Urban Sprawl: how to prevent from urbanization to counterurbanization ---
the Research and Thinking of Compact City and Satellite City

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Abstract:

Sprawl seems an inevitable phenomenon because of the rapid expansion in urban area. It has some negative consequences, such as long transport distance to work, high car dependence and inadequate facilities. Recently, it pointed as causing a lot of urban problems and the situation has been worsening. This thesis asks the question: could there be a conscious way to prevent this issue?

To deal with it, this thesis firstly conducts an intensive study about theories of compact city and satellite city. In the second part, in order to investigate how those theories are reflected and implemented in real examples, this thesis analyzes two cases and discusses about how urban sprawl happened in London and Shanghai as well as to what extent theories were served in these two cities. The investigation produces some results related to the process of urbanization, common actions which authorities would take towards it, and some highlights in the pre-experience. So when facing with urban sprawl, the measure might be dealt with it in a more conscious way.

Key Words:

Urban Sprawl, Compact City, Satellite City, Urbanization, Counterurbanization, Greater London Plan, Urban Plan in Shanghai
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# Contents

Table of Contents ......................................................................................... 4  
Introduction .................................................................................................... 6  

Chapter One – Theoretical Research .............................................................. 9  
1.1 Urban Sprawl ......................................................................................... 9  
   1.1.1 Introduction .................................................................................. 9  
   1.1.2 The Rise of Urban Sprawl, Urbanization and Counterurbanization .. 10  
   1.1.3 Consequences of Urban sprawl ...................................................... 13  
1.2 Theory of Satellite City .......................................................................... 15  
   1.2.1 Concept and Historical Background ............................................ 15  
   1.2.2 The Rise of Satellite City .............................................................. 16  
   1.2.3 Conclusion ................................................................................ 18  
1.3 Theory of Compact City ......................................................................... 19  
   1.3.1 Concept and Definition .............................................................. 19  
   1.3.2 Compact City: how compact it should be and what features it has ... 19  
   1.3.3 Compact City and Sustainability ................................................. 22  
1.4 Conclusion and Comparison .................................................................. 25  

Chapter Two – Case Studies ........................................................................ 28  
2.1 The Greater London Plan ...................................................................... 28  
   2.1.1 Introduction .............................................................................. 28  
   2.1.2 Population ................................................................................ 29  
   2.1.3 Traffic ..................................................................................... 32  
   2.1.4 Policies for a Compact City ....................................................... 36  
   2.1.5 Conclusions ............................................................................ 37  
2.2 Case Study in Shanghai .......................................................................... 38  
   2.2.1 Sprawl and Density in Shanghai ................................................ 38  
   2.2.2 Satellite City Plan in Shanghai .................................................. 39  
   2.2.3 Slow Mode Transportation in Shanghai ...................................... 42  
   2.2.4 Conclusion ............................................................................. 43  

Chapter Three – Comparison and Conclusion .......................................... 45  
3.1 A Comparison of Urban Plan between London and Shanghai ......... 45  
3.2 Conclusion .......................................................................................... 46  

References List ............................................................................................ 49
List of Images and Tables

Image 1-1: Illustration of Urban Sprawl and Compact City
Image 2-1: Four Circles of London
Table 2-1: Population of Greater London (1890-2010)
Table 2-2: Projected Population
Table 2-3: Changes in population (1991-2000)
Table 2-4: Downtown Population and Occupied Dwelling Counts (1996-2006)
Table 2-5: London’s age structure (1971-2016)
Image 2-2: The original Ringway plan in 1969
Image 2-3: The revised Ringway plan in 1972
Image 2-4: Access to public transport
Table 2-6: Mode of Transportation to Work (2006)
Image 2-5: Greater Shanghai Region
Image 2-6: Satellite City Plan in Shanghai
Image 2-7: Luo Dian New Town
Image 2-8: Qingpu Historical Center
Image 2-9: Chongming Island’s Taman Wetland
Introduction

Nowadays, because of the rapid growth in urban area, urban sprawl has become a heatedly controversial topic in worldwide. There is no doubt that it has a lot of unwanted influence and causes urban problems. But there is still one question which should be asked: Is urban sprawl inevitable? If not, how could we prevent the process from urbanization to counterurbanization? In this thesis, I discuss the main question by introducing the research and thinking of certain theories as well as analyzing two case studies. To get the final conclusion, I start at theoretical research of urban sprawl, compact city and satellite city. By referring to these concepts, case studies of London and Shanghai are given in the latter part. At last, the thesis is ended by a comparison and conclusion between two case studies.

Chapter one gives an overview about urban sprawl, compact city and satellite city, which provides the theoretical research basis for the whole thesis. It is divided into four main parts. In the first part, the definition and history of urban sprawl are introduced and the rise of urbanization and counterurbanization is discussed. In order to deal with the negative phenomenon, theories of compact city and satellite city are given in the latter two parts. The second part is about a theoretical overview of compact city, including different definitions, benefits and features. In this part, the main discussion is about whether the idea of compact city is really sustainable or not. The third part introduces the concept of satellite city, involving the original theoretical background and several famous examples. The passive influence of satellite city policy is concluded in different levels. Finally, this chapter is ended by a general conclusion and comparison between concepts, which could give me a concrete understanding toward all these theories.
After the theoretical and historical background research, I shift to my empirical approach. Chapter two gives two case studies in order to find how those theories are reflected and implemented in real examples. As far as I am concerned, London is one of the best examples to illustrate all these theories. The urban development process of London itself is a part of history about how these theories developed. After making an introduction of the Greater London Plan, I give more specific analysis related to the population, traffic and certain policies. Therefore I could assess how those theories really happen in reality. After considering these three aspects of London urban plan above, the conclusion is made about ‘in which way are they influencing urban development and do they really prevent urban sprawl’. The second case study is the example of Shanghai. As one of the most striking examples about the process of urbanization which is taking place in my home country, China, Shanghai now confronts with great opportunities as well as challenges given by urban sprawl, and eagerly needs a systematic urban plan. Some general information about sprawl and density in Shanghai is given at the first part in order to provide the background of urbanization in this city. To deal with current situation, Shanghai has made certain master plan projects, for instance, ‘the One City, Nine Towns’ and slow mode transportation. In this thesis, some examples are analyzed to get a conclusion about unique parts in urban plan field with ‘shanghai characteristics’.

I finish my thesis with a comparison and conclusion in the last chapter where I compare differences in the case study of London and Shanghai. It also concludes the process of urbanization, common actions which authorities would take, and some highlights in the pre-experience. After that, reference list is listed.

Generally speaking, my main research questions in the thesis are:

1) What is the definition and history of urban sprawl, compact city and
satellite city?

2) How do these theories be reflected in case study of London and Shanghai?

3) Does the implementation of these theories really work in dealing with urban sprawl?
Chapter One – Theoretical Research

1.1 Urban Sprawl

1.1.1 Concept and Definition

There are plenty of ways to define the phrase of urban sprawl. Although it is hard to give an exact definition about what it actually is, I would like to find a general idea in order to get a conceptual understanding towards this phrase by introducing some of them.

