Grow Up Songjiang New Town

Analysis & Strategy to strengthen economic position of Songjiang in regional network and the local self-contained system
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Analysis & Strategy to strengthen economic position of Songjiang new town in regional network and improve the local self-contained system

P5 Report
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Aims of Graduation Project

In the globalization, market-orientation, regional economic co-operation background, as well as in the context of the very fast urbanization process of China’s major metropolitans cities, against the actual development and transformation situation of Shanghai’s central and its satellite towns, the graduate project want to construct a new, more effective, and is worth learning from for other cites’ new town developing model by which the functional-spatial relationship between the contra and satellite towns will be reorganized as well as satellite towns’ intra self-contained function-spatial structure.

This model should be suitable, practical, and exercisable according to the existing situation in China’s economic, social and political context. Besides, this kind of model should be evaluable and contributory in urban theory realm. Songjiang new town is the satellite town which I select to be the case of my project.
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INTRODUCTION & MOTIVATION

Introduction of background and general hint of problems

Along with development of economic globalization, market oriented development and network system, the global cores which are constituted of large metropolitan cities, have become strategic units of global economic growth, such as London, Paris, Tokyo and Shanghai. Everyday, enormously all kinds of flows (capital, people, information, goods) are passing through the cores and dispersing to other places where can be anywhere in the world. However, in these space limited cores where a large number of different flows gathering together, many popular metropolitan diseases are their underway such as traffic jams, environment deterioration, lack of resource, etc. These problems are very common. Almost each metropolitan is suffering from every minute. Whereas, these problems are very complicated that the reasons behind them and the outcomes from them are intricate, each element has connections with the others.

As many urban problems were caused by the increasing numbers of people in cities, such as lack of public facilities and services, issues of pollution, decreased quality of life, and an increasing crime rate, the universal phenomena suburbanization has started. Many new towns have been built around mega cities in order to release the pressure of city core, however, not every new town could work well enough. There still many problems exist in new towns such as lacking facilities, single function, etc. After the early new town concept of Garden City proposed by

"Cities, and networks of cities and urban places, are the most important means by which economies, societies and cultures are articulated in the contemporary urban world."

"Economies and societies today become based less in property and labour and their 'places' in the city, and more around the production and exchange of information and knowledge in the 'spaces' of high-tech infrastructures and global organisational and production networks. Our post-industrial urban world has become dynamic and, according to many, integrated across global dimensions as its societies and economies have become networked in 'spaces of flows'."

"Urban societies today are becoming ‘dual’ as they are polarised between the connected and the disconnected – between those in the networks of the global 'network society' and those out of them."

"The subject of this studio is contemporary cities and how we can think about them and work strategically to guide their development. But cities are complex and have many different ways of being seen and understood."

"In particular, we use, and develop further in the studio, understandings of the city as an historical, technical and cultural product – as an accumulation of actions and transactions at planning and individual levels over time – as well as an integral part of the reproduction of contemporary societies, cultures and economies."

"We look for and propose the kinds of building, communications and governance strategies and infrastructures, which may have the capacity to release productive and innovative activities and capacities in urban regions and places. Our task in this studio is to develop planning and design responses to contemporary cities and their needs and problems and to imagine what they might become out of the conditions, which prevail today. This also means being critical about possible outcomes and judging them on criteria of sustainability and social justice as well as on their performance as global places in societies and economies."

(CC Studio Introduction. Stephen & Rocco . 2009 Fall)
INTRODUCTION & MOTIVATION

Personal Motivation
As a student from China, who used to grow up, live and study in metropolitan cities (Shanghai, Tianjin, Xian), the different kinds metropolitan phenomena influenced me lot and infiltrated in the ways I am living, thinking and also the ways looking at them.

As a urbanism student, I have more attention on these kind of phenomena, the reason caused them, the result produced by them, how these phenomena influence the people who are using the cities, and what is more, how these relationships reflect on spatial language which the urbanism can dealing with.

Through the research and design in the CC studio for my graduate project, I want have a more profound view in the realm of the development of the peripheral space around big centrality and work on the relationship between the peripherals and the central core, the networks among the different peripheral nodes in regional scale for the aim of releasing the pressure from the over density global cores and setting up their unique positions.

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**PROBLEM STATEMENT**

**Problems in the big context of globalization. Urbanization & Industrialization in World & China**

Under the climate of globalization, many metropolitans in northwest Europe, North America and Asian, which worked as global concentrated nodes have been suffering the same problem with the over density in the central core. Everyday, every minute, enormous all kinds of flows (capital, people, information, goods) are rushing towards the cores. The space is limited and insufficient, however, the demands is increasing.

