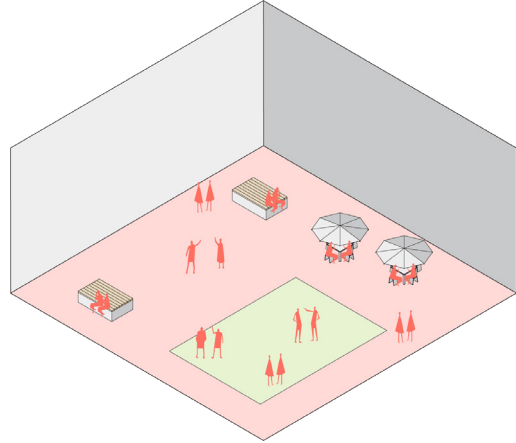
3. Multi-functional
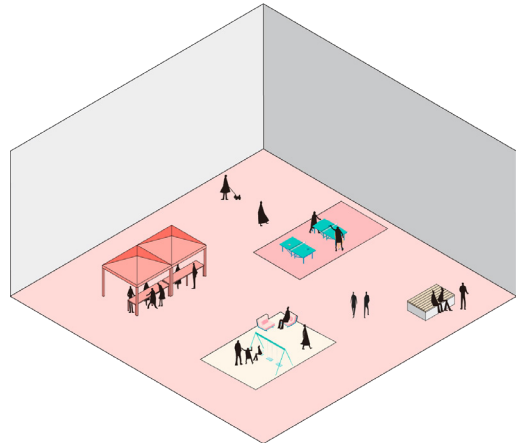
1. Larger capacity (The main aim)
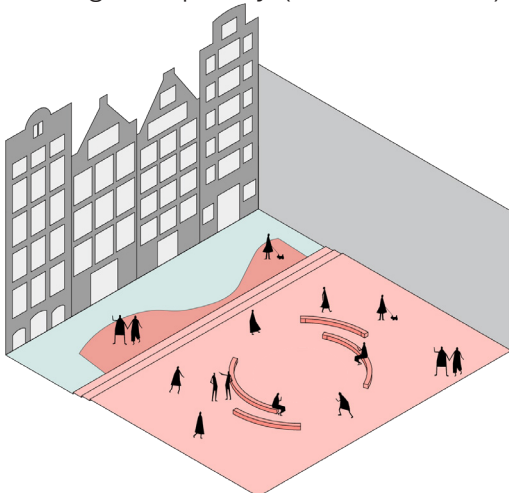
4. Sustainable
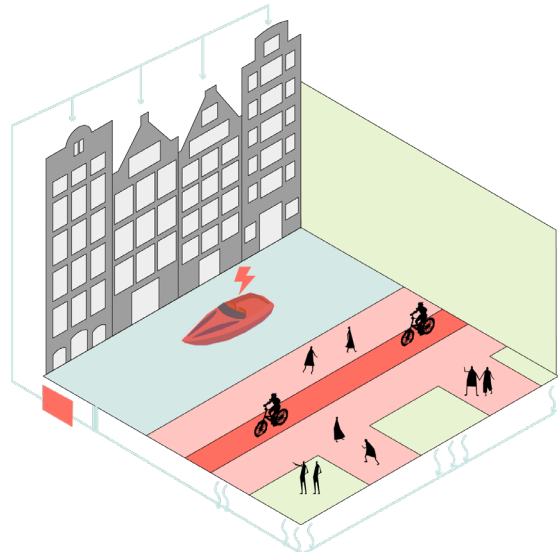
5. Greenary
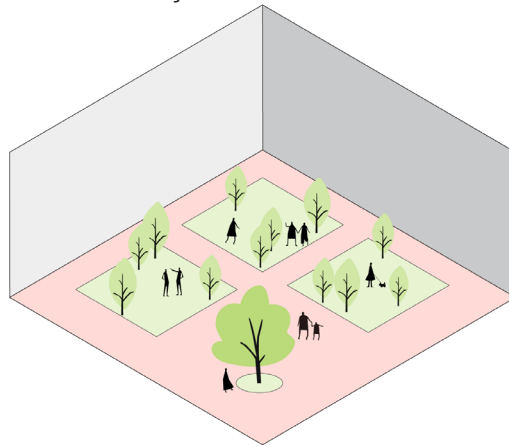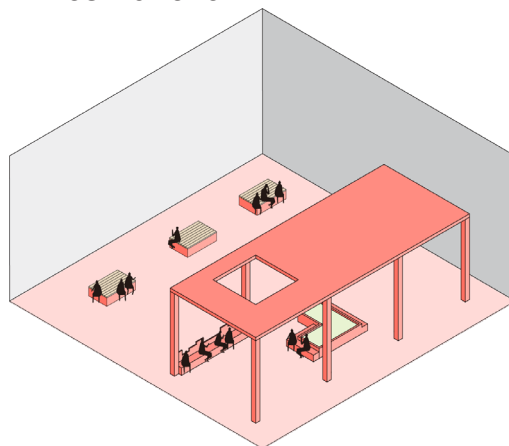
6. Flexibility