The modern concept of urban planning began to evolve in Britain during the second half of the nineteenth century “…as a reaction against the industrialization which had created such great inequalities in living conditions by exploiting for profit whatever did not have to be paid for directly, such as housing, air, water and workers’ health” (Relph 1987). It led to a great variety of urban forms, including not only the positive urban form, but also the one which was criticized. The rise of urban sprawl, “as the primary form of urban development, is the one which has come under increased criticism in recent years because of its negative environmental, social and economic effects” (Newman and Kenworthy 1989). According to the Real Estate Dictionary (Jack P. Friedman 1991), urban sprawl is “a pejorative term for low-density development in suburban and the fringe of urban areas, with characteristics that include distance from employment and commercial centers, dependence on automobile travel, extended public infrastructure and little In-Fill Development”. Nelson et. al. (1995) also have summarized it in the planning literature to create a working definition of the concept as “unplanned, uncontrolled, and uncoordinated single use development that does not provide for a functional mix of uses and/or is not functionally related to surrounding land uses and which variously appears as low-density, ribbon or strip, scattered, leapfrog, or isolated development”.

9
As far as I am concerned, urban sprawl can be concluded as follow: to begin with, it could be related to an urban form. When connected to urban form, sprawl is usually considered as an opposite example to the medieval compact city. In this case, sprawl is defined “as the opposite of the centralized development, the walkable distances between functions and the high density”. (Madureira and Möllers, 2006) Moreover, it could also be linked to land use patterns. Land use patterns could be used as a good way of defining sprawl, which have the characters like low density, low mixed use without clear boundaries, and the traffic spatial framework which bases on the circular factor. The U.S. Transportation Research Board (1998), quoted by Nancy Chin (2002), lists the following characteristics about sprawl: “low density residential development; unlimited and non-contiguous development; homogenous single family residential development with scattered units; nonresidential uses of shopping centers, strip retail, freestanding industry, office buildings, schools and other community uses; as well as land uses which are spatially segregated”. Last but not least, it refers to urban density. Density is a good indicator of sprawl. To some extent, low density is equal to sprawl. The difficulty is to define what “Low” is. Generally speaking, the rate of population growth in suburbia, which is quicker than in city center area, is a sign of urban sprawl.

1.1.2 The Rise of Urban Sprawl, Urbanization and Counterurbanization

Sprawl is an evolutionary process of urban expansion, including two main parts: urbanization and counterurbanization. Therefore, it is relevant for the purpose of describing how these two different kinds of expansion take place and what main regulations they contain.
In the eighteenth and late nineteenth centuries, a large part of people lived in rural areas or small villages. “Even though cities had existed for thousands of years, before the Industrial Revolution only a tiny fraction of the world’s population lived in urban areas” (Elkin et. al. 1991). However, technological changes in the late 1700s brought a significant chance to accelerate the speed of urban development. Great numbers of people lived in urban areas, factory work replaced many former farm jobs, and the structure of urban environment was fundamentally altered through a series of technological innovations such as trains and electric trams.

Newman (1992) has identified three time periods shaping the development of urban areas. At the first stage, traditional cities had been characterized by a small and dense environment, with walking distance from one place to the other. This form of developed, because of limited social demand, is related to unenlightened productivity, and it can easily be seen in the form of most mediaeval cities. After the industry revolution, thanks to the technological development, which enabled cities to form a new way of development, the urban area got into the second stage. “Trains generated sub-centers, with the train station at the heart of a number of pedestrian pockets with similar characteristics to that of the walking city; whilst trams created linear, grid-based development which followed the tram routes” (Newman 1992). The decrease of time and expense in commuting and transportation improved opportunities for jobs, education and housing in a larger area. Living in cities permits people to seek economic opportunities and better life standard. As a result, the population in urban area grew fast and massive urbanization spread quickly throughout most of the developed countries at that time, which aggregated a large number of capital, greatly modified the industrial structure and promoted the development of society. With time passed, this aggregation effect became strongly. A lot of urban problems appeared, such as the unpleasant environment, terrible traffic and job market depression. They
probably led the city becoming not comfortable enough to live. Some people wanted to change this circumstance. Solution to this problem was the creation of suburbs, which allowed people to live in a comparatively pleasant location away from the pollution and poverty of the inner-city but still work in the economically booming urban areas. The third stage of urban development gave possibilities to make this change. It was based on the technological development of the automobile which began before the Second World War. However, it has only become the most important form of development until after the war when “…the automobile progressively became the transport technology that shaped the city. Together with the bus it became possible to develop in any direction, first filling in between the train lines and then going out as far as fifty kilometers” (Newman, 1992). People were no longer forced to live near either their working place or a transit station. The automobile made low-density housing feasible. City functions could be identified by different zoning patterns to make sure people could have the chance to ‘escape’ from pollution and chaos in industrial or business areas. People began to live in the suburb area. As a result, there was a decline of the population rate in urban area compared to suburb area, which was an important sign of counterurbanization.

In 1890s, the garden city movement was founded by Sir Ebenezer Howard in the United Kingdom, which was an alive approach to deal with former urban problems. It could be considered as the origin of counterurbanization. According to it, garden cities were intended to be planned as “self-contained, communities surrounded by greenbelts, containing carefully balanced areas of residences, industry, and agriculture” (Wikipedia, 2010). Smaller developments were inspired by the garden city movement and were modified to build residential ‘garden suburbs’ without the commercial and industrial components of the garden city. They were built on the outskirts of cities, which mostly were in rural settings.
There were some regulations contained in the process of counterurbanization. Firstly, most of people who moved into suburb areas were the upper class. These suburbs were linked to the city by railway or horse-drawn carriage, which made them more desirable to live than the inner city. Later, the middle class began to move to the suburb, but they still went to the inner city for their job and entertainment. The spatial separation of land use would have improved living conditions greatly for residents by reducing air pollution, improving health through new regulations designed to combat overcrowding, and creating comfortable suburbs for residents to live in. During the third period, residential suburbanization and industrial suburbanization seemed an inevitable trend in the urban development. Many residents of metropolitan areas no longer lived and worked within the central urban area. Instead, they chose to live in suburbs and commute to work via automobile or mass transit. This was one of reasons that caused urban sprawl. At the last period, the independence of suburb area became so strong that the single residential function was instead by multiple urban functions, which formed polycentric urban spatial framework and the urban agglomeration. These periods of urban development represented how the decentralized sprawling developments characterized today’s cities. (Li Dehua, 2001)

### 1.1.3 Consequences of Urban sprawl

Most of the time, sprawl is linked to some uncommendable consequences which might arise severe criticism towards it. It seems quite necessary to point them out in order to understand the concept more comprehensively.