The flows of people keep on agglomerating in metropolitan cities and the metropolitan city groups is one of the expression of urbanization process. The process of urbanization are mainly reflect on three aspects, the migration of non-urban population from rural area to urban area, the urban expansion and the high rate of natural increase of urban population.

Some of the countries have comparable higher level (over 70%) of urbanization such as major cities in European, North America, Australia, Latin America and Singapore, Japan, etc. Some of the countries have comparable lower level of urbanization (20% to 30%) such as some countries in Africa, Asia, and Oceania. China's urbanization rate is 48% in 2003, also belongs to this rank.

Urbanization is associated with industrialization as a form of social organization. In the different stages of development of urbanization, the dynamics that promote urbanization is somewhat different. In the early stage of urbanization, urbanization is driven mainly by industrialization, but in the latter part of the urbanization, urbanization is mainly promoted by the development of tertiary industry. The phenomenon of falling of secondary industry proportion and the rising rates of urbanization are co-existence.

The ratio of China's average urbanization and industrialization (0.69, 1999) is comparative lower than the world's average level (1.48) and the countries' with similar levels of development. The resulting gap is mainly due to the development of tertiary industry lags behind.

In the current situation of China, the tertiary industry not yet committed to promoting the main role of urbanization. Industrialization will be the main driving force in China's urbanization in the next period of time. Industrialization and urbanization in China led to the fundamental role that is reflected in: Continuing to promote the industrialization process will have a direct demand of rural surplus labor force; industrialization would have derived demand services on the hereby increasing demand for labor, the improve of transfer of labor income, which will generate more demand of the secondary industry and tertiary industry, thus further expand the social demand for labor.
Agglomeration of population & economic activities in Shanghai

Shanghai, a global city, which plays a crucial role in the national economy and Yangtze River Delta (rank 1st of Per capita GDP in mainland China). The rate of urbanization is 88.7% which also rank 1st among the cities in mainland China (Beijing and Tianjin rank 2nd and 3rd respectively with the figure of 84.3% and 75.7%).

Major economic city regions in China

For the development of Shanghai in this stage with the higher urbanization rate, the tertiary industry plays very important roles. Shanghai has already become a concentration nodes for global capital and especially an agglomeration sites to provide professional services.

The agglomeration of economic activities have a close relationship with its agglomeration of population. Behind accumulation of economic activities, a range of potential social and environmental problems are caused, such as overaccumulation of population in city center, a large number of unemployment, insufficient fresh water and energy supply, traffic congestion, environmental degradation, increased risk of various crises, the real estate “bubble” phenomena and so on.

Shanghai has become almost the world’s most densely populated city, and with its population density of 50,266 persons/sq.km in the center core and 27,000 persons/sq.km on average of the city, rank 1st among mainland China. The extremely high downtown metropolitan population density of Shanghai is far higher than foreign ones, such as Paris, New York, Tokyo and London and other countries.
Not effective new town development

In order to alleviate the pressure on city contra, the government began to focus on developing new town since 1958. The development of Shanghai’s satellite towns is divided into three phases.

The first stage (1958-1985) is the starting suburban planning and construction period. The purpose this stage is to ease the population and industry pressure from the old Shanghai’s downtown area. As the housing and living service facilities is not enough, coupled with the categories of industry is too single, after 10 years of development, the result is not satisfactory. The small scale of satellite towns could not development independently and self-sufficiently. The business and life services were still rely on Shanghai Central City. In 1985, seven major satellite towns only can absorb only 7.44% of total Shanghai population.

The second stage is the "One City, Nine Towns" stage. In 1999, the plans to construct "One city, Nine towns of the total population of 1.025 million people. The purpose of this stage is to ease downtown population and to promote urbanization process in the suburbs to help the transformation of the old downtown area. As the function is mainly for living and lack of supportive industry, the rapid transport links, public services and supporting facilities can not keep up with the development, the "One City, Nine Towns" development model is still not satisfactory. Generally the new satellite towns become the "empty town" with the actual very limited absorbed population from the downtown. In 2007, the intake population of Songjiang New Town, Anting New Town, not reached 20% of the planning population.

The third stage is the satellite town development period under the "Eleventh Five-Year Plan", which proposed the continuous construction of the nine satellite towns with a total plan population of 5.4 million. The plan focus on the development of Songjiang, Konggang, Jiading - Anting New Town. In addition to Lingang new town, the other satellite towns still not work effective.
Unbalanced development among satellite towns

Most of the satellite towns especially in the outer suburban has been built in recent 20 years. Therefore, the satellite town issues could be looked at the new town issues. Actually, the development among the satellite towns are not balanced.