7. Rest function

5.Urban Design

5. Urban Design

5.1 Pilot Area 1: Leiseplein

5. Urban Design

5.1 Pilot Area 1: Leiseplein

5. Urban Design

5.1 Pilot Area 1: Leiseplein
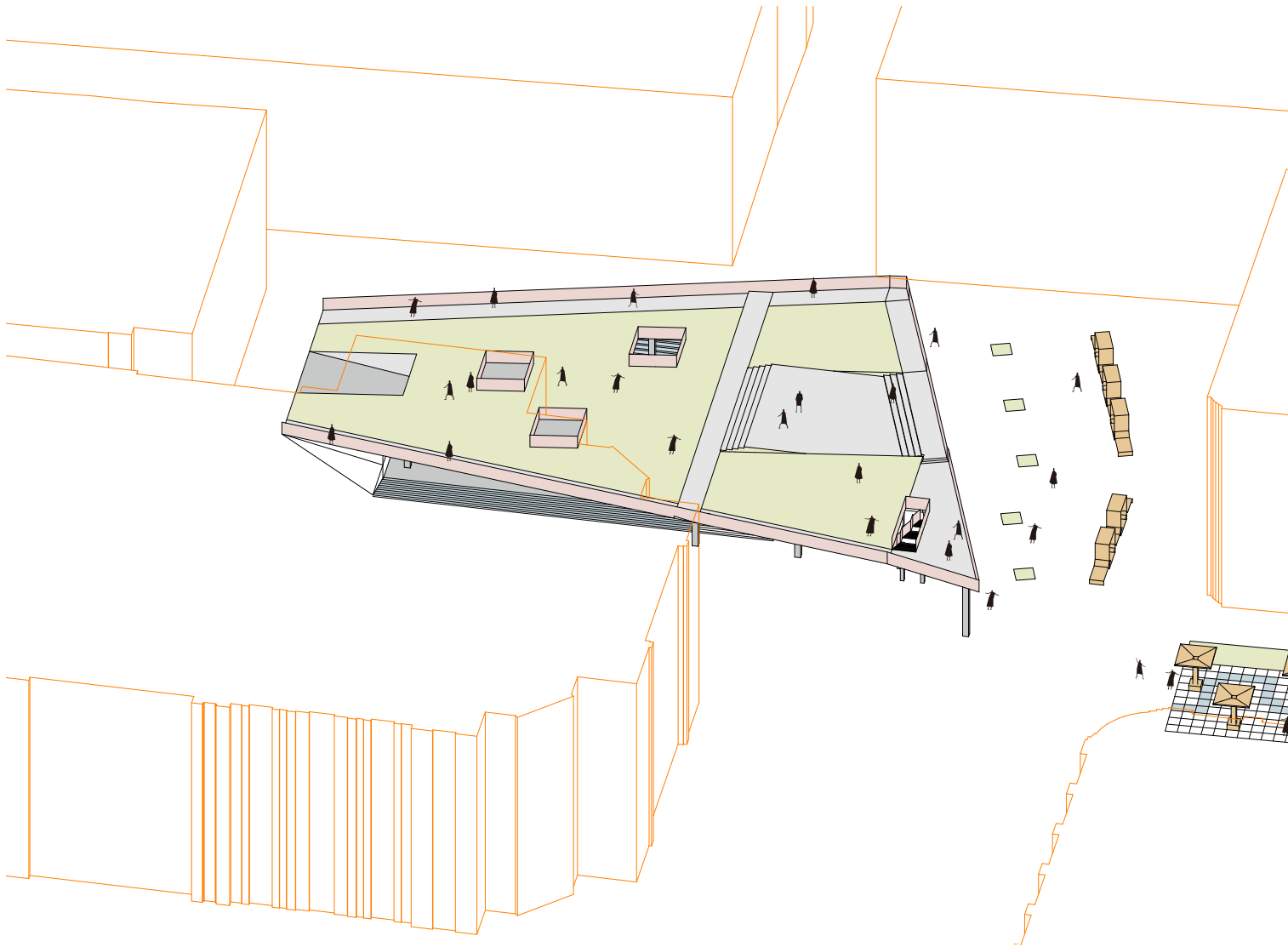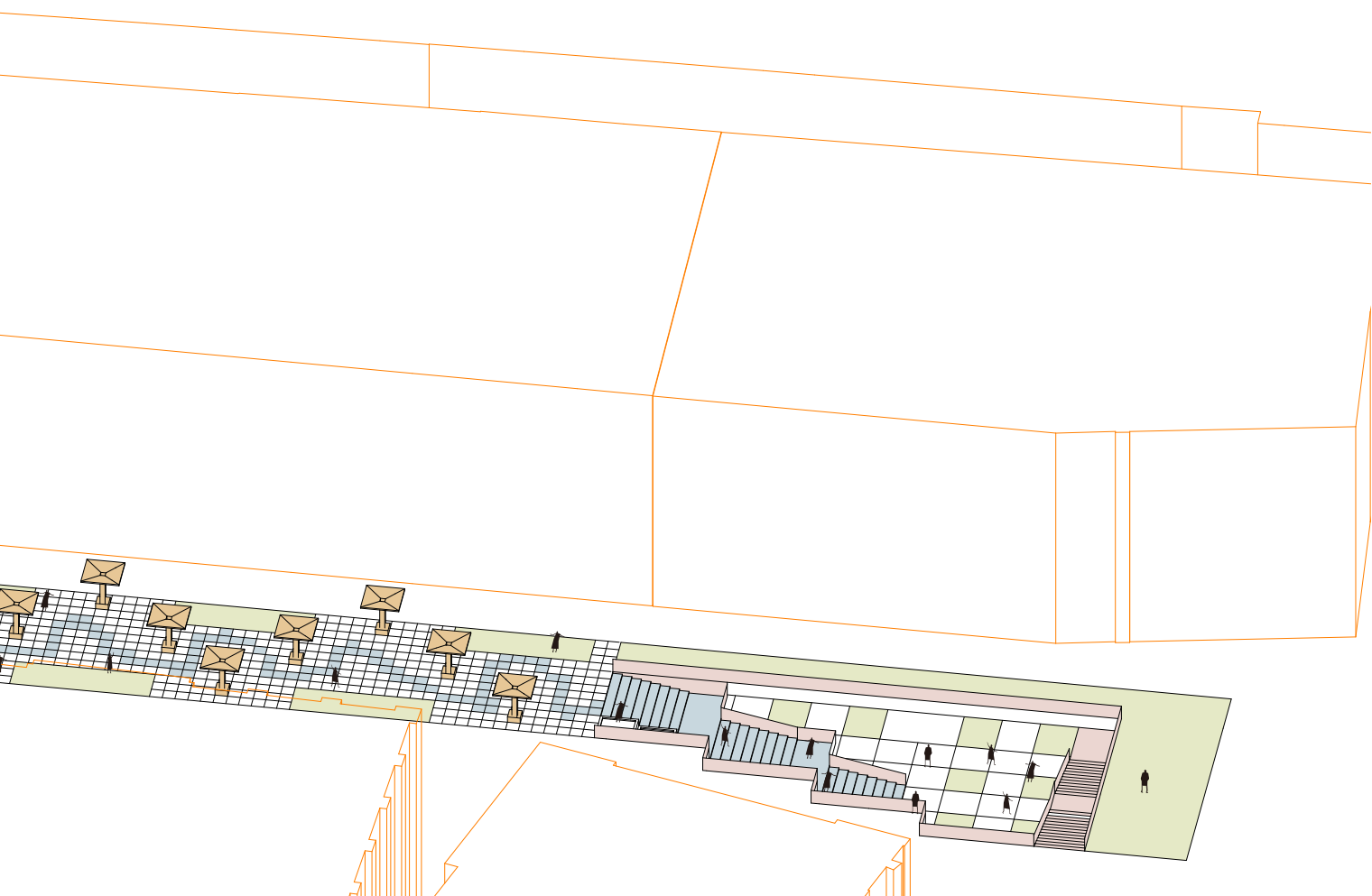
5. Urban Design