According to former study, a definition which based on the consequences of sprawl, given by Ewing (1994), detached the negative impacts from the urban
form. According to Chin (2002), “Ewing (1994) has identified poor accessibility of related land uses, and lack of functional open space as a way to identify and define sprawl. It is suggested that sprawl can be defined as any development pattern with poor accessibility among related land uses, resulting from development which is not concentrated and which has homogenous land uses”.

In my opinion, the consequences which have a negative influence on urban sustainable development could be concluded in certain aspects as follow:

1) It raises traffic jam. The distance of driving per capita in America has risen 59 percent from 1980 to 1995 (Ewing Et Al 2003). Traffic jam has become a common situation that urban commuters have to face with every day. Because of long time spend on commuting and dependence of private cars, it also brings problems involving inconvenient living and carbon dioxide pollution.

2) It leads to the excessive transportation cost which could be avoided. For instance, the government needs to invest much more to establish infrastructure in a sprawl city form compared to a compact city form based on the primary data level. It also means the pressure given to taxpayers is comparatively higher. Another example is, because of the low density and decentralized spatial distribution, sprawl has increased the commuting distance, therefore enhanced transportation cost to residents and corporations.

3) To some extent, it changes the tax-base of local government. In some countries, for example, America, 75 percent of local financial revenue is from real estate tax. When sprawl happens, the middle or upper class of society tends to move to suburb area because of the low price and high living standard of house, while the low-income group may prefer to stay in the inner city for the reason that their financial condition limits the mobility of residential choice. As a result, the housing price in the inner city will go
down, which means the local tax-base and financial revenue will be declined.

4) It gives rise to the enormous waste of land resource. Because of the decentralized form of urban development, a large number of farmland and green space has been exploited for real estate usage. According to the average data, in the ten-year time between 1982 and 1992, America lost four million acres of farm land per day, which gave a high pressure to their agriculture development. (Ding Richeng 2005)

1.2 Theory of Satellite City

1.2.1 Concept and Historical Background

Because of urban development extremely encouraged by industrialization and economy, urban illnesses have become much serious than before. In the early 20th century, urban sprawl pushed urban planners to think about how to control and decentralize the population in urban areas. By limiting the rapid speed of urbanization, they believed those urban problems, at least a small part of them, could be solved and therefore improved the standard of urban life. The concept of satellite city was a product of those attempts. It was put forward by Raymond Unwin, a proponent of Sir Howard’s garden city theory, and considered as a theory in 1922. The core part of this theory is: by building satellite cities near the metropolitan area, a part of migrants can be attracted and therefore population growth is controlled in the central area; or some urban function, especially the industrial function, is decentralized into the newly-built area.

1.2.2 The Rise of Satellite City

In the early 20th century, a large number of capital cities have made the satellite city plan. In this part, I will use three remarkable examples in
historical process to illustrate how the satellite city theory is developed and implemented in Europe.

From 1912 to 1920, there was a residential area plan implemented in the suburb of Paris in order to build twenty eight satellite cities located in areas sixteen kilometers far away from Paris. At beginning, it only provided the residential function. Without other facilities, like job opportunities and entertainment, people who lived in those areas had to go to the metropolitan area every day because of their working and living demands. It was the primary form of satellite city, and normally considered as a commuter town or bedroom community. These terms suggest that residents sleep in these neighborhoods, but mostly work elsewhere; they further suggest that these communities have few commercial or industrial activities beyond a small amount of retail which is oriented to serve residents. Because of the limited urban function and facilities as well as strong dependence to the metropolitan city, the influence of these commuter towns was quite little in population control and decentralization.

In 1918, Finnish architects Eliel Saarinen and Bertel Jung were invited to make an urban plan of Munkkiniemi-Haaga, a newly-built area of Helsinki. Although only a small part of this plan has been implemented because of some historical reasons, the practical influence in population control was also obvious. In this plan, Mr. Saarinen proposed to build a new type of satellite town, which provided not only the residential area, but also some industrial and commercial facilities in order to encourage a part of population to have a normal daily life in the satellite city. It was aimed at controlling the population growth in the metropolitan area.

However, there was no doubt that both the commuter town and the ‘Munkkiniemi-Haaga model’ still had limited influence on population
decentralization. As a result, urban planners began to think about how to develop the theory of satellite city in a new way. During the second-world-war, a number of European cities were destroyed and therefore people eagerly needed a rebuild plan. The Greater London Plan of 1944 (often referred to as the Abercrombie Plan), which focused on the development and improvement of London, was a good demonstration of the modified theory. It was directly related to the provisions outlined in the County of London plan in the previous year and intended to control and halt London’s expansion. By creating new towns, Abercrombie believed it could reduce sixty percent of population in the metropolitan area of London. These new satellite towns had strong independence, including enough infrastructure, certain facilities and industry to satisfy the living and working demand of residents. Harlow was one of those early attempts, planed in 1947 and built in 1949. It was 2590 ha, located 37 kilometers far away from London, and the planed population was 78000. In Harlow, the residential community was composed by several neighborhood units, which had their own commercial and education facilities, and connected with the metropolitan area and industrial area by green belt and main road. During 1940s and 1950s, there were eight satellite towns built near London with five hundreds factories and 400,000 residents. Another good example was Milton-Keynes, a latter attempt in 1960s. It was 9000 square kilometers, located between London and Liverpool. Compared to the former satellite towns, Milton-Keynes had larger urban scale, including better transportation and infrastructure, which made a good balance between work and daily life, and thus greatly reduced the dependence of the metropolitan city. (Li Dehua 2001)

1.2.3 Conclusion

Generally speaking, building satellite city has made some influence in four aspects as follow:
1) It controls the speed of urban sprawl in the metropolitan area by promoting decentralization of population and urban function. The satellite city development strategy in South Korea is a successful example in this aspect. After the implementation of this strategy, the proportion of people in the metropolitan area of Seoul is declined from 6.1 percent to 3.2 percent during the year 1981 and 1996. Meanwhile, the proportion of population in total areas including satellite towns is increased from 50.5 percent to 70.7 percent. (Richardson, Bae, and Jun 2002) According to these data, the population moving from metropolitan area of Seoul to towns nearby is 3.5 times more than the population moving from those towns to the metropolitan area.

2) It could ease the pressure of job market. From 1981 to 1990, the rate of employment growth in some metropolitan cities like Seoul and Pusan is 20 percent lower than the national rate. On the contrary, the rate in Inchon, the port city near Seoul, is 106 percent at the same period. (Markusen 1999)

3) It emphasizes public transportation in daily traffic. To make a convenient connection between satellite cities and metropolitan cities, a good public transportation is the best choice. In Singapore and the newly-built city, Tampines, 74 percent of citizens use the public transportation to go to work every day.

4) It provides citizens more residential area, and thereby, improves the living quality. According to economic principles, more choices could increase benefits for customers. Because of effective and convenient transportation, the residential area in satellite cities, which has comparatively high quality and low price, is competitive to give people more residential choices and enhance their living quality.

