

DISSERTATION

THE ROLE OF URBAN PLANNING  
IN REDISTRIBUTION OF INDUSTRIAL SPACE  
IN THE CONTEXT OF  
CONTEMPORARY CITY'S SPATIAL DEVELOPMENT  
**Shanghai and selected European Cities**

von

XU KAI

E0327832

Bachgasse 12/2/2, A-1160 Wien

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unter der Leitung von

**Univ.Prof. Arch. Dipl.-Ing. Dr.techn. Dr.h.c. Klaus Semsroth**  
E260 - Institut für Stadtebau, Landschaftsarchitektur und Entwerfen

**Univ.Prof. Arch. Dipl.-Ing. Dr.techn. Manfred Wehdorn**  
E251 - Institut für Kunstgeschichte, Bauforschung und Denkmalpflege

eingesetzt an der  
Technischen Universität Wien  
Fakultät für Architektur und Raumplanung





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# KURZBESCHREIBUNG

Mit dem Prozess und Phänomen der Industrialisierung assoziiert man seit Ende des 18. Jahrhunderts den Beginn unserer modernen Gesellschaft und den Aufstieg seiner repräsentativsten physischen Form – der modernen Stadt. Seit damals sind die Städte konfrontiert mit dem Zuzug und dramatischen Anstieg der Bevölkerung, sowie mit der physischen Ausdehnung der Stadtgrenzen, innerhalb derer sich die Industrie zunächst in innerstädtischen Schlüsselpositionen angesiedelt hat und später in abgelegene Peripherielagen abgedrängt wurde. Bis in die siebziger Jahre des vergangenen Jahrhunderts war dieser Prozess durch die urbanen Konglomerate Europas und Nordamerikas dominiert, nun, im Post-industriellen Zeitalter, ist er auch in großen Städten Chinas wie Peking oder Shanghai spürbar.

Stadtplaner, konfrontiert mit dem Untergang der innerstädtischen Industrieviertel, stellen sich zahlreiche Fragen: Wie kann man den Verfall alter Industrieareale aufhalten? Wie kann man neue Entwicklungsmöglichkeiten für Innenstädte generieren durch Revitalisierung ebensolcher Bereiche? Wie kann man neue, qualitätsvolle Standorte für die Vertreter einer neuen "sauberen" Industrie schaffen? Und wie wirkt solche Anstrengungen sich auf die räumliche Entwicklung der Stadt im Aspekt der Bodennutzung, Verkehr, Grünflächen und Freiflächen sowie Stadterhaltung und Denkmalschutz?

Obwohl diese urbanen Phänomene und mit ihnen korrespondierende Prozesse von Stadtplanung zumindest in der jüngeren Vergangenheit gut dokumentiert und theoretisch untermauert sind, haben sich die meisten Forscher nur auf Teilaspekte des Prozesses wie Rekonstruktion der Industriebauten, Revitalisierung der innerstädtischen Industriebereiche, Planung der Innenstadtentwicklung, Entwerfen von Masterpläne für Industriezonen im Kontext der Gesamtstadtplanung konzentriert.

Niemand wollte es als „EINEN INTEGRALEN PROZESS“ sehen.

Wenn wir es annehmen, dass all diese separaten Prozesse eigentlich interaktive Teile eines größeren Prozesses sind, müssen wir im anderen Kontext nochmals die Frage stellen: Welche Rolle können Stadtplanung im Prozess der Aussiedlung der Industrieflächen spielen? Die Antwort auf diese Frage ist gleichzeitig der wichtigste Aspekt dieser Arbeit.

Die untersuchten Methoden und entsprechende Werkzeuge der Stadtplanung sind mit Sammelbegriffen: „BRING OUT“ und „FILL IN“ bezeichnet. Die beiden Methoden sind eng miteinander verknüpft und bedingen sich gegenseitig. Anwendbar sind sie sehr wohl in Mikro- als auch in Makrostrukturen. Basierend auf diesem Konzept, verfolgt meine Arbeit zwei parallele Linien: eine - theoretische und eine praktische. Dabei werden Hintergründe, Ziele, Mechanismen, Werkzeuge und interaktive Felder der benutzten Methoden: „BRING OUT“ and „FILL IN“ sichtbar gemacht, analysiert und generalisiert.

Gemäß den Methodiken angewandter Wissenschaft, sollte die theoretische Basis von Stadtplanung praktische Hinweise für Praxis liefern und sie mit Fakten untermauern. Deswegen stützt sich diese Arbeit auf Analyse und Evaluierung von bereits fertig gestellten oder im Bau befindlichen Projekten. Die untersuchten Projekte basieren auf originellen Planungsmethoden und sind geprüft und legitimiert durch breite gesellschaftliche Diskussionen: London-Docklands, Hamburg-Harbors, Ruhr-Emscherpark, Wien-Erdberge Mais und Beijing-798 Viertel.

Basierend auf den gewonnenen Erfahrungen aus dieser „case study“ werden die „BRING OUT“ and „FILL IN“ Methoden auf räumliche Entwicklung von Shanghai und drei

Standorten in Shanghai angewandt (Yangshupu Riverfront Area, EXPO Site und Suzhou Creek Riverfront Area). Die daraus resultierenden Erkenntnisse haben zum Ziel, bestehende Masterpläne zu verbessern, sowie relevante Indikatoren für die zukünftige Stadtplanung zu liefern.

Sowohl die praktischen als auch theoretischen Schlussfolgerungen der Arbeit werden im letzten Kapitel noch einmal herausgearbeitet und zusammengefasst.

XU Kai, Wien, Oktober 2010

## ABSTRACT

The human society and one of its most representative physical forms, the city, have been closely associated with Industrialization since hundreds of years. In this period of time, it saw the dramatic expansion of city's population and spatial scale in different forms, while it also saw the evolution of industrial space from being the key space in inner city to being the most negative decaying location in inner city and seeking new location in periphery or regional area. Today, in the context of "post-industrial era", the phenomenon of massive relocation of industrial space from inner city, which has been one of the most remarkable urban phenomenon in European and American cities since 1970s, becomes also serious topic that many cities in China, such as Beijing and Shanghai, have to confront to. How to stop the decay of numerous historic industrial districts in the inner city, how to redevelop them and further to provide new growing points in the inner city, how to provide high-quality space for the rising industries in ideal location in the city are all among the challenges originated from or associated with this topic, which urban planning of the city shall take.

From the side of theory research, ever since such urban phenomenon and the correspondent urban planning processes gained ground, the research on them has never stopped. However, given the complexity of the urban phenomenon itself, most of the researches focus on only parts of the urban planning processes (such as inner city industrial district redevelopment, inner city revitalization, master planning of industrial space in macro-structural level of the city or the spatial master planning of the whole city), rather than taking them as an interrelated integrity, or to say, as ONE PROCESS.

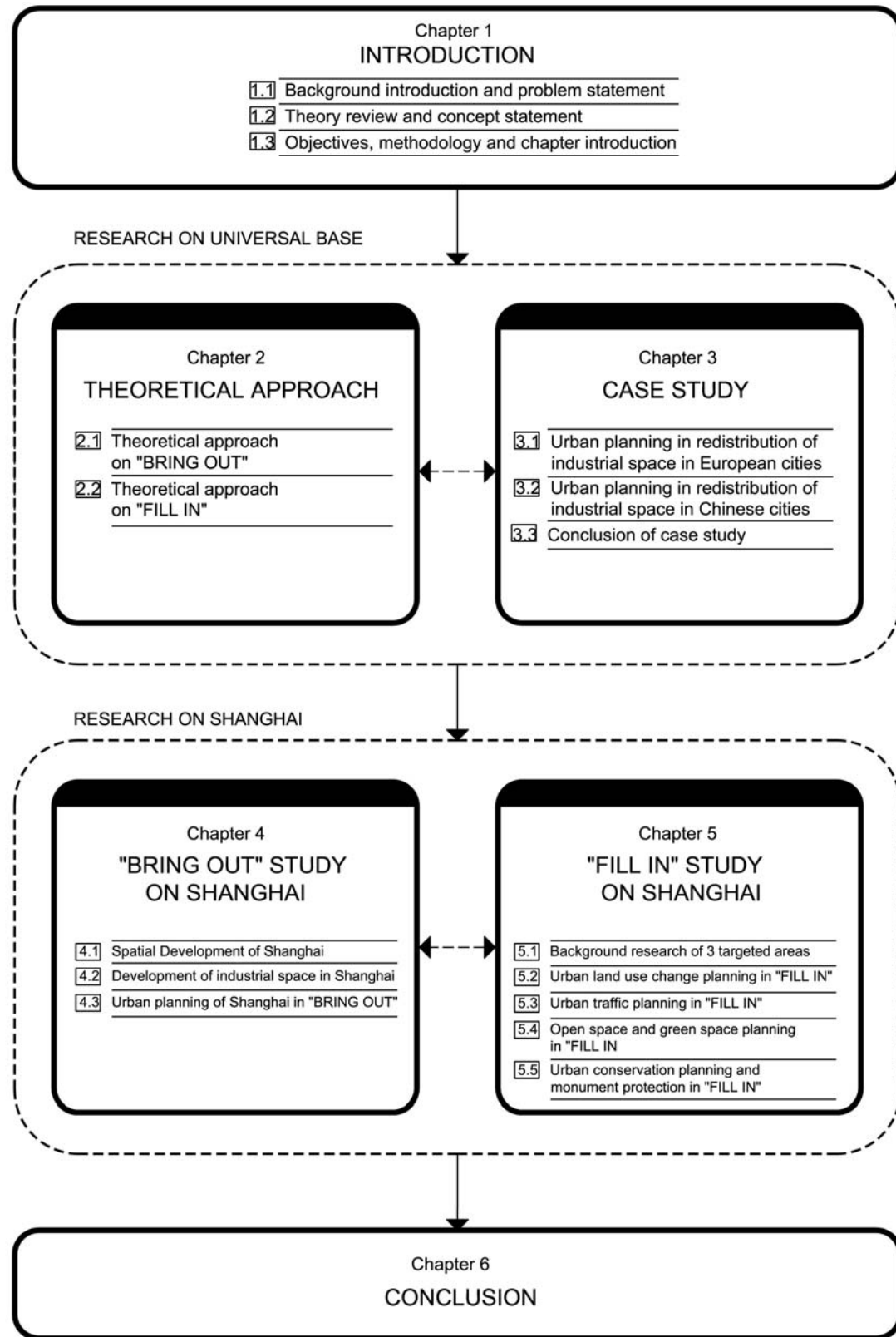
On a new level of thinking, which believes that all these individual urban planning processes are interrelated ones of one process, this thesis raises the question of: *"what is the role of urban planning in the redistribution of industrial space in the context of contemporary city's spatial development?"* The answering of this question, being the foremost task of the thesis, will contribute not only to solving theoretical or practical problems, but also will help us understand how urban planning can function in such phenomenon mentioned above.

To answer this question, this thesis brings forward the concept that urban planning's role in the redistribution of industrial space lies in two interrelated, interdepending and intersupporting efforts: "BRING OUT" and "FILL IN". These two efforts generalize the roles of urban planning on the level of macrostructure and microstructure respectively. Based on this concept, the research of this thesis will be structured following two main lines: theoretical one and practical one, in which the backgrounds, target, mechanism, instruments/interactive fields of urban planning in "BRING OUT" and "FILL IN" will be sorted out, analyzed and generalized.

Being an applied science, urban planning's theoretical achievement shall always lead to indications for practice and verify its authenticity with facts. This is the reason why this thesis elaborates on the analysis and evaluation of completed or ongoing urban planning practices, which have been put to implementation and the results are widely discussed as well as ready to be evaluated (London-Docklands, Hamburg-Harbors, Ruhr-Emscherpark, Vienna-Simmering and Beijing-798 District). Based on the conclusions on such case study, the "BRING OUT" and "FILL IN" efforts of urban planning on Shanghai with the three selected target areas (Yangshupu Riverfront Area, EXPO Site and Suzhou Creek Riverfront Area) is comprehensively evaluated, with the purpose to amend and complement the current urban planning as well as to give indications for the further urban planning practice in this regard.

Both theoretical and practical conclusion of this research will be listed and sorted out in four groups in the conclusion chapter.

XU Kai, Vienna, October 2010



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## CHAPTER 1: INTRODUCTION

## 1.1 BACKGROUND INTRODUCTION AND PROBLEM STATEMENT

Shanghai, a city with glorious history and glorious future, is one of the most unique cities in China regarding its process of spatial development, which has provided for long time countless research topics for urban planning. The uniqueness lies not only in that Shanghai has experienced an abnormal process of spatial development due to an abnormal history from its origin of traditional Chinese town, later, with a dramatic urbanization process driven by colonization, and further with its development as a typical industrial city for almost 30 years after the foundation of PRC, but also in that today Shanghai is confronted with new conditions and new challenges as never before. Entering into the new century, Shanghai is already a super-class city with population of 18.8 million<sup>1</sup>, 446km central city area and 6377.1 square kilometer metropolitan city area<sup>2</sup> that plays its role in the regional and global economic, politic and culture circle<sup>3</sup>.

In the latest urban planning of the city in 1999, the target of urban development is set that Shanghai shall develop herself into four kinds of global central city: economic center, political center, cultural center and shipping center. Such ambitious target setting initializes a series of big topics for the research of urban planning, with the main concern on urban restructuring in all aspects to accommodate the abovementioned targets based on the complexity of existing spatial structure, which is inherited from the long history of development.

Among those urban research topics being discussed, one topic shall be given enough attention due to Shanghai's unique spatial development situation. If we take a look at those projects which currently attract great attention both from the city's planning authorities and from the public: Urban Planning of EXPO Site, Urban Planning of Yangshupu Waterfront Area and Urban Planning of Suzhou River Waterfront Area, we shall not forget the fact: THE PLANNED SCOPE OF THESE PROJECTS ARE ALL FORMER INDUSTRIAL DISTRICT, which have the possibility to be turned into "free land" due to the relocation of industrial function from the inner city area to outer city area. Ever since these urban planning projects were issued, their planned scope was turned into a highly focused area of urban development in the inner city of Shanghai.

We shall also be conscious of another fact that redistribution of the industrial function of the city aiming to free up land resources in the inner city of Shanghai for development of other urban functions has become one of the core targets of the urban development of Shanghai, which is clearly stated out in the "Shanghai Comprehensive Planning 1999~2020" and the "Shanghai Comprehensive Land Use Planning 1997~2010", both issued by the municipal government of Shanghai: the current 66.2 km industrial land in the inner city area must be "converted" before 2010, within which 1/3 will be changed into non-polluting hi-tech and new urban industries (light industry), 1/3 will be replaced by land for tertiary sector and the rest 1/3 will be totally moved out to the new outer suburb industrial districts<sup>4</sup>. It shall be mentioned

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<sup>1</sup> "Statistics of Population and Family Planning" from <Shanghai Population Year Book 2009>, China Statistics Press, 2009, p.2 and p.26

<sup>2</sup> Refer to <Shanghai Comprehensive Land Use Planning 1997~2010>, Municipal Government of Shanghai, 1999, p.20

<sup>3</sup> Refer to <Shanghai Comprehensive Planning 1999~2020>, Municipal Government of Shanghai, 1999

<sup>4</sup> According to <Shanghai Comprehensive Planning 1999~2020> and <Shanghai Comprehensive Land Use Planning 1997~2010>

that the total amount of the released inner city lands by this redistribution adds up to more than 10% of the total land of Shanghai's inner city area!

Why are all the abovementioned important urban planning efforts related to industrial function's redistribution? Indeed, attempting to answer this question is the starting point of the topic of this dissertation.

#### 1.1.1 NEW CHALLENGES FOR SHANGHAI'S SPATIAL DEVELOPMENT

The name of Shanghai had been closely associated with industry throughout history. The grounding of this firm association was mainly built up in two periods. From the middle of 19th century to its peak age in 1930, Shanghai had been in the golden path to become the biggest city in the Far East and one of the central city for international trading, finance and shipping, thanks to the great geographical advantages and injection of international and national capitalization in its colonial period. This period also gave birth to the emergence and development of manufacturing industry, which made Shanghai the first city in China to be industrialized. The second period of development of industrial function starts after the foundation of PRC in 1949. Shanghai was then planned under the "planned economy system"<sup>5</sup> of China at that time to develop into an industrial city, targeted as the biggest manufacturing center of China. The heavy manufacturing industries like iron, machinery and electricity were intensively capitalized and developed in the 1950s. In the 1960s, the amount of secondary sector (manufacturing) began to surpass the tertiary sector in Shanghai<sup>6</sup>. The former prosperous functions of trading, finance and shipping declined seriously and Shanghai came into being as a national manufacturing industry center city.

Shanghai enters another golden development period after the 1990s, when the concept of the spatial development of the city was amended, which defined Shanghai to be an economic center, political center, culture center and shipping center in the regional and global circle<sup>7</sup>. Reduction of manufacturing industry and promotion of the tertiary industry was a target of the development in the inner city of Shanghai. With multiple policies and urban planning being issued to promote such tendency, the significant decline of manufacturing industry is seen. Shanghai regains her vitality as an important metropolitan city with its spatial structure for industry, commerce, residence, transportation and greenery gaining a more harmonious proportion.

Today, 20 years later after the new spatial development model was considered and implemented, Shanghai is confronted with new situations. The demand for expansion of population and spatial scale is one of the main challenges. The current population of 14.15 million is predicted to increase to 16 millions<sup>8</sup>, while the planning scope of the inner city will increased from 446 square kilometer to 585 square kilometer in 2020<sup>9</sup>. Meanwhile, the efforts for redistribution of industrial function of the city are entering their 10<sup>th</sup> year, and considerable amount of inner city land was freed up by

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<sup>5</sup> "Planned Economy System refers to economic system in which all decisions regarding production and good consumption are made by the state government. The "Planned Economy" was the major system for China after 1949 under leadership of communist party of China, before it was restructured into "Market Economic System" in 1990.

<sup>6</sup> Refer to Jianguo Wang, <Conservation of Industrial Heritage Buildings and Sites in Post-Industrialization Era>, China Building Industry Press, 2008, p.24

<sup>7</sup> Refer to <Shanghai Comprehensive Planning 1999~2020>, Municipal Government of Shanghai, 1999

<sup>8</sup> Refer to Jianguo Wang, <Conservation of Industrial Heritage Buildings and Sites in Post-Industrialization Era>, China Building Industry Press, 2008, p.23

<sup>9</sup> Refer to <Shanghai Comprehensive Land Use Planning 1997~2010>, p.20

such efforts. The two seemingly irrelevant urban activities confront with each other in this specific junction of time.

Then, how can the changing of industrial distribution contribute to these new situations? And how can urban planning make use of and enlarge this contribution?

#### 1.1.2 EMBARRASSMENT OF SHANGHAI'S HISTORIC INDUSTRIAL DISTRICTS

Being similar to many other metropolitan cities in the world which experienced industrialization process in their grounding time, Shanghai has many industrial districts in various scales in the inner city area. They used to be important areas in the city in the history, as they generated major economic outcome for Shanghai for a considerably long period of time, and many of them gained strong urban character through their long history. Being evidence of the glorious historic, cultural, technical and architectural achievement of the industrialization process of Shanghai, many industrial monument and heritage sites were left. These are all invaluable property of Shanghai.

However, the gloriousness of the districts is becoming a total embarrassment now. With the big players of manufacturing industry moving out, nearly all industrial districts in the inner city of Shanghai are confronted with comprehensive decay. Low economic output, decaying industrial function, bad accessibility and bad environment quality become main impressions on these areas. Being situated within the inner city and occupying considerably large pieces of land, these industrial districts make a big contrast to the neighboring urban district in almost all respects. Before the official urban planning and the external political/economical power intervening in the development, the revitalization for these districts was almost hopeless. Indeed, some effort to revitalize some industrial sites (not the whole district but individual sites) had already started by non-governmental power before the official urban planning was issued. Without policy and financial support from the government, almost all of them were not successful except for that they exerted effective influence on the public, media and somehow affected the decision-making of the government. And they hardly created positive effects on the industrial district as a whole, not to mention influence on the spatial development of the city, as their efforts were so dispersed and uncoordinated. The famous Suzhou Creek Loft Movement and the Creative Industrial Park Movement are among these efforts.<sup>10</sup>

The embarrassment lies also in the efforts on protection of monument and industrial heritage sites. In contrast to the many of historic industrial buildings, the list of protected architectural monuments issued by the government covers only very few numbers of monuments and sites that are related to industry (18 within 632)<sup>11</sup>. All industrial buildings, either having value of conservation or not, are in shortage of maintenance or danger of total demolition. In the other hand, the few industrial heritage monuments or sites are isolated from each other as well as from the transportation accessibility to the public, the obvious result being that the value of these heritage monuments and sites is not recognized. Urban planning is again absent here.<sup>12</sup>

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<sup>10</sup> Details please refer to Chapter 5, Section 5 of this research.

<sup>11</sup> There are four < Outstanding Historic Architecture Protection List> (respectively issued in 1990, 1993, 1999, 2002), in which 634 protection objects are defined, 18 of which are put in category of "industrial building" (including 2 "municipal infrastructure building").

<sup>12</sup> Details please refer to Chapter 5, Section 5 of this research.

All above facts prove that revitalization and monument protection without integrative urban planning, a comprehensive consideration of the balance of revitalization of former industrial districts and the integral spatial development of the city as an entirety is almost impossible. On the other side, it is also impossible for these individual revitalizations to contribute to the macro-structural spatial development of the city without urban planning being a conducting and coordinating instrument.

Then, how can urban planning contribute to change this situation and how does urban planning work?

#### 1.1.3 EXPERIENCES FROM EUROPEAN CITIES

In the so-called “Deindustrialization Era”<sup>13</sup>, the comprehensive impact of the decline of manufacturing industry on the spatial development of the city is a global topic. Starting from the 1960s and 1970s, many European and American metropolitan cities and regions experienced a similar process of “deindustrialization”<sup>14</sup>, in which the city government had to devote their full power of urban planning, economy policy and culture policy to avoid the negative impact and also to try to seize the opportunity for city’s spatial development. Famous projects of this kind include the redevelopment of London Dockland under LDDC (1981~now), IBA Emscherpark (1989~1999) and its succeeding projects (1999~now) and Redevelopment of Hamburg Ports (1980s~now)<sup>15</sup>. Entering the year 2000, many of these cities have already completed the urban restructuring corresponding to the shifting from manufacturing to tertiary sector, and the effects of this type of urban planning has already been revealed. This is the right time for a comprehensive evaluation for the urban planning’s role in such process, in which valuable experiences and lessons can be summarized. They have very important significance as reference for those cities which are confronting with similar process now, such as Shanghai.

It must be mentioned that, every city is different in its demographic, spatial, economic and politic situation, and their development target and model vary in a specific period of development. It can be said that the “deindustrialization” process in European cities, which started more than 20 years ago, is similar to what Shanghai is encountering now, but the direct borrowing of experiences and lessons from city to city is unrealistic and theoretical questionable. Nevertheless, these experiences and lessons are still very valuable to help us know about the general development targets and models in similar situations on a global background, and further provide reference for the research on the urban planning of Shanghai.

Then, how does Urban Planning work in those cities with a similar process? In the urban planning for Shanghai’s, what can the city’s authorities learn from those other cities and what they must avoid?

#### 1.1.4 4 PRESUMPTIONS + 4 QUESTIONBS

Based on the backgrounds mentioned above, this research is initiated with the aim to find out the role that urban planning plays in the redistribution of industrial space in the contemporary city’s spatial development, by means of both theoretical research and case study. The whole research has its root in the following four basic understandings/presumptions:

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<sup>13</sup> See theory review Chapter 1, Section2 of this research

<sup>14</sup> Details please see Chapter 1, Section2 of this research

<sup>15</sup> See details in Chapter 3 (case study).

1) The redistribution of industrial space is an urban phenomenon in a specific stage of contemporary city's spatial development, and there is an interrelated correspondence between both processes: redistribution of industrial space and city's spatial development.

2) Urban planning, as society's main instrument in the modern time to analyze, forecast, plan and monitor the spatial development of the city, is also society's fundamental instrument to strengthen and optimize the aforementioned interrelated correspondence.

3) There are two interdependent and interactive components of urban planning in this regard: a) urban planning on redistribution of industrial space (macro-structural level) and b) urban planning on left-over space of the redistribution process (micro-structural level). In this research we describe them as "BRING OUT" and "FILL IN".

4) The comparability of European and Chinese city in regard to this topic lies in that similarity in starting point and target setting always arrives in similarity of decision making and urban planning strategies. This validates the method of case study on European and Chinese cities and its value as reference.

Being conscious of the presumptions mentioned above, this research starts with the following questions:

a. What is the interactive discipline between city's spatial development and the redistribution of industrial space? How can this interactive discipline inspire urban planning?

b. How urban planning can play an active and positive role in the redistribution of the industrial space to benefit the spatial development of the city? What are the targets and instruments of urban planning in such process?

c. What are the experience and lessons of European cities regarding the role of urban planning in such a process?

d. How to evaluate, amend and complement to the current urban planning of Shanghai for the redistribution of the industrial space in order to benefit the spatial development of the city?



Figure 1: Old industrial space mixed with residential spaces in Shanghai Suzhou Creek Riverfront Area in 2010, Photograph taken by the author

## 1.2 THEORY REVIEW AND STATEMENT OF CONCEPT

### 1.2.1 DEFINITIONS

#### ● Industrial function & industrial spaces

The term “Industrial Function” in urban planning normally refers to those land uses related to manufacturing industry, namely the secondary sector. Based on the three sector hypothesis developed by Colin Clark and Jean Fourastié,<sup>16</sup> the secondary sector of the economy includes manufacturing, processing, assembling and maintenance activities in categories of chemical, construction, electronics, engineering, energy, food and beverage, metalworking, plastics, textile industry and so on. This research uses a broader definition of “Industrial Function” than the aforementioned one, which includes<sup>17</sup>:

- 1) Light industry
- 2) General industry (manufacturing industry)
- 3) Logistics, warehousing and storage
- 4) Waste management and recycling
- 5) Utilities
- 6) Public transport functions
- 7) Wholesale markets
- 8) Some creative industries
- 9) Other functions related to industry such as worker's residence

The reason for using this broader definition is that these functions are very closely related to the manufacturing and has the similar discipline of distribution and development.

In this research, the land use dominated or related to the “industrial functions” defined above, is in general called “Industrial Space”. This includes not only those industrial districts and industrial sites, but also lands for warehousing lands, dock lands, abandoned railways station lands and even residential lands affiliated to production.

In English-speaking countries especially in the United States, England and Australia, there is a specific term named “Brownfield”, which refers to “an industrial or commercial property that remains abandoned or underutilized in part because of environmental contamination or the fear of such contamination.”<sup>18</sup> It must be noted that the definition of “Brownfield” emphasizes mainly on the property of the land being “abandoned or unutilized”, as well as on their environmental contamination which causes obstacles for the reutilization and redevelopment. Many of the

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<sup>16</sup> The three-sector hypothesis is an economic theory which divides economics into three sectors of activity: extraction of raw material (primary), manufacturing (secondary) and services (tertiary). See Colin Clark <The conditions of Economic Progress> and Jean Fourastié <Die große Hoffnung des 20. Jahrhunderts>.

<sup>17</sup> The definition of industrial function takes reference from <Industrial Capacity: London Plan (Consolidated with Alterations since 2004) Supply Planning Guidance>, Mayor of London, 2008, p.12

<sup>18</sup> <Glossary of Brownfield Terms>, Environmental Law Institute. Retrieved 2009-11-29. <http://www.brownfieldscenter.org/big/glossary.shtml>

industrial districts that are discussed in this research are belonging to the concept “Brownfield”, but they are not necessary abandoned or contaminated.

- **Redistribution of Industrial Space**

The “Redistribution of Industrial Space” refers to any form of spatial change of industrial space in the spatial structure of the city, such as size, location and interconnection. Redistribution of Industrial Space is an extinguished urban phenomenon in the contemporary city's spatial development in a specific stage. To summarize the reasons, process and discipline of such redistribution is one of the core contents of this research, which will be discussed in depth in a specific section in chapter 2.

- **Historic Inner City Industrial Districts**

“Historic Inner City Industrial District” is one of the targeted objects of this research. This term refers to a specific area in the inner city area of the modern city, which is or was involved in manufacturing activity. Besides that, some conditions need to be further defined:

Location: The scope of “inner city” is a counter definition of that of “outer city”. “Inner City” refers to the area of the city where the population is most dense. In fact, many modern metropolitan cities had all experienced similar process from their origins of Middle-Age city, to a dramatic development and expansion after industrialization, suburbanization, going through inner city revitalization and eventually entering into a balanced development period. The scope of “Inner City” in the modern sense often has the same or much bigger scope of the historic core of the city where the city grew from. Those “Historic Inner City Industrial Districts” discussed in this research, were normally in or close to the edge of the historic core of the city when they were built, but with the expansion of city in the later stage, they were gradually included in the scope of the “Inner City”. Looking at them today, their locations are often very “central”.

Urban functions: The major urban function in a “Historic Inner City Industrial District” is “industrial function” defined above. Through the long history, some lands within these “Historic Inner City Industrial Districts” are used for some affiliated functions such as residence, office or other service function. This is still covered by the definition of “Historic Inner City Industrial District”, as the relation to the “industrial function” is very close.

Spatial and Demographical Scale: This paper is researching on the “spatial development of the city”, which requires that the “Historic Inner City Industrial District” occupy a certain scale of land and of population to become a precondition for its impact on the “spatial development” of the city. Therefore, the “Historic Inner City Industrial District” is neither a single industrial building or building cluster, nor a single piece of industrial site or a few industrial sites. The “Historic Inner City Industrial District” is a much bigger area of in the city, which has its complexity in spatial, functional and demographical composition and has developed into a subsystem affiliated to the city's spatial system through its history of development. In this sense, this study also surpasses the research on the pure physical environment; rather, it researches on a more comprehensive urban phenomenon that focuses on macro and micro spatial development.

The concept of “Historic Inner City Industrial District” is also different from the prevailing terms we are using in researches of industrial heritage protection, such as

“Historic Industrial Heritage Site” or “Terrain Vague”<sup>19</sup>, which we will discuss later in the theoretical review. A “Historic Inner City Industrial District” often contains industrial heritage buildings and sites, but this is not a necessary condition. In the other hand, the scope of “Historic Inner City Industrial District” is much bigger than “Industrial Site” and contains much more complexity in many aspects.

However, to define the spatial and demographical scale with specific numbers is also very difficult, because the situation of every city is so different. Looking at the “Historic Inner City Industrial Districts” that were selected as case studies for this research, their spatial scale varies in a wide range. For example, the biggest case is the Suzhou Creek Water Front Area, whose planned scope is 20.17 square kilometer, while the smallest case is the Erdberger Mais in Vienna, whose planned scope is 223 ha. However, despite the huge difference in scale, the development of both plays a significant role in the spatial development of the city. Many factors play here, such as the scale of the city, the location of the “Historic Inner City Industrial District” in the city, the interconnection of the location with other locations of the city, and how important is the district treated by the city’s urban planning.

## - **Urban planning**

The terms of “town-planning”, “spatial planning” have very similar meaning and are widely used in many countries. In a modern sense, Urban Planning refers to the “human means and processes to predict the city’s development and to manage and coordinate resources to adapt to the development, with the purpose to guide and administrate the development of built environment”.<sup>20</sup> Differing from the traditional sense of Urban Planning, which focused more on the physical side of the built environment, the modern urban planning expands its territory to research on the influence of related economical, political, social and environmental elements on the changing of spatial development model and to constitute planning that can guide continuous development.

The purpose of urban planning is to guide and administrate the development of the city in different stage, different aspect and with different degree. In the different grade, scope and depth of urban planning, documents such as national territory planning, regional planning, municipal comprehensive planning, municipal district planning and detailed planning (different countries may have different naming for these, but the content is basically similar with slight differences), land use, traffic (infrastructure), greenery structure, urban conservation are normally the core tasks. These four are also the instruments we use in this research for the city’s spatial development.

### 1.2.2 THEORY REVIEW

#### 1.2.2.1 City’s spatial development & industrial location: theory review 1

The composition of the city’s physical and socio-economic structure as well as their evolution over the different stages of a city’s growth are sophisticated research topics, especially when many contemporary cities are now going into a new stage of dramatic development and restructuring in the time of “De-industrialization”<sup>21</sup>. As this is an interdisciplinary topic and has its roots and research scopes in sociology,

<sup>19</sup> A term defined by 1996 UIA Congress.

<sup>20</sup> The definition here refers to <Principals of Urban Planning>, Li Dehua, China Building Industry Press, 2000, p.120

<sup>21</sup> See definition of “De-industrialization” in this research 1.2.3

economics, geology and urban planning, there is no common definition, concept and research methodology.

One of the earliest contributions to this topic was from D.L. Foley and M.M. Webber. According to D. L. Foley (1964)<sup>22</sup>, the concept framework for urban structure is multidimensional. First, urban structure contains three elements: cultural value, functional activities and physical environment. Second, urban structure has spatial and non-spatial properties. The spatial property of the metropolitan urban structure refers to spatial characteristics of the aforementioned cultural value, functional activities and physical environment. Third, Metropolitan Spatial Structure involves aspects of form and process, which respectively refers to the spatial distribution and interaction model of the structural elements in the city.

The theoretical framework of Foley was furthered by M. M. Webber (1964) and L. S. Bourne. Webber (1964)<sup>23</sup> further explained the two aspects of urban structure: "form" and "process", he also categorized two sorts of spatial structure: "adapted space" (such as buildings) and "channel space" (such as traffic network). Bourne (1971)<sup>24</sup> applied the Systems Theory<sup>25</sup> to explain the spatial structure of the city. D. Harvey (1973) summarized in 1973<sup>26</sup> that all urban theory must research on the interrelation between the spatial form and social process, which is the internal mechanism of the spatial form. Harvey stated that the past urban research was restricted by the disciplinary boundaries of the sociological approach and the geographical approach, because the sociological approach focuses only on social process and the geological approach only focuses on spatial form. It is pointed out that the interdisciplinary urban research must set up interface between sociological approach and geographical approach.

The research on urban spatial structure being a highly interdisciplinary one, the approach of the topic varies in terms of methodology and ideology. Based on analysis of the research targets and objects, P. Knox (1982)<sup>27</sup> summarized them into researches on "physical environment", "perceived environment" and "socio-economic environment". In Tang Zilai's summarization (1999)<sup>28</sup>, he combines the former two categories into "urban physical space" and renames the later into "urban socio-economic space". We use his summarization here to give a brief overview on the approaches and theories of this topic:

#### 1) Research on the "urban physical space"

Such research focused in its beginning stage on the objective properties of the urban physical space. Representative researches are the M. R. G. Cozen's research on

<sup>22</sup> D. L. Foley, "An Approach to Metropolitan Spatial Structure," in M. M. Webber ed., <Explorations into Urban Structure>, University of Pennsylvania Press, 1964

<sup>23</sup> M. M. Webber, <The urban place and non-place of urban realm>, in M. M. Webber ed., <Explorations into Urban Structure>, University of Pennsylvania Press, 1964

<sup>24</sup> L. S. Bourne (ed.), <Internal Structure of the City>, Oxford University Press, New York, 1971

<sup>25</sup> Systems Theory is an interdisciplinary theory about the nature of complex system in nature, society and science, and is a framework by which one can investigate and/or describe any group of objects that work together to produce some results. As a technical and general academic area of study it predominantly refers to the science of systems that resulted from Bertalanffy's General System Theory (GST), among others, in initiating what become a project of systems research and practice. (from Wikipedia).

<sup>26</sup> D. Harvey, <Social Justice and the City>, Basil Blackwell, Oxford, 1973

<sup>27</sup> P. Knox, <Urban Social Geography: An Introduction>, Longman, Harlow, 1982

<sup>28</sup> Tang Zilai, <Theory and Methodology of Research on Urban Spatial Structure in Western Countries>, in <Urban Planning Magazine> 1997(6), 1, Tongji University

Aluwick (1960), in which he introduced the concept of “fringe belt” and “fixation line” to explain the form and evolution of urban physical structure.<sup>29</sup> The research of A. E. Smailes (1966) showed that the evolution of urban physical structure is a dual process composed of “outward extension” and “internal reorganization”, with methods of “accretion” and “replacement” respectively.<sup>30</sup>

Another direction of research on “urban physical structure” focused on the “imagery” and “desirability” of the urban physical space.<sup>31</sup> The research by K. Lynch (1960) on Boston, New Jersey and Los Angeles, showed that people’s perception on the images of the city can be summarized by “paths”, “edges”, “districts”, “nodes” and “landmarks”.<sup>32</sup> The research on the “desirability” is mainly on the desire for residence of people of different families, races and economic states. As a contrast to K. Lynch’s research, such research, as the one by W.A. V. Clark and M. T. Cadwallader on Los Angeles (1973)<sup>33</sup>, reveals the different perception on urban physical structure of people from different social and economic backgrounds.

## 2) Research on “urban socio-economic space”

Such research dated back to the three classical spatial models regarding city’s spatial structure, which originated from the so-called “Chicago School”. E. Burgess’s “Concentric Zone Model”<sup>34</sup>, brought forth in 1925, based on land use structure and social-economic status of Chicago, is one of the theoretical models to explain urban social structure. This model indicates an urban structure that takes Central Business District (CBD) as the center, and the city expands in rings with different land use. Later in 1939, the economist H. Hoyt brought forth the “Sector Model”<sup>35</sup>, in which similar types of (residential) land uses occupy wedge-shaped sectors extending from the city center along transportation routes. In an effort to overcome some of the restrictive assumptions of the previous two theoretical schemes, Harris and Ullman further in 1933 proposed the “Multiple Nuclei Model”<sup>36</sup>, which indicated that the city’s land uses are organized frequently around particular nuclei (pre-existing agglomerations or new centers of activity) rather than around a single center. Numerous empirical studies were made after these classical spatial models were brought forth and it was showed by later research that city’s spatial structure follows multiple social properties and spatial models. The three classical models only cover a part of them. For example, the research by D. T. Herbert and R. J. Johnston (1978)<sup>37</sup> showed that North American Cities have similar urban social structure model. Economic status is the most important factor for spatial differentiation, which follows the “sector model”. Meanwhile, spatial differentiation related to family type follows the “concentric zone model” and the spatial differentiation related to race follows the

<sup>29</sup> M. R. G. Cozen, <Aluwick: A study of Town Planning Analysis>, Institute of British Geographers, 1960

<sup>30</sup> A. E. Smailes, <The Geography of Towns> Hutchinson, London, 1966

<sup>31</sup> K. Lynch, <The Image of the City>, MIT Press, Cambridge, Mass, 1960

<sup>32</sup> Refer to K. R. Cox, <Man, Location and Behavior: An introduction to Human Geography>, John Wiley, New York, 1972

<sup>33</sup> W.A. V. Clark and M. T. Cadwallader, <Residential Preferences: An alternative view of urban space, environment and planning>, Environment and Planning 5(6) 693 – 703, 1973

<sup>34</sup> Refer to E. W. Burgess, <The Growth of the City> in R. E. Park (ed.) <The City>, Chicago University Press, Chicago, 1925

<sup>35</sup> Refer to H. Hoyt, <The Structure and Growth of Residential Neighborhood in American Cities>, Government Printing Office, Washington DC., 1939

<sup>36</sup> C. D. Harris and E. L. Ullman, <The Nature of Cities>, The Annals of American Academy of Political and Social Science, CCXII, p.7~17, 1945

<sup>37</sup> D. T. Herbert and R. J. Johnston (ed.), <Geography: A Social Perspective>, David & Charles, Newton, Abbot, 1972

“multiple nuclei model”. The development of the urban spatial development also varies following multiple models.

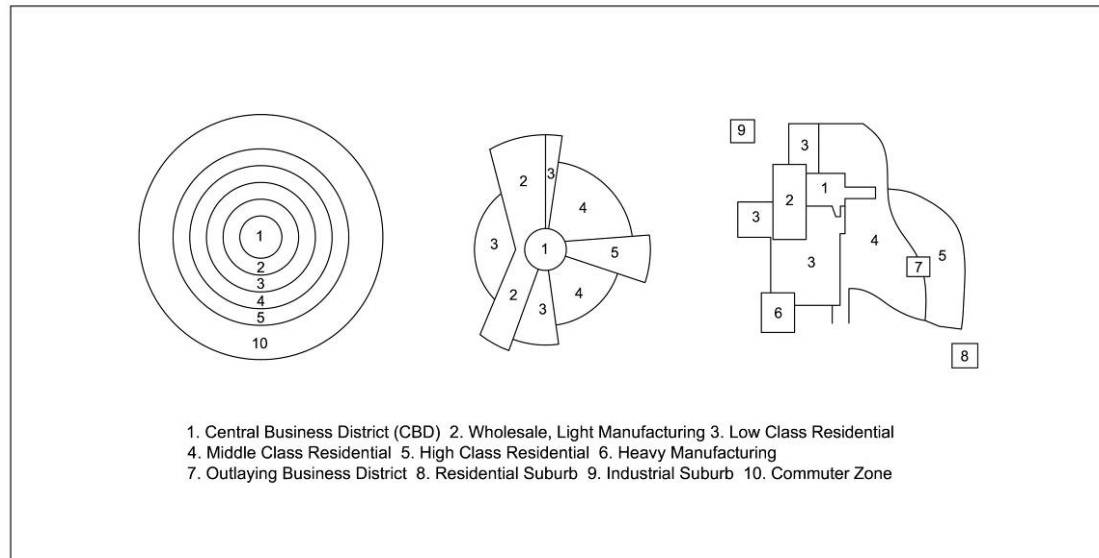


Figure 2: Three Classical Models of Urban Spatial Structure, from L. S. Bourne (ed.), <Internal Structure of the City>, Oxford University Press, New York, 1971, p.71

Except for the sociological approaches above, urban and regional economics also has an important contribution to the research on urban spatial structure and its development, the most distinguished contribution from the Location Theory from the Microeconomics, which researches on the “locational equilibrium in the idealistic state of competition in free-market economy from an angle of least-cost location”<sup>38</sup>. The analysis of land use patterns and their changes in the micro-economic theorization tradition has been influenced in fundamental ways by the agricultural land rent theory developed in 1826 by the North German estate owner, J. H. von Thünen, in which he theorized the main land use pattern that rural land uses around a market town.<sup>39</sup> Thünen’s original ideas were applied and refined in the celebrated “Urban Land Market Theory”, which was brought forth by W. Alonso in 1964<sup>40</sup>. The central concept of this theory is the *bid-rent function* for each household and/or firm. The bid rent of a household is defined as the “maximum rent that can be paid for a unit of land (e.g. per acre) at some distance from the city center, if the household is to maintain a given level of utility.” (Hoover and Giarratani 1984)<sup>41</sup> The bid rent curve of the actual land rents in the city reflects the outcome of a bidding process by which land is allocated to competing uses. Alonso’s model assumes a mono-centric, flat, continuous and uniform urban area with CBD as the center. The bid-rent curves are downward sloping (rent decreases with distance from the city center to offset transport costs) and single-valued; i.e. for a given distance from the CBD only one rent bid is associated with a given level of utility. The steepness of the slope of the bid rent curve depends on transport costs and the household’s (or the firm’s) demand for space. Steeper curves are associated with higher transport costs and/or less

<sup>38</sup> Tang Zilai, <Theory and Methodology of Research on Urban Spatial Structure in Western Countries>, in <Urban Planning Magazine> 1997(6), 1, Tongji University

<sup>39</sup> P. Hall (ed.), <Von Thünen's Isolated State> (English translation by Carla M. Wartenberg, with an introduction by the editor), Pergamon Press, 1966.

<sup>40</sup> W. Alonso, <Location and Land Use: Towards a general Theory of Land Rent>, Harvard University Press, Cambridge, Mass

<sup>41</sup> E. M. Hoover, and F. Giarratani. An Introduction to Regional Economics, 3<sup>rd</sup> edition. New York: Alfred Knopf. Reprinted in 1999 in Loveridge,

demand for space (hence, higher value attached to accessibility). Flatter curves are associated with lower transfer costs and/or higher demand for space (and, hence, preference for more outlying locations). Finally, lower bid-rent curves are associated with greater utility as, assuming fixed budgets, at any given distance from the CBD, if a lower rent bid is accepted, more goods can be consumed.<sup>42</sup>

Although the bid-rent curve is invented to explain the land use pattern mainly on residence, it can be applied as well to explain the land use pattern for industry and industrial location with its main concern being on the transportation cost for the firms. This also became the target of the new rising "Industrial Geography" in the 1960s. Research of D. M. Smith (1966, 1971) showed that the decision of enterprise for the location selection is not only influenced by the factor of transportation cost, but also by that of the revenue. The intersection part of total cost curve and the total profit curve demonstrates the region within which enterprise can profit best, which is defined by Smith as "the spatial margin to profitability".<sup>43</sup> This theory is intensively used for later analysis for industrial location and for urban policies.

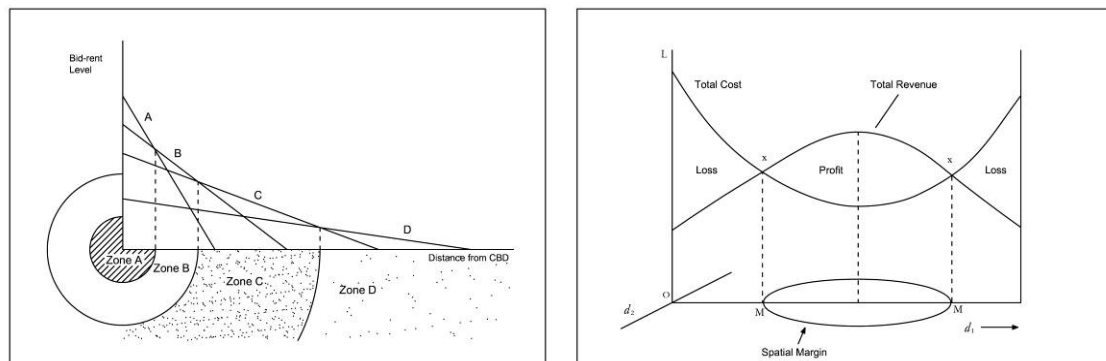


Figure 3: "Bid-rent Level and Urban Spatial Structure", from L. S. Bourne (ed.), <Internal Structure of the City>, Oxford University Press, New York, 1971, p.33 & "Spatial Margin of Profitability", from W. F. Lever (ed.), <Industrial Change in the United Kingdom>

Major critique on the aforementioned approach by microeconomic is that the restrictive assumption, being set for study in the idealistic state, limits its usefulness in approximating observed land use patterns, as well as in analyzing land use change.<sup>44</sup> Amended and improved, the Behaviorism attempted to analyze the spatial behavior of economy in reality (instead of idealistic state) based on the theoretical framework of the microeconomic. Entering 1970s, with the economic depression and rising of unemployment in western countries, the industrial location made key influences on the urban and regional economy. The research on this became a major research scope of Behaviorism in this period. Using the instrument of multivariate data analysis, D. E. Keeble (1976, 1980) analyzed the statistical interrelation between the industrial locational behavior and some selected factors, attempting to

<sup>42</sup> Hoover, E.M. and F. Giarratani. 1984. An Introduction to Regional Economics, 3rd edition. New York: Alfred Knopf. Reprinted in 1999 in Loveridge, S. (ed.) The Web Book of Regional Science. West Virginia University, Regional Research Institute, Morgantown, WV.

<sup>43</sup> D.M. Smith, <A theoretical Framework for geographical studies of industrial Location>, Economic Geography, 42/2, and D.M. Smith, <Industrial Location: An Economic Geographical Analysis>, John Wiley, New York

<sup>44</sup> Helen Briassoulis, <Analysis of Land Use Change: Theoretical and Modeling Approaches>, from The Web Book of Regional Science. West Virginia University, Regional Research Institute, Morgantown

identify the “locational factors” that affect the industrial locational behavior, such as living environment, labor power and urban policy.<sup>45</sup>

The Structuralism, which criticizes the microeconomic approach for ignoring the social and institutional constraints on individual behavior, also made a major contribution to the theory of urban spatial structure of the 1970s. The Structuralism attempts to analyze the urban structure as being an expression of society's relation in the context of late capitalism. They propose alternative conceptualizations of urban spatial structure and of the determinants and processes of its change, most of which are premised on the belief that the main determinant of locational behavior is power. Hence, analysis of spatial patterns has to be based in the relevant political economy (Johnston 1982, 83).<sup>46</sup> Castells's theoretical contribution (Castells 1977, 1978)<sup>47</sup> focuses on collective consumption and the power of the state, as the main supplier of collective consumption services, to control urban structure in ways beneficial to the interests of the owners of capital. The spatial expression of the economy includes: (a) the production space – industry and offices, (b) the consumption space – with elements of the reproduction of the labor power: housing and welfare services, and (c) the exchange space – transportation and communication networks. The administration space – local government and urban planning – relates to the economic space but also to the exchange space. The organization of production is conducted mostly, although not exclusively, at the regional scale while the reproduction of the labor power is an urban level activity.<sup>48</sup>

The Structuralism also contributes to the industrial location theory by its concept of “spatiality of social relation in capitalist production” (Massey and Meegan 1982, Massey 1984)<sup>49</sup>. It attempts to analyze the evolution of urban spatial structure as being a reflection of the flowing of capital and shifting of mode of production that lead to new spatial division of labor and new society relationship. A. Scott (1980)<sup>50</sup> also explained such mechanism and further explained the function of urban planning in this situation: “Urban development is a function of changing capital to labor ratios among firms as they engage in technical switching to maximize profits. Increased capital intensity associated with investment in technology is accompanied by increased decentralization of location from the urban core (...) these changes in the production space stimulate responses in the reproduction space as households seek suburban locations closer to employment centers (....) The state is heavily involved in unraveling the spatial knots to which this process gives rise, especially in the spheres of reproduction and circulation, to overcome market failures in the provision of housing and transportation facilities (....) Urban planning performs its main

<sup>45</sup> D. E. Keeble. <Industrial Location and Planning in the United Kingdom>, Methuen, London, 1977, and D. E. Keeble. <Industrial decline, urban policy and urban-rural manufacturing shift in the UK>, Environment and Planning (A), 12, 1980

<sup>46</sup> The summary refer to Helen Briassoulis, <Analysis of Land Use Change: Theoretical and Modeling Approaches>, The Web Book of Regional Science. West Virginia University, Regional Research Institute, Morgantown

<sup>47</sup> M. Castells. <The Urban Question>, London: Edward Arnold., 1977

<sup>48</sup> The summary refers to Helen Briassoulis, <Analysis of Land Use Change: Theoretical and Modeling Approaches>, The Web Book of Regional Science. West Virginia University, Regional Research Institute, Morgantown

<sup>49</sup> D. Massey and R. Meegan, <The Anatomy of Job Loss: the How, Where and Why of Employment Decline>, Methuen, London, 1982 and D. Massey, <Spatial Division of Labor: Social Structure and the Geography of Production>, Macmillan, London, 1984

<sup>50</sup> A. Scott, <The Urban Land Nexus and the State>. London: Pion, 1980

functions by solving land use dilemmas (...) and smoothing the dynamics of land development".<sup>51</sup>

The theory of Structuralism also attempts to explain the global phenomenon of shifting of industrial center from developed countries to newly industrializing countries. As noted in F. Froebel's research (1980)<sup>52</sup>, the international labor division had been revolutionized after the 1970s. As the labor relation changed in the developed countries due to expansion of production and the rise of power of trade associations, which impedes the pursuit for best interests of production, the capital flows from the developed countries to developing countries, where numerous surplus labor released from the agriculture and the power of trade association is relative small. In the new international labor division, the developed countries still possess the function of administration, management, research and development, while the developing countries become the manufacturing bases for transnational corporations. Two extinguished phenomena are the rising of newly industrializing countries and the increasing of unemployment in developed countries. As the physical and spatial expression of the social relation, the regional and urban spatial structure was changed. The Inner City Decay is one of the displays.<sup>53</sup>

#### 1.2.2.2 Urban planning in post-industrial era: theory review 2

The term of "Post-Industrial Society" was first brought forth in 1973 by the American Sociologist D. Bell in his book <The coming of Post-industrial Society \_ a venture in social forecasting>, in which he argued that the post-industrialism would be information-led and service oriented.<sup>54</sup> Bell also argued that the post-industrial society would replace the industrial society as the dominant system. The shifting of industrial structure characterized by the dominance of second sector of industry being replaced by the tertiary sector, which is predicted by the Three Sector Hypothesis (developed by Colin Clark and Jean Fourastié<sup>55</sup>), was the leading demonstration of this period. By then in fact, many cities in the United States of America had already shown some identities of Post-Society in the 1960s when employment and economic output value of services (tertiary sectors of economy) started to surpass that of the primary and secondary sectors. In the 1960s and 1970s, cities in Europe and Japan joined in this tendency. Manufacturing industry, being gradually replaced by the rising service industry, lost its importance of being the driving power for the development of the economy. A word was then invented to describe such process of declination of manufacturing: "De-industrialization"<sup>56</sup>, by scholars such as A. Cairncross and W. F. Lever. Main tendencies are the declination of manufacturing and rising of service and information industry, changing of consumption structure, and shifting of manufacturing center from the developed

<sup>51</sup> The summary refer to Helen Briassoulis, <Analysis of Land Use Change: Theoretical and Modeling Approaches>, from The Web Book of Regional Science. West Virginia University, Regional Research Institute, Morgantown

<sup>52</sup> F. Froebel, J. Heinrichs and O. Kreye, <The new international division of labor: Structural Unemployment in Industrial Countries>, Cambridge University Press, Cambridge

<sup>53</sup> The Summary refers to Tang Zilai, <Theory and Methodology of Research on Urban Spatial Structure in Western Countries>, in <Urban Planning Magazine> 1997(6), 1, Tongji University

<sup>54</sup> D. Bell, <The coming of Post-industrial Society \_ a venture in social forecasting>, Basic Books, 1976

<sup>55</sup> The three-sector hypothesis is an economic theory which divides economics into three sectors of activity: extraction of raw material (primary), manufacturing (secondary) and services (tertiary). See Colin Clark <The conditions of Economic Progress> and Jean Fourastié <Die große Hoffnung des 20. Jahrhunderts>

<sup>56</sup> For further definition of "Deindustrialization", see A. Cairncross, <What is Deindustrialization>, in F. Blackaby (ed.) Deindustrialization, Heinemann: Oxford. 1979, or W. F. Lever, (1991) <De-industrialization and the reality of the post-industrial city>. *Urban Studies*, 28(6), 1991

countries to developing countries, which further aggravate the sinking of the manufacturing industry.

Besides its economic and social impact, the “Deindustrialization” had a huge impact also on the development of the city and finally led to comprehensive spatial restructuring of the modern city. One extinguished urban phenomenon was the redistribution of industrial function in the city. Losing impetus of development and necessity of staying in its original location, the leading manufacturing players gradually relocate to the location where they can have better input-output ratio, such as the outer city area or even to other countries. The left-over industrial areas are thereafter confronted with comprehensive decaying process. “Structural Decay” and “Functional Decay”<sup>57</sup> are terms to describe such confrontations of these areas, as the original (left-over) industrial functions and the physical urban structure/infrastructure do not fit the new demand of the city's development, new production model, transportation and new environment standard.

This period also saw the movement of “Urban Renewal”. “Urban Renewal” is the major urban movement in cities in United States of America and Europe shortly after the Second World War, when these cities recovered from the wounds of the war and were confronted with dramatic economic booming and increase of urbanized population. Aiming at renewing the original urban structure to accommodate new development of the city, “Urban Renewal” used to be a highly controversial effort of urban planning which was criticized by many urban planners and by the public, as in the initial stage it was mainly focused in the sheer renewal of physical structure and by means of “urban destruction” and “reconstruction”, which led to “irreversible cultural, social and even economic losses”<sup>58</sup>, especially to those “historic urban areas, large and small, including cities, towns and historic centers or quarters”.<sup>59</sup> Many inner city historic districts became victim of this movement. Such movement also affected many “historic inner city industrial districts”. Actually, many redevelopments projects of inner city industrial districts, which were turned into planning process in beginning of the 1980s, more or less suffered from pursue for high development intensity, ignorance of cultural value and ignorance of urban identities conservation. Among them, the first period of redevelopment of London Dockland was a representative example.<sup>60</sup>

It was the emergence of the idea of “Sustainable Development”, which was announced by <Our Common Future \_ Report of World Commission on Environment and Development> (<Brundtland Report>) in 1987, that marked the turning point of urban redevelopment. Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own need.<sup>61</sup> With this concept expanding its original connotation of environment to social, economy, culture connotations, it was increasingly clear for the urban planers and decision-makers of the city that the urban redevelopment must gain new depth and breath to comprehensively evaluate the economic, social, cultural and

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<sup>57</sup> Jianguo Wang, <Conservation of Industrial Heritage Buildings and Sites in Post-Industrialization Era>, China Building Industry Press, 2008

<sup>58</sup> ICOMOS, <Washington Charter> (Charter for the conservation of historic towns and urban areas), part of “Preamble and Definitions”, 1987

<sup>59</sup> ICOMOS, <Washington Charter> (Charter for the conservation of historic towns and urban areas), part of “Preamble and Definitions”, 1987

<sup>60</sup> See Chapter 3.

<sup>61</sup> World Commission on Environment and Development, <Our Common Future \_ Report of World Commission on Environment and Development>, also known as <Brundtland Report>, 1987, retrieved, 2007

environmental factors of the city and find a harmonious balance between the history and the contemporary. The former “urban renewal” with focus on physical renewal and means of urban destruction, which had caused huge loss to the city especially in splitting the history from the contemporary time, could not continue. In the recent redevelopment projects for historic districts of the city, such terms like “Urban Regeneration” and “Urban Revitalization” with richer and more comprehensive connotations are usually used. Benefiting from such shifts of concepts, many redevelopment projects of historic inner city industrial districts have sustainable development as their core target.

#### 1.2.2.3 Protection of industrial monuments and industrial heritage sites: theory review 3

We will also review the concepts and theories regarding monument protection and heritage site protection, which are important for redevelopment of historic inner city industrial districts. The first international announcement to protect historic city and sites from the angle of architecture and urban planning dates back to <Athens Charter> announced by CIAM<sup>62</sup>, in which the “preservation of historic building and districts” was put forward as one of the seven main topics. However, even though the scientific-theoretical basis dates back to the 19<sup>th</sup> century and was furthered by the 20<sup>th</sup>-century “Heimatschutzbewegung” (Movement for the protection of Homeland), monument protection after the Second World War was still mainly dedicated to single structure and their reconstruction. It was only in the 1960s that the worldwide appreciation of architecture began to discover the “ensemble protection”.<sup>63</sup>

In 1964, the ICCROM (the International Centre for the Study of the Preservation and the Restoration of Cultural Property set up in 1959) put forth the <Venice Charter> (“International Charter for the Conservation and Restoration of Monuments and Sites”). Being a milestone in the history of historic building and site protection, the <Venice Charter> set an international framework for preservation and restoration of ancient buildings and historic sites. It was stated that “The concept of a historic monument embraces not only the single architectural work but also the urban or rural setting in which is found the evidence of a particular civilization, a significant development or a historic event”<sup>64</sup>, “A monument is inseparable from the history to which it bears witness and from the setting in which it occurs”<sup>65</sup>. Such statement clarifies for first time the concept that a historic monument must be an inseparable part of its urban environments and therefore a “ensemble protection” is called for. The Venice charter also dealt with “sites of monuments” by saying that “the sites of monuments must be the object of special care in order to safeguard their integrity and ensure that they are cleared and presented in a seemly manner”<sup>66</sup>, which was added to the concept of “historic architecture and site” in later international announcements. “As a direct consequence of this Charter”, 1965 saw the foundation of ICOMOS (International Council on Monuments and Sites). IUCN (International Union for Conservation of Natural Resources) had already been established long

<sup>62</sup> Congrès International d'Architecture Moderne, the International Congress of Modern Architecture, founded in 1928.

<sup>63</sup> Manfred Wehdorn, <Vienna and the World Heritage, the scientific Basis>, from <Vienna, World Heritage \_ The site of the art>, the city of Vienna, 2005, p. 17

<sup>64</sup> ICCROM, <Venice Charter> (“International Charter for the Conservation and Restoration of Monuments and Sites”), article 1, 1964

<sup>65</sup> ICCROM, <Venice Charter> (“International Charter for the Conservation and Restoration of Monuments and Sites”), article 7, 1964

<sup>66</sup> ICCROM, <Venice Charter> (“International Charter for the Conservation and Restoration of Monuments and Sites”), article 14, 1964

before, in 1948. Both organizations are answerable to UNESCO (United Nations Educational, Scientific and Cultural Organization).<sup>67</sup>

The <Nairobi Recommendation> (Recommendation concerning the Safeguarding and Contemporary Role of Historic Area), adopted by the UNESCO 19<sup>th</sup> meeting session in 1976, further defines the terms of "Historic and Architectural Areas": "Historic and architectural (including vernacular) areas' shall be taken to mean any groups of buildings, structures and open spaces including archaeological and paleontological sites, constituting human settlements in an urban or rural environment, the cohesion and value of which, from the archaeological, architectural, prehistoric, historic, aesthetic or socio-cultural point of view are recognized"<sup>68</sup>. The <Nairobi Recommendation> also emphasized that "Every historic area and its surroundings should be considered in their totality as a coherent whole whose balance and specific nature depend on the fusion of the parts of which it is composed and which include human activities as much as the buildings, the spatial organization and the surroundings."<sup>69</sup> The <Nairobi Recommendation> addressed as well the dangers for the historic sites brought by "expansion, modernization, demolition ignorant of what it is demolishing and irrational and inappropriate reconstruction work".<sup>70</sup>

Another important contribution for the preservation of historic areas especially in the sense of urban planning is the <Charter of Machu Picchu > in 1977, which reevaluated the <Athens Charter> on a updated situation and critic basis, and further added to the contents of "Historic building and sites", addressing that preservation, restoration and new use of historic sites and buildings shall be combined with the process of urban development to ensure these historic buildings and historic sites have economic value and retain their vitality. Later in 1987, ICOMOS adopted the <Washington Charter> (Charter for the conservation of historic towns and urban areas), which further defined "Historic towns and urban areas" to be "historic urban areas, large and small, including cities, towns and historic centers or quarters, together with their natural and man-made environments" with "values of traditional urban cultures".<sup>71</sup> This milestone international document defines the principles, objectives, and methods necessary for the preservation of historic towns and urban areas.

Being a very important period of human civilization, the Industrialization Process left to the human society numerous intangible heritages, which are witnesses of this period of human civilization on new production methods, achievement of technology and human culture. During a long period of development, the urban areas which were involved in the industrialization became urban areas which cannot be divided from the city's spatial structure. In fact, these power lines, water tanks, street lights, manholes, traffic signals, cellular-telephone towers, coal mines, oil refineries, railroad freight yards, power plants and garbage incinerator, form a special and impressive image, which is often described as "Industrial Landscape" recently. However,

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<sup>67</sup> Refer to Manfred Wehdorn, <Vienna and the World Heritage, the scientific Basis>, from <Vienna, World Heritage \_ The site of the art>, the city of Vienna, 2005

<sup>68</sup> UNESCO, <Recommendation concerning the Safeguarding and Contemporary Role of Historic Area>, I, (a), 1976

<sup>69</sup> UNESCO, <Recommendation concerning the Safeguarding and Contemporary Role of Historic Area>, II,3, 1976

<sup>70</sup> UNESCO, <Recommendation concerning the Safeguarding and Contemporary Role of Historic Area>, 1976

<sup>71</sup> ICOMOS, <Washington Charter> (Charter for the conservation of historic towns and urban areas), part of "Preamble and Definitions", 1987

whether to regard these industrial relics and industrial sites as “heritages” and “heritage sites”, and therefore, to subject them to measures of protection, was a controversial topic both in practice and in the academic society even to late 1960s. Due to such ambiguity in concept and also to some economic reasons, the destiny of many urban redevelopments on industrial sites at that time was construction after total demolition, just as bad or even worse than the many “urban renewal” projects at the time that were also blamed for destruction.



Figure 4: Iron Bridge Gorge, From Charlotte Amelines, MSN Travel contributor

Thanks to the rising of “Industrial Archaeology”, more and more attention has been paid to the civilization of industrial past. The term of “Industrial Archaeology” was first coined by Micheal Rix in the 1950s in England. In his book <Industrial Archaeology, Principals and Practices>, Marilyn Palmer and Peter Neaverson defined that Industrial Archaeology is “the systematic study of structures and artifacts as a means of enlarging our understanding of the industrial past.” It is addressed that “The beginnings of industrialization had an enormous impact on social conditions, buildings and material culture. Industrial Archeology uses the techniques of mainstream archaeological excavation,

analysis and interpretation to present an enlightening picture of industrial society.”<sup>72</sup> Starting with the inauguration of the “Ironbridge Georg Museums Trust”<sup>73</sup>, terms like “Industrial Archaeology” and “everyday culture” acquired widespread knowledge in the 1970s: a broad stratum of the public began to realize that architectural assets worthy of protection do not solely include churches, palaces and manors, but also factories and workers’ houses, granaries and cellar alleys.<sup>74</sup>

As a scientific committee of ICOMOS, TICCIH (the International Committee for the Conservation of the Industrial Heritage) was founded after the First International Conference for the Conservation of the Industrial Heritage in Ironbridge Georg, England, in 1971. Later on, TICCHI became ICOMOS’s special adviser on industrial heritage and assessed the industrial heritage for World Heritage List. The worldwide definition of “Industrial Heritage” was defined in the <The Nizhny Tagil Charter for the Industrial Heritage>, which is adopted by TICCHI in 2003:

Industrial heritage consists of the remains of industrial culture which are of historical, technological, social, architectural or scientific value. These remains consist of buildings and machinery, workshops, mills and factories, mines and sites for processing and refining, warehouses and stores, places where energy is generated,

<sup>72</sup> Marilyn Palmer and Peter Neaverson, <Industrial Archaeology, Principals and Practices>, Routledge, London, 1998

<sup>73</sup> Barrie Trinder (ed.), <The Blackwell Encyclopedia of Industrial Archaeology>, Oxford 1992, p.363/364. Judith Alfrey, <The landscape of Industry, Pattern of Change in the Ironbridge George>, London 1993

<sup>74</sup> Manfred Wehdorn, <Vienna and the World Heritage, the scientific Basis>, from <Vienna, World Heritage \_ The site of the art>, the city of Vienna, 2005, p. 17

transmitted and used, transport and all its infrastructure, as well as places used for social activities related to industry such as housing, religious worship or education<sup>75</sup>

The charter also asserted that:

Buildings and structures built for industrial activities, the processes and tools used within them and the towns and landscapes in which they are located, along with all their other tangible and intangible manifestations, are of fundamental importance. They should be studied, their history should be taught, their meaning and significance should be probed and made clear for everyone and the most significant and characteristic examples should be identified, protected and maintained, in accordance with the spirit of the Venice Charter, for the use and benefit of today and of the future.<sup>76</sup>

The <The Nizhny Tagil Charter for the Industrial Heritage> is the significant and first international document regarding the protection of industrial heritages, which set principles for the international efforts for the industrial heritages. It was later adopted by the UNESCO.

Starting from the late 1980s, the redevelopment of industrial districts became an important topic in Europe and in USA, both in the academic society and in practice. Metropolitan Cities in developed countries were confronted with new opportunities of development after revival of economy through the fogs in the 1970s, meanwhile the development space in inner city was becoming more and more restricted. Being treated as a component of the revitalization of the inner city, to redevelop the historic inner city industrial districts gave new hope for the development of the city and therefore gained new significance, which was so different from before, when the redevelopment was solely treated as counter measures to industrial decay, unemployment and crime. In 1996, at the UIA (International Union of Architects) Congress, the concepts of “Terrain Vague” and protection, management and regeneration of these sites were put forward. The term “Terrain Vague” refers to those abandoned areas in the city such as industrial lands, railway lands, dock lands, waterfront areas.<sup>77</sup> It was recognized that the redevelopment of former industrial areas in the city with special attention on protection of industrial heritage and urban characteristics had become an important topic that needed the contribution and efforts of architects and urban planners worldwide. Today, after almost 20 years that the movement started in Europe and USA, most of the internationally-recognized projects, such as London Docklands, Ruhr Area, Hamburg Elbe River side, have been gaining their effects and provided materials for numerous researches.

Due to the fact that the value and importance of protection of industrial heritage is increasingly more recognized, the redevelopment of former industrial districts gains new dimensions. In many internationally influential redevelopment projects, the protection and creative reuse of the industrial heritage became sensational marketing points for these redevelopment projects and raised huge enthusiasm from the public and media. The famous cases like the Tate Modern on the former Bankside Power Station, the Duisburg Landscape Park based on the coal and steel production plant, as well as, the reconstruction of Gasholder in Oberhausen and in Vienna, successfully exploited the new dimensions and possibilities to integrate the protection of industrial heritage to the development of the city.

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<sup>75</sup> <The Nizhny Tagil Charter for the Industrial Heritage>, I, TICCHI, 2003

<sup>76</sup> <The Nizhny Tagil Charter for the Industrial Heritage>, I, TICCHI, 2003

<sup>77</sup> Jianguo Wang, <Conservation of Industrial Heritage Buildings and Sites in Post-Industrialization Era>, p.16, China Building Industry Press, 2008

### 1.2.3 CONCEPT OF THIS THESIS

As can be seen from the theory review, location of industries in urban spatial structure always takes an important position in the theories of urban spatial structure. The phenomenon of redistribution of industrial space in the urban spatial structure and the result of the redistribution, namely the decay of the left-over spaces, can be explained by the theories as followed:

- 1) The three sector theory of economics and the related concept of “De-industrialization”<sup>78</sup> indicate that in the late industrialization (or post-industrial time) period, the proportion of service sector of economy grows and will finally exceed the proportion of manufacturing in the total economic output of the city, which is well proved by the high unemployment rate generating by manufacturing industry in major industrial cities after second world war, as well as the dramatic rising of service.
- 2) The bid-rent theory of micro-economics as well as the as theory of spatiality margin for profitability<sup>79</sup> indicates that the manufacturing chooses location distant from the central business district (CBD) as the cost for rent decreases with much steeper curve than the decrease of revenue which lead to higher profitability.
- 3) The structuralism<sup>80</sup> indicates that capital flows to newly-industrializing countries/cities to pursue higher profitability and less restriction, on the regional and global level. The shift of manufacturing center from developed countries to developing countries is also noticed by many other economics and sociology theories such as “De-industrialization”<sup>81</sup>.
- 4) All theories above indicate a “decentralization” of manufacturing in the urban spatial structure, which is already widely observed in many metropolitan cities. As the result, many left-over industrial spaces in the inner city are confronting with comprehensive decay. (
- 5) Concept and method to the redevelop the decaying industrial spaces are contributed by many international charters concerning monument protection/urban conservation, theory of industrial archeology<sup>82</sup> as well as theory of urban regeneration, urban revitalization and sustainable development<sup>83</sup>.

Urban planning is the “human means and processes to predict the city’s development and to manage and coordinate resources to adapt to the development, with the purpose to guide and administrate the development of built environment”.<sup>84</sup> Confronted with the urban phenomenon of “redistribution of industrial space”, what role urban planning can play in such process of “distribution”, both from a theoretical and practical point of view?

To answer this question, this research brings forth concept as follows:

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<sup>78</sup> Refer to 1.2.2

<sup>79</sup> Refer to 1.2.2

<sup>80</sup> Refer to 1.2.2

<sup>81</sup> Refer to 1.2.2

<sup>82</sup> Refer to 1.2.4

<sup>83</sup> Refer to 1.2.3

<sup>84</sup> Refer to 1.2.1

URBAN PLANNING'S ROLE IN THE REDISTRUBUTION OF INDUSTRIAL SPACE LIES IN TWO INTERRELATED, INTERDEPENDING AND INTERSUPPORTING EFFORTS: "BRING OUT" AND "FILL IN".

We can use the "HEART TRANSFER SURGERY" as an analogy to explain this concept. In the industrialization time, the industrial space served as the heart of the city to provide blood pumping (driving power of development) for their dominant importance in economic output of the city and their very central location in the urban spatial structure. With the economic importance of industry sinking, industrial function can no more provide enough driving power for the city's development and start to decay, just as the heart fails its function for pumping blood. On the other side, the decay cannot be prevented or reversed as such is determined by the economic evolution. Such irreversibility is just as the heart cannot recover by itself or by medical treatment. In this moment, a "heart transfer surgery" is needed to replace the failed heart with a new one. Urban planning must act as doctor to determine the situation of "illness", and select the best moment and method to "BRING OUT" the functionless "heart" and "FILL IN" an appropriate "heart" that fits the current system and can provide new driving power. The two processes of action are indivisible components of one operation, but with different purpose and techniques.

A general observation reveals that the redistribution of industrial space can be traced in an "Inside-Out" direction in the urban spatial structure, which is normally described as "decentralization". This can be demonstrated with the classic "Concentric Zone Model",<sup>85</sup> as displayed in the concept diagram above. As we can observe, much of the industrial space was originated in the edge of the historic core area of the city in the early stage of the city's growth. With the city growing and many of the historic core areas being turned into the central business district (CBD), these industrial spaces were included in the zone of inner city and stayed by the edge of CBD. This research assumes that these industrial spaces, as well as the related urban areas, such as neighboring residence, form an annular zone surrounding the CBD, which restricts the development of CBD and inner city. This annular zone becomes a low class zone in the inner city because the other urban spaces within this annular zone cannot be developed to its potential while the neighboring decaying industrial spaces bring down the city imagery quality of the whole zone as well as give negative influence in environmental, social, economic and urban aspects for the whole annular zone.

The concept of "BRING OUT" and "FILL IN" describes the two joint efforts of urban planning in confrontation of the situation mentioned above. "BRING OUT" refers to the effort to achieve new distribution state of industrial space in the spatial structure of the city, with the purpose that the location, type of industry, size and other related aspects of distribution can benefit both the industrial spaces themselves and the urban spatial structure of the city on a macro-structural level. While "FILL IN" refers to the effort, in the micro-structural level, to redevelop the left-over space of the "BRING OUT" process, with the purpose to cease the economic, social, environmental and cultural decay in these spaces and further on to create new grow points in the inner city. If we take the "Concentric Zone Model" for example again, the results of "BRING OUT" and "FILL IN" will be that the industrial spaces in the annular zone of inner city be relocated to inner peripheral, outer peripheral or regional areas of the city, while the left-over areas in the annular zone become active growing points in the inner city.

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<sup>85</sup> Refer to 1.2.2

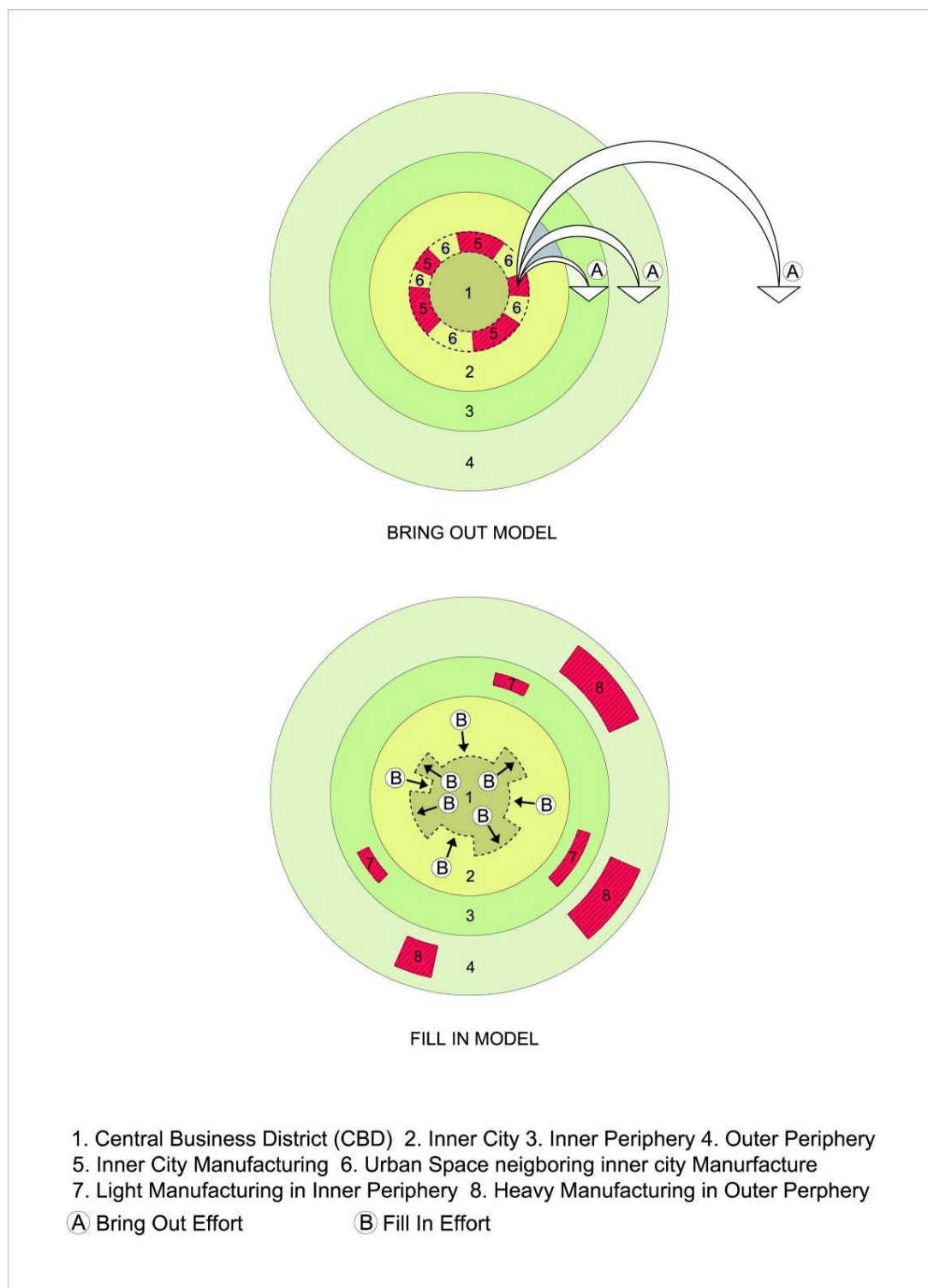


Figure 5: Concept Diagram, drawn by the author

### 1.3 OBJECTIVES, METHODOLOGIES AND CHAPTER INTRODUCTION

#### 1.3.1 OBJECTIVES OF THE RESEARCH

To answer the 4 questions raised at the beginning of this research (1.1), the target of this research is therefore defined as:

- a. Figure out the interactive disciplines between the spatial development of city and the redistribution of industrial space in the city and, thereafter, figure out the starting points of urban planning in such situation.
- b. Figure out the interactive areas and key strategies for urban planning to play an active and positive role in the redistribution of industrial function in the city as well as in the redevelopment of former industrial district.
- c. Summarize the experience of European cities regarding the role of urban planning in such process.
- d. Evaluate and give proposals for amend to and complement the current urban planning for the redistribution of industrial function in Shanghai as well as that for the redevelopment of former industrial district to benefit the spatial development of the city.

#### 1.3.2 METHODOLOGY OF THE RESEARCH

The following are the three key methodologies that this research applies to frame this research:

##### 1) Theoretical Research and Empirical Research

The theoretical research will be made in chapter 1 (introduction), in which the related theories from domains of Geography, Economics, Sociology and Urban Planning will be reviewed, as well as in the whole chapter 2 (theoretical approach), in which the interactive discipline between spatial development of the city and redistribution of industrial space, as well as the emergence and current state of left-over space redistribution (the “historic inner city industrial districts”) will be researched.

The main research of this topic will however be on the empirical level. In Chapter 3 (Case Study), Chapter 4 (“BRING OUT” Study” on Shanghai) and Chapter 5 (“FILL IN” Study on Shanghai) urban planning’s practice on redistribution of industrial space is introduced and comprehensively analyzed and evaluated. The European cases are introduced and the urban planning on these cases will be evaluated in chapter 3. In chapter 4 and chapter 5, the similar methodology of research, but in a much detailed and comprehensive degree, will be made on Shanghai on macro-structural (“BRING OUT” study”) and micro-structural level (“FILL IN study”). All these researches on the empirical level are live complements for theoretical research, and give the theoretical research a practical dimension.

##### 2) Comparative Research

Although the targeted research object of this research is Shanghai, the topic of “urban planning in redistribution of industrial space in spatial development of the city”

has its global backgrounds. The significant of the comparative study lies in that many European cases had undergone a similar urban phenomenon of industrial space redistribution and urban planning in such direction has already gained abundant experiences and lessons. To make the comparison between these cases and Shanghai can reveal the similarity and difference of Shanghai to those cities in their efforts in such direction, which serves to evaluate current urban planning for Shanghai and give practical proposals. Five cases are selected to be put in the comparison with Shanghai. They are:

- Case 1: London and London Docklands
- Case 2: Hamburg and Hamburg Harbors
- Case 3: Ruhr Region and Emscher Park
- Case 4: Vienna and Erdberger Mais
- Case 5: Beijing and 798 Districts

Regarding the European cases, there are also abundant research literature/documents on these cases, which provide materials for the research here. However, given the fact that these literature/documents are from highly varied concerns on economic, social, ecologic and monument protection fields, this research treats these literature/documents on a very selective base with a restricted focus on the urban planning and its related elements. The other important thing to be noted is that these cases dated from a relatively long period of 20 years (1980 to 2000) and also have a wide variety of situations in different aspects. Due to such difference, the urban planning on these cases are therefore varying in targets setting, process, main concerns and measures, as well as the actual effects (although some of the effects of planning are not yet fully shown due to the short term of implementing time). Although such variety leads to difficulty for horizontal comparison, however it provides a varied dimension of urban planning for us to understand the topic in its international backgrounds.

The decision to include the Beijing 798 District as one of case is to give a context for the later research on cases in Shanghai. This case, in which urban planning was almost totally absent in its early redevelopment, is a problematic case from an urban planning point of view. In spite of many difficulties for further development, it is still the most famous case of transformed industrial space in the many similar cases after 2000 and it did give many valuable experiences especially in aspects related to industrial monument protection.

### 3) "BRING OUT" and "FILL IN" Research

The concept of "BRING OUT"/"FILL IN" indicates that the effort of urban planning in the redistribution of industrial space must be on two interrelated, interdependent, and inter-supportive parts: "BRING OUT" and "FILL IN". This is the concept that also frames methodology of this research: the methodology for both case study and the major research on Shanghai will be focused on "BRING OUT" Study and "FILL IN" Study.

"BRING OUT" involves urban planning on macro-structural level and directive strategy making for the development in different location of the city (inner city, Inner-periphery and outer periphery), based on comprehensive understanding of the city's spatial development. Chapter 4 will exclusively contribute to the "BRING OUT" Study of Shanghai, aiming to evaluate the urban planning of the city in this regards and bring forth proposals for urban planning.

“FILL IN” involves accessibility, land use change, open/green space and urban conservation on the left-over space of redistribution. Urban planning to redevelop these areas must consider primarily how to re-embrace these areas into city's urban spatial structure and how the development of these areas can contribute to the city as an entirety. This is especially sensitive in Shanghai as the 3 important inner city industrial locations are confronted with or experiencing redevelopment and their location are all very “central”. Chapter 5 will exclusively contribute to the urban planning on the 3 cases in this regard, aiming to evaluate the urban planning on these cases and bring forth proposals.

### 1.3.3 CHAPTER INTRODUCTION

#### Chapter 1: Introduction:

This part is the introduction of the whole research. It starts from the problem statement, introducing the challenges and opportunities of Shanghai in its redistribution of industrial space. The significance and contribution of European cases as comparative reference is described. One important part in the introduction chapter is to review comprehensively the related theory on this topic. Based on this, the concept of this thesis is stated and the targets of the research are listed out.

#### **Part 1: Research on universal base**

#### Chapter 2: Theoretical Approach

Theoretical approach on “BRING OUT”: This part of research start from a review of interactive history of contemporary city's spatial development and redistribution process of industrial space in the city. The research on the interrelation between these two processes is an attempt to reveal regulation of their influences on each other and clarify the current situation as well as clarify tendencies of redistribution of industrial district in urban spatial structure. This interactive history is also accompanied by the many efforts of urban planning that attempted to solve specific urban problems in specific time. This is also the content of the research, which aims to find out the starting points of current urban planning in correspondence to redistribution of industrial space.

Theoretical approach on “FILL IN”: An important situation that urban planning has to react to is the result of such distribution of industrial space in the city: many former industrial spaces in the city are left over. These left-over lands are called “Historic Inner City Industrial Districts” in this research. This research will analyze the characteristics of these left-over lands, and further explain the confrontations of urban planning in this topic, including: the target setting, advantages/obstacles and the working domains.

Based on such theoretical research, the target setting, interactive field and instruments of urban in the efforts of “BRING OUT” and “FILL IN” will be analyzed and sorted out in the end of chapter 2.

#### Chapter 3: Case Study

The purpose for the case study is basically to summarize valuable experiences and lessons from these cases concerning urban planning. The situation, target setting, process, main concerns and measures of the urban planning on these cases are researched in detail to serve to the evaluation of the these cases. The research is mainly on the four aspects: “Accessibility”, “Land use change”, “Open and green

spaces” and “Urban conservation/monument protection”, as is concluded in the part of theoretical approach as major instruments that urban planning can utilize to guide the spatial development of city. Based on this case study, valuable experiences are summarized, both on level of “BRING OUT” and “FILL IN”, in the closing part of this chapter.

## **Part 2: Research on Shanghai**

### Chapter 4: “BRING OUT” Study

The “BRING OUT” study focuses on the distribution of industrial space in the urban spatial structure of Shanghai and aims to find out how urban planning can “BRING OUT” those industrial spaces in the inner city. This chapter starts from a review on historic evolution of Shanghai’s urban spatial structure, as well as on how urban planning plays a role in this process. Evolution of industrial space will be analyzed, which serves to discuss the problem of distribution state of industrial space in the current urban spatial structure of Shanghai. In the closing part of this chapter, comprehensive proposals for urban planning concerning the redistribution of industrial space will be presented.

The research in this part is based on the statistic material regarding Shanghai’s land use as well as many official urban planning documents issued by the government, the most important of which is the comprehensive planning of Shanghai in 1959, 1984 and 1999.

### Chapter 5: “FILL IN” Study

Part 4, the “FILL IN” study, focuses on the micro-structural level of research on Shanghai and aims to find out how urban planning can “FILL IN” those former industrial districts with new contents that can contribute to the spatial development of Shanghai. Three target areas of “Historic Inner City Industrial Districts” are selected for comprehensive study with the aim to evaluate the urban planning and give proposals for these cases of urban planning. The 3 target areas are:

Target areas 1: Yangshupu Riverfront Area

Target areas 2: Shanghai EXPO 2010 Site

Target areas 3: Suzhou Creek Waterfront Area

For each target areas, the research will be made in two levels: 1) Top-down analysis: It will be analyzed the demand of the inner city’s spatial development in aspects of “Accessibility”, “Land use change”, “Open and green spaces” and “Urban conservation/monument protection”, then examined the strategic importance of the four cases on such spatial background. Such analysis will identify the general direction/target setting of the urban planning for these cases. 2) Bottom-up Analysis: It will be analyzed four aspects of urban planning on redevelopment of these cases: “Accessibility”, “Land use change”, “Open and green spaces” and “Urban conservation/monument protection”. With the main consideration being on how urban planning can direct the spatial development of these cases and make them contribute to the spatial development of Shanghai.

The research in this part is based on the reference of official urban planning documents on these cases in 2005, 2002 and 2004. Besides, some urban planning for individual projects in scope of the three cases is called for. In the analysis on “urban conservation and monument protection”, related legal documents such as the protection list and protection law serves also as reference.

## Chapter 6: Conclusion and Outlooks

Based on the theoretical and practical research above, the four questions will be answered in detail in chapter 6. These conclusions will provide intuitive explanation and applicable recommendation for urban planning in such topic.

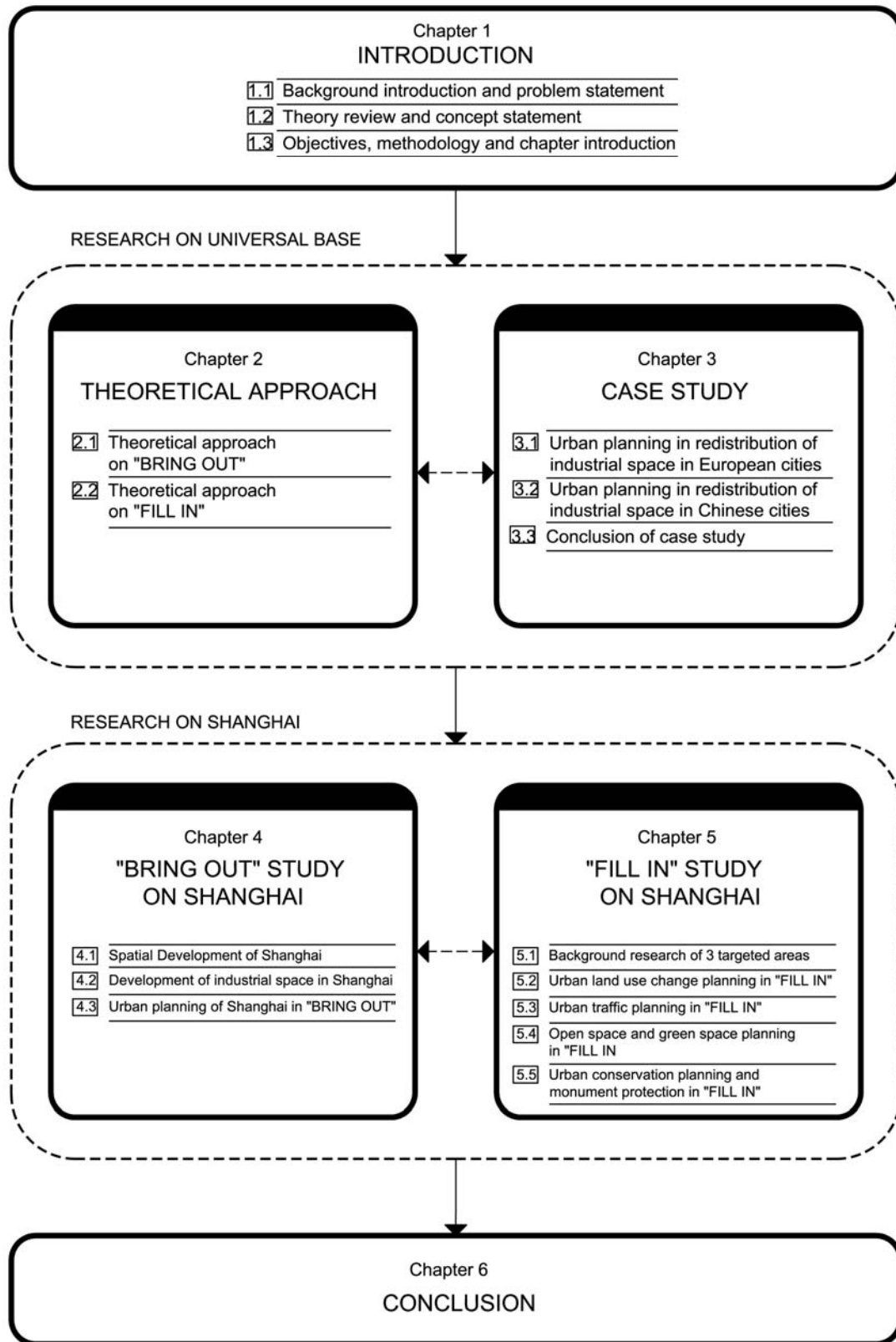


Figure 6: Structure of the Research, drawn by the author

## CHAPTER 2: THEORETICAL APPROACH

## 2.1 THEORY APPROACH ON "BRING OUT"

### 2.1.1 INTERACTIVE DISCIPLIN BETWEEN CITY'S SPATIAL DEVELOPMENT AND REDISTRIBUTION OF INDUSTRIAL SPACE: HISTORY REVIEW

#### 2.1.1.1 PERIOD 1: PRE-INDUSTRIAL CITIES

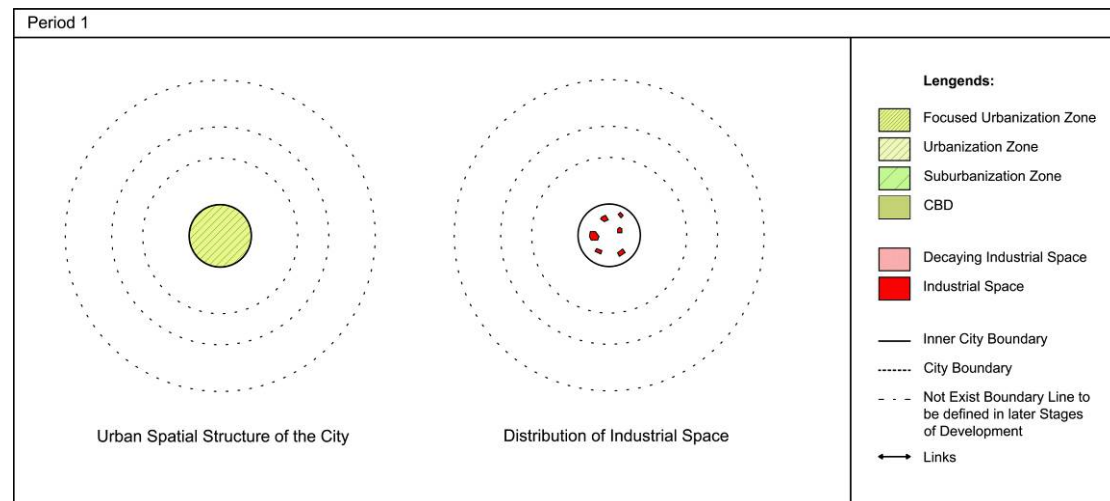


Figure 7: Urban Spatial Structure and Distribution of Industrial Space Diagram in Period 1, drawn by the author

In <The Urban Pattern>, B. Gallion and S. Eisner (1993) define the history of the city's structural development in six periods: 1) Dawn of Urbanization; 2) City of Ancient Lands; 3) The Classic City; 4) The Medieval Town; 5) The Neoclassic City; 6) Cities after Industrial Revolution.<sup>86</sup> All influential spatial developments of the cities before the Industrialization have one common background: the agricultural society basing on natural economy, in which the city has much fewer function of production than that after the Industrialization. The city must be supported and supplied by the agriculture of the country. The city and the country had different spatial pattern. The border between them, which is always clearly defined but the city wall, protects the city from aggressions, while on the other side protecting the country from invasion of urbanization. It in fact becomes the most strong boundary line for the urban spatial structure of the city.

Concerning the urban spatial structure of pre-industrial cities, the American academician G. Sjoberg (1999)<sup>87</sup> believes that, according to the similar social structure basing on natural economy, the pre-industrial cities in the world had more or less similar spatial structure: 1) Located in places which is propitious to agriculture, recovery or finance; 2) Surrounded by Rampart; 3) Religion is prominent factor in the natural distribution and social structure; 4) Enlarged family and Viscounty play important roles in the social arrangement; 5) Big Plaza in the innermost of the city, with religious buildings (cathedrals, temples or mosques); 6) Radiate urban structure, with dominating classes and upper classes living in the central area; 7) Commonalty and lower classes live in the periphery area or out of the rampart; 8) The City domains and is supplied by the surrounding agricultural zones. The 8 points

<sup>86</sup> B. Gallion and S. Eisner, <The Urban Pattern>, 1993, New York, p.1

<sup>87</sup> G. Sjoberg, <Preindustrial Cities: Past and Present>, 1999, New York

precisely cover the characteristics of the urban spatial structure of city in the pre-industrial era.