5.1 Pilot Area 1: Oudezijds Voorburgwal

6. Reflection

6. Reflection

The main idea of the project is to explore the interrelationship between urban tourism and public space. The rapid development of modern mobility technology and urbanization have led to expanding urban tourism. This great human flow is affecting urban development at the same time. However, cities are encountering new challenge by the continuous growth of tourism. How can cities carrying more tourists as well as residents and balance the relationship between them while bringing livability and sustainability at urban spaces. Therefore, the project tries to explore the harmonious co-existence of tourists, residents and the city in urban tourism precincts, which also proposes visions of public space in the dense city area.

Aspect 1: Relationship with the studio, Urbanism and master program

Transitional territories studio introduces an interdisciplinary approach with the notion of territory. Through the field of architecture, urbanism, landscape and water management, the studio concerned about the co-existence of urbanized landscape, natural landscape and cultural landscape.

The focusing area is North Sea region, where has one of the most connections in the world. In the ancient time, goods flow dominates the communication. Therefore, each part of the region was relatively independently developing. Thanks to industrial revolution and European integration, human flow is now greatly affecting the urbanization, which makes the region connected at a highest level. The migrations in some ways results in the conflicts of spatial resources, landscape transformation and governance. Nowadays, the mobility technology makes travel easier than ever. This type of human flow may be the largest throughout the north sea region. Growing tourists have a multi-dimensional impact that takes over streets, public spaces or even urban programme. In this dynamic fact, cities cannot underestimate its urban impact which tends to affect the process of territorialization.

The study in the urbanism track helped me to view cities in a dynamic and systematic way. From universal to unique urban phenomena, I consider them as the consequences of different urban elements. My project provides a spatial perspective on the overtourism phenomenon by analysis of multiple layers, research by design and stakeholder analysis which I learnt from urbanism track. Moreover, the idea of sustainability, liveability and other notions are constantly inspiring me in the designing process. I hope that I can help to improve our cities by research and design.

Aspect 2: The relationship between research and design

Overtourism is a relatively new idea which proposed about 2015. More and more policies are introduced around the world. However, observing it from an urbanist's perspective, the growing tourists can be considered as a type of human flow, which has strong spatial and temporal features. Therefore, my project aims to develop a spatial approach to connect tourism, urban design and urban development in dense urban area.