1.3 Theory of Compact City

1.3.1 Concept and Definition
The concept of compact city is generally linked to the sustainable development within urban environment and counteracting the perceived negative social, economic and environmental impacts of urban sprawl. This concept was raised by Commission of the European Communities in 1990. The assumption of this theory is greatly based on that mediaeval cities are effective to prevent urban sprawl, keep the open suburb space, reduce the resource consumption, as well as provide the citizens a comfortable living environment.

There are many attempts to define exactly what a compact city is, “… but in general it is taken to mean a relatively high-density, mixed-use city, based on an efficient public transport system and dimensions that encourage walking and cycling”. (Burton 2000) According to Thomas and Cousins (1996), initial impressions of the compact city “…invoke an intense medieval city, whose limits are clearly visible, and where the hubbub of activity is confined within the city’s walls”. While it is highly unlike what urban planner advocates, such as rebuilding walled cities, it prohibits urban activity which is desired by the supporters of the compact city theory. Indeed, Lock (1995) stated that the compact city was the process of ensuring “…that we make the fullest use of land that is already urbanized, before taking green fields”; or Naess’ (1993) definition of encouraging development to where “technical encroachments on nature have already taken place” typified the approach of the compact city advocate.

1.3.2 Compact City: how compact it should be and what features it has

After a general introduction about the concept and functions of this issue, there is a need of analyzing features of compact city in order to get an
intensive study about what compact city exactly is.

Although the compact city is distinct to urban sprawl, there are still many questions about how compact this kind of city should be, and to what extent it extends beyond a simple population density increase in the urban environment. Scoffham and Valex in *How Compact Is Sustainable - How Sustainable Is Compact?* (1996) argued that “it is highly important to ask these questions about what the compact city is; whether buildings should be brought closer together; whether the number of people living in buildings should be increased; whether it is dwelling density or activity density that needs to be ‘compacted’; and what role a mix of urban uses has in the compact city debate”. According to Pratt and Larkham (1996), “One of the key problems with the compact city hypothesis is that it brings very diverse concepts together under a potentially misleading banner. Moreover, these concepts vary from polemics based on rather utopian ideologies through to minutely detailed empirical research.”

Burton (2002) proposed measuring urban compactness by three processes: firstly identifying and defining the various aspects of urban compactness; secondly developing indicators for measuring each of these aspects; and thirdly calculating and reviewing the measure of indicators for a range of towns and cities. As far as I am concerned, these are three most common positive features related to a compact urban form:

1) A high-density city
The word ‘high density’ contains many different meanings, such as ‘high population density’, ‘high floor area ratio’, etc. According to the theory, the high density urban form is beneficial to protect land resource and reduce the consumption of energy. It encourages people to use public transportation facilities, improves the usage of all kinds of infrastructures and promotes a more sustainable way of life. The more people are concentrated, the more
traffic is generated. It is obvious that a high density city is more efficient in fuel consumption.

2) A mixed-use city
After the promotion of ‘mixed-use’ zoning in *Charter of Machu Picchu* (1977), people pay attention to mix different functions in one area, which is the original thinking of the mixed-used compact city. According to this theory, by mixing land functions such as residential and public service, more requests of daily life could be satisfied in certain distance. For example, to obey eco-friendly and mixed land-use principles, the distance between the residential area and the working area should be as short as possible. It also alleviates the traffic pressure. To build a compact city, the main issue is to solve the traffic problem, which is also important to deal with air pollution and land-use waste.

3) An intensified city
In an attempt to copy the supposedly desirable and densely developed cores of old European cities, many different methods of intensification have been proposed, such as “the development of previously undeveloped urban land; redevelopment at higher densities of existing buildings or previously developed sites; sub-division and conversions; as well as additions and extensions” (Williams 1999). However, having a compact city does not mean to compact the city extremely. To deal with the unwanted parts of high-density city, the theory of compact city promotes to intensify the urban area by building a group of city centers which are connected by the public transportation. This polycentric form of urban development is a new approach of spatial planning which gives reasonable solutions to counter-urbanization problems.

When it comes to these three features, the first two aspects are related to the form of the compact city, while the third one focuses on the process of making the city more compact. Thus, “…more compact cities can only be achieved
through a process of making existing cities more dense, of encouraging more people to live in urban areas and of building at higher densities: of intensifying cities” (Williams et. al. 1996). Therefore, it is a consensus that the compact city model is based on an increase in density from current levels. Given that a main goal of the compact city model is to reduce the impact of urban development upon the countryside, most future urban growth will need to occur within the existing city boundaries (Williams, 1999). Lock (1995) claimed that “there is no technical or professional agreement on how best to measure density, and that few planners are comfortable in distinguishing between net and gross residential density, and overall town density”. This disagreement makes it difficult to find the elements of urban intensification and to figure out which type of intensification should be promoted. The nature of urban compaction has been deemed very important (Burton, 2002; Breheny, 1996) because certain types of development are generally thought of as being more desirable than others: “high-rise apartment buildings are often associated with crime, overcrowding and the ‘failure of tower-block living’” (Williams, 1999; McLaren, 1992); while “high-density that is not characterized by high-rise is often thought of as ‘town-cramming’”(Williams et. al. 1996).

1.3.3 Compact City and Sustainability

Through these expressions about characters of compact city, many measures which deal with unsustainability of sprawl-type development are quite obvious. As a result, regulations of compact city have been designed to reduce the dependence of private cars and to decrease the loss of open suburbia. Many people think that more than just environmental benefits can be gained by intensifying urban areas; in fact “higher density settlements are argued to be more socially sustainable because local facilities and services can be maintained, due to high population densities, and therefore
accessibility to goods and services is more equitably distributed” (Williams 1999). Furthermore, “…high density urban living is seen as a prerequisite for vitality, vibrancy, cultural activities and social interaction” (Williams 1999). The recovery of local economy, especially in the countryside area which is ignored by urban decentralization and sprawl, can also be achieved through this kind of intensification. Therefore, it is very common to link compact city with sustainability.

According to what Ernie Scoffham and Brenda Vale stated in the book ‘the Compact City: a Sustainable Urban Form?’, we can describe how compact is sustainable related to the urban plan field in the following two ways. For one thing, it provides adequate space for further urban development in the future. High density, not only in the residential aspect, but also related to land use, could leave more space for future possibilities. This does not dogmatically mean to gather more people in one place. The deep meaning is to find a sustainable manner “in which the residential functions are arranged, so as to provide long term flexibility and adaptability” (Scoffham and Vale, 1996). For another, it promotes a flexible framework. To be a city which is fit to live in, the accessibility to employment and shopping area is an important measure. When it comes to urban form, the sprawl one has to inevitably face with high dependence to private car and emission problem, while compact city could be less worried about that because of the acceptable commuting distance and capable public transportation. Additionally, such a flexible framework of a re-evaluation of the Medieval New Town plantation encourages “progressive development according to the will of autonomously organized people and communities where individuals were granted freedoms – to dwell and to trade- in return for organized security” (Scoffham and Vale 1996). By creating a flexible framework, Ernie Scoffham and Brenda Vale believed it could “evoke the random nature in which the traditional town or village has grown and mutated over a period of time with a resultant consistency of appearance”
(Scoffham and Vale, 1996), which contributes to the urban sustainability.