From the figure of density, numbers of employee, financial income, and industry production and production portions, we can see the economic development among center and satellite towns are also unbalanced. The satellite towns in east are better grown than in west. And the inner suburban develop better than outer suburban.
**Problem Statement**

Discussion

At present, the development of Shanghai’s satellite towns is still in the stage from semi-independent satellite towns to independent new towns. From the semi-independent satellite to independent satellite stage, greater emphasis should on self-contained functions with complete functions of residential areas, industrial zones, and cultural welfare facilities that residents can develop sustainably in local.

The possible reasons that lead to the ineffective development of satellite towns are:

- The satellite towns lack strong economic position in the Yangtze River Delta metropolitan city group.
- The development of satellite towns basically do not rely on fast railway infrastructure network and weak in associated regional development axis. The rapid transit network system has not formed yet.
- The supportive living and service facilities are still backward.

**Directions of Research**

In order to alleviate the high-density in city centre and the related phenomenon of the social and environment, the main research direction of my graduate design will focus on exploring effective development ways of satellite towns around the rapid grown city. In the globalization, market-orientation, regional economic co-operation background, as well as in the context of the urbanization process of China’s major metropolitans cities, against the actual development and transformation situation of Shanghai’s contra and its satellite towns, construct a new, more effective, and is worth learning from for other cites’ satellite town develop model.

In order to explore this issue deeper, the main research will be in the following areas:

- In regional scale (Yangtze River Delta and Metropolitan Shanghai), the cooperative and complementary functional-spatial relationship between Shanghai and other regional centrality (Nanjing, Hangzhou), Shanghai central and the satellite towns;
- The economy position of satellite towns in the regional economy and urban economy;
- The more self-contained functional-spatial model and internal running mechanism for satellite towns.

**Songjiang new town in regional network**

In the perspective of regional connection from Hangzhou to Shanghai center. Shanghai, needs to form a sub-centers in west part which can share the centers’ pressure and also provide more cooperation opportunities to Hangzhou. On the other hand, through forming the sub centrality in songjiang, more cooperations can be provide for the surround satellite towns and driven them develop better.

Therefore, in order to strengthen the economy position of Songjiang in regional network (Yangtze River Delta), the demand functional-spatial structure and the local self contained system should be explored.
What is the demand functional-spatial structure that can strengthen economical position of Songjiang new town in regional network and improve the local self-contained system?
RESEARCH QUESTIONS

Main Research Questions

- What is the command functional-spatial structure that can strengthen the economic power of Songjiang of Shanghai in regional network system (Yangtze River Economy Delta)

- What is the relate intra functional-spatial organization structure the make satellite towns more self-contained?

Giving the answer to the main research question is the main goal of the project, and actually, the two parts of the main question aims to solve one problem, only if the song jiang new town become more self-contained and independent, it could play more important role in regional network.

Theoretical research questions

Besides the main research question, there are four theoretical research questions to help solve the main research question. By answering the four theoretical research questions, I will build up models to illustrate. And the models for the four theoretical research questions not only can work for songjiang, but also can be used in analysing other new towns which have the similar problem.

1. What is the functional cooperative and complementary model between satellite town and its parent city in regional economic network system and what is the demand spatial structure that support the model regionally and locally?

2. What kind of economy or service activities for satellite towns that can form new centrality in regional network system and what are the related intra compact system to support the new centrality?

3. What are the functional and physical pre-conditions that can improve the local economy of satellite towns and how to create the preconditions by using spatial language?

4. What are the functional attractions for satellite towns that can triggering to form and run the self-contained local structure?

Sub-research Questions

The whole story lines of the graduate projects are divided into four parts. Each part is mainly to answer one sub-question. And the four sub questions show the four stage of the project from problem statement, atlas, spatial strategy to spatial design.

Q1 What is the demand functional linkage that can strengthen Songjiang economical position in regional scale(Yangtze River Delta)?

A1 service industry

PART 1

Q2 What kind of service that can be add in Songjiang new town?

A2 SWOT analysis

PART 2

Q3 Where of these service should be add?

A3 Spatial strategy

PART 3

Q4 What is the spatial expression of these service?

A4 Spatial design

PART 4

PART 1

What is the demand functional linkage that can strengthen Songjiang economical position in regional scale (Yangtze River Delta)?
Shanghai advantages in Regional (Yangtze River Delta)?

Shanghai, Nangjing and Hangzhou are the three major cities of Yangtze River Delta city region, which is one of the three economic circles of China and plays important roles in national economy.

In the regional networks, the connections between Shanghai—Nanjing and Shanghai—Hangzhou are very important. And this regional connection between major centralities are very important for the nodes which is on the connection.