The city of Amsterdam provides a stage for researching the phenomenon of overtourism. By understanding the problem, the project dividing the reasons into external and internal. External reasons, such as the technology or the fall of oil prices, obviously cannot be easily controlled. Internal reasons are more important in this case. Therefore, in the research part, I divided tourism into 4 flows: human, resource, cultural and economic. Corresponding these flows, the city is regarded as a container which cannot carry the flows especially the human flow and resource flow. The urban carrying capacity theory is introduced here to understand the relationship between city and tourism. Therefore, the project divides the impacts of tourism into 2 major topics: spatial pressure by human flow and environmental pressure by resource flow. After analysing impacts I concluded the overlapping area which is mostly disturbed.

In the next part, the project specifically analyses the aimed area by deconstructing it into lines (streets) and dots (squares). By elaborating the analysis in 6 dimensions (the levels of crowdedness, tourification, facilities, walkability, greenery and sustainability), it can be easily recognized that the historic centre (aimed area) is narrow and public spaces are highly commercialized and motorized which cannot support more human flows and more sustainable businesses. Thus, according to the conclusion above, the main mission should be enlarging the spatial capacity for human flow. The project believes the solution would be based on a "tripartite talks" among 4 major groups of stakeholders: tourists, residents, municipality and commerce. By researching the needs for public space of 4 groups, the project further proposes 7 guiding principles for design: larger capacity, sociability, multifunctional, sustainable, greenery, flexibility and rest function.

All the research above support and lead the direction of the design, which is how to transform existing spaces

6. Reflection

in dense urban area to make them a platform of coexistence and collaboration of tourists, and residents and commercial part to provide spacious and livable urban environment. Therefore, the relationship of research and design in the project is obvious: the design is inspired by the research and it can be evaluated by the framework that research gives.

Aspect 3: Elaboration on research method and approach chosen by the student in relation to the graduation studio methodical line of inquiry, reflecting thereby upon the scientific relevance of the work]

The studio started from a collective research with six lines of inquiry. By investigating a larger scale of north sea region, this phase requires a series of research methods. This research includes multiple aspects: topographical, political, environmental or social. The overall process started with collecting data and viewing literature, then it went to the illustration of the essence of supporting data and literature. Finally, each group needed to combine their findings to draw a conclusion and propose different visions. The final atlas had been an inspiration for understanding and possible vision of north sea territorialization which helps the individual research.

In the individual phase, although the research range is more trans-scale, the research techniques from the previous phase are also feasible, such as: mapping, literature review and collage. For the project, the network idea, the holistic idea and the method of comparing and overlapping for drawing a conclusion are considered most valuable. These help the project combining multiple dimensions of elements to understand the mechanism behind (over)tourism and how it impacts Amsterdam. What is more, the network and holistic idea create a broader view of how tourism interacts with different systems in the city which guiding the design to be more reasonable and create co-benefits.

Aspect 4: Scientific & Societal relevance and transferability

In the past few decades, the studies of tourism had developed from classification to management to behind mechanism to sustainability and spatial dimension. Now, as overtourism evolves, the researchers tend to combine it with the existing studies of management. The project proposes a new view of combining overtourism with urbanization, which enhances the spatial dimension of tourism. Through this scope, spatial pressure and environmental pressure of overtourism are imbalances of demand-supply relationship. Physically, urban spaces such as streets and squares are vital for adapting larger flows of tourism while they are also the stage of citizens' life.

Therefore, the project aims to introduce multi-level urban design and an idea of closer relationship between land and water to the urban vision of city centre to provide platforms for harmonious co-existence of tourists and residents. This idea is flexible, which means it can add more values into the design of public spaces such as engineering for the circularity to achieve more co-benefits. In conclusion, this is a research of the dialectical relationship between tourism and urban spaces while it also involves in the vision for urban liveability and sustainability.

Tourism can be understood as temporary human flow. However, in this modernized world, as urbanization continues, the urban population will also in fast grow, which means there will be more and more dense cities around the world. Superficially, the project is focusing on overtourism. However, when extracting the keywords of dense, crowded and public space, the project can be a possible solution for any other cities who wants to improve the liveability for crowded area. It is an adaptation for the crowded urban future.

Aspect 5: Ethnical considerations

The overtourism problem should be comprehended from multiple sides. We can understand that it is the disrespectful and disturbing tourists caused this problem; we can demonstrate that it is the growing xenophobia caused the problem; we can also think that government's fail on tourism management led to overtourism. These all leads to a topic: spatial justice.

In tourism precinct of Amsterdam, the historical heritages make it impossible for large reshuffle of spatial resource. In the narrow historic centre, public spaces are highly commercialized and motorized. Vehicles, tourists and residents all participate in this competition. A most possible result is that all sides suffer and there is no winner. It is a crisis of representation, we blur the perception that whom the urban public space is serving. The project follows the principle of people-oriented design, and proposes to serving tourists and residents with more potential public spaces in minor scale while limiting and reorganizing how vehicles act in the specific site. It aims at not only mitigating spatial contradiction, but also social contradiction.

6. Reflection

Aspect 6: Summary & Limitations

As mentioned in aspect 2, tourism is a multi-dimensional phenomenon with 4 flows. In this project, the focusing areas are human flow and environmental flow to reflex the spatial perspective on tackling with overtourism. This is a situation of uneven distribution, imbalance between supply and demand which is closely connected to spatial justice. However, the situation also involves cultural level, social level, economic level and political level. Especially in this pandemic era, it is hard to predict if the tourism can fully recover after covid-19. In current state, isolationism, xenophobia, racism have been risen or even prevailed because of political decisions, cultural difference and social events. Tourism has greatly uncertainty in the next few years. The project started before pandemic when there were all positive attitudes about tourism. Therefore, this project may be more suitable for a scenario of thriving future.