Although the benefits of compact city are highly linked to low energy consumption, less car dependency, effective public transportation service, the re-use of previously developed land and so on, there are still some people who hold the doubt attitude towards it. Thomas Louise and Cousins Will stated that “there is evidence which suggests that these claims are at the very least romantic and dangerous, and do not reflect the hard reality of economic demands, environmental sustainability and social expectations” (1996). They believed the promotion of compact city has ignored the reasons and benefits of decentralization. To begin with, for the economic demand part, it cannot be denied that nowadays the need to concentrate and centralize business communities is reduced because of modern economy and production. The advancement of technology provides many new forms of employment and lifestyle. For example, one can work at home by teleworking. The use of telecommunication has reduced the need of concentration in business field. Actually the decrease of density seems inevitable in both cities and small towns for the reason that the size of space, such as sophistication and machinery, is becoming much greater with less people. Moreover, for the environmental expectation part, it is doubtable that compact city could be really helpful for sustainability. In a large centralized city, the traffic congestion is very common. Even to some extent it could decrease car dependence, the increased travel time and slower vehicle speed will still greatly reduce efficiency of fuel. Last but not least, for social expectation part, the proposal of compact city is reversal from the most possible trend of future urban development. According to the analysis of population movement trend in Britain (Blowers 1993), the residential population and employment in major cities of England moved to small towns and villages. This trend of decentralization also seems to be continued this century. It is very common that people who live in the inner city with small apartment and parking
problem will prefer to move out of it. In suburb, they can get more space for their living and entertainment needs. To sustain society with such living demand, the proposal of urban development should be more practical to the reality.

1.4 Conclusion and Comparison

In order to assess whether there are some phenomenons, such as urban sprawl, compact city and satellite city, which occur in the case study of London and Shanghai, it is essential to get a concrete understanding of these concepts by making conclusion and comparison.

Cities consume a far greater amount of resources than any other human environment and offer opportunities for sustainable development. Because of problems caused by urban sprawl, it is clear that we must do something to make urban areas more sustainable. In order to deal with it, actions are taken in different levels. In my opinion, satellite city is more like a technical urban plan method. It is much concrete and provides visible solution to some urban problems. In contrast, the word ‘compact city’ is like an inward guide, and sometimes can be equal to ‘sustainable’. It can be used in different fields of urban plan. For example, the master plan of a city can follow a ‘compact city’ style. Meanwhile, urban policies can also represent the principle of compact city.
Image 1-1 is a good illustration of what we will get in different ways of urban plan. The upper part of image 1-1 (above the main road) is a spatial framework of urban sprawl. The main characters are: (1) the high level isolation between different land-use types (2) the limited access toward the outside traffic.

There are some negative influences given by the spatial framework which is shown in image 1-1: Firstly, it increases the usage of private vehicle. Instead of bicycling and walking, the residents who live in monomer buildings are more likely to use the vehicle in their daily lives. Secondly, it limits traffic access extremely. According to this framework, the residents have no choices but to use the main road for their daily lives. As a result, it gives more pressure to the main road and might cause the traffic jam. What is more, it
also limits the communication in the neighborhood. The physical distance between a single building and an apartment building might be small, but it could be more times in the distance between their social communications and cause the social isolation. To make things worse, for the reason that vehicle is the only way of transportation, the parking could be another problem.

The lower part of image 1-1 is the spatial framework which is similar to the concept of compact city. The urban densities of these two parts are nearly the same. The only difference exists in the spatial framework or pattern. To begin with, because of the open pattern of land use, the residents could take other types of transportation so that the parking problem could be solved. Moreover, more choices of roads will be given, including the main roads and the block roads, which could reduce the traffic pressure remarkably. Last but not least, the pattern shown by the lower part will increase the communication between neighbors in order to harmonize the block. To sum up, the network pattern of road plan is more sustainable and propitious to improve the traffic efficiency as well as the connection between blocks.
Chapter Two – Case Studies

2.1 The Greater London Plan

2.1.1 Introduction

London is a part of a metropolitan region with approximately 8 million people. It forms "a ‘mega-city region’ in which there are a vast number of linkages and networks between all the urban settlements" (Spatial Development Strategy for Greater London 2004). Within this wider region, London, which performs the functions characteristic of the central city, maintains the main generator and source of jobs as well as of culture, leisure and higher-level shopping activities. It has a well-established pattern of centers with different size and function. The center has always been an immensely powerful place of government, trade and culture. Moreover, it has been strongly influenced by international forces. This pattern of centers can be described as polycentric, which provides the basis for the network of centers with different scales and associates guidance in order to secure appropriate capacity at each scale to
meet different urban demand.

The most remarkable feature of Greater London Plan (1944) is the circle plan. According to it, in the area which the radius is 48 kilometers, London is divided into four circle areas: inner-city belt, suburb belt, green belt and outer belt (Image 2-1). In the plan each belt has different functions. The inner-city belt plan is focus on lowering the population density, industry control and urban regeneration. In the suburb area, the goal is to build high-quality residential areas and communities with local autonomy. The width of green belt is approximately 16 kilometers. The main part is farmland and green landscape, which is to prevent and control urban sprawl strictly. The outer belt provides space to build satellite towns in order to take the spill of urban population. In addition, each area of London is connected by ring road and radial route.

2.1.2 Population

Starting with the change of population from last century until now, it is obvious to see the concentrated influence given by urban sprawl in London in population aspect. When deeper analysis is made towards this change between 1990s and 2000s in the greater region, international migration seems the most important element which contributed to the population growth. Because of the successful pre-urbanization, London has got a charming attraction in the national level. What's more, based on London's age structure, this trend will be hold in the next six years, especially in business field.
Table 2-1: Population of Greater London (1890-2010)

Table 2-2: Projected Population

From table 2-1 we can see that without certain regulation and plan towards urban sprawl, the population on the current territory of Greater London rose from about 5.5 million in 1890s to an estimated 8.6 million in 1940s. The great number of population gave London too much pressure. To make things worse, the negative influence of population concentration was much heavier than positive parts. In order to control the rapid population growth, some policies and plans were promoted in 1940s. Driven by policies of decentralization, London’s population fell significantly to 6 million people by early 1980s and it has been growing steadily during this period. However, forecasts show that there will be large changes both in scale and nature of London’s population. According to table 2-2, the population will raise to nearly 8 million by 2016 with an increase of around 700,000 people in 15 years.
According to this table, we can see that the change of population was made up of three main elements. The first one was natural growth (the excess of births over deaths). It represented an increase of about 40,000 people each year. Another important element was in-migration. It increased rapidly, leading to an average annual increase of around 62,000 in the 1990s. Last but not least, alongside these two growth components, London lost around 51,000 people each year to the rest of the UK. This means that there has been an annual average increase in population of around 51,000 each year. In the most recent period, this rate has been significantly exceeded. This situation displayed the attractiveness that London exerts on the national level instead of region level.