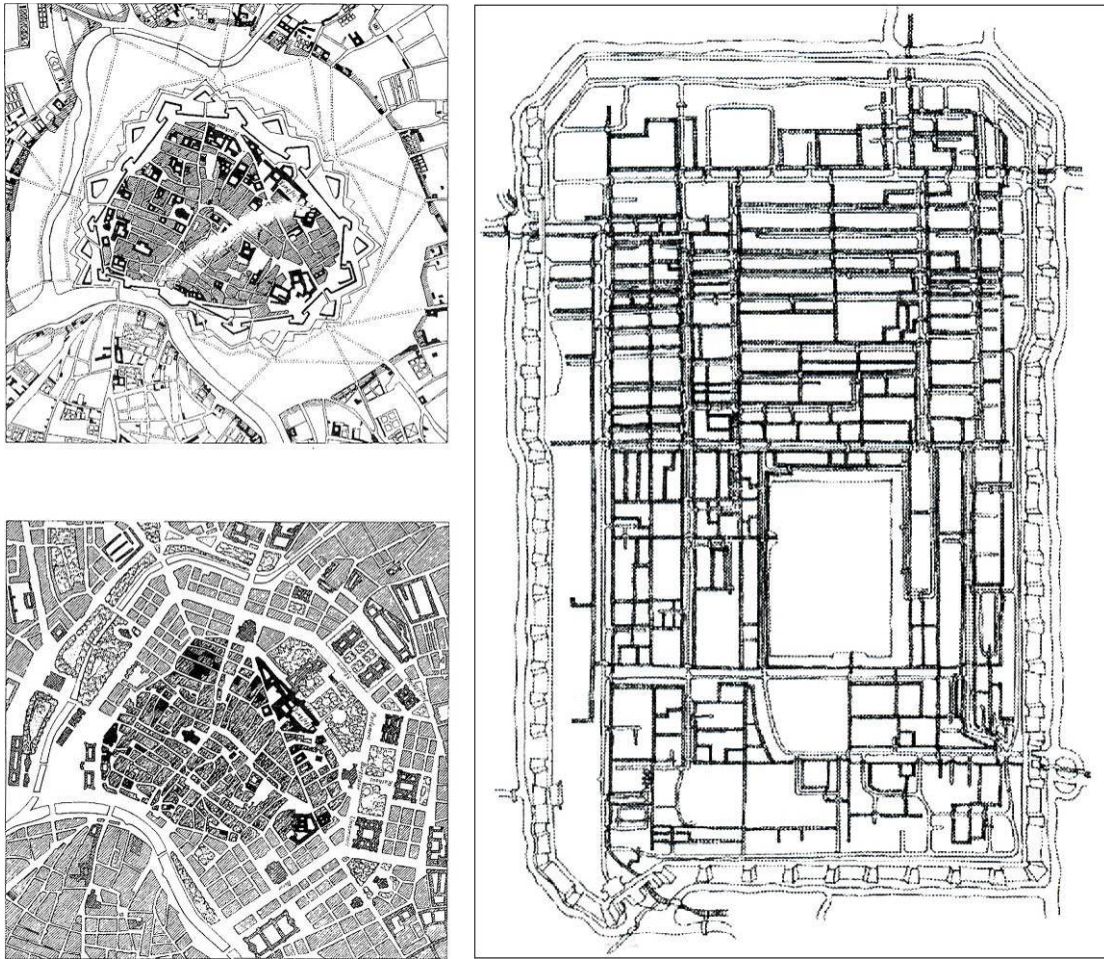


Figure 8: Left: map of Vienna in 19th century before and after the demolition of the fortification (left) and the map of Suzhou in Song Dynasty (right), from L. Benevolo, <Die Geschichte der Stadt>. Right: street and river system of the Chinese city Suzhou, from Beifei Huang, <Wasserstadt Suzhou>, Verlag Grauer: Beuren: Stuttgart, 2004, p.36

### Industrial Space in period 1:

The close connection and mixture of working places and residences were one of the most dominant characteristic of the urban spatial structure in this period. Working spaces mostly handcraft workshops, small stores and shops at that time can still hardly be described as “industrial spaces” but rather only “working spaces”. However, they still represent the spaces in the city that are related to the production activities. In the medieval European cities, the shops and the sleeping places of the shopkeepers, the workshops of handicraftsmen and their houses (residence) were often arranged in the same building or block. The outer walls of these buildings thus formed the surface of the streets.<sup>88</sup> In China, in the most booming cities in the south of Yangtze River, the so-called water towns, several patterns of the mixture of working and living functions could be found even today.<sup>89</sup> In summary, the small

<sup>88</sup> K. Wachten and S. Nadrowski, <Städtebauliche Gestaltung zur Aufwertung von Gewerbliche Standorten>, in K.W. Schulte (ed.), <Immobilienökonomie: Band III: Stadtplanerische Grundlagen>, Oldenbourg Wissenschaftsverlag, Munich, 2005

<sup>89</sup> Ruan Yisan and Dong Jiancheng Dong, <Water towns in south of the Yangtze River>, Zhejiang Photography Press, Hangzhou, 2004

industrial spaces are mixed with other urban functions within the relative small urbanized area of the pre-industrial city, in a very scattering state. There is no “zoning system”, which is seen in the later stage of city development and urban planning, to divide the urban functions according to different function categories.

#### 2.1.1.2 PERIOD 2: SPATIAL CONGESTION AND EXPANSION

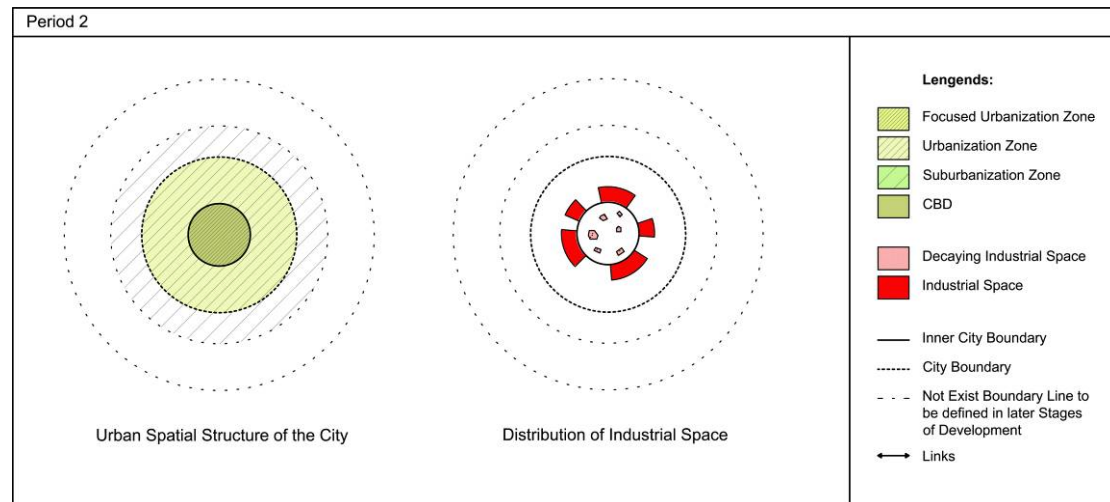


Figure 9: Urban Spatial Structure and Distribution of Industrial Space Diagram in Period 2, drawn by the author

Industrialization is the process of social and economic change that transforms a human group from a pre-industrial society into an industrial one. It is a part of a wider modernization process, where social change and economic development are closely related with technological innovation, particularly with the development of large-scale energy and metallurgy production. It is the extensive organization of an economy for the purpose of manufacturing.<sup>90</sup> The process of Industrialization brought revolutionary spatial development to the city. In the early stage of Industrialization, the strongest tendency regarding the city's spatial development was the spatial agglomeration and expansion.

One extinguished phenomenon that Industrialization brought to the human society and economics is that the development of production and its demand on labor pushed the conversion from agricultural population to urban population. For example, the population of London (Greater London) in 1800 was around 1 million (1,011,157), while the number increased to more than 6 millions (6,226,494) in 1901<sup>91</sup>. The population of Paris (City Proper) in 1801 is less than 1 millions (546,856), and it increased to near 3 millions (2,714,068) in 1905<sup>92</sup>. Such dramatic population growth triggered the spatial expansion of the city. The capacity of the city, originally defined by the boundary of the city (city walls), couldn't meet the demand of the city's spatial expansion. Cities rapidly grew beyond restriction of the city wall<sup>93</sup> and expanded further in incredible speed. Keeping the original inner city as the most focused area

<sup>90</sup> A. O'Sullivan and S. M. Sheffrin. <Economics: Principles in Action>, Pearson Prentice Hall, New Jersey, 2003, pp. 472,

<sup>91</sup> London through time: Population Statistics: Total Population, from “A vision of Britain through time”, <http://www.visionofbritain.org.uk>, Retrieved 2009-11-19

<sup>92</sup> From Official Census Figures

<sup>93</sup> For example the medieval city wall of Vienna was torn down in 1857 to make way for city development. In the Haussmann Plan (1852~1870) to renovate the old Paris, city walls were also amongst the first to be torn down.

of urban development, the urban functions in the city began to polarize in the course of the expansion, which caused the expansion of the scope of inner city and the urban development in the periphery area surrounding the origin city core. The residence are amongst the first to move to outwards, when finance organizations, insurance companies, banks, real estate companies, administrative office of enterprises, big-scale commercial facilities, entertainment facilities concentrated in the inner city. The typical highly concentrated mono-centric structure or the "concentric zone structure" of city came into being.

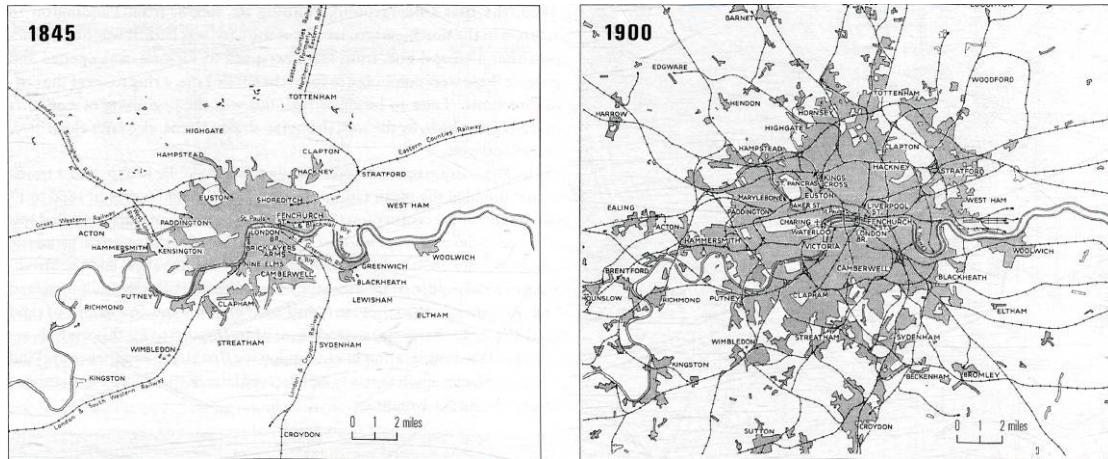


Figure 10: Growth of London 1845~1900, from Rudolf Hartog, <Europe's Ageing Cities>, Verlag Müller+Busmann KG, Wuppertal, 2005, p.90

The period is also the birth period of urban planning in modern sense, which also well served the dramatic expansion of the cities in this period. The extinguished example is the urban planning on the expansion of Paris and that on Vienna, both after middle of 19th century (Haussmann's Paris renovation plan started from 1852, while the medieval city wall (fortification) of Vienna was demolished in 1858). In the other hand, the urban problems brought by the process of industrialization, such as the over-crowded inner city population, pollution and emergence of slam, became topic that urban planning shall consider and react to. As early as the turn of 19th and 20th century, there had been hot debate on the topic of urban planning in reaction to the spatial expansion of the contemporary city, attempting to find a solution to solve the many urban problems brought by the expansion. The city models by those utopian socialists Robert Owen (Community Experiment in America), Charles Fourier and Ebenezer Howard (Garden City), the "Radiant City" model by Le Corbusier, the "Organic decentralization model" by Eliel Saarinen showed different concept of attempts in theoretic fields to gear the city's spatial development in this period, and many of them have their influences on the urban planning practice in the 20<sup>th</sup> century.

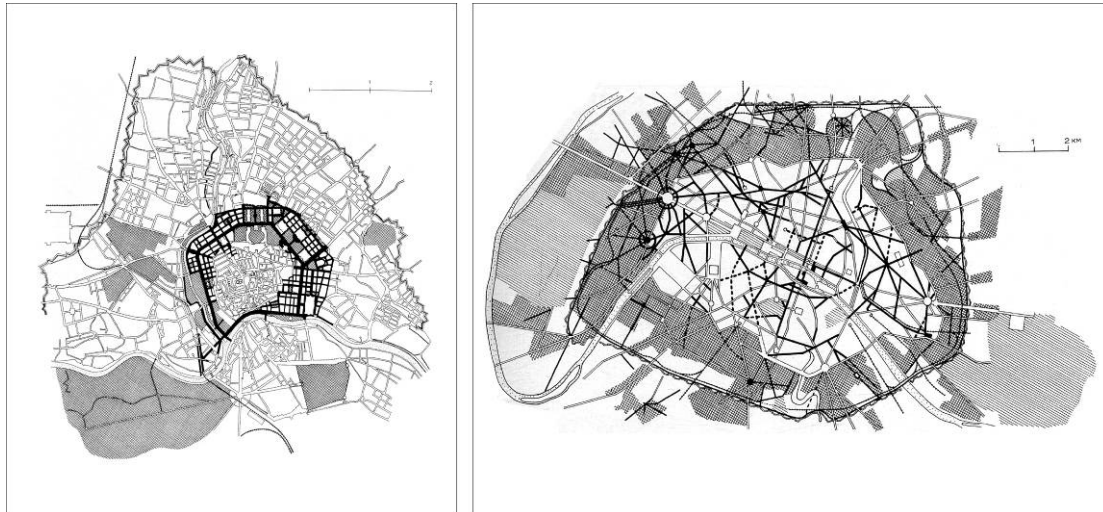


Figure 11: The expansion plan of Vienna and Paris, from L. Benevolo, <Die Geschichte der Stadt>, Campus Verlag, Frankfurt/New York, 8.Auflage, 2000, p.794

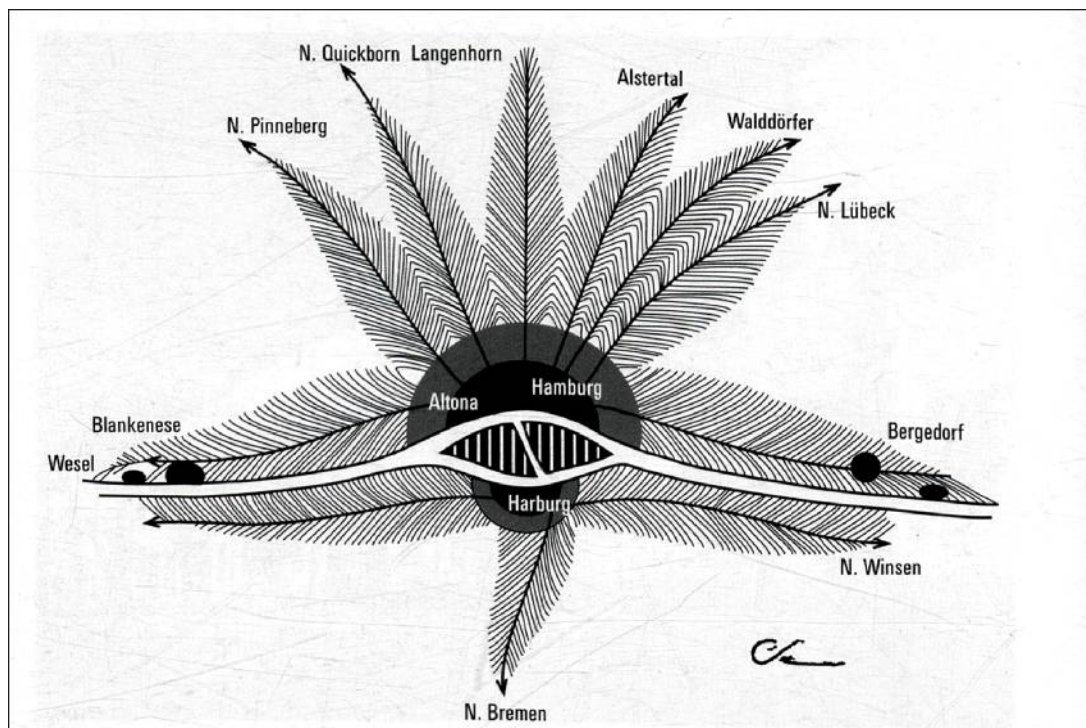


Figure 12: The schematic master plan for Hamburg by Fritz Schumacher in 1919. From Rudolf Hartog, <Europe's Ageing Cities>, Verlag Müller+Busmann KG, Wuppertal, 2005, p.102

### Industrial Space in period 2:

This period saw mass emerging and dramatic expansion of industrial spaces in the history due to the revolution of industry with significant improvement of productivity and increased demand on labor. Without effective urban management, these industrial spaces agglomerated first within or by edge of the old city core mainly by means of expansion from the original production areas. These industrial spaces soon turned to state of conflict against the neighboring urban spaces like residence, because of the noise and pollution that they produced. This led to the degradation of the quality of neighboring urban space and functions, one evidence of which is that the many industrial spaces were surrounded by slums in its period. This became the main impression of city development in the initial stage of Industrialization, which is

described and discussed in many classic literatures such as <Die Geschichte der Stadt> by L. Benevolo<sup>94</sup> and <The City in History> by L. Mumford<sup>95</sup>. The further development of industry led to build industrial spaces at the outskirts of the city from the middle of 19th century on. Most of them would preferably choose the places close to the river to make use of the use of the waterpower, water transportation and to use the water in the process of production. With the gradual expansion of scope of inner city, most of these industrial areas are now included in the inner city area today. The "Historic inner city industrial districts" that is discussed in this thesis, refers mainly on these industrial spaces.

In this period, industrial function is treated as the most important urban function that provided driven power for the development of the city in this period. The selection of industry location and its development are considered and executed by the city's authority in priority, while other urban functions and their spatial expression were arranged according to the industrial location and its development. The evidence is that a great deal of industrial spaces that newly emerged in this period, such as industrial districts, docks and warehousing zones, were all incorporated with big-scale affiliated residence of labors. These spaces became gathering places of urban life and therefore gave birth to the other function/space for retail, hospitality, public service and transportation infrastructure (like railway stations).

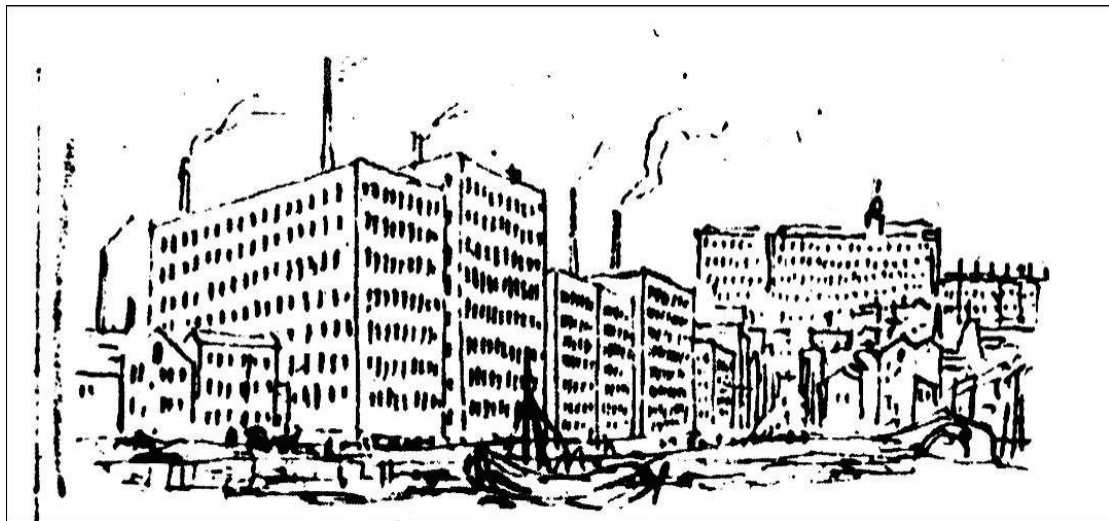


Figure 13: A sketch on industrial city by Karl Friedrich Schinkel (1830), from L. Benevolo, <Die Geschichte der Stadt>, Campus Verlag, Frankfurt/New York, 8.Auflage, 2000, p.797

<sup>94</sup> Benevolo L. (1980) *The History of the City*, the MIT press, Massachusetts, 1980 (first edition)

<sup>95</sup> Mumford L. (1961) *The City in History: its Origins, its Transformations, and its Prospect*, Penguin Books Ltd; new edition, 1991, London

### 2.1.1.3 PERIOD 3: SUBURBANIZATION, URBAN SPRAWL AND INNER CITY DECAY

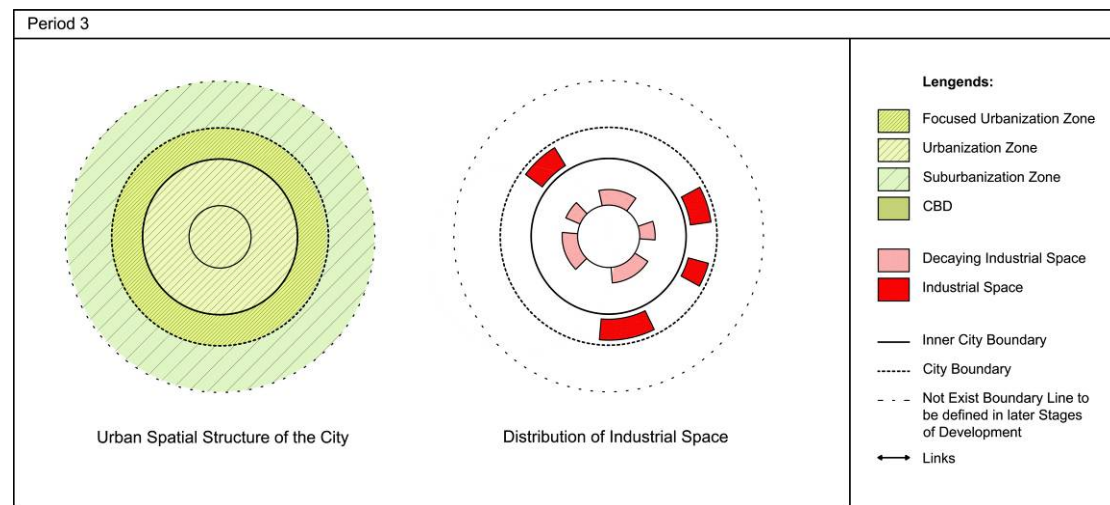


Figure 14: Urban Spatial Structure and Distribution of Industrial Space Diagram in Period 3, drawn by the author

In the later stage of spatial expansion, one tendency became more and more obvious: spatial diffusion. This is characterized by the focused development being shifted to the periphery area of the city and meanwhile the inner city area began to decay. Amongst all, residence was the first to demonstrate this tendency, with middle class leaving the inner city to choose periphery as their preferable residential location. "Suburbanization" and the relative term "Urban Sprawl" are to describe such phenomenon of urban diffusion. The internal causes for this lie basically in two aspects. First, the inner city area became less suitable area for living due to the aging of infrastructure, pollution and noise cause produced by industry, over crowded population as well as traffic jam. Second, the emergence of private automobiles and telecom technology made the distance from the city center less relevant to the decision of location selection. Though the phenomenon of suburbanization took place firstly in the field of residence, the tendency extended soon to the fields of other urban functions such as industry, commerce and offices. As a result of this, the majority of the population moved from the inner city area to the periphery area, and the inner city was left as a location for low class residence. For example, from 1948 to 1980 in the United States, with the construction of numerous suburban residences and suburban facilities, the population of inner city decreased from 64% to 43%, the manufacture employee of inner city decreased from 67% to 28% while that of retail decreasing from 75% to 49%.<sup>96</sup>

The spatial scale of the city further expanded in this period. What very different from the development pattern of the previous stage is that the inner city area lost the power of development and could no more acting as the power resource for expansion. The most focused area of development was shifted to the annular zone surrounding the inner city, it became preferable zone to build residence and later also for other functions as industry, retail and office. The outer boundary of the zone is always uncertain, always expanding depending on the degree of the suburbanization. In the later stage of this period, especially when the other urban functions except the residence also moved in this area, several concentrated centers will come into being, which further extract the development from the inner city to the periphery.

<sup>96</sup> Huang Yaping, <Urban Theory an Urban Analysis>, Southeast University Press, 2002, p.64

In the contrary, the inner city, including the historic core and the surrounding urbanized areas, which used to be the highly focused development area in the previous period, became the less focused urbanization zone that is confronted with comprehensive decay in economic, social and environmental aspects.<sup>97</sup> The comprehensive decay of inner city can be characterized by 1) Deficiency of Investment; 2) High idle rate even the rental goes less and less; 3) Singular social structure with low-income class; 4) High criminal rate; 5) High unemployment rate; 6) Decaying of building and infrastructure substance, because of deficiency of necessary maintenance.

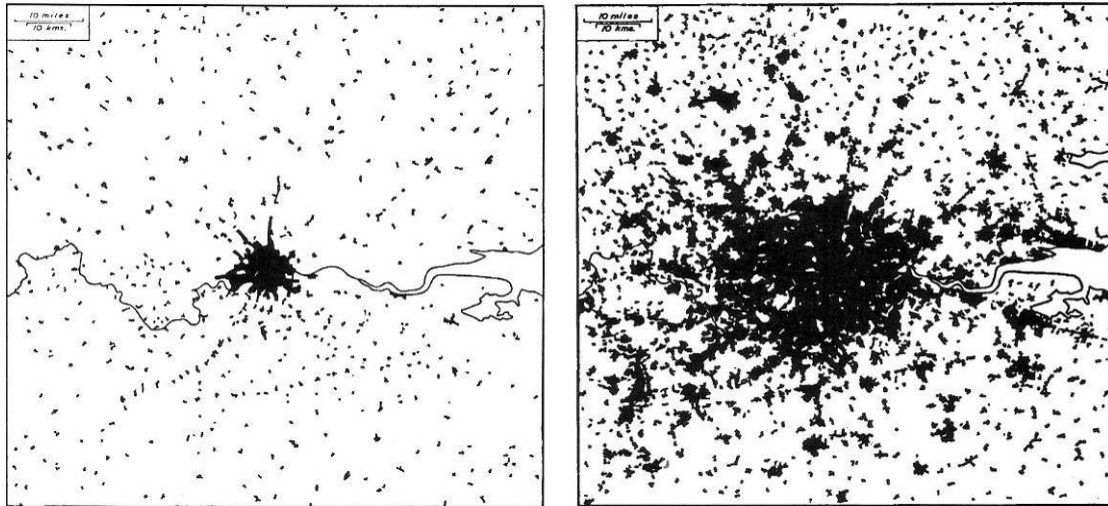


Figure 15: Urbanized Area of London in 1830 and 1960, L. Benevolo, <Die Geschichte der Stadt>, Campus Verlag, Frankfurt/New York, 8.Auflage, 2000, p.1111



Figure 16: Urban Sprawl in California 1961, Photograph by Joe Munroe, Ohio Historic Society Collections

<sup>97</sup> The characteristics of decay on the inner city industrial spaces will be further described in 2.2.

From urban planning point of view, the excessive spatial diffusion is harmful to the city, especially when the diffusion is without the arrangement and monitoring of urban planning. The criticism mainly focused on the points about the waste of land, excessive traffic, loss of urban identity, conflicts between different urban functions and lack of infrastructure support etc. Compared to American cities, the European cities are relatively less influenced by the suburbanization, as urban planning played a significant role in the development of periphery area of the city. Judged from the famous urban planning schemes after the 2<sup>nd</sup> war World such as the master plan of London (1954), Paris (1965 & 1969) and Copenhagen (1948), the steering and controlling of decentralization of the city became more and less a main target for urban planning of big city's spatial structure. The attempts usually include: 1) Improve the accessibility of suburbs such as the construction of traffic roads and railways as well as highway system. 2) Planning and protection of ring green belt/zone for the city,<sup>98</sup> 3) new towns,<sup>99,100</sup> 4) Steering the spatial development along side several "Developing Axis" or "Corridors"<sup>101</sup>. These all contributed to the better arrange and monitoring for the periphery area of city and prevent the uncontrolled spatial "overflow" to happen. In the other hand, these efforts also helped the European cities better maintain the vitality of the inner city area and prevent it from decay, compared to the American cities which were severely affected by excessive suburbanization.

<sup>98</sup> Representative examples are the "agriculture zone" of London planned by the <County of London Plan> (1943) and <Greater London Regional Plan> (1944), where the 11 new towns were located and the ring green belt of Paris 10~30 km far from the inner city, planned in 1965. In the 1948 Copenhagen planning, the "green fingers" were planned, alternating with the planned urbanized areas.

<sup>99</sup> The "New Town Movement" came from the Re-planning of London shortly after the 2nd World War. In the <County of London Plan> (1943) and <Greater London Regional Plan> (1944) by P. Abercrombie, to deal with the problem "sprawl of London and consequent suburbanization of surrounding country towns", 11 new towns were planned and constructed in the outer periphery (so called "Agriculture Zone" of London, they were planned with sufficient infrastructure and working positions. Till the middle of 70s, there were 1.8 million people living in these 11 new towns with more than 2000 enterprises that provided 188,000 working positions. According to statistics in the beginning of 90s, there are 33 new towns in England with about 2 millions inhabitants (4% of the whole population in England).

<sup>100</sup> Different from the new towns of London, the new towns for Paris were more considered as part of the central city rather than the tradition concept of new town, with well-planned public transportation to connect them with the inner city. As in the 1965 and 1969 Paris Master Plan, they were located alongside two main developing city axes in the inner periphery of the city. After worldwide experience for half century, the New Town proved to be an effective method to release the spatial pressure of the inner city.

<sup>101</sup> In the famous 1948 Master Plan for Copenhagen, the city was planned to develop alongside several "fingers" radiating from the center, these developing corridors are supported by high-speed transportation (suburban railways). Between these corridors are green areas, in this way the city conserve the possibility of further expanding while maintain the ecological system. In the 1965 Paris master plan, the city was planned to develop alongside two developing axis (75 km and 90km) paralleled to the Seine. The reason that Paris doesn't adopt the London pattern (green ring with new towns) lies in that the radiant development would restrict the development of Paris's surrounding cities (100 km away or farther) such as Orléans, Reims and Rouen. The development of these two developing corridors is promoted by the construction of newly planned traffic roads, fast metro lines and other public transportation methods, which connect the new towns with the inner city.

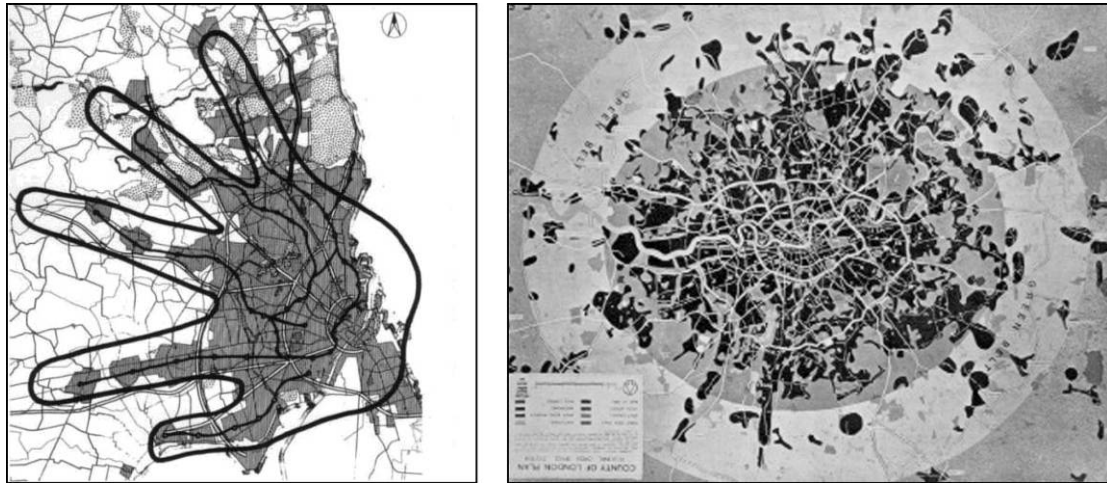


Figure 17: "Finger Plan" for Copenhagen 1947 (left) and the Abercrombie's plan for London in 1943&1944 (right). Both represent the achievement of modern urban planning in this period in reaction to the further expansion of the city's spatial scale. From L. Benevolo, <Die Geschichte der Stadt>, Campus Verlag, Frankfurt/New York, 8.Auflage, 2000, p.921 and 950

### Industrial Space in period 3:

With the further expansion of the city, the condition of the industrial location also changed accordingly. The periphery became a much more preferable location for industrial space, the internal causes of which are: 1) Improvement of transportation connection in suburban areas makes traffic accessibility in periphery area more efficient and convenient than that in the inner city. 2) For the environmental reasons, there are more and more restrictions for industrial (especially manufacturing) to stay in inner city area, while the restriction in periphery area of the city stays much loose. 3) Periphery area can provide much more abundant big-scaled free land with lower price for industry, which is hard to get in inner city area. 4) With the majority of population moved to periphery, the location in periphery is closer to the resources of labors. 5) With the suburbanization of the other functions like retail, office, the public service in periphery areas were also much improved.

For these reasons, it was an obvious tendency that industrial space moved from the inner city area to the periphery area of the city. Regarding the distribution state, the emerging industrial spaces in periphery area are also much bigger and more concentrated than those in the inner city area. They are often planned to incorporate certain amount of urban functions such as labor residence, retail, office and public service.

It was from this period that many inner city industrial spaces, which had been the very important spaces in the city in the previous period, started to lose their importance for the development of the city. Many of them operated in worse and worse situation, and some of them were even totally abandoned. This was accompanied by the comprehensive decay of the whole inner city.



Figure 18: Aerial View of Urban Sprawl in California, showing that industrial functions mixed with logistic centers, shopping centers and housing estates in the suburbs. from Rudolf Hartog, <Europe's Ageing Cities>, Verlag Müller+Busmann KG, Wuppertal, 2005, p.23

#### 2.1.1.4 PERIOD 4: BALANCED DEVELOPMENT \_ CONTROLLED PERIPHERY DEVELOPMENT AND INNER CITY REVITALIZATION

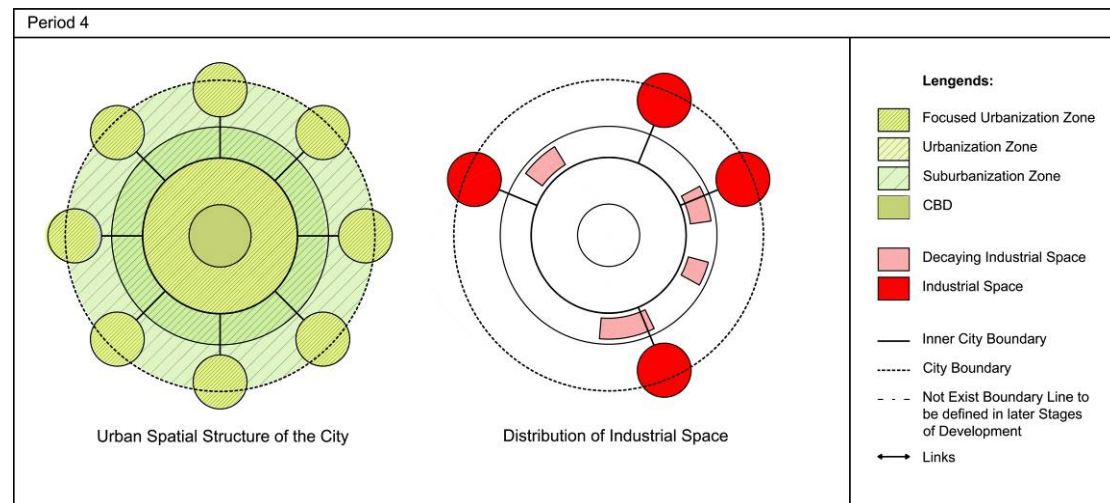


Figure 19: Urban Spatial Structure and Distribution of Industrial Space Diagram in Period 4, drawn by the author

The characteristics of latest period of contemporary city's spatial development, being the ongoing period, can be described as a pursuit on balanced development on the urban and inner city and periphery/regional development, whose efforts can be treated as reactions against the urban problems generated by the last period of spatial development. These efforts are on the following two directions:

##### 1) Managing the periphery development

In the later stage of suburbanization, while the inner periphery areas are further urbanized and are related and connected with the inner city more and more closely, many urban centers are established in the outer periphery of the city. Connected with the inner city and the regional traffic system, these urban centers act as secondary urban centers in the whole metropolitan urban system, which greatly releases the reliability of the outer periphery residence on the inner city. Functionally speaking, many of these urban centers are in form of "new town", which are equipped with functions of retailing, office, entertainment and other public services to deliver service for the surrounding residence. Such development model is treated by urban planning as an effective solution to manage the periphery development in a more efficient and ecologic way. Besides urban centers that serve for delivering service for residence, there are also types of urban centers that take specific dominant function, such as some big-scaled "shopping city", "office city" and "industrial park".

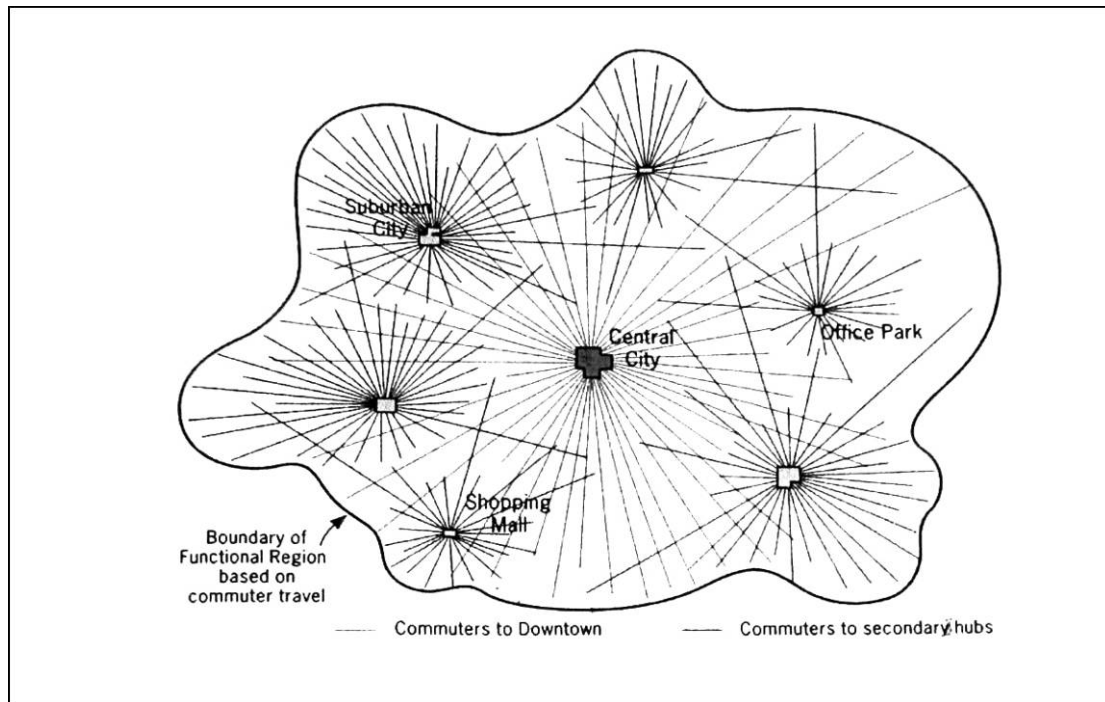


Figure 20: Expansion Pattern of big Cities, from HUMAN GEOGRAPHY, Culture, Society and Space, John Wiley & Sons, 1995

## 2) Inner city revitalization

As reaction to the excessive suburbanization, the other direction of effort is to bring back the vitality to the inner city. This effort is termed universally as “Urban Renewal”, which targets at the determent of further decay of the urban area and exploring new developing possibilities of the inner city. However, urban renewal in its early stage, especially those post-war housing acts<sup>102</sup> in USA, which aimed mostly at sweeping slums by totally demolishing the existed community and replacing with new private or public residence, were often criticized by publics and even by urban planner themselves<sup>103</sup>. The problem of the urban renewal in this early period is that the urban renewal focused merely on the renewal of the physical environment, and ignored the economic and social factors of the renewed area. The ignorance caused many irreversible losses to the urban/cultural identity and social structure of the renewed area, and the lack of economic effect often led to difficulty of further development and even led to further decay.

Going into the 1970s and 1980s, with the inner city area of many western cities started a process of revitalization (together with the revitalization of economy in these cities), a more comprehensive way of urban renewal, newly termed as “urban revitalization” or “urban regeneration”, gained ground. Reevaluation of the existing and potential values of the urban area, normally including (normally including aesthetical value, architectural diversity value, environmental diversity value, functional diversity value, resource value, cultural memory/ heritage continuity value,

<sup>102</sup> Such as the Serviceman's Readjustment Act, Housing Act of 1944, Housing Act of 1949 and Federal-Aid Highway Acts of 1956

<sup>103</sup> Most famous were those critics by American academician Jane Jacobs in her <Dearth and Life of American Cities>, in which she strongly criticized the large-scale Urban Renewal especially on the social aspect.

economic and commercial value<sup>104</sup>), maintaining and exploration of these values, maintenance of the social structure and protection of the minorities, study the feasibilities of economy, improvement of ecological value are comprehensively considered and carefully implemented in the process of urban revitalization or urban regeneration.



Figure 21: Revitalized Historic City Center of Vienna: Kärntnerstraße and Graben,  
Photograph taken by XU Kai

Both efforts gained their effects. Entering 1980s, the inner city area in many European and American regained vitality and became the investment target location of local and multi-national capitals, thanks to the comprehensive revitalization plan aided by intensive investment from the government or public-private partnership to improve infrastructure, renovate historic building, reactivate abandoned lands and improve the environment quality. The extinguished demonstration of such revitalization is that the some of the new generation middle class comes back to the historic residence in the inner city. After revitalization, many historic street and revitalized waterfront areas in the inner city became the attractive open space and urban center in the inner city. On the other side, the periphery development is much better managed. The new urban centers in the outer periphery (regional) area, categorized with their urban functions, work well to release the firm reliability of the periphery on the city center and improve the urban quality of periphery area.

With the demography scale of many western cities are steeping onto a more stable state, the spatial development of the city is thus entering a more stabile period, in which different urban elements of the city gaining a balanced development. A typical urban spatial structure is shown with the diagram above, where a strong inner city area, with the historic core turned into CBD, dominant the structure, while the urban centers in outer periphery (regional) plays their roles in the integral system network.

#### Industrial Space in period 4:

<sup>104</sup> T. Health, S. Tiesdell, T. Oc, <Revitalizing Historic Urban Quarters>, Butterworth-Heinemann, 1996, p.11~17

Strongly influenced by the “de-industrialization”<sup>105</sup>, the industrial space in this period of development mainly shows the following two tendencies:

#### 1) Further decentralization of industrial spaces

The industrial spaces, especially the manufacturing industrial spaces, are redistributed to the outer periphery (regional) of the city, or even totally to the other cities such as regional or global industrial center cities. This is pushed by the reasons that are stated in the pervious period (2.1.1.3), as well as the new situation of regionalization and globalization that is analyzed in chapter 1<sup>106</sup>.

One extinguished phenomenon regarding the spatial characteristics of the new emerging industrial spaces in outer periphery (regional) area is that they are in even bigger scale as well as in even more self-centralized form. They became one of the urban centers in the periphery area, alongside with other self-centralized urban centers like shopping city, office cities and new towns. Isolated from the neighboring area by greenery but well connected to the municipal and regional traffic system, these huge industrial spaces are incorporated with functions of labor residence, shopping area, offices and public services. This phenomenon represents a newest tendency of “Suburbanization”.

#### 2) Further decay of the inner city and inner periphery industrial spaces

The period saw dramatic declination of manufacturing industry and rising of service, which is the dominant characteristic in the “De-industrialization” society. From theoretical point of view, such structural conversion of economy is already predicted and analyzed by many theories such as the three-sector hypotheses<sup>107</sup>. The structural conversion had been widely verified by the decrease of manufacturing industry employment in 60s and 70s in world's traditional industrial cities such as Detroit, Manchester, Liverpool as well as those cities in traditional industrial regions such as Ruhr and Lille Area.

City	Year	N. of Employee	Year	N. of Employee	Decrease
Baltimore	1974	89,000	1982	60,000	33.2%
Pitzburg	1974	40,000	1984	15,000	6.4%
Birmingham	1971	237,000	1981	154,000	35.2%
Glasgow	1971	159,000	1981	99,000	35.3%
Manchester	1971	113,000	1981	64,000	43.4%
Lyon	1975	108,000	1983	91,000	15.6%

Table 1: Unemployment of cities between 1970s and 1980s, Resource: Yang Jianqiang, <Development and renewal of city: Thoughts about the urban renewal in China>, from <Urban planning journal> 1988(1)

On such backgrounds, and especially under the situation that the major industrial players choose outer periphery area of the city or totally relocate them to the other cities, the former industrial spaces, which are located in the inner city or the inner periphery of the city, and confronted with comprehensive decay. Having lost their original functions, they were amongst the most negative areas of the inner city, in terms of urban images, impetus of economic growth and urban development. The further analysis of the actuality of these left-over industrial spaces as well as how

<sup>105</sup> Refer to 1.2.3

<sup>106</sup> Refer to 1.2.2

<sup>107</sup> Refer to 1.2.2

urban planning can play a role in corporate the revitalization of these areas into the city's spatial development will be made in the next section of this chapter (2.2).

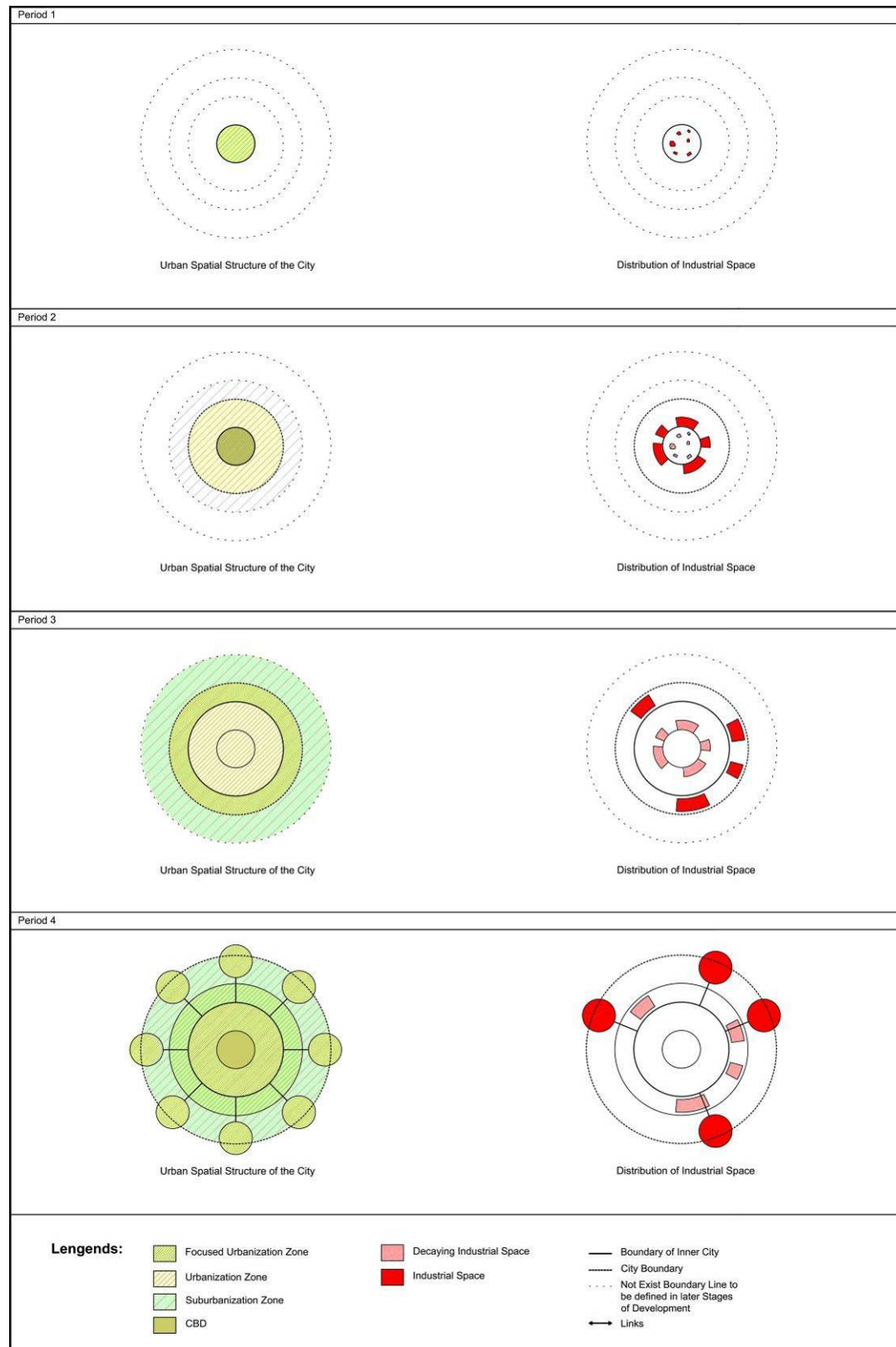


Figure 22: Urban Spatial Structure and Distribution of Industrial Space Diagram, drawn by the author

## 2.1.2 STARTING POINTS OF URBAN PLANNING IN "BRING OUT"

### 2.1.2.1 TARGET SETTING FOR "BRING OUT"

The analysis of the spatial development of city's spatial development as well as the redistribution of industrial space in different period of city's spatial development shows that the significance of the different sectors of industry as driving factor for the development of the city shifted over the time. In the post-industrial city, the manufacturing industry is contributing less economic output and employment, while the service sector is more and more treated as driving factor of the city's development. Being extremely sensitive on the location (distance to the product market, raw material and labor market, as well as the connection to the transport system), the manufacturing industry moves from their original location in the inner city or inner periphery outwards, to city's outer periphery or other locations in regional or global production networks. Meanwhile, the production-related service function such as R&D, administration (headquarters) agglomerates in the inner city or inner periphery. The relocation is accompanied by the phenomenon of city's spatial expansion over the time. The differentiation of type (sector) of industry in different location of the city is shown.

In the other hand, the importance of manufacturing industry in the structure of economy, although its proportion is in general much lowered in post-industrial cities, cannot be ignored, which is necessary for maintaining a healthy and sustainable economic structure. Many today's metropolitan cities grow from its origin on which industrialization made significant influences and their connection with manufacturing industry is still very intimate. Such intimacy lies in the proportion of manufacturing industry in the economic structure and the large number of employment related to manufacturing industry, or service related to manufacturing industry. Speaking about the regional development, these cities will continue to be regional center of manufacturing at least in short term. Therefore, the retaining of the attractiveness of industrial location is still one of the targets of many cities' urban planning.

The effort of regarding "BRING OUT" thus has a very multiple-layered task: to balance the demand and supply of industrial land use, achieve new distribution state of different type (sector) of industry as well as to maintain the attractiveness of the location for the industry. Such efforts are jointly made with the instruments of city's politics, economic policy, environment policy and most important, urban planning. The target setting of "BRING OUT" is composed of targets in the following aspects:

#### 1) To balance the supply & demand of industrial land use

This target contains the effort to monitor the demand of industry land, and to ensure the supply can meet the demand through planning and management of urban land use. This shall take in account the supply & demand equilibrium of the amount of different type of land use (manufacturing, logistics, warehousing, utilities, waste treatment, wholesale markets etc.), the existing location and desirable location of these types of industry in the city, as well as the supply & demand equilibrium on the time axis.

#### 2) To achieve ideal type-location structure of industrial space

This target contains the effort to plan and manage the industrial land use in different location of the city to accommodate the demand of different type of industry, normally following such structure: 1) Central Area: service industries related or not

related to production, administration, research institutes, office and creative industries; 2) Inner Periphery Area: non-polluting and less-polluting manufacturing industries, middle-scale high tech industries and industrial parks with mix-function; 3) Outer Periphery (Regional) Area: traditional manufacturing industry, big-scaled industrial parks, logistics centers, warehousing, wholesale markets and waste treatment.

### 3) To improve quality of industrial location

This target contains effort to maintain or improve the attractiveness of specific locals for industry, including improving the accessibility (connection to regional traffic system such as highway system, docks and airport, connection to the domestic market, connection to the labor market and residential areas and public transport), promoting the mix-use development as well as improving the open space and green space quality of the locations. Such effort must also take into account the location and type of industrial function for these areas.

#### 2.1.2.2 POSITION OF URBAN PLANNING IN JOINT EFFORT OF "BRING OUT"

The redistribution of industrial space in the city is a joint effort, which involves works from sides of politics, city's development strategy, urban economy, environments protection and urban planning. It is required that the different involved parties in the public and private sectors\_\_ the government, urban planning bureau, financial institutions, environment bureaus as well as private developers \_\_ work together to initialize, constitute and execute the "BRING OUT" plan and its whole process. In general, the process of "BRING OUT" may be composed of the following four stages<sup>108</sup>:

##### Stage 1: Collection and renewing of information

The comprehensive and in-depth information collection about the city and the current state of industrial space is the basis for the redistribution of industrial space. It includes: 1) Information about the evolution of the city's economy development, social structure, environment quality as well as the efforts of urban planning in different periods and their effects. 2) Information about the evolution of city's spatial structure with special attention on influences by industrialization and deindustrialization. 4) Information of the current demand & supply of industrial lands in different location of the city 5) Current amounts, distribution and quality of industrial space in the city's urban spatial structure.

##### Stage 2: Programming and Planning

Based on the information collected by stage 1, stage 2 is to bring forth the target and principal of the redistribution of industrial space as well as to bring forth the complete operational document for implementation. This part is composed of two levels of planning:

- 1) Strategic Planning: This involves the planning on the strategic level, which normally included 1) Strategy on balance of supply & demand amounts of industrial land indifferent location of the city, 2) Strategy on type/type-location structure of industrial space in the city, 3) Strategy on improvement of quality of

<sup>108</sup> Partially refer to Refer to Li Dongsheng, <Adjustment and renewal of historic industrial districts: Yangpu Municipal District in Shanghai as example>, Tongji University Press, 2005.

industrial location. In the other hand, the strategic planning on the redistribution of industrial space must coordinate with the strategic planning of the city's urban development.

- 2) Urban Planning: The second part of the programming stage is urban planning, which is a spatial proposal for the development, in regards of land use, transportation, open space, green space and urban conservation. With Urban Planning, the Strategic Planning is brought onto an operational level. In the other hand, the urban planning with specific aim of redistribution of industrial space must well coordinate with the urban planning of the city's urban development.

#### Stage 3: Demonstrating of revitalization programs

The plan should be demonstrated to experts, professionals and authorities as well as to the public. One important work that is the public participation in the process of demonstration, as the redistribution of industrial space will have relevant influences on the distribution of inhabitants due to the close relation between industrial space and the employment.

#### Stage 4: Establishing implementation instruments:

To implement the programming/planning, the following instruments of implementation shall be established:

- 1) Development Documents: Typical form of development document is urban planning schemes, comprising land use planning, transportation planning, infrastructure planning, open space planning, greenery plan and urban conservation planning. The urban planning document with specific aim of redistribution of industrial space is often a component of the complete set of city's urban development plan.
- 2) Policies and Regulations: These policies and regulation are given legal effectiveness to support the desired development, on aspects of land use, land purchase and sell, transportation, construction and maintenance of open space and green space etc.

#### Stage 5: Implementing and evaluation

Evaluations of the real-time information feedbacks shall be made based on investigation in the course of implementation. Such evaluation reflects the periodic results of the implementation and also tests the correctness of the planning, which can result in the modulation of strategic planning and urban planning and their methods of implementation.

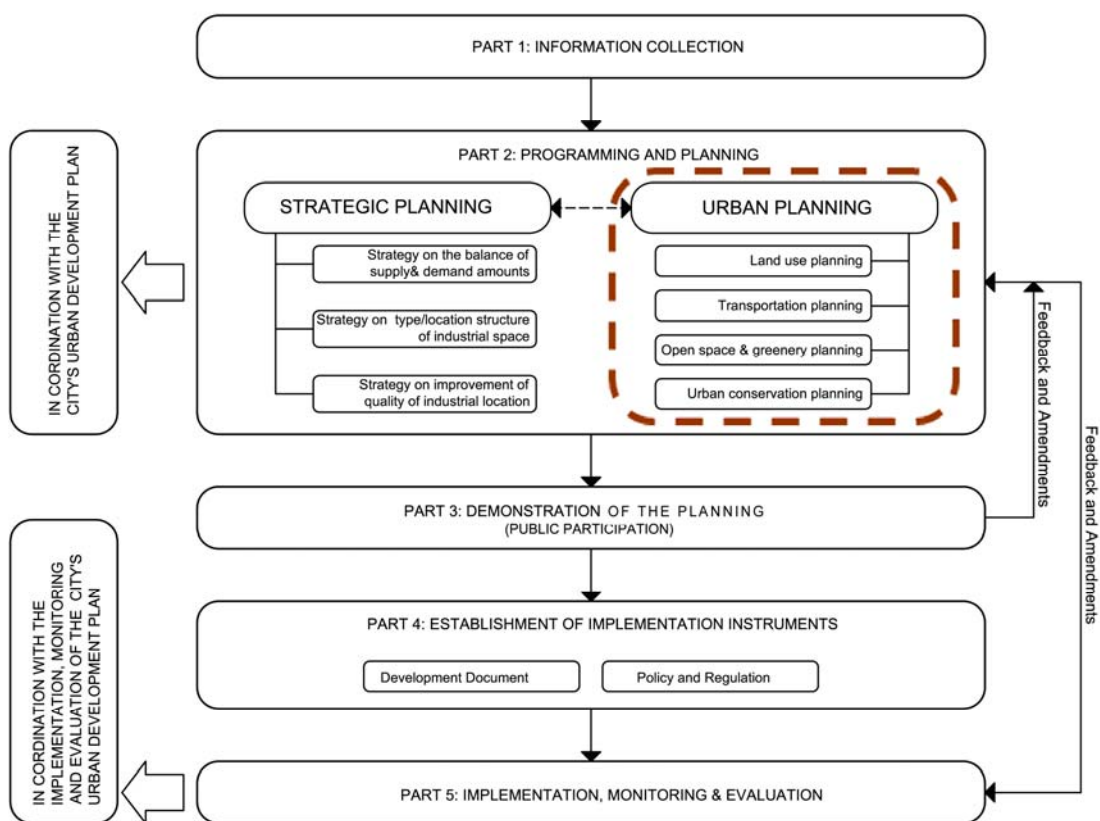


Figure 23: Urban planning in the joint effort of "BRING OUT"

### 2.1.2.3 INSTRUMENTS OF URBAN PLANNING IN “BRING OUT”

Urban land use planning, urban traffic planning, open space/green space planning and urban conservation planning are the four main instruments that urban planning can use in “BRING OUT”. Through the interactive fields of land use, accessibility, open space & green space as well as urban conservation, urban planning can guide the urban development to achieve the three aforementioned targets of “BRING OUT”.

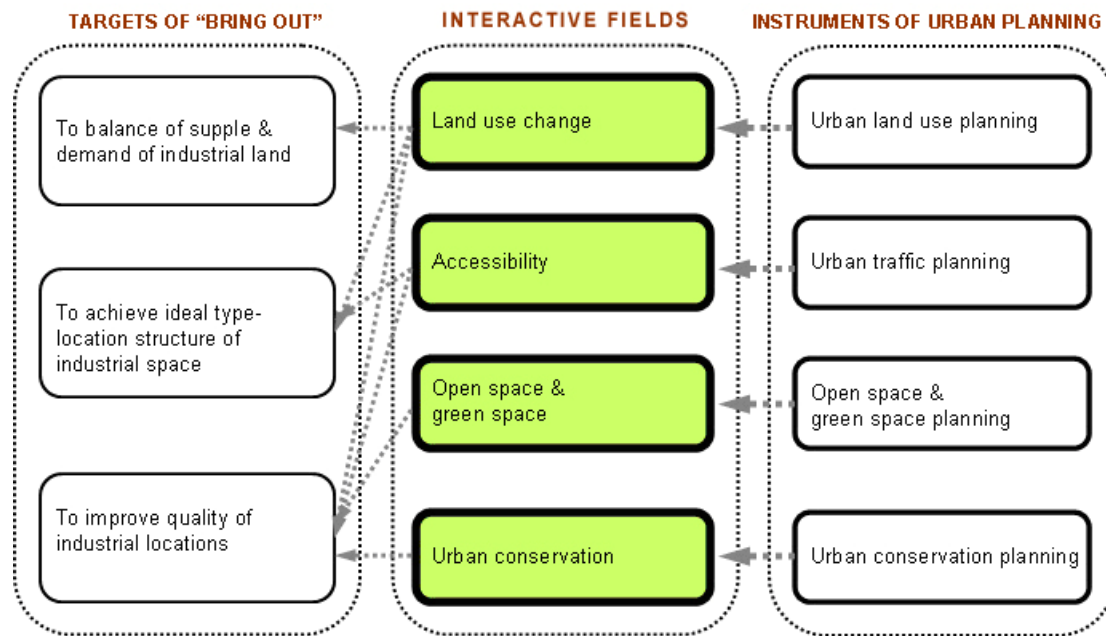


Figure 24: Interactive mechanism of urban planning in “BRING OUT”, drawn by the author

#### INSTRUMENT 1: URBAN LAND USE PLANNING

Urban planning shall utilize the instrument of land use planning to activate land use change in different locations of the city. The land use change has decisive influences on the fulfillment of the target of balance supply & demand amount of industrial land, by restriction and conversion of industrial lands in the location where industrial lands are excessive or where industrial lands are unsuitable for the type of industry to be developed, as well as by promoting, expanding existing industrial lands or creating new industrial lands in the location where the industrial lands is in demand. The overall balance of supply & demand of industrial land shall thus be achieved.

The land use change has decisive influences on the achievement of the type/type-location structure of industrial space in the city, by assigning suitable land use or conversing unsuitable land use to the different type of industry in the central area, inner periphery area and outer periphery area of the city.

The land use change will also have decisive influences on the improvement of quality of industrial locations, by adjusting land use structure reinforce the service facility support and improve the function composition (mixed use development) so as to add the attractiveness of the location for development of industry.

#### INSTRUMENT 2: URBAN TRAFFIC PLANNING

Urban planning shall utilize the instrument of urban traffic planning to improve transportation accessibility to industrial spaces in different areas in the urban spatial

structure of the city by connecting the locations with regional traffic system and city's public transport system, transportation facilities (railways, ports and airports) as well as improving the inner traffic and pedestrian circulation system, which all serve to adding the attractiveness of the locations for the development of industry.

### **INSTRUMENT 3: OPEN SPACE & GREEN SPACE PLANNING**

Urban planning shall utilize the instrument of open space/green space planning to increase the amounts and improve the quality of open space and green space in the industrial spaces in different areas in the urban spatial structure of the city. The improved urban and ecological quality of the industrial location will add attractiveness to the location for development of industry and other urban use.

### **INSTRUMENT 4: URBAN CONSERVATION PLANNING & MONUMENT PROTECTION**

Urban planning shall utilize the instrument of urban conservation planning to protect the heritage and urban identities of historic industrial spaces, as well as making use of these heritages and urban identities to serve to revitalization. This is especially important for the quality of the conversed industrial location in which the urban conservation adds great urban attractiveness to the new development of residence, commercial and service industry.

## 2.2 THEORY APPROACH ON "FILL IN"

### 2.2.1 EMERGENCE AND CURRENT STATE OF HISTORIC INNER CITY INDUSTRIAL DISTRICTS

#### 2.2.1.1 EMERGENCE OF LEFT-OVER INDUSTRIAL SPACE

One important result of redistribution of industrial space is that many former industrial spaces were abandoned because their owner bankrupted or moved to other location. The amount of such left-over spaces is enormous, especially in those traditionally industrialized countries. For example, in Austria, which is amongst the one of the earliest industrialized countries in Europe, there are 3,300 ~5,900 abandoned industrial sites that amounts to about 8,000~13,000 ha currently, with the annual increase of about 1,100 ha.<sup>109</sup> In Germany, although there's no states-wide compilation of the abandoned amounts, the Bundes Umweltministerium (Federal Environmental Minister) estimates that there are about 25,000 ha inner city brown fields in the whole country. Nearly half of these 25,000 ha lies in the States of Nordrhein-Westfalen, where Germany's most important industrial center Ruhr Region is situated. The dramatic industrial structural reformation left in the Nord-Westfalen enormous brown fields, which amounts up to about 10,000 ha. In Ruhr Region at the beginning of 1990s, about 2,600 ha manufacturing space, 2,100 dump space, 1,000 ha colliery space and 500 ha transportation space were abandoned.<sup>110</sup>

Many of these abandoned are located in the central area of the city. These left-over industrial spaces had been important components in the city's spatial structure in the initial grounding period of the city (mainly in period 2), but they became more and more de-active in period 3 and period 4. Many of them occupied huge and continuous land in the inner city area. On the other side, because of their long history of development, these districts are very "historical", with specific and valuable social and urban structure as well as enormous cultural heritages. In this research, these spaces are termed as "Historic Inner City Industrial Districts".<sup>111</sup>

#### 2.2.1.2 CURRENT STATE AND URBAN CHARACTERISTICS

The current state of abandoned Historic Inner City Industrial Districts can be summarized in the following four aspects of decay:

##### 1) Lack of economic vitality

The lack of economic vitality is indeed the primary cause for the decay of the Historic Inner City Industrial Districts. Having industry as its main function, the impetus of development of these areas relied mainly on the economic vitality brought by the industries, which acted as generator of economic income for the whole area and attractor of further investment. With the major industrial enterprises moving out and the rest enterprises declining in the post-industrial era, the Inner City Industrial Districts lost their resource of development impetus.

##### 2) Monotonous and degrading social structure

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<sup>109</sup> according to the report by Österreichische Umweltamt

<sup>110</sup> A. Holzapfel, <Flächenrecycling bei Altlasten: Sanierung und Wiederverwendung brachliegender Industrie- und Gewerbeflächen am Beispiel des Ruhr Areas>. Erich Schmidt, Berlin 1992, p.8

<sup>111</sup> See 1.2 for detailed definition of "Historic Inner City Industrial District"

Industry being the major function, the majority of the population of a typical industrial district is dominated by the population related to the industrial production and their families. Also for such reason, the diversity of the population is hard to be seen in these areas, which is very different from that in other areas in the inner city where population is composed of population related to varied profession and class of the society. On the other side, the declination of industry in these areas causes high unemployment rate and therefore led to the proportion of low income population in the population composition increase stiffly. The other phenomenon is problem of aging population, as these areas failed to create new working positions to attract young people.

### 3) Deteriorating natural environment

Most Historic Inner City Industrial Districts have severe environmental problems caused by previous industrial pollution. Many previous production processes contaminated the air, water and soil and thus decrease the environmental quality of the sites. Some of the harmful stuffs, such as heavy metal, chemical or radioactive material, stay in the water or the soil for long time and can only be decontaminated with special measures that normally demand big investment. In the investigation by IfS (Institut für Stadtforchung und Stadtpolitik), 53% of the investigated enterprises in Germany rated the contamination of brownfield to be the serious problem, 18% rated to be problem and only 18% claimed that they have no problem about the contaminated area.<sup>112</sup> On the other side, "pollution", "unlivable place", "harmful place" had become deep-rooted impression on the industrial districts on public, which make big physiological barriers for the reutilization of the land, even the pollution are not so severe in fact.

### 4) Over-aging physical environment

The over-aging of physical environment such as building and infrastructures is one of the distinguished indicators for the decay of industrial districts. No longer used by industrial enterprises, the buildings such as factories, warehouses, buildings for service and residential buildings for workers as well as are turned into a status of idle. Without necessary maintenance, the physical status of the buildings and infrastructures becomes more and more dilapidate and decayed. Sometimes, some buildings or parts of the building are temporarily rent for economic reasons. The short-term use can hardly improve the situation, sometimes even accelerating the process of deterioration by unsuitable usage. Within these idle objects, many are of great historic and cultural value. The absence of maintenance and renovation causes un-reversible loss.

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<sup>112</sup> Bundesforschungsanstalt für Landeskunde und Raumordnung (Hrsg.) Strategien zur Vermeidung zukünftige Gewerbebrachen, Materialein zur Raumentwicklung, Heft 48, Bonn 1992, P.14



Figure 25: Industrial land being contaminated is amongst the biggest obstacles for the revitalization. This photograph shows a workshop in CeCe Area of Zürich-Affoltern waiting for decontamination. from R. Züst and T. Joanelly, <Waiting Lands: Strategien für Industriebrachen>, Verlag Niggli AG, 2008, p. 63



Figure 26: Photograph of A decaying inner city industrial district in Shanghai shows that the factory building mixed with the other functions of the city, Photograph by the author

As a result of the four aspects of decay analyzed above, as well as being influenced comprehensively from the previous development as industrial districts, these areas have the following urban characteristics that must be taken into account by urban planning:

1) Central location and big adhesive land

They often occupy big areas in the inner city. As described in 2.1.1, the agglomerated places of industrial in the expansion period (period 2)<sup>113</sup> were often near the resources of raw material, transportation methods (by the river for example) and working forces (residence of workers). Geographically speaking, they were located mostly in the outskirts of city center in initial stage of industrialization course, but in today's city spatial structure they are included in the inner city area with the further expansion of the city. One typical characteristic of these industrial lands is that they are always huge in size and coherent in shape, in order to satisfy the demand of big-scale industrial production in their ground period. These lands turn to be very valuable when these areas are revitalized, given the deficiency of free land in inner city area in the contemporary time.

The close connection to the city lies in not only their location, but also in their urban structure. During the long period of the development, these historic industrial districts are more or less "fused" in to the urban structure of the city, which is indicated by: 1) The edge of the industrial districts are always hard to be clearly defined, the urban area of the city and that of the industrial areas, especially in the edge area alternate with each other or mix. 2) The previously inner circulation/transportation system of the industrial districts is now shared by the city; 3) Infrastructure, service facilities and public spaces are always shared by the city and the industrial area. 4) With the reuse of released of some sites in the districts, the city's function has already "invaded" into the industrial district, when some industrial enterprises also occupy some areas in the city for their expansion of production or service.

2) Lack of transportation accessibility

The lack of transportation accessibility lies on one side the transportation connection with the other areas of the inner city. As these industrial districts were previously planned in most occasions as an independent part of the city, in which the connection with other part of the city is not taken into accounts. On the other side, the inner transportation system of many industrial districts were originally planned to support the industrial production in the district, which doesn't meet the demand for the new development when the originally industrial function is converted. One extinguished example is that the traffic road network for industrial districts is normally much loose than the other area of the inner city, as the average size of block for industrial function is much bigger. Such loose traffic network road is not suitable for the further development of the district.

3) Lack of green spaces and open spaces

As districts previously serving and being arranged mainly for industrial production rather than urban use, these districts were planned with much less open spaces and greenery spaces, in contrast to the standard that is used for planning of other areas of inner city. With the decay of these industrial districts, those few existing open spaces and greeneries are very hard to survive, due to absence of maintenance and invasion of other urban functions. The deficiency of open spaces and greenery

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<sup>113</sup> See 2.1.1.2

spaces is one of the main reasons for the deficiency of attractiveness of these industrial districts that led to the unsuitability of the area for living and working.

#### 4) Urban identity and cultural heritage in danger

Through the long period of development in the Industrialization, many Historic Inner City Industrial Districts gain strong urban identity, which lies not only in the enormous survived single industrial heritage buildings and elements, but also in those integral urban townscapes, public spaces, characteristic streets and waterfront areas. They are the physical witness of the previously industrial and social activities of the previous generations of inhabitants, their works and their lives. From the urban conservation and architecture conservation point of view, they are of great historic and cultural value, the protection, conservation and regeneration of which are important content of the urban development the area.

However, the urban identities and heritages are faced with great danger when these industrial districts start to decay. On one side, the danger comes from the absence of necessary maintenance, due to the declining economic status of the owner. On the other side, before urban planning is involved in the development of these districts, the development of these districts were mostly in un-monitored and un-managed state. With monitoring and management, many urban identities and heritages were often erased or damaged from the area by inappropriate urban construction and destruction.

#### 2.2.2 STARTING POINTS OF URBAN PLANNING IN "FILL IN"

Being usually described as "Isolated Islands" or "Holes" in the urban context, many left-over industrial spaces in the inner city are not seen as inner city's components and ignored by the city's urban development. On the background of latest spatial development trend of contemporary city<sup>114</sup>, in which inner city revitalization become important component of the balanced development of the city, the redevelopment of the decaying Historic Inner City Industrial Districts become a new challenge for the inner city's revitalization. This is widely viewed as not only the efforts to stop the decay of these areas as well as to prevent the negative influences of the decay, but also as a new opportunity of the inner city development.

In brief, the revitalization plan for Historic Inner City Industrial Districts is to "REFILL" these "holes" with the urban life and integrate them again into the city's spatial system. Based on understanding of this, how urban planning can play a role in the revitalization plan in such effort of "FILL IN" and what is the instruments of urban planning?

##### 2.2.2.1 TARGET SETTING OF "FILL IN"

The target setting of "FILL IN" is composed of targets in aspects economic, social, environmental and cultural revitalization:

#### 1) Economical Revitalization

The revitalization plan shall aim to identify new growing points (activities/industries) of economy for the Historic Inner City Industrial Districts, create condition and environment for these new activities to develop and establish total economic system based on these new activities.

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<sup>114</sup> See period 2.1.1.4

## 2) Social Revitalization

The revitalization plan shall aim to renew the social structure of Historic Inner City Industrial Districts, stimulate the diversity of the population, create new working positions, increase the average income standard and release the phenomenon of ageing population.

## 3) Environmental Revitalization

The revitalization plan shall aim to improve the quality of both natural environment (including but not limited to improvement of water quality and atmosphere quality, soil decontamination, noise limitation, waste processing, increasing occupation of greenery etc.) and physical environment (including maintenance and repair of indoor and façade of buildings, improvement of infrastructure like electricity, gas and water, improvement of transportation accessibility and improvement of outer environments like public spaces and public facilities.) .

## 4) Cultural Revitalization

The revitalization plan shall aim to continue and the revitalize the culture in Historic Inner City Industrial Districts, through stimulation of cultural activities related to the industrial history of the areas and conservation of cultural/industrial heritages and urban identities.

### 2.2.2.2 POSITION OF URBAN PLANNING IN JOINT EFFORT OF "FILL IN"

Similar to that of "BRING OUT", the effort of "FILL IN" is also a joint effort, which involves the works from side of politics, city's development strategy, urban economy, environments protection and urban planning. It is required that the different parties from public or private sectors — the government, urban planning institutions, financial institutions, environment bureaus as well as private developers — work together to initialize, constitute and execute the "FILL IN" plan and its whole process. In general, the process of "FILL IN" may be composed of the following four stages<sup>115</sup>:

#### Stage 1: Collection and renewing of information

The comprehensive and in-depth information collection about the city and the object of redevelopment is the basis for the "FILL IN" program. It includes: 1) Information about the evolution of the district's economy development, social structure, environment quality as well as the efforts of urban planning in different periods and their effects. 2) Information about the current situation of the district's economy development, social structure, environment quality and urban structure (especially land use, transportation, open space, green space and heritage situation). 3) Information about existing development and redevelopment plan.

#### Stage 2: Programming and Planning

Based on the information collected by part 1, part is to bring forth the redevelopment target and principal as well as to bring forth the complete operational document for implementation. This part of a revitalization plan is composed of two levels of planning:

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<sup>115</sup> Partially refer to Li Dongsheng, <Adjustment and renewal of historic industrial districts: Yangpu Municipal District in Shanghai as example>, Tongji University Press, 2005. p.25

- 1) Strategic Planning: This involves the planning on the strategic level, which normally included the defining of revitalization area, defining the specific target of revitalization plan, defining the main redevelopment strategy and making the redevelopment schedule.
- 2) Urban Planning: The second part of the programming is urban planning, which is a spatial proposal for the development, in regards of land use, transportation, open space, green space and urban conservation. With Urban Planning, the Strategic Planning is brought onto an operational level.

#### Stage 3: Demonstrating of revitalization programs

The redevelopment plan should be demonstrated to groups of experts, professionals and authorities and to the public. Another important work is the public participation in the process of demonstration, especially for those existing and future inhabitants and industrial enterprises. Based on the feedbacks, the revitalization should be amended and updated.

#### Stage 4: Establishing implementation instruments:

To implement the programming/planning, the following instruments of implementation shall be established:

- 1) Development Documents: Typical form of development documents us urban planning schemes, comprising land use planning, transportation planning, infrastructure planning, open space planning, greenery plan and urban conservation planning.
- 2) Policies and Regulations: These policies and regulation are given legal effectiveness to support the desired development by monitor and manage the activities in economy, social, environment and urban aspects.
- 3) Implementation Organizations: Specific implementation organizations are established to be in charge of the redevelopment plan, below the municipal and district government as well as their responsible departments/bureaus (such as urban planning bureau, finance bureau and environment bureau) that normally act as highest authority to be in charge of the redevelopment plan.

#### Stage 5: Implementing and evaluation

Evaluations of the real-time information feedbacks shall be made based on investigation in the course of implementation. Such evaluation reflects the periodic results of the implementation and also tests the correctness of the planning, which can result in the modulation of strategic planning and urban planning and their methods of implementation.

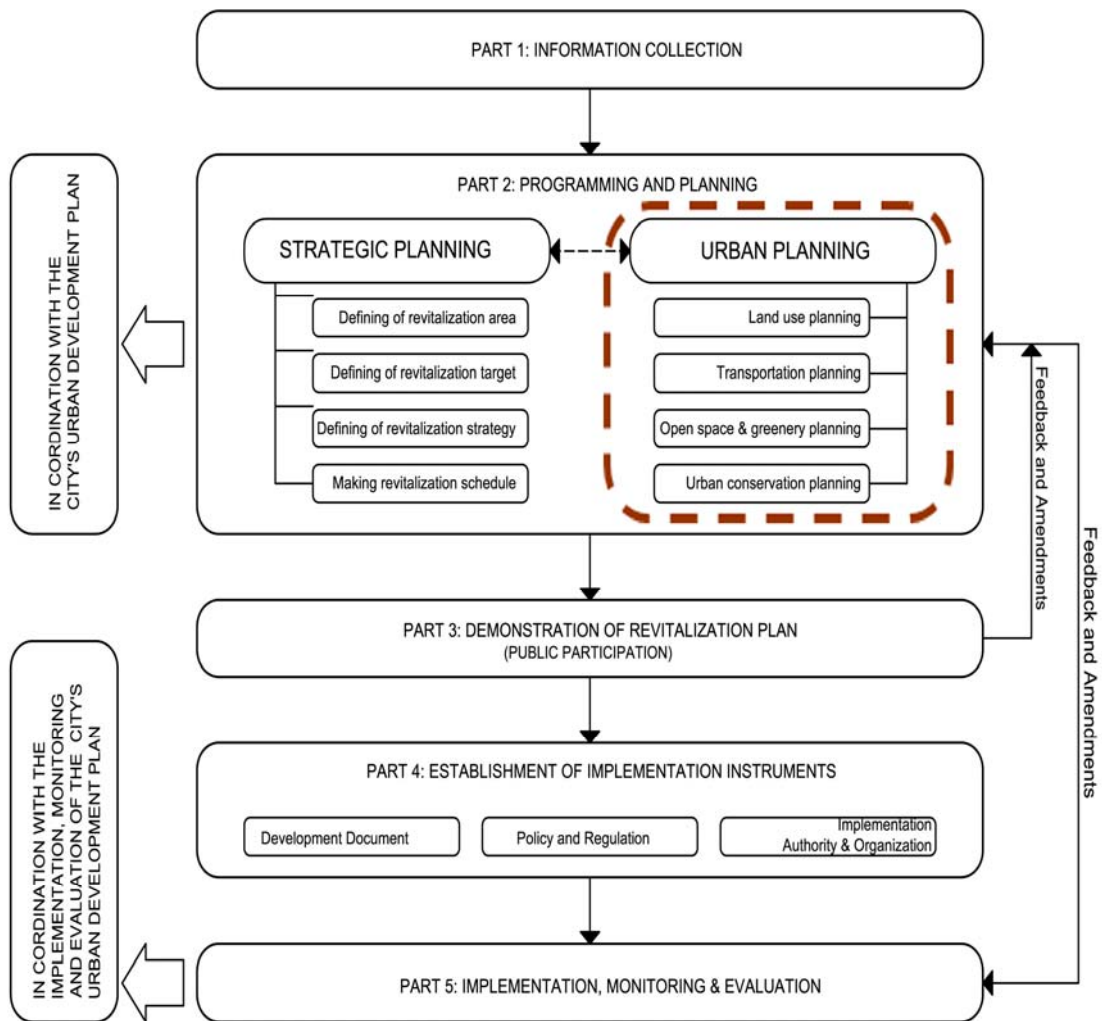


Figure 27: Urban planning in the joint effort of "FILL IN"

### 2.2.2.3 INSTRUMENTS OF URBAN PLANNING IN "FILL IN"

Urban land use planning, urban traffic planning, open space/green space planning and urban conservation planning are the four main instruments that urban planning can use in "FILL IN". Through the interactive fields of land use change, accessibility, open space & green space as well as urban conservation, urban planning can guide the urban development to achieve the four aforementioned targets of "FILL IN".

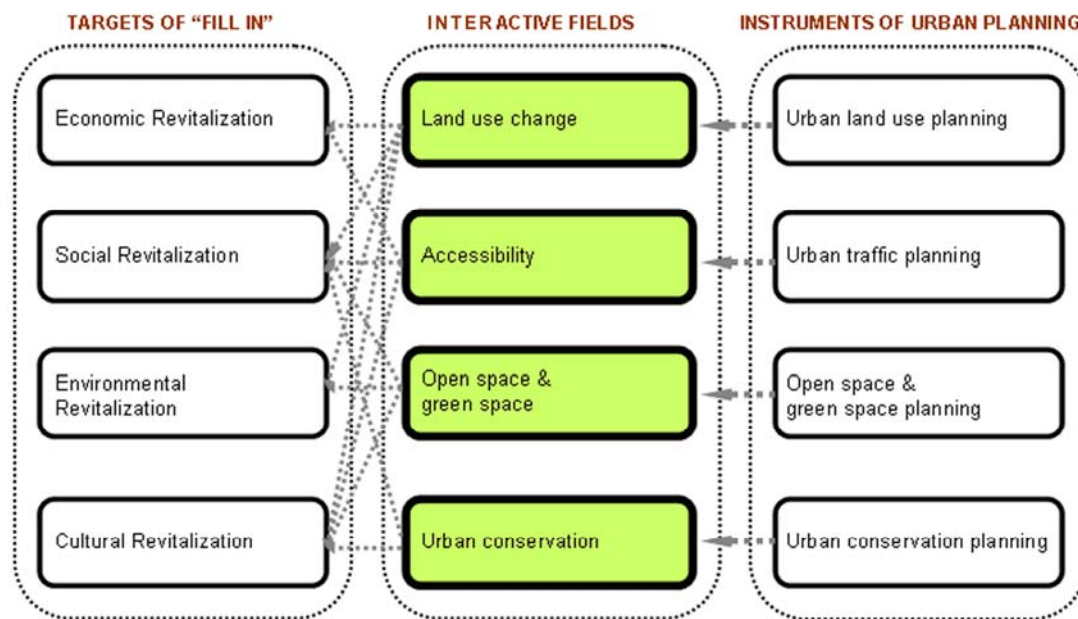


Figure 28: Interactive mechanism of urban planning in "FILL IN", drawn by the author

#### INSTRUMENT 1: URBAN LAND USE PLANNING

Urban planning shall utilize the instrument of land use planning to rearrange urban function of Historic Inner City Industrial Districts, in regards to both its distribution and composition. The change of land use will have its decisive influences on the fulfillment of target of economical revitalization, by replacing the decaying function with new urban functions that becomes the new growing points of economy, as well as by building up the urban function system that is based on the new growing points of economy.

The land use change will also have its decisive influences on the fulfillment of target of social revitalization, by building up urban function system that improves the diversity of the population, improves average income standards, creates new working oppositions and prevent the phenomenon of ageing population.

Finally, the land use change will also have influence on the fulfillment of target of cultural revitalization by introducing more cultural or cultural-related urban function, that improve the cultural vitality of the area.

#### INSTRUMENT 2: URBAN TRAFFIC PLANNING

Urban planning shall utilize the instrument of urban traffic planning to improve the transportation accessibility of Historic Inner City Industrial Districts, in regards to both transportation connection with the other urban area in inner city and the

transportation accessibility within the planned area. The improvement of accessibility has decisive influences on the fulfillment of the target of economic revitalization, by providing better connection to the other areas of the city that support the economic development of the planned area.

The improvement of transportation also has influences on the fulfillment of the target of social revitalization and the target of cultural revitalization, because the better accessibility makes the areas better area for living, working and better for cultural activities.

### **INSTRUMENT 3: OPEN SPACE & GREEN SPACE PLANNING**

Urban planning shall utilize the instrument of open space/green space planning to increase the amounts and improve the quality of open space and green space, as well as to improve their distribution in relation to the other urban functions. The improvement of open space and green space has decisive influences on the fulfillment of the target of environment revitalization, by adding new greenery and open space system and improve the quality of them.

The improvement of open space and green space also has its influences on the fulfillment of the target of social revitalization and cultural revitalization, because the improvement of open space and green space make the areas better for living, working and better for cultural activities.

### **INSTRUMENT 4: URBAN CONSERVATION PLANNING & MONUMENT PROTECTION**

Urban planning shall utilize the instrument of urban conservation planning to protect the heritage and urban identities in Historic Inner City Industrial Districts, as well as making use of these heritages and urban identities to serve to revitalization. Urban conservation has decisive influences on the fulfillment of the target of cultural revitalization, because the conserved heritage and urban identities to be conserved are the witness of the city's history and conservation of them ensures the continuation of the history and tradition.

Urban conservation also has influences on the fulfillment of the target of social revitalization, because the conserved heritages and urban identities make the areas characteristic and attractive places in the city for the people to live and work.

## CHAPTER 3: CASE STUDY

### 3.1 URBAN PLANNING IN REDISTRUBUTION OF INDUSTRIAL SPACE IN EUROPEAN CITIES

Being a turning point of human society's history, the industrial revolution started in the United Kingdom from 18<sup>th</sup> century and subsequently spread out to continental Europe, North America to the rest of the world. In this sense, Europe was the first region in the world to be strongly influenced by the industrialization in almost every aspect. Being the major driving power for the dramatic development of the city in this period<sup>116</sup>, industrialization left its strong mark in many European cities. Many cities came into being or entered upsurge period of development due to their advantage for development of industry. For example the German city Leverkusen and Bayern is closely related to chemistry industry, while Berlin is closely related to the power industry and its advantage as regional railway logistic center. In the meanwhile, many European cities grew up due to their advantages of harbors and docks that provided strong support to the manufacturing industry, such as London, Amsterdam, Oslo, Hamburg and Duisburg. The other important phenomenon that emerged in this period was the formation of "industrial region", which contains a number of urbanized areas or cities that are closely connected to together for collaboration of manufacture. Famous examples are the Ruhr Region in Germany and Lille Area in France.

The structural changes of economy in European cities gained ground in post-war time from 1950s, and reached its peak in 1960s and 1970s. Most European cities were faced with serious situation that manufacturing industry lost their dominant position in the economic structure, which led to the lack of development vitality especially for those European cities that had taken the development of manufacturing industry as the major contributor for economic growth. Meanwhile, many industrial spaces in inner city started to decay due to bankrupts and abandonment, while the new industrial enterprises prefer location in periphery or the location in other cities in the region or even location in the developing countries. In such situation, the redistribution of industrial space in these cities urban spatial structure was called for, which is also important component of the spatial structural transformation in this period.

Efforts to redistribution the industrial space were made both on the level of "BRING OUT" and "FILL IN". Today when most of these European cities had completed or partially completed their structural transformation, the effects of these efforts can be seen and the evaluation of them can already give valuable experiences and lessons to be learned from.

The efforts on the level of "BRING OUT" were made through the many comprehensive planning schemes for these cities, with consideration on the redistribution of industrial spaces in different areas of the city. This often contains the adjustment of land use including restriction of industrial land use in the inner city, planning of industrial districts in periphery of the city (often in coordination with the development of periphery residential areas such as new towns), improvement of accessibility by planning of transportation system as well as planning of open spaces and green spaces to service these areas as well as the neighboring residential area. Today, the effects of "BRING OUT" efforts can already be discerned from the current urban spatial structures compared to the former ones, which is demonstrated by the dramatic sink of proportion of land use for manufacturing industry, conversion of former industrial land use in inner city to other function as well as emergence and

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<sup>116</sup> See 2.1.1.2

development of concentrated industrial districts in outer periphery (regional) area of city in connection to regional transportation system. These characteristics are all seen in the cities that are to be discussed in following study: London, cities in Ruhr Region, Hamburg and Vienna.

In the other hand, the effort on "FILL IN" in European cities became naturally important component and great chance of "City Centre Redevelopment". The early urban planning of redevelopment of Britain cities centers such as that of Birmingham, Liverpool and Leicester in 1950~1970s involved some contents of industrial blocks and "housing mixed with industries"<sup>117</sup> because of the relative high proportion of industrial function in city centre due to industrial backgrounds of these cities. However, these early attempts were sometimes accused for their ignorance of old urban structure and heritages. The planned scopes of these projects are traditional city center, which cannot be described as typical Historic Inner City Industrial Districts.

One of the first widely recognized attempts of urban planning to revitalize Historic Inner City Industrial District was the redevelopment of London Docklands, which started in late 1970s. The development led first by LDSP by integrative planning and later by LDDC by totally different strategies with free-market-oriented development that lasted 20 years made its fame about traffic system development, water-front area redevelopment, conservation of historical industrial buildings and reshaping of urban images. In spite of the many criticism on the loss of balance in urban functions, gentrification as well as the overshadowed role of urban planning in decision-making of the development, the London Docklands had been developed within a period of 30 years from a huge decaying industrial dock area into another focused area of city's development, a second downtown, one of the world's biggest agglomeration points of office clusters as well as a famous target point for tourist. The revitalization progress is currently still on-going, with the retreat of LDDC, strategies is being modified, the future of Docklands remains uncertain.

Germany, another heavily industrialized country in Europe, had undergone similar, most likely even more severe loss caused by industrial structural change. The major industrial regions began to lose advantages from beginning of 1960s with great amounts of industrial lands were released. Ruhr Region is among the areas in the world that seriously suffered from such tendency. The region with its 17 cities and about 4.5 million inhabitants was one of the areas in Germany with densest population. From 1960s on with its basic industrial categories, steel, coals and chemistry gradually lost importance in world market, the region experienced great structural change, which turned about 50,000 ha industrial lands in to brownfields. The provincial government began to promote the structure transformation in terms of ecology, economy, social and spatial aspects from 1960s on. The key concept of strategy making is to treat the region more and more as one integral unity, rather than as independent cities. One important step was the ten-year-plan IBA Emscherpark, which aims at improving ecology quality, establishing new urban landscape and modern location for working, living and conservation of cultural and historical heritages in the Emscher Area. Currently, the 17 cities of Ruhr Region had form a cooperation of network, in which they worked together on a regional master plan, which was distributed in administration.

Many European industrial cities grew from harbors area with the city center having very close relation both in geographical location and urban functions and activities.

<sup>117</sup> J. Holliday, <City centre redevelopment: A study of British city centre planning and case studies of five English city Centers>, 1973, Knight, London, p.2

This connection lost through the structural reformation of city and also with the harbors moving out. Most inner city harbor areas with its massive adjacent transportation, logistics, industries and storage areas turned into brown fields. This is a special kind of Historic Inner City Industrial District, Except for the case of London Docklands and Duisburg Inner Harbors, we also analyze the case of Hamburg Harbors, mainly focused in the North Elbe Shoreline Area and HafenCity, which are close to the inner city and are currently playing an important role in the spatial development of the city of Hamburg.

Lastly, the case of Vienna and its redevelopment plan for the area of Erdberger Mais will be analyzed. Although Vienna could not be described as industrial city, the industrialization process did left in the city strong mark as well as many distinguished industrial heritages, especially in the area of Edberger Mais. The area of Erdberger Mais, given the central location and the big amount of free lands left partially from the industrial land use, is of great strategic significance of Vienna's inner city spatial development. Besides, there are many important industrial heritages in this area, which had extinguished value and had for long time acted as the district's urban landmarks. The revitalization of these industrial buildings were treated as "Impulse Projects" and "first step" that can provide attractive urban centers for the surroundings and promote the development of the whole area is one of the main strategies of the planning.

### 3.1.1 CASE 1: LONDON & LONDON DOCKLANDS

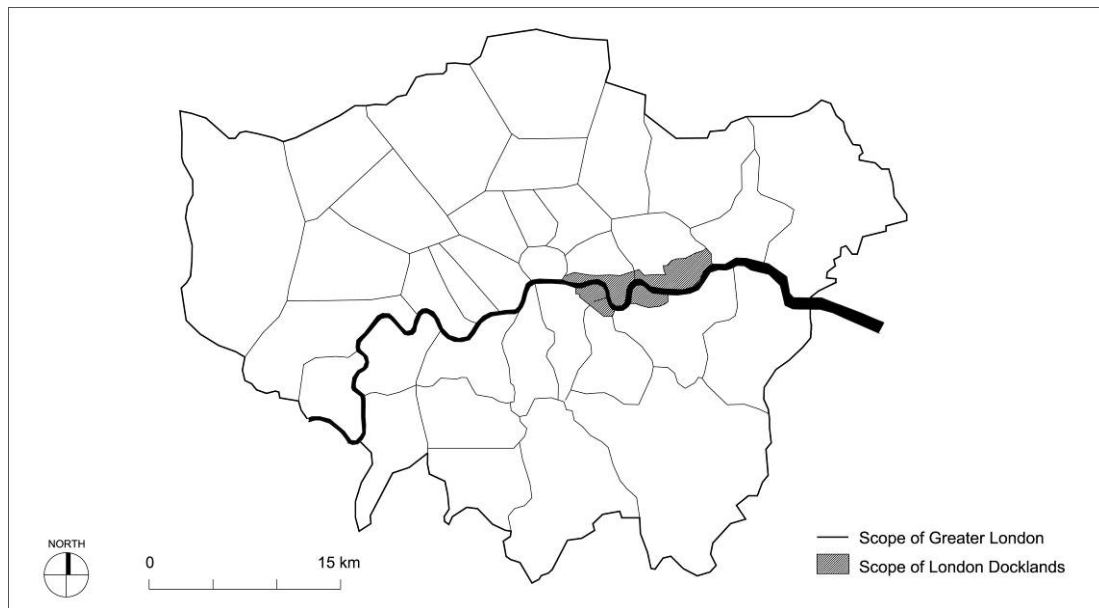


Figure 29: Scope London (Great London) and London Docklands, drawn by the author

#### 3.1.1.1 PLANNING BACKGROUND

London is the capital city of the United Kingdom of Great Britain and Northern Ireland. It is UK's largest and most populous metropolitan area, and the largest urban zone in of European Union by most measures. Greater London covers an area of 1,579 square kilometers, an area which had a population of 7.1 million in 2001 and a population density of 4,542 people per square kilometer. In a larger area, referred to as the London Metropolitan Region or the London Metropolitan Agglomeration, covers an area of 8,382 square kilometers with a population of 12,653,500 and a population density of 1,510 people per square kilometer.<sup>118</sup> According Eurostat<sup>119</sup>, London is the most populous city and metropolitan area of the European Union and the second most populous in Europe. Today, London is the leading global city, being one of the world's largest financial centers, and has the largest city GDP in Europe<sup>120</sup>. Its influence in politics, finance, education, entertainment, media, fashion, arts and culture in general contributes to its global position. London is also a city with rich cultural heritages, which contains four World Heritage Sites<sup>121</sup>.