Personally, I believe globalization will continue. Even if the future is contrary to expectations, the project is still an exploration about the distribution and utilization of spatial resource when unveiling the surface of tourism.

6. Appendix

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6.2 THEORY PAPER

The Interrelationship of Tourism and Urban Spaces
A Spatial Scope on Tourism

Abstract

Tourism is one of the most significant phenomena in the modern world. Its impacts are intense in terms of economic scope, socio-cultural scope and environmental scope. Moreover, these impacts are likely to express in physical space. The purpose of this paper is researching the interrelationship of tourism and urban space. The paper reviews the existing studies on tourism impacts and tourism value of urban spatial change, and then presents supporting cases. Next, it proposes possible trends based on the current context. Finally, it concludes the characteristics of the interaction and points out the knowledge gap and the necessity of more profound research.

Key words: Urban Spaces, Urban Tourism, Tourism Impacts, Urban Development

1. Introduction

Cities are always the main destinations of tourism over history. Tourists are fond of experiencing different cultures, landscapes and spaces in a strange city. In the last 50 years, due to the rapid progress of high-speed railway and aviation, tourism is no longer a privilege of the rich, but a recreational activity for everyone. By which we have already seen the tremendous development of tourism.

Tourism is so vital that it drives the direction of urban development and the transition of urban spaces. The spatial expression of tourism can be observed in history, and it is more intense at present. In last three decades, "the collapse of the industrial base of their cities and the rise of the service sector, city decision-makers prioritize economic development and turned to the arts and culture as one area with considerable potential" (Bayliss, 2004). By which one of the main aims is attracting more tourists. On the other hand, the urban spatial change may bring unexpected development of tourism.

Tourism is often considered as a socio-economic phenomenon; therefore, in existing literature, there are few studies from the perspective of urbanism to discuss tourism. This paper analyses tourism from a spatial perspective with case studies of Asia, Europe and America, discusses the interrelationship between tourism and urban space. The aim is to propose a new scope and add new value to tourism studies. The interrelationship has an active side that affects and a passive side that is affected. The first part regards tourism as the active side (Figure 1). It reviews existing reports and researches about the impacts of tourism, gives summaries by different aspects. Then it researches the interaction by some spatial examples of mentioned impacts respectively. The second chapter regards urban spatial change as the active side (Figure 2), also researches the examples in the existing literature. The third part observes current external background and internal reaction and predicts possible future trends.
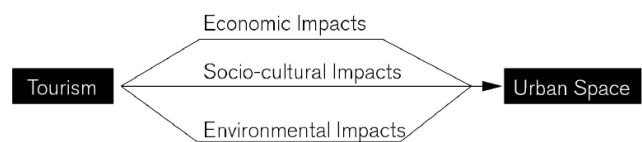
Figure 1: Tourism impacts urban space (Source: Author)
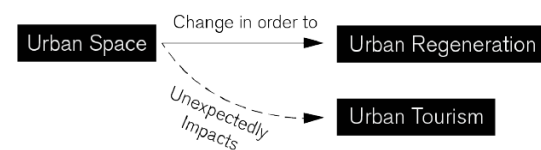
Figure 2: Urban space impacts tourism (Source: Author)

2. Tourism is shaping urban spaces

2.1 Economic impacts and spatial expression

2.1.1 Understanding the economic impacts of tourism

Tourism is now one of the largest economic sectors in the world. The strong economic performance of tourism proves it is an effective tool to generate prosperity and bring employment for goverments. By 2019, the tourism sector is now accounting for 10.4% of global GDP and 10% of global employment (WTTC, 2019) Therefore, from an economic perspective, the impacts of tourism are mostly beneficial. In fact, for many regions in the world, tourism is regarded as the primary method to support development. The economic impact of tourism is influential because of its multiplicity, which means it contains both direct and indirect impacts. (WTTC, 2019; Harcombe, 1999) The expenditure of tourists is the direct economic impact. The expenditure reflex on commercial performance, such as hotels, restaurants and airlines, while indirect impacts are mainly capital investment by private institutions and public department. All the impacts mentioned can be traced in the physical spaces in cities.

2.1.2 Economic benefits of tourism drive the transition of urban space

The transition involves both spontaneous investment by

private capital and urban transformation led by the governments.

Private capital is always money-first. Driven by the massive profits of the tourism sector, the investment in related industries floods in correspondingly. Consequently, the function of urban buildings shifts from residential to commercial, especially in historical urban centres.

This spatial expression reflexed in the development of English hotels in 19th century. Industrialization was the driving force of tourism at that time. The railway is considered to be the creator of modern mass tourism. Indeed, the railway was not created to promote tourism. However, it gave a solution for the major barrier of tourism at that time, which is the spatial distance. This great invention brought trips of several days into the stage. By which there occurred a great need for accommodation in destinations. In London, the numbers of hotels and inns rose from 75 in 1805 to 269 in 1891 while it increased more than tenfold from 31 in 1794 to 383 in 1901 within the city of Leicester (Bowie, 2018). The data shows the boom of English hotels. We can imagine the transformation of existing buildings towards hotels, and the construction of new buildings for tourists' accommodation.