Shanghai, as the most important city in Yangtze River Delta, plays dominate roles in regional economy and radiates the other cities mainly by providing higher services. Shanghai is the only city in this region which the production from tertiary industry takes up over 50% of total GDP.
The competitiveness of major cities in Yangtze river delta

What kind of elements are consistent the strength of Shanghai? Economist gave evaluation toward city comprehensive strength among major cities of Yangtze River Delta. From the comparison data between Shanghai and Hangzhou, we can see the capital strength, open extent, service facilities, government management of Shanghai are strong than that of Hangzhou. These strengths providing by Shanghai became the reason that Hangzhou companys built their headquarters in Shanghai center.

<table>
<thead>
<tr>
<th>City</th>
<th>Economic strength</th>
<th>Capital strength</th>
<th>Production structure</th>
<th>Science strength</th>
<th>Open extent</th>
<th>Service facilities</th>
<th>Govern management</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shanghai</td>
<td>4.9247</td>
<td>6.6907</td>
<td>-0.8601</td>
<td>1.4538</td>
<td>3.7741</td>
<td>3.7561</td>
<td>2.1620</td>
<td>9.676</td>
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<td>Nanjing</td>
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<td>0.3936</td>
<td>-1.0201</td>
<td>2.2667</td>
<td>1.0291</td>
<td>3.9765</td>
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</tr>
<tr>
<td>Hangzhou</td>
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<td>-0.2254</td>
<td>1.2917</td>
<td>1.1183</td>
<td>2.8398</td>
<td>0.2967</td>
<td>5.133</td>
</tr>
</tbody>
</table>

Two types of regional cooperation

There are two kinds of connections, and one type is the connections between the parent company and its subsidiary companies. The second is the cooperation among different sectors. As the strong development of tertiary industry, the first type of connections is more important in the regional economic network.

Types 1: Subsidiary companys & parent company

Types 2: Connections between different sectors
From the proportion of tertiary industry of major nodes along the Shanghai—Hangzhou connection, we can find as Shanghai has the highest proportion of tertiary, thus all the other nodes have been trying to connect with Shanghai center where accumulated service sectors. However, the level of tertiary among other nodes are similar, especially between Hangzhou and Songjiang. Therefore, there is less connections happened between other nodes. And Songiang is just on the highway from Hangzhou to Shanghai center, but the regional connection is not toward it.

From the comparison of industry production, finance income and production structure among the satellite towns and center, we can find that the proportion of tertiary in city center is much more higher than that of satellite towns. And for satellite towns, they have the strength in industry production rather than providing service. As the industry production sector must connect with its sell department and headquarter, however, as the local do not have the strength in supplying and attracting service, therefore, the industry production sector in satellite town must connect with city center for service. Thus we can build up the model among center and satellite towns in Shanghai. And from the model, all the connections are from satellite towns to the city service center for advanced services. In this perspective, although Shanghai has nine satellite towns, it is not a network city, it is still a single core city.
Together with the concentration of economic activity of providing services, the over concentration of population is very serious in Shanghai center. Large amount of floating population from other parts of China, especially rural areas rush to Shanghai for finding jobs, the figures show that most of the floating population are in city center, and some inner satellite towns such like Pudong and Minhang. The outer suburban in west and south Shanghai are much less.

The sharply increase of floating population is the main reason caused the over density problem of center. From the figure we can see the floating population take up almost one third of the total population and the numbers of floating population increase a lot each year.

**Density distribution in Shanghai**
Most of the floating population are from rural areas and take low-paid work like construction workers. And some of them from other cities for running small business. Another group constitute of the floating population are graduate university students who do the white collar jobs or blue collar jobs like technical workers.

**Occupation type among migration population**

- Other
- Garbage recycle
- Transportation operate
- Building construction
- Agriculture & Fishing
- Catering industry service
- Business service
- Office workers
- Expert
With the concentration of economic activities such as tertiary industry in city center, the result is that people rush to the city for finding jobs and also for consumption, therefore, the center is over crowded. The traffic from the satellite towns to the city center is also very crowded. On the other hand, as the satellite towns do not have the strength in providing service and less attractive, therefore, most of the satellite towns kept empty, especially for the new towns.

The ability of the strength for providing advanced service in center and new towns are different also reflect on the images of commercial center from city center to new towns are different. Or we can also see as the images are different, therefore, the new town are less attractive in providing service.
Songjiang, a new town which is on the physical corridor of regional network from Shanghai center to Hangzhou, however, as the low development of tertiary industry and do not have its characteristic and dominant advanced service in regional connection, therefore, the regional flows (transactions, talent people, energy) just by pass it in the existing situation. If Songjiang want to improve it position and plays more important roles in regional connection, it have to develop its advanced service industry, which is the regional connections from other nodes look for. That kind of improvement command that the center have to shift some service function to Songjiang new town. By this kind of shift tertiary function to Songjiang, new connections will be build up in Songjiang.