As one of the earliest city to give place for industrialization, industry had been playing an important role in the development of the city. The industrialization in

<sup>118</sup> <Metropolis: World Association of Major Metropolises>, 027 London (United Kingdom), 2006, <http://www.metropolis.org/>

<sup>119</sup> Eurostat is a Directorate-General of the European Commission located in Luxembourg. Its main responsibilities are to provide the European Union with statistical information at European level and to promote the harmonization of statistical methods across the member states of the European Union, candidate countries and EFTA countries. Refer to Wikipedia: <http://en.wikipedia.org/wiki/Eurostat>

<sup>120</sup> Oxford Economic Forecasting, <London's Place in the UK's Economy>, the city of London, retrieved 11.3.2008

<sup>121</sup> The four World Heritage Sites are Tower of London, the historic settlement of Greenwich, the Royal Botanic Gardens (Kew) and the site comprising the Palace of Westminster, Westminster Abbey and St. Margaret's Church. Collected from <List of World Heritage Sites: United Kingdom of Great Britain and Northern Ireland>, UNESCO, <http://www.unesco.org/en/statesparties/gb>, retrieved 26.11.2008

London started the industrialization since 18th century, and since then London was developed into one of the big manufacturing centers in England, thank to a good geographical location, existence vast domestic market and the existence of ports (started from beginning of 19th century). In major industries included shipbuilding, textile, sugar, machinery, chemical, food, brewery and daily commodity production. In 1970s, when London reached its peak as an industrial city, close to one in four workers in London were employed in manufacturing. Industry, one seventh of UK's manufacturing production was located in London, and manufactured products comprised London's main source of export earnings. Since then, manufacturing output and employment have fallen greatly, as industry has contracted and decentralized. Today manufacturing employs just 240,000 people in London, 5½% of its total employment, compared to around 1 million in 1971.<sup>122</sup> Decentralization had significant impact on the industrial districts of London, the majority of which was situated in relation to the docks in the west part of the city.

This research takes the case of London Dockland as example for the research on the role of urban planning in "FILL IN" effort. London Docklands lie in the east and southeast of the city center of London, being a corridor-shaped area that starts from the Tower Bridge in west and city districts and Beton in the east, on both sides of the Thames River. London Docklands were formerly part of the Port of London, which was at once the largest and most successful in the world, with a history of over 200 years. Starting from the West India Docks in 1802 and later the East India Docks, Millwall Dock, Surrey Docks and the Royal Docks, the London Docks had been an agglomerating area for huge amounts of lands for warehousing, logistics and related trades. In 1964, there had been 63 millions tons of cargo transportation in London Dock (500 ships weekly) which was about 1/5 of the total cargo of England. Over time, manufacturing industry also moved into the London Docklands, including large coal and gas plants and storage, flour mills and many other businesses.

Due to a number of complex technological (mainly the so-called containerization movement<sup>123</sup>), infrastructure and management problems, the ports of London started to moved more and more outer side to lower reaches of Thames River in the post war period. The result was that those docks near the inner city began to dramatically decline. Between 1960 and 1980, all of London's docks were closed and enormous derelict lands (most of them are previous industrial lands) in East London were left. Between 1961 and 1971, almost 83,000 jobs were lost in the five boroughs in the Docklands Area (Greenwich, Lewisham, Newham, Tower Hamlets and Southwark). A large percentage of these jobs were from large transnational corporations. The decline was heightened by government policies which favored the growth of industry outside London. High unemployment was accompanied by population decline. Whilst inner London lost 10% of its population between 1961 and 1971, the figures for Tower Hamlets and Southwark were 18% and 16% respectively.<sup>124</sup> Between 1971 and 1981, a further fall of 20% in population occurred in Docklands.<sup>125</sup> The

<sup>122</sup> Oxford Economic Forecasting, <London's Place in the UK's Economy>, the city of London, retrieved 11.3.2008, p.9

<sup>123</sup> Between 1960s and 1970s, the shipping industry adopted the newly invented container system of cargo transportation. London's docks were unable to accommodate the much larger vessels needed by containerization and the shipping industry moved to deep-sea port such as Tilbury and Felixstowe. Refer to Wikipedia: [http://en.wikipedia.org/wiki/London\\_Docklands](http://en.wikipedia.org/wiki/London_Docklands)

<sup>124</sup> Oc T. and Tisdell S (1991) The London Docklands Development Corporation (LDDC) 1981~1991: A perspective on the management of urban regeneration, in The Town Planning Review 1991, Liverpool University Press, p.311

<sup>125</sup> Oc T. and Tisdell S (1991) The London Docklands Development Corporation (LDDC) 1981~1991: A perspective on the management of urban regeneration, in The Town Planning Review 1991, Liverpool University Press, p.312

unemployment rate in 1981 in London Docklands was 17.8%, while near 60% lands were derelict, vacant or under-used.<sup>126</sup> Severe economic, social and urban problems, derived from the decay of industrial function, pushed the revitalization of Docklands to the foreground.



Figure 30: View to the Millwall Dock, Millwall Dock was among the latest docks to be closed in beginning of 1980s. Many of the other docks had been closed in 1960s and 1970s (East India Dock in 1967, London Dock in 1968, St Katherine's Dock in 1969, Surrey Dock in 1970, West India Dock in 1980).  
From Docklands: Past and Present, <http://www.bardaglea.org.uk/bridges/docklands>

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<sup>126</sup> For example, the planning scope of London Docklands by LDDC (1980) was 20.2 square kilometer, in which 8.8 was derelict, vacant or under-used.

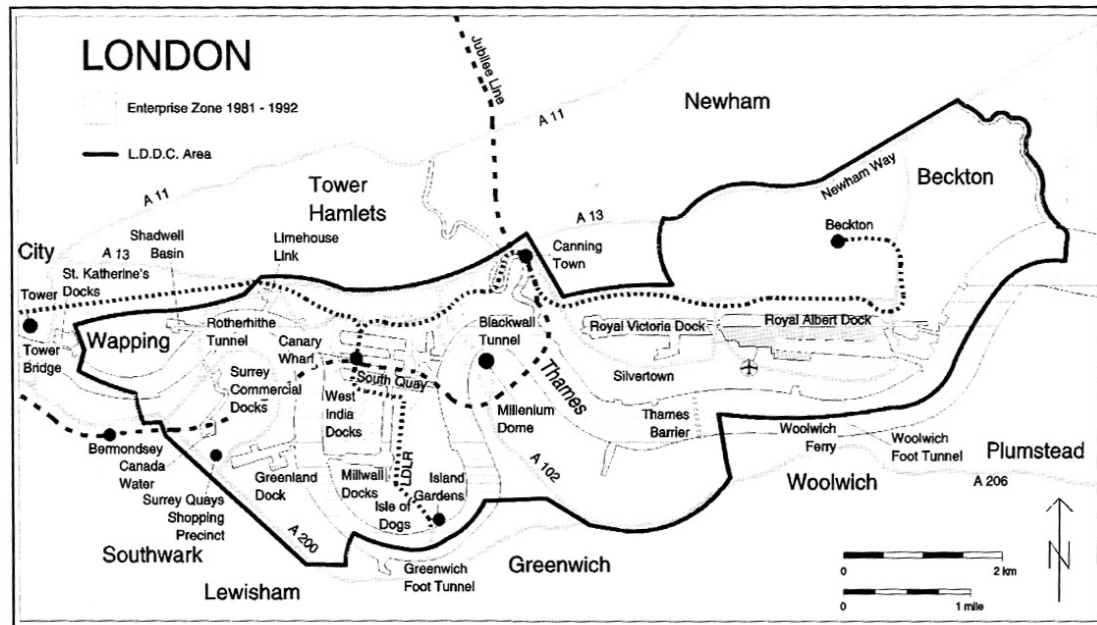


Figure 31: Scope of London Docklands, from Dirk Schubert: <Hafen- und Uferzonen in Wandel>, Berlin, 2001, p.200

### 3.1.1.2 PLANNING PROCESS

The efforts of “**BRING OUT**” were made by the <The London Plan: Spatial Development Strategy for Greater London (consolidated with Alternatives since 2004)> (thereafter referred to as <The London Plan>, in which the planning of industrial land and the strategy for the surplus industrial land were both given enough attention to. This is a reaction from the side of urban planning to the changing situation of the industrial lands in city's urban spatial structure. “The nature of London's economy has radically changed over recent decades and the continued shift of employment away from industry and manufacturing into the service sector has significant implications for land use planning.”<sup>127</sup> London has on average lost approximately 24,000 manufacturing jobs per year over the last 30 years<sup>128</sup> and large amounts of industrial land have become available for alternative uses. These trends are expected to continue, albeit at a reduced absolute rates.<sup>129</sup>

On the one hand, it was addressed in the <The London Plan> that “industrial land in London accommodates not only manufacturing, where employment is projected to decline, but a range of other activities essential to London's wider successes.”<sup>130</sup> There is an increasing on demands on other industrial types like logistic, waste management, recycling, transport functions, utilities, wholesale markets and some creative industries. The urban planning shall “ensure an adequate stock of industrial capacity to meet the future needs and functional requirements of different types of industrial and related uses in different parts of London, including that for good quality

<sup>127</sup> <London industrial land: Release Benchmarks>, Prepared by URS Corporation Limited for the Greater London Authority, Mayor of London, 2007, p. 8

<sup>128</sup> GLA Economics. Working Paper 11: Working London. 2004

<sup>129</sup> This position was agreed by the panel of inspectors at the Examination in Public 10 the draft Early Alterations to the London Plan in June 2006 which are now adopted

<sup>130</sup> <The London Plan: Spatial Development Strategy for Greater London> (consolidated with Alternatives since 2004), Mayor of London, 2008, p.112

and affordable space”.<sup>131</sup>

On the other hand, with the declination of manufacturing industry (traditional industry), a total amounts of 814 hectares industrial land is projected to be released between 2006 and 2026. This presents an average release of 41 hectares per annum.<sup>132</sup> It was recognized that: “the strategic land use planning needs to encourage an efficient and appropriate redistribution of land from industry to new growth sectors.”<sup>133</sup> Urban planning shall “plan, monitor and manage the release of surplus industrial land so that it can better contribute to strategic and local planning objectives, especially those to provide more housing (including affordable housing) and, in appropriate locations, to provide social infrastructure and to contribute to town centre renewal.”<sup>134</sup>

With regards to the **“FILL IN” strategy**, taking the London Docklands as example, the effort to redevelop the docks began almost as soon as they were closed. 1974 the Dockland Joint Committee (DJC) was grounded, which constituted the “London Docklands Strategic Plan” (LDSP) in 1976. The object of LDSP was “to use the opportunity provided by large areas of London’s Docklands becoming available for develop meet to redress the housing, social, environmental, employment and communication deficiency of the Docklands area and the parent boroughs and thereby to provide the freedom for similar improvement throughout East and Inner London.”<sup>135</sup> The plan gave great importance to infrastructure, social housing and commercials. However, LDSP stayed as a vision and gave only limited influence because of the complexities of the situation, mainly for the deficiency in finance support, failure in land marketing (the lands are only sold for highest bid, for which social housing is hard to be realized), complexity of ownership involved and the DJC’s lack of political power.

Substantial steps in revitalization of Docklands were carried out after the triumph of conservative party in election. The conservative party promote in the urban planning also the idea of de-regulation, liberal and privatizing politics. For example, the Great London Council (GLC) is disbanded for its function for planning and administration of the city development, the system of integral Planning of London is also totally disbanded, which was replaced by single urban planning initiated by different municipal districts.<sup>136</sup> The interest of the investors, developers and markets became dominant power to drive the development of city, rather than traditional top-down urban planning.

In the case of redevelopment of London Docklands, the conservative party treated Docklands as a crucial experiment of free market economy. The situation was that, the development of London in 1980s fell into crisis, demonstrated by the depressed economy and high unemployment. The structural transformation of the city was in demand. To develop London into a world-class international metropolitan city and

<sup>131</sup> <Industrial Capacity: London Plan (Consolidated with Alterations since 2004) Supplyary Planning Guidance>, Mayor of London, 2008, p.11

<sup>132</sup> <Landon industrial land: Release Benchmarks>, Prepared by URS Corporation Limited for the Greater London Authority, Mayor of London, 2007, p. 6

<sup>133</sup> <Landon industrial land: Release Benchmarks>, Prepared by URS Corporation Limited for the Greater London Authority, Mayor of London, 2007, p. 1

<sup>134</sup> <Industrial Capacity: London Plan (Consolidated with Alterations since 2004) Supplyary Planning Guidance>, Mayor of London, 2008, p. 6

<sup>135</sup> A. Coupland, <Docklands: Dreams or Disaster>, in A. Thornley (des.), <The crisis of London>, Routledge, 1992, p. 149

<sup>136</sup> Dirk Schubert: <Hafen- und Uferzonen in Wandel, Berlin, 2001>, p.200

finance center generated increasing demand for lands for a world-class business district, which the traditional city center can hardly provide. Given the massive amount of free lands that London Docklands released, its distance to the city center, also as a necessary effort to stop the decay of this area, the redevelopment of London Docklands came to foreground with big expectation from the government and the publics. "London mittels Docklands-Projekts mit einem Schlag ins 21. Jahrhundert zu versetzen und die Docklands wurden zum Laboratorium deregulierter Stadtentwicklungspolitik."<sup>137</sup>

Directly oriented towards the interest of investors, the redevelopment of London Docklands was commissioned to the LDDC (London Docklands Development Corporation) that was grounded in 1980. This organization was given almost infinitive power in all aspects, it owns lands itself (240 ha in 1986 after the dismiss of GLC, and then increased to 900 ha, which is one fifth of the total planning area of Docklands), it dealt with land trading, land marketing, strategic planning, physical planning, infrastructure planning and implementation, on behalf of government and attained sufficient political and financial power from the government.

After near 30 years of development, the restructuring had turned Docklands into one of world's biggest booming areas especially in the area of Canary Wharf or Dog Isle, which was developed into a highly dense business districts (CBD of London) where many world's top global companies had their headquarters. The success of London Docklands also initiated the strategic shift of the focused development area from the historic city center eastwards.



Figure 32: Canary Wharf in construction (2002), the redevelopment of Canary Wharf is one of the biggest redevelopment projects initiated and managed by LDDC. Photograph from internet: <http://www.skyscrapercity.com/>

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<sup>137</sup> Dirk Schubert: *Hafen- und Uferzonen in Wandel*, Berlin, 2001, p.200



Figure 33: Isle of Dog and Canary Wharf, Photograph from TelegraphPics: "Britain from Above", <http://i.telegraph.co.uk>

#### 3.1.1.3 PLANNING EVALUATION

Regarding effort of "**BRING OUT**", a comprehensive set of planning instruments was developed for the redistribution of industrial lands in London, which provide directive but highly flexible guidance for the redistribution. This includes primarily a working framework based on active "Planning-Monitoring-Managing" process. Based on the evaluation of the current amount, distribution and quality of industrial land as well a comprehensive projection of the demand/release of industrial land, <The London Plan> (2004) and <Industrial Capacity: London Plan (Consolidated with Alterations since 2004) Supplyary Planning Guidance> (2008) designed three categories of industrial land and the correspondent: 1) Strategic Industrial Locations, a resource which must be sustained as London's main reservoir of industrial capacity but nevertheless must itself be subject to periodic review and consolidation where appropriate, to reconcile demand and supply; 2) Locally Significant Industrial Sites, the protection of which needs to be justified in assessments of supply and demand for industrial land reviews and identified in Development Plan Documents (DPDs); and 3) other smaller sites that historically have been particularly susceptible to change, which in some circumstances can better meet the London Plan's objectives in new uses but in others will have a continuing local and strategic role for sustainable industrial uses. This sub-category will continue to be that most susceptible to change.<sup>138</sup> Based on such differentiation as well their location, and also combined with the in-time monitor and management, the demand and supply of industrial lands (with special focus on the rising demand of logistics, ware housing, waste management, recycling, transport, utilities, wholesale markets and creative industries) will be brought into closer harmony. Beside the strategy to ensure the industrial capacity, urban planning also configures the strategy to improve the quality of industrial lands, including mitigating and adapting to climate change, improving quality in industrial locations, Innovative approaches to intensification and promoting

<sup>138</sup> <Industrial Capacity: London Plan (Consolidated with Alterations since 2004) Supplyary Planning Guidance>, Mayor of London, 2008, p.19~30

social inclusion, access to employment and regeneration.<sup>139</sup>

One important working area of urban planning is on the land use change of the released industrial lands due to the declination of manufacturing industry and the change of location, namely on what and how to “FILL IN”. Between 2006 and 2026, it is projected that there will be an average amount of 41 hectare industrial land released per annum. Besides, the vacant rate of the industrial land is 12.7% (706 hectares) in 2006. All these imply that the planning, monitoring and management of the surplus industrial land must be given more and more attention. In the <Industrial Capacity: London Plan (Consolidated with Alterations since 2004) Supplyary Planning Guidance>, three categories regarding supply and demand of released industrial land in developing site specific allocations, policies and criteria for the retention and release of industrial sites were made: 1) Managed Transfer: Boroughs in this category generally have a greater supply of vacant industrial sites relative to demand and should generally adopt a rigorous but sensitively managed approach to transfer. 2) Boroughs in this category typically have low levels of industrial land relative to demand (particularly for waste management or land for logistics) and/or low proportions of industrial land within the SIL framework. Boroughs in this category are encouraged to adopt a more restrictive approach to the transfer of industrial sites to other uses. 3) Limited Transfer: This category is intermediate between the managed and restricted categories above<sup>140</sup>. It is required that the land use change planning of the released industrial land shall “help meet strategic and local requirements for a mix of other uses such as housing and social infrastructure and where appropriate”.<sup>141</sup>

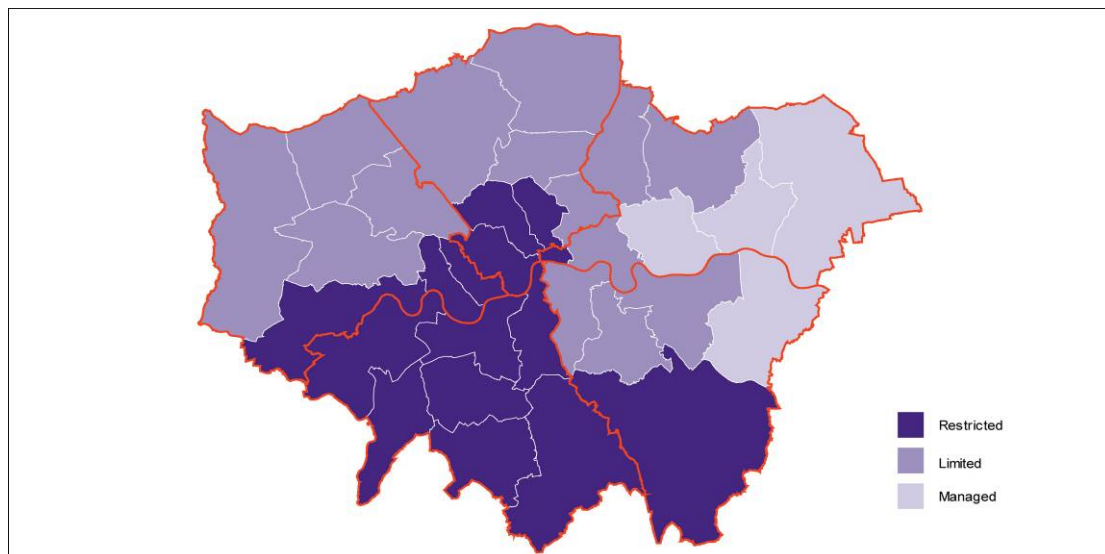


Figure 34: Borough level groupings for transfer of industrial land to other uses, Resource: <Industrial Capacity: London Plan (Consolidated with Alterations since 2004) Supplyary Planning Guidance>, Mayor of London, 2008, p.51

<sup>139</sup> <Industrial Capacity: London Plan (Consolidated with Alterations since 2004) Supplyary Planning Guidance>, Mayor of London, 2008, p.54~61

<sup>140</sup> <Industrial Capacity: London Plan (Consolidated with Alterations since 2004) Supplyary Planning Guidance>, Mayor of London, 2008, p.23~25

<sup>141</sup> <The London Plan: Spatial Development Strategy for Greater London> (consolidated with Alternatives sin2004), Mayor of London, 2008, p.112

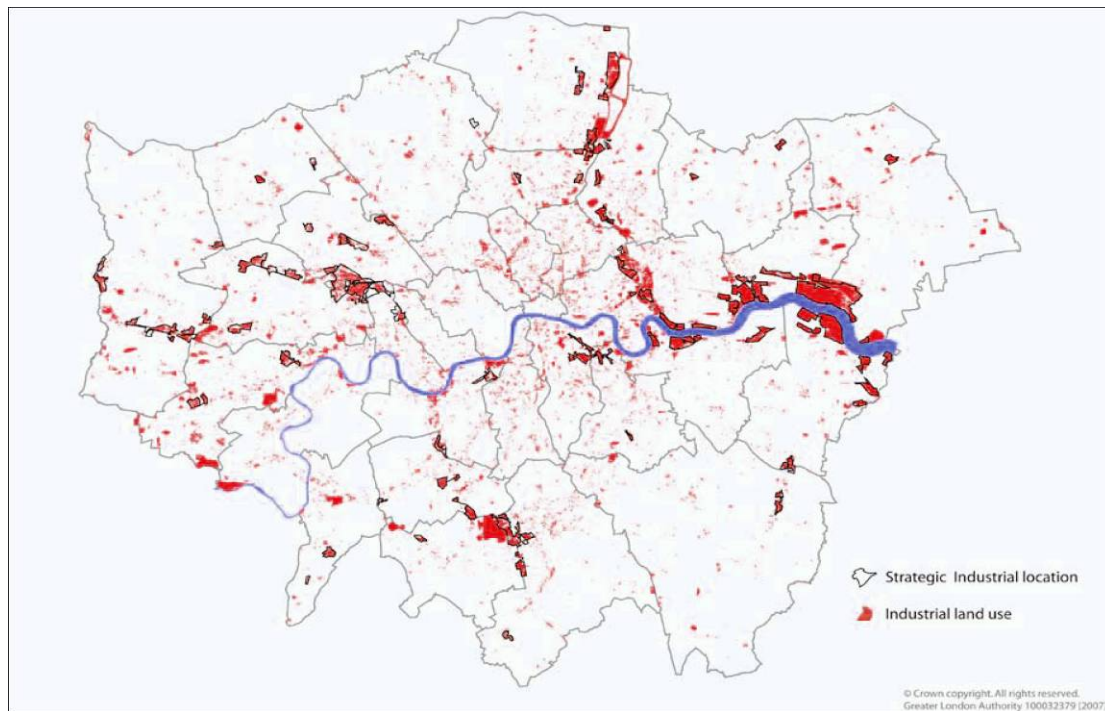


Figure 35: Distribution of industrial land in London, 2007, both from <Industrial Capacity: London Plan (Consolidated with Alterations since 2004) Supplyary Planning Guidance>, Mayor of London, 2008, p.68 & 24

Being the biggest urban regeneration project in West Europe since 1980s, the redevelopment of London Docklands is a good example of “**FILL IN**”. In 30 years, the London Docklands had been developed from decaying port and manufacturing land to highly dense and flourishing urban area under the initiation and management of LDDC and the efforts by private developers. The original target to develop London Docklands into a second urban center/CBD in east of London’s downtown was partially fulfilled, especially the development of the Isle of Dogs/Canary Wharf was realized. The booming of the development of shall thank mainly to the incentive policy. For example, about 194 ha land in the Isle of Dogs, which is located in the very center of the Docklands, was developed to an “Enterprise Zone” (EZ). Together with the construction, there were also economy policies that exempt the area from ten years’ local tax and construction tax.

However, the analysis on the development process of London Docklands will also show that the weak role that urban planning plays could cause unexpected and sometimes irreversible losses to the development. In a certain sense, the development of London Docklands was more market-oriented than planning-oriented. There was no integral master plan on the level of whole scope of London Docklands. The government was in charge of only infrastructure and transportation construction and the right of urban planning was given to the private developers. It was also for such reason, that the redevelopment of London Docklands was widely criticized as short-sighted and actually caused many problems in urban structure, images and social segregation/polarization. The explanation by the LDDC was: “It depends on how you see planning. Conventional planning approaches which aim to control the market place tends to become negative and inhabit various form of development. We will be opportunity-led so that the market place has the opportunity of influencing

how and where a development takes place and what form it takes.”<sup>142</sup> The controversial point of view also leads to controversial result in the development, which is showed below.

Concerning the urban land use change planning, a new function system composed of modern offices, commercials and housings was established to replace the former function system based on logistics, shipbuilding industries, and lower-standard worker's housing. However, the mix-development with a healthy composition of urban function was not formed due to the absence of planning, monitoring and management of urban land use change on a level of the whole scope of London Docklands.

The major criticism against the function composition is on the excessively high proportion of office. To attract private investments and tertiary industries being the foremost task for LDDC, the majority of function, which was also amongst the first to be promoted and realized, was focused on the office and enterprises function. In the middle of 80s with the finance-politics “Big Bang”, London aimed to become one of world's most important global cities besides New York and Tokyo. With the “Big Bang”, the demand for the office area was over heated, while the price of office sprang high.<sup>143</sup> Led by interests of market, the urban planning by LDDC planned a high amount of office buildings during this period. For example, in the total about 14 millions square meters office area in London, Docklands covers 2 millions in beginning of 90s,<sup>144</sup> more than half of which is in the Canary Wharf. The excessive focus on the office, especially when the support from the infrastructure was not in position, led to the result that only 60% of the office was rent in 1992.

Other important object of LDDC is to encourage housing development in Docklands. The housings were developed in the released industrial lands, or reconstructed from the usable old buildings. The result is that more than 21,600 homes have been built over the last 16 years when the inhabitants in Docklands increased from 40,000 in 1981 to 77,000 in 1996. However, the problem lies in that the privatizing policy caused the dramatic decreasing of the proportion of social housing. In 1981, there were less than 10% of private housing and more than 80% of social housing. In 1992, private housing covers more than 85% in London Docklands. The price for private housing climbed 200% up between 1984~1988. With such high price of housing surface, a social gentrification was seen.

To improve the urban traffic planning is amongst the most important tasks that were carried out first by LDDC. From the budget 1981~1991, the cost for the transportation system covered 37.5% (including 25.7% in street building and 11.8% in the Docklands Light Railway). The railway lines which connect Docklands with the London inner city includes now the Docklands Light Railway (DLR) and Jubilee Line (Metro), which had the capacity of 35,000 passenger pro hours by 2001. The other important improvement in transport infrastructure was the Limehouse Link tunnel, linking the Isle of Dogs to the highway A13 as well as the construction of London City Airport. The improved accessibility indeed became a primary condition for the redevelopment of London Docklands. A negative example for this is the crisis of the redevelopment in beginning of 1990s (high vacant rate of office surface and the bankruptcy of developer) which was caused mainly by the slow speed of the

<sup>142</sup> Klaus Zechner, < “Enterprise Zones” in Grossbritannien. Eine geographische Untersuchung zu Raumstruktur und Raumwirksamkeit eines innovativen Instruments der Wirtschaftsfoerderungs- und Stadtentwicklung spolitik in der Thatcher-Aera>, 1999, Stuttgart, p.196

<sup>143</sup> Ulrich Pfeffer, Big bang in den Londoner Docklands? In: Bauwelt 78, nr.24, 1987, P.903~906

<sup>144</sup> Dirk Schubert: <Hafen- und Uferzonen in Wandel, Berlin, 2001>, p.206

construction of transportation system behind the schedule. This is also a good example for the problem caused by absence of urban planning on the macro-structural level and its implementation schedule.

Concerning public space and landscapes, the waterfront areas were available for redevelopment. Today, about 12% of the developed part of the UDA (London Docklands Urban Development Area) is public open space including a comprehensive network of walkways providing more than 24kilometer (15 miles) of waterside access. In addition the retained docks and canals make up a further 13% of the UDA. Water sports and recreation centers, health center, “urban farms” and parks were built by LDDC to improve the environmental quality as well as to provide the site new image. The waterfront area is currently also supported by commercial, public and cultural facilities

The redevelopment of Docklands also shows that urban conservation could be very important element for revitalization. One of the first actions of the LDDC was to reappraise the historic buildings and sites of Docklands, in which 116 buildings were added to the statutory list of Buildings of Architectural and Historic Interest, 8 new conservation areas were designated, in addition to 5 previously existing conservation areas. Under these comprehensive conservation strategies and laws, the historic and culture value of the architecture and sites were conserved, as well as given with proper functions. In the booming Canary Wharf, many old industries buildings (mainly warehouses) were conversed into shopping malls, housings and public facilities, which mixes with the highly dense skyscrapers and give a very charming diversity of urban images.



Figure 36: Museum of London Docklands, renovated from a former sugar warehouse, Photograph by Joly Gordon

### 3.1.2 CASE 2: HAMBURG & HARBOR AREA (HAFENCITY AND NORTH ELBE SHORELINE AREA)

#### 3.1.2.1 PLANNING BACKGROUND

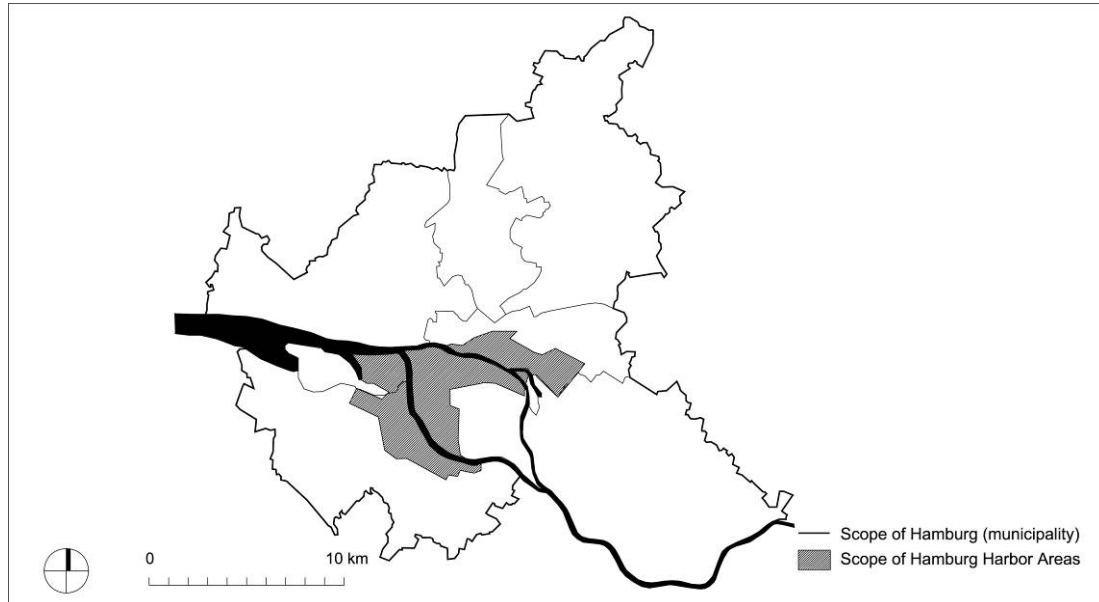


Figure 37: Scope London (Great London) and London Docklands, drawn by the author

The Free and Hanseatic City of Hamburg is Germany's second-largest city. It is situated on the North German Plain, at the head of the Elbe estuary, around 100 km from the river's North Sea mouth. The city covers an area of 755 km<sup>2</sup> and stretches, at its greatest extent, about 40 km both from north to south and from east to west. To the north of the Elbe, Hamburg borders on the Land of Schleswig-Holstein, to the south on the Land of Niedersachsen. Hamburg has one of the largest seaports in Europe, handling 107 million tons of goods and 11 500 sailings in 2003. In addition, 9 million tones of inland-waterway freight are transshipped each year.<sup>145</sup> The population is 1.77 million in 2008.<sup>146</sup> Growing from its base as port city and industrial city from the middle ages, Hamburg had grown into a centre for services and industry, and an attractive residential location today. In these early years of the 21st century, Hamburg has been afflicted like the rest of Germany by sluggish economic growth. During the preceding decade, the city had powered ahead and developed into a high-performance services centre of international standing. Trading and transport services have a long tradition in Hamburg, reflecting the more than 800-year history as a port, and these have been complemented in more recent times by the growth of business services. Industrial activities have been refocused towards future-oriented high-technology products. In addition to the fresh impetus deriving from German unification, which extended Hamburg's function as a regional capital, increasing globalization has given a further boost to the city's development. So much so that Hamburg has now become known as a gateway to China. The European Union's enlargement into Central and Eastern Europe will provide further stimulus to the Hamburg economy, partially because of the city's function as a lynchpin between the North Sea and the Baltic.

<sup>145</sup> Refer to Eurostat, <Portrait of Regions- Deutschland-Hamburg-Economy>

<sup>146</sup> Resource: Statistisches Bundesamt Deutschland: Gemeindeverzeichnis (web)

Being born as a major port city, Hamburg's industrial and maritime sectors have been closely interwoven. Raw materials import and processing for domestic sale or export spawned the first manufacturing enterprises. The processing of such materials as natural rubber, copper ore, petroleum, cocoa, coffee, oilseeds, tobacco and tea became one of three pillars of the regional economy. The maritime industries constituted the second pillar and included shipbuilding, engine construction, mechanical and electrical engineering, as well as the building sector. The third pillar comprised the industries that were not seaport-dependent. Rapid population growth in the Hamburg metropolitan region, along with increasing domestic demand, provided a solid basis for the emergence of a strong consumer goods industry. The importance of the industrial sector is often under-appreciated in current public perception. The prevalent image, in which industry is superseded by the service economy, is incorrect. After successfully transformed of the economic structure, Industry remains the foundation for the expansion of the services sector. Despite the fact that only one out of six employees in Hamburg works for an industrial firm, Hamburg, along with Berlin and Munich, is one of the leading industry centers in Germany.<sup>147</sup>

The Hamburg harbor was as old as the Hamburg city itself, which was founded in 1189 and developed into Europe's main port, largest German sea port and the "gate to the World". The development of Hamburg harbor also gave birth to the City of Hamburg to be leading trading city with a rich and proud bourgeoisie.<sup>148</sup> The heavy development of port as well as the railways that were planned to support the ports also gave birth to the development of manufacturing industries in these areas. In beginning of 20<sup>th</sup> century, the Hamburg Harbors reached its peak time, when the area was developed not only as pure ports area, but an area with many related harbor industries (shipbuilding, rubber, metal processing, chemistry for example and a considerably big amount of warehousing), wholesale markets, mixed with low-cost housing areas and other facilities. With the world-wide restructuring of industrial structure and revolution of cargo transportation method (containerization) movement in second half of 20<sup>th</sup> century, the Hamburg harbors especially those near the inner city began to decay from 1960s. The decay of harbors leads not only to the lack of development vitality of urban development in these areas, but more important generally to the decrease of city's economy output value and employment because many of the industries and employment of Hamburg are related to the harbor.<sup>149</sup> For example, the employment of shipbuilding industry, which was one of the biggest sectors of the manufacturing industry in Hamburg, shrank from about 80,000 in 1975 to 25,000 in 1995. Many of the harbor areas which are near the city central areas are turned into "brown fields" that is not able to be redeveloped without special treatment, as the land of which are often contaminated.

Despite of many barriers, question is still that "ob sich Hamburg als Stadthafen mit einem hafen in unmittelbarer Naeh e des Stadtzentrums weiter skizzierten und mit der weiteren Wachstumsdynamik implizierten Sachzwängen unterse rfen muessen und koenne" (If Hanburg as a Haborcity further plan with a port directly by the city center and .....)<sup>150</sup>. One must also take into accounts that, the discussion about the reuse and revitalization of harbors is to be evaluated on the background of the land

<sup>147</sup> Refer to "introduction of industry" from hamburg.de, official site for the city of Hamburg, HWF Hamburgische Gesellschaft für Wirtschaftsförderung mbh

<sup>148</sup> Refer to Wikipedia: [http://en.wikipedia.org/wiki/Hamburg\\_Harbour](http://en.wikipedia.org/wiki/Hamburg_Harbour)

<sup>149</sup> Uwe Bodemann, < HafenCity Hamburg – Anlass, Masterplan, Chance>, in Dirk Schubert (ed.), <Hafen- und Uferzonen in Wandel>, Berlin, 2001, p.135

<sup>150</sup> Uwe Bodemann, < HafenCity Hamburg – Anlass, Masterplan, Chance>, in Dirk Schubert (ed.), <Hafen- und Uferzonen in Wandel>, Berlin, 2001, p.55

consumption of valuable and city-central areas (40% of the total land of Hamburg, while the employment on that is about 5% of that of Hamburg)<sup>151</sup>

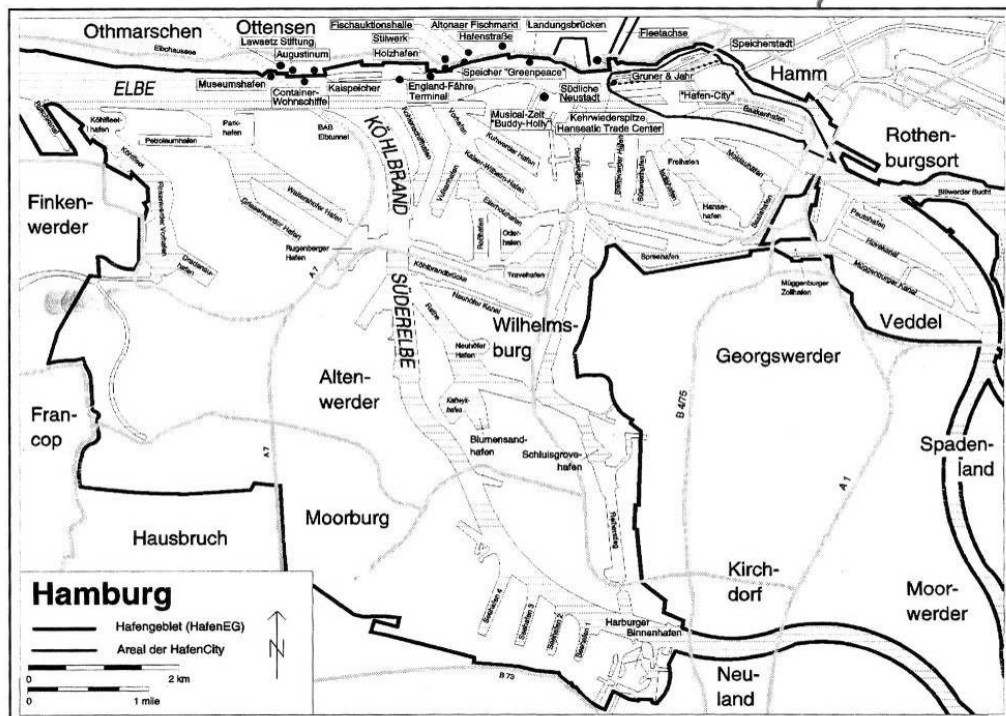


Figure 38: Harbor Area of Hamburg, Resource: Uwe Bodemann, < HafenCity Hamburg – Anlass, Masterplan, Chance>, in Dirk Schubert (ed.), <Hafen- und Uferzonen in Wandel>, Berlin, 2001, p.102



Figure 39: Kehr wiederpitze and Kaispeicher A in 1985, Resources: Uwe Bodemann,< HafenCity Hamburg – Anlass, Masterplan, Chance>, in Dirk Schubert (ed.), <Hafen- und Uferzonen in Wandel>, Berlin, 2001, p.99

<sup>151</sup> Refer to Eurostat, <Portrait of Regions- Deutschland-Hamburg-Economy>



Figure 40: The power plant in Speicherstadt of Hamburg, from [www.bildarchiv-hamburg.de](http://www.bildarchiv-hamburg.de)

#### 3.1.2.2 PLANNING PROCESS

In regard to the effort on “**BRING OUT**”, one thing shall serve as the basic starting point. After a successful structural change process, today the economic structure of Hamburg is very much dominated by services. A striking feature in comparison with other major European cities is the high share of employment accounted for by the transport sector and financial services. The rise in employment in the 1990s stemmed primarily from business services, which together with the financial sector have been the powerhouse behind Hamburg's overall structural change that was a trammel on growth until well into the 1980s. Thanks to the pre-eminence of services, Hamburg has in the past been less susceptible to swings in the business cycle than have typical industrial locations.<sup>152</sup> In the other hand, the industry remains the foundation of expansion of the service. The strategic importance of the industrial sector for Hamburg's economic development is evident in the order volume it generates for other industries, and in its role as a motivating force for technological research. According to a study conducted by the German Institute for Economic Research (DIW), approximately one-fifth of company-related services rendered in Hamburg are purchased by industrial companies. Add to this is the business relation

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<sup>152</sup> Refer to Eurostat, <Portrait of Regions- Deutschland-Hamburg-Economy>

with the retail sector, financial service providers, and media companies. As a driving force behind innovation and progress, Hamburg's industrial sector ensures the technological skills it will need to assert itself against competition from other states and regions.<sup>153</sup>

On the other hand, even though many parts of the harbor area of Hamburg suffered from structural change, the port is still indisputably one of Hamburg's key strengths as a business location, with the city's position as an economic hub for the Baltic region being further strengthened by the European Union's eastern enlargement.<sup>154</sup> The port is also of fundamental importance to the sector of transport as well as the numerous service industries which is related to the transport sector, which has a considerably proportion of the economy in Hamburg. For example, the port and shipping sector of Hamburg employ in 2007 75,000 people, while more than 133,000 in vast range of industrial and service sectors are directly or indirectly dependent on the port, which accounts for 12.7% of the total employment of the city, generating a share of 14.4% to the GDP of Hamburg.<sup>155</sup>

Given such starting points, it became a complicatedly interwoven composition of challenges for the urban planning of Hamburg. In one hand, urban planning shall aim to provide support from the urban aspect the further development of the dominant sectors of economy, mainly the service sector. In the other hand, the traditional industry, after a successful restructuring process being conducted in the past 20 years, has gained new impetus for further development and provide further support to the development of many components in service sector such as the logistic, innovative industries and R&D. In this sense, the urban planning shall also work in restructuring the land use and provide transport, open space, green space support to protect as well as to improve the quality of industrial locations in its development plan, which is characterized by the planning and construction of industrial parks catering with the new port economy.

In regard to the effort of “**FILL IN**”, taking example of the redevelopment of Hamburg's harbor areas, one shall take into account that to move the focus of city's urban development from the city center Alster to the Elbe River had its root from as early as 1920s in Fritz Schumacher's attempts and in 1930s the master plan of architect Konstanty Gutschow, in which the North Elbe shore areas mainly the Altona Area would be planned as “Zentrum von Gross-Hamburg” (centre of the Great Hamburg) with new streets, squares and important buildings. After 1980s, with the structural change of Hamburg is entering a upsurge stage and some of the harbor started to decay, more and more public attention was given to the further development of these harbors. “Mit dem Zusammenwirken öffentlicher und privater Investitionen und neuer Planungen sollte die Re-Integration der Hafen und Uferzonen in das staedtische Gefüge betrieben werden” (The re-integration of the harbor and riverfront area to the city's urban structure shall be driven by the new planning and the collaboration between public and private investment)<sup>156</sup> The decision has been taken to use wasteland and other disused sites not only to develop new industrial parks catering to transformed port economy but also, where they exist close to the

<sup>153</sup> Refer to “introduction of industry” from hamburg.de, official site for the city of Hamburg, HWF Hamburgische Gesellschaft für Wirtschaftsförderung mbh

<sup>154</sup> Refer to Eurostat, <Portrait of Regions- Deutschland-Hamburg-Economy>

<sup>155</sup> Refer to Uwe Bodemann, <HafenCity Hamburg – Anlass, Masterplan, Chance>, in Dirk Schubert (ed.), <Hafen- und Uferzonen in Wandel>, Berlin, 2001, p.100

<sup>156</sup> Hans Harms, <Port and City, harbor and Housing: a Changing Relationship in Hamburg>, in: Bruttomesso, Rinio (ed.), <Waterfront. A new Frontier for cities on Water>, Venice

city, as location for pursuing city's new development strategy.<sup>157</sup> New usage should be found, new identities for residence, visitors and tourists must be attracted and a great amount of employment should be ensured. With Hamburg after the re-uniting of Germany searching for better position in West-Europe's economy system on the background of increasing world communication and competition, the revitalization of the inner city harbor areas become very crucial because that it provides great spaces and possibilities for the inner development of Hamburg.

The new strategy first bore fruit in the redevelopment of the North Elbe Shoreline Area (between Övelgönne and St. Pauli). The concept of development was grounded in the beginning of 1980s based on the urban planning idea competition "Bauen am Wasser" (build one the water) in 1983 and the following 2<sup>nd</sup> "Hamburger Bauforum" (Hamburg Building Forum) in 1985. The concept was called "Perlenkette" (pearl necklace), which means that, there will no integrated plan covering the whole area, but some sporadic spectacular projects, which can in the middle to long term act as impulse project and improve the quality of the harbor areas. In 1987, the "Leitlinien zur Entwicklung des nördlichen Elbufer" (Guidelines for the development of north Elbe Shoreline) based on this concept was constituted, which served as basis and guidelines for the further development of the North Elbe Waterfront Area. In this planning, the North Elbe Shoreline Area was planned to be developed into area for working, living, shopping, leisure facilities, culture and tourists. Till now, with the realization of many fascinating projects alongside the shoreline, such as the Kaiserspeichern D, F and G, the Fish Market Area and the Hamburg Sailortown, the waterfront area has gained a fresh look. Fish are still processed here but new offices, flats, restaurants and shops have made the area a more heterogeneous place which is now also attracting tourists.<sup>158</sup>

The most sensational project in the harbor areas of Hamburg is the HafenCity (Harbor City), which acts as the biggest economic, politic and urban development plan of Hamburg in the coming 10~15 years.<sup>159</sup> The site, which lies in the east end of the "Perlenkette" (pearl necklace), closed by the Speicherstadt, provides 155 ha free harbor area directly on the south of the inner city. Planned with 1.5 million square meters floor area, 10,000~12,000 inhabitants and 20,000 employments, the area will be developed into not only a inner city node around the Magdeburger Hafen as a counterpart to the Binnenalster and with it a rise in the quality accessible to the general public but also to raise the value and attractiveness of the city center by providing housing and service hub composed of mix-used area with housing, culture, recreation, tourism, trading and commercial district.<sup>160</sup>

<sup>157</sup> Refer to Jörn Walter, <Pläne, Projekte, Bauten: Architecture und Städtebau in Hamburg 2005 bis 2010>, Braun, 2006, p.5

<sup>158</sup> Refer to Jörn Walter, <Pläne, Projekte, Bauten: Architecture und Städtebau in Hamburg 2005 bis 2010>, Braun, 2006, p.5

<sup>159</sup> Uwe Bodemann, <HafenCity Hamburg – Anlass, Masterplan, Chance>, in Dirk Schubert (ed.), <Hafen- und Uferzonen in Wandel>, Berlin, 2001, p.99

<sup>160</sup> Uwe Bodemann, <HafenCity Hamburg – Anlass, Masterplan, Chance>, in Dirk Schubert (ed.), <Hafen- und Uferzonen in Wandel>, Berlin, 2001, p.99

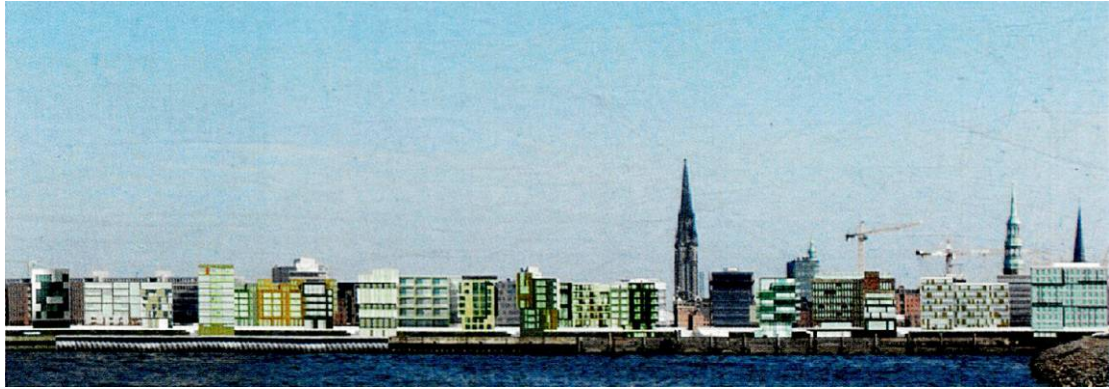


Figure 41: West HafenCity, Dalmannkai Facade, Resource: Jörn Walter, <Pläne, Projekte, Bauten: Architecture und Städtebau in Hamburg 2005 bis 2010>, Verlagshaus Braun, 2006, p.17



Figure 42: Master plan of prize-winning project of the HafenCity (urban Planning competition in 1999), from Jörn Walter, <Pläne, Projekte, Bauten: Architecture und Städtebau in Hamburg 2005 bis 2010>, Verlagshaus Vraun, 2006, p.21

### 3.1.2.3 PLANNING EVALUATION

For efforts of urban planning on both “BRING OUT” and “FILL IN”, one basic starting point is that the redevelopment of the Hamburg harbor area may provide an opportunity for Hamburg, especially its central city area, to develop near and across the river of Elbe, which is for the ambitious development step of Hamburg and will have its deep influence on the spatial development of Hamburg. This is also a strategic shift of the location of ports and their related industry, to be partially relocated and reorganized for the new structural development of this area. It is without doubt that the majority of ports of Hamburg and the industry related to these ports must be protected, upgraded and further develop, so as to provide further driving force for the city's economy, which depends significantly on the port economy. This is also strategically important for maintaining the sustainability of Hamburg's economic structure and the employment. The effort of urban planning in this aspect could be seen in the planning and construction of port areas and modern industrial parks with better ecological and urban quality is still widely promoted in this area. In the other hand, for some areas that are already released due to the decay or the areas which is close to the inner city thus has strategic significance for the inner city development of Hamburg, the redevelopment of them into part of the inner city is the opportunity of Hamburg to realize its strategy of spatial development near and

across the Elbe. The projects of North Elbe Shoreline Area and HafenCity, although still in process of implementation, have already opened part of the Elbe shoreline as well as created attractive location for the expansion of Hamburg's inner city. With more projects adds to the series the Hamburg IBA projects, a north-south development corridor will be activated. Such situation makes a highly diversified urban development model in this area, in which the development of ports and industrial parks, urban renewal projects, housing and service district interweaved with each other.

Concerning the land use change planning, the redevelopment of Hamburg harbor area applies a relative soft and flexible strategy. This is also a counter measures to the complicated situation mentioned above. An integrative land use change assignment program as what is given for other redevelopment plans for other cities is not realistic here. The land use change planning shall be made point to point, case to case according the actual situation of the different locations. The outstanding example is the "Perlenkette" concept for the North Elbe Shoreline Area, which allow for a highly flexible development and the single projects/objects under this guideline can adapt to different function according their different situations in their specific time of revitalization. In the projects to be developed as expansion part of the inner city of Hamburg, a tendency of urban planning is that the mix-use development and an overall flexibility of function assignment are widely promoted in almost all individual projects. In HafenCity the concept of master plan, the HafenCity will be promoted with a mixed use development strategy, which is supported by building structure flexible for different use such as housing, working and public facilities. There are three groups of function which is going to be realized here<sup>161</sup>: 1) Facilities for tourists, culture and accommodation. Concrete projects are going to appear, such as the cruise terminal in east Strandkai and leisure, culture and tourist functions in west and south of Grasbrook; 2) Housings. The HafenCity is going to provide housings for 12,000 inhabitants, which will greatly release the pressure of housing on the inner city due to its great amount of provision and central location. Paralleled to private development, a certain proportion of social housing is added; 3) The area is also developed for tertiary sector such as office, hotels, conference facilities, retailing and research institutes. Some new types of modern industries which don't disturb are also allowed.

In regard to urban traffic planning, the current transportation system is mainly focused on the north side of the Elbe. A new subway line (U4) was planned to support the development of the areas in south of the city (HafenCity and the Harburg Inland Port), which is expected to be completed in 2011. This line will line the city center, main railway station and the city hall. Additional to this, fast rail line (S-bahn), tramway and bus line also serve the development areas. In regard to the inner transportation circulation, the roads system of HafenCity was re-planned, which is much densified to adapt to new urban structure.

Concerning open spaces and green space planning, the creation of interesting waterfront area with open space and green space is one of the major tasks of the planning for many individual projects in Hamburg's harbor area. In the HafenCity, the former enclosed industrial shoreline is now open to the public, which is planned with waterfront pedestrians, parks and supported by public facilities such as restaurants, café bars and markets and shops. The former dock became interesting landscape element that lengthens the waterfront area and brings vivid factors into the open areas in the core of HafenCity. In addition, many parks and green belt,

<sup>161</sup> Refer to Uwe Bodemann, HafenCity Hamburg – Anlass, Masterplan, Chance, in Dirk Schubert: Hafen- und Uferzonen in Wandel, Berlin, 2001, p.104~105

where public buildings are planned on, is planned to further improve the quality of the area.

In aspect of urban conservation, the harbors area of Hamburg is famous for its high-quality and characterized industrial buildings, especially of huge-scaled warehouses, which constituted strong characters of the harbor areas. "It is the urban context, not isolated building projects, which make the city special and as such it is up to the city to come up with a concept that is flexible yet structured and which allows scope for a range of different, innovative, architectural interpretations while precluding and slip into chaos."<sup>162</sup> One of the most valuable urban area rich of heritage buildings is the Speicherstadt, which was inscribed in the list of protection of Hamburg. The high historic and architectural value of Speicherstadt as well as its advantageous location has made it into an important strategic area and buffer zone between the old city center and HafenCity. This will give new challenge for urban planning to integrate the conservation of historic area with new use and make it into attractive points in the city.

Many industrial buildings had been given new uses. For example, the cooling house in Neumühlen which had been the landmarks for the harbor area in west end and had been destroyed by fire in 1991 was rebuilt on the grounding wall according to original form and scale as Augustin Elder's dormitory. Also some ships were kept and even renovated into public facilities and housing, which together with other historic objects makes the west end of the "Perlenkette" into active "Museumhafen". Further example are such as the two-storages buildings belonging to Fischmarkt Altona GmbH east of Kaiserpeicher which is now used as "Delikatesmeile", the Tief Kühlhalle which is renovated into office building, the harbor mill in Sandberg was renovated inside into housings, the warehouse nearby are renovated into office for Greenpeace Deutschland. The latest and most sensational renovation project is the renovation on the Kaiserspeicher into a Elbphilharmonie, a complex composed of Philharmonie, small music chambers, restaurants, bars, hotel and conference room. This dazzling project will make an outstanding landmark of a new area, anew center of vitality for the commercial, cultural and daily life of the city.<sup>163</sup>

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<sup>162</sup> efer to Jörn Walter, <Pläne, Projekte, Bauten: Architecture und Städtebau in Hamburg 2005 bis 2010>, Verlagshaus Braun, 2006, p.7

<sup>163</sup> Refer to Jörn Walter, <Pläne, Projekte, Bauten: Architecture und Städtebau in Hamburg 2005 bis 2010>, Verlagshaus Braun, 2006, p.21



Figure 43: Renovation of Kaiserspeicher into Music Hall, Resource: Jörn Walter, <Pläne, Projekte, Bauten: Architecture und Städtebau in Hamburg 2005 bis 2010>, Braun, 2006, p.20



Figure 44: Waterfront façade and spaces in HafenCity, photograph taken by the author

### 3.1.3 CASE 3: RUHR REGION AND EMSCHER AREA

#### 3.1.3.1 PLANNING BACKGROUND

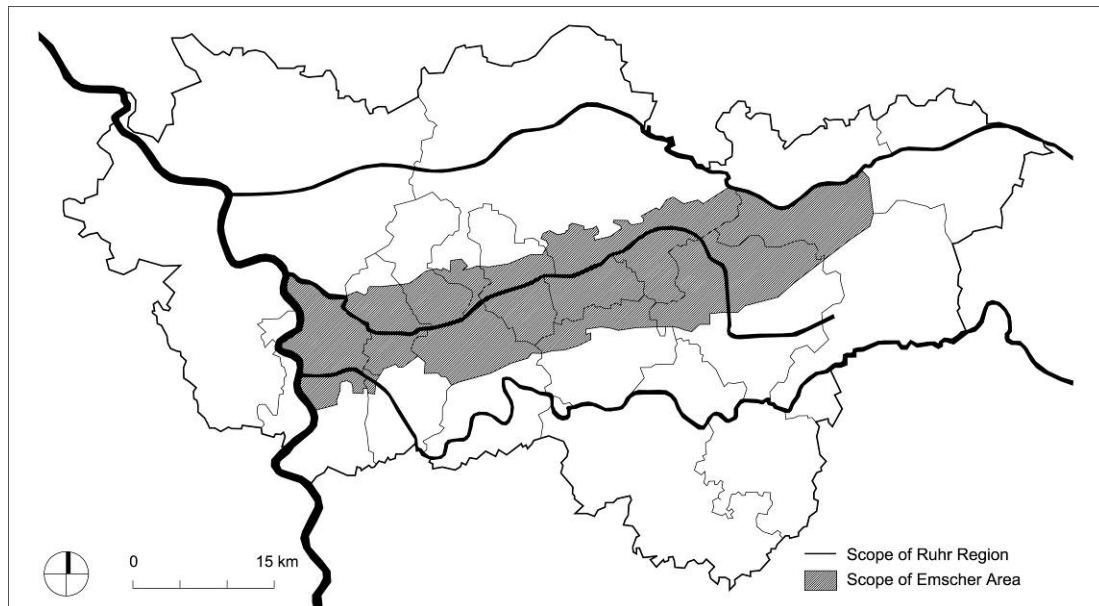


Figure 45: Scope of Ruhr Region and Emscher Area, Drawn by the author

Being the biggest industrial region in Europe and one of the most important industrial regions of the world, the Ruhr Region lies in west of Germany, between the rivers Ruhr (in the south) and Lippe (in the north) and the Emscher River in the center. The region's major part is included in the province of Northrhine Westfalen. With area of 4432.7 square kilometer (1.3% of total Germany), population of 5.7 millions (9% of Germany's total) and 24 cities with more than 50,000 inhabitants, the area was one of the most heavily urbanized region in Germany as well as in Europe. The area had been developed heavily for industrial purpose for the past 200 years. Since the 18th century, mining and steel had been the main economical pillar in the Ruhr Region. The industrial massive development made quickly the area the most important industrial base in middle Europe. Industrial development also gave birth to the emergence and development of cities scattering in the region, while the establishment of accessibility of industrial resources acted as basic infrastructure networks serving the whole region. Result was: the development of the area was traditionally and functionally rather as that of a whole region than as simple combination of cities. The heavy industrialization left the region with typical identities: monotonous economy structure, high proportion of employment in manufacturing sector, environmental problems, and a strong image of industrial society composed of those industrial landmarks: collieries, steel works, warehouse, high chimneys, sewer system and worker's residence that form characterized continuous industrial landscape over the whole region and make the Ruhr Region one of the regions in Europe with rich cultural heritages.

The structural change of economy structure struck the Ruhr Region strongly from the 1960s on, especially since the decay of coal and steel industries. Most coal mines and steel works were shut down and number of jobs halved. For example, in 30 years, the coal mine reduced from 200 to 15, whose employment reduced from 620,000 to 53,000, in the meanwhile the steel works reduced from 26 to 4, whose employment reduced from 350,000 to 75,000. In the mining industry, the Ruhr

Region had 470,000 miners in 1956, while in 2006 there are only 28,000.<sup>164</sup> The industrialization process over hundred years also gave the area severe environmental pollutions, which acted as great barrier for the redevelopment. On such backgrounds, the whole region was facing to the great economical, ecological, social and urban challenges. Given the scale of the region and the existing and potential problems, methods of revitalization and redevelopment, which are very probably other than the traditional principal or urban redevelopment, must be searched for and applied.



Figure 46: The aerial view on the ThyssenKrupp Duisburg in Ruhr Region 2009, from AP Photo/Frank Augstein

#### 3.1.3.2 PLANNING PROCESS

Facing such problems, the State Government of NorthRhine-Westphalia had supported the structural change in Ruhr Region from 60s on through sorts of economic, ecological and urban policies. Given the scale of the environmental and economic degradation, and the increasing number of abandoned industrial properties with varying levels of soil contamination, the region soon realized that it could not apply traditional principles of urban redevelopment. It could not rely solely upon the private sector to redevelop the region project-by-project. It would have to create something grander in scope and size. Successful revitalization of this region and these former industrial properties would demand an innovative framework that could manage or stimulate individual redevelopment projects within the context of a regional planning strategy.<sup>165</sup> On such background, the significant step of revitalization concerning the “integrative regional redevelopment” is the 10-year program IBA Emscher Park (Internationale Bauausstellung Emscher Park), which was launched by the government of Nordrhein-Westfalen in 1989. The word

<sup>164</sup> G. Seltmann, < Renaissance of an Industrial Region: “Internationale Bauausstellung Emscher Park” - achievements and future model for others>, GseProjekte- Office for Regional Development, 2007, p.2

<sup>165</sup> <International Brownfields Case Study: Emscher Park, Germany>, from Brownfields and Land Revitalization, website of EPA (United State Environmental Protection

“Emscher Park” symbolized the target to change the urban and landscape quality of the northern part of the Ruhr Region with 800 square kilometer, 17 municipalities and about 2.2 million people within 10 years. Surpassing the classic concept of IBA which was mainly focused on the level of architectural demonstration<sup>166</sup>, this attempt is also a “state-supported entity that oversees individual redevelopment projects and seven area-wide master plans”<sup>167</sup>. The program was basically a comprehensive modernization and innovative offensive aiming at recreation of a new landscape, of modern location for work and living, and the preservation of cultural and historical inheritance. Their planning strategy contains the following fundamental elements:

- Re-utilizing land to prevent additional exploitation of "green spaces", or previously undeveloped land.
- Employing maintenance, modernization, and re-use strategies for existing buildings to extend the life of buildings.
- Incorporating ecologically-sound construction practices for both new buildings and adaptive reuse.
- Transforming the region's production structure towards environmentally friendly production methods.

Five target-themes were followed during the IBA- time:<sup>168</sup>

- The Emscher Landscape Park
- The Reconstruction of the Emscher System
- Working in the Park
- New Uses for old industrial buildings
- New Housing Projects

The fields of work include<sup>169</sup>:

- Rebuild ecological and scenic qualities through the Emscher landscape park
- Regenerate a system of natural waters; with special focus on the “nature cycle” treatment of rainwater
- Development of new industries, trade points and technology centers on abandoned industrial sites
- Rehabilitation of historic neighborhoods, new development sites, restorations on brownfields
- Preservation and adaptive uses of industrial structures (industrial archaeology)

In the ten year term, over 120 projects in 800 square kilometer area between Duisburg and Kamen were developed and implemented. They were realized under close cooperation of planning company, architecture and planning experts, private

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<sup>166</sup> The Term “International Building Exhibition” refers to the German tradition of building exhibitions. Since the 1920ies, German municipalities have organized these “exhibitions” to find good solutions for architectural or urban demands by inviting international architects and presenting the solutions to the international public. In the 1980ies the City of Berlin had created the IBA Berlin. For the first time in the history of IBA, Berlin integrated not only one area, but several parts of the city and also added the reconstruction of neighborhoods to the traditional panel.

<sup>167</sup> <International Brownfields Case Study: Emscher Park, Germany>, from Brownfields and Land Revitalization, website of EPA (United State Environmental Protection

<sup>168</sup> Refer to G. Seltsmann, < Renaissance of an Industrial Region: “Internationale Bauausstellung Emscher Park” - achievements and future model for others>, GseProjekte- Office for Regional Development, 2007, p.2

<sup>169</sup> C. Schreckenbach, C. Teschner, presentation < IBA Emscher Park – a beacon approach, dealing with shrinking cities in Germany>, Fakultät Architektur Institut für Landschaftsarchitektur, Professur Landschaftsbau Technische Universität Dresden, 2007

and public investor partnerships, state and local governments with aids of competitions. The type of reuse varies from housing, museum, education, public service to office to recreation area. One of the best-known projects being implemented recently is the redevelopment of "Duisburg Inner Harbor". Being biggest inner harbor of the world which lies just at the north edge of the inner city of Duisburg, the 1.8kilometer long Duisburg Inner Harbor with its 89 ha area, which composes of industrial buildings (mainly warehouses) and big amounts of brownfields, was reconnected to the city center and available for redevelopment from 1989 after an international master plan competition, in which Norman Foster won. After near 20 years of planning and redevelopment, the revitalization of Duisburg Inner Harbor is regarded today as one of the most successful project in Ruhr Region for its successful improvement of environmental quality and reuse of old industrial buildings.<sup>170</sup> In Essen, the city planned the big area by the inner city, which was previously used for steel industry to a modern zone for living and working spaces. The so-called "Krupp-Gürtel" area, which previously separated the inner city to the west part of the city, will be reconnected to inner city and redeveloped into inner city quarter with green networks that can greatly improve the urban and environmental quality of the city. In Dortmund, the city part "Phoenix", which is 5 kilometer away from the Dortmund inner city and was previous huge steel work area, was planned in 2000 to become modern technology park for high-tech enterprises and university. On its west side, huge artificial lake is going to provide nice resource for recreation and housing area. Similar redevelopment projects on former left-over industrial spaces projects also take place in many other cities in this region such as Gelsenkirchen, Herne, Bochum and Müllheim an der Ruhr.



Figure 47: Duisburg Inner Harbor with the revitalized warehouses in the right side, from internet

The efforts of urban planning following up the IBA Emscher Park, whose planning term was over in 1999, are the planning on further development of the Emscher Landscape Park and changing of Emscher System, whose responsibility was taken by The responsibility for the further development has been taken over by the Emscher Cooperative (Emscher System) and the Association of the Ruhr Municipalities (Emscher Landscape Park). In the year 2005, all the local and regional parliaments agreed to the new masterplan "Emscher Landscape Park 2010". During

<sup>170</sup> Refer to Kenneth Powell, Stadt im Umbau: Städtebau zu Beginn des 21. Jahrhunderts, Dt. Verl.-Anst., Stuttgart, 2000, p.124~132

a two years process of discussion, the region developed the idea to extend the total park area from 320 sqkm to 457 sqkm. For the first time the “Emscher Park” is no longer focused to the Emscher Region. It is now stretching out to the south in the direction of the river Ruhr and to the northeast into the rural areas at the borderline of metropolitan Ruhr. By combining public funding from the state government, European Union and municipalities add new elements to the extended park year by year. Meanwhile, the effort to changing the Emscher System further improved the environmental quality of the Ruhr Region.

The latest effort of urban planning, also an effort based on the new situation that is very different from that for the IBA Emscher Park in end of 1980s, is the “Concept Ruhr”, created by 35 cities with population of 4.8 million in 2007. Based on the IBA-related tradition of coordinated regional action the region has developed the “Concept Ruhr” as the new fundament for urban and regional sustainable development in the next decade. While IBA was only focusing on a small part of the Ruhr area, “Concept Ruhr” is made for the whole region. While IBA was a “top-down”- process thriven by the state government, “Concept Ruhr” is a “bottom- up” initiative thriven by the common will of the cities and counties.

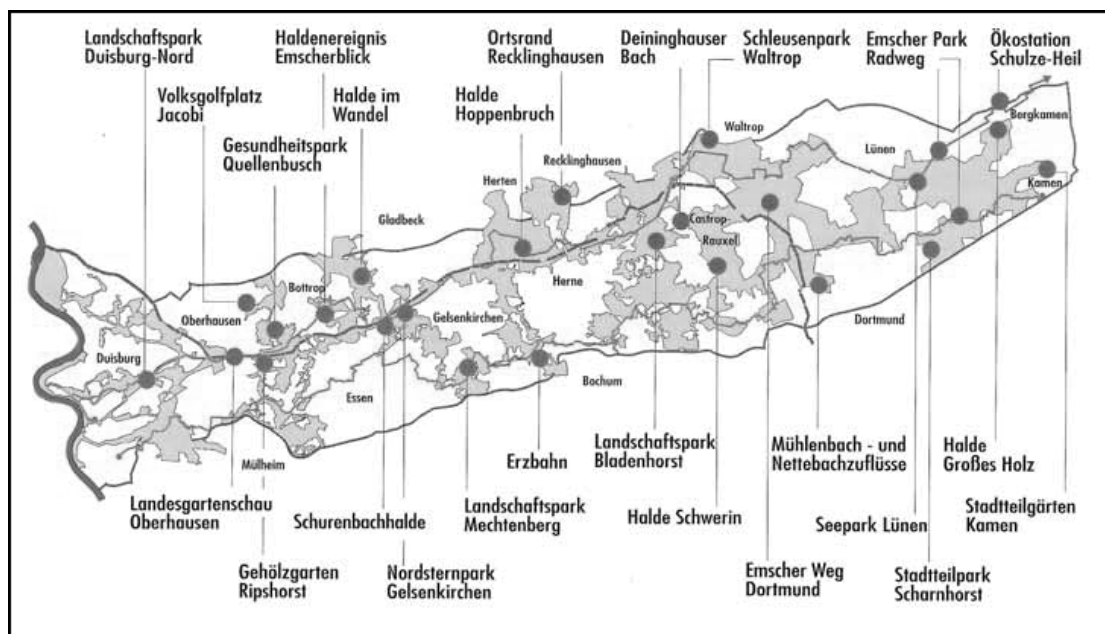


Figure 48: Projects in the Emscher Landscape Park, Resource: J. Dettmar; K. Ganser (ed.) : <Industrienatur. Ökologie und Gartenkunst im Emscher Park>, Stuttgart, 1999

### 3.1.3.3 PLANNING EVALUATION

The redevelopment of the Ruhr Region confronted the structural change from a heavily industrialized area into a modern metropolitan region, through the IBA Emscher Park (including the further planning and development after the time frame of IBA in 1999 such as the Emscher Landscape Park) and the latest “Concept Ruhr”, had gained rich experiences for the urban planning to learn from, especially in a sense of regional urban planning. One shall not forget that the urban planning, which boasts for a marvelous success on the realized 120 projects, 4 billion Euro investment, 17 new technology centers (industrial parks), 3000 new housings and another 3000 renovated housings based on original building monuments as well as even more projects further planning (further 274 projects under the scope of “Concept Ruhr”), was conducted over a region of 17 cities and 2.2 million people (and later in the “Concept Ruhr”, 35 cities with 4.8 million people were involved), in

which the political power is very dispersed. Taking into accounts this situation from the beginning, the government made it clear, that the whole IBA- Process had to be based on a political consensus in the region that this new approach for a special part of the Ruhr Area had to be based on the participation of the municipalities and regional organizations. The consensus was fundamental for the implementation of the projects and the acceptance in the region. The fundamental activities like Emscher Landscape Park were based on the voluntary will of the city administrations to think across the city borders to make the strategy possible. The workgroups for the regional greenbelts developed a permanent training ground for inter-municipal thinking. In addition to that, the IBA- process also emphasized the cross- project-thinking. In addition to the efforts for every single project, there were always additional aspects: What about the neighborhood of the project? How is the project linked to the surrounding project? What about the area in between? In terms of implementation organization, the members of the IBA-Curatorium represented the political parties and important groups of the society. The role of the IBA Ltd in Gelsenkirchen was to guide the process, to initiate discussions and competitions, to moderate procedures and to help getting public funding for projects.<sup>171</sup>

On the aspect of “**BRING OUT**”, which was nevertheless often ignored by the many reviews on IBA and its later effort of redevelopment, the Ruhr Region survived the severe structural change successfully with the occupation of manufacturing industry employment sinking from 58% in 1970s to 28% in 2006, while that of service increasing from 40% in 1970s to 70% in 2006. In the same time, the Ruhr Region as a major industrial locations remained. Business groups are investing heavily in the inner cities and are contributing to a revaluation of city locations. Large industrial companies are building new headquarters in the cities and are investing on their industrial sites. Today the Ruhr Area is still a very powerful economic region. 13 of the 50 largest German companies are based in the region. Steel production, chemical industry and large power plants distributing all over Germany are supplied by light metal manufacturing, car production, electronic industries and health industries. Research institutions and companies are growing. Ruhr Regions is also a center of Logistic for Europe. Urban planning plays a major role in the process of restructuring, in optimization of the distribution of industrial location as well as improves the quality for selected industrial locations. One of the main target-themes for IBA Emscher Park is “Working in the Park” With a strategic link to the Emscher Park- concept the general idea of this target was that new industrial or service areas should be implemented on brownfields. Brownfields were no longer seen as risky “no go- areas”, but as opportunities for new investments. Inspired by the low costs for the land itself the IBA- areas - many of them very close to the city- centers –were developed by combining green spaces with the new infrastructure and linking them to the near urban areas. This special approach created some very attractive business-areas with 5000 new jobs in the Emscher Region.<sup>172</sup>

The efforts of urban planning regarding “**FILL IN**” in the Ruhr Region, namely those on the redevelopment of projects from the left-over industrial spaces, were sensationally successful in many aspects. A wide range of approaches of the selection, designing (most of them by competition) and implementation of projects are applied. “The IBA Planning Company serve as the coordinator with Steering

<sup>171</sup> Refer to G. Seltmann, <Renaissance of an Industrial Region: “Internationale Bauausstellung Emscher Park” - achievements and future model for others>, GseProjekte- Office for Regional Development, 2007, p.5

<sup>172</sup> Refer to G. Seltmann, <Renaissance of an Industrial Region: “Internationale Bauausstellung Emscher Park” - achievements and future model for others>, GseProjekte- Office for Regional Development, 2007, p.1 and p.7

Committee and Board of Trustees, which reviews projects from admission to exhibition and the Trustees develop public-private partnerships to promote IBA and garner support for its initiatives. The planning company also plays a major role in the promotion, brainstorming, planning and presentation of the exhibition efforts.” All these would “keep IBA abreast of the latest innovative urban designs and cutting approaches to ecological regeneration”.<sup>173</sup>



Figure 49: Housing development KÜPPERSBUSCH, C. Schreckenbach, C. Teschner, presentation < I B A Emscher Park – a beacon approach, dealing with shrinking cities in Germany>, Fakultät Architektur Institut für Landschaftsarchitektur, Professur Landschaftsbau Technische Universität Dresden, 2007

Concerning the land use change planning, due to the independence of the individual projects, there are big diversity in terms of land use strategy and planning method from one project to another according to their different situation, varying from modern housing, education, office, service to creative or high technology center. Many of the projects were planned with mix use functions. For example, housing projects are often planned together with high proportion of workings spaces, leisure entertainments together, so as to improve the quality of the project and provide sustainability of the project. The other characteristic for the land use change planning is that the functions related to culture are given great importance through most IBA projects. Most of these cultural functions are closed related with the past industrial history and the reuse of existing industrial heritages. Today, Ruhr Region has the highest density of theaters and cultural events in Europe, and was voted for Europe's cultural capital for 2010. The cultural function had given the region great identities and impetus for development.

Regarding urban traffic planning, if we look at the broader scope than the Ruhr Region, the Rheine Ruhr Megapolis Region<sup>174</sup> a highly-developed traffic road system which is the densest traffic road system in Germany and a public transportation

<sup>173</sup> <International Brownfields Case Study: Emscher Park, Germany>, Brownfields and Land Revitalization>, from Brownfields and Land Revitalization, website of EPA (United State Environmental Protection

<sup>174</sup> Rheine Ruhr Metropolitan Region is the biggest metropolitan region in Germany which covers an area of 9694 square kilometer and 10,582,000 inhabitants. Ruhr Lager Urban Zone (namely the Ruhr Region referred to in this research) is the biggest sub-division in it. Refer to Eurostat.

system (also a rapid transit system) composed of regional traffic system (15 RegionalExpress lines, 23 Regionalbahn lines, 11 S-Bahn lines and 33 express bus lines) and local traffic system (17 Stadtbahn light rail lines, 44 tramway lines, 18 semi-fast bus lines, 6 trolleybus lines and 778 bus lines)<sup>175</sup>. This highly polycentric transportation system provide ideal condition for the development of the cities in this region as well as the region as an entirety to be a major location of industry, business and tertiary industries.

One of the outstanding achievements of the redevelopment of Ruhr Region is the green space planning and open space planning, whose efforts had made Ruhr Region from an environmentally problematic area into one of the greenest area in Germany. Besides the changing of Emscher System (still on going) that separate the waste water from the natural water and thus greatly improve the environmental quality to create condition for development, the other big effort is the planning and development of the Emscher Landscape Park, which works on the park area between the cities and inside the cities. Based on a historic outline from the 1920s, the Emscher Landscape Masterplan defined 7 regional greenbelts that had to be developed in the responsibility of inter- municipal workgroups. Many local projects from small garden areas to a 100 hectare brownfield were developed as contributions for the Emscher Landscape Park, which include landscape design, biotope management, forest planting, housing construction projects and art projects. Besides treated the Emscherpark as the biggest open-air opens pace, middle-scaled and small-scaled open spaces were planned in related to the individual projects, with highly diverse planning strategies and methods. One strategy from these is to create open spaces in the industrial brownfields areas with characteristic industrial landscape as background, which has indeed become a trademark of IBA Emscher Park and a big attractiveness for the tourist. In the other hand, a regional system of bikeways and pedestrian path was planned to link these individual projects up, thus to form a unprecedented green space and open space system that spread over a length of over 70 square kilometer (east-west).

The redevelopment of Ruhr Region is famous for its strategy on the conservation of industrial heritages as well as the success this strategy has received. This is the first time in the human history that such big amounts of industrial heritages were included under one conservation strategy and was implemented based on a regional development background. Actually, those huge industrial buildings or installation \_\_steel works, cooking plants, g smoke stacks and gas tanks \_\_ had been for long time the strongest identities for the region. Many of them had not been used for decades. Except for the great deal of every-day types of reuse such as for housing, offices and commercials, we could find great part of projects in terms of reuse of industrial relics is related to the public/cultural functions or landscape elements. IBA Emscher Park applied a strategy that promote reutilization of these industrial buildings as demonstration of their industrial past, such as museums, concert halls, conference centers and other activities. The former coal mine "Zeche Zollverien" in Essen was re-planned into home for museum, cultural events and small offices for creative industries. A site for the former coal mine and a smelter in Duisburg was integrated into the "Duisburg Landscape Park", where industrial objects became sculptures and installations in the landscape. The conservation was also on the industrial infrastructure and other elements such as roads and sewage system. For example, a mine spoil area in Bottrop was redeveloped into characteristic landscape area and event area ""Emscherblick". Those characterized projects were seen not as individual projects, but parts of a complete industrial landscape, which are interconnected on a background of green spaces by bikeways and pedestrian paths.

<sup>175</sup> Refer to official website of Verkehrsverbund Rhein-Ruhr (VVR)

The well connected conserved industrial heritages also gave rise to tourists. Well-organized tourist infrastructure includes the thematic routes known as the Industrial Heritage Trails.



Figure 50: The 150 meter long skating ring renovated Zechen Zollverein, from NDR.de, photograph by Peters Bianca



Figure 51: MKM Museum Küppersmühle for Modern Art, from Herzog & de Meuron company homepage

### 3.1.4 CASE 4: VIENNA AND ERDBERGER MAIS



Figure 52: Scope of Vienna (Municipality) and Erdberger Mais, drawn by the author

#### 3.1.4.1 PLANNING BACKGROUND

Vienna is the capital city of Austria. It is Austria's largest and most populous metropolitan area and administrative, cultural, political and economic centre. Vienna covers an area of 414 square kilometers, an area which had a population of 1.55 million in 2001, while the whole population in the so-called Vienna Region (including Vienna, Niederösterreich and Burgenland) is 3.37 million.<sup>176</sup> Geographically speaking, Vienna belonged to the east periphery of the "West Europe" in a traditional sense before the iron curtain fall down in the 1989/1990. After the fall of Iron Curtain in 1989/1990 and especially after the turning point that Austria joined in the EU in 1995, Vienna left its fringe position and moved to the center of a new Europe waiting for a new definition<sup>177</sup>. Located in the center area of the middle European region "Centrope"<sup>178</sup>, Vienna gained big opportunity of urban development in the turn of 20<sup>th</sup> and 21<sup>st</sup> century benefiting from such changing background of conditions, especially with the tendency of EU's expansion eastwards. Aimed at the service centre for the west-east trade, its significance in the regional and global economic, politics, and culture had been shown and further strengthened. On the other side, the role of Vienna as a global center of culture had been firmly established, thanks to the numerous culture heritages and the historic urban structure left from the history of over 2000 years (especially since the "Gründerzeit" (Grounding period) of the modern Vienna in between the middle of 19<sup>th</sup> century and the beginning of 20<sup>th</sup> century), which are well protected under a highly advanced monument protection system. In 1996 and 2001, the "Schloss und Park Schönbrunn"

<sup>176</sup> Stadtentwicklung Wien Magistratsabteilung 18, <Step 05: Stadtentwicklungsplan Wien 2005>, 2005, p.38

<sup>177</sup> Hannes Swoboda, foreword in <Vienna: on the way to the 21<sup>st</sup> century: urban planning for the welfare of the people and environment>, Vienna, p.3

<sup>178</sup> The scope of European region Centrope was defined by "Kittsee Erklärung". This region is composed of cities of Vienna, Bratislava, Trnava, Győr, Sopron, Brno, Eisenstadt and St. Pölten.

and the “Historic Centre of Vienna” were inscribed by the World Heritage Committee on the World Heritage Site List.<sup>179</sup>:

Austria is amongst the earliest industrialized countries in Europe. The city of Vienna in 18<sup>th</sup> Century was always treated primarily as cultural phenomenon and a residential city in the German-speaking country, the role as industrial city was often today underrated. In fact, the typical industrialization with dominance of production sector rose up dramatically from the beginning of 19<sup>th</sup> Century, and reached its peak in the twenty years before the 1<sup>st</sup> World War under intensive foreign investment. In the end of 19<sup>th</sup> Century, Vienna was already the most important industrial location in the Austrian Monarchy.<sup>180</sup> Except for in the city core area (1<sup>st</sup> District), almost the whole city area saw the emergence of industrial space, especially in the inner city area with water or railway support such as in lower Wientalarea, Simmering and areas near the Südbahn (south rail) and Nordbahn (north rail)<sup>181</sup>. The development of the industrial was further promoted after the 2<sup>nd</sup> World War, by urban planning to make Vienna a more ideal location for industrial agglomeration. From 1960s, the traditional industrial areas in the south part of Vienna (Liesing, Erdberger Mais and southern East-Rail) as well as the northeast part (Floridsdorf and Stadlau) were massively expanded with new developments. In the 1980s, a movement of planning and construction of industrial parks, which were orientated to the service and production and planned in close relation with the residential area, was seen. The increasing demands on lands of these industrial spaces must also place task for the development of transport system.<sup>182</sup>

The transformation of economic structure had influential impact in the development in Vienna, and triggered the change of strategy of the development of industry. Between 1995 and 2000, the manufacturing sector shrunk by 24,800 or 14% of employment, which was the highest decrease concerning employment in this sector compared to the other regions.<sup>183</sup> Today, after the process of de-industrialization over years, the tertiary sector in contributes about 81% of the total economic output in Vienna (2005), while the secondary sector contributes only 19%, in which the traditional commodity industry dominants.<sup>184</sup> The characteristics of a typical post-industrial society are shown.

The area of “Erdberger Mais” is selected for the study of “FILL IN”. The area lies in southeast of Vienna between the Vienna city center (3.5kilometer in its east) and the Vienna International Airport (7kilometer in its east), with Vienna’s huge city recreation area Prater and the Danube Canal in the north. Current transportation infrastructure includes the city express way A23, A4 and B223 and the city metro line U3. According to the scope of planning defined by “STEP 05”, the Erdberger Mais Area is composed of 6 sub-zones: St. Marx, Erdberg, Franzosengraben, Gasometerunfeld, Sülisches Gasometervorfeld (Mehrwert Simmering) and Gaswerkareal. The total area of the 6 sub-zones is 380 hectare.

<sup>179</sup> UNESCO, <http://www.unesco.org/en/statesparties/gb>, retrieved 26.11.2008

<sup>180</sup> Refer to R. Banik-Schweitzer and G. Meißl, <Industriestadt Wien: Die Durchsetzung der industriellen Marktproduktion in der Habsburgresidenz>, Franz Deuticke, Vienna, 1983, p.33

<sup>181</sup> Refer to R. Banik-Schweitzer and G. Meißl, <Industriestadt Wien: Die Durchsetzung der industriellen Marktproduktion in der Habsburgresidenz>, Franz Deuticke, Vienna, 1983, p.38~47

<sup>182</sup> Stadtentwicklung Wien Magistratsabteilung 18, <Step 05: Stadtentwicklungsplan Wien 2005>, 2005, p.60

<sup>183</sup> Refer to Eurostat, “portrait of the regions-Austria-Vienna-employment”

<sup>184</sup> Stadtentwicklung Wien Magistratsabteilung 18, <Step 05: Stadtentwicklungsplan Wien 2005>, 2005, p.120 and 121

Regarding the composition of land use, this area had a wide variety of urban function, ranging from logistics, wholesale markets, manufacturing industry, infrastructure, office to housing. Although cannot be described as a typical "industrial district", industrial land does occupies a relative high proportion of the total land use in this area, especially in the planning sub-zone of Gasometerunfeld, Gaswerkareal (site of the gasworks) and the St. Marx. The high proportion of industrial land has its root of the history of this area. Massive urban development of the area could date back to the second half of 19<sup>th</sup> century, when the area of Simmering (including majority of the 4 sub-zones mentioned above) was incorporated in Vienna as independent district by the government in 1892. The early village structure was then replaced by rapid "big city development" (großstädtische Entwicklung) of housing and new infrastructures. The prior function to be developed here is industry, which made the area one of the earliest area for agglomerating industry in Vienna. Many big enterprises came in, such as the enterprise of "Maschinen- und Waggonfabrik AG" (today known as Siemens-Verkerstechnik) and the first factory of enterprise family Mautner Markhof. This area also became the location for the infrastructure support for the city of Vienna, including gas, electricity and sewage treatment. Many valuable industrial heritages were left in this time such as the Gasometer (gasholder). In the next one and half century, the area had been mainly developed for industrial use. As a district which is very near to the city center, today's Simmering has much lower density of population and building area compared to its neighboring districts. Till 2000, there are only 12,000 inhabitants and 28,000 employees.<sup>185</sup> The land use of the area today is mostly dominated by industries<sup>186</sup>, storages and logistics, many of which were built in the second half of 20<sup>th</sup> century with relative low quality and isolated to each other, mixed with low-density housing and other functions. This fragmentary urban structure cause also negative urban images.

Having taken industry as prior urban function, the area of Erdberg Mais began to face with problems with inadequate economic vitality after middle of 1970s, demonstrated by high unemployment rate, low population density, aging social structure, ecologic problems and less urban attractiveness. Since 1980s, many industrial sites had been left free and the vacant rate of industrial land stayed high.

Some efforts had been given to the adaptation of industrial heritage buildings into new use, but they were all suffered from inadequate infrastructure, traffic support and public attentions. For example the famous Gasometer, which was one of the landmarks of Vienna and was placed in "Denkmonumentschutzlist" (monument protection list) in beginning of 1980s, had been reused after its cease of industrial function since 1982 for concert halls, discos and exhibition halls, but was then shut down again for the lack of visitors and economy outputs. Facts proved that single project is hard to be successful and sustainable without the integrative urban planning of the whole area.

On the other side, from the point of view of spatial development of Vienna, the Erdberg Mais area, with its very central location, its geographical advantages of airport and Danube Canal and its huge scale of land available for redevelopment, is of great potential on the background of "Inner City Development". A integrative urban planning which aims not only at revitalize the area as a whole but at reconnect the area to the city's development was called for.

<sup>185</sup> Official website of Mais: Wien

<sup>186</sup> According to Wien Magistratsabteilung 5, <Nutzungsart nach Bezirken> in 2005, the urbanized area in Simmering (11th Districts) covers 35.8% of the whole district, in which the industrial land covers 50.6%, much higher than that of housing and other functions.



Figure 53: Simmering power station by the Danube Canal in 1910, from G. Leitner and K. Hamtil (ed.), <Simmering in alten Fotografien>, Verlagsbüro Wien, 2008

#### 3.1.4.2 PLANNING PROCESS

The urban planning on the spatial development of Vienna entered into a new stage with the urban development in 2005 (step05), when the new situation emerged, including the incorporation of Vienna into the newly defined region (“Centrope”, which includes the Vienna, Bratislava, Trnava, Győr, Sopron, Brno, Eisenstadt and St. Pölten), the increasing intercity competition of conurbations, the changes in economic structure, function divisions, space requirements, suburbanization as well as the change of service and trade centres towards the periphery.<sup>187</sup> The target of this planning was set at: 1) Becoming of more competitive city through attractive locations, securing supply infrastructure 2) Expanding of the “Greenbelts” with Lower Austria 3) Concentrating of development along public transport routes 4) Increasing of the proportion of environmentally acceptable modes of transport 5) Securing and improving of the quality of life.<sup>188</sup> The working fields to achieve this comprehensive targets setting are on 9 aspects: 1) Concept and strategies of regional development, 2) Region spatial model, 3) Residence, 4) Economic and working, 5) Green space and free space, 6) Spatial and timing priority of the development, 7) Potential lands for bigger urban development projects, 8) Architecture and city form, 9) Spatial model of Vienna’s spatial development.

Besides the emphasis on the improvement of the function additions and interconnection with the region, the development of inner city is still focused in the scope of the city, which is demonstrated by a so-called “decentralized centralization” model<sup>189</sup> that promotes the poly-centric structure if the inner city, while still maintaining the dominant important of the historic core. For implementation of such plan, 13 target area of development, are selected for intensive development in the

<sup>187</sup> Presentation by D. I. Mittringer, Magistratsabteilung 18, <Vienna’s Urban Development Plan 2005>, 2005

<sup>188</sup> Refer to <Step 05: Stadtentwicklungsplan Wien 2005>, Stadtentwicklung Wien Magistratsabteilung 18, 2005, p.17

<sup>189</sup> Refer to <Step 05: Stadtentwicklungsplan Wien 2005>, Stadtentwicklung Wien Magistratsabteilung 18, , 2005, p.54

short-term, so as to activate positive impulse for the development of the neighboring urban area and the city of Vienna. The case of Erdberg Mais belongs to one of these target areas of development, which is ambitiously planned to be a second CBD of Vienna.

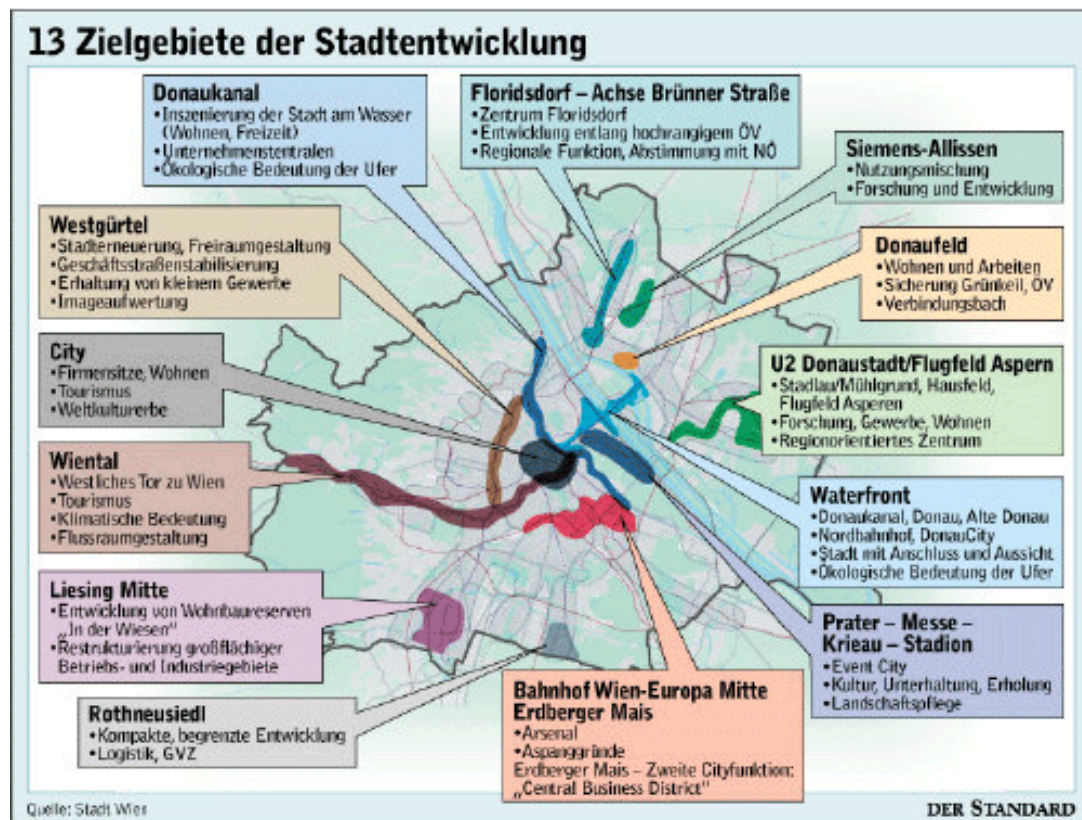


Figure 54: The 13 target development areas of Vienna inner city, Resource: <Step 05: Stadtentwicklungsplan Wien 2005>, Stadtentwicklung Wien Magistratsabteilung 18, , 2005

In regard to the efforts of urban planning in “**BRING OUT**”, the strong tendency of de-industrialization, demonstrated by the transformation of economic structure, is addressed and given attention by both the urban development plan in 1994 and that 2005. In 1992, the total industrial land in Vienna is 25.97 square kilometer, with 14% in the densely developed urban area of the city<sup>190</sup>. In 2005, the total land increased slightly to 27.8 square kilometer<sup>191</sup>. In the same time there is an obvious tendency that in the secondary industry, the service related to production increase very fast, while the production itself lost the vitality of further development. It was stated in the Urban Development Plan 2005 that: “As the width of the city’s economy shall be retained, the industry must be still given attention to, because the industry still bears a certain role in the economy in spite of the massive “tertiarisierung”. As the capital of Austria, Vienna has the highest gross regional product of all Austrian federal provinces. The economic structure is marked by a strong trend towards the service sector, a high number of business-related services, banking and insurance companies as well as international organizations and enterprises. The industry is currently characterized by the increasingly successful development of new technologies, for example biochemistry, logistics and telecommunications. This is the

<sup>190</sup> Refer to <Step 94: Stadtentwicklungsplan Wien 2005>, Stadtentwicklung Wien Magistratsabteilung 18, , 2005, p.225

<sup>191</sup> Refer to <Step 05: Stadtentwicklungsplan Wien 2005>, Stadtentwicklung Wien Magistratsabteilung 18, , 2005, p.55

target that the urban planning shall pursue through its multiple instruments.