Also, in Prague. When the historical centre, where most attractions concentrated, met the increasing numbers of visitors, the transition of building function is inevitable. These most expensive properties shifted from residential use to the functions related to tourism, such as hotels, souvenir shops, and restaurants. As a result, the street front was more likely to be occupied by dining tables and shelves as merchants wanted to show their products closer to tourists. The former mixed-use patterns of culture, commerce and residence were later fully occupied by tourism purposes (Cooper & Morpeth, 1998).

Tourism is also a method for governments to revitalize the economy. During the rapid urbanization in China, a massive population from less developed region migrates to large cities to seek employment. As a result, large cities are growing more and more crowded. On the contrast, small towns in the inland area are facing population decrease and stagnation. To cope with this widespread problem, the central government of China introduces policies to cultivate "Chinese distinctive towns". In which cultural and tourism towns are the largest part. Thanks to the abundant special fund, municipalities of these towns call for planning project publicly and then start constructions of renewal, infrastructure and tourism facilities. Former residential buildings are refurnished and converted to B&B hotel or shops that sell native products. The forgotten ancient buildings are repaired and preserved as a valuable tourism resource. Local economic and spatial structure is completely transited.

2.2 Socio-cultural impacts and spatial expression

2.2.1 Understanding the socio-cultural impacts of tourism

The social impacts of tourism are often seen as dualism. From the negative side, the impacts are ideological and behavioural. Existing researches recognize the effects on loss of local identity and culture (Rosenow and Pulsipher, 1979), commercialism (Cohen, 1988), more crime (Tosun, 2002), crowding and congestion (A.J. Haley et al. 2004). In terms of positive perspective, tourism can lead to increase and improvement of public services and infrastructure (Andereck et al. 2005), more cultural events (Brunt and Courtney, 1999), and better conservation of cultural heritage (Gilbert and Clark,1997).

The impacts above are only parts of the socio-cultural impacts, and they mainly investigated from residents' perception. However, no matter the impacts are subjective or objective, we can always recognize the universal lifestyle transitions for both host communities and tourists.

2.2.2 The spatial expression of socio-cultural impacts

The neutral and positive socio-cultural impacts can reflex on urban spaces. The spatial expressions are about infrastructure and urban development.

The spirit of exploration and the recreational need for human was constantly growing over history, which brought the change of lifestyles towards a more leisure and experience directed way. In the 18th century of China, the emperor of Qing dynasty ordered the construction of the Mountain Resort and its Outlying Temples. The host city, Chengde, became a royal destination. In the western world, hot spring city Baden-Baden underwent a massive construction because of the increasing recreational need of nobles (Gyr, 2010). The social impacts of tourism are enormous that a whole city can be built based on touristic need according to the examples mentioned.

In addtion, in 19th century, due to the evolution of technology, skiing and mountaineering were no longer inaccessible. A trend of winter sport and trekking driven tourism occurred. The trend greatly stimulated infrastructural progress. In alpine cities, especially Swiss cities, tens of mountain railways were constructed. In cooperation with the built of supporting accommodation and facilities, the urban pattern sprawled both horizontally and vertically.

One of the major reasons for urban tourism is to learn about local cultures. In a good way, tourism enhances the conservation of cultural heritage. In Chengdu, China, the district of Shaocheng contains a cultural block which can be traced back to 2000 years ago. The structure of Chengdu's tourism bases on this area and the other two historical blocks. To respond to tourism needs and the bad living condition, the city council of Chengdu started the urban transformation within the block. Protection was the primary purpose; in the meantime, the commercial function was implanted to display and preserve local culture. The block was named of Kuanzhai Lane, and now it is one of the most successful urban tourism destinations in China (Chen, 2010).

2.3 Environmental impacts and spatial expression

2.3.1 Understand the environmental impacts of tourism

Tourism is often considered as a way for sustainable

development. From financial scope, the revenue from tourism provides the fund for conserving the environment, which is positive. However, to achieve sustainability of tourism, the harmful impacts on the environment should be avoided. The first point is the emissions of transport and accommodation. Researchers found that tourism accounts for around 8 per cent of global greenhouse gas emissions, which is four times more than previously estimated (Lenzen et al. 2018). Meanwhile, more tourists mean more waste (Brunt and Courtney, 1999; Gilbert and Clark, 1997). According to Davies and Cahill (2000), a typical tourist in Europe generates at least 1 kilogram of solid waste per day. Also, Gössling (2015) found that average direct water consumption reaches 350 litre per guest night; this means tourism is also a sector that requires massive natural resource extraction. The impacts above express indirectly towards the environment. More directly, natural tourism often develops in attractive but sensitive environments. Although the facilities constructed in nature provide convenience to tourists, they can also be significantly negative. The irresponsible human activities will disturb the habitats and biota, pollute soil and waterbody.