Statistics Canada which was specific to the downtown boundaries provided a specific snap shot of who was living in the core, what they did, and what their
education and income was during the past ten years. According to the data, there were 3430 people living in the downtown, with 23% increase since 2001. In 2006 there were 2135 occupied households in the Downtown, with 39% increase since 1996. Perhaps the most striking trend to observe from the Census Canada data was the 23% increase in population that the Downtown experienced between the 2001 and 2006 census years.

The change of age structure in London is also relevant. Table 2-5 showed recent and projected changes in the population by age group. While two of six age cohorts have declined slightly in London between 2001 and 2011, the downtown has experienced growth in all six age categories – most notably in the 15-29 cohort and the 45-59 cohort. It seemed the impact of migration has had a rejuvenating effect on London’s age structure. People moving to London tended to be young adults, such as students or first time employees, while those moving out were mostly older workers, retired people and young families. To sum up, the region revealed energetic concerning there was a rising tendency in business attractiveness and expenditures.

### 2.1.3 Traffic

Ringway plan and accessibility are two major issues that influence physical plan of London. There are a lot of activities depend upon good accessibility,
such as commerce, services, and industries. Therefore, the road system and transport mode have a word in settlement patterns. What I am trying to find out is how urban development in London is influenced by road system and transport mode.

In 1943 Scotland Yard’s chief traffic policeman, H. Alker Tripp, promoted some important opinions about traffic system in his book, *Town Planning and Road Traffic*, which had a significant influence in later traffic plan. In this book, he developed an extended case for replanning on the precinct principle. His idea depended on a clearer road hierarchy for metropolitan areas. This principle later combined with theory of neighborhood unit, and provided the theoretical foundation for the concept of superblock. These principles of hierarchy and precinct duly appeared in the 1943 County of London Plan and elements of these ideas influenced other plans, such as the plan of Coventry.

![Image 2-2: The original Ringway plan in 1969](http://www.cbrd.co.uk/histories/ringway2/img/03.jpg)
In the 1960s, the Greater London Council put forward a series of plans for a network of urban motorways which were to cross the city (Image 2-2). The main part of this plan was the ringways, which made loops around the heart of London. Ringway 1 was the London Box, a tight loop ringing Westminster and the City, and Ringway 2 was the upgrade to the North and South Circulars. Ringway 3 included the Dartford Crossing, and Ringway 4 was further out in open countryside. What we now know as the M25 is parts of Ringway 3 (in the east and north) and Ringway 4 (in the south and west).

This plan was modified by the Greater London Council (GLC) in 1972 (Image 2-3). Ringway 1 was never materialized except the part near the center. The plan redrew the map, dropping Ringway 2’s southern flank. The remaining sections of Ringways 1 and 2 would have to cope with the traffic of the missing sections. The new plan would shorten the life of the ringways, bringing them to capacity at a much earlier date and removing their effects in crucial parts of London.
Here is some information about the traffic infrastructure of London. London benefits a lot from a systematic public transport network, which includes the subway system, national rail service and a bus network. It provides a high level of transport accessibility. For example, there are 14 tube lines in central London, which forms an effective underground network. This map shows the existing public transport accessibility levels across London, based on the PTAL method *Parking Standards, Transport Assessments and Public Transport Accessibility Levels*. It provides a consistent framework for assessing public transport accessibility. According to image 2-4, the central area is particularly well served and town centers also have good levels of public transport accessibility.
In the late 20th century, the London authorities hold a common opinion that the traffic infrastructure of London was good enough to satisfy the usage demand of London citizens. They believed the current traffic system could adapt the growing need by itself, and thereby, the traffic plan development of London was stagnating during this period. Unfortunately, things did not go well as their thoughts. In 2000, nearly every family had two vehicles. From this table, we can figure out how important a safe and effective vehicle and pedestrian transportation network is. Approximately half of central London citizens chose driving as the mode to work. 42% of downtown residents reported walking or cycling as the principle means of transportation compared to 8% of citywide. A further 14% cited public transit as the primary means of transportation. According to the data, we can tell that the private car traffic is still the main transportation mode. Because of the limited forecast about the motorway pressure, the traffic situation has taken a turn for the worse. To deal with it, the London Authority invested billions of pounds to make a ten-year traffic plan. The programme of traffic improvement has been developed to “address current problems of movement, support the expected growth and improve access to and from the 2012 Olympic and Paralympic venues” (The Mayor of London 2004)

<table>
<thead>
<tr>
<th>Transportation Mode to Work</th>
<th>2006 Downtown (as % of PD*)</th>
<th>2006 Central London (as % of PD*)</th>
<th>% City-wide</th>
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<tr>
<td>Carpool</td>
<td>6%</td>
<td>8%</td>
<td>8%</td>
</tr>
<tr>
<td>Drive</td>
<td>38%</td>
<td>49%</td>
<td>49%</td>
</tr>
<tr>
<td>Public Transit</td>
<td>14%</td>
<td>13%</td>
<td>9%</td>
</tr>
<tr>
<td>Walk/Bike</td>
<td>42%</td>
<td>29%</td>
<td>8%</td>
</tr>
<tr>
<td>Other</td>
<td>&lt;1%</td>
<td>1%</td>
<td>&lt;1%</td>
</tr>
</tbody>
</table>

Table 2-6: Mode of Transportation to Work (2006)
(Source: Statistics Canada Census Data, 2006)
2.1.4 Policies for a Compact City

To deal with urban sprawl which happened in London, the government paid a lot of attention on policy making. The example of compact city initiatives in the “Spatial Development Strategy for Greater London” would further contribute to sustainable urban growth.

Although compact city does not necessarily imply high-rise buildings, tall and large-scale buildings have already become an important component of modern cities. When it comes to London, it seems that this city provides an example of efficient land usage to create a sustainable world city. Here we can see some clues about it. In Policy 4B.9 “Tall buildings–location”, in order to “promote the development of tall buildings where they create attractive landmarks enhancing London’s character, help to provide a coherent location for economic clusters of related activities and/or act as a catalyst for regeneration and where they are also acceptable in terms of design and impact on their surroundings”, tall buildings should be identified by suitable locations which are included in sub-regional implementation frameworks and “the potential benefit of public access to the upper floors” are took into account. Moreover, according to Policy 4B.10 “Large-scale building–design and impact”, large-scale buildings, including tall buildings, are required to design with highest quality, such as “be suited to their wider context in terms of proportion and composition and in terms of their relationship to other buildings, streets, public and private open spaces, the waterways or other townscape elements”, “be attractive city elements as viewed from all angles and where appropriate contribute to an interesting skyline, consolidating clusters within that skyline or providing key foci within views” and “provide high quality spaces, capitalize on opportunities to integrate green spaces and planting and support vibrant communities both around and within the building”. These policies are quite helpful to maintain a high level activity at
locations with great transport capacity. Meanwhile, well-designed tall and large-scale buildings can also be landmarks and hence contribute to urban regeneration as well as improving London’s skyline. (The Mayor of London 2004)

2.1.5 Conclusions

Having looked at these three aspects of London urban plan above, in which way are they influencing urban development and do they really prevent urban sprawl?