The efforts on “**FILL IN**”, taking the revitalization of Erdberger Mais as example, dated back in 1990s, which was started with the reconstruction of the 4 gas-holders and the redevelopment in St. Marx. Meanwhile, the city' also extended the metro line U3 to Simmering, which links the city center with this area. In the “Stadtentwicklung Plan 1994” (Step 94), in which the urban renewal was among one of the key strategies of spatial development of the city, parts of the area (Simmering Hauptstr. and Erdberg) were included in the focused area of urban renewal, with the main focus on housing. However, the substantial step to plan the whole area as an entirety and to integrate it into the spatial development prospect of the city of Vienna was taken after 2005, when “Erdberg-Mais” was included as part of the target area of development “Bahnhof Eien - Europa Mitte - Erdberger Mais”, which is one of the 13 most important inner-city action areas defined by the “Stadtentwicklung Plan 2005” (Step 05). On this background, the revitalization of this 380-ha site is regarded as one of the key projects for the steering of urban development of Vienna in the next 10~15 years.

The area has currently about 12,000 inhabitants and 20,800 employments. In the future, it was planned to contain 18,000 inhabitants and 60,000 employments in addition. Basing on the master plans constituted by the MA 21, “In the short to medium term, substantial portions of the approx. 380-hectare site are to be subjected to sustainable improvement and the marked condensation of different forms of land use.”<sup>192</sup> The general objectives of the development in this area are defined as:<sup>193</sup>

- High-value uses in terms of the mixture of use such as office with research, development and service companies
- Attractive conditions for working and living
- Urbanism (high-valued architecture quality ensured by competitions)
- Ensuring the social and technical infrastructure
- Supporting whole developing zones with public transport (constructed in phases) as well as Availability of high-ranking public transport roads
- Connecting living quarters and workplaces have a close pedestrian and bicycling network within the meaning of the “City of the short distances” (breaking the barrier effects)
- Improving quality of landscape and public spaces
- Step by step supporting the big block structure with MIV infrastructure
- Participative planning process
- Cultural infrastructure such as renovation of Rindhalle, Gasometer and Arena
- Location marketing and public relations

Because of the huge size of the area and also of the concept of poly-centric development, the site was divided into 8 sub-districts<sup>194</sup>, for different districts different strategies, core tasks and timing programs were given. Some middle scale projects are promoted as “Impulse projects”, which means they will act with public centers or landmarks of the districts so as to promote the development of the surrounding areas. Judged from the projects which is implemented or partially implemented now such as

<sup>192</sup> Refer to Markus Olechowski, Robert Schweighofer, Hans peter Graner, Klaus Valter, MA 21A, <Zielgebiet Bahnhof Wien-Erdberger Mais\_\_Entwicklungszonen Erdberger Mais, Aspengruende und Arsenal>, p.1

<sup>193</sup> Refer to Official website of Mais: Wien

<sup>194</sup> They are Gasometer Umfeld, Südliches Gasometer Vorfeld Mehrwert-Simmering, St. Marx, Neu Erdberg, Aspengruende-Eurogate, Franzosengraben, Gaswerkareal and Arsenal

the Gasometer City and the T-Mobile center, these impulse projects had managed in creating sensation effect in the public with their high architecture value and giving the areas new images. However, whether they can promote the urban development of surrounding areas and how they can do this, is still questionable and hard to be concluded now.



Figure 55: Aerial view of the planning scope of Erdberger Mais, from <Ausgangslage im Zielgebiet Hauptbahnhof Wien - Erdberger Mais> from office website of city of Vienna, [www.wien.gv.at](http://www.wien.gv.at)

#### 3.1.4.3 PLANNING EVALUATION

Having in mind the importance to retain a healthy composition of economy in which manufacturing industry still has a role, the urban planning regarding “**BRING OUT**” aim to protect the industrial and commercial sector, which include the promotion of large office and hotel projects, protection of industrial, retailer and SMEs in the densely built up urban area and protection and promotion of large-scale industrial and retailer parks in the periphery.<sup>195</sup> It is confirmed by the urban development plan 2005, based on comprehensive investigation and data analysis, that the process of relocation of industrial and commercial enterprises from the densely built up area is already finished. Instead of providing more industrial lands by urban planning, the further development of must be focused on improving the quality and sustainability of the industrial locations that are already confirmed, including improving transportation/traffic accessibility and public transport, the mix-function development and the establishment of compatible facilities.<sup>196</sup>

<sup>195</sup> Refer to presentation by D. I. Mittringer, Magistratsabteilung 18, <Vienna’s Urban Development Plan 2005>, 2005

<sup>196</sup> Refer to <Step 05: Stadtentwicklungsplan Wien 2005>, Stadtentwicklung Wien Magistratsabteilung 18, , 2005, p.134 and p.135

In aspect of “**FILL IN**”, the urban development plan 2005 also provides indications for the redevelopment of “brownfields/industriesbrachen” (brownfield/abandoned industrial site). The redevelopment of these areas shall be treated as important component of the “Inner City Development” and “City Expansion”, in which active reutilization program must be made. Special attention is paid to the development of abandoned industrial areas with monument protection value.<sup>197</sup> Such strategy is best demonstrated by the redevelopment plan for Erdberger Mais, which is one of the 13 target areas of development and aimed to develop under an ambitious target: a second CBD. Under such target, comprehensive urban planning measurement was made.

Regarding the evaluation on the planning on the redevelopment of Erdberger Mais, it shall be also mentioned that although starting as early as in late 1990s, the redevelopment of Erdberger Mais of Vienna only gained its new dimensions shortly after the newest urban development of Vienna in 2005. The major implementation of the redevelopment is still in process. The evaluation will be based on the current state and the projection of the urban planning.

Concerning the land use change, the objective is on one side on “Enhancement of the value of area by high-valued functions of administration, high technology, research and development and service”, on the other side on “Promoting residential use, so as to provide “cloak population” a viable (social) infrastructure.”<sup>198</sup>

Concerning the development of office, enterprises and industrial areas, the planning it is projected that there will be a dramatic increase of office function in this area for the target to develop it into a secondary CBD, where society-related service and production-related service agglomerate. However, it is also emphasized that the new office area should be gradually realized in consideration of a longer time space, and firstly on the basis of existing infrastructure capacity. This must be achieved with use of planning methods. In some less attractive place, industrial functions can be still retained including development of some new industrial parks.<sup>199</sup> The strategy on one side avoids loss of employment due to structural change, on the other side avoids excess increasing of office areas that may cause unbalanced function composition. The failure in London Docklands regarding the excessive development of office function (in first stage)<sup>200</sup> shall not be repeated here.

Other major functions are the housings and education facilities. Both social and private housing will be developed in this area. Education facilities such as the Campus Vienna Bio-center, institute for Molecular Pathology and other schools will be promoted for support both for the increasing population and the coming enterprises.

The peculiarity about the function composition and distribution here is that in the 8 sub-districts, different objectives and strategies are set forth and applied. For example, the Gasometerumfeld had relative higher proportion on offices with some housing, student dormitory and school as complementary function, while the south Gasometerumfeld was titled as “Mehrwert-Simmering”, in which big-scaled parks

<sup>197</sup> Refer to <Step 05: Stadtentwicklungsplan Wien 2005>, Stadtentwicklung Wien Magistratsabteilung 18, , 2005, p.134 and p.115

<sup>198</sup> Refer to Markus Olechowski, Robert Schweighofer, Hans Peter Graner, Klaus Valter , <Zielgebiet Bahnhof Wien-Erdberger mais\_\_Entwicklungszonen Erdberger mais, Aspernggründe und Arsenal>, , City of Vienna, MA 21A, 2006, p.1

<sup>199</sup> Refer to official website of Mais: Wien

<sup>200</sup> See also 3.1.1

(recreation area) are planned with high proportion of housings both of private and social ones. These strategies of each sub-district are made up according to different urban, economy and social situations and revitalization possibilities of each sub-zone, thus to attain high degree of flexibility and feasibility.

In spite of its central location with only 3.5 kilometer meters to the city center, the area of Erdberger Mais was treated as outer district before the planning for its lack of accessibility by traffic and public transport. Therefore, the improvement of accessibility was treated as one of the basic starting points of projects as early as in the initial stage of planning<sup>201</sup>. The planning of Erdberger Mais is planned to mainly improve the accessibility in three aspects: individual transportation (highways and traffic roads), public transport (metro lines, tramways system and bus) and pedestrian paths. In terms of individual transportation, B 228 will be extended and connected to the A4. Further efforts are to realize the internal transportation circulation of sub-zone St.Marx and that of Arsenal in connection to the development of central railway station. In addition to existing metro line U3, the metro line U2 would be extended into this area, connecting several important points to the city's public transport network. The planning of pedestrians and bicycle paths will put importance on the connection to the recreation connection to Danube Canal and Prater, as well as the conquering of barriers by highway A23 and reducing the distance to public transport.

The development of public space and green space is another important task in the planning. The site is close to the Danube canal and the huge recreation area Prater. With in the relative loose urban structure, there are high potentials for development of green area and public spaces. However, currently the area is facing with the situation of inadequate green area and public space. Basing on the current situation, 7 principals were brought forth, in which the general targets, requirement on planning and design, combination methods of green area and architecture, financing methods (private and public partnership), administration methods are suggested. The network of green area and public spaces is in close connection to the public transport system and those historical landmarks which give strong characteristics to the green area or public space. Some newly developed projects also put green area planning in their core tasks such as the "Kultgrün St. Marx" project (financed by Urban II) and the "Grüntown" project.

In terms of urban conservation, the case of Erdberger Mais also has its specific situation and countermeasures. There are also some very valuable historical industrial heritages in this area such as the Gasometer, the Ring Hall and the Arsenal, which witness certain phase of the city's industrialization period, acted as important landmarks for the city and have great conservation value due to their historical significance as well as architectural achievement. The strategy of urban conservation on these monuments is to use them as "Impulse projects", which is combined with sensation-creating architecture value and filled with public functions so that they can not only change the image in the area but also serve as public centers or facilities.

For example, The Gasometer, which was biggest gas container when it was built in 1899, is the landmark of the district Simmering as well as landmark of Vienna. In early 1980s, it was been inscribed on the list of Denkilometerschutz (monument

<sup>201</sup> There are four starting points that were pointed out: 1. A high-valued and powerful transportation infrastructure, 2. well enclosed available lands with high developing potentials, 3. attractive impulse projects (Gasometer, T-Mobile headquarter, Institute of Molecular Biotechnology of the Austrian Academy of Sciences), 4. connection to recreation space (Prater). Refer to Official website of Mais: Wien: [http://www.iemar.tuwien.ac.at/mais/projekte-overview/projekte\\_f.html](http://www.iemar.tuwien.ac.at/mais/projekte-overview/projekte_f.html)

protection). Early attempts to reuse for exhibition and concert hall proved to be not successful for inadequate support of urban planning and economy reason (bad public transport support and less attractiveness of the surrounding area). After bought by Gesiba, GPA and SEG, a worldwide design competition, was hold in the end of 1990s. In 1999~2001, Gasometer was then constructed with carefully restoration of the original architecture and the creative design for shopping center, housing (both social and private), student dormitory and concert hall. In additional, other public facilities was built its surroundings such as cinema in its north, in which the whole cluster is made into center of the Simmering District.

The Rindhalle of the former slaughterhouse, which stays in the center of the sub-zone St. Marx, is the first iron construction building of Vienna in end of 19 century, built in 1878~1898. After careful restoration and reconstruction, this 114-meter-wid, 224-meter-long industrial building with its about 20,000 square meters area will be adapted for sport, recreation, fitness, gastronomy and culture uses. The reconstruction project of Rind Hall, together with the other impulse projects such as project of T-Mobile Headquarter (built in 2006) and Campus Vienna Bio-center, will become the public center of the sub-zone of St. Marx.



Figure 56: Aerial view of the renovated Gasometer complex with office & cinema cluster connected to it,  
Resources: internet

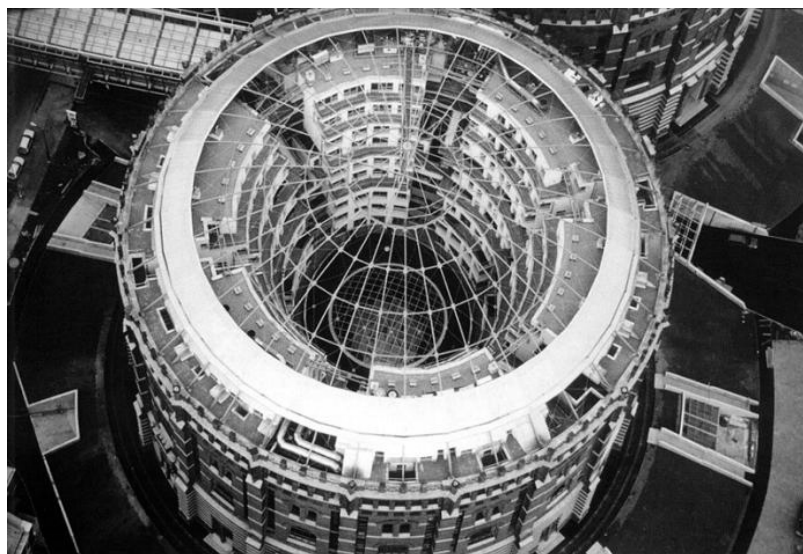


Figure 57: Aerial view of renovated Gasometer C, Designed by Manfred Wehdorn, Resource: internet



Figure 58: Renovated Gasometer B with the high-rise building added to it, designed by Coop Himmelb(l)au, Resource: internet

### 3.2 URBAN PLANNING IN REDISTRUBUTION OF INDUSTRIAL SPACE IN CHINESE CITIES

Compared to European cities, the city's structural transformation due to evolution of industrial structures started much later in China. The industrialization started in China only after Opium Wars in second half of 19<sup>th</sup> century, some industrial centers in south east coast area as well in the northeast China such as Guangzhou, Shanghai, Wuhan, Dalian, Shenyang emerged before the foundation of the PRC in 1949, national or foreign capitals. In the post-war period while the atmosphere of de-industrialization began to affect the city's development in European and American cities, the whole China entered a stage of heavy development of manufacturing industries, in contrary. In the political movement of "Great Leap Forwards"<sup>202</sup> and the later "Cultural Revolution"<sup>203</sup>, the development of heavy manufacturing industries such as steel, coal and chemistry industries were highly promoted in priority and treated as the pride and achievement of the nation and communist party. Such effort led to a very high proportion of manufacturing industry, especially heavy manufacturing industry, in the industrial structure in many cities of this country.

After 1980s, China's economy structure was reformed from strict socialism economy system more and more to free-market economy system. Although the manufacturing industry still had its dominant advantages nevertheless to ensure the development of the cities wouldn't be slowed down, the tertiary sector began to grow in high speed and the proportion of it also grew in the industrial structure. In those former industrial cities, which had been established originally on manufacturing industries in their grounding time, are now faced with serious problem of comprehensive decaying of industries and incapability of inner city development, which leads often to big economy barrier of the city as well as social, urban and environmental problems. Such atmosphere is widely seen in the northeast part of China, while a number of former booming industrial cities such as Shenyang, which suddenly lost advantages of development and suffered from high unemployment rate and lack of economic vitality. In other cities such as Guangzhou, Shanghai, Beijing and Shenyang, which were not typical "industrial cities" but have strong industrialization backgrounds, considerable big amount of industrial areas were left in the inner city areas and these areas all suffered from comprehensive decay. In contrast is the booming of the rest part of inner city area in these cites, which becomes agglomeration area for tertiary sector.

The topics of "BRING OUT" and "FILL IN" come to the view of urban planning. On one side, many cities constitute their new master plans after 1990s, in many of which a decrease of industrial spaces in the inner city and the establishment of concentrated industrial districts in the periphery of the city were seen. These demonstrated that the urban planning authorities in these cities have recognized the tendency mentioned above, and started to make efforts in "BRING OUT".

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<sup>202</sup> The "Great Leap Forward" in PRC was a social and economic plan used from 1959 to 1961 which ostensibly aimed to use China's vast population to rapidly transform China from an agrarian society to a modern communist society through agriculturalization, industrialization and collectivization. Refer to Wikipedia

<sup>203</sup> The Cultural Revolution was a violent mass movement that resulted in social, political, and economic upheaval in the PRC starting in 1966 and ending officially with Mao's death in 1976. It resulted in nation-wide chaos and economic disarray and stagnation. Refer to Wikipedia

On the other side, many efforts of “FILL IN” led to confusion and in many times to complete failures. Under the over-heating enthusiasm of city-redevelopment and real estate development, these districts are easily torn down, while historic buildings and urban fabric were erased from the area. In the same time, the re-planning often lacks integrative view of the whole area and of the city. Pursuit for short-term economy profit, pressure from private real estate investors and short-sighted policies often make these planning very unsustainable, that may be very harmful to the areas long-term development.



Figure 59: Shenyang, China: People walk near a coal-fired power plant, from <24 hours in picture> in THE GUARDANCE, 28/11/2009, Photograph: AP

### 3.2.1 CASE 5: BEIJING AND 798 DISTRICT

#### 3.2.1.1 PLANNING BACKGROUND

Located in the northeast of China, Beijing is the capital city of China and the most important political and cultural city in China. It has a history of more than 2000 years and had been capital city of China for many dynasties such as Yuan Dynasty (1271~1368), Ming Dynasty (1360~1644) and Qing Dynasty (1636~1911). The current city urban spatial structure is a typical mono-centric one, with the center situated in the so-called Forbidden City (established in the Ming Dynasty and was significantly expanded in the Qing Dynasty) and spread out with multiple ring streets. According to the newest census data in 2009<sup>204</sup>, Beijing has a permanent population of 17.5 million. The metropolitan area of Beijing is 1,650 square kilometer and the inner city is 778 square kilometer.<sup>205</sup>

<sup>204</sup> According to <Beijing Year Book 2009>, China Statics Press, Beijing, 2009, p.5

<sup>205</sup> According to <Beijing Comprehensive Planning 2004~2020>, chapter 3, item 19.

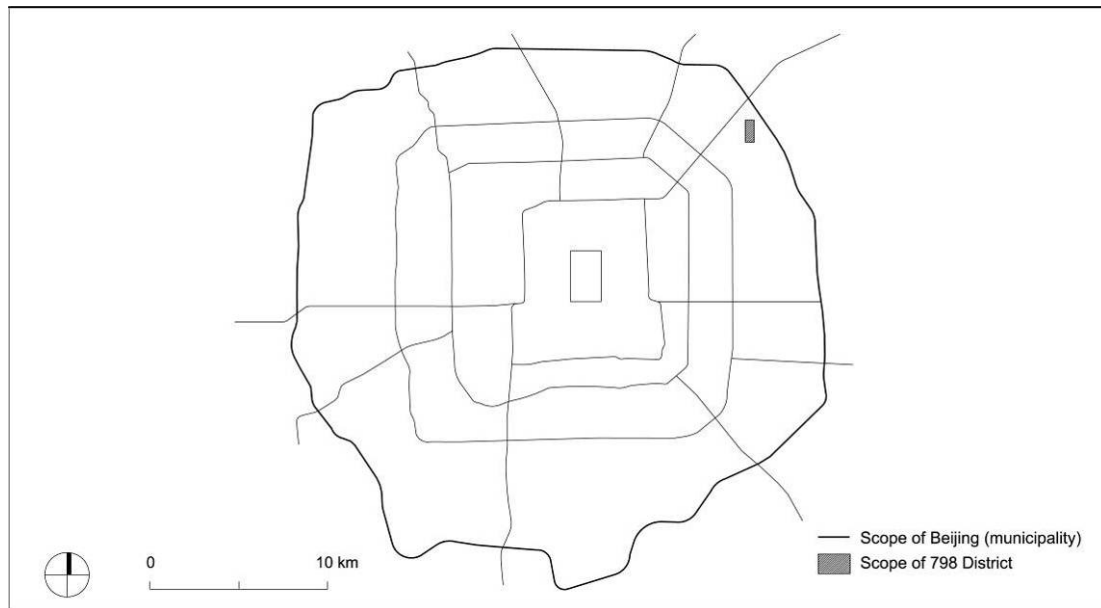


Figure 60: Scope of Beijing (Municipality) and 798 District, drawn by the author

The initialization of industrialization of Beijing can trace back to the 1883, when the government of Qing Dynasty established the “Shenjiying Beijing Manufacture Bureau”. Since this time, many factories, either by national or foreign investment, were established in the Inner City of Beijing. After the foundation of PRC, a new strategic target for the development of the city was set forth, in which it was demanded that Beijing must develop itself from a consumption-oriented city into a manufacture-oriented city.<sup>206</sup> This led to the intensive industrialization of the city in the following 30 years till 1980s, with major industrial facilities such as the electronic, mechanism, steel work, chemistry were set up, either in inner city and in periphery. In 1980s, Beijing became one of the biggest industrial cities in China, specialized in heavy manufacture. Concerning the heavy manufacture’s proportion in the total industrial composition, Beijing ranked the second, only after Shenyang.

The area that is known as 798 Arts District, was actually part of the state-run electronic and military manufacturing enterprises “718 united factory”, which is located in the northeast of the inner city area of Beijing between 4<sup>th</sup> and 5<sup>th</sup> ring road, 10.2 kilometer to the Forbidden City. The factory district was established in beginning of 1950s as key project of Beijing’s industrial development, with aids of USSR and Democratic Republic of Germany. The planning and construction of the factory were taken charge of by experts from Democratic Republic of Germany with most advanced techniques at that time. Factory buildings were designed with highest building standards by architects from Germany with Bauhaus style, very prevailing style for industrial building at that time.

In the meanwhile, the huge state-run 774 Factory and 738 Factory were planned and constructed in its neighboring areas. The huge scale of factory construction was unprecedented in China, which changed completely the urban structure of the “Jiuxianqiao Area” of Beijing and turned it into industrial district after that. The factories in the districts contributed greatly to the industrialization of China after the foundation of the PRC and marked the one of the highest achievements of industrialization in that time in aspects of electronic industry, military industry and

<sup>206</sup> <According to the <Key points of Urban Construction of Beijing in the first Planning Stage>, Municipal Government of Beijing, October 26<sup>th</sup>, 1954

telecommunication industry. For example, parts of first atom bomb and manmade satellite of China were manufactured here.



Figure 61: Aerial View of Beijing 798 Districts, from U. Münster, <With the Weapons of Art>, Artnet

After its golden period in 1950s to 1970s, the enterprise began to slow down its development in 1980s. The structural change of the economy of Beijing had a great influence on the area: the economy outputs of the industries in the area dramatically dropped down in the 1990s, when the number of stuffs dropped from 20,000 in 1970s to 4,000 in late 1990s.<sup>207</sup> In beginning of 1990s, the assets of 798 district and its surrounding industrial districts were integrated together and taken over by the state Qixing Cooperation, which planned to demolish the whole existing physical environment and build an office park in this location.

#### 3.2.1.2 PLANNING PROCESS

In the year of 2000, there were still about 1000 industrial sites in the inner city of Beijing. In some municipal districts like West City District and Xuanwu District, the industrial areas occupy almost near half of the urbanized area.<sup>208</sup> The effort of “**BRING OUT**” by urban planning was initiated from the “Beijing Comprehensive Planning” in 1990s. The focused area for construction of industrial area was shifted from the inner city area to the outer periphery (regional), Beijing must “further adjust the industrial structure:, “change the state of distribution to avoid excessive congestion of industrial spaces in inner city”, “improve or relocate the industrial facilities that pollute or disturb the residence in inner city within a time frame of 20 years” as well as “accelerate the development of tertiary sector”.<sup>209</sup> In the latest urban planning scheme <Beijing Comprehensive Planning 2004~2020>, it was set

<sup>207</sup> Huang Rui, <Factory, Beijing>, timezone 8 +, Beijing, 2004, p.8

<sup>208</sup> Jianguo Wang, <Conservation of Industrial Heritage Buildings and Sites in Post-Industrialization Era>, p.28, China Building Industry Press, 2008

<sup>209</sup> Jianguo Wang, <Conservation of Industrial Heritage Buildings and Sites in Post-Industrialization Era>, p.28, China Building Industry Press, 2008

forth that the manufacturing industry must be further relocated from the inner city to the outer periphery (regional) and their planning and development in outer periphery (regional) must be coordinating with the planning and development of the periphery especially the “new towns”.<sup>210</sup> The redistribution of manufacturing industry will release 47.78 square kilometer lands free in the inner city.<sup>211</sup> These targets and principals regarding the redistribution of industrial space were basis for the constitution of comprehensive planning in land use planning, transportation planning, open space& greenery planning.

In contrary to the systematic efforts of urban planning regarding “BRING OUT”, the efforts regarding “FILL IN” were often missing. While many former industrial spaces in the inner city area being release free by the redistribution, the urban planning for the revitalization was often not coming in time, or the urban planning that was made was inappropriate for the redevelopment of these areas. Both made difficulties or irreversible damage to the redevelopment of left-over these areas.

The missing of urban planning can be well demonstrated by the case of Beijing 798 District. Before the area began to be revitalized by the non-governmental force, there was no official urban planning for the redevelopment of this area, although a big number of single industrial sites in the districts were already abandoned and release free. The only urban planning scheme came from the factory owner, who aimed to totally demolish the existing physical environment and redevelopment the area for purpose of office park. This scheme has is based on a short-term pursuit of economic output, not the mention that it has no consideration of coordination with the city's spatial development. Without official urban planning, the redevelopment of the area underwent a unique special way which is very similar to that of SoHo in New York in 1960s and 70s, where the artists came in and became the main power to push the revitalization.

From the second half of 1980s on, many factory buildings in 798 and surrounding industrial areas had been abandoned. Before the implementation of new planning by the owner, they were temporarily leased out with very low rental. The China Central Academy for Fine Art was among the first lessees to come in. Between 1995 and 2002, the academy rented several big workshops to use as their studios and exhibition halls. The low rents, central location in the city and the existing industrial buildings with huge space and natural light from north-windows which are ideal for ateliers and exhibitions attracted more and more artists and designers to move in. The 798 district had soon become agglomeration area for creative industries.

More and more factory buildings were protected and renovated with new comers: artists, galleries, art centers, design companies, book stores and art restaurants and bars. The district gained new characters and identities through the revitalization: historic elements and modern design mixed together and formed very harmonious scenes. The existing industrial landscape survived and showed new activeness in this way. An “art community of international level”<sup>212</sup> is gaining ground. Meanwhile, the revitalization of 798 gained its international fame and enthusiastically reported by world's main magazines.

<sup>210</sup> <Beijing Comprehensive Planning 2004~2020>, chapter 8, item 71, Beijing Municipal Government, 2004

<sup>211</sup> Jianguo Wang, <Conservation of Industrial Heritage Buildings and Sites in Post-Industrialization Era>, p.28, China Building Industry Press, 2008

<sup>34</sup> Huang Rui (ed.), <Beijing 798: reflections on art ; architecture and society in China >, Time Zone 8, Hong Kong, 2004, p.36

To prevent the district from the being demolished, the lessees of the factories set out campaigns against the redevelopment plan by the factory owner. In 2004, the 798 arts district submitted to the Beijing Municipal People's Congress <Motion about the conservation of architecture and cultural industries of 798 united factories>. In 2005, the first 798 International Art Festival was held. Public opinions and mediums continued to exert pressure on government. Under such pressure, the old redevelopment plan and demolition was stopped. In January of 2008, Beijing released the first protection list of "historic modern architecture", all industrial buildings in 798 district were included, that means principally no building in the site can be further demolished without special permission.

Since it began to attracted more and more attention of the public, this area have been the object of study for many universities and architects like China Central Academy for Fin Art, Southeast University and the Bernard Tschumi Architects. Some urban planning proposals were made and these all became power to press the government and the factory owner to change the old planning. The new official planning for Beijing 798 District only came into being in 2007, as a result of competition and a part of the "798 Art Zone infrastructure and environment improvement project", in which Beijing Turen Landscape Architects and Shenzhen Zongshuo Architects won.

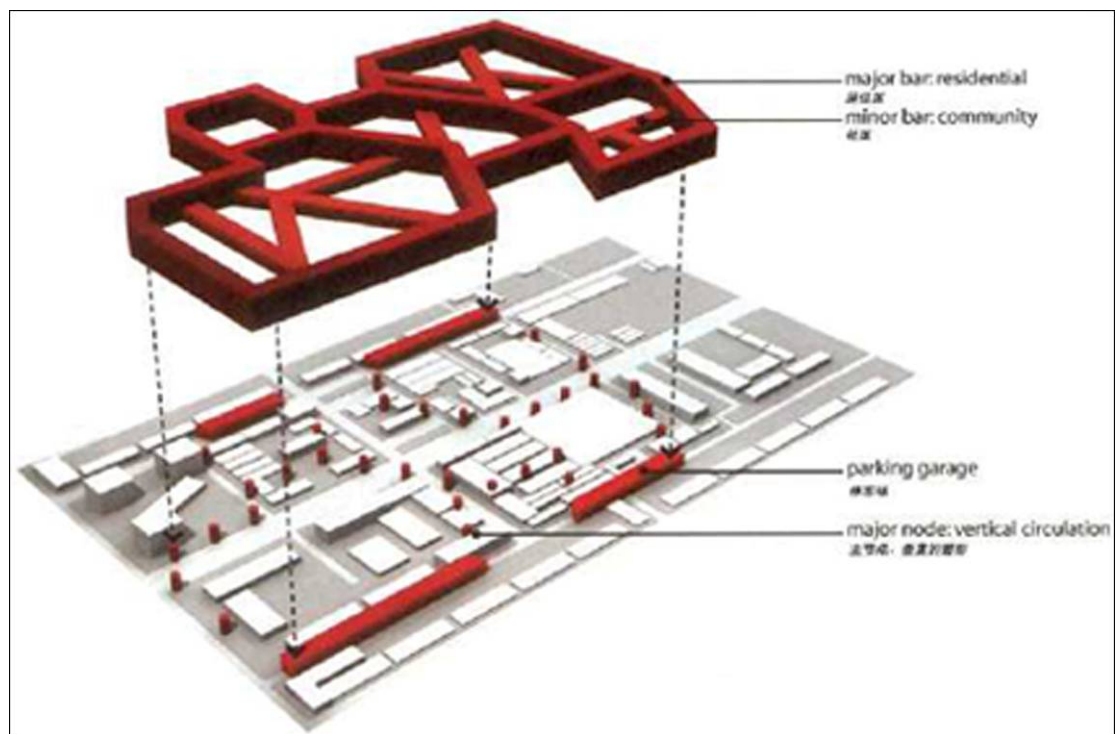


Figure 62: Urban Planning Proposal by Bernard Tschumi, from <Combination of "new" and "old"\_\_\_798 factory>, Architecture technology and design, 2004(11)

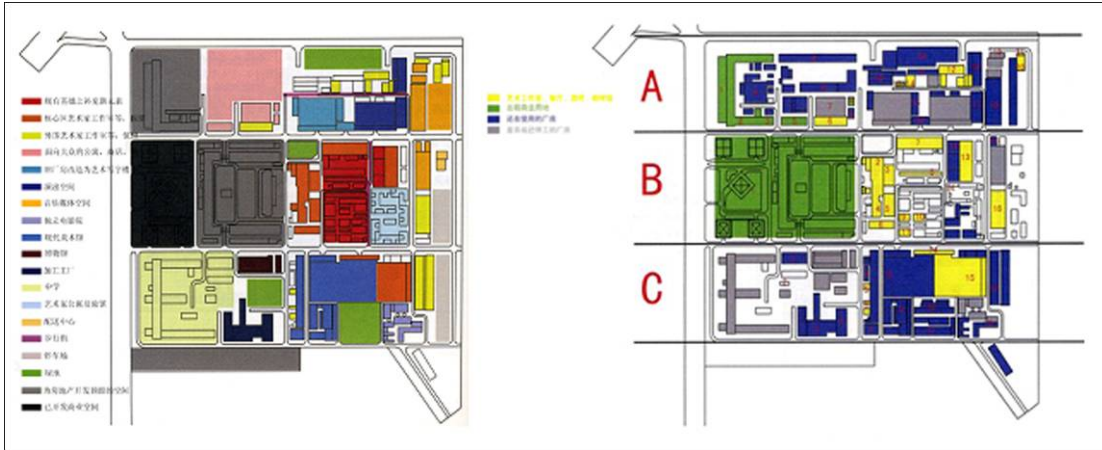


Figure 63: Analysis and planning proposal by China Central Academy for Fine Art, from Huang Rui, <Beijing 798: reflections on art; architecture and society in China >, Time Zone 8, Hong Kong, 2004, p.20

### 3.2.1.3 PLANNING EVALUATION

From the “BRING OUT” point of view, the effort to redistribute the industrial space in the urban structure of Beijing received expected effects. The planned spatial distribution of industrial space is in process of forming. The development of the industry in inner city is focused on one side the relocation of former manufacturing, on the other side the promotion of the so called “new urban industry”, namely the tourist products industry, applied art commodity industry, beverage industry, printing industry, information service industry and so on. The revenue of these industries in inner city is increased to more than 20% in the total industrial revenue of Beijing in 2002 and will further increase. In the inner periphery, the strategic spatial structure is formed base on the center of “Zhongguancun Hi-tech Park”, its neighboring high-tech parks and the two axes along side main transportation corridors, stretching out from this zone to Districts of Huairou, Changping, Yanqing and Shunyi, in which Hi-tech manufacturing industries are promoted. The new manufacturing industries were planned in the outer periphery (regional) of Beijing, in coordination with the urban development of the new towns and suburban residence.<sup>213</sup> In terms of urban planning, the comprehensive planning of Beijing in 1990 and 2004 utilized the land use planning, transportation planning and open spaces/ green spaces planning to pursue the target of the redistribution by restrict the industrial land use in inner city, planning new lands and improving accessibility for the core development of industry, as well as planning open spaces and green space to service the industrial spaces in different location of the city.

On the other side, the urban planning in terms of “**FILL IN**” have not gain satisfactory effects, in which many lessons can be learned from in this regards. Let’s take the urban planning of the 798 District as an example. Although having undergone a partially successful path of revitalization through non-governmental efforts, the majority duration of the revitalization of this area had been without the indication, monitoring and managing of official urban planning. It is also for this reason that such revitalization is unsustainable, and there are many aspects to be amended, improved and strengthened.

Concerning the urban function, to develop the site as “art zone” with activities of visual art and its related commercial and service facilities has been an agreement of

<sup>213</sup> Refer to <Planning of the redistribution of industrial areas of Beijing>, municipal government of Beijing, 2004

the municipal government, enterprise owner and the existing lessees now. However, it shall not be forgotten that before the official urban planning came into being, there has been a heated campaign between people who tried to protect this area and the factory owner who insisted to demolish and build it into office function. After the official urban planning that planned this area to be function of service and commercial, another problem appeared. When the this area became famous and attracted more and more tourists, the proportion of commercial function increased dramatically and the proportion of function related to the art dropped when the quality of artists also dropped because many artists cannot afford the increasing price for rental. A tendency of gentrification and lost of social diversity are seen, while no measures from the urban planning is provided to prevent this.

For achieve the goal to develop this area and its surrounding areas to a sub-urban center in Beijing inner city, the improvement of accessibility is fundamental. The site is located in between the 4<sup>th</sup> and 5<sup>th</sup> ring road<sup>214</sup> of Beijing, outer edge of the Beijing Inner City. Before the establishment of subway line in 2008, this area was like an isolated island in the city and difficult to access. The establishment of the subway line in 2008 connected this area with the public transport system of Beijing Inner City and contributed greatly to solve this problem of accessibility. Regarding the inner transportation system, the official urban planning in 2007 and the following construction on transportation infrastructure (traffic road and pedestrian path) improve the transportation circulation of this area and made good effects.

The official urban planning in 2007 also gave proposal and indication for the open space and green space of this area, which were not considered before the official planning is made. Many spaces besides the traffic road and pedestrian path are utilized as open space, decorated with greenery and sculptures. These open spaces are very effective in contribution to the urban vitality of this area, due to the close relation to the main stream of people and to the urban functions of the renovated industrial building by the roads.

In terms of urban conservation, the high aesthetic value of the industrial buildings and the diversity of renovation style made by the lessees made the main attractiveness of this area. But without the advisory instruction from professionals, some of these renovations could cause damages and losses to the original buildings, many to these are irreversible. In beginning of 2008, the 798 District is included in Beijing's architecture protection list, which means the official power had entered the conservation process. More measures about conservation laws, conservation guidelines, design approval, expert advisory system and construction supervision system should be constituted and implemented.

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<sup>214</sup> Beijing has a typical mono-centric spatial structure with the historic city being the very center of the whole huge structure. Till now five ring roads had been built. The 1<sup>st</sup> ring road stands on the former location of city wall (fortification) of historic inner city.

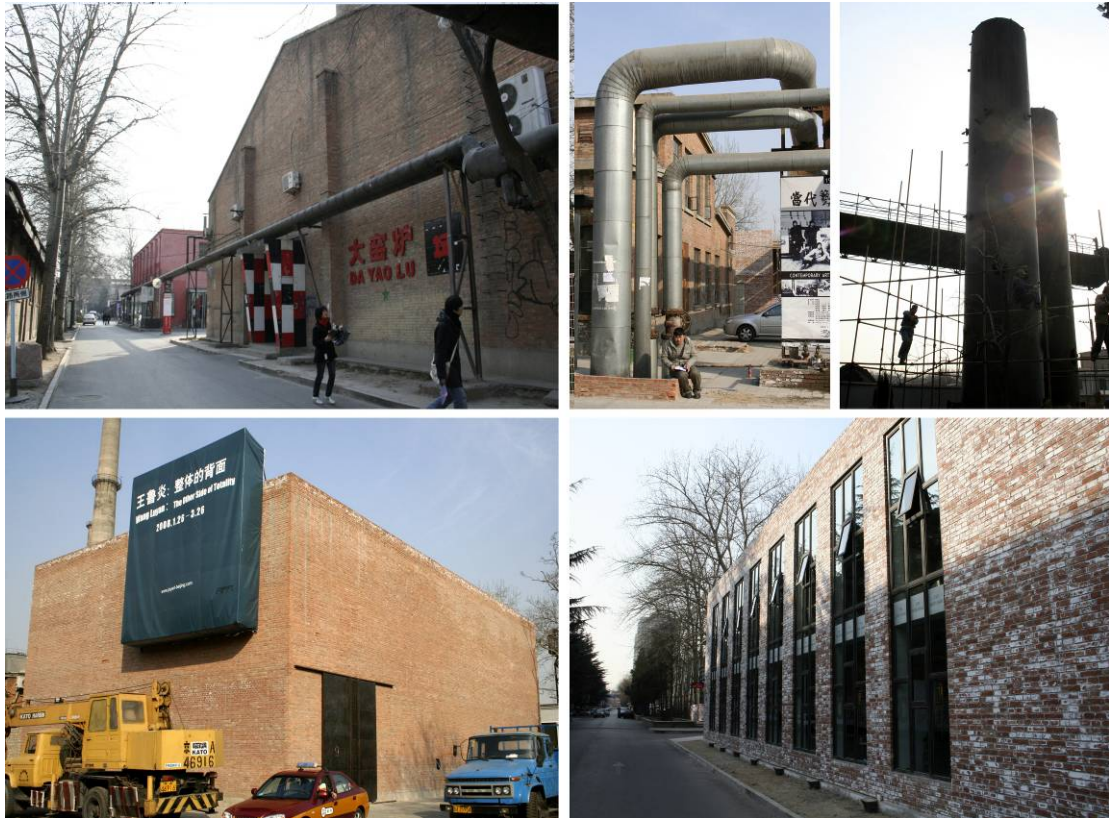


Figure 64: Factories in renovation, photograph by the author



Figure 65: Renovated Interior Space for Shop and Gallery in Beijing 798 District, from DACARC: Nature + Architecture + Light, Achieve for March, 2009

### 3.3 CONCLUSION OF CASE STUDY

#### 3.3.1 CONCLUSIONS BEYOND LEVEL OF URBAN PLANNING

- **Market-oriented development or urban-planning-oriented development**

The case of London Docklands opens for us the topic of heatedly debated discussion: whether market-oriented development or urban-planning-oriented development is more suitable? Of course, for London to choose more market-oriented development strategy and method has its political backgrounds.<sup>215</sup> The market-oriented development in London Docklands, which took priority of attractiveness of investment and target of economic growth pursuit, did receive positive results in its early stage with fast speed of decision-making and implementation. However, entering 1990s, the problems of the previous stage of development appeared, which is characterized by discontinuous urban fabric, social polarization and monotonous function composition and high vacant rate of the built area. In the Beijing 798 District, with the rise of fame of this area that stimulated the tourism, excessive commercial function enters and forces the art function such as galleries and studios, which was the origin of attractiveness as well as the initial power to drive the area's development, to leave, as the price of rent is already much higher than what they can afford. Under such situation, the industrial monuments and the protection on them that this area was boasted for, was in danger again. Both cases demonstrated the harm that the market-oriented development can make to the development of the area, especially judged from a view of long-term development. In Ruhr Region, quite in the contrary, the market-oriented development had no root while urban planning is from the beginning in its dominant position. Certainly the attractiveness of investment stays as one of the main targets of redevelopment, the development is granted with multiple layers of development targets, in which the improvement of environment quality, industrial heritage protection and industrial landscape conservation, green space and open space planning, mix use development were all considered. Instead of asked for economic output in short term, the government invests itself as well as stimulates public-private investment on these targets. All these efforts, using urban planning as an instrument, were aimed at a long term development vitality of this area, which has already met positive results.

- **United power system for the planning and implementation**

A precondition for the success of redistribution is that a united power system for the constituting, implementing, monitoring and managing of urban planning must be established. This system shall be given dominant official power that overcomes the complexity of individual and often isolated official power such as the local government. It represents the interest of the city, its people and its spatial development as entirety rather than that of a single party involved (local government, private owners or investors). It must also be supported as possible enough financing support from public or private resources or be given the power to utilize the resource of public or private financing, which is fundamental for implementation of urban planning as well as to balance short-term and long-term investment and profits. The outstanding example for this is the LDDC in redevelopment of London Docklands, in which the institution was given nearly infinite power: huge available lands, political power overtopping the local governments, close collaboration with municipal

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<sup>215</sup> For details please see 3.1.1

government and huge state financing support. The growth of prosperity in London Docklands couldn't be without the contribution of LDDC. In Ruhr Region, a political consensus was initiated right in the beginning of the planning process, in which all parties involved including municipal governments of the cities in this region reached agreement. Later on, companies and organizations were set up for planning and implementation for the purpose based on the common interests which had been found, which ensure that all efforts, while highly diversified in strategy and methods, was made towards the same direction. Quite in the contrary, in the case of Beijing 798, even though the political system of China had somehow granted the possibility of self-concentrated power structure to take in charge of all necessary affairs, the absence of a united authority still places chaos and low efficiency in planning, implementing, managing and financing.

- **Connected effort of “BRING OUT” and “FILL IN” in integrative planning**

Facts prove that the effort of “BRING OUT” and “FILL IN” must be well connected to each other, well as be connected to the city's spatial development planning, so as these efforts can benefit from each other. Integrative planning, or planning with close connection with each other in same or well-connected power system is necessary for a sustainable and fruitful development. The embarrassment of development caused by disconnected efforts of “BRING OUT” and “FILL IN” are often seen in the early development stage of some cases. For example, in the early stage of development in London Docklands saw dramatic development of office function, which turned to result in very high vacant rate and finally led to the economic crisis of the development company due to low attractiveness of the area as an entirety (no link to the city center and lack of service function. The early reutilization of the Gasometer in Vienna also suffered from that the quality of the surrounding area of Simmering, where industry still dominated, as an entirety as well as low traffic accessibility from the city center. Urban planning on Ruhr Region made an outstanding example on this aspect. While those projects regarding “FILL IN”, including those reutilization of brownfield as well as industrial land continues to be used as industrial area, were under planning and construction, they found themselves on a integral regional background of urban development in which the environmental is much improved, transportation system to connect these projects to each other is in forming process as well as the regional green space to connect these projects is also in forming process. In the other side, these successful individual projects contribute to the development of region in almost all aspects as an entirety. “BRING OUT” and “FILL IN” reached a harmonious state here.

- **Controlled flexibility in urban planning**

The complexity of urban planning in regard to the redistribution of industrial space lies in not only the situation and target-setting of difference cases are highly diverse, but also in that the situation and target setting is changing with the time. This calls for a kind of controlled flexibility, which is ensured by the concept and strategy of urban planning, to adapt continuously to different situation in changing, as well as to allow urban planning to adjust its target setting and strategy in reaction to these changing situation while not damage the continuity of urban development through the planning time. Such controlled flexibility in urban planning is perfectly demonstrated by the case of Hamburg and Ruhr Region. In the redevelopment of the harbor areas of Hamburg, there is not an integrative master plan. However, a general guideline for these areas, together with the target development projects such as the North Elbe Shoreline Area and the HafenCity. In the redevelopment of North Elbe Shoreline Area, the concept of “Perlenkette” allows for flexibility of the “pearls” (individual projects) to develop according to their diverse situation, based on an integrative

planning of transportation infrastructure that connect them. In the Ruhr Region, the individual projects in the Emscher Park have their flexibility of redevelopment through combination of top-down planning and bottom-up planning, while the general guideline for the planning is set in advance. On another level, in the London's urban planning regarding "BRING OUT", industrial spaces were categorized by the London Master Plan with different set of guidelines, aided by real time monitoring and management of land supply & demand. Meanwhile, the power to plan of these industrial spaces in detail is given to the Boroughs.

- **Coordination of implementation time table**

The contents of urban planning: urban land use change planning, urban traffic planning, urban open space and green space planning as well as urban conservation planning, shall be implemented with coordination to each other, as they are interlinked with other. For example, the postponement of the subway line construction, even though planned for long time, caused the crisis of development of London Docklands area in beginning of 1990s. In Beijing 798 District, lack of transportation accessibility, lack of open spaces and green space as well as the belated land use planning made the area a problematic area of development, even though the urban conservation/monument protection in this area had gained a name for long period. In the contrary, the well-coordinated efforts of urban planning and implementation benefited the urban development of Ruhr Region. For example, the priority was given to the implementation of changing Emscher Water System as well as the Emscher Landscape Park, as so the environment quality was significantly improved and image of the region in public view was also significantly changed. This powerfully supports the urban development in other aspects such as the implementation of the individual projects.

- **Urban acupuncture: Importance of quality impulse project (pilot project)**

The importance of quality impulse project, such as Canary Wharf in London Docklands, Gasometer and T-mobile Center in Vienna, Philharmonie in Hamburg HafenCity, Zeche Zollverein, Duisburg Landscape Park and Oberhausen Gasometer in Ruhr Region, is recognized by almost all cases in this research. The importance of these projects lies in, although they need intensive investment in the beginning period and many of them are non-profitable in short term in terms of economic output for their public and service function, that they can change the public impression on the surrounding area, increase the urban attractiveness. These projects become usually trademark of the whole redevelopment. Most important is, they play important role in the so call "urban acupuncture", which means that the intensive development in certain points in strategic location of the in the initial stage of urban development can stimulate the urban development of the whole area. Acting as a public center for the further development of the surrounding area, these impulse projects were also big stimulations of the area's transportation development (the locations of impulse projects are often planned as transportation nodes with traffic roads and public transport), open space & green space development (the locations of impulse projects are often planned with high amounts of open spaces and green spaces). Besides, many of these impulse projects were realized based renovation of industrial heritages, which acted as urban monument and are brought back to life through the impulse project. In Ruhr Region, after the 120 projects were successfully implemented in the time frame of IBA Emscher Park (1989~1999), further 276 projects united under the "Concept Ruhr" are now under planning as the next step of urban development. In Hamburg, the implementation of the three strategic projects (HafenCity and North Elbe Shoreline Area) will be followed by other projects in between, including an "IBA Hamburg" project.

### 3.3.2 CONCLUSIONS ON LEVEL OF URBAN PLANNING

#### 3.3.2.1 Urban planning in "BRING OUT"

One shall be aware that in many European cities the structural transformation characterized by the development of tertiary sector and declination of manufacturing sector with the spatial phenomenon that industrial spaces relocate from inner city to periphery area and regional/global manufacturing locations has come to an end, which is very different from that in Chinese cities. In European cities such as in London, Vienna, Hamburg and Ruhr Region, the prior target of urban planning regarding the redistribution of industrial spaces is no more "redistribution", but to protect the current industrial location as well as create new industrial locations as well as enhance their attractiveness of these locations for investment. This is treated as of tremendous importance for the city's sustainable economic vitality as well as to stabilize and enhance the employment structure.

On the contrary, many cities of China such as Beijing, which has grown with strong influence of industrialization, are still in the process of massive relocation of industrial space from inner city to periphery, characterized by the decaying of inner city industrial spaces and the massive development of industrial spaces in the periphery area driven by big demand.

On the other side, the analysis on the industrial development in aforementioned European cities also shows that a significant restructuring process within the manufacturing industry itself became more and more apparent. This is seen also in Chinese cities such as Beijing. The restructuring is characterized by the rise of the industrial categories which is related to the production, but is not included in the traditional categorization of manufacturing industry such as logistics/warehousing, research, wholesale market, waste treatment, utilities and transportation. This new tendency places demand on the urban planning, which is addressed by the urban planning of cities as London and Ruhr Region.

On such backgrounds, a movement of planning and construction of modern industrial parks in inner or outer periphery area of the city, newly built or based on the former industrial locations, gained ground in many European cities from 1980s, which has already gained positive effect demonstrated by maintained employment and improved working environment for people. Such movement is also seen in some cities in China, such as Beijing and Shanghai.

The experiences and lessons are as followed:

- **Supply & demand relation and type/location strategy**

After the structural transformation process, currently the type-type-location structure of the distribution of industrial spaces in many European cities is already formed, which is characterized by the service industry, headquarters and research institutions in inner city, high technology mix use industrial parks and non-polluting industries in inner periphery as well as manufacturing industrial bases with well connected traffic and well planned environment protection green belts in outer periphery of city. The stabilized industrial land supply & demand relation with only slight change in the industrial land use in these cities (for example, the industrial land use in Vienna, increase 7% over the period from 1992 to 2005) demonstrate that urban planning regarding industrial land has shifted from effort on land supply to the effort of stabilization characterized by carefully monitoring and managing the land supply & demand, protecting the industrial location by improving the quality of industrial

location based on the current framework of distribution structure, as well as by the planning of industrial land to meet demand of newly rising sectors of industries such as logistics, waste treatments, utilities. In Ruhr Region, the concept “work in park” aims at improving industrial location’s attractiveness for people and for investment, so as to maintain the position of Ruhr Region as a major industrial region in Germany and Europe. In Hamburg, the ports, although suffered from severe structural change in which many port-related manufacturing locations were released free, is in the new period of growth and plays major role in the city’s economic. In London, three categories of industrial lands were categorized and subjected to different development strategy, in which the SIL (Strategic Industrial Locations) and LSIS (Locally Significant Industrial Sites) are protected with different strategies as main reserve for the industrial land, while the other smaller industrial sites can be redeveloped according their situation and potential contribution to the city’s development target.

The location strategy shows different tendency in Chinese cities like Beijing, where the redistribution of industrial spaces from inner city to periphery is still the main target. The planning and construction of industrial spaces in inner periphery and outer periphery area is entering an upsurge stage in which the increase of amount is promoted prior to the improvement of quality. In the inner city area, the phenomenon of decaying industrial spaces is very widely seen. Only a few of them were in the view of urban planning. For example the urban planning of 798 District, which was nevertheless a very isolated planning without integrative consideration on surrounding area, came into being nearly 10 years later than the decay of this area started.

#### ● **Quality of industrial location**

The improvement of quality of industrial location so as to improve the working environment as well as to maintain the attractiveness of the industrial locations for investment is the key working areas of urban planning in many European cities such as Ruhr Region, Hamburg, Vienna and London, who has gained many valuable experiences in this respect.

One extinguished quality of industrial location in European cases lies in the improved transportation accessibility. Besides the connection to the traffic roads, airport and docks that is fundamental for the development of industrial function, the connection of the industrial parks to the public transport which links the industrial location to the urban centers in periphery and the city center is more and more paid attention to by the urban planning. Such effort improves the accessibility of the industrial location from the city, thus bring the industrial locations much closer to the resource of labors.

The concept of mix use development is applied for planning of many industrial locations, especially those inner periphery industrial parks which integrate functions such as offices, headquarters, research institutions as well as a high proportion of service. These industrial locations are also planned, when possible, with or in close relation with housing areas.

Planning of green space and open space in industrial locations is an effective measure to improve the quality of industrial locations. Ruhr Region makes excellent example for the planning of open space and green space in or in relation to the industrial locations, with the concept of “working in park”. Industrial areas, business areas and other urban areas were placed on a green background of Emscher Landscape Park. Some industrial locations, with their mix use function, well planned green space and open space as well as good accessibility through link of public

transport system, become attractive public centers. In other cities like Vienna, Hamburg and London, the quality of green space and open space is also important criterion for the urban planning for industrial parks.

The last important quality of industrial location is about urban conservation. In the 5 cases analyzed in this research, which grew from their historic base as industrial cities, many of the newly planned industrial locations are based on former industrial spaces. In such situation, the urban conservation, whose importance being recognized and applied in the urban planning, is an important factor to increase quality and attractiveness for public of these industrial locations.

### 3.3.2.2 Urban planning in "FILL IN"

A considerable big amount of left-over industrial spaces in the central areas of the city, if not planned to continue their function as industrial location of the city, are confronted with redevelopment to new use. One important characteristic in the "FILL IN" effort in the European cities that are analyzed in the research is that they are well connected with city's spatial development in level of macrostructure. The redevelopment of London Docklands, Hamburg HafenCity, Vienna Erdberger Mais are all part of the spatial development plan of the city which they are located in. Therefore, the redevelopment of these areas for "FILL IN" is no more a redevelopment project for its own sake, but a step of city's development and bears a certain position in the city's urban planning. For example, The Erdberger Mais belongs to one of the 13 target areas of development in Vienna and is planned to develop into a second CBD besides the historic city core, following the planning strategy in reaction to the situation that Vienna is developing more and more into a regional center of business and administration and the current area for development for this direction is constrained within the small historic area. London Docklands, over 30 years of redevelopment, has become the outstanding CBD in London and release the historic city center from pressure of development by shifting the development focus eastwards. Hamburg HafenCity, being one of the biggest urban redevelopment project as well as inner city redevelopment project in Europe today, bears the function to expand the inner city of Hamburg as well as open up the waterfront area for the development. The individual projects regarding "FILL IN" in RUHRE Region, are all well connected development points on a bigger regional backgrounds and all the projects contribute to this master plan as development points.

From such starting point, the efforts of urban planning regarding "FILL IN" have the followed experiences and lessons:

- **Land use change strategy: mix use development**

A carefully selected suitable function program, to replace the former monotonous function structure dominated by manufacturing industry, will give the area new life as well as sustainable economic, ecologic and urban vitality. In all European cases regarding "FILL IN", the concept of mix use development is widely applied. This is not only important for the planning of left-over industrial spaces that are redeveloped into new functions, but also for those industrial spaces which are further developed as industrial parks.

Among all mix use functions, the creation of new working positions is of tremendous importance. Almost all former industrial location suffers from the sinking of employment, due to the structural transformation of economy. Creation of working can be realized restructuring the left-over industrial spaces into modern industrial

parks which attract and accommodate the modern industry. The proportion of manufacturing industries, production-related service industries, administrative service industries, office and headquarters, commercial function, research institutions, universities shall be carefully studied and implemented by urban land use planning. For example, in Ruhr Region, IBA Emscher Park created 5,000 jobs within time frame of 10 years through the many projects revitalized from brownfield. In Vienna, 60,000 employments are projected to be created.

The other important component of function is housing. For example, in Ruhr Region, 7,500 flats, most of which were realized based on renovation of workers' settlement, were constructed within the time frame of IBA Emscher Park. In Vienna Erdberger Mais, 18,000 inhabitants will be accommodated through construction of high quality housing. Real estate market proves to be great power for the development, since it attract in short-term great amount of investment and urban construction. However, it is a double-bladed knife, too much real estate development especially over-proportioned private housing and office development could cause social polarization and reduce the possibility of development of other function, such as in the case of London Docklands, in which the commercial housing and office were excessively promoted, while the proportion of social housing is reduced to lower than 5%.

Most of the mix used function could be realized through reuse of existing industrial buildings. Housing, commercial building, office and public buildings are all possible through this way. Among them, functions related to culture are very unique and important, as the history of industrialization left these areas with always great charming identities, special buildings and urban spaces that can make these left-over industrial spaces ideal to be reused for culture-related function. Ruhr Area, Vienna and Hamburg all make excellent example in this regard, in which the industrial heritages were reused as museums, galleries, concert halls, cinemas, conference centers and so on. In Beijing's 798 District, the creative industries and artists' studios became the impetus for the development and fame of the area.

- **Establish transportation accessibility both “outwards” and “inwards”**

Four out of five cases in this chapter are within the distance of less than 8 kilometer from the downtown (the only exception is 798 district of Beijing, which lies in 10.3 kilometer from the downtown area, however, with the expansion of city in the last 10 years, the location is now started to be treated as within the “inner city” area). Before the revitalization, they were all suffered from the weak linkage with the city center. On the other side, they have much better connection to the regional traffic road system or docks, thanks to the previous development as industrial district. Therefore, the urban planning's main efforts are on two levels: 1) Linkage with the city center and other areas in inner city area; 2) establish inner transportation circulation.

The case study shows us that the reestablishment of transport linkage to the city and surrounding area is the most basic condition for the area's redevelopment. The planning on this must be implemented in the initial stage of redevelopment although it involves intensive public investment, as the other aspects of redevelopment only take effect after the transportation linkage is established. This can be well demonstrated by the difficulties of redevelopment that Vienna Simmering and the London Docklands encountered in their initial stage of development before the linkage to the city center is established.

Public transport systems such as subway lines, light rail lines and buses prove to be most effective methods to reestablish the linkage. Excellent example is the huge difference of development before and after the establishment of Docklands Light

Railway (DLR) and Jubilee Line (subway) in London Docklands. In the case of Vienna Simmering-Erdberg, the establishment of metro line U3 and S-Bahn (fast railway) also contribute greatly to the urban development after they were established. In the contrary, the absence of public transport system in 798 made the district till now as a remote area of the city, even though the road system is more or less complete.

The transportation system must also be improved inwards besides outwards. In many cases, the inner transportation circulation system was re-planned for most parts because the roads, which were only very loosely planned for the original industrial function, cannot meet the demand of new use. For example, it makes the individual site too huge to be used for civic functions. New inner circulation system is composed of traffic roads, pedestrian paths, bikeways that make the individual sites in the redeveloped area better accessible by both transportation vehicles and people. Such system is well demonstrated by the Hamburg HafenCity, Canary Wharf and Vienna Erdberger Mais.

- **Open space & green space planning: Interconnected public space and green space system**

"Contaminated lands, dirty streets and buildings, polluted rivers and no man's land" are the normal impressions of the public on the left-over industrial spaces. To improve the environmental quality had been one of the main tasks and precondition for the redevelopment, which contains measures to decontaminate the soil and water, reforestation, and, in the field of urban planning, to create attractive landscapes and public spaces to bring back the urban life to the district. Ruhr Region makes an outstanding example for this by transforming many industrial brownfields partially or entirely into landscape element and location for public activities, which are well connected by pedestrian path and bikeways on the green background of Emscher Landscape Park. The waterfront area is always treated as important landscape and public space zone in many cases (London Docklands, Hamburg HafenCity and Duisburg Innenhafen) especially in those industrial shorelines, which were closed to public before and now has possibility to reopen to public. The typical industrial landscape composed of historic monuments and spaces, becomes attractive elements for the public through well conservation and proper reuse.

- **Urban conservation planning and monument protection: promotion of conservation-led urban redevelopment**

The urban conservation, including the protection of valuable monuments, group of monuments, special industrial elements and spaces, as well as the so called "Industrial Landscape" that defined all these as integrity, is of great significance in the redevelopment of historic inner city industrial districts. It's essential that a specific and considerate evaluation and conservation system and law/regulations must be established first. Those valuable objects should be thoroughly investigated and put in protection list with corresponding detailed protection measures. It is widely recognized that the conservation and adaptive reuse, which seeks possibility to adapt the historic building to new use under the premise of not to damage the original values and identities of old buildings, is prior to the "frozen" preservation. In the European cases, we saw various methods of the adaptive reuse, historic buildings are renovated into housings, dormitories, offices, shopping centers, museums, cinemas and other public facilities. These renovations do not sacrifice the original buildings' value and identity, instead, they add new value and identity to the originals and bring back to them new life. Yet, they should be done with expert advisory and under rigorous assessment.

On a level of urban planning, a question of how to combine the protection of industrial heritages and landscapes to the development of the surrounding urban area and let them benefit from each other presents a special challenge. In many cases, these reutilization projects are treated as impulse projects and the reused functions are closely related with culture functions. For example, in the case of Ruhr Region, many of the old factories and industrial elements were put in free green area as open-air landscape elements and urban activities location (such as Duisburg Landscape Park, Zeche Zollverein, Bottrop Emscherblick and Oberhausen Gasometer). In Vienna, the reconstruction of Gasometer into complex of housing, commercial building and cinema is treated as impulse project for the whole revitalization. These projects have become the sensational trademark for the redevelopment plan, and the implementation of them make very positive impulse function in the urban development of surrounding areas.

## CHAPTER 4: "BRING OUT" STUDY ON SHANGHAI

## 4.1 SPATIAL DEVELOPMENT OF SHANGHAI

### 4.1.1 BASIC INFORMATION ABOUT SHANGHAI

#### GEOGRAPHICAL INFORMATION

Shanghai is located on east coast of China, on the south bank of the Yangtze River Delta, with “East China Sea” in the east, Hangzhou Bay in the south and Zhejiang Province, Jiangsu Province in the west. Currently Shanghai is one of China's most important economic center cities, and is playing an important role in world's economic system. The development in economy during the past 150 years must thank to its specific historic background (most intensive exploited colonial city in China and one of the first harbor cities in China to be allowed for free trading), advantageous geographic location (near to Japan, Korea as well as advantageous connection with city groups of Hangzhou delta) and geographic resources (the Huangpu River being the biggest branch of Yangtze River and the mouth to the East China Sea that is advantageous in inland river shipping and ex/import shipping).

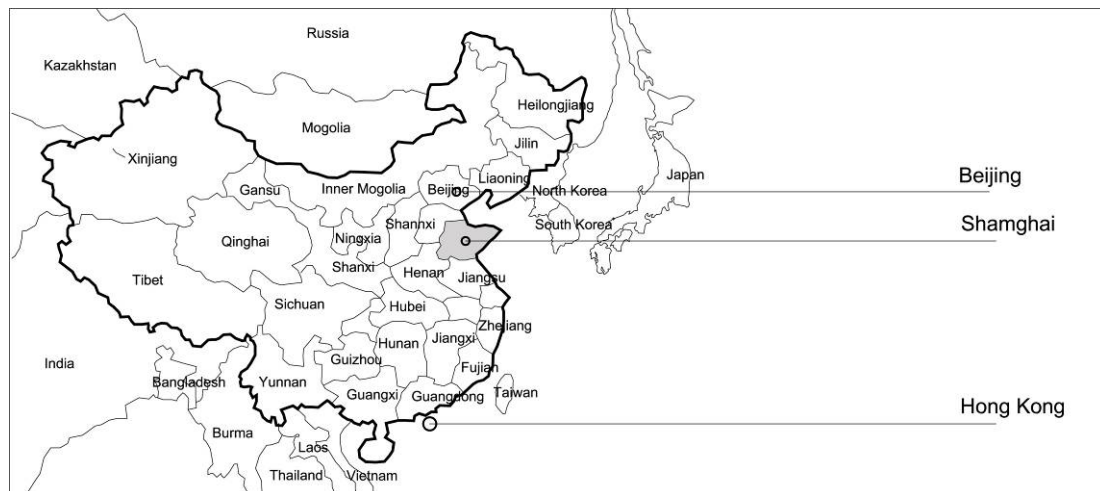


Figure 66: Location of Shanghai in East Asia. drawn by the author

#### DEMOGRAPHICAL SCALE & SPATIAL SCALE

According to the 5<sup>th</sup> national census of immigrant population in 2000, the registered permanent population of Shanghai in 2005 was 13.5 million. This number was estimated to slightly increase to 14.0 million before 2020. On the other side, Shanghai has an immigrant population of 3.8 million, before 2020 this number was planned to be kept within 2.0 millions.<sup>216</sup> According to the latest population statistics in 2009, the permanent population of Shanghai is 13.7 million, while the floating population is 5.1 million. This indicates that the control on the increase of permanent population made its effect, while that on the immigrant population cannot meet the expectation.

<sup>216</sup> Statistic Data from official website of National Bureau of Statistics of China, and <Shanghai Statistical Year Book 2009>, Shanghai Statistic Press, 2009

The existing inner city area occupies 446 square kilometers, while the metropolitan area is 6377.1 square kilometers<sup>217</sup>. Till 2020, the inner city area is planned to reach 600 square meters. The average constructed land consumption per capita is 60 square meters currently, which is planned to increase into 75 square meters per capita in 2020.<sup>218</sup>

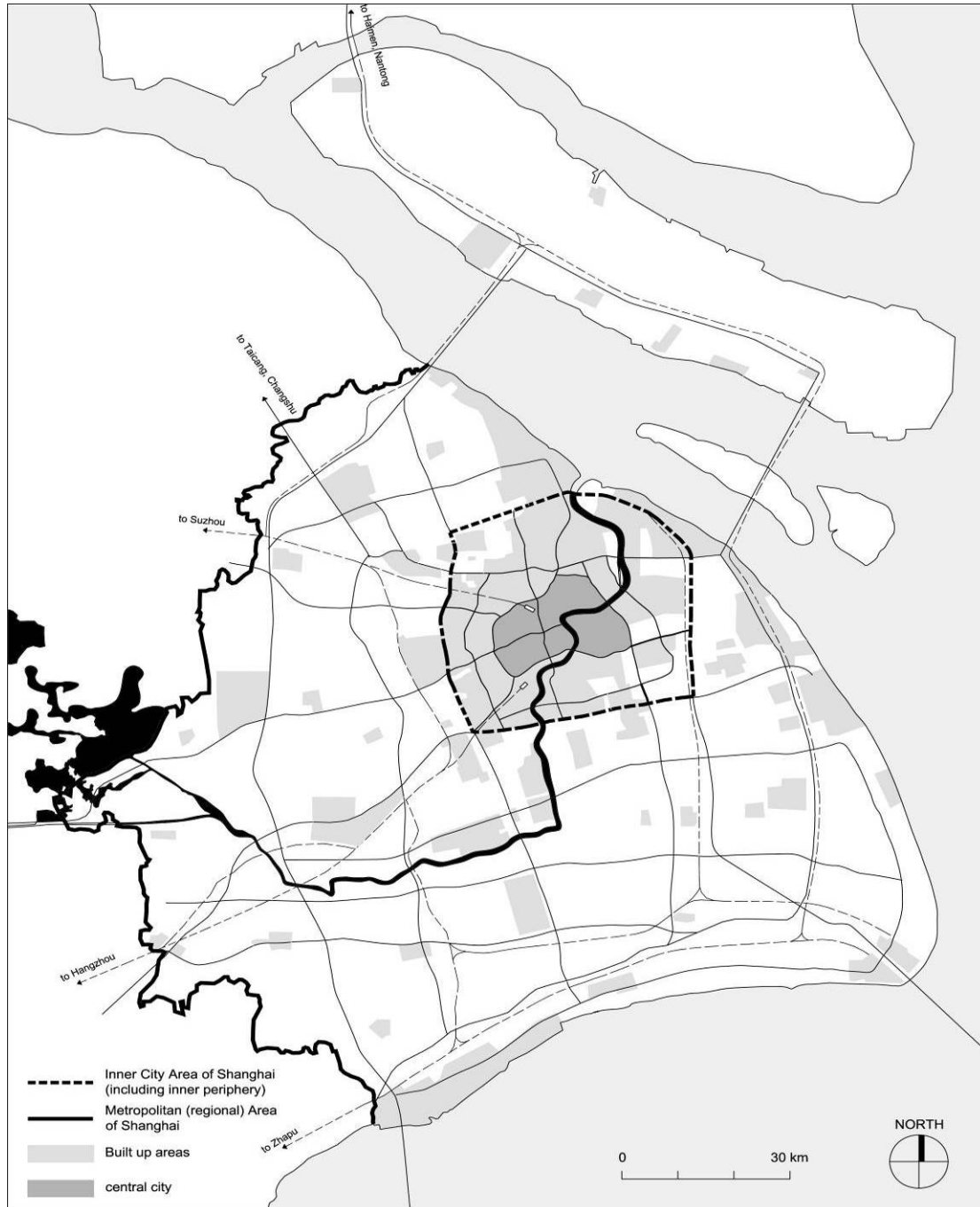


Figure 67: Urban area of Shanghai, drawn by the author

<sup>217</sup> Refer to <Shanghai Land Use Planning 1997~2010>, Municipal Government of Shanghai, 1997, p.4

<sup>218</sup> Refer to <Shanghai Comprehensive Planning 1999~2020>, Municipal Government of Shanghai, 1999



Figure 68: Aerial view of central area of Shanghai, photograph by Peter Morgan

#### 4.1.2 SHANGHAI'S SPATIAL DEVELOPMENT OVER THE HISTORY

The development of Shanghai experienced a unique way in a relative short time of about 700 years, in which several developing modules, structure and objectives in different period of development were applied, partially realized and mixed together eventually. Going through the history, each specific period or movements left their own traces in this city, which formed the complexity of today's spatial structure of the city. From the development of urban spatial structure point of view, the development of Shanghai can be differentiated in the flowing major periods:

##### 4.1.2.1 PERIOD 1: BIRTH OF SHANGHAI (13<sup>th</sup> CENTURY TO 1839)

The history of Shanghai City dates back to 1267 A.C., when the Song Dynasty (960~1279 A.C.) started a town in the mouth of Yangtze River. In 1292 A.C., the Yuan Dynasty set county here to be a military stationed point.<sup>219</sup> The county was established by the bank shore of the Huangpu River (branch of Yangtze River in the river mouth area), where the area today known as Lao Cheng Xiang (Shanghai Old City) is situated. Started from the Ming Dynasty (1360~1644), the Huangpu Rivers was regulated to avoid over-flooding and to connect the river further with the sea, the area became more and more a suitable area for human's residence and the advantage in river and sea transportation became important impetus for the city's development in later stages. With the growth of residence, this county grew into a booming area in this region. Many of the public or religious buildings such as schools, temples and markets were built in this period, some of which can be even seen today.

Important step in the spatial development is the constitution of the circular city wall (fortification) in 1553 A.C. for resistance against Japanese pirate. The old city wall

<sup>219</sup> Refer to <Shanghai Land Use Planning 1997~2010>, Municipal Government of Shanghai, 1997, p.4

(fortification) is 4.5 kilometer long and surrounded by canal, which is further connected to the Huangpu River for shipping. The city had government and schools in the center and two transportation systems: streets and canals systems. Always being a center of the spatial structure, this mono-centric structure dominated the spatial development of Shanghai for near 400 years. Even during later concession period, when the focus of the city's development moved northward to the concession areas, this traditional Chinese city still served as center of the Chinese city part.

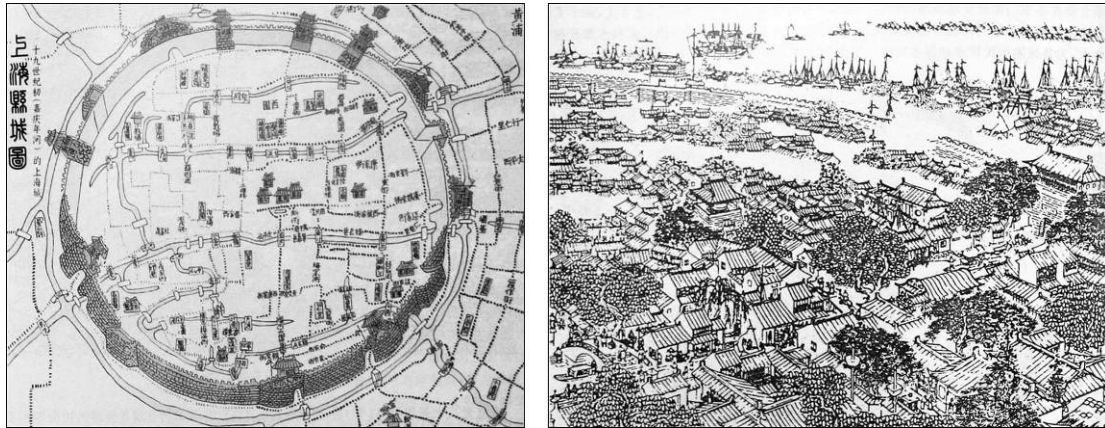


Figure 69: Map of Shanghai Town in Beginning of 13th Century (left) and the Fangbang Area of Shanghai in Ming Dynasty (right), from both from Sun Ping (ed.), <The History of Urban Planning in Shanghai>, Shanghai Social Science Press, 1999, p.55, 56

In summary, Shanghai has the following characteristics in this period in terms of urban spatial structure of the city:

**Demographical and spatial scale:** The urban spatial structure still stayed in a very small scale, both in demographical or in spatial aspect. The city development was restrained within the scope that the city wall (fortification) defined. There exists no data about the population in this period. However, it can be estimated based on the spatial scale of the city that the population was between 50,000 to 100,000. <sup>220</sup>

**Focused urban development of the city:** The focused development area was the area that was defined by the city wall (fortification). It can be estimated by the existing historic documents that the area alongside the river were also developed due to the activities related to shipping.

**Development of Transportation System:** The pedestrian road network was densely distributed in the area defined by the city wall (fortification). Besides, the small river made another network to interweave with the pedestrian road network, as ship is the major transportation vehicle in this period of city development. The similar structure is often seen in the other Chinese towns in this period in the neighboring province like Zhejiang. <sup>221</sup>

**Development of open spaces:** The open spaces in this period of development can be found in the markets, commercial spaces besides the pedestrian roads and in spaces close to the public buildings like school, temple and government.

<sup>220</sup> Sun Ping (ed.), <The History of Urban Planning in Shanghai>, Shanghai Social Science Press, 1999, p.55, 56

<sup>221</sup> For further description of the water transportation in the so-called towns in this period, the readers can refer to Ruan Yisan and Jiancheng Dong, <Water Towns in South of the Yangtze River>, Zhejiang Photography Press, Hangzhou, 2004

Development of green spaces: The main public greenery area is seen in the spaces alongside the river network in the city. On important phenomenon is the planning and establishment of private gardens that add big-scaled green spaces to the city's urban fabric, such as the famous Yu Garden, which was built in 16<sup>th</sup> Century. However, these gardens are not accessible by public in that time.

Urban conservation and monument protection: This was the period when the historic origin of Shanghai was born. Many cultural heritages/monument is left till today, such as the fragment of cold city wall (fortification) and the Yu Garden. Today, the whole Chinese towns was inscribed in the list of "Historic and Cultural Protection Districts", and has been developed into characteristics commercial and leisure areas with strong traditional identities.

#### 4.1.2.2 PERIOD 2: ESTABLISHMENT OF SHANGHAI AS METROPOLITAN CITY AND EARLY STAGE OF INDUSTRIALIZATION (1840-1949)

The period between the 1<sup>st</sup> Opium War in 1840 and the foundation of PRC in 1949 was the golden period of Shanghai's development as a modern metropolitan city. In about 100 years, Shanghai rapidly grew from a small provincial county into the biggest and most flourishing metropolitan city in the Far-East. Shanghai opened its ports for foreign merchants in 1842 according to the articles of <Treaty of Nanking>, which the government of Qing Dynasty was forced to accept to stop the 1<sup>st</sup> Opium War. From then on, the enormous investment from the West, combined with the awakening of national industries invested by the Chinese government, big-scale construction of infrastructures in concession areas and later new Chinese city center, the reinforcing of advantages of river and sea shipping through new regulation of Huangpu River (1901) and constitution of ports brought to Shanghai its golden era of development. In 1930s, Shanghai occupied 81.2% of China's total importation/exportation commerce, 79.2% of China's banking investment, 67.1% of China's total manufacture investment, and 76.8% of China's total real estate investment. In the 2435 factories in that time of China, 1200 were situated in Shanghai. In 1931, the total tonnage of the ports of Shanghai already ranked the 7<sup>th</sup> in the biggest ports of the world, which marked that Shanghai had already been the biggest shipping center in East Asia.<sup>222</sup>

In 1930s (before China-Japanese War), Shanghai had a population of about 5 millions.<sup>223</sup> The scale of city expanded over ten times of the previous one. The focus of the city's development moved from the previous Chinese old city to the concessions areas, in which the western rules of urban planning was applied and formed attractive urban areas.

The most distinguished spatial characteristic in this period is the division of lands by different political powers that led to the isolation and lack of coordination between each other, whose spatial structures and developing modules were often completely different. This character led to a unique multiple centric urban spatial structure, which gave significant influence on the urban development of Shanghai in later stages. In its initial stage of development, three divisions of lands were seen in the urban spatial structure: 1) Public Concession, which is composed of the previous English concession and American concession with total area of 2288.9 ha. 2) French Concession, which lies in south of Public Concession, with total area of 1010 ha. 3)

<sup>222</sup> Cui Ning, <Restructuring of the City under important Urban Events: Shanghai EXPO as Example>, Southeast University Press, 2008, p.58

<sup>223</sup> Sun Ping (ed.), <The History of Urban Planning in Shanghai>, Shanghai Social Science Press, 1999, p.61

The old Chinese city.<sup>224</sup> These three divisions built the basis of today's city center of Shanghai. In 1930s, the total area of the concessions, namely the International Concession and the French Concession had grown to about 30 square kilometer, which was the strongest area of development in this time.

The fourth part was added to the existing fabric in 1930s. The Chinese government (Republic of China) in 1927 planned to construct the "New Shanghai", which however had to put the focused development area to the north part of Shanghai in, away from the flourishing concession area, the un-urbanized place near the north reach of Huangpu River that was called "Wujiaochang" afterwards. Due to the breaking out of China-Japanese War in 1937, this project was only partially implemented. The central part of the planning composed of government districts, sport and library districts, which was characterized by the traffic road system in particular pentagon shape, was realized. Together with the aforementioned three divisions, they together contributed to the forming of a multiple centric urban structure of Shanghai.

The period also saw the early stage of industrialization development of industries. These industries, invested by foreign capitals or national ones, mainly agglomerated in the river side area, namely alongside the Huangpu River in south reach close to the ports, north reaches in the Public Concession Area and in the middle reach of the Suzhou River, which is to be further discussed in 4.2.1.



Figure 70: The Bund in 1828 was the most flourishing urban area of Shanghai, resource: <Historic Photograph of Old Shanghai>, Jiangsu Art Press, 1995, p.6

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<sup>224</sup> Sun Ping (ed.), <The History of Urban Planning in Shanghai>, Shanghai Social Science Press, 1999, p.62

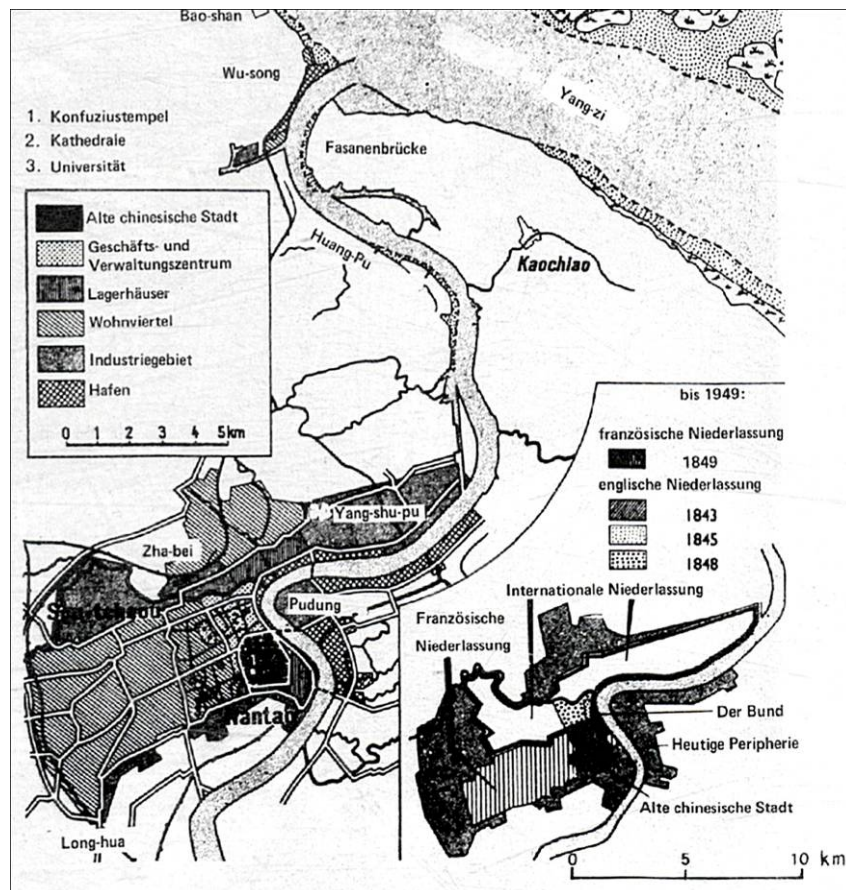


Figure 71: Map of different territories of Shanghai and their time of emergence, Resource: L. Benevolo, <Die Geschichte der Stadt>, Campus Verlag, Frankfurt/New York, 8.Auflage, 2000, p.882



Figure 72: The aerial view of Shanghai's central area in 1930s, showing traditional Chinese city and the English concession, from L. Benevolo, <Die Geschichte der Stadt>, Campus Verlag, Frankfurt/New York, 8.Auflage, 2000, p.882

In summary, Shanghai has the following characteristics in this period in terms of urban spatial structure of the city:

Demographical and spatial scale: The period saw the dramatic expansion of spatial and demographical scale of the city, with which the profile of a modern metropolitan city was formed. The urban development grew from the 30?? Square kilometer concession area, in 1949 Shanghai's inner city area was 82.4 square kilometer and the metropolitan area was 636.18 square kilometer. The total population in 1949 was 7, 73 million, within which 4.52 million was in the inner city. <sup>225</sup>

Focused urban development of the city: One of the most extinguished characteristics of this area is that Shanghai's power of development was generated by several focused development centers of the city, which led to the multiple centric structure of Shanghai and gave significant to the further development of Shanghai in later stages. These focused development centers were the two concessions area, the old Chinese city and the later urban center in "Wujiaochang". The development of these focused area were managed by different authorities and their development were following different concepts.

Development of Transportation System: Since the beginning of the establishment of concession areas after 1842, the planning and construction of transportation infrastructure was one of the primary tasks of the urban development. The majority of the very dense traffic roads today in Shanghai's city center were based on the transportation network that was built in this period. Shanghai was also the first city in Far East to establish public transport system including tram way (1908 in the International Concession and the French Concession respectively). The problem lied in that the developments of transportation system were promoted in different territories and didn't coordinate with each other, especially between the concession and the territories governed by Chinese government. The later "Great Shanghai Plan" in 1927 plan to integrate the transportation systems together, however it was not realized except for establishing the unique pentagon-shaped traffic road system in "Wujiaochang".

Development of open spaces: This period saw the great increase of amount of open spaces and the improvement of their quality. The areas where the city center (downtown) of Shanghai is situated in were mainly planned and established in this period. They included the Bund, the Racecourse (today known as "People's Square"), the Nanjing Road, Avenue Joffre (today known as Huaihai Road), which were all most flourishing area for commercial functions, public service functions, leisure facilities and open spaces. The other places where open spaces were situated were the Chinese old town by the south of the concession area and the "Wujiaochang" in the north.

Development of green space: The development of green space in this period is characterized by the movement of planning and construction of parks in the concession area, which included the famous Bund Park, Wainbaidu Park (later known as Huangpu Park), French Park (later known as Fuxing Park), Bazichang Park (later know as Luxun Park) etc. Although many of these parks were ruined or damaged during the time of war, there were still 65,880 square meters parks left in the inner city of Shanghai. <sup>226</sup> Such movement went beyond the boundary of

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<sup>225</sup> Sun Ping (ed.), <The History of Urban Planning in Shanghai>, Shanghai Social Science Press, 1999, p.88

<sup>226</sup> Yang Mingzhong, <Anecdotes about parks in old Shanghai>, from Xinmin Evening Paper, 20/3/2009

concession: in the “Great Shanghai Plan” in 1927, big scale green space was also planned for the new Chinese city center area.

Urban conservation and monument protection: This was the period when the majority of the cultural heritages/monuments that Shanghai is proud of today were born. The unique historic background of Shanghai in this period gave possibility of a dialogue between Chinese and European culture, which generated a wide diversity and high quality of architecture design and urban planning. While the architectures in the concession areas, especially highlighted by the astonishing commercial architectures in the Bund area and alongside Nanjing Road and Huaihai Road as well as the residence in the French Concession, represented the highest standard of architecture design with diverse European styles, the historic Chinese town and the new urban center in “Wujiaochang” gave birth to the new generation of “improved” Chinese style architecture. The contrast also lies in the different urban fabric of the city in the concession area, old Chinese towns and the new Chinese city center. All these constituted the unique charm of Shanghai, and became valuable cultural heritages, that must be protected and conserved in the later period of development of Shanghai.

#### 4.1.2.3 PERIOD 3: FURTHER EXPANSION, MONO-CENTRALIZATION AND DEVELOPMENT AS INDUSTRY CITY (1949–1985)

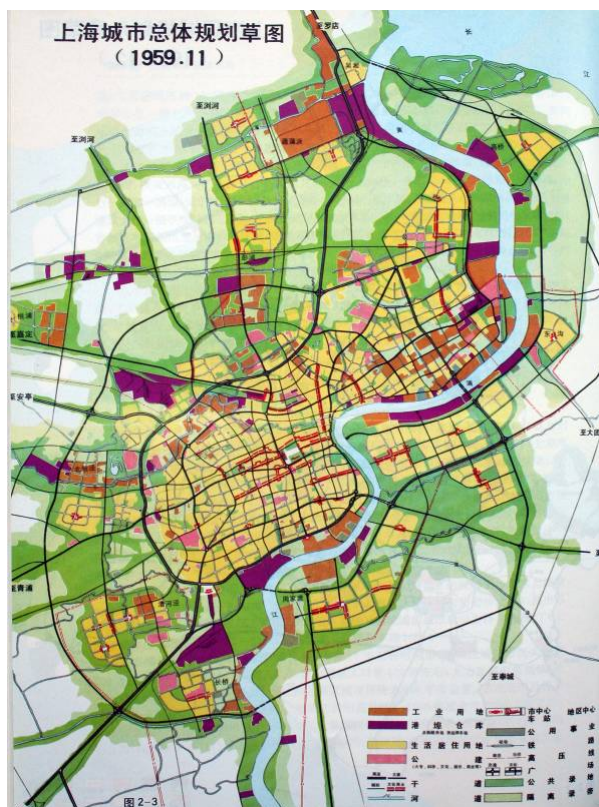


Figure 73: Master Plan of Shanghai 1959 in <Sketch of the comprehensive planning of Shanghai 1959>, from Sun Ping (ed.), <The History of Urban Planning in Shanghai>, Shanghai Social Science Press, 1999, p.100

The period from 1949 (the foundation of PRC) to the beginning of the 1980s was a unique and important period of development for Shanghai. With the foundation of PRC, the state of isolation development of different territories governed by different authorities was over and Shanghai was first time got the opportunity to develop as an integral city. The political environment was another important factor to affect the urban development of the city, as the sole power of urban planning and its implementation was in the hand of the central government of China, who often place the strategic importance of manufacturing industry of Shanghai in the prior position. Two tendency of urban development were the most obvious in this period. On one side, Shanghai was developed into a mono-centric city with the development focus staying in the city center and the inner city area expanded twice the bigger than before. On the other side, the function of manufacturing industry

was heavily developed with continuous injection of national investment, due to the new target of the urban planning to develop Shanghai into production-based city.

The main urban planning scheme that directed the development of Shanghai in this period is the comprehensive planning of Shanghai in 1959<sup>227</sup>, which was based on the many urban planning studies, suggestions and proposal in 1950, 1951, 1956~1957 and 1958.<sup>228</sup> All these urban planning schemes concluded that the concept of “decentralization” brought forth by the former urban planning such as that in 1946<sup>229</sup>, which drew the development focus to the satellite towns and connect them with inner city by modern transportation means, was “model of capitalism western city”<sup>230</sup> and inappropriate for Shanghai, Shanghai shall develop based on reutilization and redevelopment of the inner city area (based on the former highly developed concession areas) and expand it to meet the demand of development, which was also more economically realistic. Such concept of development led to the reinforcing and expansion of the central area of Shanghai. From 1949 to 1978, the area of inner city increased from 82.4 square kilometer in 1949 to 141 square kilometer, almost two times. The mono-centric urban spatial structure of Shanghai came into being, and the characteristics of the old Shanghai's polycentric structure disappeared.



Figure 74: Inner City of Shanghai in 1970s, Nanjing Road, resource: internet

<sup>227</sup> Named as <Sketch of the comprehensive planning of Shanghai 1959>, this is an urban planning proposal given by team led by Bureau of Urban Development of China and Municipal of Shanghai. Although this was not approved by the State Council of China, this acted as the official urban planning scheme to direct the urban development of Shanghai in the years before 1982, when the <Comprehensive Planning of Shanghai 1982> was approved.

<sup>228</sup> Including <Suggestions about the redevelopment of Shanghai and its future of development> in 1950 by experts team from USSR led by Balnikov, <Draft Plan for Development Direction of Shanghai> in 1951 by commission of municipal construction, <Schematic Diagram regarding mater planning for Shanghai> in 1953, <Schematic Plan for Shanghai's short-term development 1956~1957> by the Bureau of Urban Planning and Administration of Shanghai, and <Preliminary Master Plan of Urban Development 1958> by Bureau of Urban Planning and Administration of Shanghai.

<sup>229</sup> <Great Shanghai Metropolitan Plan>, constituted and approved by the Municipal Government of Shanghai (Republic of China).

<sup>230</sup> Refer to the <Suggestions about the redevelopment of Shanghai and its future of development> by Balnikov in 1950, which was the first urban planning suggestion after the foundation of PRC. From Sun Ping (ed.), <The History of Urban Planning in Shanghai>, Shanghai Social Science Press, 1999, p.89, p.90

Another extinguished characteristic of the development in this period was the focused development of the industrial function in the city, with special focus on the heavy manufacturing industry. In the <Suggestions about the redevelopment of Shanghai and its future of development> in 1950, it was brought forth that Shanghai must develop from a consumption-based city to production-based city.<sup>231</sup> In the following years, the development of industrial became the prior task of the city's development. From 1958, eight industrial districts in the inner periphery were planned and constructed. In the comprehensive planning of Shanghai in 1959, the designated function of Shanghai was set as "national manufacturing center city". In the following 30-year development, the former inner city industrial districts Yangshupu Riverfront Area and Suzhou Creek were further intensely developed, while newly planned eight industrial districts in inner periphery was implemented, further expanded and became major industrial areas in Shanghai. Meanwhile, huge-scaled industrial districts were planned in or beside satellite towns in the outer periphery (regional) area. Famous examples were the Shanghai Petrochemical Complex (1972) and the Baosteel Plant (1978). These two satellite towns Jinshanwei and Baoshan town were established to be residence for workers to support the development of these industrial districts. According to the statistics in end of 1982, the total land us for industrial function was 125 square kilometer, within which around 42.9 square kilometers was situated in inner city.<sup>232</sup>



Figure 75: The Plant of Baosteel, a huge-scaled state-owned steel plant, constructed in 1978 in Baoshan (today Baoshan Municipal District), Resource: internet

<sup>231</sup> Refer to the <Suggestions about the redevelopment of Shanghai and its future of development> by Balnikov in 1950, which was the first urban planning suggestion after the foundation of PRC. From Sun Ping (ed.), <The History of Urban Planning in Shanghai>, Shanghai Social Science Press, 1999, p.89, p.90

<sup>232</sup> Sun Ping (ed.), <The History of Urban Planning in Shanghai>, Shanghai Social Science Press, 1999, p.89, p.110

In summary, Shanghai has the following characteristics in this period in terms of urban spatial structure of the city:

Demographical and spatial scale: The demographical scale and spatial scale grew significantly further in this period. The total population grew from 7.73 million in 1949 to 11.62 million in 1981, while the population in inner city grew from 4.52 million in 1949 to 6.3 million in 1981.<sup>233</sup> Meanwhile, the inner city area grew from 82.4 square kilometer in 1949 to 141 square kilometer in 1978.<sup>234</sup>

Focused urban development of the city: In contrary to the concept of “decentralization” in the “Great Shanghai Metropolitan Plan” in 1945, the spatial development of Shanghai in this period went with a way of “centralization”. The inner city was heavily developed, while the scope of inner city expanded. The target to develop Shanghai as an industrial city specialized in heavy manufacturing industry made excessive development of the industrial function, majority of which were planned in the industrial inner periphery and outer periphery (regional) area of the city. With the expansion of scope of inner city many of these industrial districts were then embraced by the inner city. The establishment of satellite towns from 1960s had their effect in decentralizing the development of the city, but mostly on that of industry. The inner city was still the most focused area of development.

Development of Transportation System: Shanghai's traffic transportation system was basically established in this period of development. In the 1959 Comprehensive Planning for Shanghai two ring roads, a raster traffic roads network (composed of 7 north-south and 9 east-west main traffic roads in the inner city area) as well as 12 main radiating traffic roads connecting the inner city to the areas outwards were planned and implemented. Such structure of transportation system reinforced the former concession area as the center of the city and the mono-centric structure of the city. This transportation structure was to be further reinforced by the development in the next period. The other important development of the transportation system was the construction of railway stations, railway and traffic roads to connect Shanghai with the neighboring provinces as well as the construction of harbors alongside the Yangtze River.

Development of open spaces & green spaces: The development of public space was not given priority in this period. The areas with densest distribution of open spaces were developed on the former structure of opens paces, such as the area of Bund, Nanjing Road and Huaihai Road (Avenue Joffre). However, the public lives in this period dramatically sank, which was taken places by big political movement. The Major construction regarding opens space in this period was the demolishment of the former racecourse to build the People's Sqaure on it, being the place for mass movements, the People's Square in this time was basically for the purpose of political power demonstration

The development of green space had noticeable progress in this period. According the comprehensive plan in 1959, the efforts of green space planning were on the major points of the inner city like the People's Square and the main public buildings, alongside the main traffic roads, railways and rivers as well as the parks. It was required that a certain amount of green space must be put in every residence

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<sup>233</sup> Sun Ping (ed.), <The History of Urban Planning in Shanghai>, Shanghai Social Science Press, 1999, p.88 and p.104

<sup>234</sup> Sun Ping (ed.), <The History of Urban Planning in Shanghai>, Shanghai Social Science Press, 1999, p.88 and p.103, p.104

projects. The planning of green space was also promoted in the development of satellite towns.