2.3.2 Tourism colonizes the environment

As tourism progresses worldwide, the territorial invasion of the environment can be traced spatially. In the Bay Area, USA, Golden Gate National Recreation Area (GGNRA) was proposed by President Nixon in 1972. Since 1972, this area has added land to become one of the largest urban nature reserves in the world (Ebinger, 2016). To make GGNRA safer and more attractive, the management department started large construction of hiking trails, camping sites, hostel and museums. Now GGNRA welcomes 15 million visitors annually. The crowd of people drown out the sounds of nature, degraded habitat and disturb the wildlife.

Similarly, in Mediterranean area, the most popular vacation destination in the world, massive tourist facilities, particularly hotels and apartment complexes, have been built extensively starting from 1960s, as a result of post-war economic recovery (Satta, 2004). However, not only the coastal landscape was damaged, but ecological problems occured. The erosion of the beaches and dunes are increasing each year. This poses a risk of flooding to coastal communities in the context of climate change.

The environmental impacts of tourism sometimes force the government to take actions on specific issues. In Hong Kong, for example, because of the industries in Hong Kong moved to mainland China, the region turned to tourism for the stimulation of the local economy. Now 60 million people travel to Hong Kong each year, by which massive food and packing waste is a negative consequence. Tourism put on much more pressure as waste management is already an urgent problem. Hong Kong government was forced to make plans, such as a $10 billion dollar incinerator and a food waste processing plant on Lantau.

3. Urban spatial change impacts tourism

In urban development, construction and transformation are constantly undergoing processes. The processes create not only better living conditions for citizens, but also an attractive image to tourists. Tourism economy is additional value and benefit for the spatial transitions.

3.1 Urban renewal brings unexpected tourism

From 1960s to 1990s, suburbanization played the leading role in urban development worldwide. This trend created similar dull neighbourhoods and took up massive natural areas, which received much criticism. Therefore, since 2000, the focus turned to urban renewal.

Hafencity is the largest urban regeneration project in Europe, and it is still ongoing. In 2000, municipality of Hamburg approved the masterplan for this under-used port as it was unsuitable for container operations. The project was to be developed into an upmarket inner-city district with residential, office functions for the main purpose, while water was used for culture and leisure as it is part of the urban landscape (Sepe, 2013). The advanced concepts applied in the project gave Hafencity better walkability, better accessibility and vital public space. Tourists experience an unforgettable industrial and post-industrial culture in the area. According to the official website, Hafencity is "extremely attractive to tourists: this kind of 'construction site' tourism can be seen as a temporary phenomenon; many people see it as a unique opportunity to experience for themselves how a completely new part of town takes shape." The data support its attraction, since 2001, the start year of construction, the annual tourist numbers increased from 2.57 million, with an approximately 6% growth rate to 7.18 million in 2018. In contrast to this, the numbers before were stagnated with small fluctuation (Statista, 2019).

The similar plan can be found in the east even earlier. The base of Minato Mirai 21 in Yokohama is a large shipyard and railway classification yard. In 1965, the mayor proposed this urban renewal project, and in 1983 it started to be physically advanced. Although the project initially aimed at office, technology and exhibition, it is now one of the most attractive areas within Tokyo metropolitan region. It received 83 million visitors in 2018, which have increased by 18 years since 2000.

In both cases, we can observe that these gentrification projects near urban centres attract not only businesses and residents to work and live, but also gain attention from tourists because of the high-quality spaces and abundant cultural base. In turn, tourism added more economic value to urban renewal projects.

3.2 Large events promote tourism growth

Although hosting large events can be expensive, countries and cities around the world still compete for the right to host. Olympic Games and FIFA World Cup, which are held every four years, attract worldwide atte-

ntion before and during the events. It is a stage to show the beauty and urbanity to the world. Host cities will build magnificent stadiums and facilities, construct new and renew existing infrastructure To make a good impression on the world. Tourism is often considered an additional effect.

The short-term tourism effect led by large events is undeniable. During Los Angeles Olympic Games in 1984, the city received 400 thousand tourists, which generated 9.6 billion dollars benefit. Similarly, Milan held World Expo in 2015; it was a huge success according to Italian Prime Minister as 20 million people visited Expo in 5 months. Tourism revenue reached about 5 billion euros, which is much higher than the cost of 2.6 billion euros (Euronews, 2015).

Whether large events have long-term tourism effect is still controversial. Fourie and Santana-Gallego (2011) believe that there is no significant impact on tourism in terms of post event period. Song (2010) finds that it is positive for short-term but negative for long-term impact on tourism after events. However, both two authors think that boomed international tourism started from 4 years before the event until it finished. Vierhaus (2019) presented Summer Olympics has a long-term tourism boost before, during and in the 20 years after the event, while FIFA World Cup and Winter Olympics have almost no long-term effect. Barcelona is considered a successful example. Until the event year, "(New) roads represented an increase of 15% over those existing in 1986; new sewage systems, 17%, and new green areas and beaches, 78%."(Taylor, 2012) At present, Barcelona has 9 million long haul tourists, four times the number in 1990. It is now the fifth popular destination in Europe, and some Olympic legacies are still attractions, such as Olympic Port and nearby beach which was transformed from industrial buildings.

3.3 Architectures and Landmarks are the catalyst of urban tourism

"Tourism is a scenario to 'familiarize a city for an unfamiliar audience and gain identity for the citizen', while Architecture 'is an expression of lifestyle and spirit of the epochs and cultures in which it arises'" (Murali, n.d.) The various architectures are always the reason people love urban tourism. The combination of traditional architectures forms diverse spatial experience, which psychologically gives tourists a sense of freedom. The landmark architectures attract flows of tourists with its uniqueness.