On the one hand, according to great London plan, the spatial framework of London aimed at slowing down urban sprawl by encouraging population decentralization. However, although to some extent the green belt has indeed controlled the speed of urban sprawl, it could not change the fact that London still has been sprawling. Growing population and industries went over the green belt, spreading in a larger area of London. As far as I am concerned, the most effective function of green belt is to build the ecological landscape space in the suburb area. Additionally, in 1950s, eight satellite cities were built near the central London. Generally speaking, these satellite cities have made some positive influence on decentralization, such as reducing the residential pressure, slowing down population growth in the metropolitan area and sharing some urban functions. In 1970s, the metropolitan area of London became comparatively depressed and shrunk because of the pre-policies. Consequently, the British government changed the relative policies by promoting urban renaissance in the inner city instead of building new satellite cities. To sum up, in this case, it seems building satellite cities is not as effective as it supposed to be.

On the other hand, one can argue that through the expansion and
improvements of the transport network, urban sprawl is correspondingly controlled. For example, there are many ways to prevent urban sprawl with an emphasis related to growth management in London’s Official Plan: conversion of non-residential buildings to residential uses, higher residential densities in Downtown and Central London, opportunity for proposals for higher densities, etc.

2.2 Case Study in Shanghai

2.2.1 Sprawl and Density in Shanghai

When it comes to the process of urbanization taking place in China, Shanghai offers one of the most striking examples.

In 1949, Shanghai was divided into 20 urban districts and 10 suburban districts, which covered an area of only 636 square kilometers. By the year 1958, after Shanghai took over 10 counties from Jiangsu Province, the area under the city’s jurisdiction expanded nearly 9 times of the figure in 1949. By the end of 2008 Shanghai had 18 districts and 1 county, and the total area
was more than 6 thousand square kilometers. According to these data, we can see sprawl has happened in 50-year time with a rapid speed, and it seems this trend is still continuing.

Due to urbanization and the constant inflow of people from other parts of the country, the population in Shanghai keeps growing. When Shanghai turned into a city, it had a population about less than 100,000. By the time Shanghai was liberated in 1949, the figure rose to 5 million. By the end of 2008, however, the city’s permanent residents had grown to 13 million, or 1% of China’s population. The population of long-term residents reached 18 million, including 5 million from other parts of the country. On average, the city had nearly 3 thousand long-term residents per square kilometer of land.

### 2.2.2 Satellite City Plan in Shanghai

![Image 2-6: Satellite City Plan in Shanghai, Edit by Author](Source: sh.focus.cn/msgview/1507/8256618.html)

Like London, Shanghai is implementing a version of new town development that draws inspiration from the likes of Howard, who sought to address the urban problems of his day. Because of the high speed of urbanization in Shanghai, more than 12 new town projects will be implemented over the next 15 years, and five will carry the theme of sustainable urban development. The
project, ‘One City, Nine Towns’, seeks to achieve important social and economic goals. It is pertinent to include here an overview of the three main towns in ‘One City, Nine Towns’ project:

**Luodian New Town**

It is located in the Baoshan area, designed to reduce urban growth pressure of the central area of Shanghai by creating a western style satellite town. The theme of this plan is Swedish, which establishes an ecologically sustainable development mode for almost 60 thousand inhabitants. By associated with Garden City ideas, Luodian will provide certain land for industrial use in order to increase employment opportunities with pollution-free storage logistics. Additionally, it is also an ecological area, including forests, lakes, islands, and a Nordic-themed adventure garden(Image 2-7). Because of some existing rivers for transportation, greenbelt features, and green residential areas which give a lot of real estate choices, the urban development in Luodian will fit the so called “ecological green heart” envision for the Baoshan district.


**Qingpu New City**

This is the one that focuses on greater metropolitan region by making municipal plan in Shanghai. It is located in the western part of Shanghai. In this district, there is a large industrial zone and some old town centers which are protected. In order to achieve the goal of being an environmentally friendly
industrial zone, the industrial zone maintains environmental and economic sustainable principles in the process of production. Moreover, in the historical area which is located in an outer-ring suburb, local architectures will be preserved through a combination of tourism (Image 2-8). For instance, in Qingpu, nowadays the natural waterways have been used for transportation purpose, which is quite environmental friendly. It could also be a hot spot in tourism.

![Image 2-8: Qingpu Historical Center](http://big5.elong.com/gate/big5/www.elong.com/seoresource/pictures/20090227/14b9e7fa53d24c75a82adce02f99b482.jpg)

**Chongming Island**

As one sixth of Shanghai’s total land area, Chongming is the third largest island in China, which covers more than 300 thousand acres. It is currently considered as an important agricultural center and a base for shipbuilding. There are several new town projects planned for Chongming in order to create it as an ecological demonstration island. For example, it will be a new site of reservoir, which is significant to give water supply in Shanghai at the year 2020. Except the housing project, Chongming will also offer ecotourism (Image 2-9), recreation, environmental education, ecological research, renewable energy resources, and a solar power generator. Additionally, there is a research and technology park designed for five universities in this area. Because of the environmental beauty, Chongming will have a town plan which includes resorts, a conference center, entertainment venues, theme parks,
and stadiums on its northern portion. For the transportation part, subway system will be established to connect this island to Pudong International Airport in order to serve the resorts.

2.2.3 Slow Mode Transportation in Shanghai

In order to reduce the dependence of vehicle, use energy effectively and make the city more compact, Shanghai government has promoted slow mode in transportation system since last century. In this mode, traffic is oriented by cycling and pedestrian. The plan of slow mode transportation in the inner city of Shanghai is a good example to illustrate how slow mode makes this city compact.

In this plan, the efficiency of traffic system and the connection of different transportation are improved by slow mode transport facilities from two parts as follows. For one thing, slow mode transportation road system is built in the inner city. These areas are places which will attract a large amount of traffic, for instance central business districts, schools and residential areas. In order to avoid sprawl in Shanghai, locations of these places are considered very carefully and cycling tracks are built to give people chance to enjoy a
non-vehicle experience. Based on the short-distance access to most of places, the city will actually become compact. For another, slow traffic area is set in the urban freeway system. Compared to vehicle traffic, it is obvious that non-vehicle traffic, including cycling and walking, is sometimes marginalized, for the reason that it could be easily disturbed or even hurt. As a result, in order to encourage slow mode transportation in the inner city, it is necessary to build safe island in urban freeway area for the transferring of vehicle and non-vehicle traffic. In these areas, pedestrians and cycling could use the designated non-vehicle lane for the short-distance visit and have enough space to transfer to the public transportation. By the promotion of slow mode transportation, more people would choose non-vehicle way in their daily life, and therefore easily feel compact in Shanghai.