Urban conservation and monument protection: This period of development saw big damage to the historic heritages/monuments and to the city's historic townscape. The concept of urban conservation and monument protection was not in view of urban planning in this period. The earliest efforts to protect cultural heritages/monuments were made from 1960s. However, the protection was only constrained in the protection of very few single objects<sup>235</sup> in the list of national and municipal protected cultural heritage, while the protection of historic urban districts was not in consideration. The numerous cultural heritages with high historic value as well as the historic urban areas in inner city of Shanghai was damaged or demolished without appropriate protection. In the period of "Cultural Revolution", when the city development was out of control, such damage and demolishment was even more severe.

#### 4.1.2.4 PERIOD 4: DECENTRALIZATION, BALANCED DEVELOPMENT AND SUSTAINABLE DEVELOPMENT (1986~)

Entering 1980s and 1990s, the spatial development of Shanghai entered into another golden period. Together with the economic booming of China that last over 30 years due to the open-door policy and shifting of economic system from planned one to free market one from beginning of 1980s, the dramatic spatial development towards the direction of an international metropolitan city brought Shanghai onto another level of growth and gave Shanghai a complete new dimension of profile. In contrary to the state in last period of development that defined Shanghai as national manufacturing center, today Shanghai is already an huge scaled metropolitan with population of 18.8 million and inner city of 446 square kilometer, which ranks in the same class as most important cities in the city like New York, London, Paris and Tokyo in terms of the their spatial and demographical scale, degree of internationalization and the important role in the regional and global economic system.

Two comprehensive planning (1986 and 1999) contributed to the development in this period. The fundamental change of these two urban planning compared to the previous one was the difference in target-setting. Instead of targeted at an industrial city, the comprehensive plan in 1986 targeted Shanghai at an economic, technology and cultural center, and an important harbor city.<sup>236</sup> In the comprehensive planning 1999~2020, it was brought forth that Shanghai must develop herself into "international economic, financial, trading and shipping center city", for which "the spatial structure fitting to the international metropolitan city is pursued".<sup>237</sup> Targeted as such, Shanghai's development in the following years showed many new characteristics and tendencies, the most extinguished of which was spatial expansion, decentralization, balanced development and sustainable development.

<sup>235</sup> Till 1977, there were only 27 units in the list of protection (National and municipal cultural heritage protection units). Compared to the numerous cultural heritages left by the urban development in the previous periods, such number of protection units was not

<sup>236</sup> Refer to <Shanghai Comprehensive Plan 1986> chapter 1, Municipal Government of Shanghai, 1986, p.5

<sup>237</sup> Refer to <Shanghai Comprehensive Plan 1999~2020> chapter 1, Municipal Government of Shanghai, 1999, p.3



Figure 76: The historic center area of Shanghai (2008) has been development into the booming CBD of Shanghai. The high density of high-rise building was side by side with the conserved historic building that were built mainly in the concession period, and thus the townscape shows a vivid skyline and diversity of density distribution. Photograph by Xinkuangshenyi

The dramatic expansion of spatial and demographical scale was the most obvious tendency in this period. The inner city area expanded from 141 square kilometers to 446 square kilometers. Accompanied with such spatial expansion, the city was “decentralized”. In the comprehensive plan of 1986, it was already brought out that “the development of the inner city must follow the open polycentric structure” as well as “the satellite city must further develop to decentralize the population from the inner city”. In the later development, the development of the cross-river district Pudong, made the biggest step of decentralization. While the old city core (the downtown) maintained its vitalization further developed, the Pudong Districts with its 350square kilometer development area became a heavily urbanized area within a short period of 20years, which bears the function of CBD of Shanghai. Meanwhile, many secondary city centers in the inner city was developed, such as “Xujiahui” and “Wujiaochang”, which became the centers of emerging dense residence area. These secondary city centers further decentralize the population on the city core (downtown) and thus form the polycentric structure of the inner city of Shanghai.

The decentralization is also realized by the revitalization of historic districts in the inner city, which were in the previous period of development faced to comprehensive decay. These include many historic inner city industrial districts such as the Suzhou Creek Riverfront Area, which will be discussed in detail later in this research.

In the same time when the inner city was heavily developed, the development of the inner and outer periphery (regional) was also restlessly promoted by the government. The focus of development was on the satellite towns, which grow based on the development in the previously period of development for purpose of supporting industrial districts, but was massively expanded for residential function, which is planned with good accessibility from the inner city, abundance of greenery and service functions. These satellites cities are expected to further decentralize the population from the inner city.

**The cross-river Pudong District** is an area of 350 square kilometer (planned scope) which was started to be developed from the beginning of 1990s. The area in the turning of Huangpu River was developed into the CBD.



Figure 77: Aerial view from one high-rise building of the Pudong CBD, photograph by Eric Faller

Xujiahui, a Secondary city center, which is situated in south of Shanghai's inner city and was planned in the center of former French Concession, has become another booming area in the inner city area of Shanghai besides the historic city central area in Bund and People' Square.



Figure 78: Night view of Xujiahui District, resource: internet

Pujiang Town, one of the periphery residence area (based on former satellite towns) of Shanghai can decentralize 200,000 population from the inner city of Shanghai. All satellite towns were planned to be supported by transportation system including subway lines or regional fast train



Figure 79: Pujiang Town, one of the new towns of Shanghai, resources: internet

Sustainable development is one of the major concepts of development of the cities in this period. The significance of sustainability is interpreted not only by the balanced development both in inner city and periphery, the diversity of urban functions that is promoted, the planning of greenery and open spaces to support these developments, but also by a new consciousness on preserving the history of the city by urban conservation and monument protection. Such new consciousness received considerable success in projects like "Cheng Huang Miao Chopping District" (conservation of the old Chinese town) and the "Xin Tian Di" (conservation of the old Shanghai Low-rise residence call "Li Nong").

In summary, Shanghai has the following characteristics in this period in terms of urban spatial structure of the city:

Demographical and spatial scale: The demographical scale and spatial scale grew further in this period. The total population grew from 11.62 million in 1981 to 18.8 million (including 13.7 million permanent inhabitant and 5.1 million immigrant), while the population in inner city grew from 6.3 million in 1981 to 8.5 million in 2009<sup>238</sup>. The population is estimated to be kept below 20 million in 2020, within which that in inner will be within 8 million.<sup>239</sup> The inner city area dramatically increased from 141 square kilometer to 446 square kilometers in 2009, which is planned to reach 600 square kilometer<sup>240</sup>. Average constructed land consumption per capita is 60 square meters currently, which is planned to increase into 75 square meter per capita in 2020.<sup>241</sup>

Focused urban development of the city: The mono-centric spatial structure was developed towards the direction of polycentric structure, with the strongest center still in the inner city. This was demonstrated by the further decentralization of the land use in the spatial structure of Shanghai through: 1) forming the system in inner city composed of the city core (downtown), Lujiazui CBD and multiple secondary city centers in inner city, 2) promoting and reinforcing the development of satellite towns 3) promoting the development of outer other periphery residence points (towns). With the revitalization in of the historic districts as well as the booming of the city core (downtown) and the Pudong districts that developed into CBD, the scope of inner city expanded further and maintained its dominant important in the whole system of urban centers. The development of secondary city center and satellite towns, which are planned with diversity of urban function and good accessibility, however played their roles in the system to decentralize the population.

Development of transportation system: The transportation system was immensely improved based on the structure established in the former period of development. The improvement is on three aspects: 1) Completion of the inner city transportation system including the construction of the three ring roads for inner city, strengthening the problematic north-south accessibility, strengthening the cross-river transportation by construction of tunnels and bridges to support the development of Pudong area as well as the establishment of public transport system (subway system), 2) Improvement of periphery transportation system as well as its connection with the regional transportation system to support the development of periphery, 3) Construction of transportation facility such as the reconstruction and expansion of

<sup>238</sup> Statistic Data from official website of National Bureau of Statistics of China, and <Shanghai Statistical Year Book 2009>, Shanghai Statistic Press, 2009

<sup>239</sup> Refer to <Shanghai Comprehensive Plan 1999~2020>, Municipal Government of Shanghai, 1999

<sup>240</sup> Refer to <Shanghai Comprehensive Land Use Planning 1997~2010>, Municipal Government of Shanghai, p.20

<sup>241</sup> Refer to <Shanghai Comprehensive Planning 1999~2020>, Municipal Government of Shanghai, 1999

old Shanghai harbor area and establishment of new harbor area including the biggest deep-water port in Yangshan Harbor, expansion of the north railway station and establishment of other three railways station in south and west of Shanghai, as well as expansion of Hongqiao Airport and establishment of the new international airport in Pudong.

Development of open spaces & green space: The development of public spaces follows the development of the urban centers, namely the system composed of the city core (downtown), Lujiazui CBD and multiple secondary city centers in inner city as well as the urban centers in the satellite towns. The urban centers are the location well in the city that is connected with residence. This period also sees the development of cultural and public facilities (planned and promoted both by the comprehensive planning in 1986 and 1999) like museums, community centers, libraries, culture centers and galleries, which were often planned together with the open spaces and add vitality to those open spaces.

The development of green space were treated as most important task to “achieve the target of ecological development of Shanghai” in the <Shanghai Comprehensive Planning 1999~2020>. <sup>242</sup> The targets for the green space development are that: 1) the average public green space area per capita will reach 15 square meter 2) Greenery ratio<sup>243</sup> reach 38% 3) Public green space service distance is less than 500 meter in the inner city area. 4) The forestation ratio in the whole metropolitan area is more than 25%. The green space system in inner city will be highlighted by the urban landscape corridors alongside Huangpu River, Suzhou Creek and Yan'an Road, in the metropolitan area, the greenery system will be composed of different form of greenery such as green ring and green corridors. When the abovementioned targets are formed and the structures are formed, Shanghai's green space amount and quality will be close to the standard of the international metropolitan city.

Urban conservation and monument protection: The inscription of Shanghai in the list of “National Historical and Cultural City” marked significant milestone of the history of urban conservation and monument protection. This is the beginning of many efforts to promote the urban conservation in Shanghai including the compilation of the “Outstanding Historic Architecture List” which was started from 1989 and was continuously added to till today, as well as the compilation of “Historic urban landscape zone List” and correspondent urban planning documents, protection measures and laws for these protected units and areas.

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<sup>242</sup> Refer to <Shanghai Comprehensive Land Use Planning 1997~2010>, Municipal Government of Shanghai, p.28

<sup>243</sup> Greenery Ratio in China refers to the ratio of the area of greenery to the total ground area.



Figure 80: Master Plan (scope of metropolitan area) 1999~2020, from <Shanghai Comprehensive Plan 1999~2020>, Municipal Government of Shanghai, 1999

#### 4.1.3 DIAGRAMMATIC SCENARIO OF SHANGHAI'S SPATIAL DEVELOPMENT

	DEMOGRAPHICAL AND SPATIAL SCALE		
	DESCRIPTION	INNER-CITY AREA	METROPOLITAN AREA
<b>PERIOD 1</b> Birth of Chinese Old City (13th Century to 1840)	Population: no information 50,000~100,000 (estimated)  Scale of the City: no information about 6,5 square kilometer (estimated)		
<b>PERIOD 2</b> Grounding of modern metropolitan city and early stage of industrialization (1840~1949)	Population: → 7.73 million  Scale of the Inner City: → 82.4 square kilometer		
<b>PERIOD 3</b> Expansion, mono-centralization and development as industrial city (1949~1985)	Population: → 11.62 million  Scale of the Inner City: → 141 square kilometer		
<b>PERIOD 4</b> Further expansion, decentralization, balanced development and sustainable development (1986~)	Population: → 18.8 million  Scale of the Inner City: → 446 square kilometer  Planned Scale of the Inner City in 2020: → 600 square kilometer  Metropolitan Area: → 6777 square kilometer		
Legends: ■ Highly urbanized area    ■ Less urbanized area			

Figure 81: Diagrammatic evolution of Shanghai's demographical and spatial scale, drawn by the author


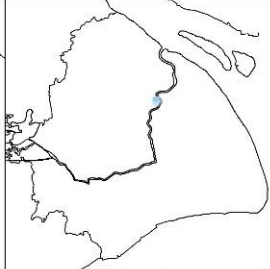
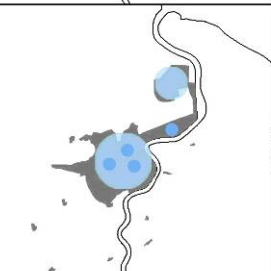
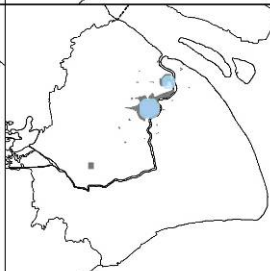
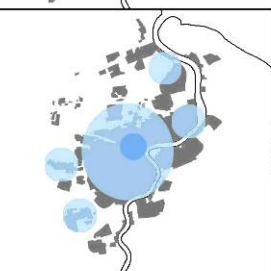
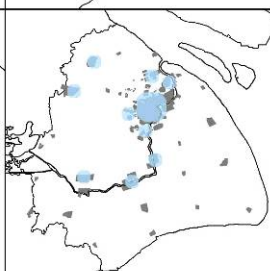
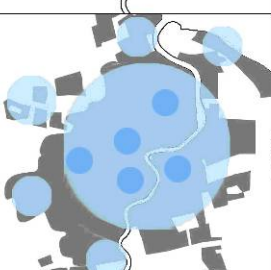
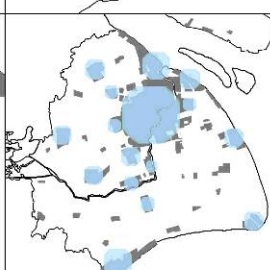

	FOCUSED AREA OF DEVELOPMENT		
	DESCRIPTION	INNER-CITY AREA	METROPOLITAN AREA
<b>PERIOD 1</b> Birth of Chinese Old City (13th Century to 1840)	Development was constrained in the scope of Chinese town defined by city wall		
<b>PERIOD 2</b> Grounding of modern metropolitan city and early stage of industrialization (1840~1949)	4 focused development area: 1)The International Concession 2)The French Concession 3) The Chinese Town 4)New Chinese Center (Wujiaochang) The multiple-centric structure came into being		
<b>PERIOD 3</b> Expansion, mono-centralization and development as industrial city (1949~1985)	Mono-centralization with the inner city further developing and expanding. Development of industrial districts and affiliated satellite towns in periphery area.		
<b>PERIOD 4</b> Further expansion decentralization, balanced development and sustainable development (1986~ )	Further development and expansion of inner city with mono-centric structure. Development of satellite towns, residence and industrial districts in inner and outer periphery area		
Legends:  Focused development areas			

Figure 82: Diagrammatic evolution of Shanghai's focused development area, drawn by the author

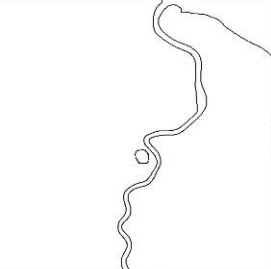
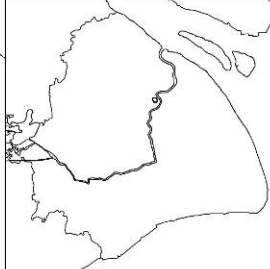
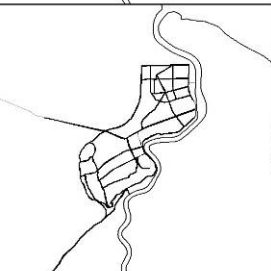
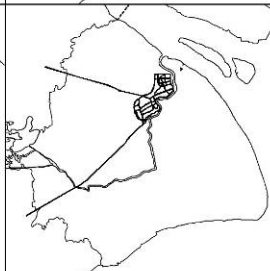
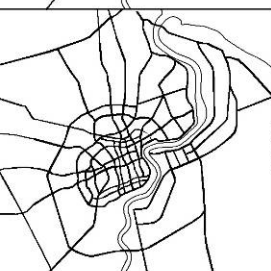
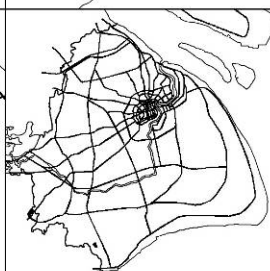

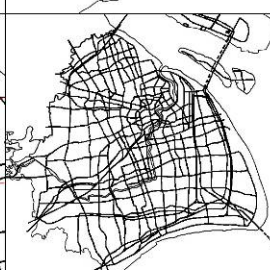
	DEVELOPMENT OF TRANSPORTATION SYSTEM		
	DESCRIPTION	INNER-CITY AREA	METROPOLITAN AREA
<b>PERIOD 1</b> Birth of Chinese Old City (13th Century to 1840)	Dense raster pedestrian street system in the Chinese town. River network was another transportation for that time		
<b>PERIOD 2</b> Grounding of modern metropolitan city and early stage of industrialization (1840~1949)	Different street system in concession areas, old chinese town and new chinese city center. East-west connection is stronger than north-south connection. Two railways to connect neighboring provinces.		
<b>PERIOD 3</b> Expansion, mono-centralization and development as industrial city (1949~1985)	Densifying street raster and strengthen the north-south connection in inner city. Establishing two ring-roads. The radiating street system in outer city area connects satellite towns and neighboring provinces.		
<b>PERIOD 4</b> Further expansion decentralization, balanced development and sustainable development (1986~)	Further densifying street system especially in regional area to support the connection of central city and suburbs. Promoting public transportation system (metros, city fast-rail) in inner city. Establishment of new railway station and new international airport in Pudong		
Legends: — Traffic Road System    — Subway Lines (in process of construction)			

Figure 83: Diagrammatic evolution of Shanghai's transportation structure, drawn by the author

	DEVELOPMENT OF OPEN SPACE		
	DESCRIPTION	INNER-CITY AREA	METROPOLITAN AREA
<b>PERIOD 1</b> Birth of Chinese Old City (13th Century to 1840)	Open spaces were situated in relation to the markets, temples and other public buildings as well as river networks within the scope of Chinese Town.		
<b>PERIOD 2</b> Grounding of modern metropolitan city and early stage of industrialization (1840~1949)	Open spaces were built in the Bund and main commercial street in the concession areas. New urban center with big-scale open spaces was planned and partially realized in "Wujiaochang" Area north of Inner City.		
<b>PERIOD 3</b> Expansion, mono-centralization and development as industrial city (1949~1985)	Limited amounts of open spaces were built on based of the open spaces that agglomerated in the central area of city such as the bund, Nanjing Road, Huaihai Road and Racecourse (rebuilt into People's Square). A few open spaces were planned and partially realized in the peiphery and satellite towns.		
<b>PERIOD 4</b> Further expansion decentralization, balanced development and sustainable development (1986~ )	Great development of open spaces in inner city follows the development of mutiple-centric structure of inner city, namely in the historic city center, Pudong CBD and a number of sub-city-centers. Open spaces were also planned and restlessly promoted in the periphery residentiario areas and satellite towns.		
Legends: <span style="color: blue;">●</span> Concentrated public spaces/centers <span style="color: blue;">—</span> Lineal public spaces/centers			

Figure 84: Diagrammatic evolution of Shanghai's open space structure, drawn by the author

	DEVELOPMENT OF GREEN SPACE		
	DESCRIPTION	INNER-CITY AREA	METROPOLITAN AREA
<b>PERIOD 1</b> Birth of Chinese Old City (13th Century to 1840)	Green spaces were situated in relation to opens space and along the small reivers in the Chinese town. This period also saw the emergence and development of private gardens.		
<b>PERIOD 2</b> Grounding of modern metropolitan city and early stage of industrialization (1840~1949)	Many parks were planned and constructed in this period in the inner city (concession area). In the new Chinese city center planned in "Wujiaochang", big scaled green spaces were also planned and partially realized.		
<b>PERIOD 3</b> Expansion, mono-centralization and development as industrial city (1949~1985)	This period saw the planning and realization a noticeable amount of green sapces and the improvement of quality of them in inner city, especially in the residential areas in inner city. The green space is also planned for periphery satellite towns together with the initial-ization of forestation move-ment.		
<b>PERIOD 4</b> Further expansion decentralization, balanced development and sustainable development (1986~ )	The amount of green space per capita is further in-creased, while their structure is optomized. The green space structure of the inner city and that of the metropoli-tan area are planned and in process of realization.		
Legends:  Green Spaces			

Figure 85: Diagrammatic evolution of Shanghai's green space structure, drawn by the author











	URBAN CONSERVATION AND MONUMENT PROTECTION		
	DESCRIPTION	INNER-CITY AREA	METROPOLITAN AREA
<b>PERIOD 1</b> Birth of Chinese Old City (13th Century to 1840)	This was the period when the origin of Shanghai was born. Some cultural heritages or fragment of heritages still remained today such as the piece of city wall and the Yu Garden.		
<b>PERIOD 2</b> Grounding of modern metropolitan city and early stage of industrialization (1840~1949)	This was the period when majority of the cultural heritages was generated. These heritages include not only numerous outstanding single buildings or objects, but also the historic districts with characteristic modern townscapes		
<b>PERIOD 3</b> Expansion, mono-centralization and development as industrial city (1949~1985)	This was the period when the earliest efforts on cultural heritages protection was made. However the protection was only on the single objects which were in the list of protection, which was very incomplete. The concept of urban conservation to protect urban area didn't exist. This period saw big damage and loss of cultural heritages and historic areas.		
<b>PERIOD 4</b> Further expansion decentralization, balanced development and sustainable development (1986~ )	Shanghai was inscribed in the list of "National Cultural and Historic City" in 1986. This period saw the constitution of the more complete list of protection units as well the improvement of the measures of protection. This period also saw the planning for urban conservation of 12 "Historic and Cultural Protection Districts".		
Legends:  Urbanized Area  Historic and Cultural Protection District			

Figure 86: Diagrammatic evolution of Shanghai's urban conservation areas, drawn by the author

## 4.2 DEVELOPMENT OF SHANGHAI'S INDUSTRIAL SPACES

### 4.2.1 DEVELOPMENT OF SHANGHAI'S INDUSTRIAL SPACE OVER THE HISTORY

#### 4.2.1.1 PERIOD 1 (END OF 13th CENTURY TO 1839)

There are only a few small handcraft industrial spaces with in the scope of the historic Chinese town. As what is often seen in the cities in this period, these small working spaces are mixed with the other functional spaces in the city like the residential and commercial spaces in the same block or same building. Before the industrialization process was initialized in the middle to end of 19<sup>th</sup> Century, there were no concentrating manufacturing spaces in modern sense. Such situation is very much like that in the medieval European cities. The other location for small working spaces were seen in the ports of Shanghai by the north of historic Chinese town, in which some functions like the ship repairing and small warehouse to service the port. There were no historic documents about the economic structure in this period, however it can be estimated that the primary sector of economy (agriculture) and the tertiary sector (service) dominated the economic structure.

#### 4.2.1.2 DEVELOPMENT OF INDUSTRIAL SPACE IN PERIOD 2 (1840~1949)

This period saw the rising of industrialization in Shanghai. With the intensive investment from the foreign and national capitals, Shanghai had been developed in to the biggest center for manufacturing industry before 1930s. In the 2435 factories in China, 1200 were situated in Shanghai. Shanghai occupied more than 50% of the nation's total investment amount on industry and also led in terms of technology advancement and scale of workforce.<sup>244</sup>

The industrialization gain ground as early as in 1865, when the ministers from the government of Qing Dynasty, Li Hongzhang and Zeng Guofan, initiated the Jiangnan Manufacturing Bureau in Shanghai for the purpose of modernization of China's industry especially the military industry to fight back the invasion of western countries and Japan. In 1867, the Jiangnan Manufacturing Bureau moved to the south of Shanghai Gaocang Temple Area (today's EXPO site), in which the machinery factory, steam boiler factory, gun factory, wood processing factory, cooked iron factory and copper plant were built. This marked the beginning of the industrialization in Shanghai as well as the rising of national industry.

The upsurge of the development of manufacturing industry was coming in the turning of 19<sup>th</sup> Century and 12<sup>th</sup> Century. Trigger for this development was the <Treaty of Shimonoseki> and the followed "Triple Intervention"<sup>245</sup>, which the government of Qing Dynasty was forced to sign with Japan to give privilege to foreign merchant to invest in factories in China. The investment of industry by foreign capital in this time was mainly on the industry of infrastructure supply, such as the Shanghai Water Plant invested by English Merchants, Yangshupu Power Plant invested by initially by national capital but later transferred to the General Electric USA and the Yangshupu Gas Plant (named as Shanghai Gas Company at that time) invested by English

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<sup>244</sup> Cui Ning, <Restructuring of the City under important Urban Events: Shanghai EXPO as Example>, Southeast University Press, 2008, p.58

<sup>245</sup>

Merchants. The development of these manufacturing contributed greatly the urban development of Shanghai in this period.

Ti the term of the First World War, Shanghai became the main interchange hub for the supply materials from China for European battlefield, and thus Shanghai's economic position in the world was further strengthened. This period also saw the dramatic development of manufacturing industries, especially those invested by the Chinese national capitals. These industries were focused on the light industry, chemical industry, daily necessities industry, and food-processing and beverage industry. For example, the first factory of Fuxin Flour Mill was established in 1913 and it was expanded to the scale of 5 factories in 1919 and thus became the biggest enterprise in China's flour industry. In the later years till foundation of PRC, the manufacturing invested by western capitals, national capitals and Japanese capitals were further developed. The well-known examples are the textile and rubber factories invested by Chinese national capitals, shipbuilding, steel, copper, metal-processing, tobacco, paper, brewery, beverage, soap industries invested by European and American merchants as well as many textile, iron, automobile parts and weapon factories invested by Japanese merchants.



Figure 87: Factory complex of Yihe Spinnery invested by Jardine Matheson & Company was the first factory invested by foreign capitals in Shanghai (1896). Photograph from "China Heritage Net"

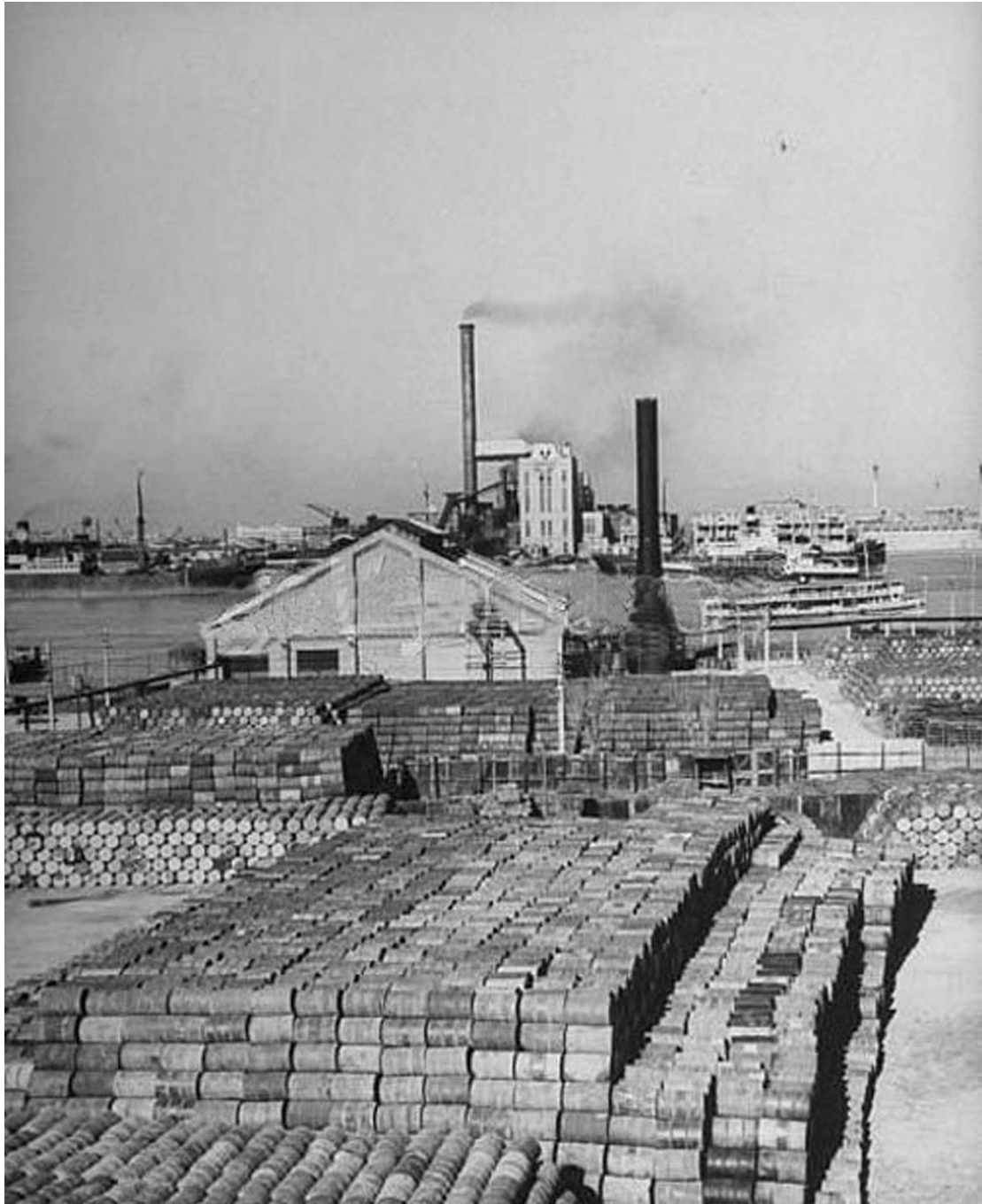


Figure 88: View from Pudong to the Yangshupu Industrial District in 1948, the oil barrels piling in the closed-range of this photograph are from Standard Vacuum Oil Company. In the other side of the river, it can be seen that the factories already agglomerated in this area. Yangshupu District belonged to the International Concession at that time, and was the most flourishing area for manufacturing industry.

Photograph from Getty Images

The manufacturing industries were mainly built in three locations of this period. 1) Area in south of the concession area on the north bank of the Huangpu River. This was the area where the first national manufacturing enterprise, namely the “Jiangnan Manufacturing Bureau”, is situated. The dominant enterprise in this areas was the “Jiangnan Shipbuilding Factory”, which was a super-scaled military industrial enterprise invested by the government of Qing Dynasty, as well as many subsidiary factories on steel, copper and machinery. Later, some other foreign-invested enterprises such as Mahler Shipbuilding Factory were also situated here. 2) Yangshupu Riverfront Area. From the end of 19<sup>th</sup> Century, the Yangshupu Riverfront

Area, part of the international concession, in the north of city center and the north bank of Huangpu River became the biggest and most important area of manufacturing industry due to advantages of long shoreline for river transportation. The Shanghai Power Plant, Water Plant, Gas Plant and other famous factories were all situated here. 3) Middle part of Suzhou Creek. This area is situated in by the north edge of the concession area, and was developed into one agglomerating area for factories and warehouses for its advantages of central location and in the River transportation.

#### 4.2.1.3 DEVELOPMENT OF INDUSTRIAL SPACE IN PERIOD 3 (1950~1985)

The period between 1949 and the beginning of 1980s was a special period of Shanghai in terms of development of industrial space, in which Shanghai was targeted towards the biggest national manufacturing center by the comprehensive planning 1959. With all efforts from politics, finance and urban planning to convert Shanghai from a "consumption-based city" in to a "production based-city", Shanghai became one of the most important centers of manufacturing industry in China. Shanghai's urban spatial structure was shaped in this period towards that of the industrial city, while the urban characteristics of an international metropolitan city was weakened and finally disappeared.

The extinguished tendency in this period was that heavy manufacturing industries such as iron, machine and power industries were developed in priority from the beginning of 1950s. In 1950s, the investment for these heavy industries occupied 80% of the total industry investment on industry. This direction of development made significant change to the economic structure in Shanghai. From 1950s to 1970s, the average yearly increase in GDP generated by the secondary sector was 9.81%, while that generated by the tertiary sector of industrial was only 4.73%. In 1952, the secondary sector occupied 52.1% in GDP, while the tertiary sector occupied 41.7%. In 1978, the proportion of secondary sector already increased to 77.4%, while that of the tertiary sector further sank to 18.6%.<sup>246</sup> Shanghai played an important role in the national economic system in that its industrial output value occupied 1/8 of the total industrial output value of China, financial revenue occupied 1/6 of the total financial revenue of China and almost 1/2 of the daily necessity products for the whole China was from Shanghai, from the statistics in beginning of 1980s.<sup>247</sup>

The effort to promote such dramatic development of manufacturing industry from urban planning was initiated from end of 1950s. In the <Preliminary Master Plan of Urban Development 1958>, eight industrial districts was planned in the inner periphery area of Shanghai, they were specialized in different category of industrial development (Yunzaobang Industrial District for steel work and chemical industry, Pengpu Industrial District for Iron and machinery industry, Taopu Industrial District and Beixinjing Industrial District for chemical industry, Caohejing Industrial District for precision apparatus and medical apparatus, Gaoqiao Industrial District for petrochemical industry, Zhoujiadu Industrial District for steel and glass industry and Wujing Industrial District for chemical industry). In the <Shanghai Comprehensive Plan 1959>, 12 satellite towns were planned. Many of these satellite towns were planned not only as outer periphery (regional) residential area, but as service area for the related industrial districts. In 1950~1970s, 7 of them were realized. The

<sup>246</sup> Chen Youhua, <Thoughts on several topics regarding the urban planning of Shanghai>, in <Urban Planning Journal> 2001(1), 1, Tongji University Press, p.55

<sup>247</sup> Cui Ning, <Restructuring of the City under important Urban Events: Shanghai EXPO as Example>, Southeast University Press, 2008, p.63

representative examples are the huge-scaled Baosteel Plants (1978) in the Baoshan Town and the Shanghai Petrochemical Complex in the Jinshanwei Town.

Regarding the distribution and development of industrial space in the urban spatial structure of Shanghai, there layers of distribution can be seen in this period: 1) Inner city industrial districts, mainly in three locations: Gaocang Temple Area (now EXPO site), Yangshupu Riverfront Area and Suzhou Creek Middle Part. These are all historic industrial districts where the industrialization process in Shanghai in last period of development was initiated. Although it was planned in the <Shanghai Comprehensive Plan 1959> that the industrial space in the inner city shall be restricted, the industrial spaces in these areas further expanded from 1950s to 1980s with expanded scale of land use, expanded scale of workforce and increase of number of factories. 2) Eight industrial districts in inner periphery area of Shanghai, which was heavily developed in from 1950s to 1980s according to planned. However, with the expansion of the scope of inner city, many of these industrial districts were partially included in the inner city. 3) Outer periphery (regional) industrial districts, most of which were in relation to the development of satellite towns.



Figure 89: A textile workshop in Shanghai in 1950s, resource: internet

#### 4.2.1.4 DEVELOPMENT OF INDUSTRIAL SPACE IN PERIOD 4 (1986~)

This period saw another important historic turning point of industrial space development in the urban spatial structure of the city. The primary ground for such turning is the shift of the target of the urban development of the city. In the <Shanghai Comprehensive 1986>, the targets of the city was set as that Shanghai must develop itself into “an economic, technology and cultural center, and an important harbor city”.<sup>248</sup> In the comprehensive planning 1999~2020, it was brought forth that Shanghai must develop herself into “international economic, financial, trading and shipping center city”, for which “the spatial structure fitting to the

<sup>248</sup> Refer to <Shanghai Comprehensive Plan 1986> chapter 1, Municipal Government of Shanghai, 1986, p.5

international metropolitan city is pursued".<sup>249</sup> The development of manufacturing industry, which had been pursued in the previous stage of development, was no more a priority task of development. Since this, the development of industrial space went in a new direction, in which the restructuring and redistribution of industrial space was the primary task of urban planning.

The results of redistribution and restructuring were extinguished. In terms of the composition of economic structure, the proportion secondary sector in the total GDP sank from 77.4% to 48.4% in 1999<sup>250</sup>, which is planned to further sink to 38% in 2010<sup>251</sup>. The proportion of tertiary sector in total GDP increased from 18.6% in 1978 to 49.6% in 1999,<sup>252</sup> which is planned to further be increased to 60% in 2010.<sup>253</sup> In term of scale of land use, manufacturing industrial land use occupied about 24% of the total land use of Shanghai (metropolitan scope), which sank to 16.8% in the middle of 1990s.

The effort to promote such dramatic development of manufacturing industry from urban planning was mainly on the "decentralization" of manufacturing industry from the inner city, which lies mainly in these aspects: 1) Converting the manufacturing industrial land use in inner city to other function, mainly service, housing or non-polluting industry. In 1994, there are still about 142 square kilometer industrial land in the inner city<sup>254</sup>, which occupied a higher proportion of land use in inner city. Many of these areas are in process of conversion and positive results have already been shown. For example, compared to 1993, 6,601 new factories in Shanghai were established, while the number of factory in the five central city municipal districts decreases by 580.<sup>255</sup> 2) Constraining the development and restricting the further expansion of former inner periphery industrial districts. Some of them had been already planned in process to be converted into non-industrial areas such as part of the EXPO and Wujiaochang Industrial District. 3) The new exploitation of the 350-square-kilometer (planned scope) of Pudong District gave opportunity for development of industry, such as the planning and construction of the Outer Gaoqiao Harbor Districts, Jinqiao Exportation Processing Districts and the Zhangjiang Hi-tech Industrial Districts. 4) Development of outer periphery (regional) industrial districts. Except for further development of those industrial districts that were already been established in relation to the satellite towns, 6 new manufacturing industry bases were to be constructed.<sup>256</sup>

As a result, the development and distribution of Shanghai's industrial space will reach a state of: 1) First Zone (Inner city) for tertiary sector of industry (service) and restricted amount of non-polluting industries. 2) Second Zone (Inner Periphery, between inner ring and outer ring) for high-tech, high-add-value and non-polluting industries. 3) Third Zone (outer periphery (regional), areas out of the outer ring):

<sup>249</sup> Refer to <Shanghai Comprehensive Plan 1999~2020> chapter 1, Municipal Government of Shanghai, 1999, p.3

<sup>250</sup> From <Shanghai Statistics Year Book> , China Statistics Press, 1999,p.3 and p.64

<sup>251</sup> Xing Junfang, <The development tendency of China in 21<sup>st</sup> Century>, China Communist Party School Press, Beijing, 1997, p.3

<sup>252</sup> From <Shanghai Statistics Year Book> , China Statistics Press, 1999,p.3 and p.64

<sup>253</sup> Xing Junfang, <The development tendency of China in 21<sup>st</sup> Century>, China Communist Party School Press, Beijing, 1997, p.3

<sup>254</sup> Refer to <Shanghai Land Use Planning 1997~2010>, Municipal Government of Shanghai, 1997, p.18

<sup>255</sup> Cui Ning, <Restructuring of the City under important Urban Events: Shanghai EXPO as Example>, Southeast University Press, 2008, p.71

<sup>256</sup> Zhang Jiang for Nano Technology, An Ting for automobile industry, Jin Shan for etrolchemical industry, Bao Shan for steel, Lu Chao for harbor related industry, Chang Xing for shipbuilding industry.

primary sector of industry (agriculture and mining) and secondary sector of industry (manufacturing), in relation to the development of satellite towns.

#### 4.2.2 DIAGRAMMATIC SCENARIO OF DEVELOPMENT OF SHANGHAI'S INDUSTRIAL SPACE

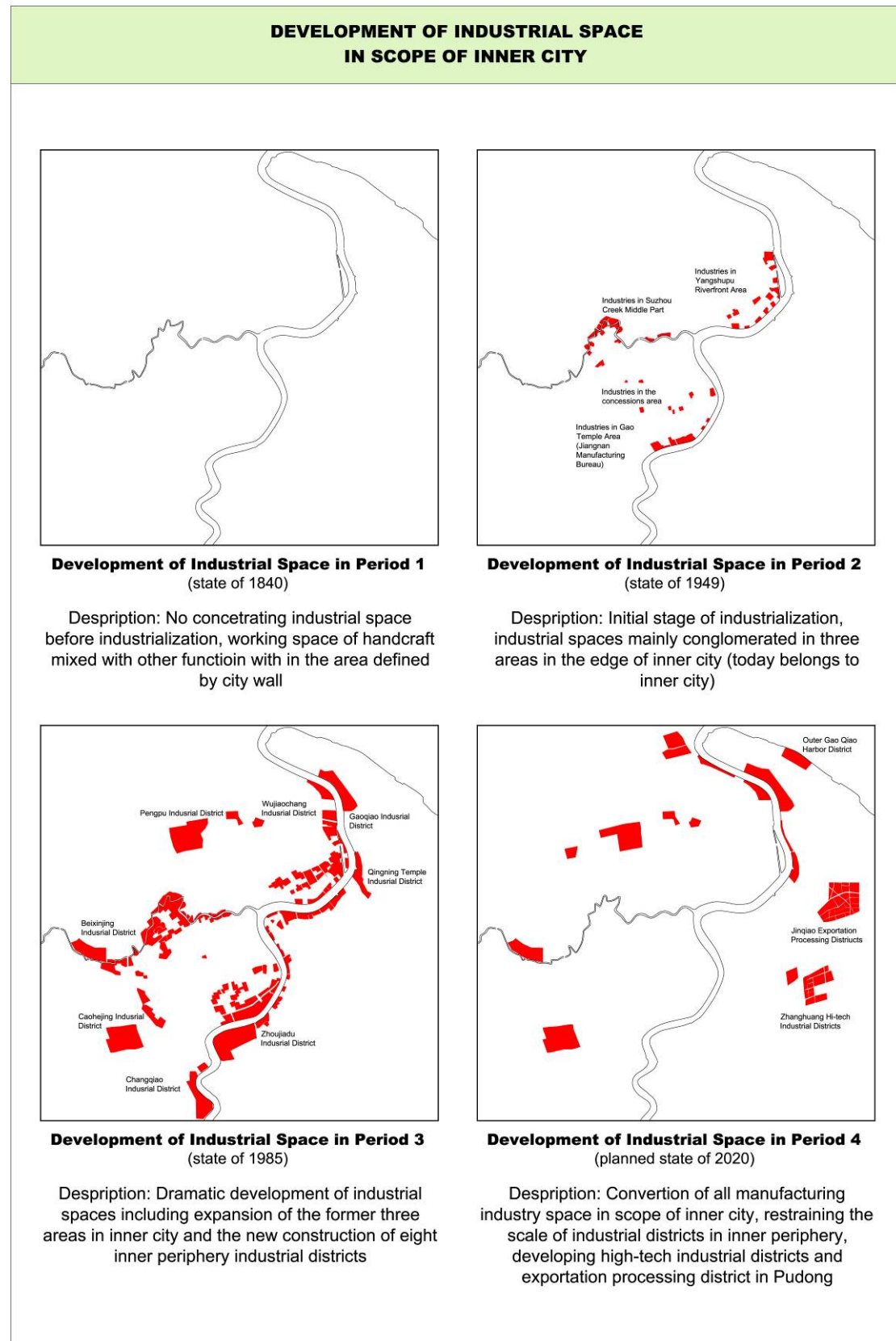
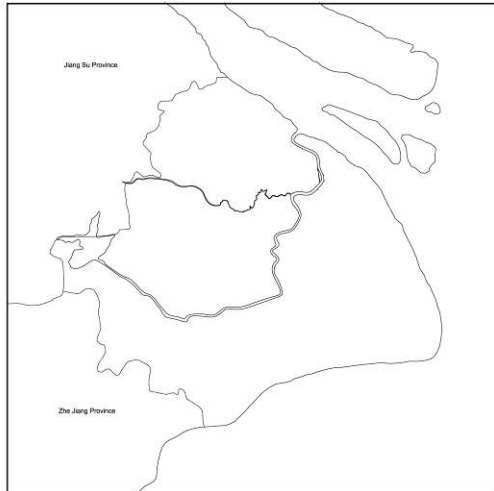


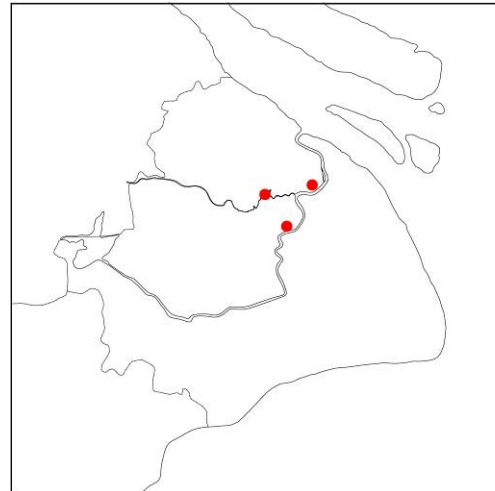
Figure 90: Diagrammatic scenario of industrial space distribution (scope of inner city), drawn by the author

### DEVELOPMENT OF INDUSTRIAL SPACE IN SCOPE OF METROPOLITAN AREA



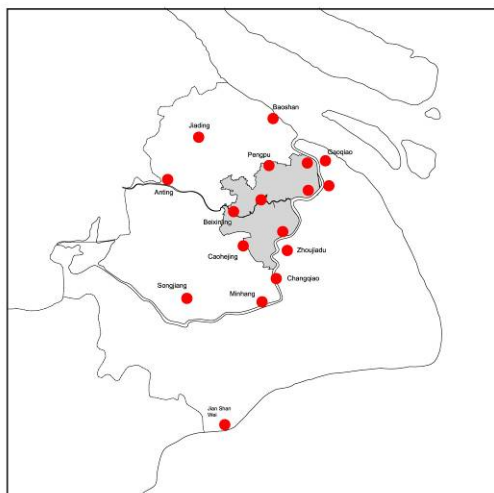
**Development of Industrial Space in Period 1**  
(state of 1840)

Description: No industrial space in inner city and metropolitan area



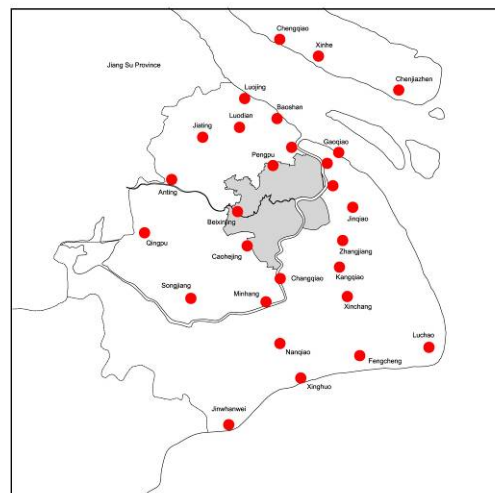
**Development of Industrial Space in Period 2**  
(state of 1949)

Description: Industrial space only in inner city area, no industrial space in metropolitan area



**Development of Industrial Space in Period 3**  
(state of 1985)

Description: Emergence of the eight inner periphery industrial districts and the outer periphery industrial districts related with satellite towns development



**Development of Industrial Space in Period 4**  
(planned state of 2020)

Description: Conversion of all manufacturing industry space in scope of inner city, restraining the scale of industrial districts in inner periphery, further development of new construction of outer periphery industrial districts

Figure 91: Diagrammatic scenario of industrial space distribution (scope of metropolitan (regional) area), drawn by the author

#### 4.2.3 CURRENT STATE OF THE DISTRIBUTION OF INDUSTRIAL SPACE

Currently, in the 1930.7 square kilometer urbanized area of Shanghai, industrial (manufacturing) lands occupied 333.7 square kilometer, which is 14.54% of the total the urbanized lands of Shanghai.<sup>257</sup> They are situated in two zones of the city: Inner City Area (areas within the Outer Ring Road, including the areas which was referred to as "Inner Periphery" previously. 3) Outer periphery (regional) Area (area between the Outer Ring Road and the boundary of metropolitan area of Shanghai. The amounts of land and state of distribution in these three zones were listed below.

CURRENT STATE OF DISTRIBUTION OF INDUSTRIAL SPACE IN THE URBAN SPATIAL STRUCTURE OF SHANGHAI				
Location		Area of industrial space	Percentage in the urbanized area in the location	Percentage in the total industrial land of Shanghai (metropolitan area)
Industrial Spaces in Inner City (including inner periphery)	Three Historic Inner City Industrial Districts	66.86	18.12	19.86
	Industrial Districts in Pudong District			
	Eight Inner Periphery industrial districts			
	Other industrial spaces			
Industrial Spaces in Outer periphery (regional)	Industrial districts related to satellite towns and new towns	67.7	19.86	20.13
	Industrial districts related county towns, villages and suburban residential points	246.63	21.46	60.01

Table 2: Area of industrial space in different location of the city, statistics collected from <Shanghai Land Use Planning 1997~2010>, Municipal government of Shanghai, 1997

##### 4.2.3.1 INDUSTRIAL SPACE IN INNER CITY AREA (INCLUDING INNER PERIPHERY)

The Inner City Area of Shanghai contains currently urbanized area of 365.66 square kilometer. Industrial area occupies 66.26 square kilometer, which is 18.12% of the

<sup>257</sup> This is the statistics in 1997, referring to <Shanghai Land Use Planning 1997~2010>, Municipal Government of Shanghai, 1997, p.7

total land use of the inner city area and the 19.86 % of the total industrial land use in the whole Shanghai (metropolitan area). <sup>258</sup>

The industrial lands mainly distributed in the following areas:

- 1) Three former historic industrial districts in the “Middle Ring Road Area” (areas within the scope defined by the Middle Ring Road): Gao Temple Area (currently EXPO Site), Yangshupu Riverfront Area and the Suzhou Creek Middle Part Area. These came into being in the grounding time of Shanghai in 19th Century or beginning of 20<sup>th</sup> Century and were further expanded in the period from 1950s to 1980s.<sup>259</sup> The industrial spaces in these areas were faced with comprehensive decay currently. Main production type in these locations is shipbuilding, power, water and textile.
- 2) Inner Periphery Industrial Districts: These are the 8 industrial districts planned and established from the end of 1950s<sup>260</sup>. The total areas of the eight industrial districts add up to 24.1 square kilometer. These industrial spaces will be further developed and optimized, but the expansion will be restricted. Main production type of industrial space in this area chemical, machinery and steel industry.
- 3) Industrial Districts in Pudong: The Pudong Districts was developed from beginning of 1990s was planned with two industrial districts (Zhangjiang Hi-tech Industrial Districts and Jinqiao Exportation Processing Districts) as well as a port area (Outer Gaoqiao Harbor Districts).
- 4) Other industrial areas: There are also many industrial spaces left in the city, which mix with the other functions of the city rather than concentrate in form of industrial district. The distribution form of such industrial spaces is “industrial spots”, “single industrial building” and “industrial block”. For example, in the areas between the Inner Ring Road and the Middle Ring Road, there are 70 dispersed industrial blocks with 725 industrial enterprises and 686,800 staffs and industrial output value of 23,365,000,000 RMB. Main industrial types are mechanics, textile, chemistry, light industry and metallurgy.

#### 4.2.3.2 INDUSTRIAL SPACE IN OUTER PERIPHERY (REGIONAL) AREA

The Inner City Area of Shanghai contains currently urbanized area of 1574 square kilometer. Industrial area occupies 267.4 square kilometer, which is 17% of the total land use of the inner city area and the 81.18 % of the total industrial land use in the whole Shanghai (metropolitan area). <sup>261</sup>

The industrial lands mainly distributed in the following areas:

- 1) Industrial Districts related to Satellite Towns and New Towns: The satellite towns which were planned in the end of 1950s were originally planned for purpose for industrial development. In the comprehensive planning in 1999, several new towns were planned, which further contribute to the decentralization of manufacturing industry in Shanghai. In the satellite towns and new towns that were

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<sup>258</sup> Refer to <Shanghai Land Use Planning 1997~2010>, Municipal Government of Shanghai, 1997, p.7

<sup>259</sup> See 4.2.1.2 and 4.2.1.3

<sup>260</sup> See 4.2.1.3

<sup>261</sup> Refer to <Shanghai Land Use Planning 1997~2010>, Municipal Government of Shanghai, 1997, p.7

already constructed, there were 67.70 square kilometer industrial lands, which occupied 19.86% of the urbanized area of satellite towns/new towns, and 20.31% of the total industrial lands of Shanghai (metropolitan area).<sup>262</sup> The type of production in these areas cover a wide range from shipbuilding, steel, chemical, automobile to machinery.

2) Industrial Districts related to county towns, villages and rural residential points: the majority of industrial spaces currently are however located in the industrial districts/areas related to county towns, villages and rural residential points, which occupied 246.63 square kilometer. This is 21.4% of the total urbanized area of the sum of county towns, villages and rural residential points, as well as 73% of the total industrial lands of Shanghai (metropolitan area).

#### 4.2.3.3 CHARACTERISTICS OF THE CURRENT DISTRIBUTION STATE

Concerning the spatial development of Shanghai, the current spatial distribution of the industrial areas in the city such characteristics as well as potential problems:

- **Industry lands agglomerate in the inner city area**

For the development of a metropolitan city, manufacturing industrial land in the inner city must be kept under very low amount. However, there was 142 square kilometer industrial land in the inner city of Shanghai in 1987. This extremely big amount was significantly reduced to 66.26 square kilometer in 1997 which is 18.12% of the total land of the inner city, and 19.86% of the total industrial land in the whole Shanghai. Compared to mainly metropolitan cities of the world in which industrial lands usually occupy less than 5% of the total area of the inner city<sup>263</sup>, the amount of industrial space that Shanghai possesses in its inner city is still considerably big. The existence of these manufacturing spaces in inner city became an obstacle for the development of other urban functions, especially when the free land in inner city is more and more scarce.

- **Fragmentary state of distribution of industrial spaces**

The mixture of residential area and small industrial spaces are widely seen in Shanghai, especially in the inner city area. They are distributed in a very fragmentary state: most factories are divided into several parts, locating in different places. According to statistics in 1997, there are 5,603 industrial enterprises in the inner city area with industrial 15,000 sites, which means that the majority of the enterprises has more than one site. In those small factories with less than 100 stuffs, 15% of them have more than 6 additional sites. In the bigger factories with more than 100 employees, 40% of them have more than two additional sites.<sup>264</sup> In the periphery area, according to the investigation in 1999, only 30% of the total economic output was contributed by the planned concentrated industrial districts, while 70% was contributed from the dispersed industrial spaces. The fragmentary state of distribution of factories causes discontinuing production process and leads to excessive transportation demand, which lowers the production efficiency as well as gives much pressure to the infrastructure of the city.

<sup>262</sup> Refer to <Shanghai Land Use Planning 1997~2010>, Municipal Government of Shanghai, 1997, p.7

<sup>263</sup> Refer to Li Dongsheng, <Adjustment and renewal of historic industrial districts: Yangpu Municipal District in Shanghai as example>, Tongji University Press, 2005. p.25

<sup>264</sup> Yang Wanchun, <Research on industrial distribution and structure of Shanghai>, East China Normal University Press, Shanghai, 1992, p.66

- **Most industrial areas are situated alongside the rivers and cause pollution**

Most of the industrial districts, especially those in the inner city, are situated by or with connection to the river system of Shanghai, which is composed of the Huangpu River, Suzhou Creek and their branches. The purpose of planning industrial districts along side the river was to take the advantaged of water drainage and shipping. However, without proper treatment of the waster water, these industrial districts became resources of pollution for Shanghai. According to environment statistics in 1987, the wastewater drainage by industry amounts up to 1,489 millions tons, occupying 74.08% of the total wastewater drainage of the city. Majority of them flew from these industrial districts directly to the river system of the city.

THE INDUSTRIAL DISTRICTS AND THEIR RELATED RIVERS		
Location	Name of industrial district	connected rivers
2 historic inner city industrial districts	Gao Temple Area (EXPO Site)	Huangpu River (south reach)
	Yangshupu Riverfront Area	Huangpu River (upper reach)
	Suzhou Creek Middle Part	Suzhou Creek
8 inner periphery industrial districts	Changqiao Industrial District	Huangpu River (upper reach)
	Zhoujiadu Industrial District	Huangpu River (upper reach)
	Qingning Temple Industrial District	Huangpu River (middle reach)
	Gaoqiao Industrial District	Huangpu River (middle reach)
	Caohejing Industrial District	Huangpu River (lower reach)
	Wujiaochang Industrial District	Huangpu River (lower reach)
	Beixinjing Industrial District	Suzhou Creek
Outer periphery (regional) industrial districts	Pengpu Industrial District	Penggongpu Creek (connected to Huangpu River)
	Wusong Industrial District	Yangtze River
	Jinshan Industrial District	Hangzhou Bay (East China Sea)
	Minhang Industrial District	Huangpu River (upper reach)

Shanghai's industrial districts and their water system connected with them  
Information collected by the author

- **Many periphery industrial spaces lacks of transportation support**

The shortage of transportation accessibility (to the regional highway/railway system as well as to the central area of city as resource of labor) for the periphery areas of the city is still constraining the development of the industries and other urban functions in these areas. Although many of the concentrated industrial districts especially those related to the satellite towns were planned with transportation connection to the central city as well as the regional traffic networks, the scale of these district expanded from beginning of 1990s and the demand on transportation exceeded the support the existing traffic infrastructure and deliver. On the other side, controlled urban development from 1950s to 1980s<sup>265</sup> caused the fragmentary distribution state of industrial space in periphery of Shanghai, the majority of which are with weak transportation support.

- **Monotonous industrial function development cause shortage of urban attractiveness**

<sup>265</sup> See also 4.2.1.3

Industrial districts, especially those planned and constructed in the inner and outer periphery of the city during period of the massive industrialization from 1950s, were treated by urban planning as isolated areas that must be away from contact of other urban areas, so as to prevent pollution and noise damage to the other urban areas. These industrial spaces were planned in a way that industrial function dominates the function composition and the other urban functions such as office, service, residential, open space and green space were mostly not considered within the scope of these industrial spaces. The support of housing and service were planned only in the neighboring urban areas (mainly in satellite towns and periphery residential points), which were linked to the industrial spaces with traffic road system and became more and more out of capacity when these industrial expanded. Such situation was even more severe in the smaller dispersed industrial locations in periphery of Shanghai, which appeared outside the planned industrial districts during the period of massive industrialization.

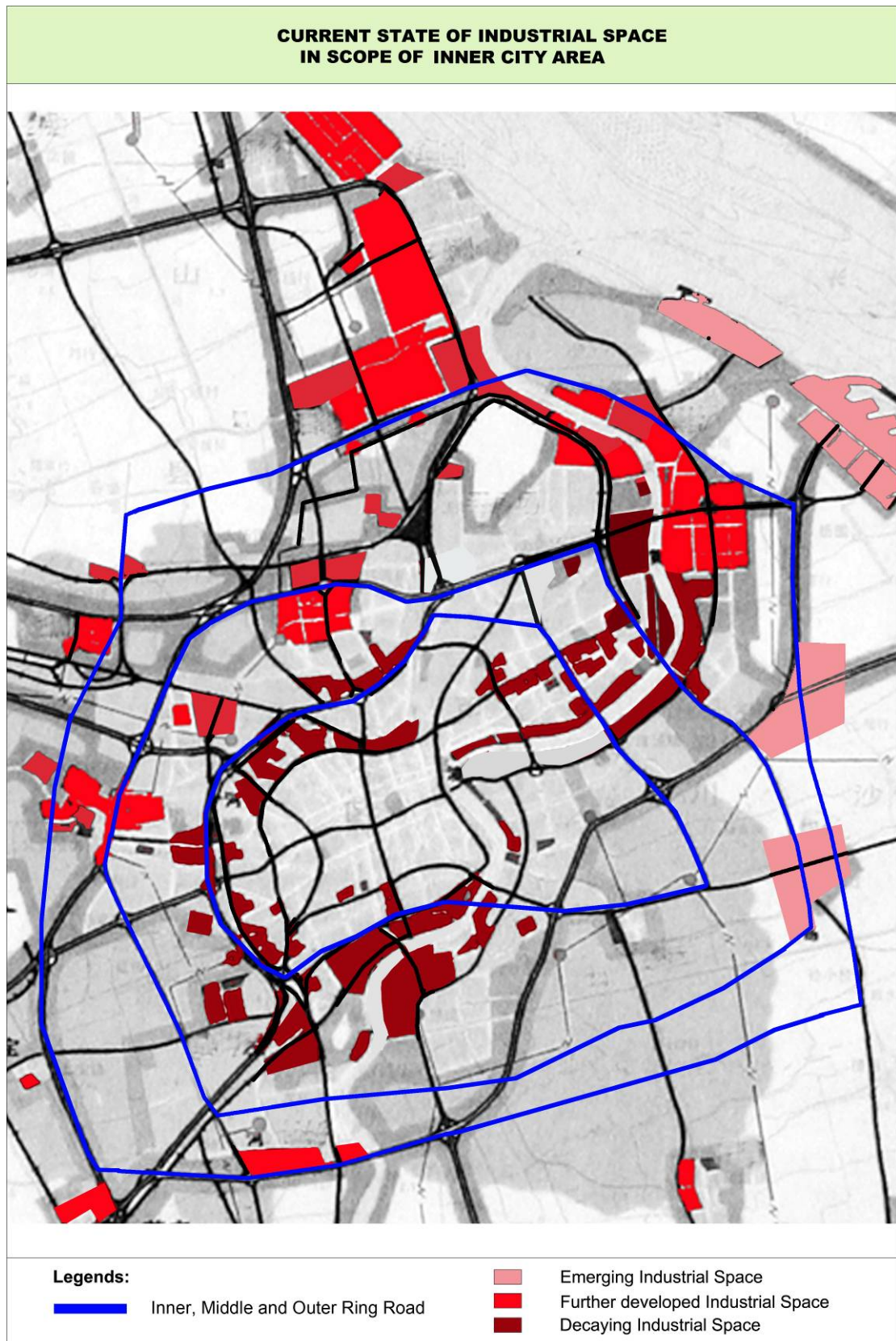


Figure 92: Current state of industrial space in inner city area of Shanghai, Drawn by the author based on <Shanghai Comprehensive Plan 1999~2020>



Figure 93: Current state of industrial space in metropolitan (regional) area of Shanghai, drawn by the author based on <Shanghai Comprehensive Plan 1999~2020>

### 4.3 URBAN PLANNING OF SHANGHAI IN "BRING OUT"

#### 4.3.1 STARTING POINTS OF URBAN PLANNING IN "BRING OUT"

As analyzed in previous sections, Shanghai is now entering into a new stage of spatial development with new situation and target-setting. This new situation and target-setting of spatial development place new challenges to the restructuring of industrial space, whose distribution state was much influenced by the previous stage of development that is characterized by massive industrialization and has been already a obstacle for the further development of Shanghai. It is time for a comprehensive "BRING OUT" made by the urban planning.

On the other side, judged from the current state of economic structure and land use structure, the development of Shanghai's spatial structure from an industry-based one to a service-based one, is still in its very initial stage, compared to many European cities in which the process is more or less finished. The analysis in chapter 3 has revealed this fact. How urban planning can learn from the experiences and lessons from the other cities, mainly on the three aspects of "BRING OUT" (to balance supply & demand of industrial land, to achieve ideal type-location structure as well as to improve the quality of industrial locations), shall be taken into account.

Before starting to explain how urban planning in Shanghai works in this regard, the following starting points, which summarize the basic situation and confrontation of Shanghai, need to be addressed:

- **New general target of Shanghai's spatial development**

Having been developed as an industrial base of China for over 30 years, Shanghai now has now entered into a new stage of development. The new target established by the <Shanghai Comprehensive Plan 1999~2020> was to develop Shanghai into 4 kinds of center: international economic, financial, trading and shipping center city, while Shanghai must still maintain the development as one of the most important industrial bases of China.<sup>266</sup> Since nearly 50 years, the development of manufacturing industry is for the first time no more pursued as primary and sole target. Such target-setting triggers the spatial restructuring of Shanghai, as well as act as the primary starting point of urban planning in regard of "BRING OUT".

- **Structural transformation of economy in process**

Since 1992, Shanghai's economy growth stepped into an upsurge period. Till 2007, Shanghai had continuously maintained a high speed GDP growth of more than 10%. The growth was only slightly lowered to 9.7% in 2008. After this upsurge period of economic development, Shanghai as a modern metropolitan city had already come into being in aspects of economic structure. Regarding the proportion of economic structure, although the secondary sector and tertiary sector both maintained very high speed of growth, their proportion in the economic structure has been changed. The proportion of secondary sector in total economic output decreases significantly from 77.4% to 45.5% in 2008, while the tertiary sector increases significantly 18.6% in 1978 to 53.7% in 2008. It is now the 12th year since 1998 that the proportion of secondary sector is lower than 50%. Compared to world's metropolitan city such as

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<sup>266</sup> See 4.1.2.4

New York, Tokyo as well as the cases for comparison in this research, London, Hamburg and Ruhr Region (Duisburg and Essen as examples) and Vienna, the proportion tertiary sector in Shanghai still has a long path to further increase. Nevertheless, a typical post-industrial economic structure is already shown.

Regarding the development of industry, new tendency had been shown in the period 2000~2009. The total amount of industrial output keeps increasing, although the speed of increase sank from 31.4% from 8% to 2008.<sup>267</sup> Manufacturing still occupied a relative high proportion (40%) in the total industrial output, although it had been lowered through industrial restructuring since 1987 from 77.4% to 48.4% in 1999 and further to around 47.9% in 2008<sup>268</sup>. It is also seen that the ability of the technology innovation was more and more strengthened. In 2008, the industrial production of high technology sector increased by 11.6% over the same period of last year (24.8% in the total industrial output of Shanghai). The other tendency is the production-related service was highly developed in this period. For example, the production-related service (mainly modern logistics, information service and R&D) was increased by 16.7% in 2008 compared to 2007 and covered 90.99% of the total tertiary sector of economy in Shanghai.<sup>269</sup>

	1978	1983	1988	1993	1998	1999	2003	2008
Occupation of manufacturing sector	77.40%	72.60%	66.80%	59.40%	49.30%	47.40%	47.90%	45.50%
Occupation of service sector	18.60%	23.60%	29.00%	38.10%	48.80%	50.80%	50.90%	53.70%

Table 3: Shanghai's manufacturing industry and service industry 1978~2008, Information collected by the author based on <Shanghai Statistic Year Book 2009>

	Shanghai	New York	Tokyo	London	Hamburg	Duisburg	Essen	Vienna
Occupation of manufacturing sector	40.20%	13.30%	29.60%	6.50%	19.20%	20.60%	19.20%	18.70%
Occupation of service sector	53.70%	86.60%	69.80%	93.40%	80.00%	79.40%	80.80%	80.80%

Table 4: Shanghai's in comparison with other global cities in terms of employment in secondary and tertiary sector, Information collected by the author based on multiple resources

#### 4.3.2 BALANCING SUPPLY & DEMAND RELATION OF INDUSTRIAL LAND

The period from 1950s to 1980s, when the development of manufacturing industry was put in priority, left to Shanghai a very high occupation of industrial land in the total area in Shanghai. For example, in the end of 1980s, industrial land occupied about 24.4% of the total land of Shanghai.<sup>270</sup> Through the efforts of multiple policies and urban planning, the proportion industrial land is significantly reduced to 14.54% (333.7 square kilometer). However, many metropolitan cities in Europe and America,

<sup>267</sup> Refer to <Overview of Industrial and Informatization Development> as well as <Report on the Industrial Development of Shanghai 2009>, both from official website of Shanghai Municipal Commission of Economy and Informatization.

<sup>268</sup> Refer to Municipal Government of Shanghai official website

<sup>269</sup> Refer to <Report on the Industrial Development of Shanghai 2009>, both from official website of Shanghai Municipal Commission of Economy and Informatization.

<sup>270</sup> See 4.2.1.3 and 4.2.1.4

the proportion of industrial land in Shanghai is still very high. Such high proportion of manufacturing industrial land doesn't meet the demand of the development of Shanghai, which is targeted at an international metropolitan city instead of industrial city.

	Shanghai	New York	Tokyo	London	Hamburg	Duisburg	Essen	Vienna
Industrial Land (km <sup>2</sup> )	333.7	71.37	42.4	55	33.73	26.1	16.69	25.97
Total built up area (km <sup>2</sup> )	1930.7	952.77	1726	1610	755	232	210	414
Proportion of industrial land in total built up land of the city	17.28%	7.49%	2.46%	3.42%	4.47%	11.25%	7.95%	6.27%

Table 5: Comparison of proportion of industrial land in the total land of the city, Statistic data collected by the author from multiple resources

Spatial expansion still being the most extinguished characteristics in Shanghai, the land use development in the period of 1990~2000, showed a general increase of demand in almost all categories of land use. The industrial land in Shanghai increased by 45 square kilometer (in which 6 square kilometer is on the six target industrial development zones in outer periphery), while the residential land increased by 40 square kilometer, commercial land increased by 4.5 square kilometer, land related to science research, education and culture increased by 20 square kilometer, new urbanized area in Pudong District covered 100 square kilometer, while new urbanized area in outer periphery (satellite towns, towns and suburban residential points) increased by 33.33 square kilometer. The total increased amounts of land add up to about 250 square kilometer.<sup>271</sup> The period of 2000~2008 saw the further increase of land demand, in which industry further increase by 56 square kilometer by 2008.<sup>272</sup> It is predicted that at least in short term, the there is still big demand for industrial space in Shanghai.

The demand for the industrial land is highly diversified according to different categories of industry. The priority of urban planning is given to the six selected fundamental categories of manufacturing industrial: microelectronic, automobile, petrol chemical, fine steel, equipment and shipbuilding industries, which are treated as key driving force for the economic output of Shanghai. The period between 2001 and 2007 had already s successful growth (at an average speed of 12.5%) of these industrial districts, which had already occupied 65.5% of the total industrial output of Shanghai.<sup>273</sup> With the effort of facilitating the development of large industries, large projects, and large industrial bases, microelectronic, automobile, petrol chemical and fine steel bases have been in a preliminary shape. Bases for the equipment in Lingang, shipbuilding in Changxing Island, aviation and space industries are under planning and construction. These were all newly planned or planned based on the former industrial districts related top satellite towns since later 1990s.

<sup>271</sup> Refer to <Shanghai Land Use Planning 1997~2010>, Municipal Government of Shanghai, 1997, p.12

<sup>272</sup> Refer to <Shanghai Statistical Year Book 2009>, Shanghai Statistic Press, 2009

<sup>273</sup> Refer to Refer to Municipal Government of Shanghai official website

The other increasing sector is the high technology industries and sector related to production, such as logistics/warehousing, wholesale market as well as municipal utilities. The reserve of industrial land for these sectors shall be ensured through instrument of urban planning. The example for the efforts is the planning and construction of the Zhangjiang High Technology Industrial Park, Jinqiao Export & Export Processing Districts, the Outer Gaoqiao Port and related logistic district and the Luchao Port.

On the side of supply, urban planning shall work on the conversion of the 66.26 square kilometer manufacturing industrial land in the inner city area (including inner periphery) to other land use. The target is to preserve 1/3 of these lands for non-polluting industries and high technology industries, converse 1/3 of these lands to service sector land use, while totally remove to the inner periphery or outer periphery concentrated industrial districts. Through this planning, about 25~30 square kilometer lands will be released, which can be redeveloped as land for urban green space, municipal facilities, commercial use or residential use.<sup>274</sup>

In the periphery area, the relocation of the 2 millions rural population from the fragmentary villages (around 50,000 villages in 1994) to the planned towns, planned periphery residential points and planned central villages will released around 153 square kilometer land for free use.<sup>275</sup> This will become a reserve for lands in development in periphery area of Shanghai. Another resource for meeting the increased demand on industrial land is the restructuring of the current industrial land to increase the efficiency of land utility and reduce the vacant rate. Currently many industrial lands are in very fragmentary state of distribution, which cause the low efficiency of land use (current economic output of industrial land in periphery area of Shanghai is 679 CNY/square meter, which is much lower than the standard for national level industrial district 5000 CNY/square meter). Urban planning shall work on optimizing the distribution of industrial land in outer periphery, mainly by relocating the dispersed industrial lands in the towns and villages to the concentrated industrial districts, in which a considerable amount of industrial land can be released. For example, currently there is 267.4 square kilometer is industrial land in the outer periphery area of Shanghai. If the economic output of industrial land maintains the current standard, then the industrial land shall be increased to 883 square kilometer so as to reach the planning of industrial development of Shanghai. This is almost impossible. However, if the restructuring can increase the land economic output to 2500 CHY/square kilometer, which is half of the national standard for national-level industrial district, the industrial land demand is only 240 square kilometer, which means that the current amount of industrial land in outer periphery can already meet the demand through restructuring.

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<sup>274</sup> Refer to <Shanghai Land Use Planning 1997~2010>, Municipal Government of Shanghai, 1997, p.12~15

<sup>275</sup> Refer to <Shanghai Land Use Planning 1997~2010>, Municipal Government of Shanghai, 1997, p.12~15

#### 4.3.3 ACHIEVING TYPE-LOCATION STRUCTURE OF INDUSTRIAL SPACE

Through land use planning, the following type-location structure of industrial space shall be achieved as described below:

- **Industrial spaces in central area (between inner ring road and middle ring road)**

The central area of Shanghai shall be developed into location for CBD, modern commercial, trading, financing, culture, education, research, tourism as well as modern residence. Manufacturing industry shall basically be relocated to inner periphery or outer periphery, to avoid conflicts with other function as well as leave more lands for the development of other urban functions (analysis on the conversion of former industrial districts in central area of the city can be seen in chapter 5). However, many production-related service industries as well non-polluting industries, such as administration (headquarters), R&D and training can still find central area of the city as ideal location.

- **Industrial spaces in inner periphery (between middle ring road and outer ring road)**

Given the convenient connection with the city and the labor market, this area is ideal for development of non-polluting (environment-friendly) and high value-add industries in form of industrial parks or high technology park. The development of industry in this area will also support to the stability of the employment in the inner city Shanghai. The target can be achieved by the restructuring and optimization (instead of expansion) of the former 8 inner periphery industrial districts<sup>276</sup> on the aspects of: 1) upgrade the industrial type; 2) improve the efficiency of utilization, reduce vacant rate; 3) improving the quality of industrial locations by improving connection to the neighboring residential and office area, planning open space and open spaces, promoting mix-use development of the industrial parks (see 4.3.3, 4.3.4 and 4.3.5). Focused development of industrial parks will be seen in the Pudong Municipal District, which was developed since beginning of 1990s with total planned scope of 350 square kilometer.<sup>277</sup> Two main industrial districts, the Zhangjiang High Technology Park and Jinqiao Import & Export Processing Districts were planned and developed.

- **Industrial spaces in outer periphery**

The outer periphery area of Shanghai is the major base for the industrial development of Shanghai, especially in terms of the large industries and large projects, which include the six basic manufacturing categories of Shanghai (microelectronic, automobile, petrol chemical, fine steel, equipment and shipbuilding industries), as well as the large municipal utilities, waste recycling, ports and logistics centers. In end of 1999, there were already 4 national-level industrial districts in Shanghai's outer periphery, together with 12 municipal-level industrial districts and 170 other industrial districts, which occupied 81.18% of the total industrial land in Shanghai. Urban planning shall work on the optimization of the distribution state of industrial lands in this area (mainly to reduce the fragmentary state of distribution) as well as to further plan and develop the industrial districts (industrial parks) in this area to facilitate large industries and projects.

<sup>276</sup> See also 4.2.1.3

<sup>277</sup> See also 4.1.2.4

#### 4.3.4 IMPROVING QUALITY OF INDUSTRIAL LOCATION

##### ● **Urban land use planning and improving quality of industrial location**

To maintain Shanghai as an attractive location for investment and industry is among one of the most important tasks of the urban development of Shanghai. This requires that the quality of the industrial locations be improved. Besides being the main instrument of urban planning in the two aspects analyzed above, urban plan use planning can also contribute to improvement of the quality of industrial location in the following aspects:

1) Changing the fragmentary distribution of industrial spaces in inner periphery and outer periphery area, increase the productivity of industrial land by relocation them to periphery mix use industrial parks and industrial bases. Special attention shall also be given to those industrial spaces alongside the river by improving the waste treatment system or relocating them to other location.

2) Strengthening the relation of industrial districts with the neighboring residential, office, commercial and service areas, by selecting of ideal locations for new planned industrial districts as well as restructuring, reshaping, expanding or improving of existing industrial districts, in which the development of industrial spaces will gain more support from the labor market and service from the city.

3) Promoting mix use development in the land use planning for the industrial district (industrial parks), by establishing considerate function composition as well as their distribution and interconnection, so as to improve the quality of living and working as well as to improve quality of environment. The proportion of residential, commercial, office use and service shall be considered according to situation and development target of different industrial locations.

##### ● **Urban traffic planning in improving quality of industrial location**

The lack of transportation support had been a big constraint for the further development of Shanghai's industrial space before 1990s.<sup>278</sup> Entering 1990s, Shanghai had entered a stage of upsurge of planning and construction of transportation system. Today, although the construction of the plan is still in process, a basic traffic structure composed of harbors, regional railways, regional highway system, inner city traffic road system and public transport system is already shown. The improvement of traffic system has significant influence on the improvement of quality industrial spaces in that it much improve the links between the sell market (over 80% of the production of Shanghai's industry supplies non-domestic market) and the resource of labor. The efforts of urban traffic planning as well as their contribution on the industrial spaces are mainly on the following aspects:

##### 1) Planning and construction of external transportation facilities

Shanghai shall develop itself into the world-class transport hub, through the further planning and construction of harbors and air harbors. Previously, Shanghai's external shipping function relied mainly on the Gaoqiao Harbor in the north and Jinshan Harbor in the south. Since, 1995, the Yangshan (Luchao) Deep Sear Harbor in the Southeast was planned and started to be constructed. Currently, Shanghai has already a prominent position in the world's shipping system. In 2006, Shanghai surpassed Singapore to be world's biggest harbor in terms of cargo throughput. In

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<sup>278</sup> Also see 4.2.4

2008, Shanghai surpassed Hong Kong to be the world's second biggest port in terms of container throughput.<sup>279</sup>

Development of harbors provides ideal condition for development of specific categories of industry in Shanghai, especially those relying on import/export capacities. Today, more than 99% of the cargo in Shanghai as well as more than 20% of the cargo in China related to export/import goes through the ports of Shanghai. The locations of port also give birth to the big-scaled industrial and logistic space geographically related to them. For example, the Jinqiao Import/export Cargo Processing District was planned and built since later 1990s to meet the demand of the increasing amount and business opportunity in export/import activities. The Jianshan Port and the Gaoqiao Port had been both planned with big-scaled industrial districts since the ports were built in late 1970s, which is now under further expansion with the port areas being further expanded. The Pudong International Airport and the Yangshan Deep Sea Port, which were planned and built since late 1990s, also provided good condition for the development of big-scaled industrial and logistic district planned in its neighboring area.

The challenge of urban planning in terms of urban traffic planning is how to provide further transportation infrastructure to support the port areas' growth. Currently, 80% of the transportation support for the port areas is provided by the traffic road, while only 3% of it is provided by railway. The lagged planning and construction of the transportation support for port becomes a big constraint factor for the development of ports.

## 2) Planning and construction of regional highway system and railway system

The traffic planning of Shanghai in the metropolitan (regional) area shall be focused on completion of the planning and construction of transportation system composed of highway lines and railway lines. The target is described as "15/30/60", which means that 1) the traffic from the main urbanized area, towns, industrial districts and transportation hubs in metropolitan (regional) area to the highway system must be reduced to be within 15 minutes; 2) the traffic from the inner city to the boundary of Shanghai or to the new towns must be reduced to be within 30 minutes; 3) traffic between any two locations in the highway system must be reduced to be within 60 minutes. The planning and construction of railway system must be focused in this stage of development. In 2005, the highway/traffic road bears 3/4 of the passenger between Shanghai and other provinces, while railway only bears 1/4. This indicates that the development of railway system is seriously lagged behind.<sup>280</sup> The traffic planning shall aim to adjust the proportion of highway/traffic road and railway to 2:1.<sup>281</sup>

The development of highway system and railway system will have significant influence on the development of industrial space in the metropolitan (regional) area. Although many big-scaled industrial districts in the metropolitan (regional) area were

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<sup>279</sup> Refer to <Annual report on integrated transport of Shanghai 2008>, from Shanghai City Transportation Planning, official website of Shanghai Urban Construction and Communications Commission

<sup>280</sup> Refer to <Research on the transportation system of Yangtze-River Delta International Shipping Center>, from Shanghai City Transportation Planning, official website of Shanghai Urban Construction and Communications Commission

<sup>281</sup> Refer to <Research on the transportation system of Yangtze-River Delta International Shipping Center>, from Shanghai City Transportation Planning, official website of Shanghai Urban Construction and Communications Commission

planned with consideration to their accessibility to highway system, the capacity of the traffic cannot meet the demand in many locations. The situation of the majority of industrial spaces (middle and small scale), which are located in a very fragmentary state<sup>282</sup>, the accessibility is much worse. In this situation, urban traffic planning shall work closely with the land use planning to relocate the dispersed industrial spaces to concentrated industrial locations, which are supported with optimum traffic support. Regarding the support of railways, the connection between the port areas in south to the railway system that links Shanghai to the west and south (Jiangsu and Zhejiang Province) and the north (Jiangsu and Shandong Province) will be strengthened.

### 3) Priority of the planning and construction of public transport system

Establishment of highly efficient public transportation system, that is often comprised of rail traffic system (metros and fast railways lines), tram way and bus lines and that is planned considering the developing problems and potentials of the city, had been proved by most successful metropolis to be necessary and effective way of improving transportation accessibility and fluency. In Shanghai this is especially important because of the currently severe traffic problem in inner city and the smaller possibility of reshaping existing traffic roads system. According to the statistics in 2008, the daily volume of transportation of Shanghai is 45,930,000 trips/day, within which the public transport covers 23.2%. In inner city area, the daily volume of transportation is 28,850,000 trips/day, within which the public transport covers 33.1%. It is obvious that although the planning and construction of public transport system is highly pushed in the recent period (from 1994 to 2008, 123 kilometer subway line was built), the coverage of public transport is still low, if we compare it to the other metropolitan city such as Tokyo (35%). The current key development field of public transport system is the further push planning and construction of subway lines (inner city) and light railway lines (regional area), with the aim to increase the coverage of public transport to over 30%. In short term, a length of 280 kilometer subway/light railway line (inner city) is targeted till 2020.<sup>283</sup>

The influence of the further development of public transport on the development of industrial spaces is significant, as it will much strengthen the connection between the industrial spaces and the other functions of the city. The improved accessibility by the human resources is of extremely importance for the increasing of quality of industrial spaces. In the urban traffic planning, a general target of connecting all inner city (including inner periphery) industrial spaces with public transport system must be set.

- **Open space and green space planning in improving quality of industrial location**

The urban open space planning in Shanghai shall aim to convert the current mono-centric structure of open space into a poly-centric one. The development of public spaces follows the development of the urban centers, the system composed of the city core (downtown), Lujiazui CBD and multiple secondary city centers in inner city as well as the urban centers in the satellite towns. In the same time, the development of cultural and public facilities (planned and promoted both by the comprehensive planning in 1986 and 1999) like museums, community centers, libraries, culture centers and galleries shall be further strengthened, which can be planned together with the open spaces and add vitality to those open spaces.

<sup>282</sup> See also 4.2.4

<sup>283</sup> Refer to Refer to <Research on the transportation system of Yangtze-River Delta International Shipping Center>, from Shanghai City Transportation Planning, official website of Shanghai Urban Construction and Communications Commission

In the other hand, the planning and construction of green space shall be further strengthened. The targets for the green space development are that: 1) the average public green space area per capita will reach 15 square meter 2) Greenery ratio<sup>284</sup> reach 38% 3) Public green space service distance is less than 500 meter in the inner city area. 4) The forestation ratio in the whole metropolitan area will be more than 25%. The green space system in inner city will be composed of circulation green space alongside three ring road, the urban landscape corridors alongside Huangpu River, Suzhou Creek and Yan'an Road as well as wedge green belt (connecting the inner city with the metropolitan (regional area)).<sup>285</sup> In the metropolitan area, the greenery system will be composed of the big-scaled forestation area, green belt alongside highway and railway system as well as green space related to satellite towns, towns, periphery residential points as well industrial districts.

The planning and construction of open space and green space will have significant influences on the improvement of quality of industrial spaces in Shanghai. In one hand, the close connection of industrial spaces and the open spaces as well as green spaces in the city will provide the added quality for the industrial locations, in which the attractiveness of the urban location where the industrial spaces is one part will be increased. The green spaces, especially those big-scaled concentrated green spaces also have the function of reduce the environment impact of the industrial space to the other functions of the city. This needs to be taken into account by the land use planning and the open space/green space planning of Shanghai, in carefully selecting the location, size, shape of the industrial spaces and the neighboring open spaces and green spaces. In the other hand, on a micro-structure level, to plan and construct open spaces and green spaces with the promotion of mix-use development in the industrial district, can greatly improve the urban and environment quality of the industrial districts.

### ● Urban conservation in improving quality of industrial space

Shanghai as a historic city, had numerous valuable sites, left from the history since its grounding time, and strong urban identities in many areas of the city. However, the protection of cultural heritage/monuments in the city had only been given proper attention after late 1980s, after many of them had been ignored, improperly protected or damaged in the previous development period.<sup>286</sup> The effort of urban planning to integrate the single protection of cultural heritage/monument to the urban development, the so called urban conservation planning, gained ground relatively late. The inscription of Shanghai into the list of "National Historical and Cultural City" marked significant milestone of the history of urban conservation and monument protection. This is the beginning of many efforts to promote the urban conservation in Shanghai including the compilation of the "Outstanding Historic Architecture List" which was started from 1989 and was continuously added to till today, as well as the compilation of "Historic urban landscape zone List" and correspondent urban planning documents, protection measures and laws for these protected units and areas.<sup>287</sup>

The urban conservation plays a special role in the redevelopment of historic inner city industrial districts, which in a sense create special attractiveness for these areas that was redeveloped for other urban uses of the inner city. Shanghai's process of industrialization left a considerable amount of industrial heritages in those inner city

<sup>284</sup> Greenery Ratio in China refers to the ratio of the area of greenery to the total ground area.

<sup>285</sup> To be further analyzed in 5.3.1

<sup>286</sup> See also 4.1.2.3

<sup>287</sup> See also 4.1.2.3 and 4.1.2.4

industrial districts (Yangshupu Riverfront Area, EXPO Site and the Suzhou Creek Riverfront Area) as well as gave these area strong urban identities. These are all valuable cultural heritages for the city of Shanghai and shall be well protected. In the other hand, the practice on many other cities, such as London, Vienna, Ruhr Region and Hamburg,<sup>288</sup> tells us that the protection of industrial heritages which is combined with innovative renovation/ reutilization as well as supported by well planned land use, transportation, open space and green space, can give special impulse for the redevelopment of the whole area. This must be reflected in the urban planning of the redevelopment of those former industrial districts, which are located in strategic locations of the inner city development of Shanghai.

Geographically speaking, these former industrial districts stayed side by side with the most historic areas of Shanghai (the 12 townscape conservation zones), as well as in the important strategic location of the inner city development. In the initial stage of redevelopment, the importance of protection of industrial heritages was not given enough attention, in which many valuable heritages were damaged. This was to be corrected by the urban planning after 2000, in which urban conservation planning was important part.

Further analysis of the urban conservation planning will be made in the next chapter (5.5).

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<sup>288</sup> See also

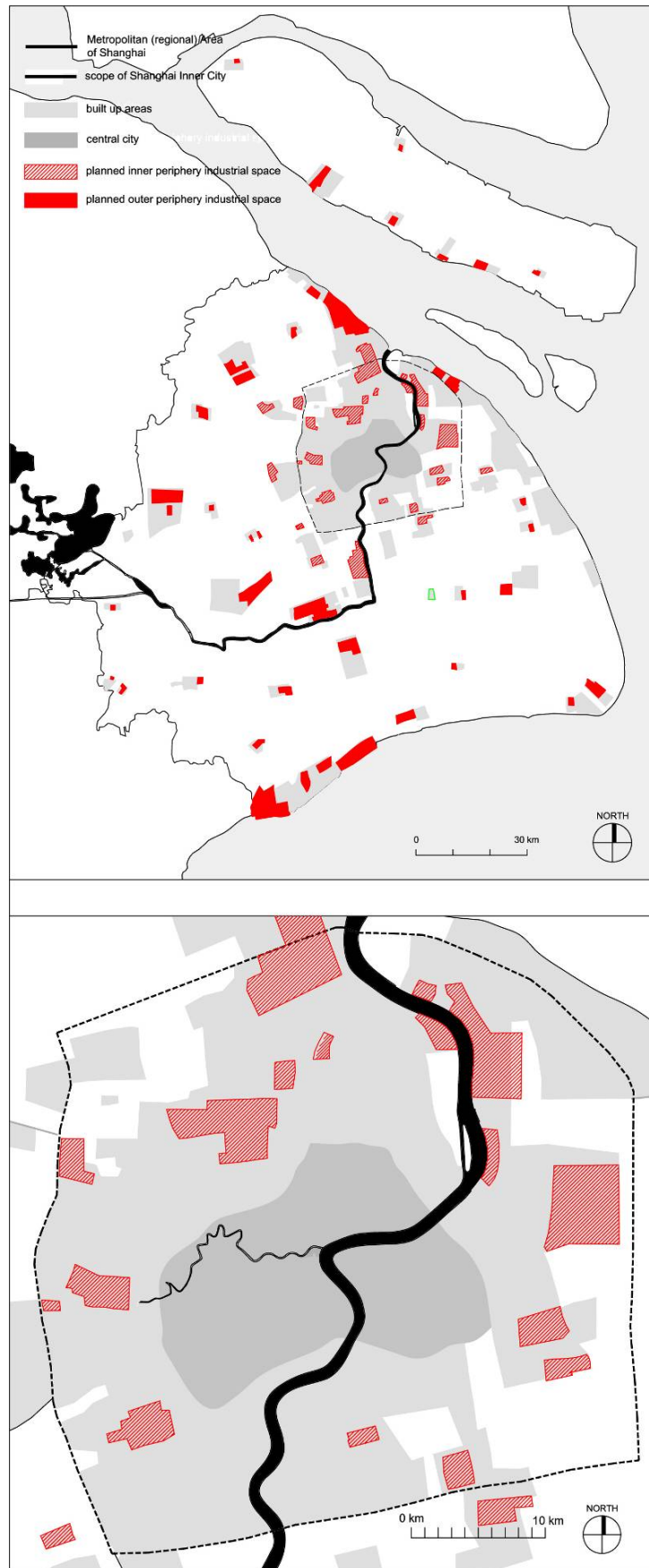


Figure 94: The planned location of industrial space in Shanghai's metropolitan area and inner city area, drawn by the author based on the <Shanghai Comprehensive Plan 1999~2020> and other resources

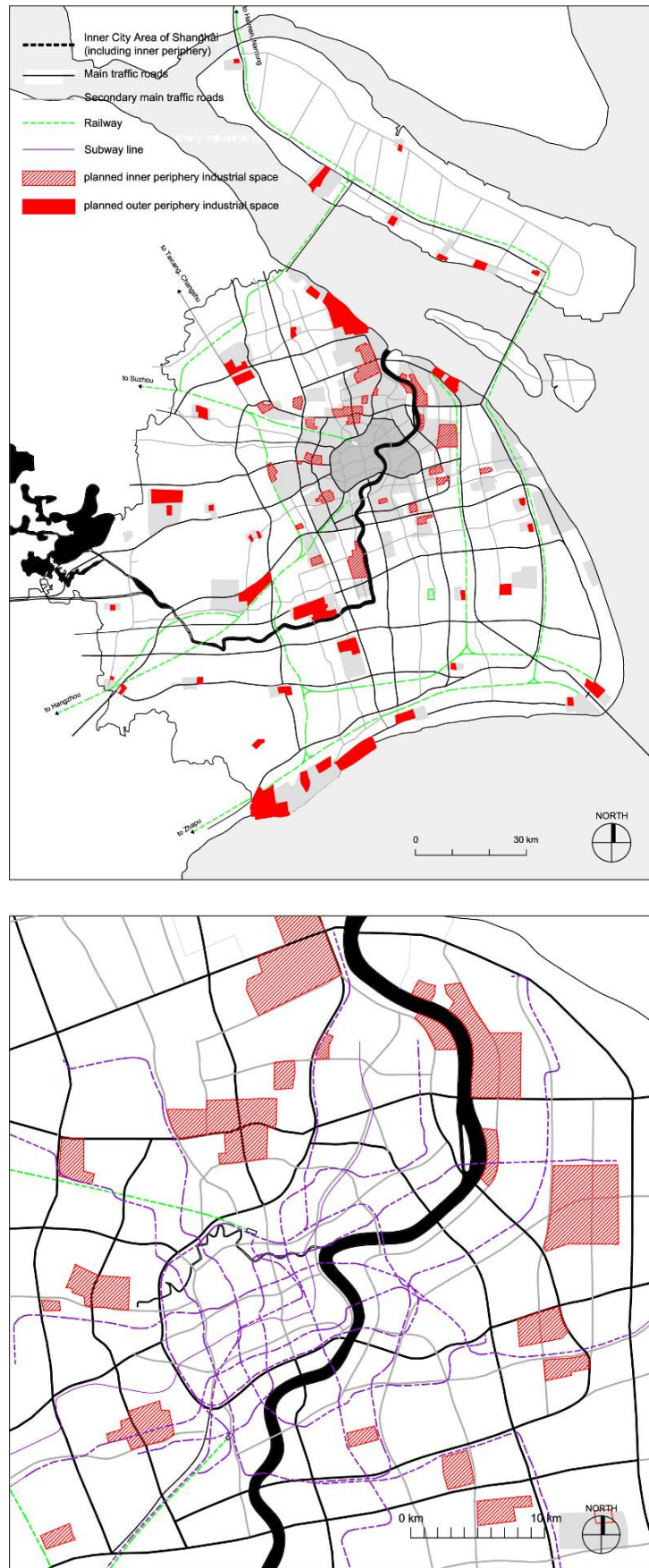


Figure 95: The planned state of transportation system in Shanghai's metropolitan (regional) area and inner city area, drawn by the author based on the <Shanghai Comprehensive Plan 1999~2020> and other resources



Figure 96: The planned state of open space and green space in Shanghai's metropolitan (regional) area and inner city area, drawn by the author based on the <Shanghai Comprehensive Plan 1999~2020> and other resources

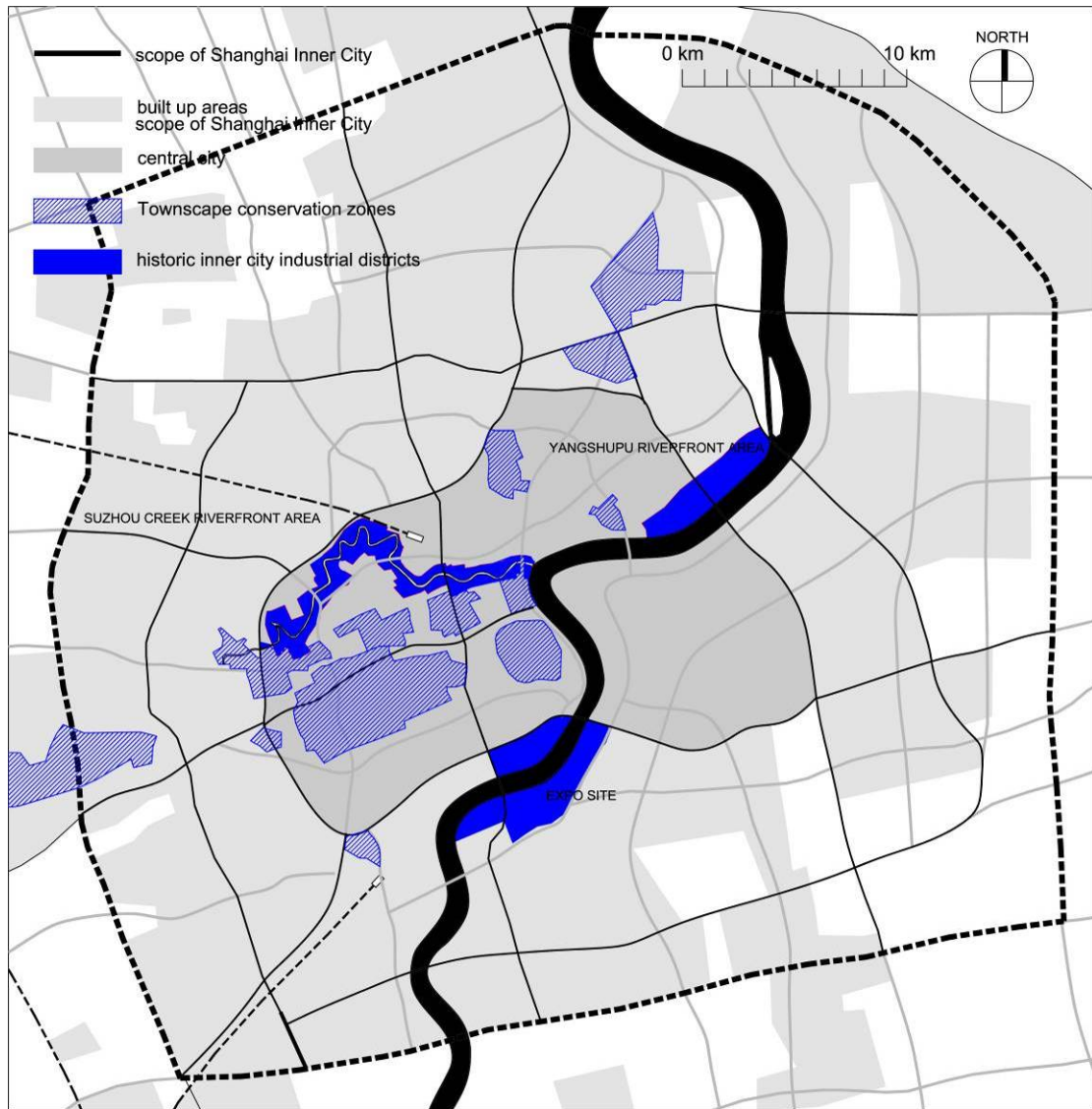


Figure 97: The Townscape Conservation Zones and the 3 Inner City Historic Industrial Districts, drawn by the author

## CHAPTER 5: "FILL IN" STUDY ON SHANGHAI

## 5.1 BACKGROUND RESEARCH OF THE 3 TARGET AREAS

### 5.1.1 SELECTION OF TARGET AREAS

The effort of “FILL IN” of urban planning is made on those former industrial spaces, which are left over by the redistribution process of industrial space in contemporary city's spatial structure. The majority of these left-over spaces, as we have analyzed in the other part of the research<sup>289</sup>, are located in the inner city area. The amounts of these left-over spaces are enormous. Meanwhile, the spatial development of contemporary city nowadays encounters with new situation, while new objectives are pursued.<sup>290</sup> In many cities in Europe, urban planning had gained enough experiences and lessons from the effort of “FILL IN” regarding the development of decaying left-over industrial spaces as well as making the redevelopment beneficial from and benefitting to the spatial development of the city especially that of inner city area.<sup>291</sup> How is Shanghai compared to these cities in regard to “FILL IN”? What common and special situation does Shanghai have? How can evaluate the “FILL IN” effort that Shanghai has made through its urban planning and what efforts shall be further made?