Bilbao is the best example of how architecture changes one city's tourism. In 1993, the city council invited Frank Gehry to design Guggenheim Museum as a place for a regional art centre to focus more on the cultural economy. Once it built, this deconstructivism architecture was prodigious and gained global attention. It turned Bilbao into an international destination. The tourism data shows the effect; foreign travellers had risen 43% whereas non-Basque Spanish accounted for a 20.4% growth until 1999(Plaza, 1999) and from the economic scope, the museum brought the city about $500 million in economic activity and $100 million in taxes in its first three years (Conasür, 2019). And then the whole city was regenerated

and got rid of stagnation. Media called this phenomenon "Bilbao Effect". Gospodini (2001) thinks that "It is avant-garde design of both buildings and open spaces that can make urban space morphology in itself and of itself a sightseeing, a tourist resource." We can conclude that tourism and landmark are closely connected nowadays as landmarks appear not only econimic values but cultural values.

4. Current and Future Trends

In the comtemporary era, ICT progresses massively and many new concepts occur. These external factors induce new trends in tourism. These trends probably bring spatial transitions in our cities.

Share economy is one of the most popular concepts in recent years. It already has some applications in tourism. The most famous one is Airbnb. In touristic cities, inner parts can be too noisy by tourists, which makes it no longer suitable for long-term living. Consequently, the hosts move their residences to quiet districts and post their original house on Airbnb to get benefits. This phenomenon further commercializes the inner city. Criticism says that the offer is encouraging segregation processes (Guttentag, 2015) and reinforcing the risk of social desertification of historical centres (Semi, 2015). In some sense, the residential function is converted to commercial. Tourists colonize the space in city's attraction area, research calls it "disneyfication". However, in the context of the continuing growth of international tourism, although governments are taking various measures to limit, Airbnb will still contribute to the conversion of spatial function.

Sustainability is a concept supported by the public. After understanding personal carbon footprint, more people choose to travel by trains instead of aeroplanes. In Europe and US, although governments have proposed detailed plans for high-speed rail, the implementation is quite slow as the high costs and lack of investment. In the future, this urgency could be an opportunity to promote the construction of related infrastructure of high-speed rail. Overtourism is an idea that drew attention since 2015. According to UNWTO, it is "the impact of tourism on a destination, or parts thereof, that excessively influences perceived quality of life of citizens and/or quality of visitor experiences in a negative way". Venice, Barcelona and Amsterdam are typical examples. Among them, Amsterdam has already taken action to control overtourism. Besides the strict policies such as regulation of traffic flow and punishment on nuisance by tourists, there are spatial strategies alredy applied or taken into account. The city government tries to 'expand' Amsterdam's borders by urging holidaymakers to visit other places in the city region (Hospers, 2019). The famous "I amsterdam" sign was moved from Museumplein to less-known neighbourhoods following the purpose of attracting tourists out of the city centre. Driven by this kind of decentralization strategies, we could envision the spatial change that the towns around famous touristic cities will get attention and development in the future.

5. Conclusion

This paper examines the interaction of tourism and urban space by categorization, presents related cases of past, present and possible future trends. By comparing each case, the features of this interaction can be concluded.

a. Dynamic

The interaction between tourism and urban space bases on the time context. In time scale, we can conclude an overall trend that the interaction is regarding from leisure to culture. Moreover, tourism could be both the active side or the passive side in this interelationship. Therefore, why they interact and how they interact is constantly changing.

b. Multi-scale

Over the cases, it is clear to observe the interaction happens through different scales. In large scale, it can be a regional phenomenon (resorts in the Mediterranean). In mesoscale, it can be the overall development direction, which leads to urban masterplan (Baden-Baden). In small scale, it can be urban regeneration in blocks (Kuanzhai Lane). Furthermore, it also can be just one architecture (Bilbao Guggenheim).

c. Broadness

No matter what the active-passive relationship of tourism and urban spatial change is, the interaction will gradually involve multiple stakeholders of tourists, residents, government, companies and capitals. Also, the aspects of economic, socio-cultural and environmental will all be covered.

d. Infrastructure and facility are always a concern.

Infrastructure and tourism facility is essential through all the cases. Technological and conceptual progresses create new tourism needs. The construction of infrastructure is the expression when this interaction reflexes in physical space. Also, it is common that tourism drives functional change, by which more tourism facilities are how the change presents.

Tourism is a spatial behaviour, it represents temporary stays and a kind of human flow. However, the spatial attribute of tourism is often ignored. Few studies discuss it. Therefore, this paper is primary research. The knowledge gap is still substantial. By detailed research about the characteristics of the interaction, environmental behaviour study and spatial cognition will be involved. We could understand the mechanism behind urban tourism; what kind of urban space do tourists need? What type of tourists will respond to what kind of urban space? This kind of questions will help urbanists and decision-makers manage tourism better. After integrating with the counterpart questions of residents, relatively fair polices and spatial designs concerning the interests of both tourists and residents can be proposed. Therefore, this topic is valuable for further research.

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