2.2.4 Conclusion

To some extent, although the process of urbanization and the plan of satellite cities are greatly influenced by western style, there are still some unique parts with shanghai characteristics.

To begin with, unlike the old tradition, industrial zone is no longer the main part of satellite city. In ‘One City, Nine Towns’ program, the plan is inspired by western style of market-oriented economy, which contributes to the prosperity of other industries such as tourism and culture. Besides, the satellite town development in Shanghai also includes environmental features. The program gives priority to implementation of rapid mass transit. Far from promoting sprawl in the traditional sense, the program continues implementation of policies that promote development of smaller urban centers in rural areas.

Moreover, it is also purposed to develop satellite cities by building college towns. By decentralizing colleges of central city, a large amount of students
and faculty staffs will move into the new town, which brings social needs and thereby attracts economic investment. Besides accessible transportation and good infrastructure, in order to improve the attraction for population in new towns, authorities should also offer some preferential policies, such as low tax in real estate trade and flexible census registration. The only problem is, without primary and secondary sectors served as an industrial foundation, it could be easy for the new town to become commuting. To solve this problem, authorities could build advanced economic and technological development zones around the satellite city. It will not only produce regional self-sufficient relationship between supply and demand, but also ease the pressure of unemployment in the central city.

Last but not the least, as we all know, since China is named by ‘bicycle kingdom’, which means the bicycle possession in China is much higher than other countries, we have enough condition and facilities to develop slow mode transportation in the metropolitan part of city. This could be an effective way to control urban sprawl and to make the city more compact. However, there is no doubt that our trip mode is greatly influenced by morden lifestyle, and private vehicle usage is becoming much higher than before. Therefore, how we could make a good balance between vehicle and non-vehicle traffic should be concerned carefully.
Chapter Three – Comparison and Conclusion

3.1 A Comparison of Urban Plan between London and Shanghai

According to my two study cases, we can see that they have totally distinct differences in the urban plan background. Firstly, London has a much longer history than Shanghai in urban plan field. To be a capital city and an important transportation hub of England for nearly 2000 years, London has sufficient urban resources and abundant practical experience towards urban sprawl. Comparatively, Shanghai has become a city in the late 19th century and only began to make a scientific urban plan in recent 50 years. As a result, one should admit that there are still a lot of shortages in the urban plan of Shanghai, such as lacking residential area and high traffic pressure. However, one should also find the positive part that Shanghai could learn a lot from the history of urban development in other countries. For example, when urban sprawl happens, by getting the pros and cons in the urban plan experience of London, Shanghai should pay attention to increase the investment of public transportation system in order to prevent sinking into the awkward traffic situation which now London has to face with. Secondly, London and Shanghai have a large distinction in city primary data. Shanghai is six times larger than London in the greater region, with two times larger in the inner city, and the population density in the central area is three times of London, with 5 million people more in general. All of these data determine a fact that they would confront with different situation in urbanization. London could sacrifice some interests in order to make the city compact, while Shanghai cannot help but to focus on improving the condition in densely inhabited districts, which means
they should make the city not that compact first. It seems that how to maintain sustainable in the rapid urban development process would be the top mission of Shanghai. Last but not least, they have obvious differences in urban function orientation. To be a primary financial center in Europe, London needs enough space to establish certain central business districts in order to fit the requirement of economic development. In the meantime, it also has another city identity as the political center of Britain, which means maintaining an integrated plan of central administration district is quite imperative. However, based on the geographical location and current economic condition, Shanghai has the potential to be the most important financial center and port city in Asia. To achieve this goal, authorities should focus on making a good balance between improving investment attraction in worldwide and controlling speed of urban sprawl.

3.2 Conclusion

After completing the investigation and comparison, I reached a deeper understanding in the process of urbanization. Generally speaking, the process has three periods. For quite a long time, normally urban development is promoted by industrialization. In the beginning period, the city is gradually concentrated with a slowly increasing population. The second period is quite controversial. On one hand, the urban economy and population grow rapidly in this period. On the other hand, the urban spatial expansion is easy to out of control because of urban sprawl, which causes a lot of problems. In the later period, the speed of population growth in the central area becomes slow again and suburbanization happens. In the meantime, the motivity of urbanization transfers from industry to service sector. Related to the case study of Shanghai, because of limited time of development, when the industrialization is still in the process, the informationization and economic globalization have already become the new fashion. Consequently, the
analysis of motivity in Shanghai could be complex. At least one thing can be sure is that no matter whether urbanization is over weight than industrialization or not, negative influences will be brought into urban development process. As a result, authorities, especially Shanghai government, must make a good balance between urbanization and industrialization.

According to two cases studied here in relation to the history of urbanization, western countries spent nearly 100 to 150 years during the period. In this process, some cities developed very fast with a large amout of population. Because of the rapid urbanization, these cities formed the megalopolis. In Asia, after the Second World War, China was in the process of urbanization. To some extent, we have followed the western style of urban development. All of these tell us, no matter to make a metropolitan plan, or to deal with urban problems, we must not only pay attention to the peri-urban area, but also have a concerted plan in both central city and surrounding towns.

To sum up, in the case of London and Shanghai, authorities took actions which could be concluded as follow: (1) using the weapon of law in the conflict between development and protection. (2) promoting a sustainable urban development through planning instrument. (3) making certain regional public policy to keep the balance of public interest, for example the Policy of Bus Priority. (4) strengthening city management, including land management, environment management, traffic management and municipal administration. Specifically, here are some points which should be highlighted in pre-experience. For one thing, urban plan should be made highly related to different social and economic background. Although it seems that the theory of satellite city does not work as good as people thought in the case of London, Shanghai could still implement it successfully to ease population pressure. In the meantime, by decentralizing certain unnecessary urban
functions and industries into suburb area of Shanghai, hopefully urban sprawl could be prevented in a great extent. For another, to establish a sustainable spatial framework, urban development strategy should be made in both the local level and the regional level. It is clear that the function of administrative measure is limited when it comes to urban sprawl. In order to deal with it, attention should also be paid into the regional level, including combining local plan with regional plan in a larger area, breaking the dual structure between urban and rural area, and transferring urban framework from monocentricity to polycentricity.

As what I mentioned above, when we are going to prevent from urbanization to counterurbanization, consideration should be made into both urban plan field and political issue in order to promote urban form in a more sustainable way. Even if it is not easy, the attempt seems to be beneficial for the sake of future.
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Internet

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## Index1: Image and Table sources

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<tr>
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<td><strong>Table2-6: Mode of Transportation to Work (2006)</strong></td>
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