For answering these questions, this research selects 3 typical Inner City Historic Industrial Districts for the research of “FILL IN”. They are:

Target Area 1: Yangshupu Riverfront Area (East Bund)

Target Area 2: Expo Site (South Bund)

Target Area 3: Suzhou Creek Riverfront Area

Target Area	Location	Distance to the City Core	Spatial Scale	Length of shoreline
Yangshupu Riverfront Area (North Bund)	Northeast of the city center	3~15.5 kilometer	7.9 kilometer <sup>2</sup>	11.75 kilometer
EXPO Site (South Bund)	South of the city center	7.5 kilometer	6.68 kilometer <sup>2</sup>	5.28 kilometer
Suzhou Creek Riverfront Area (inner city part)	North of the city center	0.5~5.5 kilometer	6.81 kilometer <sup>2</sup>	20.17 kilometer

Table 6: The basic information about the 3 target areas, Information collected by the author

One fact that shall be noticed is that all these target areas are riverfront areas. This has its geographical and historical reasons. One of the driving factors for the initial stage of Shanghai's development is its advantages in water transport, connecting both to the inland and the overseas shipping. This is attained through its two main water path: Huangpu River and its main branch Suzhou Creek. The T-shaped river network, defines the basic spatial structure of Shanghai, with its intersection, where the Suzhou Creek joins with the Huangpu River, being the first booming place of Shanghai and today's downtown area, and the extension in north, west and south are traditional inner city industrial districts areas or port areas. The three selected Cases in this research are all located on the three extensions of the T-shaped river

<sup>289</sup> See Chapter 2.

<sup>290</sup> See Chapter 2.

<sup>291</sup> See Chapter 3

network. They gained ground in the grounding period of the modern Shanghai (from 2<sup>nd</sup> half of 19<sup>th</sup> Century<sup>292</sup>), continued to develop in 20th century especially after the foundation of PRC, and began to decay from late 1980s. All three cases had been confronted with serious problems caused by structuring transition of Shanghai from industrial city to a modern metropolitan city from 1990s. Entering 2000s, with Shanghai entering the new stage of development, the value of redevelopment of these former industrial districts was recognized by the government of Shanghai and the authority of urban development of Shanghai. In the many urban planning efforts for Shanghai after 2000, the redevelopment of these cases was amongst the focused topics.

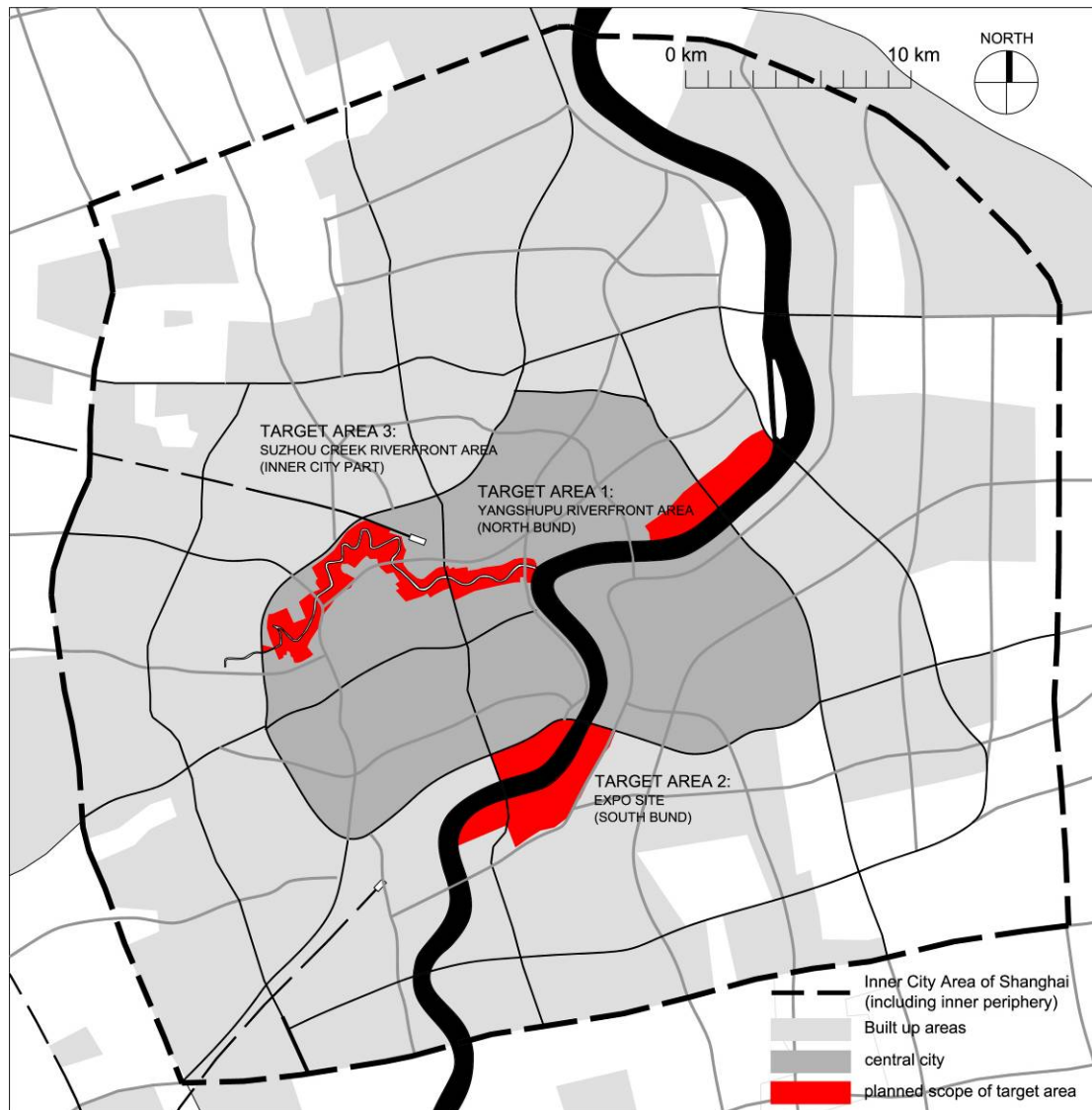


Figure 98: Location of the three target areas, drawn by the author

<sup>292</sup> See 4.1.3

### 5.1.2 TARGET AREA 1: YANGSHUPU RIVERFRONT AREA (EAST BUND)

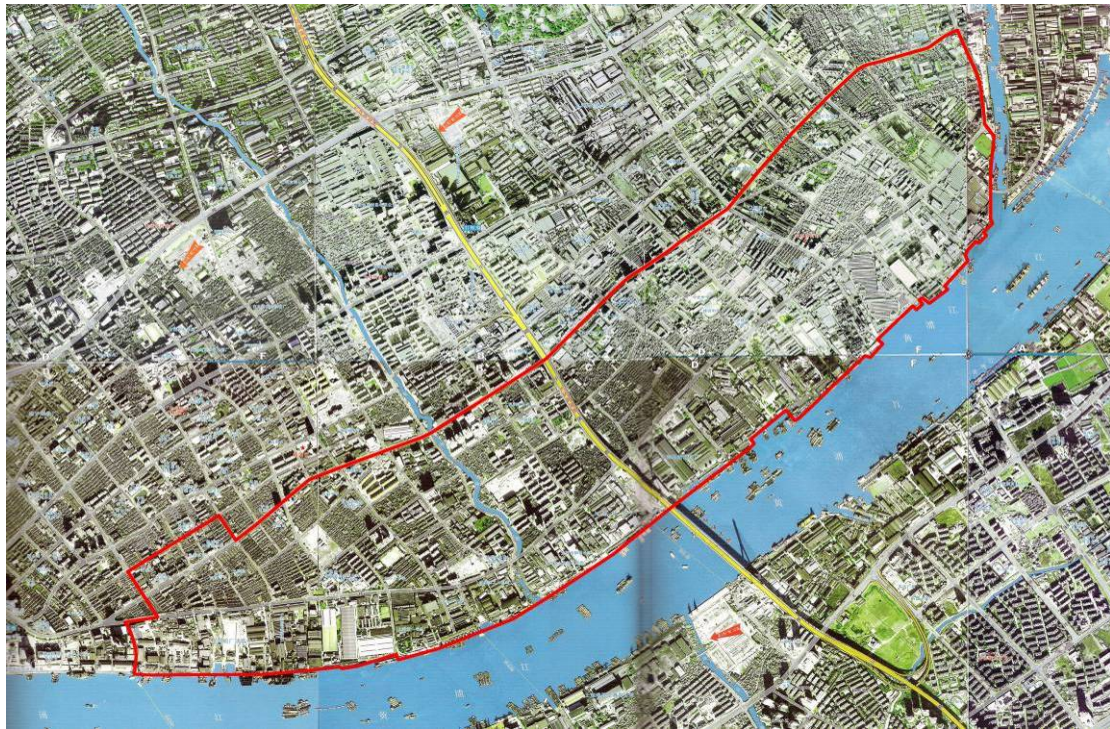


Figure 99: Scope of Target Area 1, drawn by the author based on the <Shanghai Aerial Map Atlas> 2005

## GEOGRAPHICAL INFORMATION

The East-Bund, Yangshupu Waterfront Area is situated in the east and north sides of the Huangpu River. It is bordered by Qinhuangdao road, Yulin Road, Pingliang Road, Yangshupu Road and Jungong Road with shoreline of 15.5 kilometer and total site area of 11.75 square kilometer.<sup>293</sup> The Yangpu Bridge (one of the 4 main cross-river bridges of Shanghai) goes in the north end of this area, while the city center (the Bund) lies very close the south. The site is about 5 kilometer (nearest end) /13.6 kilometer (far end) northeast to the city's downtown (measured from the Bund) and 15 kilometer away from the Pudong International Airport of Shanghai.

## HISTORY REVIEW

Throughout the history, the Yangshupu Riverfront Area was treated for long time as Shanghai's biggest inner city industrial district. The reason for the massive agglomeration of industries in its forming period lies in these aspects: first, the site had prominent geographical advantages (the long shoreline provides good connection to shipping lines, with which the most big ships from the East China Sea through Yangtze River can park and up- or download cargos in a location very close to the downtown area, thanks the regulation of Huangpu River in 18<sup>th</sup> Century); second, the site belonged in colonial period first to American concession and later to the "International Settlement" <sup>294</sup> when American and British concession were combined. It was just at the edge of the concession center and with the best

<sup>293</sup> The definition of site borders here refers to the official urban planning in 2002 by the Yangpu District government and urban planning authorities.

<sup>294</sup> See 4.1.3

connection to main traffic roads (Yangshupu road, which was constructed in 1869 which go along the shoreline and connects the whole area with the city center) and the railways (1.5kilometer away from the site)<sup>295</sup>; thirdly, the price for land is much lower than the other locations in the inner city such as the Suzhou Creek Riverfront Area, as the surrounding area, namely the Yangpu District, was a less developed area in Shanghai' inner city, in which the other urban uses such as residential and commercial function were for a long period affiliated functions to the industry.



Figure 100: Map of Yangshupu Riverfront Area in 1941 (left) and 1990 (right), from Dong Yiping, <A study on the "east bund" industrial heritage and its regeneration and conservation>, master thesis of Tongji University, 2004

The industrial development in the area experienced such phases:

Period 1 (1878~1913): The industrial development in this area started from the late 1870s, when the most municipal utilities moved from the central area of concessions to here. Important industries built in this period, such as the Shanghai Water Company, Shanghai Power Plant (biggest thermal power plant in Fareast in that time, as well as the first power plant in China) and Shanghai Gas Company, were mostly for this purpose and set up by foreign capitals. The other industrial enterprises were a considerable number of textile mills (such as the Yihe Spinnery which was the first foreign-invested factory in China) and shipbuilding industry (owned by American enterprise). The massive industrialization made the Yangshupu Riverfront Area one of the earliest flourishing industrial locations in whole China.

The urban characters of this period are: 1) Main transportation structure was founded. 2) The development was mainly focused on industries, the service facilities such as residence of workers were not considered. 3) The factories were mainly in bigger scale. 4) Many valuable historic heritage buildings came into being in this period, which represented the highest standards of architecture design and technology. The historic heritage buildings in the protection list later were mainly buildings in this period, such as the Yangshupu Power Plant (former Shanghai Power Plant) and the Yangshupu Water Plant (former Shanghai Water Plant).

Period 2 (1914~1949): The industrial further developed and showed such characters: 1) Increase in number of enterprises as well as their industrial categories such as rubber making, tobacco, breweries, knitting wool, crushers, soaps, machine making and iron. The existing enterprises expanded further. 2) In terms of the ownership, foreign capitals and Chinese state capitals took the majority, when the Chinese local

<sup>295</sup> Refer to Dong Yiping, <A study on the "east bund" industrial heritage and its regeneration and conservation>, master thesis of Tongji University, 2004

private capitals only took a very small part. 3) Textile took a considerably big proportion (86%) in the composition in industry, while the other heavy industries only took 9.3% and light industries 4%.

The urban characters in this period are: 1) Expansion of the industries from the shoreline into the inland (cross the other side of the Yangshupu Road); 2) The transportation structure which was send today was basically formed in this period; 3) Big scale residence areas were constructed in the other side of Yangshupu road, mainly to support the industries. 4) The structure of the industrial district came into relative stable and mature state.

Period 3 (1949 till beginning of 1980s): This was another heatedly development period for industry in this area, as Shanghai was targeted to develop into an industrial city<sup>296</sup>. After the so called "socialism reformation"<sup>297</sup> in beginning of 1950s, the state controlled almost 100% of the ownership of the industrial enterprise in this area. The economic structure was transformed in this period, with the heavy industry being highly developed. In the beginning of 1980s, heavy industry had already occupied 56.6% of the total economic output, while light industry occupied only 6.1% and the other 27.3% was occupied by textile. The labor-intensive industry dominated the whole industrial structure. The other characteristic of the development of industry was that the scale of factories was expanded in aspects of number of labor and land-consumption. For example, in be beginning of 1980s, there are 123 enterprises with more than 1000 stuff, 38 with more than 100 acre, 35 with more than 50,000 floor area and 34 with more than 100,000,000 RMB output value.<sup>298</sup>

The urban characters in this period are: 1) Further expansion of the industries from the shoreline into the inland (cross the other side of the Yangshupu Road), 2) On the other side of Yangshupu Road more residential areas appeared, which mingled with industrial sites. 3) Environmental problems became serious. 4) Transportation system was overburdened with the growth of industries.

## CURRENT STATE AND DISTRIBUTION OF INDUSTRIAL SPACE

Entering the 1990s, the Yangshupu Riverfront Area had grown into the most important industrial district in the central area of Shanghai (one of the three historic inner city industrial districts<sup>299</sup>). In the 11.75 square kilometer planned scope of this area, industrial space occupied more than 9.6 square kilometer (82%), in which warehouse occupied 2.2 square kilometer (18%)<sup>300</sup>. King Yangshupu Road as a border, the south part namely alongside the shoreline, is totally occupied by industrial sites, which are almost in relative big scales. Some of them are for municipal infrastructure or for transport infrastructure (such as cargo ports, logistic and ferry terminals use). On the other side of the Yangshupu Road, the industrial space scatters here and there and mixes with other urban uses such as residential and commercial functions.

<sup>296</sup> See 4.1.4

<sup>297</sup> "Socialism Reformation" refers to the political and social movement from 1953 to 1956, with the aim to establish socialism social system. The major actions in this period were on three aspects: socialism agriculture reformation, socialism handicraft reformation and socialism industry and commerce reformation.

<sup>298</sup> Refer to Li Dongsheng, <Adjustment and renewal of historic industrial districts: Yangpu Municipal District in Shanghai as example>, Tongji University Press, 2005. p.54

<sup>299</sup> See 4.2.3

<sup>300</sup> Refer to official website of Yangpu Municipal Government.

This relative higher proportion of industrial land-use became a big obstacle for the further development of this area. Actually from the beginning of 1990s, the area had already showed a trend of comprehensive decay. The most obvious indicator of the decay is the high vacant rate of the industrial space. According to the official statistic in 2004, about 40% of the industrial enterprises stopped production totally, 30% are in very low production efficiency, while 65% port areas are abandoned. In the aspect of social decay, the majority of the population in this area is in or related to manufacturing industry (67% in 1994). With the bankruptcy and relocation of the manufacturing industry in this area, this area became one of the locations in the central area of Shanghai, which has the highest unemployment rate.

The industrial decay gives the area very negative city images, such as aging buildings, environmental pollution, overburdened infrastructure indicated by traffic jams, inefficiency of water, electricity and gas supply as well as inefficiency of green and public spaces (the only public greenery in this area is the "Gongqing Park with 260m public shoreline, which is less than 1% of the total area). The shoreline is still totally unopened to the public although most part of it had been abandoned and free of industrial use.

Concerning the conservation of historic buildings, many industrial heritages are in danger although there had been some enlisted in the protection list. Without strict protection and integral revitalization plan, these heritages are most abandoned, unused or given improper functions, without maintenance or being maintained in fault way, or even serious, some of them are permanently damaged or even demolished.



Figure 101: Current distribution of industrial space in Target Area 1, drawn by the author based on the based on official urban planning of W5W8 and urban planning of W7E10, Shanghai Urban Planning Design and Research Institute, 2004

## PROCESS AND OBSTACLE OF REDEVELOPMENT

The earliest effort of revitalization was made by the owner of the industrial enterprises. It can be described as “simple re-use”, which started ever as early as the area started to decay (beginning of 1990s). Many enterprises rented out their abandoned buildings in very low prices. In such case, the reconstructed for the new functions are made either by the enterprises themselves before the rental or by the new users of the buildings. For example, many factories, especially those alongside the Yangshupu Road, were reconstructed for office use, ware markets and hotels. For highest economy profit, many valuable buildings and site are demolished and developed for housing.

After 2000, a movement of readapting old industrial site for service industries, especially for creative industries such as ateliers, design studios, fashion shops and culture facilities was seen, which represented another method of revitalization. Representative example is the “Creative Park” owned and design by architect Teng Kun-Yen. The industrial buildings and site was restored and reconstructed with creative way of design, which made significant influences on the media and then to the public. The value that lies in the industrial heritages was recognized by the academicians, the public and eventually by the government, thanks to this movement.

From 2002 on , Shanghai Municipal Government started to prepare for the redevelopment plan of Yangshupu Riverfront Area, especially in the new situation that Shanghai was targeted to develop into a metropolitan city with the expansion and poly-centralization of inner city is promoted.<sup>301</sup> The whole riverfront area of the two main water paths in Shanghai, namely the Huangspu River and the Suzhou Creek was treated as highly potential areas for the development of inner city of Shanghai.<sup>302</sup> The defined planning scope of Yangshupu Riverfront Area is composed of 2 parts: coordinating area (covering the 15.5 kilometer shoreline with total area of 11.75 kilometer<sup>2</sup>) and core area (with total area of 9.3 kilometer<sup>2</sup>). It is for the first time in history that the area is no longer aimed to develop as industrial area but as an area for modern tourism, public facilities, education, office and modern living. In 2004, detailed planning for two parts of the core area (W5 and W7) is made. The planning was based on international master plan competitions, which were held in 2003 and 2004. Planning on urban function, transportation system, open space, landscape and conservation strategies were proposed and confirmed by the Municipal Government of Shanghai. Our later analysis will be mainly base on these urban planning documents.

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<sup>301</sup> See 4.1.5

<sup>302</sup> See 5.2.2

### 5.1.3 TARGET AREA 2: EXPO SITE (SOUTH BUND)



Figure 102: Scope of Target Area 2, drawn by the author based on the <Shanghai Aerial Map Atlas> 2005

## GEOGRAPHICAL INFORMATION

The area which is known as “EXPO Site” today is situated in south reaches of the Huangpu River, between the two major cross-river bridges: Nanpu Bridge and Lupu Bridge. It is bordered by South Zhongshan Road, Nanpu Bridge, South Pudong Road, Yaohua Road and Yaohua Branch Road. The shoreline included in the planned scope is 5.28 kilometer long. The total area of the site is 6.68 square kilometer, in which 5.28 square kilometer is planned for built up area. A coordination area of 1.4 square kilometer is also planned. The site lies in the Inner Ring Area of Shanghai, with about 4.8kilometer (nearest end)/5.9kilometer (far end) northeast to the city's downtown and 15kilometer to the Pudong International Airport of Shanghai.

## HISTORY REVIEW

The area was treated as one of the earliest locations in China for industrialization invested by Chinese national capitals. The development experienced four periods:

Period 1 (1865 to beginning of 20th century): 1865 was the actual start point of the development of the area, when the former Qing Dynasty Government decided to set up its first also biggest industrial bureau: The Jiangnan Manufacture Bureau<sup>303</sup>. The Jiangnan Shipbuilding Plant which was then grounded in this site was amongst the

<sup>303</sup> The Jiangnan Manufacture Bureau and the Merchant Bureau were two major industrial corporation invested by the Qing Dynasty Government. The grounding of them represented the rise of national industrialization.

biggest industrial plants that the Jiangnan Manufacture Bureau invested in China. The lands west of the Huangpu River were then highly industrialized for shipbuilding industries and military industries. The first vessel, first canon, first plane of China were all born here. Those huge-scaled factories, workshops, docks which we can still see today are witness of the industrialization of China in its initial stage. Concerning the urban development in this period, the most urbanization areas are situated in the west part of Huangpu River, which was isolated from the surrounding area because its military use.

Period 2 (beginning of 20th century to 1949): In the beginning of 20th century, the Chinese local private capitals became more and more active in industry investment, which was focused mainly in the sites of Target Area 2 and Target Area 3. In the west side of the Huangpu River, more shipbuilding industries were established, such as the Qiuxin Shipbuilding Plant, which became another flagship in Chinese ship-making industry. The east side of began to be developed for steel industries.

Period 3 (after the grounding of PRC to beginning of 1980s): This area became one of the bases for the city's development for heavy industries, mainly on shipbuilding, steel work, weapon making, aerospace industry and machinery. The former Jiangnan shipyards and Qiuxin shipyards were further expanded, while the former steel industries were combined together and run by the Baosteel Cooperation, the biggest steel industrial enterprise of Shanghai (established in 1978). In addition to these big-scaled enterprises, some middle-scaled industries such as South Shanghai Power Plant, some other shipyards and machinery factories were grounded.

In 2002, the site was selected for EXPO 2010, huge events and urban construction is foreseen in this site. The industrial enterprises began to move out of the site.

## CURRENT STATE AND DISTRIBUTION OF INDUSTRIAL SPACE

The area was treated before being selected as EXPO as "Unknown Area" or "black-hole area" of the city and remained "un-plannable" before 2002, because that some industrial enterprises are used for military production purpose, managed directed from the Central Government of China and the Ministry of Industry. The Municipal Bureau of Urban Planning and Urban Administration, which is the highest authority of urban planning in Shanghai, are not authorized to plan it. It was only after the site was selected for the EXPO 2010 and the right for planning is transferred back into the city of Shanghai, that the site is opened for investigation and urban planning.

Concerning the state of production, unlike the other cases in this dissertation, major part of this case doesn't really face the situation of decay. Those huge-scaled industrial enterprises, such as Jiangnan Shipbuilding Plant, Baosteel Steel Plant and the Shanghai Steel Plant had powerful state investment in background, which ensure the upgrading of the production and continuous policy support.

In terms of urban characteristics, the area is like an isolated island in the surrounding urban fabric which is in the process of development: no traffic connection, extremely huge scale of site division, no civil infrastructure support and no public facilities (there are only some affiliated facilities in the plants, which is affiliated to the production and residence of workers).

The major part of the area is occupied by large-scale industrial sites, which is very isolated with each other (only basic traffic road to divide them from each other). The scale of industrial sites is biggest in the northwest end and became relative smaller in the northeast end. Industries agglomerate most densely near the river, where the

river side area are almost 100% occupied by industries. Only in the outer north and south periphery as well as in the northeast part, some residential uses are seen to be mixed with industrial use.



Figure 103: Current distribution of industrial space in Target Area 2, drawn by the author based on the based on official urban planning of EXPO Site 2005

## PROCESS AND OBSTACLES OF REDEVELOPMENT

In 2002 the site is selected for the EXPO 2010. As one of the biggest “Urban Events”<sup>304</sup> and for its massive agglomeration of visitors, most Expo normally chooses site out of the city center so as to avoid the deficiency of land and pressure on infrastructure. In the history of EXPO, to select an inner city, closing-river and previous industrial site as EXPO site is without precedent.

The most important influence of EXPO is to force to converse those industrial lands, which is actually the core problem of the development of this area as well as a core problem of Shanghai’s development, because a big amount of land in such central area of Shanghai is occupied by industry. Most of the industrial enterprises in this area are still in production and economy state, which are not actually facing the necessity of decay and thus have no need for relocation. In such situation, if it was not for the reason of EXPO, the industrial lands in this area are very difficult to be conversed for the development demand of the inner city of Shanghai. The other reason for the difficulty of land conversion, unlike in other locations in Shanghai, is that some of the big-scaled enterprises in this area is of the same political level of the Municipal Government of Shanghai, which means on the backgrounds of China’s political environment, the city of Shanghai is not politically powerful enough to force to converse the land as what it usually does in other cases of land conversion. The

<sup>304</sup> EXPO, Olympic Games and FIFA World Cup are usually called as the three biggest “Urban Events”, which can agglomerate mass visitors in short time and thus motivate great urban investment, construction of infrastructure, event facilities and gastronomy of the city. Urban Events are always treated as great opportunities for the city’s development.

EXPO solved this dogma by bringing back the power of urban planning from the hand of the state to the city of Shanghai, in which new urban area in the outer periphery of Shanghai was planned and the industrial enterprises were forced to relocate in an indicated direction. EXPO also brought big economy investment and enough political power to replace the purchase the lands, change their ownership to civic use and release them free in the market.

The urban planning of the EXPO site experienced several stages. In 2001, for the purpose for early stage publicity, the first international urban planning competition was held. In 2004, after Shanghai was confirmed as selected city for EXPO 2010, a second international urban planning competition was held. The first prize and second prize winning projects was further improved by the expert committee headed by Prof' Wu Ziqiang, Shen Di and Xu Yisong. The master plan (comprehensive planning) of EXPO Site was accepted by the World EXPO Organization Committee. In August 2005, the <Regulatory Detailed Plan for China Shanghai EXPO 2010> was compiled and approved by the Municipal Government of Shanghai. The analysis in this research will be based on the latest available urban documents mention above.



Figure 104: Expo Site in construction, Resource: Xinhua Net

#### 5.1.4 TARGET AREA 3: SUZHOU CREEK RIVERFRONT AREA (THE PART IN INNER CITY)

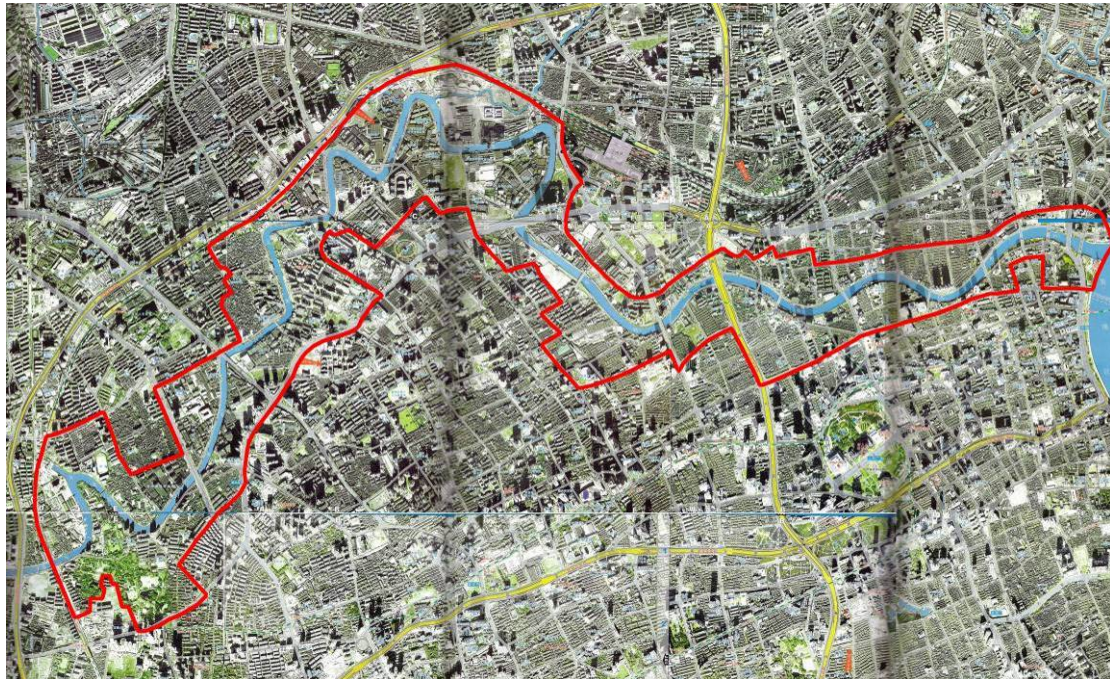


Figure 105: Scope of Target Area 3, drawn by the author based on the <Shanghai Aerial Map Atlas> 2005

#### GEOGRAPHICAL INFORMATION

The Suzhou Creek Riverfront Area (inner city part) is the riverside areas of Suzhou Creek, which starts from the Outer Baidu Bridge, where the Suzhou Creek connects with Huangpu River and Bund, and end in Zhongshan West Road, where the Suzhou Creek meets with the Inner Ring Road of Shanghai. The area is about 13.3 kilometer in length and 0.5~1 kilometer in width. The site lies in the Inner Ring Area of Shanghai, with about 2.5 kilometer (average) north-west to the city's downtown and 15 kilometer away from the Pudong International Airport of Shanghai.

#### HISTORY REVIEW

The Suzhou Creek Riverfront Area had been developed in the past 150 years as inner city industrial districts. Unlike the Yangshupu Waterfront Area, which was developed mainly by foreign capital in its initial periods, the Suzhou Creek Riverfront Area was traditionally industrial district for Chinese national capital. The development of this area experienced four stages:

Period 1 (between 1843 and 1910): This is the grounding period for the development of Suzhou Creek Riverfront Area. The north part of the area, namely the area from the Outer Baidu Bridge to Xizang Road, was included in the British Concession after the Opium War. As part of the Bund, this area was developed as commercial and financial area, the land use structure of which was composed of office, public service and housing as majority, mixed with a few industrial use, mostly for warehouses. The General Post Office of Shanghai and the Riverside Apartment, which are important components of skyline of The Bund, were built in this period.

Period 2 (between 1910 and 1949): This is first golden period in industrial development in this area. Because its advantage in geographical location (transition area of foreign concession and Chinese region) and in water transportation (connection to Huangpu River and further to Far East oversea transportation in the east, as well as the connection to inland water system in the west through Suzhou Creek and Tai Lake), the middle and western part of Suzhou Creek became ideal area for the industrial development for Chinese local developers in the beginning of 20<sup>th</sup> Century. The area was heavily industrialized in this period, while the basic urban structure and infrastructure that can be sent today was grounded. The urban development in this period also left here numerous industrial heritages, such as Fuxin Flour Mill (landmark of the Suzhou Creek skyline), Shanghai Brewery (biggest brewery in Far East in 1930s), Zhonghua Printing House (biggest Chinese printing house at that time) as well as many characteristic warehouses.

Period 3 (between 1950 and 1980s, namely after the foundation of the PRC in 1949): The area was further developed in this period. The existing industries were taken over by the state-owned enterprises and were further expanded, in the meanwhile many new industrial enterprises were set up. The west part of Suzhou Creek, namely the part from Changshou Road to Guangxin Road, was developed to the so called "Huxi Industrial District", one of the 8 main inner city industrial district of Shanghai.<sup>305</sup>



Figure 106: Aerial View of middle part of Suzhou Creek Riverfront Area in 1970s, Resource: internet

## CURRENT STATE AND DISTRIBUTION OF INDUSTRIAL SPACE

After its development over the past 100 years, the Suzhou Creek Riverfront Area had been developed into a highly developed industrial District, also the one in the three target areas with the closest distance to the inner city. Given the length of the site (20.17 kilometer), the amounts, type and distribution state of industrial spaces have diverse characteristics as followed:

Part A (from the Outer Baidu Bridge to Henan Road Bridge): The area was mainly developed after Opium War as commercial and financial area. Only a few industrial sites are located in this part, most of them are for warehousing.

Part B (from Henan Road Bridge to Changshou Road): The south bank area is mostly dominated by historic residential areas, while the north bank is occupied by a

<sup>305</sup> See 4.2.1.3

considerable number of big-scaled warehouses. The impressive image of Suzhou Creek Riverfront is characterized mainly by the historic warehouses in this part.

Part C (from Changshou Road to Guangxin Road): This part was the former site of the “Huxi Industrial district”, one of the 8 major inner city industrial districts of Shanghai, which is composed of big-scaled industrial enterprises that occupy almost the whole riverside area. Here we can also find some of the most historic factories built in 20s and 30s such as the Fuxin Flour Mill and the Shanghai Brewery.

Part D (from Huangxin Road to West Zhongshan Road): This part is the part where industries with much lower quality than in the other parts agglomerate with very high density. The urban fabric in this part is very discontinuous and fragmentary. Here we can find also the worst big-scaled low-quality residential areas for workers and the “flowing population”, which were built illegally and mingled with small industrial spaces all around.

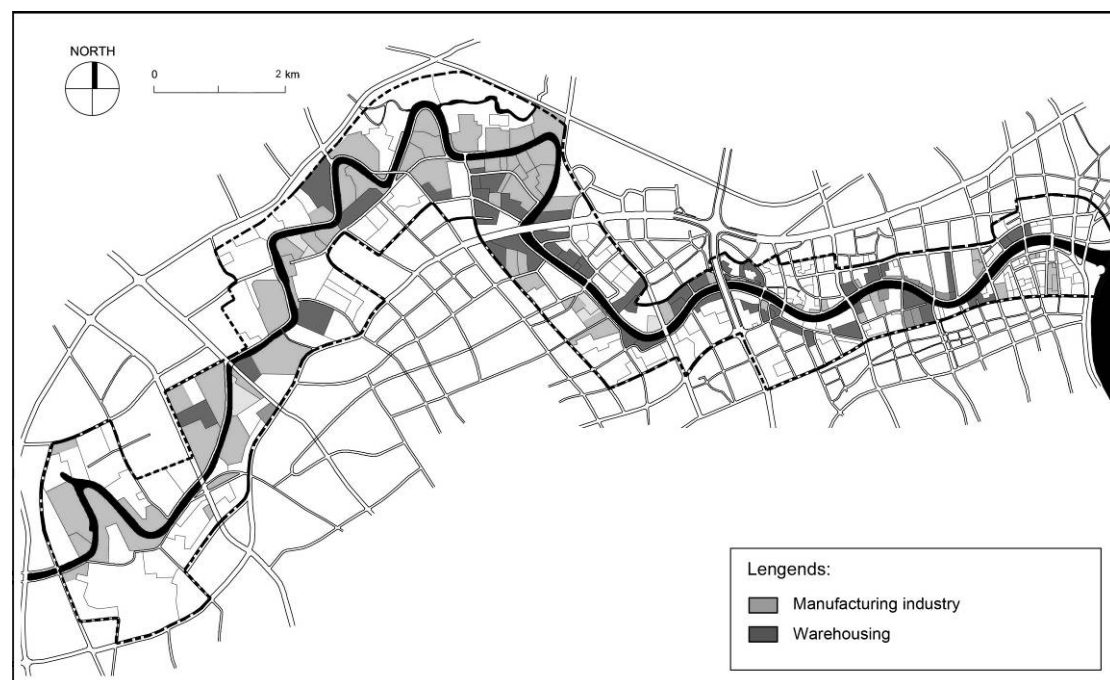


Figure 107: Current distribution of industrial space in Target Area 3, drawn by the author based on <Suzhou Creek Riverfront Area Landscape Planning>, Shanghai Urban Planning Design and Research Institute, 2002

Unlike the other 2 target areas, the Suzhou Creek Riverfront Area had been under the process of redevelopment for about 10 years till now because of its central location and land value, even though there had not been any official planning to plan the river side area as an entity before 2002. One reason for the belated official planning for this area is that this area belongs to 3 municipal districts, in which the integrated urban planning demands for special coordination. Many industrial sites had already been already released and developed for other use (mostly housing). According to official statistics in 2002, industrial land occupies 15.05% and warehousing occupies 3.15% of the total built up land. Residential use occupies 41.7%, while the other functions such as commercial and office only taking very small proportion<sup>306</sup>. Compared to the other two cases, the proportion of industrial use

<sup>306</sup> Refer to <Suzhou Creek Riverfront Area Landscape Planning>, Shanghai Urban Planning and Research Institute, 2002

is already much lowered, while in the future development it must be further decreased.

Concerning the economy state of the industries of this area, most industrial enterprises had been already faced with the problem of lower economic output and started to move out. Many factories and warehouses are turned idle or changed into other uses. This phenomenon is especially obvious in the middle and east part, which is very close to the city's downtown area. Here we see many industrial buildings were reconstructed into office building, hotels and big markets. However, with the absence of integral planning and conservation, many valuable industrial heritages and scenes are in dangers.

Environmental problem in this area is very severe. Talking about Suzhou Creek, the first scene that Shanghainese would remind is the heavy polluted river, dirty air and streets, which was caused by the massive industrial development after the grounding of PRC.

In the official planning of Suzhou Creek that was issued in 2002, the existing urban problems in urban aspects were described as following<sup>307</sup>: 1) Development intensity is too high. This means mostly the industrial districts which had been already released free and developed for real estate. The density ratio had reached 3.5, which case many housing in the river side are at least 70 meter high, which gives the river bank very unpleasant feeling. 2) Discontinuous River Bank Area. The bank side area is currently cut into pieces with only a little part is accessible by public. 3) Insufficient green area and public spaces. 4) Discontinuous landscape and townscape. This is caused by the absence of integral control and insufficient cooperation between different municipal administrative districts. 5) Not enough attention urban conservation and protection of historic buildings.

## PROCESS AND OBSTACLES OF REDEVELOPMENT

The redevelopment of Suzhou Creek had begun since second half of 1990s. However, the earlier stage of redevelopment, either by the private method such as the owner of previous industrial estate, by the private real estate developer or by the governments of different municipal districts, doesn't have overall awareness of the whole area as an entirety and awareness of a pursuit for its long-termed development.

The prelude to official urban redevelopment of Suzhou Creek Riverfront Area was the "Suzhou Creek Environmental Restoration Project", which was initialized by the Municipal Government of Shanghai from 1996, aiming at improving the environmental quality of this area. The main effort of this project is the treatment of water and decontamination of soil. After 10 years' effort of restoration realized by huge investment from government, the environmental quality of Suzhou Creek had been much improved.

As a component of the "Suzhou Creek Environmental Restoration Project", the "Suzhou Creek Riverfront Area Landscape Planning" was made in 2002. The planning was made based on the prize-winning projects of the international competition held before. In this plan, the Suzhou Creek Riverfront Area was no more defined as industrial area but as residential and leisure area. The plan composes of the several guidelines of the area's transportation system, land use change,

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<sup>307</sup> Refer to <Suzhou Creek Riverfront Area Landscape Planning>, Shanghai Urban Planning and Research Institute, 2002

landscape structure, public spaces and the urban conservation, which is the currently the latest urban planning document about the area's redevelopment.



Figure 108: New real estate areas mixed with old housing and industrial areas in waterfront area of target area 3

## 5.2 URBAN LAND USE PLANNING IN “FILL IN”

### 5.2.1 CONTRIBUTION OF “FILL IN” TO INNER CITY DEVELOPMENT OF SHANGHAI

The inner city of Shanghai, which covers an area of 365.66 square kilometer (18.9% of the total built up area of Shanghai) and population of 9.76 million (71.2% of the total population of Shanghai), is still the most focused development of Shanghai, although the poly-centralization strategy is continuously promoted since the latest metropolitan-area-wide comprehensive plan was issued in 1999. The “FILL IN” of the three selected cases, which stay in important strategic locations and are confronted with opportunity of redevelopment under the new situation, is closely related to the inner city development of Shanghai and the success in the urban planning and implementation of “FILL IN” could contribute to the inner city development in the following aspects:

- **“FILL IN” and the poly-centralization of inner city**

The transformation from mono-centric spatial structure to a polycentric one is the most important tendency that Shanghai's inner city is targeted towards in the coming 10 years.

Currently, the historic core of Shanghai (taking the People's Square and Bund as center) together the Pudong CBD on the other side of Huangpu River forms the dominant and strongest “heart” of Shanghai, where the majority of inner city's public functions including commerce, business (office) and most public services facilities of municipal level agglomerate in this area. The development in the last 20 years saw the emergence of the secondary urban centers such as Wujiaochang, Xujiahui has grown into a certain scale, which proved to be successful in releasing the pressure of the main urban center and powerfully supporting the urban development in the area surrounding them. With the further development of inner city, a series of secondary and tertiary urban centers shall be established shall be further planned and added to this system, in which well planned transportation links (public transport lines in priority) shall be linking these points in to a highly efficient urban center system that support the comprehensive development and redevelopment of the inner city.

Starting by the establishment of these secondary and tertiary urban centers, the urban spatial structure of Shanghai will gradually transform into polycentric one, characterized by the system composed of urban centers, in which the public purpose such as commercial, office, culture facilities, education and open spaces agglomerate, and the mix use housing areas surrounding these centers and being supported by these centers.

The “FILL IN” of the three cases will seize the opportunity of such tendency of development, while the successful planning and implementation will be great contribution this tendency. The short distance to the city center, plenty of available land as well as the connection to the neighboring residential area make the location of the three cases ideal strategic location for development as urban center. This is especially important for the case 1 and case 2, which both locate in areas surrounded by low-quality residential areas which call for redevelopment into higher quality that suitable for the location of them. With development of the area of case 1 and case 2, big amount of function related to public use will be realized on the

brownfields that makes the areas into the urban center for the surrounding residential area, as well as characteristic secondary urban centers in the polycentric system of Shanghai's inner city. The development of case 1 and case can also be treated as functional extension of the Bund (finance, commerce and business) towards the direction of northeast and south. For case 3, which is located in closest distance parallel to the downtown of Shanghai, a characteristic urban areas with leisure, culture, recreation activities and modern waterfront housing is planned, which benefits from the downtown by its south border serving as the urban service center and the Suzhou Creek going through it that brings the best advantage of landscape into the scope planned area of case 3.

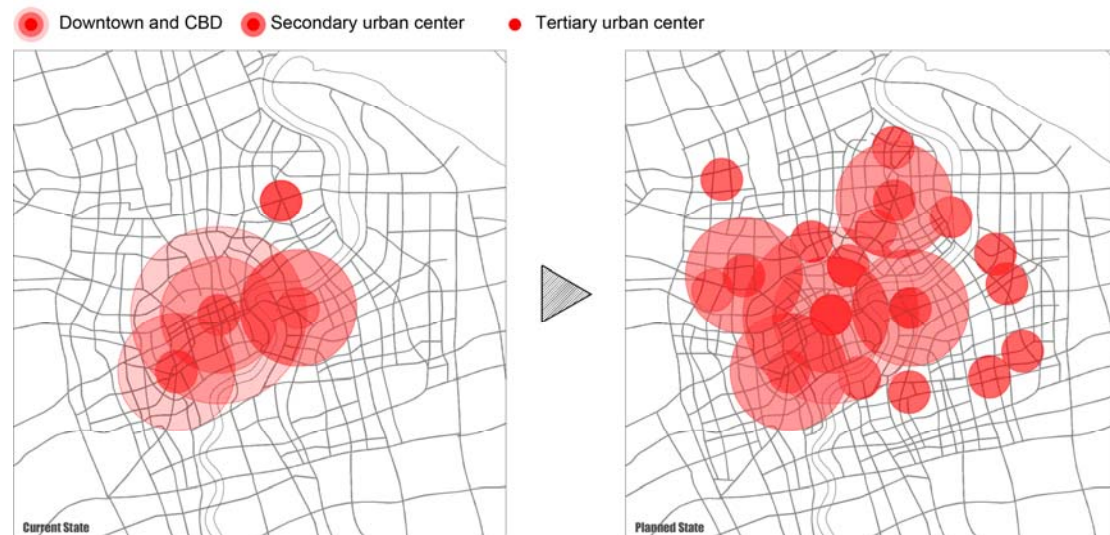


Figure 109: Transformation from mono-centric urban spatial structure to polycentric one, drawn by the author

### ● “FILL IN” and the development corridors of the inner city

Another focused development model, besides the model of urban center system, is the development alongside several development corridors. These development corridors are formed by lineal artificial or geographical element of the city such as existing commercial streets, shorelines of rivers, green belts, and most efficiently, the main transportation infrastructure skeletons such as rail traffic lines and public transport lines (so to say the TOD model<sup>308</sup>).

In Shanghai, the most important corridors are those which connect the historic city core and stretch outwards, which forming a radiating structure. The strongest existing development corridor following this logic is the combination of Xujiahui city secondary urban center, People's Square (downtown), Nanjing Street/Huaihai Street, the Bund and further to cross-river Lujiazui CBD. This corridor goes across the inner city from east to west, connecting the most important city urban centers.

Except for this development corridor, other corridors are currently still relative small. More development corridors will be added to this structure in the planned state. The most important development corridors are proposed as followed: 1) Suzhou Creek: another west-east corridor that is parallel to the existing west-east corridor. The

<sup>308</sup> “transit oriented development (TOD) is a major solution to the serious and growing problems of peak oil and global warming by creating dense, walkable communities connected to a train line that greatly reduce the need for driving and the burning of fossil fuels.” <http://www.transitorienteddevelopment.org/>

creek will add great landscape value to the development. Commercial, financial, office and high-quality waterfront housing will be main functions for this corridor. 2) Huangpu River waterfront: a new urban development corridor that will intersect the existing corridors and bring huge-scaled development in the south-north direction of Shanghai. This corridor will start from the Bund, developing northwards through East-Bund and Yangshupu Waterfront Area (case 1) and northwards to the EXPO Site (case 2). 3) Other south-north corridors are for example the North Sichuan Road commercial street corridor and the Bund - Wusongroad-Siping Road - Wujiaochang corridor. They provide development potentials for the north city areas.



Figure 110: Existing and proposed development corridors, drawn by the author

Geographically speaking, all three selected cases in this thesis are situated on the important development corridors and occupy strategic locations on them. For example, case 1 and case 2 are located in the north and south ends of the biggest south-north urban development corridor: Huangpu River Waterfront Area. Treated as extension of the Bund, their developments of them are of great importance to the forming and development of this corridor. The scope of case 3 is located in the important west-east corridor Suzhou Creek, whose development will bring to Shanghai another fascinating location for urban activities, leisure and high-quality housing and meanwhile greatly release the pressure of spatial expansion of Shanghai's Inner City.

#### ● “FILL IN” and the formation of mix use function system of inner city

One of the specific charm of the spatial structure of Shanghai's inner city, especially in those historic areas such as in Downtown and old Chinese cities is the mix use function structure, which is inherited from the history and characterized by the phenomenon that commerce, business (office), housing and social facilities often mix together in the same district, same block or even in the same building. Such mix use function structure had been given Shanghai endless urban vitality through the history and make Shanghai an outstanding city in comparison to other cities.

However, this state is damaged during the previous stage of development, in which the traditional predominant zoning system with single-use function allocation is widely applied for the city's development from 1950s. In the three master plans after 1949 (1956, 1982 and 1999), there are few contents and strategies about mix-use development. In latest official municipal level comprehensive planning document

<Shanghai Comprehensive Planning 1999~2020>, there had been no indication about the mix-use function.

Entering into the 20<sup>th</sup> Century and especially on the backgrounds of transformation of Shanghai's inner city from mono-centric structure to polycentric one, it became more and more apparent for urban planner and other professionals that mix use development, as a urban development strategy that can give district continuous urban vitality, reduce the distance between different urban activities and reduce waste in extra cost in traffic, and as a strategy that has been proved to be successful in many European cities in their inner city development, shall be promoted in Shanghai again. In China, the debate took place first within the academicians fields and later importance of mix use development had been given more and more importance in theory and practice. Today, although there is still no such practice on the macro-structural scale, on micro-structural level urban planning, the planning-makers had started to consider the mix use development, which is demonstrated in increase in proportion of mix used areas in the total land use structure and types of functional composition in the following:

- Type A: Commercial and office use
- Type B: Commerce and residence use
- Type C: Residential and office use
- Type D: Commercial use and public facility
- Type E: Commercial, office and public facility
- Type F: Commercial, office and residential use



Figure 111: Current function composition and planned function composition, drawn by the author

The mix use development has particular importance for the redevelopment of the three selected cases, as they are all situated in important strategic locations in inner city, whose redevelopment with mix use development can contribute greatly to the formation of the mix use function structure of Shanghai's inner city.

Concerning actual situation, target area 3 is in the most "mix-use" state in the three cases especially in its east part that belongs to the historic city core area. This identity becomes more and more obvious in its middle and east part, which is also followed with dramatic decrease of urban vitality. In its west part, where big-scaled industrial sites dominate, the lands are totally divided into single-use blocks. In the future development, the whole scope of case will be included as part of the inner city historic core area, which means that more public function will be added to the

existing structure and mix use land use structure must be further promoted as major principal of planning.

On the other side, the other 2 target areas are totally in single-use state. Target area 1 has very little mix-use blocks in the north side of Yangshupu Road, in which the industrial use and residential use still dominate and public functions are very low in proportion. In the south side of the Yangshupu Road, namely the shoreline area, huge industrial sites and municipal utilities sites dominate the whole area. In target area 2, the situation is even worse regarding mix use function, being covered mostly with industrial sites. For these 2 target areas, one of the main goals of the planning of function composition and distribution must be to promote the mix used development in priority, which is significant not only for the fulfillment of the urban development target of both areas to become urban centers and functional extension of the Bund northeastwards and southwards, but also for the further development of whole inner city especially the central areas towards a mix use structure.

- **Expansion “inwards” instead of “outwards”: “FILL IN” as a solution for the land shortage in the inner city**

A big amount of land is in demand to meet the further development of Shanghai's inner city, judged from the land supply & demand relationship from 2004 to 2007. According to the flowing tables by supply and demand of three main urban functions, housing is still biggest urban function the city has to accommodate, whose demand and supply is much bigger than the other 2 main function categories, namely commercial and office. The real estate market of housing had been experience an over-heated period in the beginning of 2000, which reached its peak at 2004 and turn out to decrease from that on. Nevertheless, the supply and demand in 2007 still ranged about 20,000 thousands square meter. If we simply calculate this number with average density ratio of 2.5<sup>309</sup>, these floor surfaces need 880.43 hectare land. The resource for these lands can only be achieved mainly by revitalization of pre-developed lands and industrial lands. On the other side, continuous increase the main tendency of the demand and supply of office and commercial function. For commercial function, the demand increases by 3 time from 2004 to 2007 (780,000 square meter to 2,100,000 square meters) and the supply increases by 5 times (590,000 square meter to 3,180,000 square meter). For office function, the demand increases from 2,018,000 square meter to 2,407,000 square meter from 2004 to 2007, while supply increases from 1,422,000 square meter to 2,323,000 square meter. The two functions individually need lands of 140 hectare (1.5 as average density ratio) and 96.2 hectare (2.5 as average density). With the development of other city cores and corridors mentioned before, the commercial and office function will keep the strong increase tendency.

To meet the fast-growing demand for land, two ways of land supply can be considered currently in Shanghai. One of them is the further expansion of the inner city “outwards”, which has been a prior way in the past years, in which the built up areas of Shanghai's inner city increased dramatically from 141 square kilometer in 1978 to 446 square kilometer in 1999, and is projected to increase to around 600

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<sup>309</sup> Density ratio is a number to measure the ratio of the total floor area to the ground area. Generally speaking, for low-rising housing of 6 stories in typical housing type (stripe building), the density ratio ranges from 0.6 to 1.2. Investigation about the building type shows that in the new housing development in Shanghai, high-rising building with more than 8 stories occupies the majority of total amount. That say, the density ratio will be higher than 2 (taking 18 storey high-rising as example) or even higher. In this paper, I choose the density of 2.5 as an average density ratio only for a very rough estimation for the lands these housings need.

square kilometer in 2020<sup>310</sup>. The increase of spatial scale is at cost more and more free land and green area have been urbanized. For the further increase of population and land demand, such way of creating land supply is not preferable for the city's sustainable development. The other way of creating land supply, namely expansion "inwards", must be put in priority on such background. Available lands are created under such concept through densification of the current built up area, optimization of land distribution and promotion of land recycling/ land conversion.

Currently, manufacturing industrial use covers 66.26 square kilometer in the inner city area. Through the effort of "BRING OUT",<sup>311</sup> around 25~30 square kilometer free land can be released (6% of the total built up area inner city), which can contribute to the further land demand of Shanghai, through proper efforts of "FILL IN". If taking the three selected cases as example, a total of maximal 571 hectare industrial land can be released free (107 hectare in case 1, 392 hectare in case 2 and 72 in case 3). Besides, the non-industrial land use within the planned scope of these cases such as housing, which had been developed in the previously stage of development with lower quality and also low density, can be a further resource of land by densification. Given the advantages mentioned above, the planned scope of the three cases will become the key area for "inwards expansion" in next stage of urban development as well as an ideal solution for the land shortage in the inner city of Shanghai.

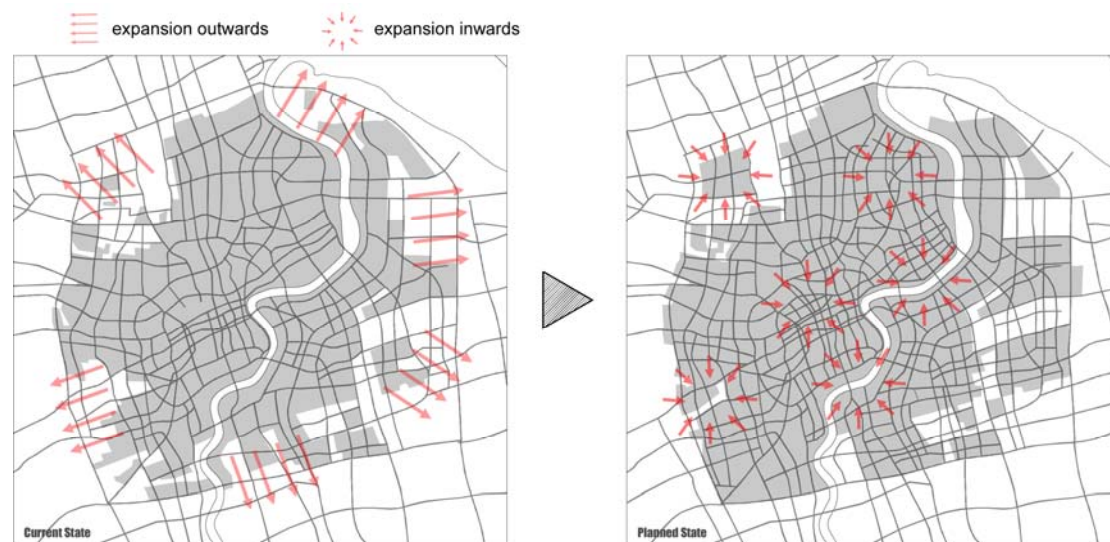


Figure 112: From "expansion outwards" to "expansion inwards", drawn by the author

<sup>310</sup> Refer to <Shanghai Land Use Planning 1997~2010>, Municipal Government of Shanghai, 1997, p.6

<sup>311</sup> See details in 4.3.2

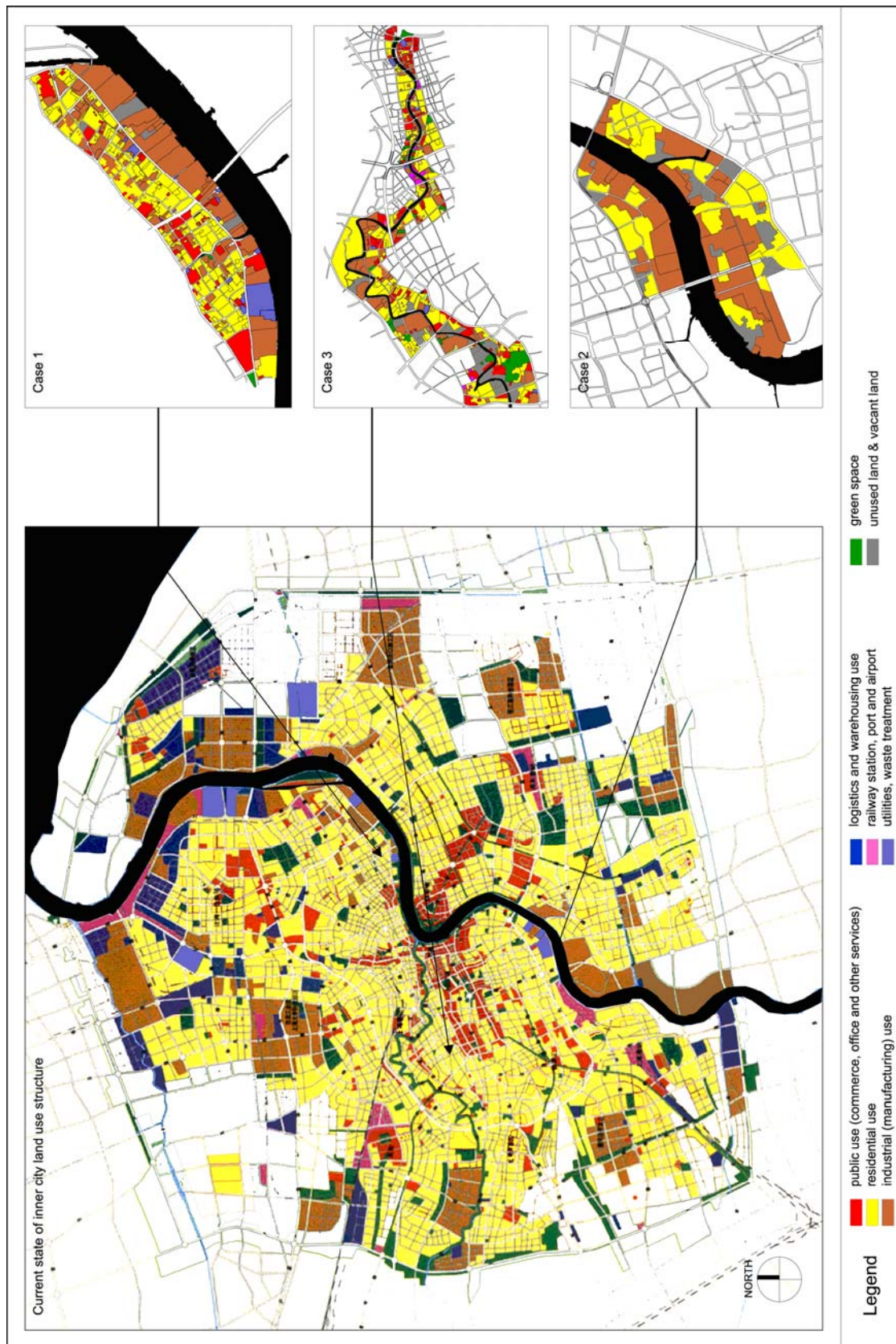


Figure 113: The three cases in the current land use structure of Shanghai's inner city, drawn by the author

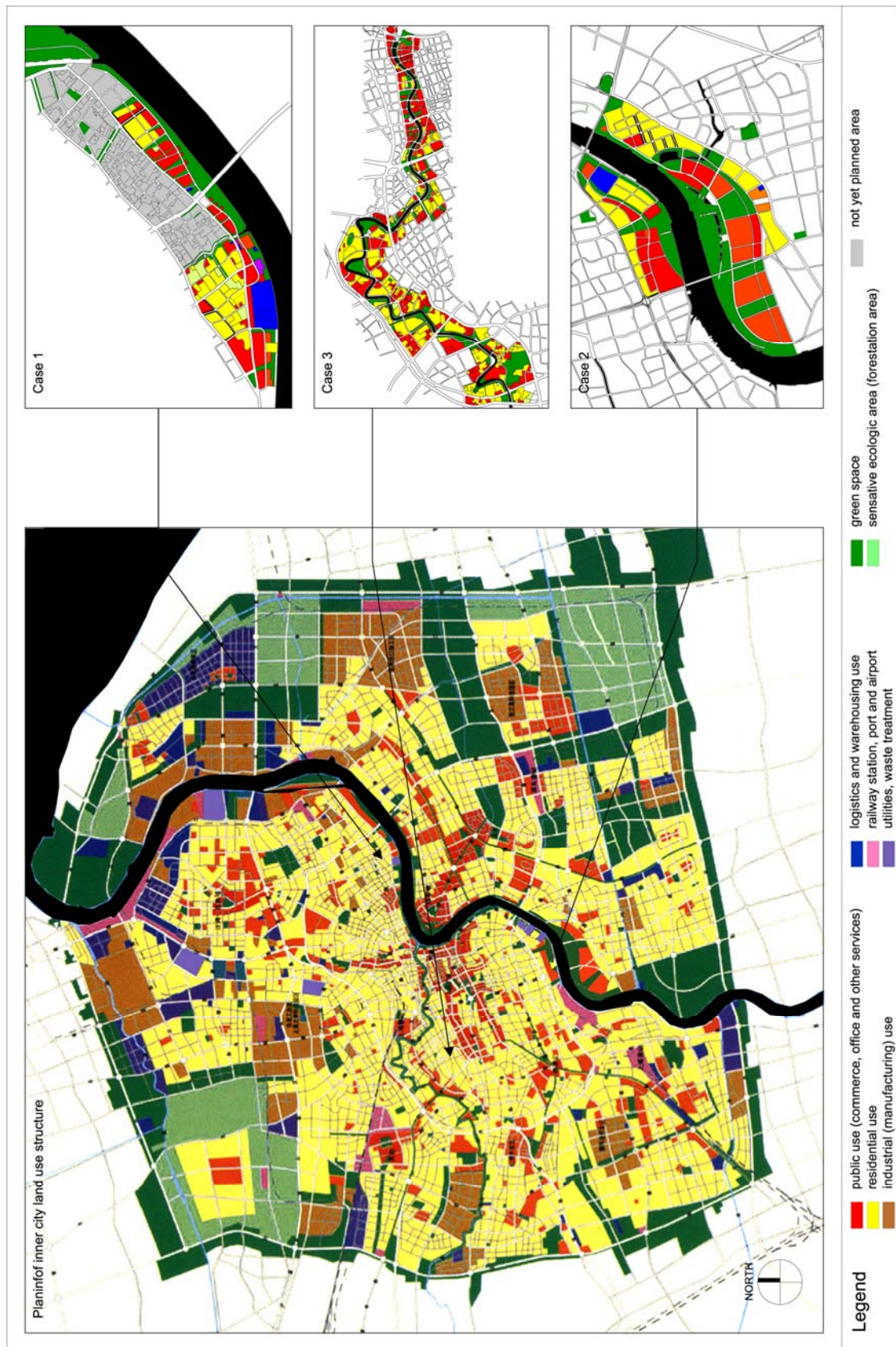


Figure 114: The three cases in the planned land use structure of Shanghai's inner city, drawn by the author

### 5.2.2 URBAN LAND USE PLANNING IN THE "FILL IN" OF THREE TARGET AREAS

- **Concepts of urban land use change planning in three cases**

Based on the analysis on the potential contribution of the redevelopment of three target areas to the inner city development in previous section, the land use planning concept of the three target areas shall be therefore defined as followed:

Target area 1 shall aim to develop into a function extension of the Bund northeastwards with relative high proportion of commerce & finance, exhibition, cultural and leisure facility shall be developed be developed from the conversion of the former industrial sites. The development of this can be treated as a third CBD area in complement to the existing one: People Square- the Bund and the Lujiazui CBD. This concept shall especially be promoted in the south side of the Yangshupu Road, in which industrial sites and industrial ports covers currently almost the entire area, and take advantages of the waterfront areas as public activities belt that link the functions of the whole shoreline. In the other side of the Yangshupu River, where residential areas had been partially developed, the aim is to make modern mix use residential district, with the existing residence being upgraded and densified as well as public and service function added to this fabric. For urban development in both sides of Yangshupu River, the urban planner shall take advantages of two development concepts, which are the core concepts of the development of Yangpu Municipal District where target area 1 is situated in: 1) "Intellectual Yangpu": Yangpu District is a district where most of the universities of Shanghai are located in. Following such concept, the functions that are related to or based on these universities (education, R&D, creative industries, technology development etc) shall be intensively promoted. 2) "Culture Yangpu": Well known as a historic industrial district, the planning of Yangshupu Waterfront Area shall take history and numerous industrial heritages as advantage for the further development. Relative high proportion of cultural functions is planned in the waterfront area.

Target area 2's land use planning is strongly affected by the urban planning of EXPO site, which converses the land from industrial one to civil use in a short period of time, as well as its further utilization planning of the EXPO site. The planning EXPO site, which can be treated as a big "impulse project", can receive sensational effect in that it attract investment and intensive development and stimulate the urban development of its surrounding areas, as what has been seen in many other urban redevelopment cases in Europe.<sup>312</sup> Although the urban planning of the reutilization of EXPO site after the exhibition period has not been constituted, the official intent is already formed: this area shall take advantages of its central location, big-scale available land, convenient transportation support and numerous facilities that EXPO leaves (exhibition hall, conferences center, performances center etc.) to develop itself in a "international culture and business communication district",<sup>313</sup> where function of conference, exhibition, cultural are intensively developed. The development of target area 2 will be an important step of communication, business and leisure tourism will be the expansion of downtown area of Shanghai.

The concept of land use planning of target area 3, where the redevelopment in many parts of it has begun since beginning of the 2000, shall be on the modification of

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<sup>312</sup> Details see conclusion of case study: 3.3

<sup>313</sup> Refer to Cui Ning, <Restructuring of the City under important Urban Events: Shanghai EXPO as Example>, Southeast University Press, 2008, p.71

current development model, which is focused mainly on real estate development and neglect the balanced development of different urban functions, to a modern mix use residential and leisure/recreation area, in which waterfront area development is highly focused. Given the long length of the shoreline stretching from the Bund in east westwards, different focus of function development shall be conceived. For example, in the east end of the site, where the Bund lies, the function shall be more focused on the commerce & finance, while in its middle end, where many industrial heritages are left, function related to culture activities can be planned. The area surrounding the Shanghai Main Railways Station stays, commerce and office function can be intensively developed. Mix use residential areas can find ideal location in the middle and west part of the waterfront area, in which good connection to the waterfront area, green space and open space, public transport, sufficient public services is planned.

- **Change of land use composition**

For all function groups that are planned with increase amount of land use that places demand on land, the release of former industrial lands, mainly the manufacturing industrial and warehousing lands, makes a big contribution for the supply of free land. For example, the industrial land covers extremely high occupation (both over 50%) in the total land use in the target area 1 and target area 2. Given the planned concept to develop these areas into third CBD and cultural/business district, the industrial lands in both areas will be totally conversed to other use, which can release 111.08 hectare and 414.1 hectare free land respectively. In target area 2, in which the redevelopment has been started since 10 years and many industrial lands have been already conversed, 81.18 free lands will be further released free.

One similarity in land use change of three target areas, especially in target area 1 and 3, is the significant increase of proportion of urban functions related to public uses, namely functions of office, commerce & finance, culture, education, research, medical and sport etc. In target area 1, proportion of this function group is planned to be increased from 5.32% to 27.95%, for which 52 hectare land is demanded. For target area 2, although a detailed land use program has not been constituted, it is projected that the total of residence and public function will reach 58.53%. The other group of function that is planned to be significantly increased is the public green space. In target area 1, the amount of public green space is planned to be increased from 0 to 19.66%, while that in target area 2 be increased from 0.1% to 24.55% and that in target area 3 from 3.81% to 14.64%. The increased occupation of both groups of function in total land use in three cases represents the effort of the urban planning to converse the planned area from industrial districts to respectively desired target: either “a third CBD” (target area 1), “cultural and business communication area” (target area 2) or “modern mix use residential area” (target area 3).

Another group of function, which also encounters significant increase of amount, is the transportation use (roads, pedestrian path, car parking and port). This demonstrates a general characteristic in almost of redevelopment of former industrial areas. The reason for this lies in that generally the transportation structure previously planned for industrial use must be densified to meet the demand of new urban use. In target area 1, the occupation of transportation (summed together with land for square) is planned to be increased from 12.19% to 17.61%, while that in target area 2 is planned to be increased from 1.65% to 16.92% and that in target area 3 from 3.81% to 14.64%.

The development of residential use has evoked controversial debates in the last years. The controversy lies in that on one side, the dramatic development of real

estate market that has gone through a significant rise in the past 20 years becomes one of the most important driving factors for the economic and urban development of Shanghai, on the other side the over developed residential in many areas has already decrease the development space of other urban function to develop, such as in the target area 3, in which the real estate market has been started since 10 years. Although urban planning has treat the development of public functions as one of the core targets, the free land for development is much restricted as residential use has been occupying majority of lands. The controversial tendency regarding the development of residential use is that the private-owned residential, namely the commercial real estates, almost occupied 100% of the whole amount of residential use being developed, which lead to the appearance of the social gentrification, which has already been seen in many areas of Shanghai including some parts in the three target areas. Although this has its political and economic grounds caused by the shifting from planned economic system to free market one, the lessons of the development of London Docklands, shall be avoided by urban planning of Shanghai through promoting of mix use development and diversity of housing type including social housing. Concerning the occupation of residential use, all three cases are planned or will be planned with only slight increase (21.52% to 26.21% in target area 1, 41.13% to 46.97% in target area 3, while that in target area 2 hasn't been decided by official planning).

Category of land use	Area (hectare)		Percentage in total	
	before	after	before	after
Residence	50.59	61.62	21.52%	26.21%
Office	2.41	6.3	1.03%	2.68%
Commerce & Finance	3.44	34.65	1.46%	14.74%
Culture, education, research, medical, sport and other uses	6.65	24.34	2.83%	10.35%
Manufacturing industry	102.49	0	43.59%	0.00%
Warehousing	8.59	0	3.65%	0.00%
Utilities	20.46	20.56	8.70%	8.74%
Transportation and squares (road, square, car parking and harbors)	28.66	41.41	12.19%	17.61%
Public green space	0	46.23	0.00%	19.66%
Unused land & vacant land	11.82	0	5.03%	0.00%
Total	235.11	235.11	100.00%	100.00%

Table 7: Land use composition of target area 1, Data collected by the author from the official urban planning on site w5 and w7 (these are the two parts that official urban planning has been made within the scope of target area 1, while the rest of the area remained unplanned till now)

Category of land use	Area (hectare)		Percentage in total	
	before	after (estimated)	before	after (estimated)
Residence	178.5	391	26.72%	58.53%
Office	6.1		0.91%	
Commerce & Finance	4.7		0.70%	
Culture, education, research, medical, sport and other public uses	14.1		2.11%	
Manufacturing industry	392.3		58.73%	
Warehousing	21.8		3.26%	

Utilities	24.2		3.62%	
Transportation and squares (road, square, car parking and port)	11	113	1.65%	16.92%
Public green space	0.7	164	0.10%	24.55%
Unused land & vacant land	14.6	0	2.19%	0.00%
Total	668	668	100.00%	100.00%

Table 8: Land use composition of target area 2, data collected by the author from Cui Ning, <Restructuring of the City under important Urban Events: Shanghai EXPO as Example>, Southeast University Press, 2008, p.71

Category of land use	Area (hectare)		Percentage in total	
	before	after	before	after
Residence	280.35	320.2	41.13%	46.97%
Office	14.34	31.9	2.10%	4.68%
Commerce & Finance	26.05	22.9	3.82%	3.36%
Culture, education, research, medical, sport and other uses	31.66	33.8	4.64%	4.96%
Manufacturing industry	72.18	4.52	10.59%	0.66%
Warehousing	19.09	5.57	2.80%	0.82%
Utilities	19.42	5.1	2.85%	0.75%
Transportation and squares (road, square, car parking and port)	72.4	157.9	10.62%	23.16%
Public green space	26	99.8	3.81%	14.64%
Unused land & vacant land	120.2	0	17.63%	0.00%
Total	681.69	681.69	100.00%	100.00%

Table 9: Land use composition of target area 2, data collected by the author based on official planning of Suzhou Creek Riverfront Area

## - Waterfront development and impulse projects

Successful waterfront area redevelopment, combined with mix use development, well connected planned open spaces and green spaces<sup>314</sup> as well urban conservation of historic areas, is proved by many European cases such as London Docklands and Hamburg HafenCity to be an effective strategy to stimulate the urban area in a bigger scope neighboring them. This involves in the initial stage a comprehensively considered urban land use planning, which releases the urban land which was allocated to industrial use in the waterfront area and changes their land use to one that can help to achieve the development target of the whole area. In all three target areas which are situated with waterways goes through or by the scope of them, the development of waterfront area by Huangpu River in northeast as well as south of the Bund shall be treated as most important focused area of development. In target area 1 and 2, to create mix use area with focus on culture, commerce and business is a priority for land use planning. Besides, to fulfill the urban development concept of whole Huangou River waterfront area s recreation and landscape belt, the development green space and open space in the waterfront area of these two cases shall also be put in priority. In target area 3, the previous stage of development, mainly in real estate development, has caused the monotonous domination of residential function and also the discontinuity of shoreline area that was occupied by

<sup>314</sup> Details see 5.4

some housing projects. The task of land use planning will be to correct such state by adding other functions especially public ones, so as to achieve the target of mix use development.

Taking the lineal waterfront area as backgrounds, impulse projects are to be created. Many European cases have proved that impulse projects, often realized in the initial stage of redevelopment, can successfully stimulate strategy of urban planning to facilitate investment for intensive urban development that act as basis for the further development of the surrounding area. In Shanghai, the urban planning of EXPO can be treated as such impulse project, in a much huger scale. With the 18 billion CYN investment raised in a relatively short term of 6 years, the urban planning on the EXPO has been converted from an enclosed industrial site into a world class exhibition, cultural, conference and entertainment area, which a total visitors number of 70,000,000 is projected. The significance of such impulse projects lies that, on one side the EXPO's sensational effect will change the impression of public on this area, on the other side EXPO's stimulation on the dramatic improvement of transportation accessibility<sup>315</sup>, planning and development of green space & urban space<sup>316</sup> as well as in the protection and reutilization of industrial heritages,<sup>317</sup> which create a good basis for the site's further development as a part of the inner city. Land use planning shall take advantages of such impulse project to plan the further use of this site as well as consider how the effect of impulse project can be maximized beyond the project itself to bring benefit to the development of the site its neighboring areas in long term.

In the other two targets areas, however, the importance of impulse project is still not been fully recognized for urban planning. In target area 1, projects like Museum of Drinking water, Fishman's Wharf and Modern Culture & Exhibition Zones were proposed by the land use planning, all of which has potential to be impulse projects for the redevelopment of the whole area. However, these projects still stay in the stage of proposal till today, now further activity of urban planning has been further contributed to it and how to maximize the effect of these projects to benefit the development of surrounding areas is still not considered. The similar situation is in the target area 3, where the different "theme zones", although planned in the land use planning for the whole area, stay in the stage of proposal. In the actual implementation of the urban planning, these "zones" have not been treated as real impulse projects and given enough intensity of planning and implementation efforts as well as investment. Till today, although 5 years has passed after the official urban planning for the target area 1 and 3 were issued, there is still no true impulse projects in the same league of what are seen in Ruhr Area or Vienna is further planned and realized. This is also one of the reasons that the issuance of official urban planning on both cases hasn't received desirable effect as planned: in target area 1, the urban development is still in slow speed while in target area 3, monotonous function development model still dominated and those rising of cultural functions and public functions is not seen yet.

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<sup>315</sup> See details in 5.3

<sup>316</sup> See details in 5.4

<sup>317</sup> See details in 5.5



Figure 115: EXPO as super-class impulse project, Resource: Xinhua Net

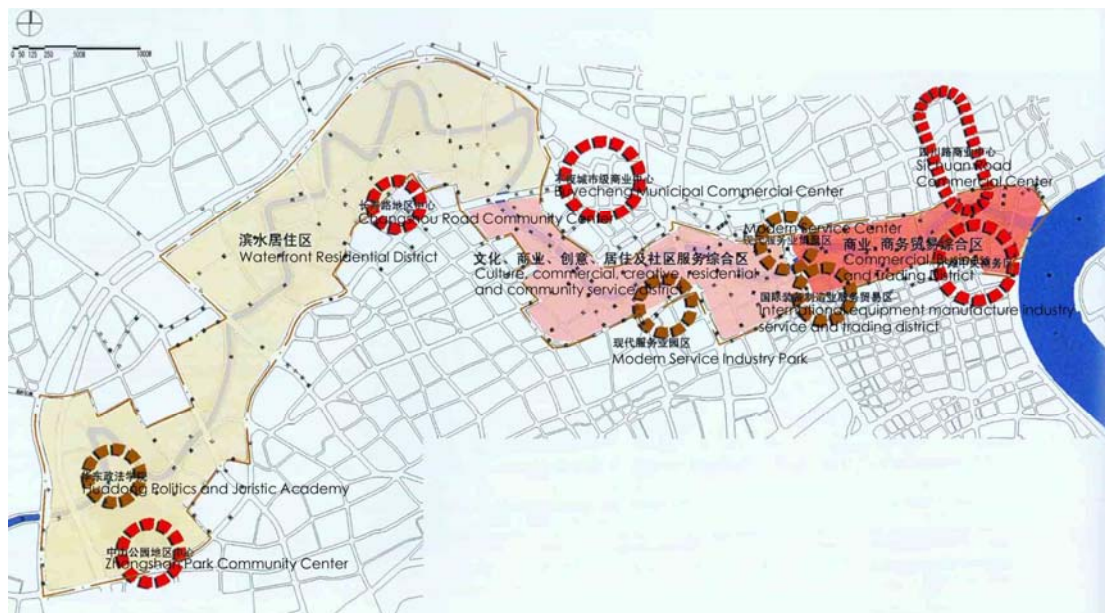


Figure 116: Potential impulse projects for the target area 3, Resource: official planning of Suzhou Creek Riverfront Area

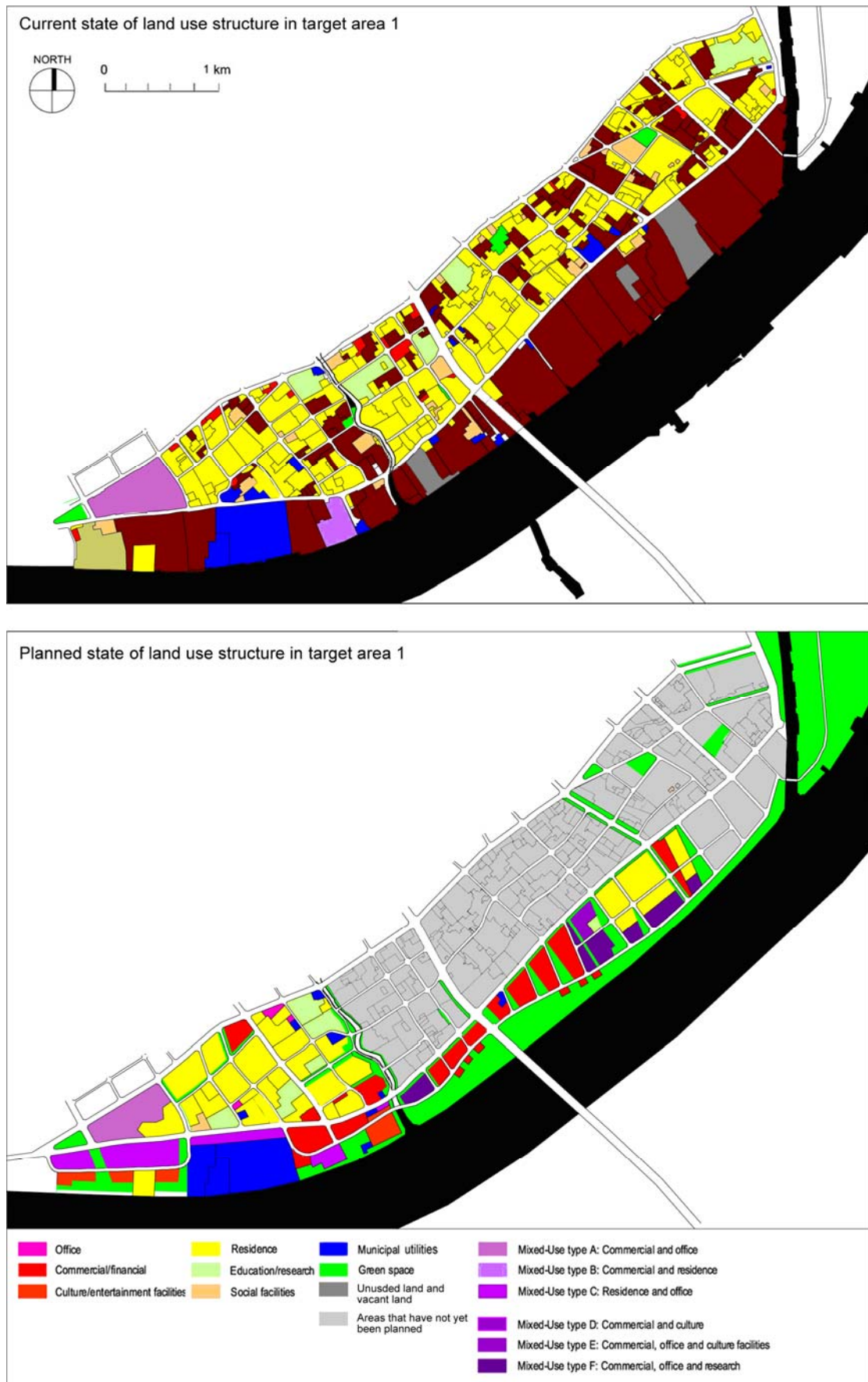


Figure 117: Land use change in target area 1, drawn by the author based on the official urban planning on site w5 and w7

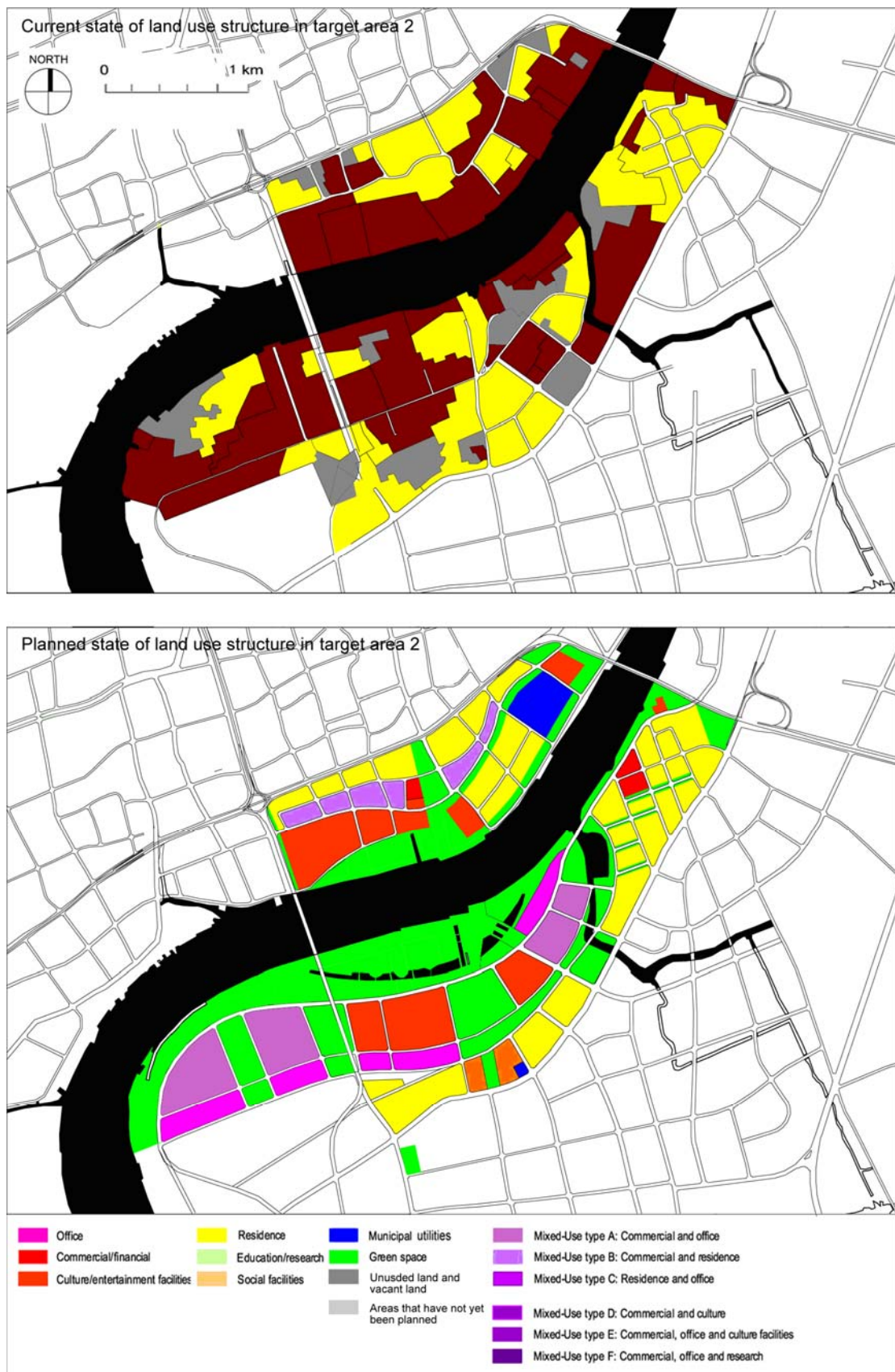


Figure 118: Land use change in target area 2 (projected), Drawn by the author based on the official urban planning on EXPO Site

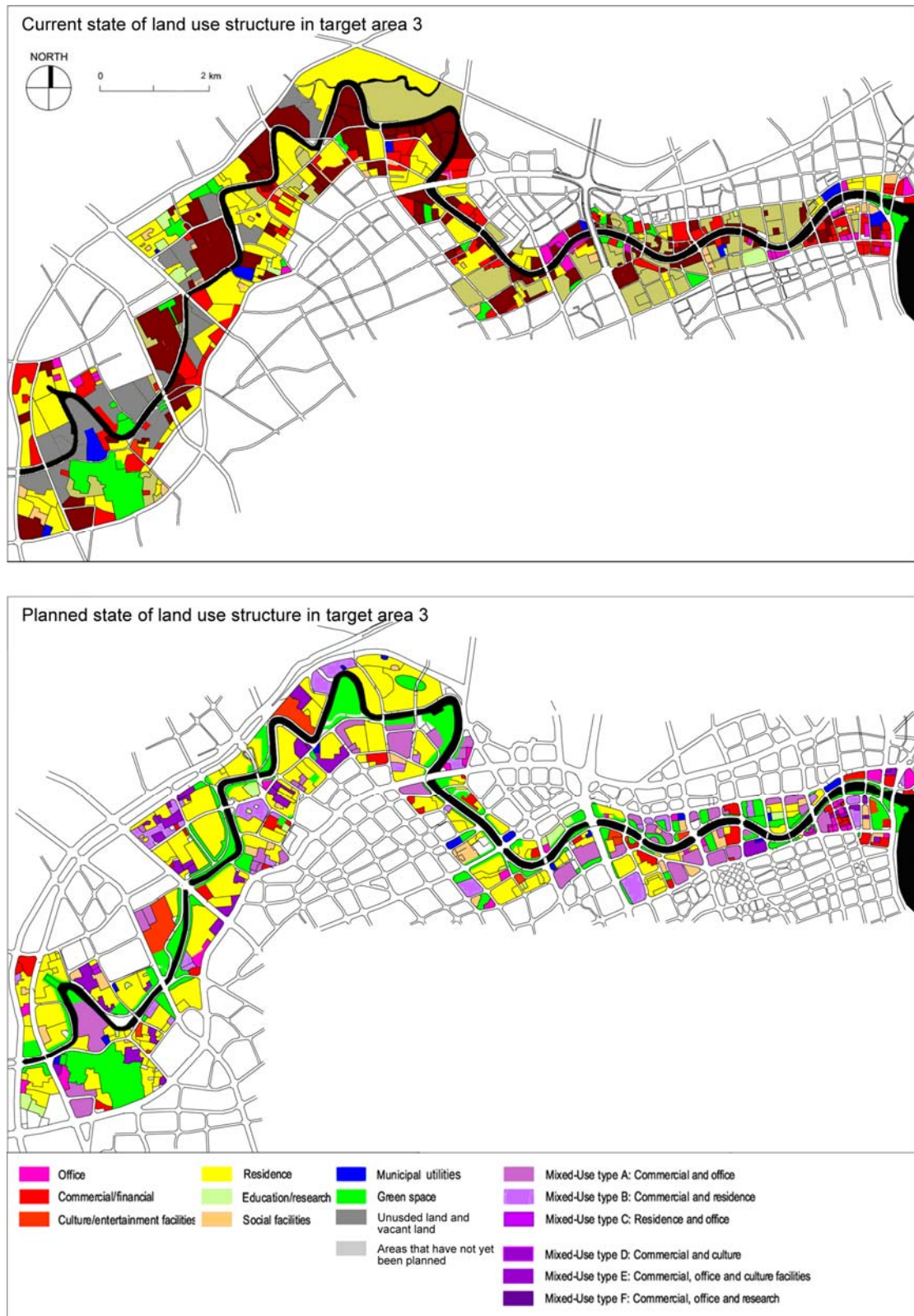


Figure 119: Land use change in target area 3, drawn by the author based on official planning of Suzhou Creek Riverfront Area

### 5.3 URBAN TRAFFIC PLANNING IN "FILL IN"

#### 5.3.1 CONTRIBUTION OF "FILL IN" TO INNER CITY TRANSPORT DEVELOPMENT OF SHANGHAI

The case study in chapter 3 shows that planning and establishment of transportation accessibility is one of the most important preconditions for a successful urban redevelopment.<sup>318</sup> On the other side, establishment of such accessibility has its effect not only in the redevelopment projects itself, but also, on a bigger scale, in the urban area surrounding the planned area as well as the area surrounding the whole transport lines that it goes through. Therefore, the effort to improve the transportation accessibility of the area of "FILL IN" could have positive interactive relation with that to improve the transportation system in the inner city. In Shanghai, the establishment of the transportation accessibility for the three target areas of "FILL IN" plays an important role in the establishment of inner city's transportation system, which is still in important stage of planning and formation. The following points shall be analyzed in relation to the following topics:

- **Old and new confrontations of transportation system development: increasing demand and poly-centralization**

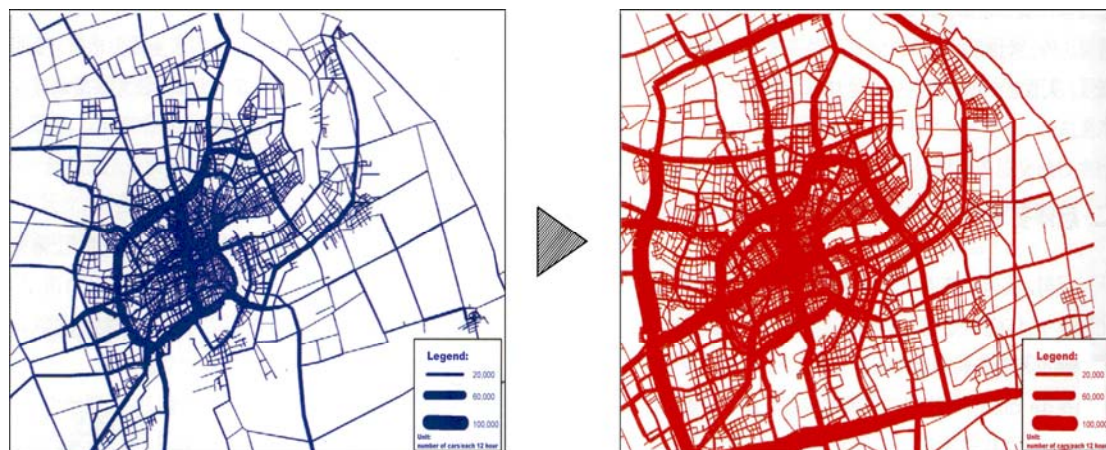


Figure 120: Increased demand on inner city traffic road system 1995 and 2004, Resource: <Shanghai planning and management practice>, p.128

One of the important confrontations of transportation development of Shanghai's inner city is that, with the expansion of spatial and demographic scale, the demand of Shanghai's inner city transportation has been increasing dramatically since early 1990s, and such tendency will continue further. Compared to 1995, there is an averagely transportation amount of 41,000,000 trips/day, increased by 45% from that of 1995. The trip per capita has increased also from 1.87 to 2.21. In inner city, the average trip per capita has increased 1.97 to 2.36. Concerning the trips of motor vehicle, in 2004 there was an amount of 5,000,000 trips/day, which is increased by 220% from that in 1995.<sup>319</sup> Such dramatic increase is continued in the period after 2004, and it is projected that the trip per capita is will be increased further to

<sup>318</sup> See 3.1

<sup>319</sup> Refer to <Research on the transportation system of Yangtze-River Delta International Shipping Center>, from Shanghai City Transportation Planning, official website of Shanghai Urban Construction and Communications Commission

48,000,000 trips .day in 2010 and the number of motor vehicle will increase from 842,000 in 2004 to 1,500,000 in 2010.<sup>320</sup> Such dramatic increasing transportation amount placed big demand on the traffic road system of Shanghai, especially in inner city where the majority of population is situated.

The new confrontation for Shanghai's transportation system development is the structural shift from mono-centric one to a polycentric one, so as to service of the demand of the polycentric urban spatial structure that is pursued for in the next step of Shanghai's land use structure<sup>321</sup>. This is also demanded by the increase amount of the connection between the inner city and the periphery, which will result in the emergence and development of urban centers, which also becomes hubs for transportation, out of the downtown area. From 1995 to 2004, the daily transportation between inner city and periphery increased from 1,200,000 trips/day to 3,100,000 trips/day. This is projected to increase further to 5,800,000 in 2010.<sup>322</sup> The current transportation system in Shanghai, composed of traffic road system and public transport lines represents a typical mono-centric one however. In the further development, a polycentric structure must be promoted to meet the demand mentioned above. This will include urban traffic planning in the aspects like: 1) Planning and construction of transportation hubs in inner city with focus on the outer area of inner city, to service the new urban centers emerge in these areas. 2) Reinforced the links, with planning and construction of traffic road system as well as public transport system (priority), between these hubs and the central area of the city (downtown), between these hubs to the periphery area of Shanghai as well as between hubs them selves.

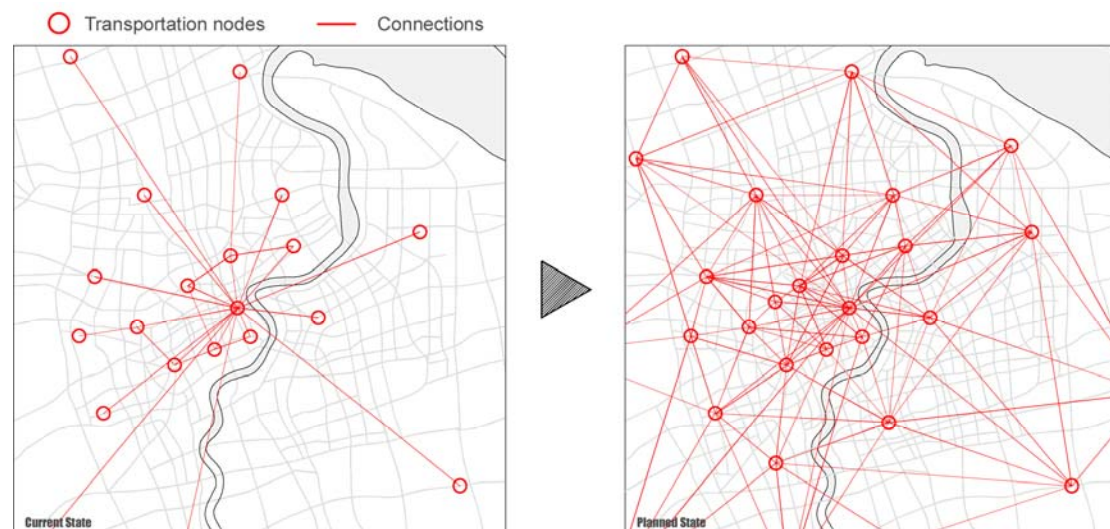


Figure 121: Structural shift of transportation system from mono-centric to polycentric one, drawn by the author

<sup>320</sup> Refer to <Research on the transportation system of Yangtze-River Delta International Shipping Center>, from Shanghai City Transportation Planning, official website of Shanghai Urban Construction and Communications Commission

<sup>321</sup> See details in 5.2.1

<sup>322</sup> Refer to <Annual report on integrated transport of Shanghai 2008>, from Shanghai City Transportation Planning, official website of Shanghai Urban Construction and Communications Commission

- **“FILL IN” and the development of inner city traffic road system**

In the upsurge period of the Shanghai's urban development since beginning of 1990s, the traffic road system of Shanghai had significantly improved. Till 1997 the total length of inner city traffic road is 3552.6 kilometer with surface area of 58 square kilometer, 13% of the total land use of the inner city of Shanghai at that time. The density of traffic road in inner city is 1.34 kilometer/square kilometer.<sup>323</sup> The period after that has seen further successful development of traffic road system in inner city, including the construction of the main skeleton of this system, composed of the three ring roads and main traffic road connect them. However, this is still to be seriously challenged by the dramatic increasing demands of traffic. For example, the average vehicle speed in inner city is 12 km, which is lower from the average standards. 50% main junction point of main traffic roads had traffic jam in rush hours, and 70% of them are in inner city area.<sup>324</sup>

The difficulty of the further development lies in that, given the deficiency of land supply in inner city of Shanghai, the further increase of total amount of traffic road is hard to be achieved. The target of Shanghai's traffic road network system is planned to be: total length of inner city traffic roads: 3630 km, with primary traffic roads of 1410 km, traffic roads density: 5.5km/km<sup>2</sup>, traffic road coverage rate 15.1%, traffic road surface per capita 12.5 m<sup>2</sup>. Such increase is mainly focused on the development in periphery area. Indeed, the only realistic way of the further development of traffic road system in inner city is on the regulation and systemization of the existing traffic road to improve the efficiency as well as to improve its connection with public transport system, instead of further increase of capacity.

In the <Shanghai Comprehensive Plan 1999~2020>, the future main structure of transportation system in inner city will be comprised of four grades of traffic road: 1) Three ring roads (high-rising roads and bridges), 2) Main traffic roads (3 north-south and 3 east-west inner city main traffic road network and 10 radiating main traffic roads), 3) secondary main traffic roads and 4) traffic branches. This network will be realized step by step based on the existing structure of traffic roads of inner city. Many roads have to be widened and organized in more logical order. Another main task of planning is to improve the connection of two sides of the Huangpu River, as the Pudong District (East part of Huangpu River) is becoming more and more important in development of inner city area. The infrastructure would include 5 bridges and 6 tunnels.

Yangshupu waterfront area (target area 1), Suzhou River Riverfront Area (target area 2) and EXPO site (target area 3) all have significant strategic importance in development of traffic road system development in Shanghai's inner city. For example, in target area 2, which had not been treated as part of the city for its heavy industrial function, is actually a black hole in the inner city's traffic road network. After the area became EXPO site, active urban planning has treat this area s extremely important area for transportation development, so as to meet the demand of big visitor amount during the exhibition time frame. The traffic road system in the north side of the Huangou River will be well supported by the Inner Ring Road, while the main traffic road in the south of Huangpu River will be further reinforced. On the

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<sup>323</sup> Refer to <Notes on the master plan of Shanghai 1999~2020>, Shanghai municipal government, 1999, p.23

<sup>324</sup> Refer to <Notes on the master plan of Shanghai 1999~2020>, Shanghai municipal government, 1999, p.26

contrary, target area 1 and target area 3 are for long treated as “parts of the city”, while their traffic road systems somehow are merged into that of the inner city. The traffic accessibility of both target areas can be improved by the reinforcing and regulating of the current traffic skeleton. One advantages that both target area 1 and target area 2 can take is the existence of the cross-river bridges: Yangpu Bridge (target area 1) and Lupu Bridge (target area 2), which go through the scopes of both targets and bring transportation accessibility from both side of the Huangpu River.

On the aspect of traffic road circulation system within the scope of planning scope, both target area 1 (the part in south of Yangshupu Road, namely the waterfront part) and target area 2 (entire planned scope) have almost no inner traffic road circulation system, which needs to be totally re-planned in its effort of “FILL IN”. For target area 2, although the existing dense traffic road network gives a good basis for the further development of traffic road system in this area, mainly on systemization and regulation instead of new planning, the existence of Suzhou Creek is the biggest natural barrier that makes special challenges for the planning and development of traffic road system in this area. Historically speaking, the south-north connection of the city is much weaker than that of the west-east connection in Shanghai, also mainly due to the existence of Suzhou Creek that stays as the border of the downtown area in the north. In this sense, the improvement of the traffic road system to conquer the south-north barrier of Suzhou Creek has its special contribution to the traffic road system of Shanghai's inner city.

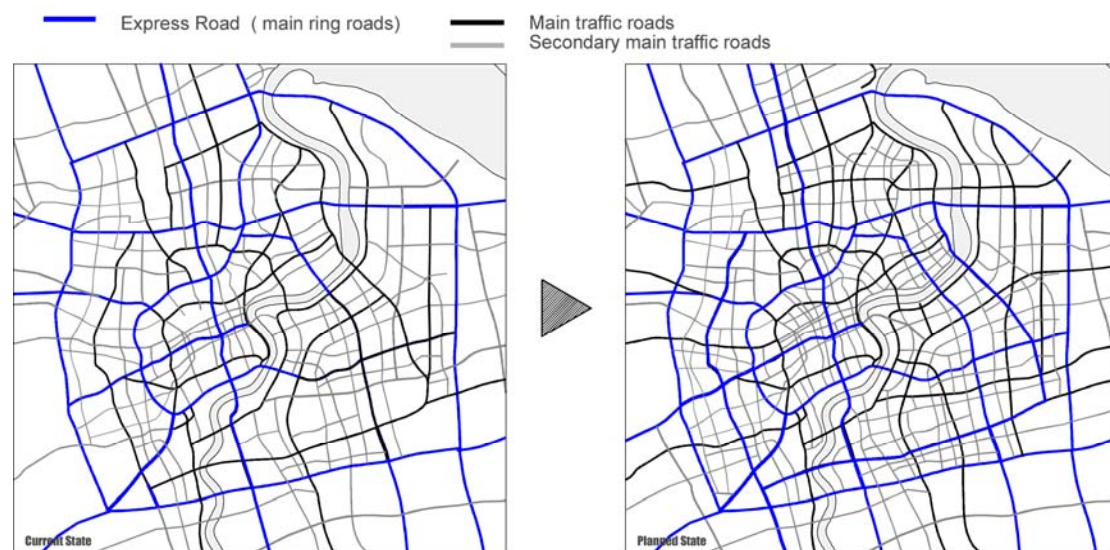


Figure 122: Development of traffic road system, drawn by the author

- **“FILL IN” and the development of inner city public transport system**

Planning of highly-efficient public transportation system, composed of subway lines, light rail lines, tram way and bus lines, had been proved by many European cities to be successful and effective way of improving transportation accessibility and fluency. In Shanghai this measure is especially important because of the currently severe traffic problem in inner city and the restricted possibility of reshaping existing traffic roads system. The current key development field of public transportation system is the planning and implementation of the rail traffic system, which is comprised of subway and light railway lines. Before 2008, 5 lines (123km) had already been implemented, which covered 18% of the current capacity of public transportation.

According to the statistics in 2008, the daily volume of transportation of Shanghai is 45,930,000 trips/day, within which the public transport covers 23.2%. In inner city area, the daily volume of transportation is 28,850,000 trips/day, within which the public transport covers 33.1%.<sup>325</sup> It is obvious that although the planning and construction of public transport system is highly pushed in the recent period (from 1994 to 2008, 123 kilometer subway line was built), the coverage of public transport is still low, if we compare it to the other metropolitan city such as Tokyo (35%). The current key development field of public transport system is the further push planning and construction of subway lines (inner city) and light railway lines (regional area), with the aim to increase the coverage of public transport to over 30%. In short term, a length of 280 kilometer subway/light railway line (inner city) is targeted to be realized before 2020.<sup>326</sup> The target of the planning and construction of public transport system in Shanghai's inner city is summarized as: 1) Reduce the total average daily "time on road" from 62 minutes to 45 minutes, while enlarge the scope of accessible area increased from 260 square kilometer to 670 square kilometer. The rail traffic system will bring people to most inner city area within 25 minutes. 2) Daily transportation capacity of rail traffic system will reach 8,000,000 passengers per day, which will share 1/3 of the pressure of road traffic. 3) The occupation of public transportation system in the total amount of transportation will increase from 28% to 50% (including taxi), in which rail traffic covers 70% and other road transportation covers 30%.<sup>327</sup>

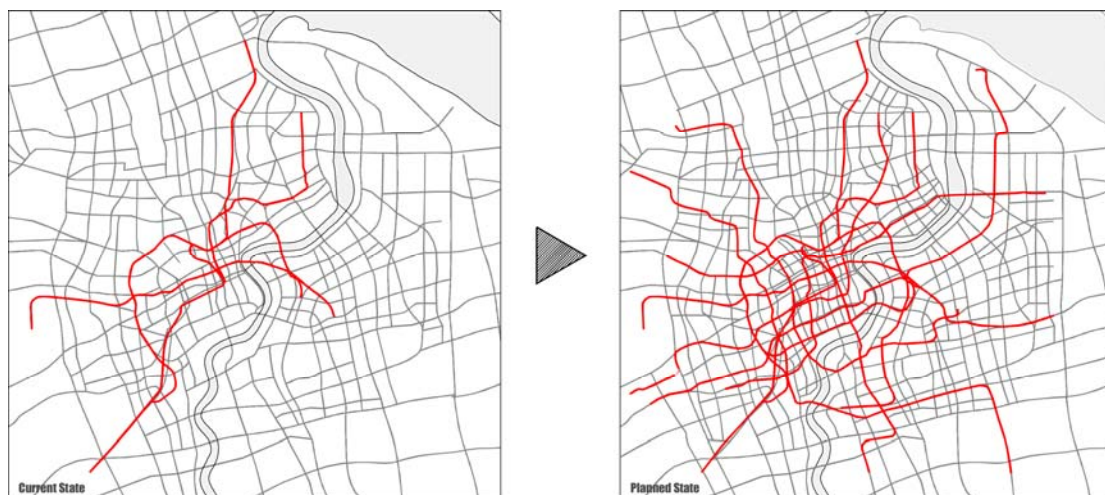


Figure 123: Development of public transport system, drawn by the author

On this background, great chances for accessibility improvement of the three target areas through the establishment of inner city public transportation system are seen. The most extinguished improvement would be for target area 3, which has great difficulty in traffic accessibility and traffic fluency and too little possibility to reshape the existing traffic road system. The municipal government had realized that the problem could be only solved by a comprehensive public transport system in the planning of rail traffic system of Shanghai inner city, the location of this target area is one of the locations where rail lines most densely agglomerate. 9 subway lines (No.1,

<sup>325</sup> Refer to <Annual report on integrated transport of Shanghai 2008>, from Shanghai City Transportation Planning, official website of Shanghai Urban Construction and Communications Commission

<sup>326</sup> Refer to <Research on the transportation system of Yangtze-River Delta International Shipping Center>, from Shanghai City Transportation Planning, official website of Shanghai Urban Construction and Communications Commission

<sup>327</sup> Refer to <Notes on the master plan of Shanghai 1999~2020>, Shanghai municipal government, 1999, p.28

No.2, No.3, No.4, No.7, No.8, No.11, No.12 and No.13) cross the site that will provide great support for the development of the area, connecting them to almost important centers and sub-centers of the city.

Similar measure is seen in target area 2. 4 metro lines (M4, M6, M7, and M8) and probably the magne to rail line will serve the site, which will turn it into one of the sites which is most easy to be accessed by public transportation. Target area 1 will be profited by the establishment of M12 which goes parallel to the site in east-west direction and help to connect to the downtown area of the city. The connection to the city's sub-center Wujiaochang in the near is still very weak concerning the network of public transportation before the long-term planning of M18 is implemented. Before that, the link of public transportation can be only reached by bus system.

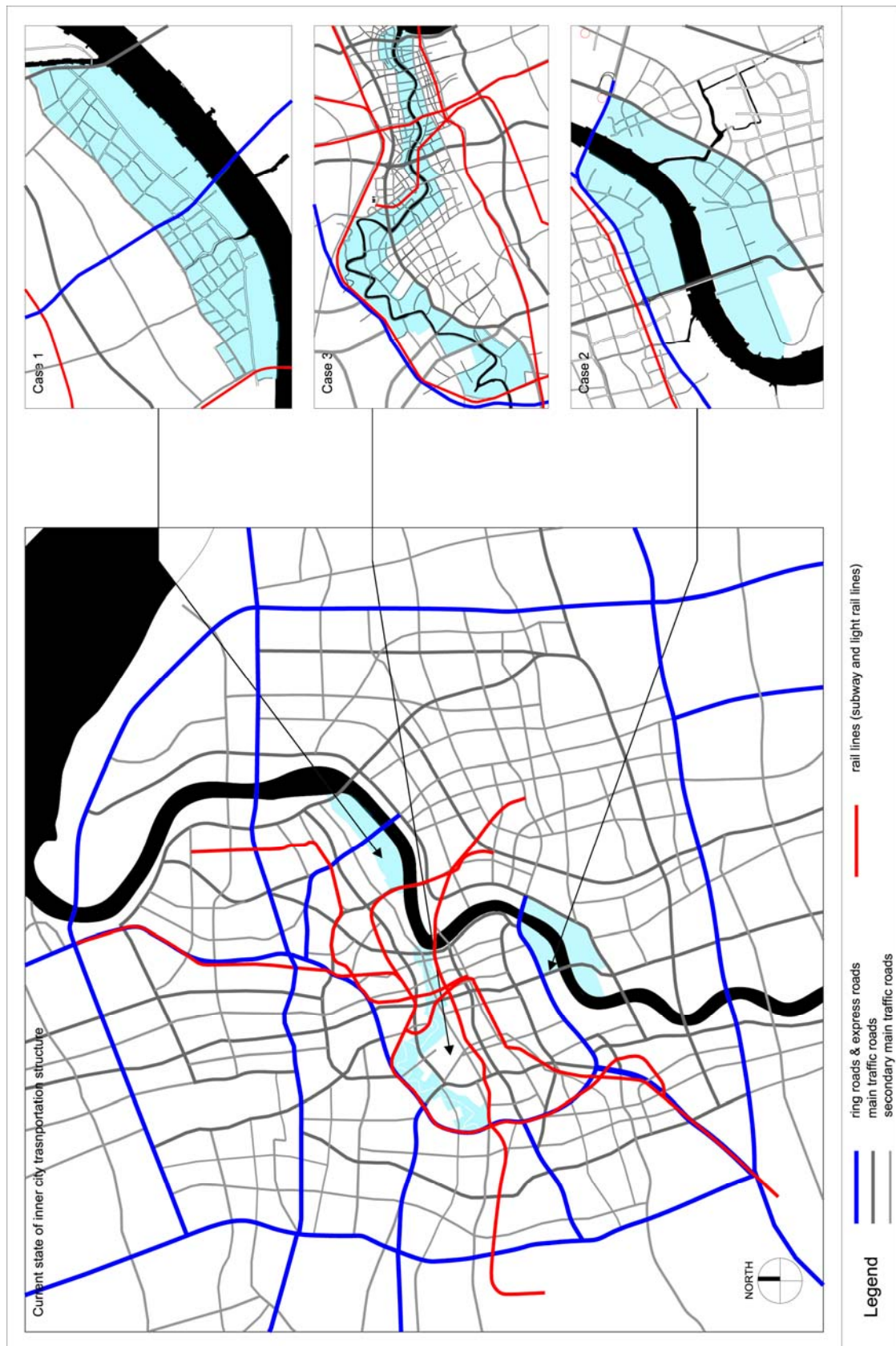


Figure 124: The three cases in the current transportation structure of Shanghai's inner city, drawn by the author

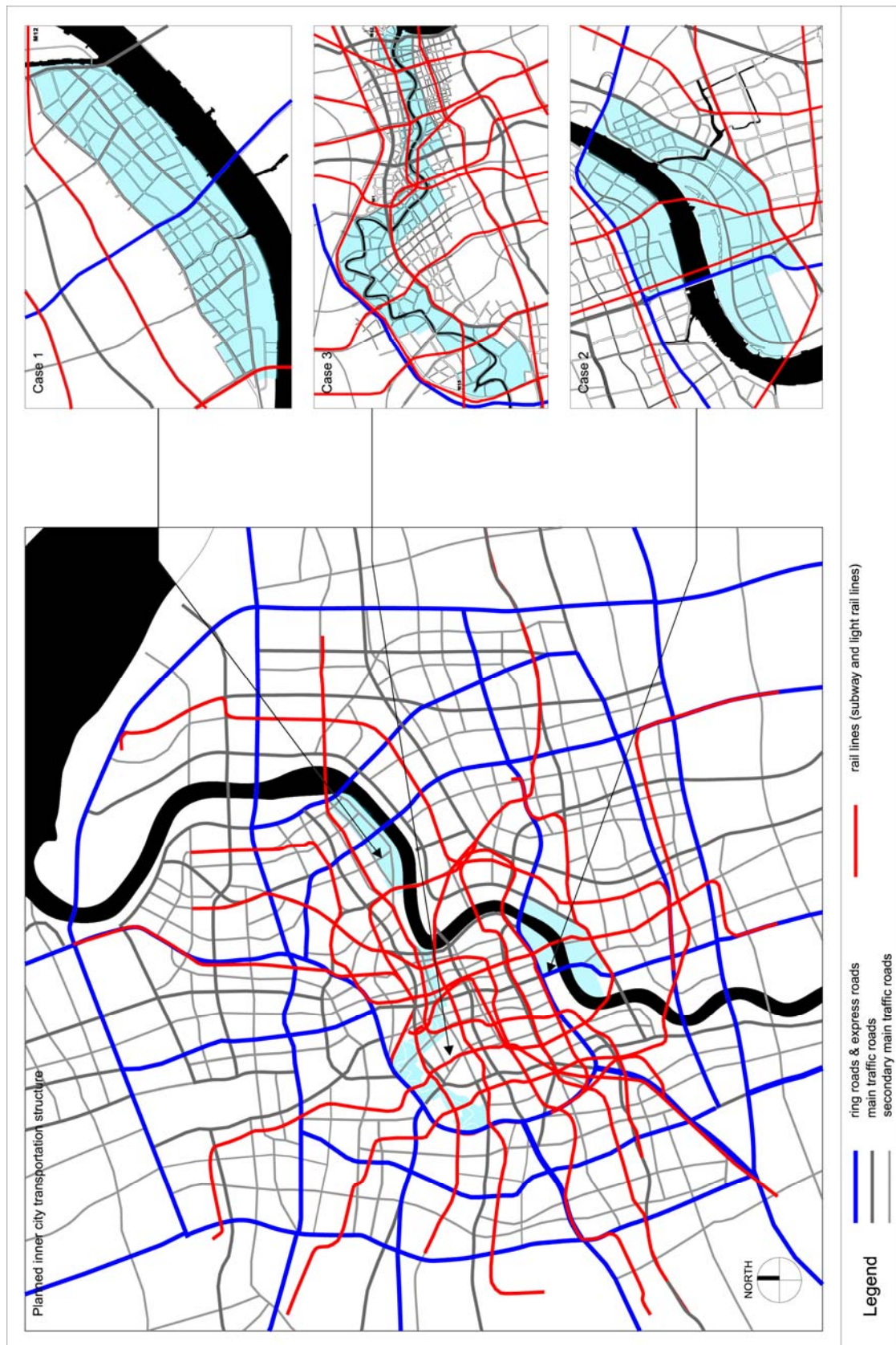


Figure 125: The three cases in the planned transportation structure of Shanghai's inner city, drawn by the author

### 5.3.2 URBAN TRAFFIC PLANNING IN "FILL IN" OF THREE TARGET AREAS

- **Planning and implementation of transportation system as a priority of the redevelopment plan**

It is proven in many European cases that the establishment of high efficient transportation system, both on aspects of outer accessibility and inner accessibility, is a precondition for the redevelopment of urban area. Significant urban development will take place only after such transportation system is planned and realized. Therefore, within all aspects of urban planning \_land use planning, transportation planning, green space & open space planning as well as urban conservation planning, the transportation planning must be put in priority. For such reason, a considerate timing schedule for different components of urban planning as well as the order for their implementation, are of crucial importance for the success of the redevelopment plan.<sup>328</sup> Such crucial importance of planning and implementation timing is already seen in target area 1 and target area 3, in which the areas where the transportation accessibility is already improved (such as the west part of target area 1 and east part of target area 3) have much more vitality of urban development than the areas where transportation accessibility is not yet improved. Target area 2 acts as an outstanding example on this aspect. As an impulse project, the transportation planning of EXPO site has been implemented within a short period of 6 years, in which two inner mainly traffic road, 4 subway lines were planned and implemented, as well as the total inner transportation circulation system was completely new planned for the use of EXPO. This transportation system, which took the link with the city's downtown and meeting demand of big amount of visitors as most important tasks to fulfill, make ideal condition for the further development of the area of target area 2.

Given the situation that the possibility of the improvement of current traffic road system in inner city is becoming more and more restricted<sup>329</sup>, the planning and implementation of the public transport system, especially that of the subways lines, will be the main solution to be relied on and placed in priority of planning and implementation. In target area 2 and target area 3, densely distributed subway lines were planned (4 lines in target 2 and 9 lines in target area 3), which is expected to significant improve the transportation accessibility of both areas. The fast speed of planning and implementation of these lines in target area 2 proves the positive effect of impulse project could be. Meanwhile, with the 4 lines that have been realized in or by scope of target area3, public transport system has proved to be successful in stimulating the urban development of the area surrounding the lines and stations of subway. The weaker case in this regard is target area 1, in which the planned subways lines support mainly the west part of the area while the east part remains weak. The only line that can service the waterfront area is the M12 that goes alongside the planned scope of target area 1. However, with an average distance of 1.5~2 kilometer, such support is not effective. That is one of the reasons that have led to the lack of necessary vitality for current development of the whole scope of target area 1, even though the urban planning for this area had been made 7 years ago.

- **Outer accessibility: identifying and improvement of weaker locations**

Occupying big land in the inner city and being developed through the long history, all three cases have their complexity regarding the situation of transportation

<sup>328</sup> See conclusion of case study, 3.3

<sup>329</sup> See details in 5.3.1

accessibility. The task of urban planning is to identify the weakest locations and to improve them with instrument of traffic roads and public transport system planning.

In target area 1, which occupies a lineal shape land with its west end connected to the downtown (the Bund), the situation of transportation varies from its east end and west end. With the planning and implementation of ring road, the transportation accessibility for the east part will be improved. However, concerning the public transport system, the middle and east part of target area 1 is still not supported efficiently, even with the realization of subway M12 parallel to the planning scope, which is 2.2 km to the shoreline. Further consideration of urban planning must be made on this. For target area 2, the similar unbalance is seen, which is characterized by the much weaker transportation accessibility in its west part with much looser distributed traffic road and absence of public transport system. In target area 3, in the south part of the Huangou River, the transportation accessibility is also much weaker than that in the north part of Huangpu River. Such weaker locations in both target areas mentioned above are already recognized by the urban planning and the situation will be much improved with the improved traffic road and public transport system.

- **Inner accessibility: establishment of inner transportation circulation through densification and systemization**

It is widely seen in most inner city historic industrial districts that the inner transportation circulation system, which had been planned and developed with the purpose to serve the former land use structure dominated by manufacturing industry, cannot meet the demand of redevelopment towards non-industrial land use structure. In many cases, the former inner transportation circulation system needs to be significantly modified or re-planned. In the three target areas, one of the most extinguished efforts of urban planning on the re-planning of inner transportation circulation can be described as “densification”. For example, in the waterfront part (south of Yangshupu Road) of target area1 as well as the major part of the target area 2, where the industrial area dominated, the typical inner transportation circulation system that is characterized by loosely distributed traffic road in form of raster with link to continuous industrial docks and big scale of block size have been replaced by densified transportation networks, that ensure the reasonable size and shape of sites for redevelopment and the accessibility of each sites by traffic. In target area 2, to ensure the new inner transportation circulation that is planned for the purpose of EXPO can also fit the demand of urban development of this area after the period of EXPO is a special challenge for the urban planning.

Another tendency, called “systemization”, can be seen in the planning for the inner circulation for target area 3 and the rest part of target area 1 (the part in the north of Yangshou Road), whose specialty lie in that through long period of urban development the transportation network of these areas has developed into part of that of the city's, which is characterized by densely distributed raster-shape traffic roads. Instead of method of totally replacing the existing traffic road system that is applied in target area 2, urban shall work on systemization of the existing traffic road system to fit it further into the city's transportation system which is composed by ring road & express roads, main traffic roads and secondary traffic roads.

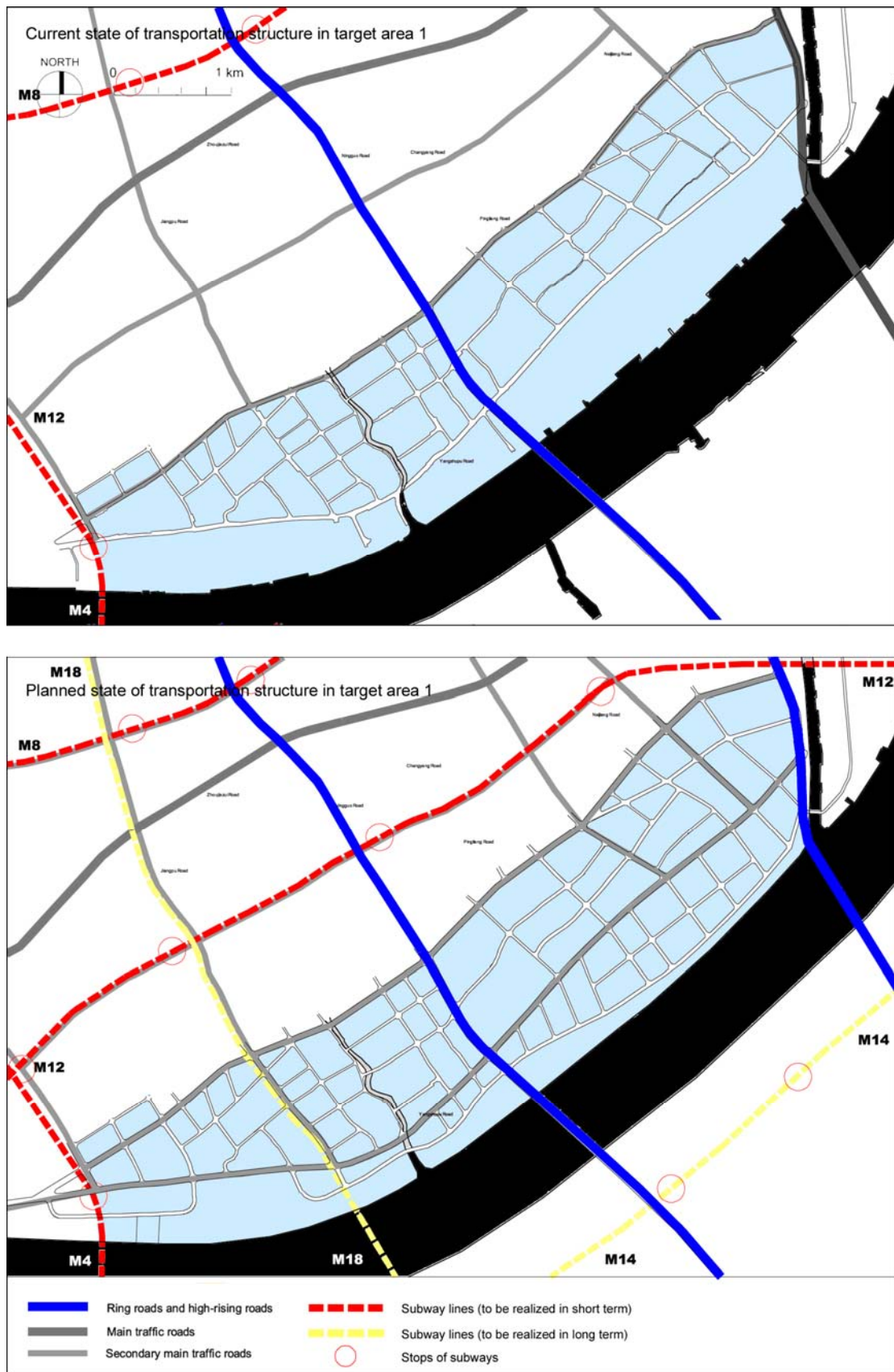


Figure 126: Urban traffic planning in target area 1, drawn by the author based on <Shanghai Comprehensive Planning 1999~2020> and <Shanghai Rail Transport System Planning 2005>

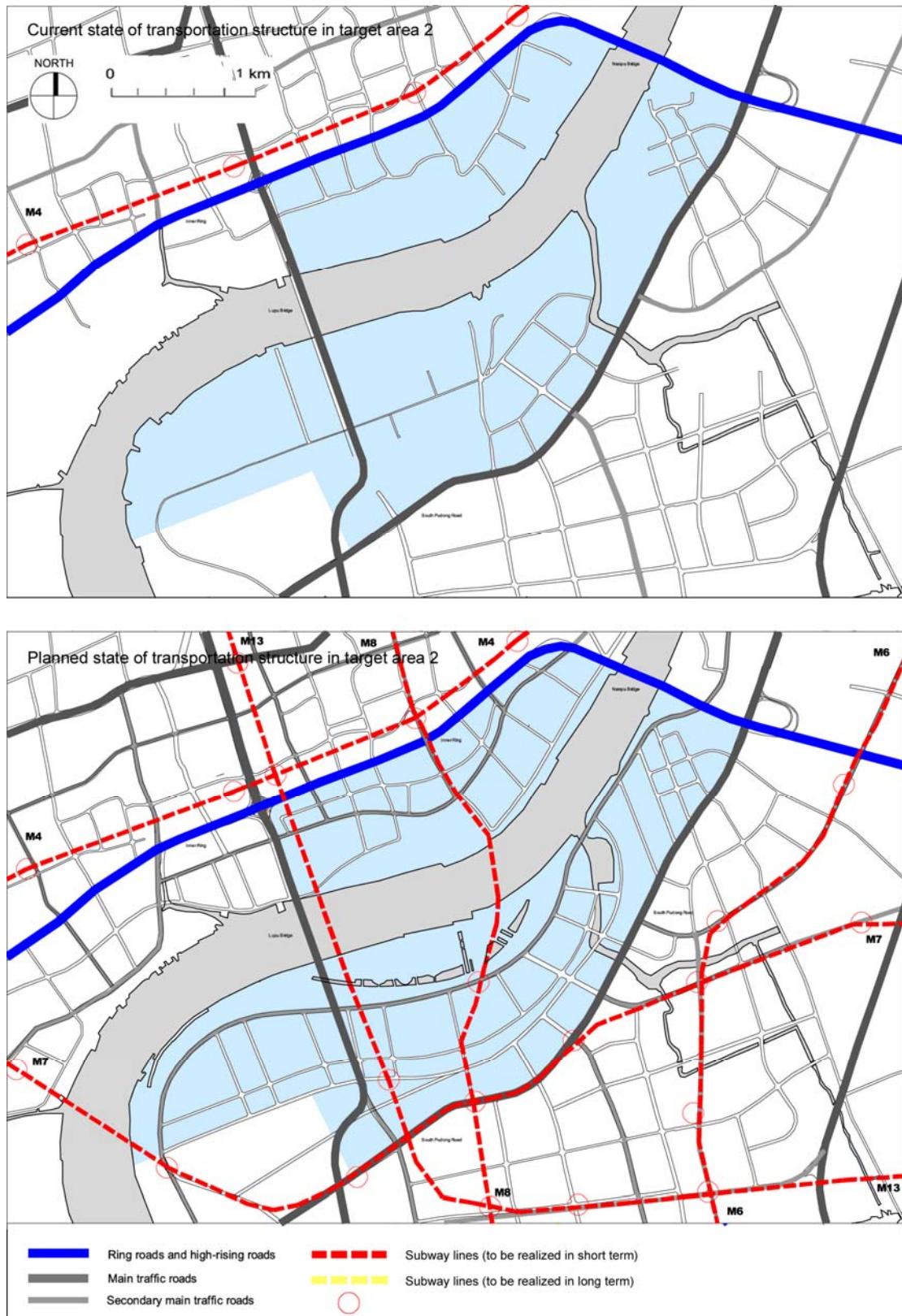


Figure 127: Urban traffic planning in target area 2, drawn by the author based on <Shanghai Comprehensive Planning 1999~2020> and <Shanghai Rail Transport System Planning 2005>

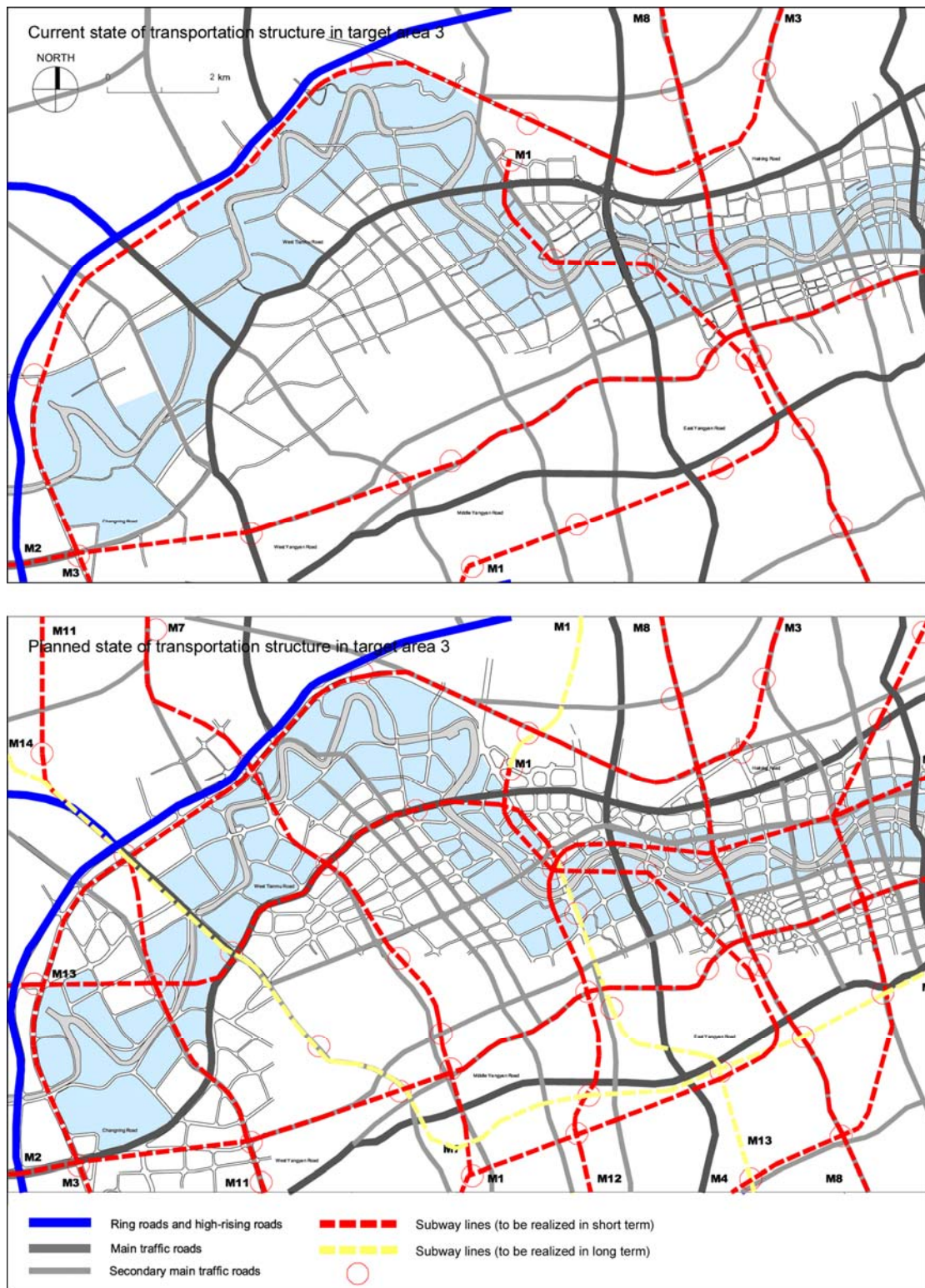


Figure 128: Urban traffic planning in target area 3, drawn by the author

## 5.4 GREENSPACE AND OPEN SPACE PLANNING IN "FILL IN"

### 5.4.1 CONTRIBUTION OF "FILL IN" TO INNER CITY GREEN SPACE & OPEN SPACE DEVELOPMENT OF SHANGHAI

In a time that inner city of Shanghai is experiencing significant land use and traffic structural change towards new targets of development, the structure of open space and green space, as an important and indispensable component for the spatial structure of Shanghai inner city, is also in an important process of structural reformation. The "FILL IN" of the three target areas, which are all situated in strategic location of the inner city and in a state of extremely lacking of green space and open space due to their previous development as industrial areas, will have significant influence on the formation of open space and green space structure in the following aspects:

- **Formation of interconnected green space and public space structure**

The development of open space and green space in Shanghai's inner city, although having experienced significant development both in the amounts and the distribution since 1950s, still needs significant improvement to meet the demand of further spatial development of Shanghai, characterized by further spatial expansion and poly-centralization. The current amounts of green space and open space need to be further significant increased especially when the inner city of Shanghai is in an upsurge period of expanding.<sup>330</sup> In regard to the distribution state, the development of current open space and green space is stay constrained within the scope of the central part of the city, while those in the other areas of the inner city still in low vitality of development.

The primary concept for the green space and public space development in Shanghai's inner city to form an "interconnected structure", that is composed of intensively developed areas of green space and open spaces to service the polycentric spatial structure of the inner city as well as well planned links between these intensively developed areas. Two types of elements are planned to be the major components for this structure: "key development area for open space and green space (KDAOG)" and "development corridors for open space and green space (DCOG)".

- **"FILL IN" and the "key development area for open space and green space (KDAOG)"**

Playing the most important role in the planned open space and green space structure of Shanghai's inner city, the "Key development area for open space and green space (KDAOG)" is the term in Shanghai's urban planning to describe the strategic urban area, in which the open space and green space are intensively planned and developed. These areas are planned in the strategic locations where opens space and green space is especially demanded, such as in the poly-centralized urban centers (including primary, secondary and tertiary urban centers)<sup>331</sup>, center of the residential areas as well as in other strategic locations such as

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<sup>330</sup> See details in 4.3.4 (for open space and green space amounts of Shanghai) and 5.2.1 (for inner city expansion and use development)

<sup>331</sup> See detail in 5.2.1

waterfront areas. These KDAOs are also strategic areas in Shanghai's inner city to intensively plan and develop public. Leisure and culture function and facilities, whose development and further improve the quality and attractiveness of these KDAOs.

Besides careful selection the locations of KDAOs, which takes into account from a strategic planning point of view the integrative spatial development of Shanghai's inner city both on aspects of land use and traffic development, two key tasks of urban planning shall be taken into account. One of them is the connection of these KDAOs with the surrounding areas. The second is to reinforce the interconnection between these KDAOs so as to form a network of KDAOs in Shanghai's inner city. Both tasks ensure the accessibility of these KDAOs from the urban areas in Shanghai's inner city, which shall only be fulfilled with considerate open space & green space planning in close cooperation with land use planning and urban traffic planning.

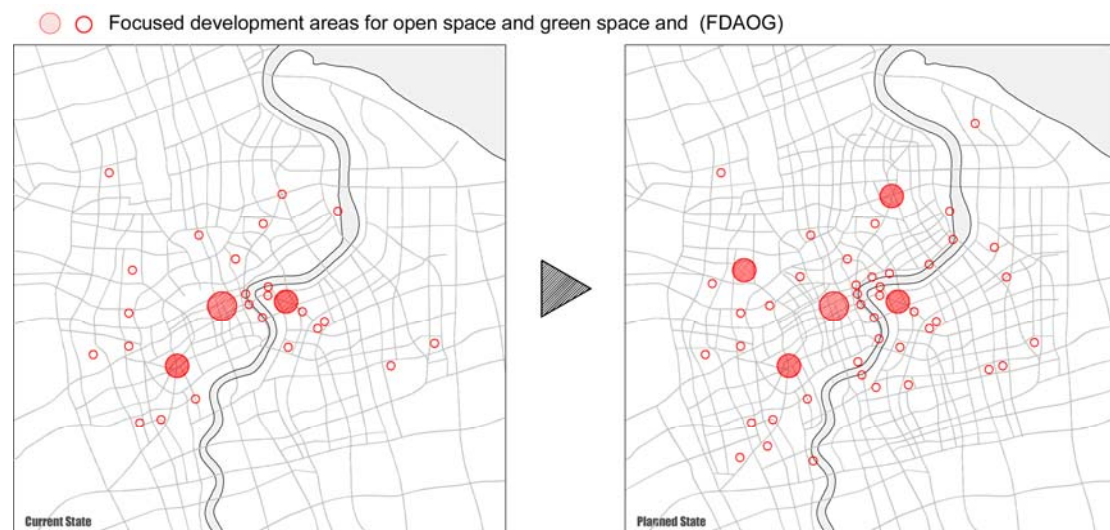


Figure 129: Distribution of KDAOs, drawn by the author

The riverfront areas in Shanghai, namely those areas alongside the main waterway Huangpu River and Suzhou Creek, become the ideal location of planning and development of KDAOs, due to the existing close relation between them and surrounding residential area as well as their advantages of waterfront location, that give great potentiality for urban planning to create high quality open space and green space. In such contexts, to reopen the area of the three target areas waterfront areas, which were occupied by the former industrial function and have low open space and green space quality, and transform them into most vital waterfront area Shanghai's inner city through planning and development of KDAOs, is a prior task of urban planning.

In target area 1, where the waterfront areas south of Yangshupu Road is currently occupied fully by industrial sites, open space, green space and new public functions can be realized through development of these industrial sites in specific locations such as in the north and south ends of the planned scope as well as the place where the Yangu River crosses. In target area 2, the well planned green space and open space system for EXPO as well as the public and culture facilities, the majority of which to be conserved and integrated into the further development of this area after the period of exhibition, have turned the area an outstanding KDAO. In target area 3, which is the nearest to the historic city center, there are no urban activity centers in the whole waterfront area today, even in its east part which direct by one of the city's most active public space "The Bund". The long shoreline in intimate distance to

the historic core of city is superior basis for the site to become public-friendly area and create attractive KDAOs alongside the waterfront area.

- **“FILL IN” and “key development corridors for open space and green space (KDCOG)”**

Another important component in the structure of open space and green space structure is the so-called “key development corridors for open space and green space (DCOG)”, which refers to those strategic lineal-shaped territories in the inner city of Shanghai potential to developed for purpose of open space and green space. The planned system of KDCOG will be composed of the following important elements: 1) Entire Huangpu River Riverfront Area (part within inner city), which will become the most important north-south KDCOG, whose development will be incorporated with intensive urban development of public function and residential use alongside this corridor; 2) Entire Suzhou Creek Riverfront Area (part within inner city), which will become the important west-east oriented KDCOG, being incorporated with modern housing development and leisure facilities; 3) Greenbelt alongside Yan'an Road, another east-west oriented landscape and open space corridors paralleled to the Suzhou Creek 4) Two circular KDCOGs: green belt alongside the middle ring road and that alongside the outer ring road, which links the main big-scaled concentrated green space in Shanghai's inner city.

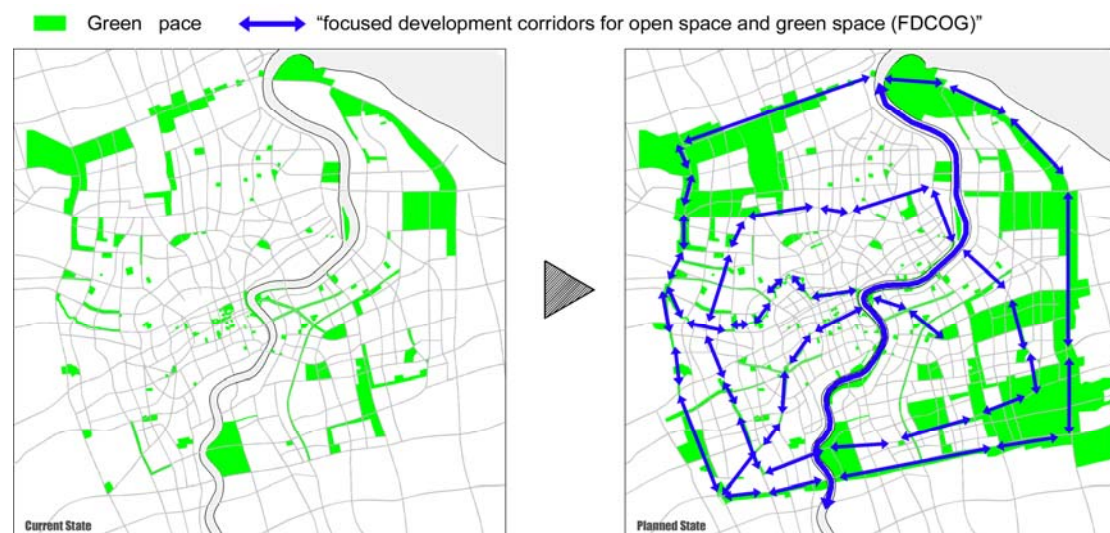


Figure 130: Distribution of KDCOGs, drawn by the author

All three target areas are situated strategic locations in the structure of KDCOG, and thus they can play important role in the formation of this structure. The whole scope of target area 3 is treated as one of the two main KDCOGs, while target area 1 and 2 are on strategic location in north and south part of the north-south corridor (Huangpu River), which will be developed into flourishing open space and green space corridors of Shanghai's inner city. As these waterfront areas of Huangpu River and Suzhou Creek within the scope of all three target areas are currently deficient of green space and open space, the development of green space in these target areas into continuous green and open space corridors will be one of the most important task of formation of green space structure of Shanghai's inner city. These corridors also serve as links for the KDAOs alongside the waterfront areas, and integrate them into an entire system of open space and green space in inner city.

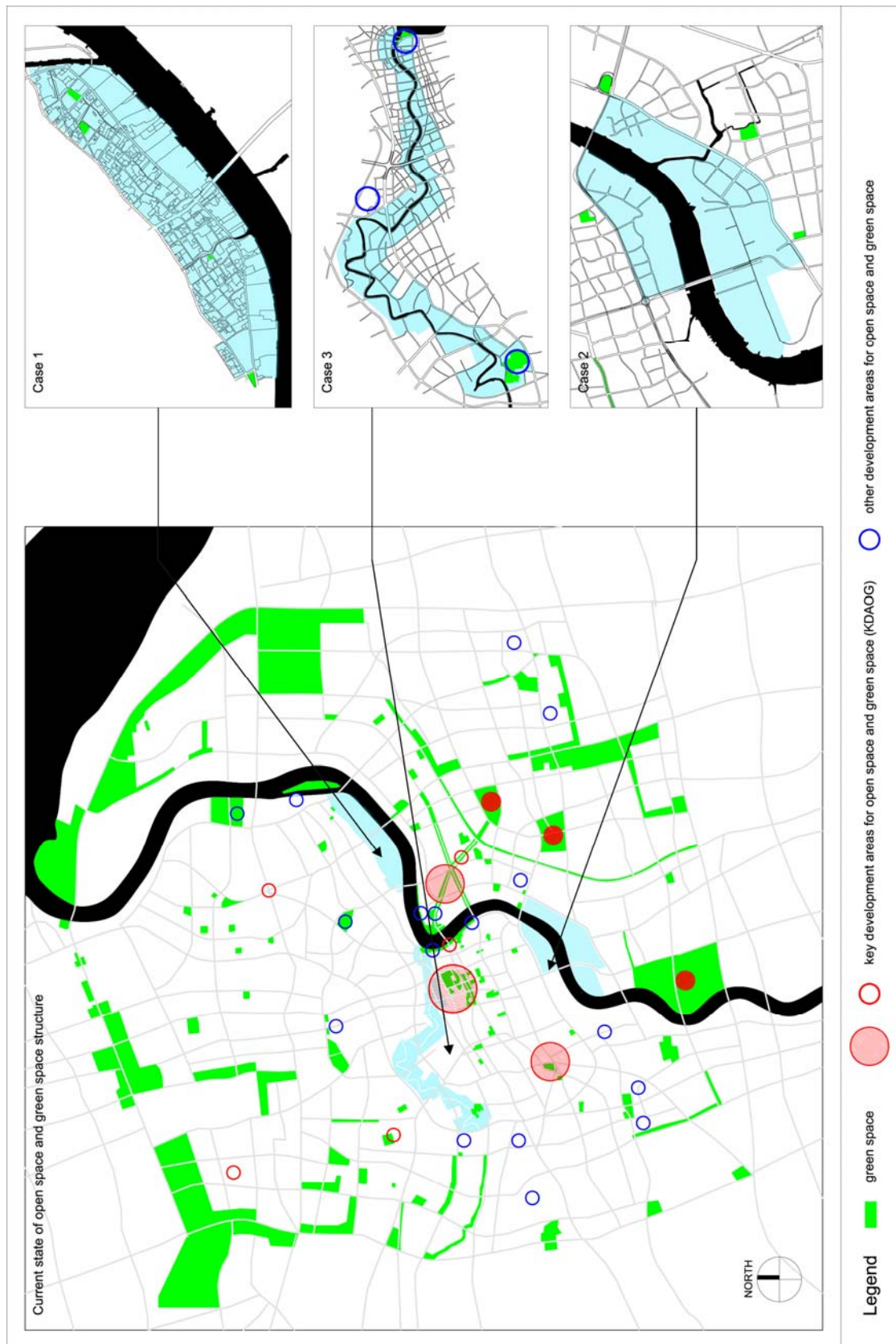


Figure 131: Three cases in the current open space and green space structure of Shanghai's inner city, drawn by the author

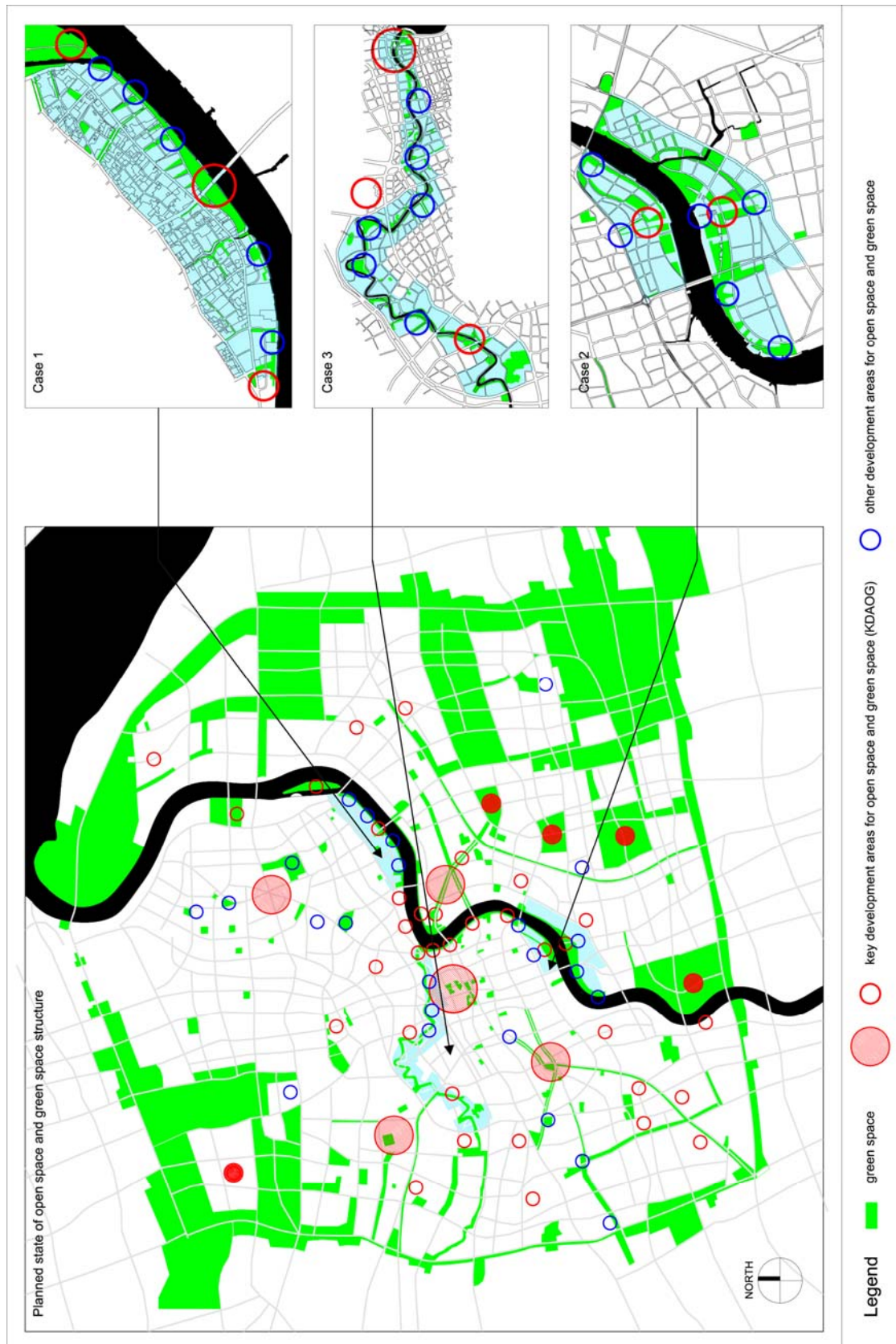


Figure 132: Three cases in the planned open space and green space structure of Shanghai's inner city, drawn by the author

#### 5.4.2 OPEN SPACE AND GREEN SPACE PLANNING IN THE "FILL IN" OF THREE TARGET AREAS

- **Efforts on both increase of quantity and improvement of quality**

It is proven in many European cities that well planned high-quality open space and green space system acts as a basic condition for the redevelopment of urban areas that were previously developed as industrial districts. Reason lies in not only the previous industrial development makes these areas low environmental quality that need urgently to be improved to meet the demand of the new use, but also that successful planning and development of open space and green space that significant improve the environmental quality can add to the activeness and development vitality of the area and thus create condition of the comprehensive urban revitalization.

In Shanghai, all three target areas are in state of extremely lacking of public space and green space. In target area, the coverage of public space in total land use is 0% (in areas under planning, W5 and W7), while that in target area 2 is 0.1% and that in target 3 is 3.81%. Given the strategic task to develop these areas into important locations in the city to host the development of KDAOs and KDCOs, which contribute to the formation of open space and green space structure of Shanghai's inner city, the general increase of amount/coverage of green space and open space is a primary task of urban planning. In the official planning for the three target area, the coverage of public green space has been increased to 19.66%, 24.55% and 14.64%.

Even more important is the improvement of quality of these open spaces and green space, which shall be achieved by the open space and green space planning, in coordination with urban land use planning and traffic planning. Urban planning's major fields of work for the three target areas can be summarized in three aspects that is to be analyzed in the following parts: 1) intensively open space & green space development in waterfront area, 2) nodes of urban activities supported by public and cultural facilities as well as 3) networking of open space & green space system.

- **Waterfront open space & green space development as prior task**

For both the establishment and development of KDAOs and KDCOs, the significant of waterfront area shall not be underrated. Waterfront areas of Shanghai, namely areas alongside the Huangpu River and Suzhou Creek, act as KDCOs themselves and also as effective links between the KDAOs. Most of inner city part of these waterfront areas is included in the planned scope of the three target areas. On the other side, concerning the current land use actuality of these areas, waterfront areas are mainly occupied by manufacturing industrial and warehousing use, when the industrial shorelines are mainly closed to the accessibility of public. With the release of industrial land to civil use, both the increase of quantity and improvement of quality of green space and open space can be realized from the re-planning of industrial sites, without the difficulty of acquiring land, which is a difficulty that urban planning generally meets with in other densely built up area in Shanghai. Thus, both from the strategic importance in the urban development in bigger scale (inner city) or the less difficulty of implementation points of view, the waterfront area development shall become the key area for development of open space and green space to be intensively planned and developed from the beginning of the redevelopment plan.

A important requirement for the planning of these waterfront areas is that they must be well accessible from the public and the surrounding urban function such as commercial, cultural facilities, office and most important, the residential functions. In this regards, open space and green space planning must work in collaboration with urban land use planning and traffic planning.

In target area 1, the most spectacular highlight of the area is that the 11.75 kilometer long shoreline, which had been used as industrial shoreline before and thus not accessible for the public since long time, will be re-opened for the public. Huge amount of open space, series of open squares, landscape zones, themes parks and adjacent public functions are planned to highlight this shoreline. This is regarded as important strategy for the restructuring of inner city open space of Shanghai, in which the famous Bund as well as its high-quality of urban open space and green space will be extend northwards to the site of target area 1. In target area 2, the impulse project of EXPO has made the area into one of the greenest and most open areas in Shanghai's inner city. 164 hectare land in total has been assigned for the use of green space and open space, and all of them will be conserved after the period of exhibition. The waterfront areas of both target areas have planned with sufficient high proportion of public functions such as cultural facilities, office and commercial areas, that are supported with by traffic roads and public transport system.

In target area 2, however, although the open space and green space have been planned to make the whole shoreline a continuous vital areas of urban activities and leisure, the continuity of waterfront area cannot be ensured in its implementation, due to the uncontrolled previous real estate development, that make a considerable parts of shoreline be occupied by private real estates and not available for integral planning. Concerning the support of land use and traffic, the planning of surrounding area of the waterfront area plans a high proportion of housing function that will be well supported by public transport system.

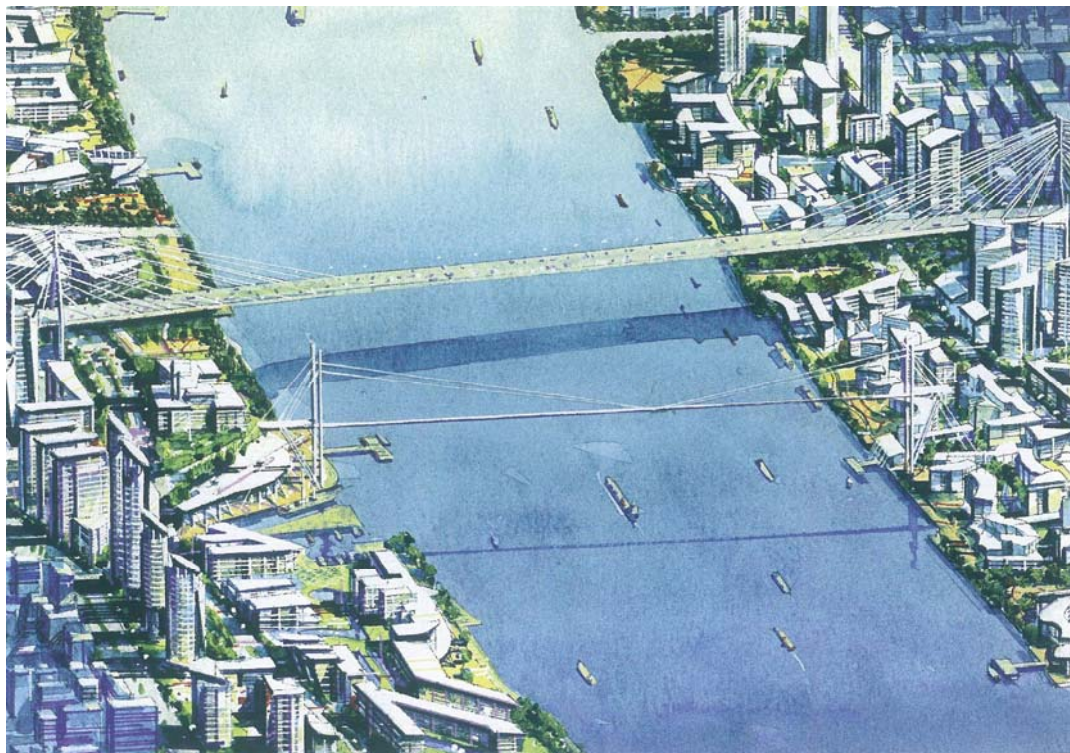


Figure 133: Open space and green space in waterfront area in part of target area 1, urban planning proposal of COX submitted to the urban planning competition on Huangpu Riverside, Resource: internet

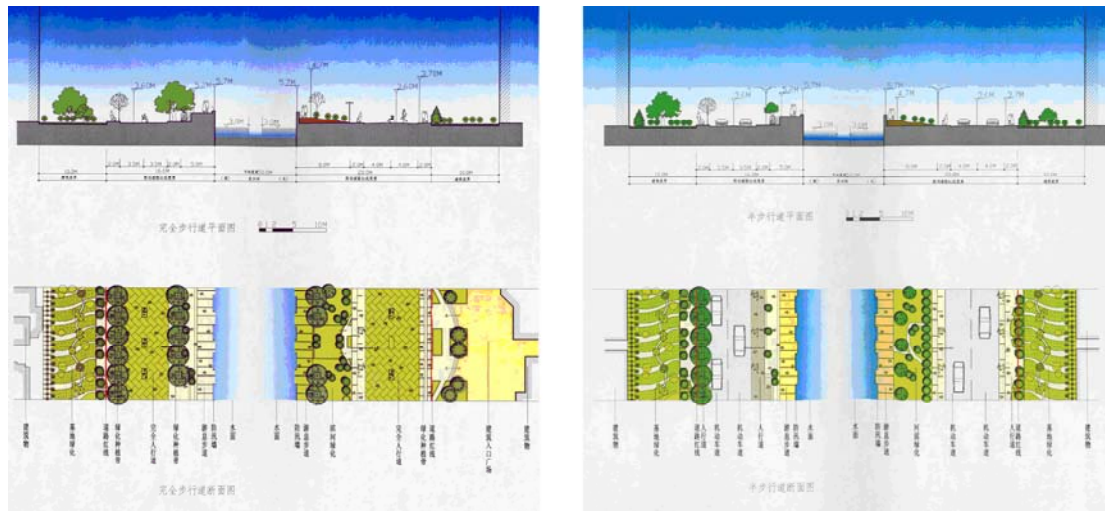


Figure 134: Shoreline section and landscape planning detail of target area 3, Resource: <Suzhou Creek Riverfront Area Landscape Planning>, Shanghai Urban Planning Design and Research Institute, 2002

### ● Nodes of urban activities supported by public and cultural facilities

To plan and develop attractive urban activity nodes in the waterfront area is an effective effort to improve the integral attractiveness of waterfront area and stimulate urban development in specific locations. Most important nodes include important urban territory such as the south joint point to the Bund and the area surrounding the Yangpu Bridge in target area 1, the entire waterfront area of target area 2 (which is supported by the cultural, conference and exhibition facilities of the EXPO as well as the east end (financial area), Shanghai Main Railway Station and Zhongshan Park in target area 3. Many of these points, that have been planned and developed, have already been proven to be successful in stimulation urban development in its surrounding areas as well as improve the urban quality of the waterfront area where they are situated in.

To improve the attractiveness of these urban nodes of open space and green space, one way is to plan public and cultural facilities in them. Outstanding example for this is the target area 2. With the concert hall, conference centers and many exhibition halls that will continue their functions after the EXPO, the open space and green space will gain big attractiveness for the open space and green space in this area. In target area 1, the planning of Drinking Water Museum and Fisherman's Wharf play a role as such nodes.

Many urban activities nodes on the waterfront area can be realized through the reutilization of industrial site as well as through reutilization of former industrial buildings and elements. Many European cities have provided outstanding example for such concept, in which industrial heritage buildings were renovated in innovative ways into museums, concert halls, housing and parks. Industrial landscape shall be treated as a special and characteristic type of landscape to be integrated into the open space and green space planning. In Shanghai, the target area 3 makes such efforts in integrating exhibition hall into the conserved plant workshops as well as renovating the former docks into open-air theatre and open space. Such effort makes the area where these projects are located in attractive urban area and agglomerating area for urban activities. In target area 1, the Fisherman's Wharf and Drinking Water Museum, which were renovated from old industrial sites and buildings, also have potentiality to become attractive urban activity nodes in the waterfront area. Target area 3 has a very similar situation, in which some of the industrial heritage buildings have been renovated for public and cultural use. However, these projects with

potentiality for becoming urban activity nodes were not treated in urban planning as “impulse project”<sup>332</sup> and failed to be integrated into the development of surrounding area as well as the waterfront landscape and thus failed to play an important role that they should have been playing. This shall be recognized by the government and further urban planning efforts regarding the creation of urban activities to make them into spectacular open space and green space nodes must be called for.



Figure 135: Waterfront area green space and facilities in target area 2, Resource: internet



Figure 136: “EXPO Axis” in target area 2, Resource: Internet

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<sup>332</sup> The critic on the ignorance of “impulse project” in target area 1 and 2 can be see in 5.2.1 and 5.2.2

## • Network-building of open space and green space

The open space and green space development shall not be constrained only in the area of waterfront area, but expand the development into those non-waterfront area, while still taking advantage of the intensively developed waterfront area as a main skeleton of open space and green space. A concept of “networking” is widely seen in the open space and green space planning of all three target areas, characterized by development corridors of open space and open space growing from the main skeleton of waterfront area into the non-waterfront area. These development corridors together with the waterfront area, urban activities centers in waterfront or non-waterfront area, interweave into a network of open space and green space.



Figure 137: Network of open space and green space in target area 3, Resource: <Suzhou Creek Riverfront Area Landscape Planning>, Shanghai Urban Planning Design and Research Institute, 2002



Figure 138: Open space and green space planning in target area 1, drawn by the author

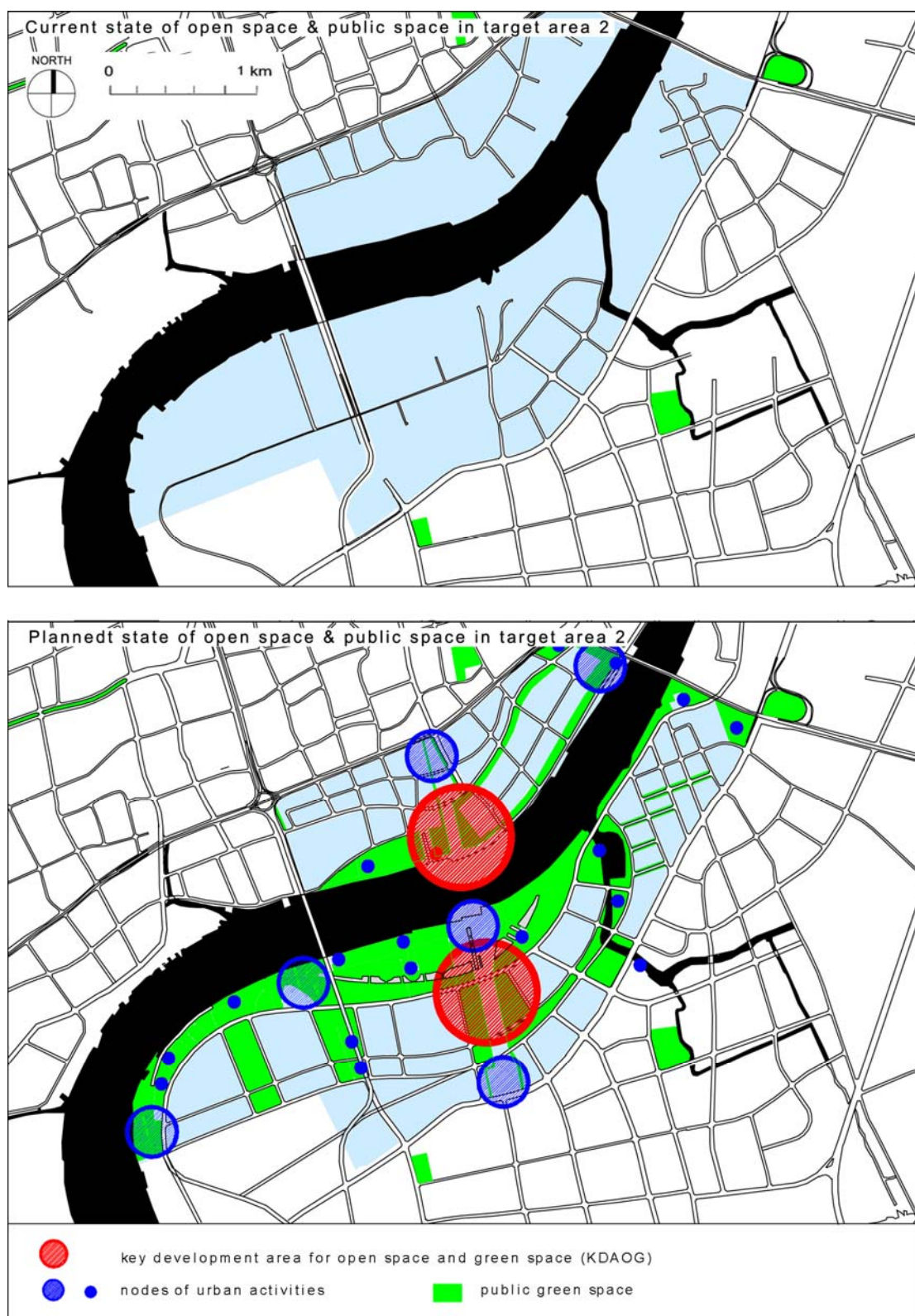


Figure 139: Open space and green space planning in target area 2, drawn by the author

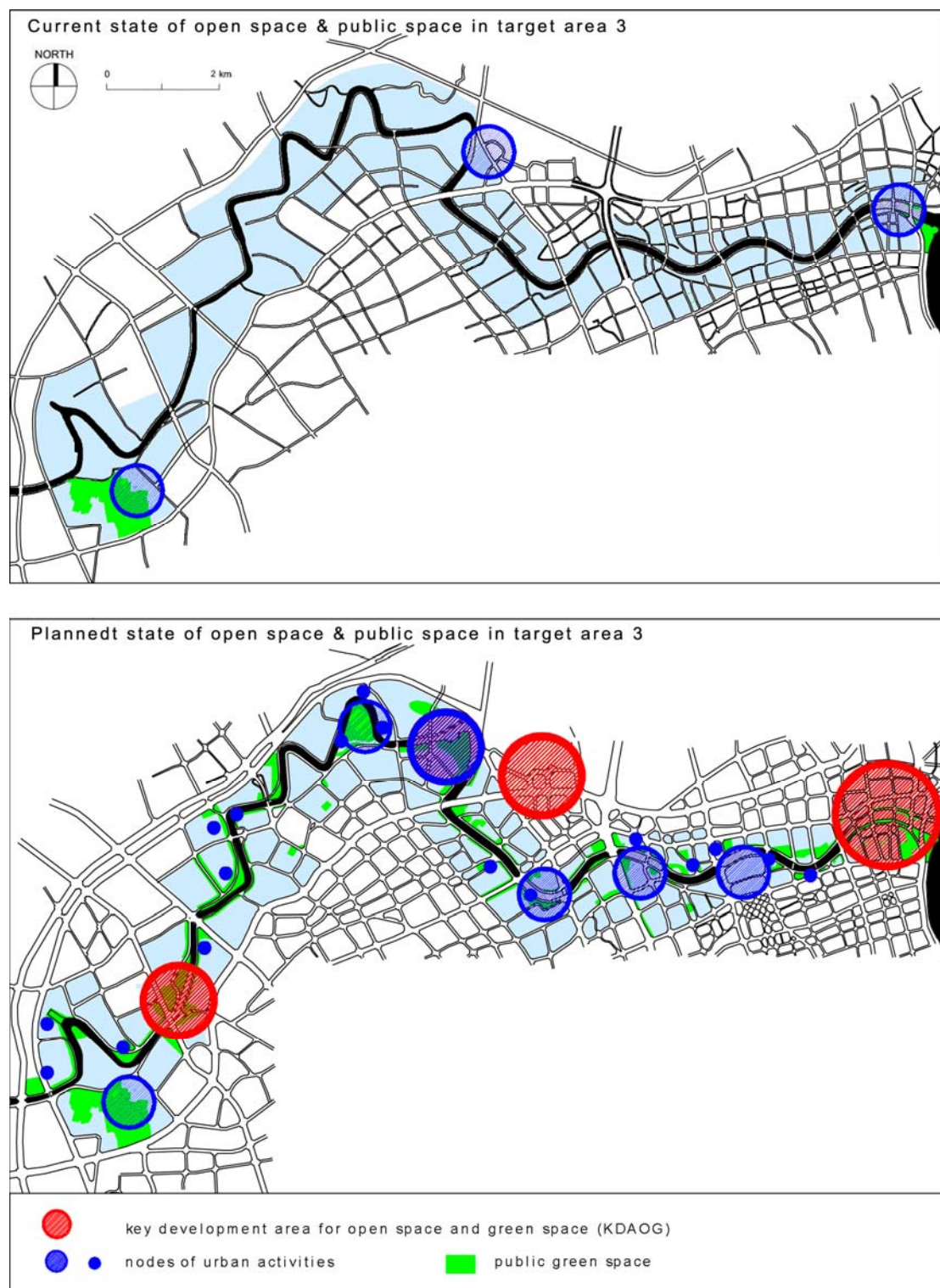


Figure 140: Open space and green space planning in target area 3, drawn by the author

## 5.5 URBAN CONSERVATION PLANNING & MONUMENT PROTECTION IN "FILL IN"

### 5.5.1 FUNDAMENTAL BACKGROUNDS OF SHANGHAI'S URBAN CONSERVATION AND MONUMENT PROTECTION SYSTEM

Shanghai as a historic city, has a strong urban identity and numerous invaluable historical and cultural sites. Among them are the historic downtown area, the Bund, and many colonial residential quarters, which had become name card of Shanghai and given unique charm to the townscape of Shanghai. However, the protection of historic monuments in the city had only been given proper attention from late 1980s, after many of them had been ignored, improperly protected or damaged in the previous development period.<sup>333</sup> The protection of industrial monuments and industrial landscape, being a unique and important component of the protection of historic monument, is only included in the protection system recently.

The effort of urban planning to integrate the protection single historic monuments to the urban development, the so called urban conservation planning, gained ground relatively late. Amongst the efforts in this regard since late 1980s, the "FILL IN" of the three target areas is the latest attempt, whose focus of work lies in the protection of industrial heritages and industrial landscape.

- **A path from single monument protection to ensemble protection and further to historic urban landscape protection**

In regard to the establishment of historic protection system of Shanghai, one can see a path from protection from single monuments to ensemble protection and further to historic urban landscape protection.

Except for the few law for protection of national heritages issued by the Republic of China before foundation of People's Republic of China in 1949 which had been put into validation substantially due to the 2<sup>nd</sup> World War, the actual effort for Shanghai to systematically protect historic monument and the city's historic identities started from the issuance of first list of "Protected Culture Heritage" and the <Law of Protection of Culture Heritage> by the Council of State of China in 1959 and 1961. Ever since that, the list of protection and law were continuously updated and added to in the following years till today.

The significant milestone in history of urban conservation was made in December 1986, in which Shanghai was included in the list of "National Cultural and Historic City" by the State Council of China. This is the beginning of many efforts to promote the historic monument protection in Shanghai including the compilation of the "Outstanding Historic Architecture List" which was started from 1989.

In 1989, the earliest attempts on ensemble protection of historic monuments and quarters were seen. This was through the compilation of "Historic Urban Landscape Zone List" and the correspondent urban planning documents, protection measures and laws for these protected units and areas.

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<sup>333</sup> See details in 4.1.2.3 and 4.1.2.4

Thus, the system of urban protection/conservation in Shanghai is composed of the three following groups:

#### I. List of "Culture Heritage Units" and correspondent urban area:

From 1959~1995, 267 "Culture Heritage Unit" were identified in the list of protection/conservation by 12 different issuances (1959, 196, 1977 and others). They are the 9 "Culture Heritage Unit (national level)", 67 "Culture Heritage Unit (municipal level)", 15 "Historic Place (municipal level)", 7 "Memorial Relic Site of China-Japan War (municipal level)", 132 "Culture Heritage Unit (municipal district level)", 12 "Historic Places (municipal district level)" and 7 "Memorial Relic Sites (municipal district level)".<sup>334</sup> The main protection measures of "Culture Heritage Units" were listed out in 1961 "Temporary Management Measures of Culture Heritage Units", 1977 <Protection Measures of Shanghai Culture Heritage Units> and 1982 <Detailed Implementation Measures of Architecture Management> (approved in 1986). In 1977 and 1982 legal documents mentioned above, it was required that certain scope of urban area surrounding the protected units need to be controlled. For example, in the protected scope no new construction is allowed, and in the correspondent urban areas<sup>335</sup> all new building must not be higher than 11m and the forms and colors of the new building must coordinate with the protected unit etc.<sup>336</sup> This was the earliest effort in Shanghai to expand the protection scope from single objects to areas, and can be treated as the beginning of urban conservation in Shanghai.

#### II. Outstanding Historic Architecture

The proposal to establish "Outstanding Historic Architecture List" was set forth in 1982 <Architecture Protection Planning Description>, as component of <Draft of Shanghai Master Plan>. In 1989 the first proposed list (61 units) was listed out and approved by the municipal government of Shanghai. After that, three addition lists were added to in 1993 (175 units), 1999(162 units) and 2004 (234 units). Till today, 632 units in total are protected by this list, covering 2138 single buildings / 4.3 millions square meter built floor area. The <Measures of Outstanding Historic Architecture Protection Management> issued later in 1991 was the first document to formulate the measures for the protection/conservation of the units in the list. Later in 2002, <Ordinance for the protection of historic urban landscape zones and outstanding historic architecture> was issued. This acted as the latest documents with legal bond power for the protection for outstanding historic buildings.

#### III. Historic Urban Landscape Zones:

The value of Shanghai's unique townscape and urbanism lie not only in single units, but also in the historic urban area, which had been developed through the history into characteristic and charming urban landscape area. To identify such zones as well as to come out with correspondent measures to protect the urban area as an entirety is a significant step beyond the protection of single monuments. It was as early as 1984 when the new master Plan was being drafted, that 11 historic urban

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<sup>334</sup> Refer to Sun Ping (ed.), <The History of Urban Planning in Shanghai>, Shanghai Social Science Press, 1999, p.398

<sup>335</sup> The works of formulation of correspondent urban area of the protected were initialized in 1980 and continued in 1984, 1988. refer to Sun Ping (ed.), <The History of Urban Planning in Shanghai>, Shanghai Social Science Press, 1999, p.398

<sup>336</sup> Refer to Sun Ping (ed.), <The History of Urban Planning in Shanghai>, Shanghai Social Science Press, 1999, p.398

landscape zones were identified and correspondent protection/conservation measures were drafted. After Shanghai was included into the list of “National Cultural and Historic City”, the importance of protection/conservation of historic urban landscape zones was more and more recognized. In the <Conservation Planning of Shanghai as National Cultural and Historic City> which was approved in 1991, the 11 proposed historic urban landscape zones in six different categories and the correspondent measures of urban landscape protection came into validation. In 1999, the Municipal Bureau of Urban Planning and Administration of Shanghai arranged the second stage of the urban planning for the 11 historic urban landscape zones, identifying further the protection/conservation scope and requirement as well as 234 historic blocks and 440 historic building clusters. In 2003, the Municipal Government of Shanghai official announced the 11 historic urban landscape zones in Shanghai’s central city area, and started to identify and plan the 32 historic urban landscape zones in the Shanghai outer city area.<sup>337</sup> The latest documents of protection/conservation measures with legal bonded power for the urban conservation of the historic urban landscape zones is the <Ordinance for the protection of historic urban landscape zones and outstanding historic architecture>, issued in 2002.

The initiation of protection on the historic urban landscape zones in Shanghai marked the turning point that the historic monument protection of Shanghai has gone through the path from protection of single objects to ensemble protection and urban landscape protection of the urban area. Compared to other cities in China, where many demolition of historic objects and areas were often seen, there are only very few such incidents in Shanghai, even in the years of Culture Revolution when all the country’s law and its management were out of control. In this regard, Shanghai is an archetype of all other Chinese cities.



Figure 141: Historic urban landscape zone surrounded by with highly developed business and residential areas, photograph by XU Kai

<sup>337</sup> Refer to Wang Anshi, <Practices and thoughts on the protection of historic architecture>, 2008

- **Industrial heritages and landscapes, a new resource to be discovered**

The value of industrial heritages and industrial landscapes had been ignored by both the public and the academic circles in Shanghai for a considerably long time. Industrial buildings and industrial district give the impression of “dirty, chaos and low-quality” on people, and they are always amongst the focused units/areas to be considered to remove, demolish and redeveloped. In the 632 “Outstanding Historic Architecture Units” protected by law, only 18 are related to industrial function. On the level of conservation of industrial landscape, none of the industrial areas were included in the “Historic Urban Landscape Zone” list. Therefore none of these areas receive any policy and law support of conservation. In the dramatic development in the past 20 years numerous industrial units and industrial areas with high artistic and cultural value disappeared from the scene of the city, while most of the other still remained in idle state and received no funding support from the government for maintenance.

It was quite similar to what happened in New York SoHo or in Beijing 798 district that the earliest protection and reutilization came from the non-governmental force. In 1998, the Taiwanese architect Teng Kunyen rented a warehouse in the Suzhou creek Waterfront Area and renovated it into his own design studio. Through the renovation he created a complete new look and unexpected beauty for old warehouse with great combination of conserved old façade, structure and other elements of the old building and the new added elements such as new structure and furniture. The following efforts of Teng Kunyen to utilize his resources in the media society to protect the warehouse from being demolished by the redevelopment plan created a second sensation in academic society and the public. Since then, more and more attentions were given to the conservation of old industrial buildings and industrial areas.

After the successful case of Teng Kunyen’s studio, it became a reasonable and workable business model for the factories owners to rent these unused warehouses to architects, designers and artists who recognized the value and special beauty of industrial buildings. For the interest of the factory owners, this model generates a certain economy income and also covers the additional maintenance cost which the factory owners are unwilling to pay, while for the interest of the tenants, this provides them a much cheaper choice than renting in the business areas of the city as well as a much better place with the special artistic beauty. The extinguished examples were the Si Hang Warehouse (one of the famous warehouse which was in list of “outstanding historic architecture”) and Warehouse West Suzhou Creek Road No.1131, were rented by well-known artists He Rundong, Ding Yi, Zhou Tiehan, Chenqiang, Xue Song, who renovated the old warehouses into special working spaces, ateliers and galleries. Taking this as a prelude, more and more industrial sites and buildings were operated in such model and turned into reutilization.

One trend following this was the so-called movement of “creative industrial park”. Instead of protection on single industrial building, more and bigger industrial areas composed of multiple industrial buildings and the integral industrial landscape were planned, reconstructed and redeveloped as “creative industry park”, which provide specialized places for the rising demand of “creative industry” in the recent years.<sup>338</sup>

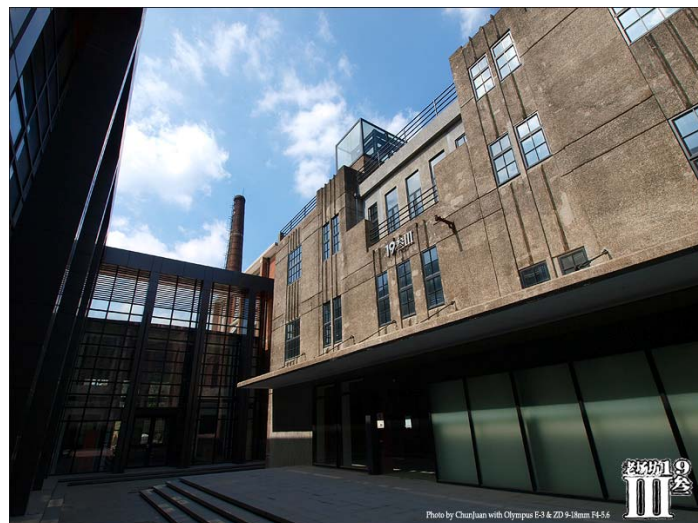
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<sup>338</sup> The creative industry refers to a range of economic activities which are concerned with the generation or exploitation of knowledge and information. They may also be referred to as cultural industries or the creative economy. The most prevailing definition is the one given by the UK Government, which described the creative industry as: “those industries which have their origin in

This was accompanied by the increased consciousness of the factory owners and governments that industrial landscape and building have its aesthetic value and have special attraction for people. For example, the redevelopment of M50 Industrial Park, started from renovation of some factory warehouses (belonging to a former textile factory) into working spaces for artists, and finally the whole area with 2.3 hectare land and 41,600 square meter industrial buildings were put into a comprehensive urban planning and design process, in which the existing buildings and urban status were carefully researched and comprehensive proposals for urban planning and building reuse were made. The conservation of industrial heritages here lies not only in conservation of some landmark buildings in this area, but also a general conservation strategy system for different categories of buildings as well and the industrial landscape which is formed by the group of buildings as an integrity. The other outstanding examples are the “Yangshupu Creative Park”, Bridge 8 and the Shanghai Sculpture Space” (these three projects were redeveloped on base of Auxiliary Machinery Factory for Shanghai Power Plant, Shanghai Automotive Brake Factory and Shanghai Steel Plant No.10 cold-rolled Steel Subsidiary).



Figure 142: Creative 1933, an office, atelier, exhibition and entertainment complex, renovated from the Slaughterhouse built by Shanghai Municipal Council of Construction in 1933, photograph by Chunjuan



individual creativity, skill and talent and which have a potential for wealth and job creation through the generation and exploitation of intellectual property.” (DCMS 2001, p.4) .



Figure 143: Warehouse in waterfront area of Suzhou Creek, renovated by Teng Kunyen, Resource: internet

- **Confrontations and challenges for urban conservation and monument protection system**

In spite of the progress on urban conservation mentioned above, there are still many problems and challenges in regard to urban conservation and monument protection in Shanghai:

1) To further complete the protection list: Till today, the protection/conservation lists is composed of 267 “Protected Culture Heritage Units”, 632 “Outstanding Historic Architecture” and the 12 “Townscape Conservation Zones”. However, it is widely appealed that the list must be further expanded to contain more objects and areas with value of conservation. There are still a lot of objects and areas, which have certain value of protection or conservation, in danger of being damaged or demolished without the protection of the law. More efforts on the careful investigation, research as well as list compilation are called for.

The situation is even more serious in regard to the protection of industrial heritages. In the 632 protected “Outstanding Historic Architecture”, only 19 are related to industrial functions. A considerable mounts of industrial heritages were apparently ignored. In the redevelopment on the many former industrial districts from 2000, especially before the official urban planning were issued, a big number of industrial buildings were demolished to make way for real estate development.

2) To further complete the protection and conservation measures: The other problem that the current protection/conservation system has is that the conservation planning and the protection/measures based on it were made in a rigid and static way, which was proved to be unable to coordinate with complexity of situation of city's development today. The representative example is in the urban development of the “Jiangwan Area”, which is one of the 11 “Townscape Conservation Zones”. Although the measures to maintain the visual channel between the three major

buildings (the City Hall, City Library and the Stadium ) were kept according to the urban conservation planning of the area, the excessive urban development especially the high-rise buildings neighboring the protected zone still easily destroy the area's harmonious townscape and the relation between the three buildings, while the conservation measures based on the protection/conservation planning of this area has no way to prevent it from happen.

None of the historic industrial areas, even the three most important historic industrial areas in this paper, were officially included in the list of protected townscape zone of Shanghai and therefore there are no specific regulation and measures concerning the urban conservation in these areas. Even though later there was specific planning for the three historic industrial areas, the level of urban conservation and monument protection for these areas were not up to the level of "townscape conservation zone". Many creative parks developed on industrial sites, although highly praised, received no official guidance on urban conservation and monument protection.

3) To improve coordination ability between urban conservation/monument protection and urban development of the city: Urban conservation and monument protection shall not become obstacle for the city's development, but in the contrary, become a driving power for it. In this sense, it is very important that they coordinate with each other to find solution for specific urban problems. This requires not only strict conservation system, but a flexible, open and active working mechanism between different departments of the government (in Shanghai, these are the bureaus of Culture Heritage Management, Building Management, Land Management, Urban Planning and Administration), financing institutions as well as private public or developers towards specific urban topics.

One example for the failure to find solution for conflicts between urban conservation and urban development is the planning of Shanghai's ring road, which crossed the "Sinan Road China Revolution Origin Place" (one of the protected Historic urban landscape zones) and cut the zone into two pieces, which forced one culture heritage object (Residence of Mr. Ren Bishi) to relocate and destroyed the continuity of the townscape of this zone. The ring road also goes across the "Hongqiao Road Village Villa Zone" (one of the protected Historic urban landscape zones) and cut it into two pieces. In these two cases, the urban conservation was sacrificed for economic reason, which also reflected the fact that the significance and seriousness of urban conservation and monument protection were not well recognized by the authority to execute these projects.

4) To raise fund for urban conservation and monument protection: The funding for urban conservation previously through the sole investment from the public sector (government) proved to be unsuccessful for its shortage of finance resources and low efficiency of investment. Besides further stabilizing and increasing amount of specific funding as well as improve the efficiency, a new concept of public-private partnership to set up specific funds for monument protection must be promoted. Currently in many monument protection projects, the strong involvement of private investment is already shown. In the future, the role of government must shift from the sole investor more and more to an administrator to in terns of professional advisory and quality control. <sup>339</sup>

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<sup>339</sup> Refer to interview of Prof. Wu Jiang (deputy general secretary of Shanghai Urban Planning and Administration Bureau) in 2006, People's Net

- **A further step forwards: from urban conservation to urban-conservation-led urban development**

In recent years, it was more and more recognized that the value of the historic building and townscape can be used as attracting point for urban development and therefore create new urban growing point. The practice on this received great success in the development of “Xin Tian Di” area, in which an urban area with old Linong Building<sup>340</sup> was saved from demolition and was renovated and redeveloped into famous entertainment district and raised up the value of the whole district that triggered the booming real estate development in its surrounding areas. This marked a significant step forward from pure protection into using the conservation as impulse project for the urban redevelopment for the bigger urban areas. Following the project of “Xin Tian Di”, such concept was applied in the project of M50 (based on conservation of former textile factory) and Tian Zi Fang (based on conservation of historic district composed of hand workshops and residences), whose achievement needs to be further evaluated.



Figure 144: Xin Tian Di and its surrounding areas, Resource: internet

<sup>340</sup> Linong refers to a specific form of housing and their combination (neighborhood) in Shanghai. Emerging in the second half of 19th century (colonial era), Linong was a hybrid form of traditional Chinese courtyard housing and European urban residence and townhouse.

#### 5.5.2 URBAN CONSERVATION PLANNING AND MONUMENT PROTECTION IN "FILL IN" OF THREE TARGET AREAS

- **Background and concept of the urban conservation planning of three target area**

The scopes of the three target areas are amongst the most important locations for Shanghai's industrialization in its early and middle stage. Amongst the 19 industrial heritages that were inscribed in the protection list of Shanghai, 16 are situated in the scopes of the three target areas. Given the ignorance of industrial heritages in the previous stage of development<sup>341</sup>, the practice of protection and conservation on them, starting from the official urban planning since early 2000s, will have its historic significance as it acts as the earliest attempts in regards to industrial heritages protection and urban conservation on former industrial districts, and thus marks a historic turning points in Shanghai's monument protection and urban planning history.

Being one of the oldest large-scaled industrial districts in China, target area 1 witnesses many industrial, architectural/engineering and cultural achievements of China. For example, China's earliest factory, first power station, first paper factory, first modernized water plant, first rein-forced structure and first non-beam reinforced floor structure were all born here. These achievements were solidified into physical forms of factories, warehouses, docks, chimneys, offices and workers' housings. Currently there are 8 units/sites in the in protection/conservation list of Shanghai and 6 of them are related to industrial function.

While target area 2 is the representation of industrialization driven by foreign capitals, the target area 2 is the representation of industrialization driven by China's national capitals. Jiangnan Shipbuilding Plant, Qiuxin Shipbuilding Plant as well as the former Shanghai Steel Plant in the site of target area 2 are all important witnesses of the Chinese national industrialization process in its initial stage. The glory of the site was proved by being the birth place of many industrial achievements in China such as the first submarine, first 5,000-ton-class cargo ship and first 10,000-ton-class cargo ship in China. Currently there are 3 units/sites area included in the protection list of Shanghai and 2 of them are related to industrial function.

The planned scope of target area 3 is one of the most historic areas of Shanghai. The number of historic buildings in this area is in abundance. Being witness of the industrialization period of Shanghai ever since middle of 19<sup>th</sup> century, the industrial buildings in the scope of target area 3 covers the variety of styles from Chinese traditional style, Classism, Eclecticism and Bauhaus. In the other hand, the cultural and historical value of this area lies not only in the single buildings, but more important, in the industrial landscape as a whole, especially the east part, which is the component of The Bunds, and the middle part, where the old national industries in 1930s agglomerated. There are 16 monuments, in which 8 are of industrial heritages, under the protection list of Shanghai, while the east part of the planned scope is included in one of the 12 "Historic urban landscape zones" of Shanghai.

Given the ignorance of value of industrial heritages in the previous stage of development, industrial heritages were all affected in various degrees. Amongst them, the target area 3 has the best situation as the industrial enterprises, which were still in good economic status before being relocated due to EXPO, can still finance the daily maintenance of those heritage buildings. In target area 1, many of

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<sup>341</sup> See details in 5.5.1

the industrial heritages suffered from shortage of maintenance, due to the bad economic state of the owners and the absence support from the government. Starting from early 2000s, some industrial sites and building had been rented out and conversed to other uses such as economic hotel and low-quality office and housing. Extinguished from the other two cases which were affected by the city's development in relatively later stage, the redevelopment of the urban area of target area 3 with booming real estate development started very early since 1990s, in which urban conservation and monument protection hadn't played a role. One of the results of such development is that majority of the industrial heritages had been facing with crucial decision of "to be or not to be" and eventually been demolished to make way for real estate development which can bring more short-term economic revenue. Entering 2000s, target area 3 was also the area to see the earliest rise of the movement of "creative industrial parks"<sup>342</sup>, in which many historic warehouse and factories were renovated and reused as creative industrial parks. The famous cases in this regard are the South Suzhou Road No. 1233 Warehouse, Sihang Warehouse and M50.

In the official urban planning on the three target areas, emerged since early 2000s, the importance of the protection of industrial heritages was recognized. Two main progresses in this regard are seen in these urban planning:

1) "Reutilization" instead of "frozen protection": "Reutilization" of monuments is highly encouraged instead of "frozen protection" that had been widely seen in the previous stages. For example, the concept of monument protection and urban conservation in target area 1 was set as "for the historic building in the protection list of Shanghai as well the other buildings which are not in the list but have historic values, the target of protection is to reveal their original appearance, refill the urban functions. Under the condition to protect and restore the appearance, we shall explore the historical and cultural connotations in these buildings, refill with multiple function such as museums and other cultural facilities."<sup>343</sup>

2) From protection of single monuments to protection of historic sites and historic urban landscape: It is widely recognized that the heritage that are left from the previous development as industrial area lie not only in the single historic monuments, but also in the urban landscape, such as historic streets, blocks and riverfront spaces, in which these monuments, together with the other industrial or nonindustrial building and elements, are part of. This is especially extinguished in target area 1 and target area 2, in which the historic industrial landscapes in complete riverfront area are still intact. In target area 3, the former continuous industrial landscape composed of factories, warehouses and docks in the middle part of the planned scope has been severely damaged in the previous stage of development. Measures shall be taken into effect to stop the further deterioration of such situation and protection the parts that are still remained.

On the level of urban planning, it was recognized that the protection and reutilization of monuments shall support and be supported by the concept of urban development of the surrounding areas, therefore an integrative thinking on how monument protection and urban conservation can collaborate with land use planning, traffic planning and open space/green space planning is called for. In target area 1, which is planned to be developed into a second CBD area of Shanghai and high quality

<sup>342</sup> See details in 5.5.1

<sup>343</sup> <Urban Planning of W7E10 Site of Huangpu Riverfront>, Municipal Government of Shanghai, 2003, p.30

waterfront mix use area<sup>344</sup>, the reutilization of industrial heritages/sites for culture and public use is highly promoted, which is projected to be a driving factor to improve the quality of the surrounding areas. In target area 2, with the concept of the EXPO being “Better City better Life” and the consciousness to explore the connotation of the “History, Presence and the Future” of “City”, EXPO 2010 recognized that the industrialization process of the city is an important stage of the history of the city, and that the protection of industrial heritage and reutilization of them as facilities for the EXPO can act as great presentation for this concept. Many industrial heritages are renovated and reused as exhibition halls, cultural facilities and urban activity spaces, and will continue such function after the period of EXPO. Meanwhile in target area 3, various concepts towards different part of the planned scope are promoted. In its east part of the planned scope, which belongs to one of the 12 “Historic urban landscape zones” of Shanghai, the focus will be to strictly protect those numerous culture heritage building and townscape following the urban planning of the Bund as Historic urban landscape zone. In the middle part of target area 2, where most of the historic warehouses are situated in, the focus is not only to protect, but also to create attractive points in the waterfront landscape area, based on the reutilization of monuments for public use. The promotion of “creative industrial park” movement, which has been proven successful to create urban vitality while generating economic revenue, will be further pushed. In some other projects like the renovation of Shanghai Brewery (into hotel and entertainment facility), Shanghai Flour Mill (into Suzhou Creek Art Center) and the protection of the Yichang Road Firehouse shall become highlights in the riverfront green space/open space belt.

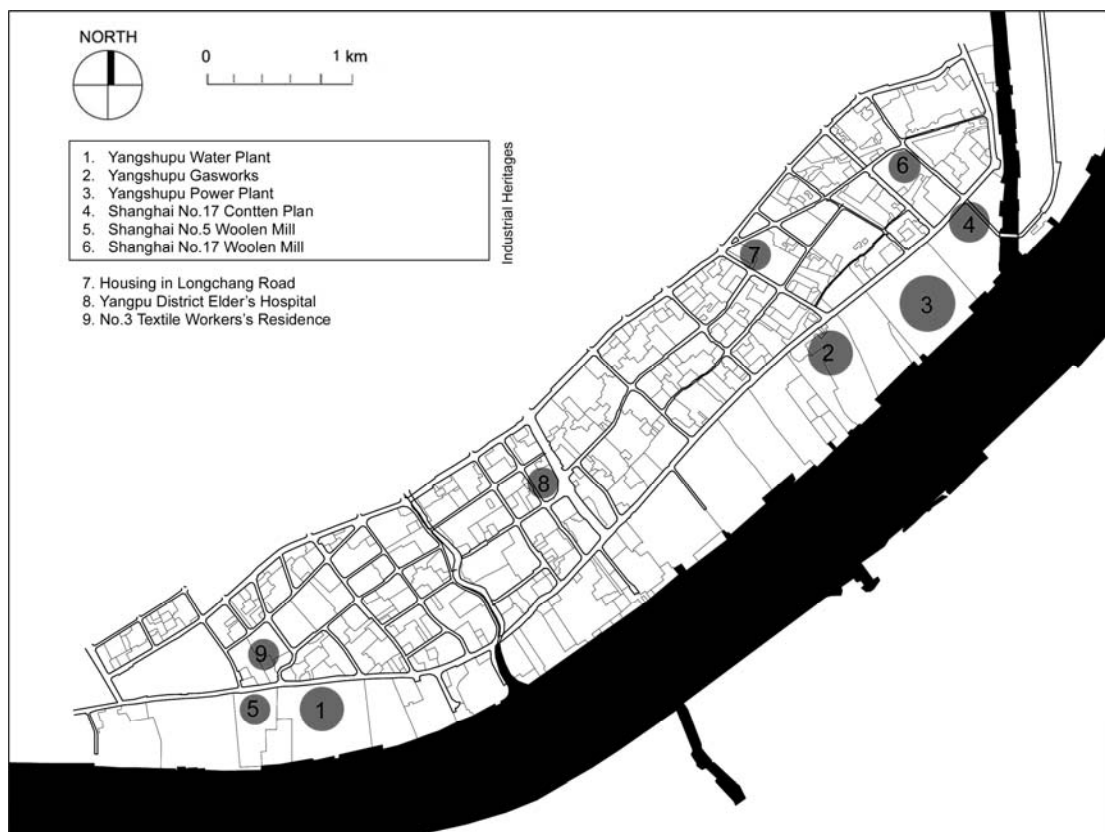


Figure 145: Distribution of monuments that are inscribed in the protection list in target area 1, drawn by the author

<sup>344</sup> Details see 5.2.2

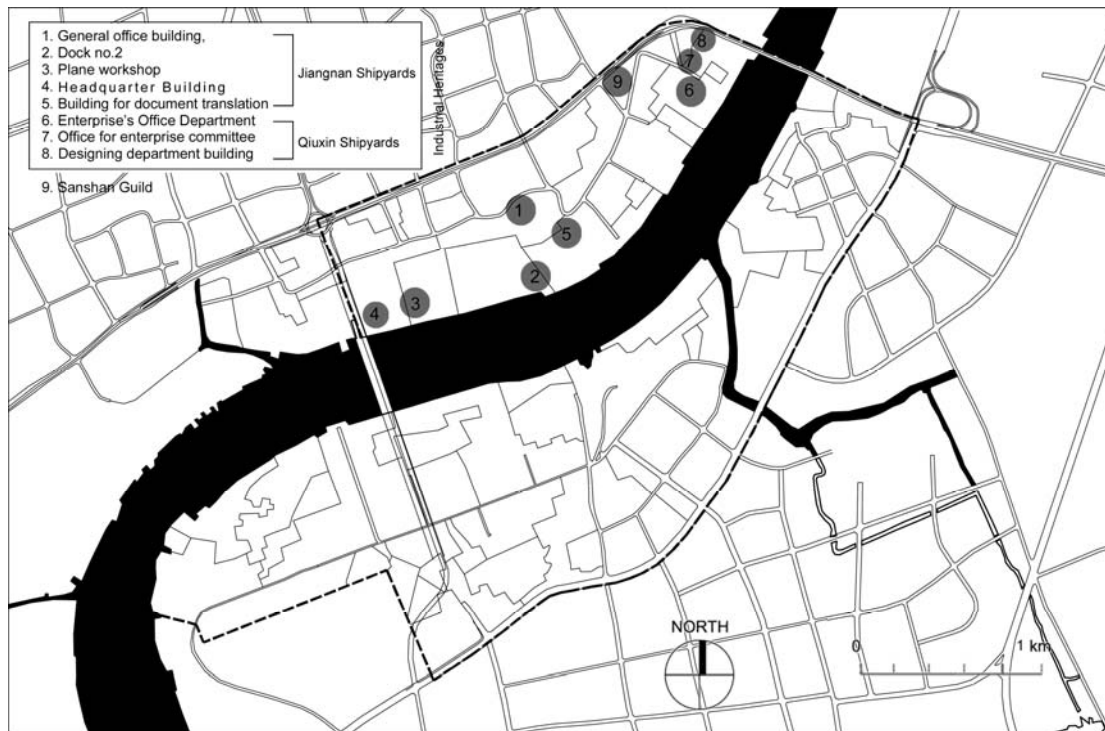


Figure 146: Distribution of monuments that are inscribed in the protection list in target area 2, drawn by the author

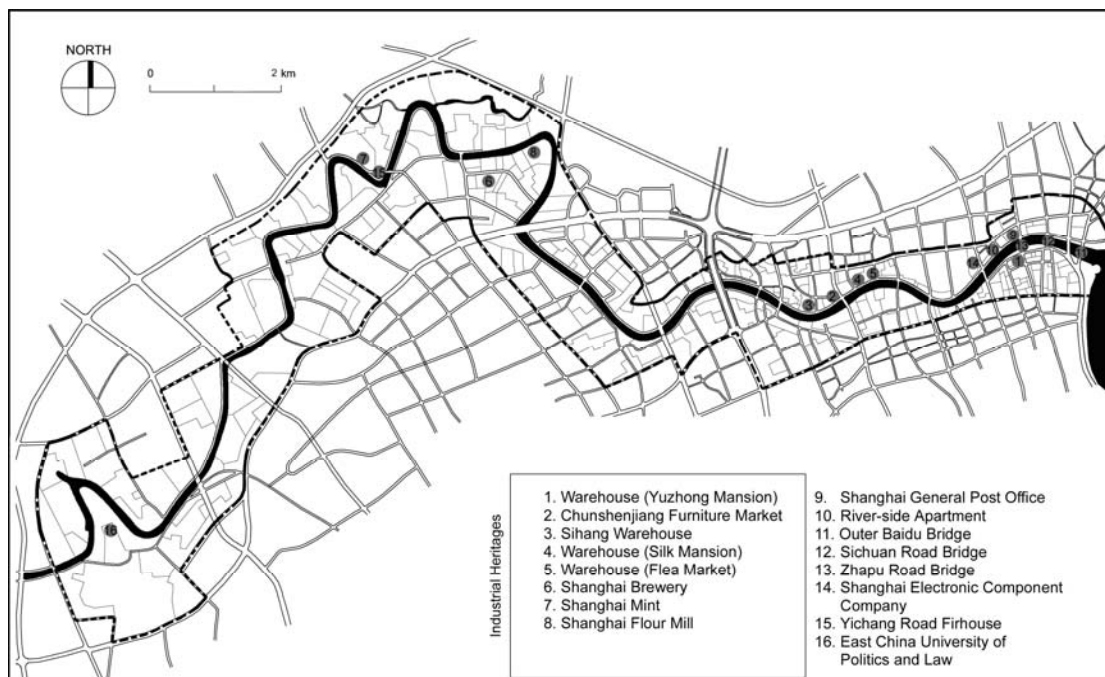


Figure 147: Distribution of monuments that are inscribed in the protection list in target area 3, drawn by the author

### ● “Extended protection list”: a transitional solution

One of the biggest problems of the monument protection in the three target areas is that the actual protection list of Shanghai covers only a small number of monuments in these areas. The number of monument related to industrial function is particularly small due to the ignorance of the industrial heritage in the previous period. For such reason, for majority of historic buildings in the three target areas, which are not included in the list but have certain historic value, the protection of them receive no

financial support and professional guidance from the government. They are thus in dangers of being damaged, improperly renovated or totally demolished to make way for urban development. In the other hand, from urban conservation point of view, it must be mentioned that the historic urban landscapes in these target areas is composed of not only the monument buildings in protection list of Shanghai, but also those everyday buildings and elements with certain historic or practical value, such as specific forms, facades, details or simply usable structure that can be adapted to new use, which act as dispensable context of those historic monuments. Any damage on these buildings and elements can cause the discontinuity on the urban context and thus make damage to the entire historic urban landscape.

This fact leads to the demand for an expanded list of protection, which covers not only those most important historic monuments and their correspondent protection measures, but also those buildings and elements with certain value for protection or those acts as the urban contexts of monument buildings as well as the correspondent protection measures for them. The constitution of such expanded list call for careful investigation and analysis, both on level of architecture and urban design, to identify the protected objects and the measures for their protection. Such concept has been reflected in the urban planning the three target areas, in which the scope of protection normally contains the three categories<sup>345</sup>:

1) Monuments that are inscribed in the protection list of Shanghai:

This covers the 8 objects/sites in target area 1, 3 objects/sites in target area 2 and 16 objects/sites in target area 3. The scope, focus and measures of protection shall strictly follow the indication of the regulations and laws that are related to the monument protection system of Shanghai. In principal, the strategy for protection is on one side to restore the buildings/sites to their original appearance with original elements and materials, on the other hand to FILL IN new public functions based on the exploration of the historic material and events of the historic buildings, which must not affect the original and existing functions of these buildings. The extinguished example for protection for objects in this category is the restoration of the Shanghai Water Plant in target area 1, which was restored carefully to its original appearance while the majority of the building cluster continues its function and part of it is renovated into Shanghai Drinking Water Museum.

2) Historic buildings and elements that have certain protection value (out of the protection list of Shanghai):

This refers to those building and elements with certain historic, cultural or architectural value, such as specific forms, facades styles or architectural details. Although they are currently not inscribed in the protection list of Shanghai, their value as well as importance as being components of the urban landscape shall not be ignored. In the urban planning for the three target areas, investigations were made to identify these objects/sites. In principal, these buildings and elements shall not be demolish, but be carefully repaired, maintained, expanded (when necessary) and reused without damaging their original shapes and spirits. Compared to protection of those in the first category, the protection as well as reutilization of building and elements in this category is however granted with higher flexibility, which varies from case to case according to their individual situation and their relation to the urban planning.

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<sup>345</sup> In official urban planning for target area 1 and 3, category 1 and 2 are included in the extended protection list. In urban planning of target area 2, category 3 is further added.

### 3) Everyday architectures that are components of historic urban landscape:

Except for those historic buildings in the aforementioned 2 categories, there are also considerably big amount of “everyday architectures”, which have relative lower historic, cultural or architectural value, but the structure and form of them can meet the demands of further reutilization through simple renovation, which grants them also a value for protection. Besides economic reasons, the protection of buildings and elements in this category can also help the conservation of the urban landscape, since the majority of the urban landscape is composed of buildings and elements of this category. Compared to the protection measure for the two aforementioned categories, protection measures for this category have highest flexibility, in which various strategies can be applied according the actual situation. For example, in target area 2, many of the factories and warehouses are reutilized for big-scale exhibition spaces based on the original building structure. In target area 1 and 3, many creative industrial parks were realized based on buildings in this category.

In practice, the compilation of extended protection list, which can be described as a “transitional solution” as many of these lists are made on the level of urban design on individual redevelopment plan before the legal availability is granted on level of municipal government, has been proven to be successful in expand the scope of protection from the few objects under Shanghai protection list to cover a much bigger number of objects and urban landscapes. For example, in the target area 2, although the 3 objects/sites that is protected by the protection list of Shanghai only covers an floor area of around 16,000 square meter, the extended protection list covers a much bigger number of about 380,000 square meter floor area, with in which those belonging to category 2 covers about 95,000 square meter.<sup>346</sup>

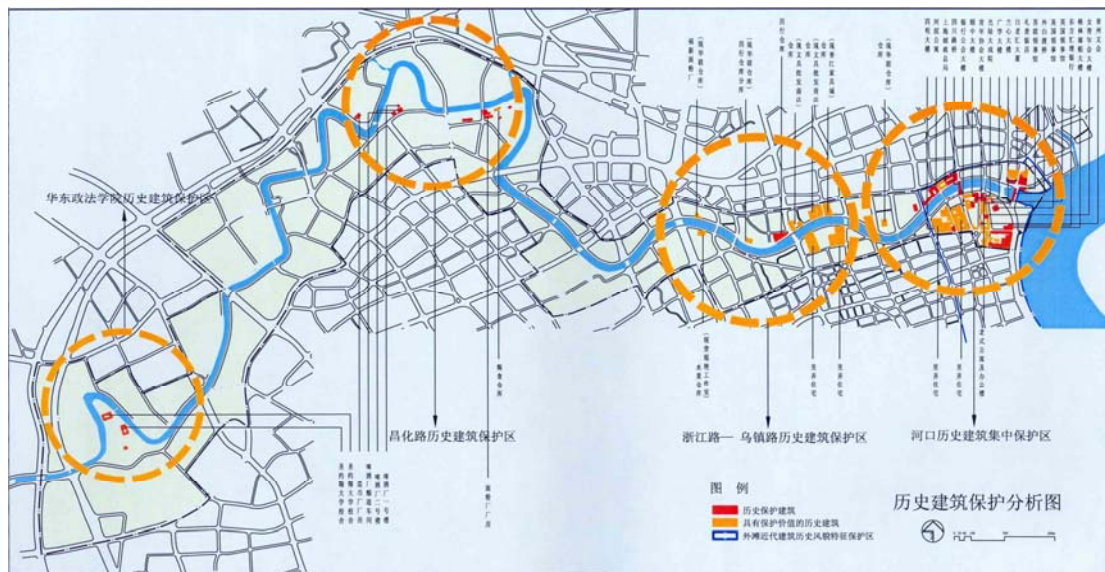


Figure 148: Extended protection objects/sites in part of target area 3, showing the protection category 1 (red) and category 2 (yellow), Resource: official urban planning on target area 3

<sup>346</sup> Cui Ning, <Restructuring of the City under important Urban Events: Shanghai EXPO as Example>, Southeast University Press, 2008, p.205 and p.209

- **Monument protection in impulse projects and potential impulse projects**

Being fundamental base for the “conservation-led urban development” and “urban acupuncture”, planning and implementation of impulse project, in which monument protection is most important component, have been playing a major role in urban planning of many successful urban redevelopment projects.<sup>347</sup> It is also widely proven that the innovative protection and reutilization on historic monuments, which had been acting as the landmark of the urban area, is one of the decisive factors for the success of these impulse projects. On level of urban planning, how to combine the impulse projects to the development of the surrounding urban area and let them benefit from each other is a special challenge. This demands not only efforts from the monument protection itself, but the urban planning and implementation of new land use, traffic and open space/green space structure. In the other hand, to integrate the monument protection into part of impulse project, which can attract intensive investment that triggers dramatic urban development in short term, is proven to be an effective solution for the revitalization of abandoned historic monuments that suffers from absence of maintenance due to financial shortage.

The outstanding planning and implementation of EXPO, which covers the whole planned scope of target area 2, can be seen as one big-scaled impulse project. Being the only one in EXPO's history to host the exhibition based on redevelopment of industrial site, the protection of the historic monuments and elements as well as conservation of industrial landscape have become the one of the main attractions and trademarks for EXPO 2010. The added quality brought by the protection and conservation is invaluable not only in that their innovative adaptation for new use create sensation and new images for the EXPO, but also, from an sustainable development point of view, in that they will continue to be strong and charming urban identity in the further development of the EXPO site, as the majority of the preserved and conserved industrial buildings and elements will continue to be used after the period of exhibition.

In the many historic monuments to be protected and adapted for new use, various strategies were applied. For example, for the few objects in the protection list of Shanghai, a strategy of complete restoration combined with careful reutilization is applied. The outstanding example is the reutilization the docks into urban activity space for leisure, tourism and performance, which are integrated into the big-scaled river side. Interesting landscape elements like platforms and greeneries were added to the original structure of dock No.1 and No.3, while in the Dock No.2, which is protected by the protection list of Shanghai as being one of the historic origin of industrialization of Shanghai in this site, the protection is focused on restoration of its original appearance and reduce the added element to minimum. Ships and cranes were maintained for it to remind people of the memory of industrialization. The other tendency is to use the workshops for exhibition and activity facilities, such as in the “EXPO Grand Stage”, a big-scaled performance center built based on the original structure of steel workshop with 38-meter-span interior space, which belongs to the former Shanghai Steel Corporation. Besides these spectacular projects related to monument protection, the upgrade of the South Shanghai Power Plant to a “green factory”, which is equipped with advance solar power and wind power system, natural ventilation, green building material, water recycling system, LED lighting system and intelligent control system, represent another type of monument protection, in which the original function of production continues.

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<sup>347</sup> See the conclusion of case study, 3.3

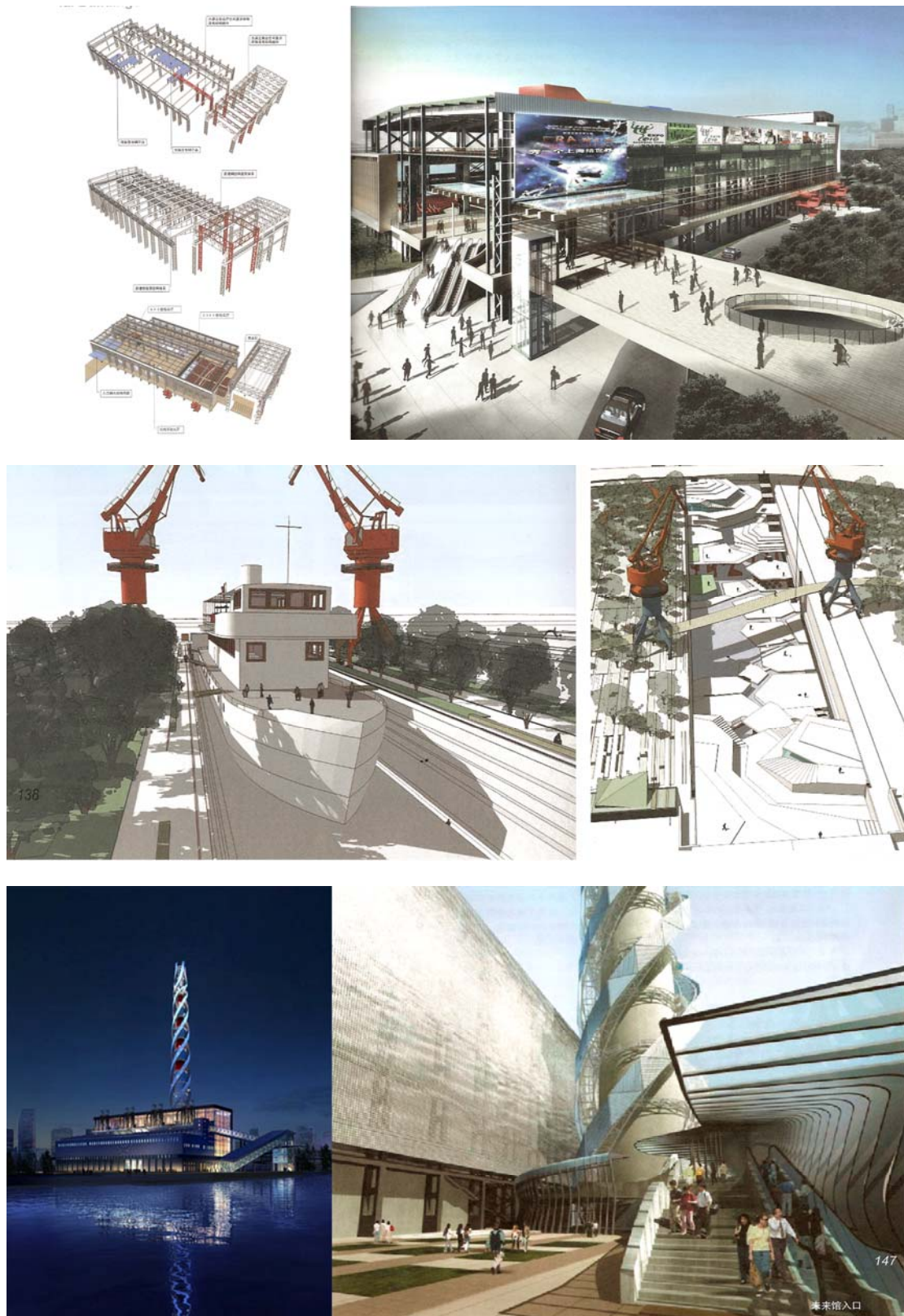


Figure 149: A. "EXPO Grand Stage" based on the former steel workshop, B. Reutilization of docks into open-air urban activity area and C. Revitalization of South Shanghai Power Plant, Resource: WU Zhiqiang Siegfried, < Sustainable Planning and Designing for World EXPO 2010 Shanghai China>, China Building Industry Press, 2009, p. 121, 137, and 147

In target area 1, the importance of impulse project is not well recognized. In nearly 6 years after the official urban planning for the redevelopment was issued, no significant urban growth had been seen in this area, except for the further decay and relocation of industrial function. The urban attractiveness for this area is still low. On the level of monument protection, regardless of the abundance and high quality of historic monuments in this area, the lack of the support from protection funding together with ambiguity of decision making is the biggest obstacle. The planning and implementation of impulse project, integrated with innovative monument protection and reactivation, can be a good solution for both challenges mentioned above.

The biggest potential impulse project can be developed based on the Yangshupu Water Plant, which was built in 1881 (being significantly in 1928) by English architect John Williams Hart with grey bricks with decorative red brick band on façade to imitate the image of Middle Age castles. Being the earliest municipal infrastructure plant in China and the first water plant in China, the Yangshupu Water Plant is one of the milestones in the industrialization process of China. In terms of building engineering technology, the Yangshupu Water Plant also bears the glory of being the first reinforced-concrete building in China. Inscribed in the protection list of Shanghai, the plant will continue its function as municipal infrastructure facility after careful restoration, while part of the plant was renovated into Shanghai Water Museum. By its southwest border, a fisherman's wharf was planned since 2004, which has not moved onto implementation stage till now. All these provide ideal conditions to integrate the three projects, namely the majority of the Yangshupu Water Plant (restoration according to the requirement of the law), Shanghai Drinking Water Museum (renovated based on historic monument) as well as the fisherman's wharf, into a big-scaled impulse project to be planned and implemented in the early stage of the redevelopment of target area 1, acting as the biggest attracting point and urban center in the west end of target area 1.

The other potential impulse project is in the north end of the planned scope of target area 1 on the site of auxiliary machinery factory of Yangshupu Power Plant, a former branch of General Motors, which was built in 1898 and was continuously expanded till it closed down in beginning of the 2000s. Since 2006, part of this area became the site for architect Teng Kunyen's architectural experiment that converses it into Yangshupu Riverfront Creative Park that host offices, galleries and restaurants. The innovative renovation to integrate modern design elements with historic industrial monuments has already created a sensation in the public and attracted the earliest customers to move in. To expand the site up to the river bank and integrate the development of the surrounding urban areas in a way of urban-conservation-led urban redevelopment will be the task of urban planning in the next step of development. Given the strategic location, the value of existing industrial buildings as well as the attractiveness that the current development has created, this area can be treated as another impulse project, based on which to create an attractive point in the east end of target area 1. As the previous development in this site was all pushed by the private developer in a method of bottom-up development that suffered from shortage of investment and complexity of land ownership, the government shall also play a much more active role in coordinating the players (private developer, factory asset owner and government) in the scene as well as optimizing financial instrument (such as banking and private-public partnership) to finance the development of such significant impulse project.

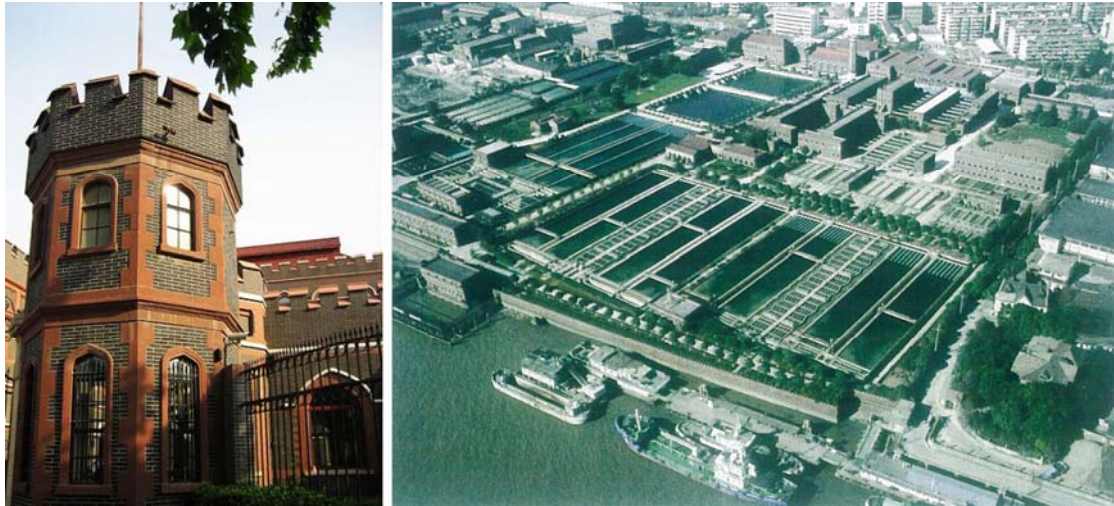


Figure 150: Corner tower and the aerial view of Yangshupu Water Plant, resource: official planning on w7

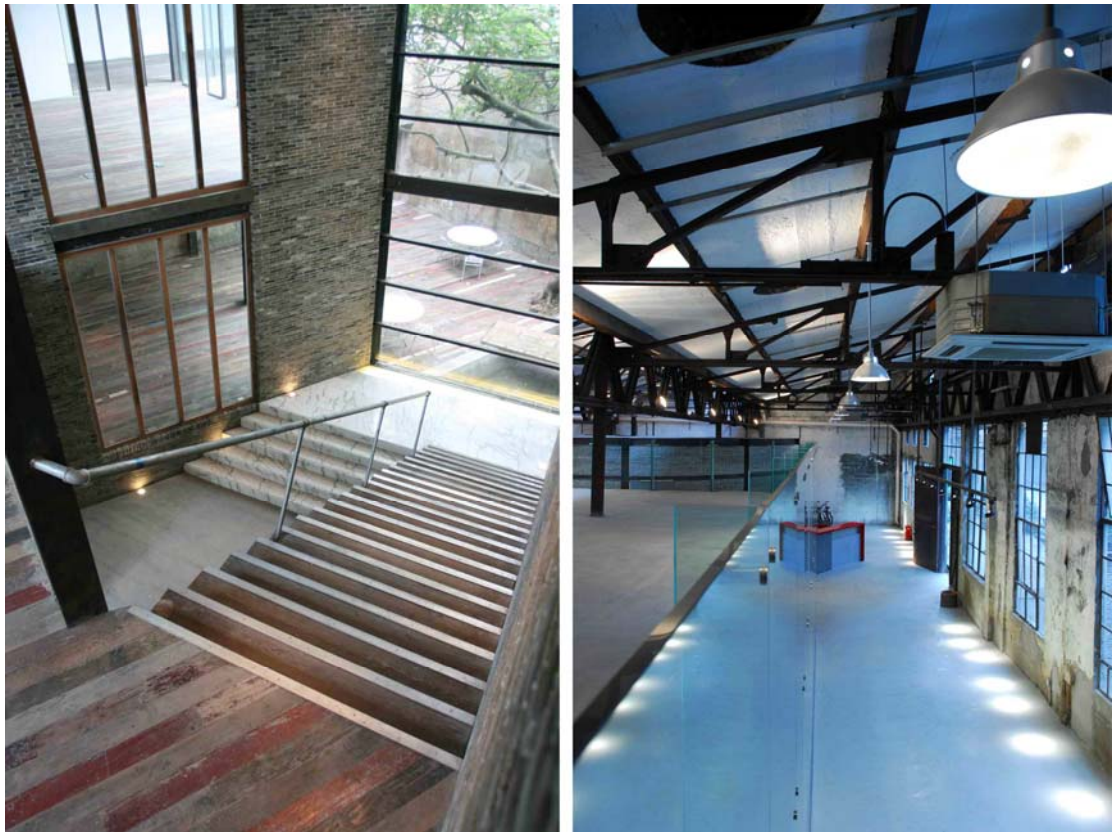


Figure 151: Exhibition and office space in Yangshupu Riverside Creative Park, Resource: official planning on w7

Similar situation of impulse projects exists in target area 3. Many industrial monuments have been renovated for use of atelier, exhibition halls as well as office for creative industries since early 2000s, which had made the earliest contribution on effort to protection historic monuments in this area. However, none of these individual projects were promoted by the government in way as impulse project, therefore the development of these projects, mainly relying on private investments, failed to receive support from the government in terms of protection funding and infrastructure, and the effect of success of these projects is only constrained within the scope of the project themselves, or to say, it doesn't trigger the urban

development in the surrounding urban areas of these projects as what is expected for an impulse project.

Among these individual project, M50 (Chunming Creative Park) is the most successful one and the one that has great potentiality to be developed into an impulse project. Located in the middle part of target area 2, the M50 was developed on the base of the building cluster of the former Shanghai Cun Ming Raw Textile Factory. It was originally built in 1933 by the English Merchant Xinhe Mill, owned by famous Chinese national merchant Zhou Family. After the foundation of PRC, the factory was renamed in succession as Xin He Cotton Mill, Shanghai No.12 Textile Factory and Shanghai Cun Ming Raw Textile Factory. The building cluster is composed of buildings which were built in different periods of the factory between 1933 and 1994. In 1999, it was decided by the factory owners to rent out the buildings as offices. In as short as 2 years, the M50 Creative Industrial Park became one of the famous creative industrial park where the galleries, atelier studios, design offices, museums and other service industries agglomerate. The official urban planning with indication on urban conservation came into being in 2004 by Tongji University under commission. The planned site area of it is 23,000 square meter floor area with the conserved building floor area of 41,000 square meters. In this urban planning, the site was considered in the official planning as an integrity with relation to the river while the functions, traffic system, pedestrian, landscape, open spaces was for the first time systemized.

Another project, which is located with close distance to the M50, is Shanghai Brewery. Being the biggest brewery in the Far East when it was established in 1933, the Shanghai Brewery was designed by the Hungarian architect L. E. Hudec. The building cluster of Shanghai Brewery was designed with an early modernism (Bauhaus) style with simple details and beautiful proportion. In 1958, there was a thorough reconstruction of the building cluster planned and designed by the East-China Industrial Building Design Institute and the majority part of the building cluster was demolished. Only three buildings were left from the reconstruction: the office building, the bottling building and the brewery building. In 2002, with the so-called "Suzhou Creek Environmental Restoration Project" going, the site of Shanghai Brewery was decided to be developed into an ecological park, so as to improve the environment quality in the surrounding area. The brewery building and the bottling building were carefully restored to its original appearance after documentary research. The brewery building was reutilized as the restaurant and bars for the park, in which fresh beer is served. The bottling building was reutilized as the administration and office. In both buildings, many old industrial elements such as the chimney were remained, which become attractions for the visitors and remind people of the industrial period.

Another monument protection project with potentiality to be develop into impulse project is the CreekArt, which is a modern art exhibition center renovated from the historic monument Fuxin Mill, one of the protected landmarks (built in 1912A) in middle part of Suzhou Creek. After restoration of the façade and new partition of the inner space in one of the four warehouses that form a historic block, the CreekArt opened in 2005 through a difficult path, in which it was forced to close down twice. The reasons for this are complicatedly interwoven. One of them is that the stability of investment raised by private investor such non-profitable project cannot be ensured. The restoration efforts lasted several years and is has still not completed due to shortage of funding. On the aspect of urban quality, the location is surrounded by low quality urban area composed of mixed warehouses, small factories and residential area for low-income classes. Besides, the weak accessibility and the low

environmental quality in its surrounding areas added to the low urban attractiveness of this area, which finally led to the unsuccessful operation of CreekArt.

Such situation is not only in the project of CreekArt, but also in all individual monument protection projects including M50 and Shanghai Brewery, which hinders these projects to develop further, despite potentiality to be developed into impulse projects for their strategic locations in the mater plan as well as the valuable historic monument that they have. This again proves the reciprocal causation relation between successful monument protection and successful urban planning. To further plan and develop these projects to be impulse project that aims to trigger the urban development of their surrounding urban areas will require the government as well as private developers to invest intensively in short term to further support the monument protection as well as to improve urban quality (traffic in priority) of their locations. Urban planning shall play an important role in integrate all these factors for a successful project, namely the land use change, traffic, open space/green space as well as urban conservation, together into workable plan.



Figure 152: CreekArt, renovated from warehouse of former Fuxin Flour Mill, Resource: internet



Figure 153: Renovated M50, Resource: internet



Figure 154: Renovated Shanghai Brewery, Resource: internet

## CHAPTER 6: CONCLUSION AND OUTLOOKS

The concept of this thesis is that, urban planning's role in the redistribution of industrial space lies in two interrelated, interdepending and intersupporting efforts: "BRING OUT" and "FILL IN" (p. 22~24).

Guided by such concept, the conclusions of this thesis are sorted out following the logic to answer the four major questions that have been brought forward in the introduction chapter of this thesis (p. 5) as followed:

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**1. "What is the interactive discipline between city's spatial development and the redistribution of industrial space? How can this interactive discipline inspire urban planning?"**

1.1) This thesis draws the conclusion that the redistribution of industrial space over the history has a closely interrelated correspondence with the different period of city's spatial development:

- Period 1 (pre-industrial era): In the pre-industrial cities, the close connection between working places and other urban use within a relative small scale of spatial structure was the most dominant characteristic of the urban spatial structure. Industrial function stay in relative small spatial scale and its content of urban activity are more related to preliminary stage of handicraft production. (p. 32~33)
- Period 2 (initial period of Industrialization): With the dramatic development of manufacturing industry, the industrial space differentiates itself from the other urban space. With cities dramatically expanding its spatial scale, the development of industrial space became the foremost leading power for urbanization. Industrial space agglomerating first in city's core area and then relocating to the periphery of the city core, initial tendency of "decentralization" of industrial space came into being. (p. 34~37)
- Period 3 (late period of Industrialization): With further spatial expansion and spatial diffusion of the city characterized by "suburbanization", "urban sprawl" and eventually "inner city decay", industrial space experienced a further "decentralization" tendency, seeking peripheral area rather than central area of city as preferable location. Industrial space emerged in this period in city's peripheral area are also lager in scale as well as more self-concentrated than those in inner city area. It is also from this period that many inner city industrial spaces started to decay. (p.38~p.42)
- Period 4 (post-industrial era): In the context of "regionalization" and "globalization", the industrial space experienced further decentralization from inner peripheral area to outer peripheral (regional) area or even to other cities. Industrial space in this period becomes even lager in scale and more self-concentrated. The other tendency of development of industrial space in this period is the further decay of industrial spaces in inner city and inner peripheral area of the city, due to shrink of manufacturing industry in the economic structure as a result of "de-centralization" emerged from 1960s. (p. 43~47)

1.2) As human's means and processes to guide and administrate city's spatial development, urban planning (in modern sense) emerged in the second period of city's spatial development mentioned above (p. 34~37), and had been ever since played an important role to solve different urban problems occurred in different period, including those caused by Industrialization. In today's "post-industrial era", the context of contemporary city's spatial development characterized by two main

tendencies (controlled periphery development and inner city revitalization) (p. 43~47) is the foremost starting points for urban planning in its function in redistribution of industrial space (p. 43~47).

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## **2. How urban planning can play an active and positive role in the redistribution of the industrial space to benefit the spatial development of the city? What are the targets and instruments of urban planning in such process?**

2.1) Targets of "BRING OUT": "BRING OUT" refers to the effort to achieve new distribution state of industrial space in spatial structure of the city, with the purpose that location, type of industry, size and other related aspects of distribution can benefit both industrial spaces themselves and city's urban spatial structure on a macro-structural level. The target of "BRING OUT" is composed of the following aspects (p. 48~49):

- To balance the supply & demand of industrial land use
- To achieve ideal type-location structure of industrial space
- To improve quality of industrial location

2.2) Targets of "FILL IN": "FILL IN" refers to the effort to redevelop the left-over space of the redistribution of industrial space, with the purpose to cease the economic, social, environmental and cultural decay in these spaces and further on to create new grow points in inner city. The target of "FILL IN" is composed of the following aspects (p. 58~59):

- Economical Revitalization
- Social Revitalization
- Environmental Revitalization,
- Cultural Revitalization

2.3) Instrument and interactive fields of urban planning: Urban planning can utilize its four main instruments (land use planning, urban traffic planning, open space & green space planning and urban conservation planning) to affect the following four interactive fields so as to fulfill the aforementioned targets of "BRING OUT" (on macro-structural level) and "FILL IN" (on micro-structural level) (p. 51~52 and p.61~63):

- Land use change,
  - Accessibility
  - Open space & green space
  - Urban conservation and monument protection
- 

## **3. What are the experiences and lessons from selected European and Chinese cities regarding the role of urban planning in such a process?**

After a comprehensively-deigned comparative case study on European and Chinese cases (London-Docklands, Hamburg-Harbors, Ruhr-Emscherpark, Vienna-Simmering and Beijing-798 District), this thesis draws conclusions as followed:

### **CONCLUSIONS BEYOND THE LEVEL OF URBAN PLANNING:**

3.1) Urban-planning-oriented development instead of market-oriented one: Comprehensively designed urban-planning-oriented development instead of market-

oriented one, granted with multiple-layered targets (such as improvement of environment quality, industrial heritage protection and industrial landscape conservation, green space and open space planning, mix use development...) as well as aiming at obtaining long-term vitality of the development instead of short-term economic output, shall be called for. (p. 119)

3.2) United political power system in planning and implementation: A precondition for the success of redistribution is that a united political power system for the constituting, implementing, monitoring and managing of urban planning must be established. (p.119)

3.3) Connected efforts of "BRING OUT" and "FILL IN" in integrative planning: Facts prove that the effort of "BRING OUT" and "FILL IN" must be well connected to each other as well as be connected to city's spatial development planning, so that these efforts can benefit from each other. Integrative planning, or planning with close connection with each other under same or well-connected political power system is necessary for a sustainable and fruitful development. (p.120)

3.4) Controlled flexibility: Controlled flexibility, which is ensured by the concept and strategy of urban planning to adapt continuously to different situation in changing, as well as to allow urban planning to adjust its target setting and strategy in reaction to these changing situations through the time while not damage the continuity of urban development through the planning time, is called for. (p.120)

3.5) Coordinated implementation time table: Implementation time table of contents of urban planning: urban land use change planning, urban traffic planning, urban open space and green space planning as well as urban conservation planning, shall be coordinated with each other, as they are interlinked with each other. Any lag-off of implementation of any content can cause unpredictable damage to the other content even to the whole project as an entirety. (p.121)

3.6) Importance and function of impulse projects (pilot projects): Urban planning can make use of impulse projects (pilot projects), which are to be realized in the initial stage of the development project, to change the public impression, create trademark for the project as well as stimulate the urban development of surrounding areas of some strategic locations. Quality of such impulse project plays an important role in the success of project. (p.121)

## **CONCLUSIONS ON THE LEVEL OF URBAN PLANNING:**

### URBAN PLANNING IN "BRING OUT":

3.7) Balancing supply & demand relation of industrial land: Regarding the effort of urban planning to balance the supply & demand of industrial land, different tendencies are shown in the European cities and Chinese ones. In most European cities, in which the shifting of economic structure caused by de-industrialization has mostly been completed, the effort of urban planning are mostly on stabilizing supply & demand, protecting existing industrial space as well as providing space for the rising sector of industries. Meanwhile in China, the massive relocation of industrial space is still in process, in which the effort of urban planning shall focus on the providing quality space for industrial development in peripheral area of the city while stimulate the redevelopment of inner city industrial spaces. (p. 122~123)

3.8) Achieving ideal type-location structure of industrial space: Regarding the effort of urban planning to achieve ideal type-location structure, it is widely seen that those

strategies of urban planning has shown their effect in most European cities, in which inner city areas have been successfully turned into location for service industries, while the inner periphery becoming ideal location for middle scale mix use industrial parks, high tech parks and the outer periphery becoming location for big scale manufacturing industrial parks and logistic parks that are closely related with new towns and suburban residential points. Such type-location structure shall also be pursued in Chinese cities by urban planning. (p. 123~124)

3.9) Improving quality of industrial location: The improvement of quality of industrial location so as to improve the working environment as well as to maintain the attractiveness of the industrial locations for investment is the key working areas of urban planning in many European cities. Urban traffic planning, mix use development, open space & green space planning as well as urban conservation planning are all proved to be effective instruments of urban planning. (p. 124)

#### URBAN PLANNING IN “FILL IN”:

3.10) Urban land use change planning: Urban land use change planning shall be treated as a foremost step of urban planning in such aspect. A carefully selected suitable function program, to replace the former monotonous function structure dominated by manufacturing industry, will give the area new life as well as sustainable economic, ecologic and urban vitality. In all European cases regarding “FILL IN”, the concept of mix use development, with focus on giving more working positions, housing and public functions, is widely proved to be successful key to reactivate the development of the left-over industrial space. (p.124)

3.11) Urban traffic planning: Case study shows us that the transportation system “outwards” with transportation linkage (public transportation in priority) to the city as well as “inward” with well planned inner traffic circulation system are both most fundamental to the redevelopment of the left-over industrial space. The planning on this must be implemented in the initial stage of redevelopment although it involves intensive public investment, as the other aspects of redevelopment only take effect after the transportation linkage is established. (p.125)

3.12) Open space & green space planning: To improve the environmental quality had been one of the main tasks and precondition for the redevelopment, which contains measures to decontaminate the soil and water, reforestation, and, in the field of urban planning, to create attractive interconnected green space and open spaces to bring back the urban life to the district. (p.126)

3.13) Urban conservation planning & monument protection: Reusing the industrial monuments as for public or private functions instead of frozen protection is a valuable experience that most cases have. Urban planning shall think a step even forward, namely how to combine the protection of industrial heritages and landscapes to the development of the surrounding urban area and let them benefit from each other. A conservation-led urban development shall be introduced. (p.126)

#### **4. How to evaluate, amend and complement to the current urban planning of Shanghai for the redistribution of the industrial space in order to benefit the spatial development of the city?**

##### URBAN PLANNING IN "BRING OUT":

Based on comprehensive analysis on the spatial development of Shanghai over the history (p.129~152) as well as on the development of industrial space over the history (p.153~168), this thesis draws the conclusion that Shanghai, a city strongly influenced by industrialization, is confronted with significant spatial restructuring process with the purpose to establish a spatial structure that can meet the demand of its development as a metropolitan city. Regarding urban planning's role in "BRING OUT", the following conclusions are drawn:

4.1) Balancing supply & demand of industrial land: Regarding its function in balance supply & demand of industrial land, urban planning of Shanghai shall take into account the following points (p.171~172):

- Proportion of industrial land in the total built-up land shall be further reduced.
- On the other hand, Shanghai demand more lands for industry in its peripheral area.
- Demand of different categories of industries is highly diversified. The priority shall be given to the "six fundamental categories of manufacturing industries" and the rising high tech, service and logistic industries.
- To meet the demand for industrial land, three resources can be found: a. conversion of inner city industrial land, b. relocation rural residents from village to towns, c. restructuring of the current industrial land to increase the efficiency of land utility and reduce the vacant rate

4.2) Achieving ideal type-location structure of industrial space: Regarding its function in achieving ideal type-location structure of industrial space, urban planning of Shanghai shall take into account the following points (p.173~174):

- Manufacturing industries shall be completely relocated from inner city of Shanghai to make room for other urban functions. Some production-related service industries as well as non-polluting industries can still take central area of the city as ideal location.
- Inner peripheral area of Shanghai is ideal for development of non-polluting (environment-friendly) and high value-added industries in form of middle-scale mix use industrial parks or high technology parks, mainly through restructuring of former 8 inner peripheral industrial districts.
- The outer periphery area of Shanghai is the major base for the industrial development of Shanghai, especially in terms of the large-scale industries and large-scale projects (include the six basic manufacturing categories of Shanghai as well as the large municipal utilities, waste recycling, ports and logistics centers). Urban planning shall work on the optimization of the distribution state of industrial lands in this area as well as to further plan and develop the industrial districts in this area to facilitate large-scale industries and projects.

4.3) Improving quality of industrial location: Regarding its function in improving quality of industrial location, urban planning of Shanghai shall take into account the following points (p.174~182):

- Land use planning of Shanghai shall work on a) changing the fragmentary distribution of industrial spaces in inner periphery and outer periphery area; b) strengthening the relation of industrial districts with the neighboring residential, office, commercial and service areas, by selecting of ideal locations for new planned industrial districts or restructuring, reshaping, expanding or improving of existing industrial districts; as well as c) promoting mix use development in the land use planning for the industrial district (industrial parks)
- Urban traffic planning of Shanghai shall work on a) planning and construction of external transportation facilities to strengthen the position of Shanghai as regional central transport hub; b) planning and construction of regional highway system and railway system as well as c) planning and construction of public transport system to improve the accessibility of the industrial location from the regional markets, labor resource and city center.
- Open space & green space planning shall work on a) converting the current mono-centric structure of open space into a poly-centric one and b) completing the green space system to improve the quality and give vitality for the development of industrial locations.
- The urban conservation planning shall work on a) protecting of monument and urban identities in those historic inner city industrial districts, b) utilizing creative and innovative conservation project to bring attractiveness and sustainable vitality to the redevelopment of these areas.

#### URBAN PLANNING IN "FILL IN":

Based on comprehensive analysis on the three selected target areas of Shanghai (Yangshupu Riverfront Area, EXPO Site and Suzhou Creek Riverfront Area) (p.184~195), this thesis draws the conclusion that the "FILL IN" of these target areas will play significant role in the inner city development of Shanghai. Regarding urban planning's role in "FILL IN", the following conclusions are drawn:

4.4) Urban land use change planning: The success in the urban use change planning of the three target areas could contribute to as well as benefit from Shanghai's inner city development in the following aspects (p.200~216):

- Shifting from mono-centric structure to polycentric structure,
- Establishment of inner city development corridors,
- Formation of inner city mix use function system,
- Providing space for spatial expansion "inwards" instead of "outwards".

Regarding the land use change planning of the three target areas, the following suggestions shall be well considered by the current urban planning:

- The concept setting of development for the three target areas must reflect the specific demand and strategic development of inner city of Shanghai.
- Following the development concept of target areas, the mix use development becomes a common strategy for the three target areas, which is characterized by significant increase of public function, transportation, green space and open space.
- Excessive residential development in some target areas shall be corrected in the further development,
- Land use planning shall take the waterfront development and impulse project as priority in initial stage of project.

4.5) Urban traffic planning: The success in the urban traffic planning of the three target areas could contribute to as well as benefit from Shanghai's inner city development in the following aspects (p.217~229):

- Establishment of the polycentric structure of traffic system in inner city,
- Establishment of inner city traffic road system,
- Establishment of inner city public transport system.

Regarding the urban traffic planning for the three target areas, the following suggestions shall be well considered by the current urban planning:

- The planning and implementation of transportation system for the target areas shall be treated as foremost task for the whole redevelopment,
- Regarding "outer accessibility", the most important task is to identify the weakest location in the scope of planning and to improve them with traffic roads and public transport system planning.
- Regarding the "inner accessibility", urban planning shall contribute to the establishment of inner transportation circulation through densification and systemization of road system.

4.6) Open space & green space planning: The success in the open space & green space planning of the three target areas could contribute to as well as benefit from Shanghai's inner city development in the following aspects (p230~242):

- Formation of interconnected green space and public space structure,
- Establishment of "key development area for open space and green space (KDAOG)",
- Establishment of "key development corridors for open space and green space (KDCOG)".

Regarding the open space & green space planning for the three target areas, the following suggestions shall be well considered by the current urban planning:

- Efforts shall be made both on increase of quantity and improvement of quality,
- Waterfront area open space and green space shall be taken as priority,
- Attention shall be paid to planning and establishment of node of urban activities, which are supported by public and cultural facilities,
- Eventually, an interconnected open space & green space network that covers the whole planned scope and bring the value of waterfront into inland area shall be established.

4.7) Urban conservation planning and monument protection: The following backgrounds of Shanghai's urban conservation and monument protection system must be taken as fundamental basis of the "FILL IN" of the three target areas (p.243~263):

- The monument protection system has gone through the path from protection of single monument to ensemble protection,
- Industrial heritage and landscape has been more and more recognized as a new and valuable resource,

- The current protection needs to be improved on aspects including the expansion of protection list, improving of protection measure, obtaining better coordination ability with city's development as well as obtaining stronger funding for protection,
- Conservation-led urban development has been proved to be successful in some projects. In the target areas, such concept must be taken into account.

Regarding the urban conservation planning and monument protection for the three target areas, the following suggestions shall be well considered by the current urban planning:

- Promotion of tendency of "reutilization instead of frozen protection",
- Promotion of tendency of "from protection of single monuments to protection of monument cluster and historic urban landscape",
- Given the situation that the current protection list is incomplete and ignorant of industrial heritages, a transitional solution is to compile expanded protection lists for each redevelopment projects,
- Impulse project (pilot projects) with creative concept of monument protection must be promoted.

As a final remark, it must be re-addressed that the "post-industrial era" is a very important time in human's history. In this period, the influence of "de-industrialization" has already driven the complete structural transformation in many European cities. While in many cities in China, where the influences of "de-industrialization" started relatively late, the structural transformation is just in its initial stage. How to stop the decay of numerous historic industrial districts in the inner city, how to redevelop them and further to provide new growing points in the inner city, how to provide high-quality space for the rising industries as well as for other demand of the city in ideal locations are all among the challenges originated from or associated to this phenomenon, which urban planning shall take. In this sense, the contribution of this thesis lies in that, with the concept of "BRING OUT" and "FILL IN", all above mentioned separate efforts of urban planning is now understood as ONE JOINT EFFORT. With the targets, interactive fields and instruments of urban planning being sorted out in this thesis, a basic research method for urban planning in such process is established.

On a higher level of thinking, it shall be addressed that the phenomenon of "distribution of industrial spaces" shall not be treated as a danger to be afraid of, but as a great opportunity for city's spatial development. In this sense, all conclusions that are brought forward regarding Shanghai's urban planning here, shall not only be treated as suggested strategies to solve the current or potential urban problems, but also be treated as those for urban planning to take this opportunity to benefit the city in its structural transformation process, a way leading to "better city, better life".<sup>348</sup>

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<sup>348</sup> "Better city, better life" is the theme of World EXPO 2010 in Shanghai.

## LIST OF LITERATURES

### A

- Adams D. (1994) *Urban Planning and the Development Process*, Routledge, London
- Alfrey J. and Catherine C. (1993) *The Landscape of Industry: Patterns of Change in the Ironbridge Gorge*, Routledge, London
- Alonso W. (1964) *Location and Land Use: Towards a General Theory of Land Rent*. Harvard University Press. Cambridge, Mass
- Alonso W. (1960) *A Theory of Urban Land Market*, Papers and Proceeding of the Regional Science Association, Vol.6 pp.149-158.

### B

- Bärtschi, Hans- Peter (ed.) (1994) *Architektur, Industriearchäologie, Stadtentwicklung – ARIAS: Tätigkeitsgebiete und Werkverzeichnis 1979-1994*, Hans-Peter Bärtschi, Winterthur
- Bagguley P., Mark-Lawson J. Shapiro D., Urry J., Sylvia W. and Warde A. (1990) *Restructuring: Place, Class and Gender*, Sage, London.
- Baldinger, Astrid E. (1989) *Schweiz: Kunstwerke aus industrieller Vergangenheit*, Baldinger, Umiken
- Baldinger, Oskar (ed.) (1987) *Erhaltung industrieller Kulturgüter in der Schweiz*, Baldinger, Umiken
- Ball M. (1983) *Housing Policy and Economic Power: The Political Economy of Owner Occupation*, Methuen, London
- Banik-Schweitzer R. and Meißl G. (1983) *Industriestadt Wien: Die Durchsetzung der industriellen Marktproduktion in der Habsburgresidenz*, Franz Deuticke, Wien
- Bauer W. (1964) *Strukturwandlungen im Ruhrgebiet, Siedlungsverb. Ruhrkohlenbezirk*, Essen
- Beauregard R. A. (1989) *Between Modernity and Postmodernity: the ambiguous Position of U. S. Planning, from Environment and Planning Vol. 7*
- Bell D. (1976) *The Coming of Post-industrial Society: a venture in social forecasting*, Basic Books Inc, New York
- L. Benevolo (2000) *Die Geschichte der Stadt* (8th edition), Campus Verlag, Frankfurt/New York
- Bertsch C. (ed.) (1992) *Industriearchäologie*, Christoph Bertsch, Hazmon Verlag, Innsbruck
- Biecker J. and Nendza H. (1991) *Baudenkmäler im Ruhrgebiet*, Pomp, Essen
- Biecker J. and Föhl A. (1996) *Industriedenkmale im Ruhrgebiet*, Ellert & Richter, Hamburg
- Bodemann U. (2001) <HafenCity Hamburg – Anlass, Masterplan, Chance>, in Schubert D. (ed.) (2001) *Hafen- und Uferzonen in Wandel: Analysen und Planungen zur Revitalisierung der Waterfront in Hafenstädten*, Leue, Berlin
- Bourne L. S. (ed.) (1971) *Internal Structure of the City*, Oxford University Press, New York.

- Borchard K. (1993) Räumliche Ordnung und Entwicklung im Ruhrgebiet: im Blick auf den Verflechtungsraum Berlin-Brandenburg ; Erkenntnisse und Erfahrungen ; vorbereitender Bericht zur Jahrestagung DASL 1993 in Berlin und Potsdam, Deutsche Akademie für Städtebau und Landesplanung, Landesgruppe Nordrhein-Westfalen. Dortmund
- Borstell U., Dirksen J., Sarrazin E. (2010) Blühendes Ruhrgebiet, Mercator, Duisburg
- Bundesforschungsanstalt für Landeskunde und Raumordnung (ed.) (1992) Strategien zur Vermeidung zukünftige Gewerbebrachen, Materialein zur Raumentwicklung, Heft 48, Bonn
- Briegleb T. (2007) Eine Vision wird Wirklichkeit: auf historischem Grund - die Elbphilharmonie entsteht, Murman, Hamburg
- Bruns-Berentelg J. (ed.) (2010) HafenCity Hamburg: neue urbane Begegnungsorte zwischen Metropole und Nachbarschaft, Springer, Wien
- Bruttomesso, Rinio (2001) "Complexity on the urban waterfront". in R. Marshall (ed.), Waterfronts in Post-industrial Cities, Spon. Press, New York
- Budesheim W. (ed.) (1999) Zur Kulturgeographie und Industriearchäologie in Norddeutschland: Versorgung, Verteidigung, Verkehr, Frei Lauenburgische Akademie f. Wissenschaft u. Kultur, Wentorf bei Hamburg
- Burgess E. W. (1925) The Growth of the City in Park R. E. et al.(ed.) The City, Chicago University Press, Chicago.

## C

- Cairncross A. (1979) What is Deindustrialization, in Blackaby F. (ed.) (1979) Deindustrialization, Heinemann, Oxford
- Chen Youhua (2001) Thoughts on several topics regarding the urban planning of Shanghai>, in <Urban Planning Journal> 2001(1), Tongji University Press, Shanghai
- Chockoway B. (1980) Large Builders, federal housing programs and postwar suburbanization, International Journal of Urban and Regional Research,4, pp.21-45.
- Clark C. (1957) The conditions of Economic Progress, Macmillan, London
- Clark W. A. V. and Cadwallader M. T. (1973) Residential Preferences: and alternative view of intra-urban space, Environment and Planning (A), 5, pp. 693-703.
- Cooke P. (ed.) (1989) Localities: the Changing Face of Urban Britain, Unwin Hyman, London.
- Conzen M. R. G. (1960) Aluwick: a Study of Town Plan Analysis, Transaction, Institute of British Geographers, 27, pp.101-122
- Coupland A. (1992) Docklands: Dreams or Disaster, in Thornley A. (ed.), The crisis of London, Routledge, Oxford
- Cox K. R. (1979) Location and Public Problems, Basil Blackwell, Oxford.
- Cox K.R. (1972) Man, Location and Behavior: An Introduction to Human Greography, John Wiley, New York.
- Cox K. R. and Johnston R. J. (ed.) (1982) Conflict, Politics and the Urban Scene, Longman, London.
- Cui Ning (2008) Restructuring of the City under important Urban Events: Shanghai EXPO as Example, Southeast University Press, Nanjing

## D

- Davy B. and Kanafa K. (2004) Die neunte Stadt: wilde Grenzen und Städteregion Ruhr 2030, Müller + Busmann, Wuppertal

- Davidoff P. (1965) *Advocacy and Pluralism in Planning*, American Institute of Planners Vol. 31, New York
- Davoudi S. (ed.) (2009) *Conceptions of Space and Place in Strategic Spatial Planning*, Routledge, London
- Dikowitsch, Hermann (ed.) *Leben im Denkmal: von Menschen mit Engagement*, Amt d. NÖ Landesregierung, Abt. f. Kultur u. Wissenschaft, St. Pölten
- Dong Yiping (2004) *A study on the "east bund" industrial heritage and its regeneration and conservation*, master thesis of Tongji University, Shanghai
- Drucker P. F. (1993) *Post-Capitalist Society*, Butterworth-Heinemann, Stoneham, MA, and Oxford
- Duncan S. (1989) *What is Locality*, in Peet R. and Thrift N. (ed.) *New Models in Geography* (Vol. 2), Unwin Hyman, London.
- Dunleavy P. (1980a) *The Political Implications of State Employment*, *Political Studies*, 28, pp. 364-383 and pp.527-549.
- Dunleavy P. (1980b) *Urban Political Analysis: The Politics of Collective Consumption*, Macmillan, London and Basingstoke.
- Dühr S., Colomb C. and Nadin V. (2010) *European Spatial Planning and territorial cooperation*, Routledge, London
- E
- Edensor T. (2005) *Industrial ruins: spaces, aesthetics and materiality*, Oxford, Berg
- Edwards B. (1992) *London Docklands: urban design in an age of deregulation*, Butterworth, Oxford
- Everding D. (2008) *Pioniere des ökologischen Stadtumbaus und einer nachhaltigen Regionalentwicklung*, WiKu, Duisburg
- F
- Fainstein S. S. and Campbell S. (ed.) (1999) *Reading in Urban Theory*, Blackwell, Oxford
- Faludi A. and Waterhout B. (2002) *The making of the European spatial development perspectives: no masterplan*, Routledge, London
- Faludi A. (ed.) (2008) *European Spatial research and Planning*, Lincoln Inst. of Land Policy, Cambridge, Mass.
- Fabris L. M. F. (2004) *IBA Emscher Park 1989~1999*, Testo ed Immagine, Torino
- Fishman R. (1977) *Urban Utopias: Ebenezer Howard and Le Corbusier*, Basic Book Inc, New York
- Foglesong R. E. (1986) *Planning the Capitalist City*, Princeton University Press, Princeton
- Foley L. D. (1964) *An Approach to Metropolitan Spatial Structure*, in Webber M. M. et al. (ed.) *Exploration into Urban Structure*, University of Pennsylvania Press, Philadelphia.
- Föhl A. (2010) *Architecture guide to the Ruhr*, Reimer, Berlin
- Jean Fourastié (1954) *Die große Hoffnung des 20. Jahrhunderts*, Bund-Verl., Köln-Deutz
- Frityl H. (1986) *Wohnkultur und Lebensformen in Industrieansiedlung: Endbericht*, H. Fritzl, Wien
- Frobel F., Heinrichs J. and Kreye O. (1980) *the New International Division of Labour: Structural Unemployment in Industrial* Cambridge University Press, Cambridge.

Fusi P. (2004) Grenzen, Schwellen und Formen der Stadt am Wasser: Entwürfe für Mölln und die HafenCity Hamburg, TUHH, Wien

## G

Gaida W. (2007) Ruhrgebiet, European Garden Heritage Network, Jüchen

Gallion B. and Eisner S. (1993) The Urban Pattern, Wiley, New York

Gesellschaft für Hafen- und Standortentwicklung (2001) HafenCity Hamburg – aktuelle Projekte, GHS, Hamburg

Gesellschaft für Hafen- und Standortentwicklung (2000) HafenCity Hamburg der Masterplan, GHS, Hamburg

Giffinger R. (2009) Territorial capital: its meaning for urban and regional development, from International Scientific Conference, Regional Development, Spatial Planning and Strategic Governance, Thematic Conference Proceedings, Belgrad, 2009

Giffinger R. and Hamedinger A. (2009) Metropolitan Competiveness reconsidered: the role of Territorial capital and Metropolitan Governance, from Terra Spectra - Planning Studies - Central European Journal of Spatial and Landscape Planning

Goch S. (2002) Eine Region im Kampf mit dem Strukturwandel: Bewältigung von Strukturwandel und Strukturpolitik im Ruhrgebiet, Klartext-Verl., Essen

Goodall B. (1972) The Economics of Urban Areas, Pergamon Press, Oxford and New York

Gordon R. and Raber M. (2000) Industrial heritage in Northwest Connecticut: a guide to history and archeology, CAAS, New Haven, Conn.

Grub H. and Lejeune P. (1996) Grün zwischen Städten, Prestel, München

Günter B. (ed.) (2010) Alte und Neue Industriekultur in Ruhrgebiet: ein Symposium des Deutschen Werkbundes auf Zollverein, Klartext verl., Essen

Günter R. (2008) Der Traum von der Insel im Ruhrgebiet: eine konkrete Utopie für die Kultur-Hauptstadt 2010, Klartext verl., Essen

## H

Hajt J. (2005) Zechen- und Hafenbahnen im Ruhrgebiet, Podszun, Brilon

Hall P. (1998) Cities of Tomorrow: and intellectual History of Urban Planning and Design in 20<sup>th</sup> Century, Blackwell, Oxford

Hall P. (1966.), <Von Thünen's Isolated State> (English translation by Carla M. Wartenberg, with an introduction by the editor), Pergamon Press, Oxford

Hamm O. G. (ed.) (2010) IBA Hamburg: Internationale Bauausstellung Hamburg, Jovis, Berlin

Harms H. (, <Port and City, harbor and Housing: a Changing Relationship in Hamburg>, in Bruttomesso R. (ed.), Waterfront. A new Frontier for cities on Water>, Venice: International Center Cities on Water, Spon. Press, New York

Harloe M., Pickvance C. and Urry J. (ed.) (1990) Place, Police and Politics: Do Localities Matter? Unwin Hyman, London.

Harris C. D. and Ullman E. L. (1945) the Nature of Cities, the Annals of American Academy of Political and Social Science, CCXII, pp. 7-17

Hartog R. (2005) Europe's Ageing Cities, Müller+Busmann Wuppertal, 2005

Harvey D. (1985) On planning the Ideology of Planning, in Fainstein S. S. and Campbell S. (ed.) (1999) Reading in Urban Theory, Blackwell, Oxford

- Harvey D. (1973) *Social Justice and the City*, Basil Blackwell, Oxford.
- Harvey J. (1987) *Urban Land Economics of Real Property*, Palgrave Macmillan, Houndmills, Basingstoke and Hampshire,
- Huang Yaping, (2002) *Urban Theory an Urban Analysis*, Southeast University Press, Nanjing
- Healey P., Davoudi S., O'Toole M., Tavsanoglu S. and Usher D. (1992) *Rebuilding the City: Property led Urban Regeneration*, Spon, London.
- Healey P. (1992) *Planning through Debate: The communicative turn in Planning Theory*, from *Town Planning Review*, Vol. 63, 1992, Liverpool
- Health T., Tiesdell S. and Oc T., (1996) *Revitalizing Historic Urban Quarters*, Butterworth-Heinemann, Oxford
- Heckmann U. (1995) *Emscher Landschaftspark: Dokumentation ; Ein gemeinsames Projekt der Städte Bochum, Gelsenkirchen, Herne, Herten, Recklinghausen und des Kommunalverbandes Ruhrgebiet im Rahmen des IBA-Projektes Emscher Landschaftspark*
- Herbert D.T. (1972) *Urban Geography: a Social Perspective*, David & Charles, Newton, Abbot.
- Herbert D. T. and Johnston R. J. (1978) (ed.) *Social Areas in Cities: Processes, Patterns and Problems*, John Wiley & Sons,
- Höber A. and Ganser K. (ed.) (1999) *IndustrieKultur: Mythos und Moderne im Ruhrgebiet ; im Rahmen der IBA Emscher Park*, Klartext Verl. Essen
- Holzapfel A. M. (1992) *Flächenrecycling bei Altlasten: Sanierung und Wiederverwendung brachliegender Industrie- und Gewerbeflächen am Beispiel des Ruhrgebietes*, Schmidt, Berlin
- Holzinger E. (ed.) (2008) *Rurbanisierung*, Österreichisches Institut für Raumplanung, Wien
- Holliday J. (1973) *City centre redevelopment: A study of British city centre planning and case studies of five English city Centres*, Knight, London
- Hoover E. M. and Giarratani F. (1984) *An Introduction to Regional Economics*, 3rd edition. Knopf. New York
- Hoyt H. (1939) *the Structure and Growth of Residential Neighborhoods in American Cities*, Government Printing Office, Washington DC.
- Huang Rui (ed.), (2004) *Beijing 798: reflections on art; architecture and society in China*, Time Zone 8, Hong Kong

## I

- Idam F. V. (2003) *Industriearchäologie in Hallstatt ; industrielle Muster unter der alpinen Idylle*, Wien, Techn. Univ., Diss., 2003, Wien
- ICCROM (1964) *Venice Charter ("International Charter for the Conservation and Restoration of Monuments and Sites")*, Venice
- ICOMOS (1987) *Washington Charter> (Charter for the conservation of historic towns and urban areas)*, Washington
- Internationale Bauausstellung Emscher-Park <Gelsenkirchen> (1999) *IBA 99, Finale: das Programm, April bis Oktober 1999 ; 10 Jahre ökologische und kulturelle Erneuerung einer großen Industrieregion*, Internationale Bauausstellung Emscher-Park, Gelsenkirchen

## J

- Jacobs J. (1961) *The death and life of great American cities*, Vintage Books, New York
- Johnston R. J. (1977) *Urban Geography; City Structures*, *Progress in Human Geography*, Vol. 2, No. 1, pp.118-129.
- Johnston R. J. and Taylor P. J. (ed.) (1995) *Geographies of Change*, Basil Blackwell Oxford.
- Jones E. (1958) *the Delimitation of Some Urban Landscape Features in Belfast*, *Scottish Geographical Magazine*, 74, pp. 150-162.
- K
- Kähler G. (2001) *Gesellschaft für Hafen – und Standortentwicklung <Hamburg>: HafenCity Hamburg – Spuren der Geschichte*, GHS, Hamburg
- Kaufmann J. L., Jacobs H. M. (1987) *A Public Planning on Strategic Planning*, American Association Vol. 53
- Keeble D. E. (1976) *Industrial Location and Planning in the United Kingdom*, Methuen, London.
- Keeble D. E. (1980) *Industrial Decline, Regional Policy and Urban-Rural Manufacturing Shift in the UK*, *Environment and Planning (A)*, 12, pp. 945-962.
- Kelman S. (1987) *Making Public Policy*, Basic Books Inc, New York
- Kilper H. (ed.) (1999) *Die Internationale bauausstellung Emscher Park: eine Studie zur Steuerungsproblematik komplexer Erneuerungsprozesse in einer alten Industrieregion*, Leske und Budrich, Opladen
- Kirdorf A. And Hassler U.(2000) *Denkmale des Industriezeitalters: von der Geschichte des Umgangs mit Industriekultur*, Wasmuth, Tübingen
- Kölbl R., Brunsch S., Knoflacher H. (2003), *Perspective Vienna: a comparion of planning scenarios and real development, from CORP 2003*, *Geo Multimedia 03: Computergestützte Raumplanung, Computer Aided Spatial Planning. Beiträge zum 8. Symposium zur Rolle der Informationstechnologie in der und für die Raumplanung*, February 25 - March 1, 2003, Technische Universität Wien. Bd.2. Wien 2003, S.451-457
- Klosterman R. E. (1985) *Arguments for and against planning*, from *The Town Planning Review*, Vol.56, 1985, Liverpool
- Knox P. (1982) *Urban Social Geography: an Introduction*, Longman, Harlow.
- Köpl R. and Redl L. (1989) *Das totale Ensemble*, Verlag für Gesellschaftskritik, Wien
- L
- LeGate R. T. and Stout F. (ed.) (2007) *The City Reader*, fourth edition, Routledge, Oxon
- Leismann B. and Rütth U. (ed.) (2009) *Industrial Land Art im Ruhrland*, Klartext Verl. Essen
- Leitner G. and Hamtil K. (ed.) (2008) *Simmering in alten Fotografien*, Verlagsbüro Wien
- Lever W. F. (ed.) (1987) *Industrial Change in the United Kingdom*, Longman, London.
- Lever W. F. (1991) *De-industrialization and the reality of the post-industrial city*. from *Urban Studies*, 28(6), 1991
- Li Dehua (ed.) (2001) *Principals of Urban Planning*, China Building Industry Press, Beijing
- Li Dongsheng (2005) *<Adjustment and renewal of historic industrial districts: Yangpu Municipal District in Shanghai as example>*, Tongji University Press, Shanghai
- Lindblom C. E. (1959) *The science of "Mudding Through"*, *Public Administration Review* Vol. 19, New York

<London industrial land: Release Benchmarks>, Prepared by URS Corporation Limited for the Greater London Authority, Mayor of London, 2007

Lynch K. (1960) *The Image of the City*, MIT Press, Cambridge, Mass.

Lovering J. (1989) *the Restructuring debate*, in Peet R. and Thrift N. (ed.) *New Models in Geography* (Vol.2), Unwin Hyman, London.

Levy J. M. (1990), *What local Economic Developers actually do*, American Planning Association Vol. 56

Olechowski M., Schweighofer R., Graner H.P. and Valter K., *Zielgebiet Bahnhof Wien-Erdberger Mais\_\_Entwicklungszonen Erdberger Mais, Aspanggruende und Arsenal*, MA 21A,

## M

Mayor of London (2008) *Industrial Capacity: London Plan (Consolidated with Alterations since 2004) Supplyary Planning Guidance*, London

Mayor of London (2008) *The London Plan: Spatial Development Strategy for Greater London (consolidated with Alternatives sin2004)*

Marcus C. C. and Francis C. (1998) *People Places: Design guidelines for Urban Open Space*, John Wiley & sons Inc, New York

Massey D. (1973) *Towards a Critique of Industrial Location Theory*, *Antipode*, 5, pp. 33-39. New York

Massey D. (1984) *Spatial Division of Labour: Social Structure and the Geography of Production*, Macmillan, London.

Massey D. and Meegan R. (1982) *the Anatomy of Job Loss: the How, Where and Why of Employment Decline*, Methuen, London.

McAllister D. M. (1976) *Equity and Efficiency in Public Facility Location*, *Geographical Analysis*, 8, pp, 47-64.

McCluskey J. (1979) *Road Form and Townscape*, Architectural Press, London

Meyhöfer D. (ed.) (1999) *Städtebaulicher Wettbewerb - das Ergebnis: die neue Stadt mitten in Hamburg*, GHS Gesellschaft für Hafen- und Standortentwicklung, Hamburg

Mill E. S. (1967) *an Aggregate Model of Resource Allocation in a Metropolitan Area*, *American Economic Review*, 57

Mittringer D. I. (2005) *Vienna's Urban Development Plan 2005*, Magistratsabteilung 18, Wien

Moseley M. J. (1974) *Growth centres in Spatial Planning*, Pergamon Press, Oxford

Municipal Government of Beijing (2004) *Beijing Comprehensive Planning 2004~2020*, Beijing

Municipal Government of Shanghai (1986) *Shanghai Comprehensive Plan 1986*, Shanghai

Municipal Government of Shanghai (1999), *Shanghai Comprehensive Land Use Planning 1997~2010*, Shanghai

Municipal Government of Shanghai (1999) *Notes on the master plan of Shanghai 1999~2020*, Shanghai

Municipal Government of Shanghai (1999), *Shanghai Comprehensive Planning 1999~2020*, Shanghai

Municipal Government of Shanghai (2003) *Urban Planning of W7E10 Site of Huangpu Riverfront*, Shanghai

Mumford L. (1961) *The City in History: its Origins, its Transformations, and its Prospect*, Penguin Books Ltd; new edition, 1991, London

Muth R. F. (1969) *Cities and Housing*, Chicago University Press, Chicago.

## N

Nagel F. N. (ed.) (1995) *Stadtentwicklung und Stadterneuerung*: Hamburg, London, Singapur, Steiner, Stuttgart

Nagel F. N. (2001) *Kulturlandschaftsforschung und Industriearchäologie: Ergebnisse der Fachsitzung des 52. Deutschen Geographentags Hamburg*, Steiner, Stuttgart

Nagel F. N. (1992) *Kulturlandschaftsforschung und Industriearchäologie in Hamburger Raum*, Univ. Hamburg, Inst. F. Geographie u. Wirtschaftsgeographie, Hamburg

National Bureau of Statistics of China (2010) *Shanghai Statistical Year Book 2009*, Shanghai Statistic Press, Shanghai

National Bureau of Statistics of China (2010) *Beijing Year Book 2009*, China Statics Press, Beijing

Neumann E. G. (1986) *Gedanken zur Industriesarchäologie: Vorträge - Schriften - Kritiken*, Olms, Hildesheim

## O

Oc T. and Tisdell S (1991) *The London Docklands Development Corporation (LDDC) 1981~1991: A perspective on the management of urban regeneration*, in *The Town Planning Review 1991*, Liverpool University Press, Liverpool

O`Connon J. (1973) *the Fiscal Crisis of the State*, St Martin`s Press, Chicago.

O`Sullivan A. and Sheffrin S. M. (2003) *Economics: Principles in Action*, Pearson Prentice Hall, New Jersey

Otto K. H. (ed.) (2007) *Industriewald als Baustein postindustrieller Stadtlandschaften: interdisziplinäre Ansätze aus Theorie und Praxis am Beispiel des Ruhrgebiets*, Geographisches Institut der Ruhr-Universität, Bochum

## P

Palermo P. C., Ponzini D. (2010) *Spatial planning and urban development*, Springer, Dordrecht

Palmer M. and Neaverson P. (2000) *Industrial archaeology: principals and practice*, Routledge, London

Paulinyi A. (1975) *Industriearchäologie: neue Aspekte der Wirtschafts- und Technikgeschichte*, Dortmund

Pickvance C. G. (1985) *Spatial Policy as Territorial Politics: the Role of Spatial Policy*, in Roes G., Bujra J., Littlewood P., Newby H. and Ress L. (ed.) *Political Action and Social Identity: Class, Locality and Ideology*, Macmillan, London and Basigstoke.

Pfaffenbichler P. C. and Emberger G. (2003) *Are European Cities becoming similar? From CORP 2003, Geo Multimedia 03: Computergestützte Raumplanung, Computer Aided Spatial Planning. Beiträge zum 8. Symposium zur Rolle der Informationstechnologie in der und für die Raumplanung*

Pferffer U. (1987) *Big bang in den Londoner Docklands?* In: *Bauwelt 78* (24)

Powell K. (2000) *Stadt im Umbau: Städtebau zu Beginn des 21. Jahrhunderts*, Dt. Verl.-Anst., Stuttgart

## R

Reicher C. (ed.) (2008) Internationale Bauausstellung Emscher Park: die Projekte 10 Jahre danach, Fachgebiet Städtebau, Stadtgestaltung u. Bauleitplanung, Fakultät Raumplanung, TU Dortmund, Klartext, Essen

Ruan Yisan and Dong Jiancheng (2004) Water towns in south of the Yangtze River, Zhejiang Photography Press, Hangzhou

## S

Salet W. (ed.) (2000) The revival of strategic spatial planning: proceedings of the colloquium, Amsterdam, Royal Netherlands Acad. of Science and Arts, 1999, Amsterdam

Salet W. (ed.) (2007) Metropolitan governance and spatial planning: comparative case studies of European city-regions, Spon Pr. London

Sayer A. (1984) Methods in Social Science: a Realist Approach, Hutchinson, London.

Seltsmann G. (2007) Renaissance of an Industrial Region: "Internationale Bauausstellung Emscher Park": achievements and future model for others, GseProjekte-Office for Regional Development, Germany

Schreckenbach C. and Teschner C. (2007) Presentation: IBA Emscher Park – a beacon approach, dealing with shrinking cities in Germany, Fakultät Architektur Institut für Landschaftsarchitektur, Technische Universität Dresden, 2007

Schubert D. (ed.) (1993) Wohnen am Hafen: Leben und Arbeiten an der Wasserkante ; Stadtgeschichte, Gegenwart, Zukunft ; das Beispiel Hamburg, VSA-Verlag, Hamburg

Schubert D. (ed.) (1995) Städte für Morgen: Planungen und Erfahrungen aus Berlin, Dresden, Essen, Hamburg, Hannover, Kassel, Leipzig und München, Leue, Kassel

Schubert D. (ed.) (1997) Stadterneuerung in London und Hamburg: eine Stadtbaugeschichte zwischen Modernisierung und Disziplinierung, Vieweg, Braunschweig

Schubert D. (ed.) (2001) Hafen- und Uferzonen in Wandel: Analysen und Planungen zur Revitalisierung der Waterfront in Hafenstädten, Leue, Berlin

Schultz J. (ed.) (2008) Atlas IBA Hamburg, Braun, 2008

Semsroth K. (1974), Bestand, Planung und Gestaltung von Industriegebieten in Österreich, Technische Universität Wien Diss., Wien

Semsroth K. (1992) Stadträume, Materialien zum Städtebau, Institut für Städtebau, Raumplanung und Raumordnung, TU Wien

Semsroth K. and Hofer A., (2003) Hafencity, New Urban Center Magdeburger Hafen, from Harbourpolis Hamburg : 15 schools of architecture, Paris, 2003

Shanghai Urban Planning and Research Institute (2002) Suzhou Creek Riverfront Area Landscape Planning, Shanghai

Shevky E. and Bell W. (1955) Social Area Analysis, Stanford University Press, Stanford

Shevky E. and William M. (1949) the Social Area of Los Angeles, University of California Press, Los Angeles.

Sjoberg G. (1999) Preindustrial Cities: Past and Present, Free Press, New York

Slotta R. (1982) Einführung in die Industriearchäologie, Wiss. Buchges. Darmstadt

Smailes A. E. (1966) the Geography of Towns, Hutchinson, London.

Smith D. M. (1977) Human Geography: a Welfare Approach, Edward Arnold, London.

Smith D. M. (1971) Industrial Location: an Economic Geographical Analysis, John Wiley, New York.

- Smith D. M. (1966) a Theoretical Framework for Geographical Studies of Industrial Location, *Economic Geography*, 42, pp. 95-113.
- Stadler G. (2010) Industrial Revolution – Revisited Industriearchäologie: Wesen, Werkzeuge, Wirkung – ein Gespräch, from MACH Magazin für Technikgeschichte, Linz, 2010, Linz
- Stadler G. (1994) Industriekultur und Industriearchäologie, from Niederösterreichische Wirtschaftsschönheit, 1994, Wien
- Stadtentwicklung Wien Magistratsabteilung 18 (2005) Step 05: Stadtentwicklungsplan Wien 2005
- Stratton M. and Trinder B. (2000) Twentieth century industrial archaeology, E. & F. N. Spon, London
- Sun Ping (ed.) (1999) The History of Urban Planning in Shanghai, Shanghai Social Science Press, Shanghai
- Swoboda H. (1995) foreword in Vienna: on the way to the 21<sup>st</sup> century: urban planning for the welfare of the people and environment, Vienna
- T
- Tang Zilai (1997) Theory and Methodology of Research on Urban Spatial Structure in Western Countries, in <Urban Planning Magazine> 1997(6), 1, Tongji University Press, Shanghai
- Thrift N. (1989) Image of Social Change, in Hammett C., McDowell L. and Sarre P. (ed.) Restructuring Britain: the Changing Social Structure, Sage, London.
- Thomson J. M. (1977) Great Cities and their Traffic, Lowe & Brydone, London
- TICCHI (2003) The Nizhny Tagil Charter for the Industrial Heritage, Moscow
- Trinder B. (1992) The Blackwell encyclopedia of industrial archaeology, Blackwell, Oxford
- U
- UNESCO (1976) Recommendation concerning the Safeguarding and Contemporary Role of Historic Area, (Charter of Nairobi), Nairobi
- Urban T. (2008) Visionen für das Ruhrgebiet: IBA Emscher Park: Konzepte, Projekte, Dokumentation, Klartext Verl. Essen
- URS Corporation Limited (2007) London industrial land: Release Benchmarks, prepared for the Greater London Authority, Mayor of London
- Urry J. (1981) the Anatomy of Capitalist Societies: the Economy, civil society and the State, Macmillan, London and Basingstoke.
- W
- Wachten K. and Nadrowski S. (2005) Städtebauliche Gestaltung zur Aufwertung von Gewerblichen Standorten, in Schulte K.W. (ed.) (2005) Immobilienökonomie: Band III: Stadtplanerische Grundlagen, Oldenbourg Wissenschaftsverlag, Munich
- Wang Anshi (1999) Practices and thoughts on the protection of historic architecture, Shanghai
- Wang Jianguo (2008) Conservation of Industrial Heritage Buildings and Sites in Post-Industrialization Era, China Building Industry Press, Beijing
- Walter J. (2006) <Pläne, Projekte, Bauten: Architecture und Städtebau in Hamburg 2005 bis 2010>, Verlagshaus Braun, Hamburg
- Webber M. M. (1964) the Urban Place and Nonplace Urban Realm, in Webber M. M. et al. (ed.) Exploration into Urban Structure, University of Pennsylvania Press, Philadelphia.

Wehdorn M. and Georgeacopol-Winischhofer U. (1991) Baudenkmäler der Technik und Industrie in Österreich I: Wien, Niederösterreich, Burgenland, Böhlau, Wien

Wehdorn M., Georgeacopol-Winischhofer U. And Roth P. W. (1991) Baudenkmäler der Technik und Industrie in Österreich II: Steiermark, Kärnten, Böhlau, Wien

Wehdorn M. (1989) Die bautechnische Sanierung der Wiener Gasbehälter, from Österreichische Zeitschrift für Kunst und Denkmalpflege ; 43(1989), H.1/2, S.65-74, Wien

Wehdorn M. (1987) Gasbehälter Wien – Simmering: Gesamtösterreichischer Studentenwettbewerb, Verlag Österr. Postsparkasse, Wien

Wehdorn M. (2005) Das kulturelle Erbe: vom Einzeldenkmal zur Kulturlandschaft, Studien –Verl., Innsbruck ; Wien

Wehdorn M. (2007) Die unterschiedlichen Sanierungspraktiken im EU – Raum, Megatrends, from 1. International Property Management Congress, Wien

Wehdorn M. (2006) Wien und das Kulturerbe: die wissenschaftlichen Grundlagen, from Wien, Weltkulturerbe: Der stand der Dinge, Wien

Williams K. (2005) Spatial planning, urban form and sustainable transport, Ashgate, Aldershot

Williams S. (1993) Docklands, Phaidon, London

Williams R. H. (1996) European Union spatial policy and planning, Chapman, London

World Commission on Environment and Development (1987, retrieved 2007) Our Common Future \_ Report of World Commission on Environment and Development

WU Zhiqiang Siegfried (2009) Sustainable Planning and Designing for World EXPO 2010 Shanghai China, China Building Industry Press, Beijing

Wright E. O. (1980) Varieties of Marxist Conceptions of Class Structure, Politics and Society, 9,

X

Xing Junfang (1997) The development tendency of China in 21st Century, China Communist Party School Press, Beijing

Y

Yang Jianqiang (1988) Development and renewal of city: Thoughts about the urban renewal in China, from Urban planning journal, 1988 (1)

Yang Mingzhong (2009) Anecdotes about parks in old Shanghai, from Xinmin Evening Paper, 20/3/2009

Yang Wanchun (1992) Research on industrial distribution and structure of Shanghai, East China Normal University Press, Shanghai

Z

Zechner K. (1999) "Enterprise Zones" in Grossbritannien. Eine geographische Untersuchung zu Raumstruktur und Raumwirksamkeit eines innovativen Instruments der Wirtschaftsfoerderungs- und Stadtentwicklung spolitik in der Thatcher-Aera, Franz Steiner Verl., Stuttgart

Züst R. and Joanelly T. (2008) Waiting Lands: Strategien für Industriebrachen, Verlag Niggli AG, Sulgen

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## CURRICULUM VITAE



Name: XU Kai  
Gender: Male  
Birth Date: November 24<sup>th</sup>, 1977  
Birth Place: Xiamen, Province of Fujian, China  
Nationality: China

### EDUCATION

2005~2010 Doctorate study in Faculty of Architecture and Spatial Planning,  
Vienna University of Technology  
2001~2004 Master studying in School of architecture and Urban Planning,  
Tongji University of Shanghai  
1996~2001 Bachelor study in School of architecture and Urban Planning,  
Tongji University of Shanghai

### WORKING EXPERIENCE

2004~2010 Chief director for architecture design in Land-AU architecture and  
urban planning consultant Co., LTD, Shanghai  
2006~2008 Member of the working group, Mladen Jadric Architects, Vienna

### MAJOR PARTICIPATED PROJECTS

2010 As chief architect and planner for Luoyang Waterfront Delta  
Development Plan, China  
2007 As member of working group for Wellingerstrasse Wohnanlage,  
Vienna  
2006 As chief architect in factory and office complex in Xiamen, China  
2006 As team leader and chief architect in China Insurance Twin Tower  
in Dalian, China, 1st Prize in international competition  
2003 As chief architect and chief planner for urban design of CBD and  
5-star hotel cluster in Dalian, China, 1st Prize in international  
competition  
2003 As chief architect in urban design and architecture design for  
Dalian Sport Park, 1st Prize in international competition

### PUBLICATIONS AND RESEARCHES

2004~2010 <The role of urban planning in the redistribution of industrial  
space in the context of contemporary city's spatial development  
— Shanghai and selected European cities>, Ph. D thesis, Vienna

- 2007 <Vienna meets Zagreb: A comparative study of housing in Vienna and Zagreb 1918~2007>, being member of the teaching and publishing group, Zagreb
- 2007 <Looking for "Made in Austria": the past and contemporary of Austrian architecture>, in <Urban Spatial Design> 2007(1), Tianjin
- 2004 <Research and proposals for the sustainable development and heritage protection in Doitung Mountains Thailand>, in <Urban planning overseas>, 2004, 19(4), Beijing
- 2001~2004 <Contemporary conceptual art and its influences on contemporary architecture>, master thesis, Shanghai

#### TEACHING EXPERIENCES

- 2005~2010 Teaching assistant and guest lecturer in 6 "China-Austria Summer Student Workshops", cooperation between TU Vienna, Tongji University, Southeast University, Shenzhen University and Hong Kong Chinese University
- 2005~2008 Guest lecturer and jury for 6 student design studios in TU Vienna
- 2007 Lecturer in Vienna-Zagreb joint Teaching program sponsor by European Unions