**Regional scale**
Improve advanced service in regional network

However, tertiary industry has a very wide range, from living service such as restaurant, supper market, to business service such as bank, insurance company, real estate company, etc. What kind of tertiary could be added in Songjiang, and which types of services are needed for Songjiang? From the local analysis in part 2, the answer will be given.

**Shanghai scale**
Shifting the advanced service function from center to new town

**Songjiang scale**
Make up the missing service function in new town
PART2

What kind of service that can be add in Songjiang new town?
Infrastructure from Hangzhou to Songjiang

Before giving analysis on local situation, the spatial analysis on infrastructure will be given first. Highways and railways are very important in Shanghai-Hangzhou corridor. The distance between Hangzhou and Songjiang is 112 km, and from Songjiang to Shanghai center is 39 km. For the existing railway connection, fast train need 1.5h from Hangzhou center to Shanghai center. However, as many train do not stop in Songjiang station, it takes 2-3 hours from Hangzhou to Songjiang by train.

However, the connectivity will be improved as the introduce of fast train. After improvement, it just take 26 mins from Hangzhou to Songjiang train station. The connection of Songjiang train station to new town light rail station has been under construction. By that time, the connectivity from Hangzhou to Songjiang new town will be highly improved.
Infrastructure from Songjiang to Shanghai center

For the connections from Songjiang to Shanghai center, the metro and light rail system worked much more effective than highways. It needs less than 40 mins from Songjiang lightrail station to the nearest station in center. There are two rail stations in Shanghai, one is in north another is near Songjiang, in the south. Rail stations are connect with metro stations.

There are two airports in Shanghai, one is Pudong international airport, another is Hongkou national airport. Songjiang distance the Hongkou airport 25km, and also it can be reached by metro.
Introduction of territory

Songjiang whole territory are consist with 15 sub towns. There are four major sub towns. Songjiang new town is the core development area among all the sub towns. The other place are small urban-rural settlement, industry zones, agriculture land and ecology protection area.

Before the construction of Songjiang New Town, early settlements is in "Songjiang Old Town." in the south part. Actually it is not a down place, compare with new town, it is more energetic and active. In my project, my focus will be on the new town, however, some analysis will be given both on new town and old town to give comparison. The major analysis will be given on housing, education, service and industry layers.
What will be the functional linkage and the relate spatial structure have close relation with local self-organize situation. According to local situation, I divided four major layers to analysis the local situation, they are housing, industry, service sector and education. And given analysis to each layer on spatial, social and economical dimension. After analysis each dimension for each layers, the SWOT analysis will be concluded in one model and find relation with each other. That will be the reasons to give intervention and strategy.

Actually, the aim to strategy is improve the service sector in Songjiang new town. As the four major sectors, housing, industry, education, and service have close relation with each other. In short, the service is supporting the other three sectors. Therefore, the cross sections of service with housing, industry and education will be the research and strategy focus area.
**Industry**

Industry is the only production sector in Songjiang which benefit from the regional connection of highway. From the distribution of industries, we can see most of the industries locate along the highways from Hangzhou to Shanghai and railway. There are two shipment customs in industry zone which have strength for the export of production, and by the highway, the production can be transported to the airport and harbour in Shanghai. As the good potential of develop industry, government plan to extend the industry to the north and west.

The major industry types in the industry zones are high technical industry and less polluted such as IT industry, biomedical, new material, etc. The economic strength of Songjiang Industry zone and Songjiang export processing zone is relevant highly for the local economy.
**Education**

The only one major of economic backbone in new town is its university cluster. There are 7 major universities in new town near the north light rail station. The total area of campus is 41.35 km².

By 2010, there will be 934,436 students and teachers in university clusters. And these group will be the potential resource for songjiang new town.

Most of the students are studying economic and art, that will be the potential for the related job sectors such as business service and creative industry in new town.
**LOCAL ANALYSIS**

**Housing**

Most of the housings in new town were built since 2003. Large part of the housings in Songjiang new town are for high income group. The highrise apartment, low density housing and some high quality villa. The living environment is quite good compare with that of city center,

Most of people live in Songjiang old town, and most of them are local resident. For the new town, floating population is more than old town, however, the total population who live in new town is less.
Each year large sums of excessive housings are built in new town compared with the increasing of population. In 2004, 1,233,582 m² housing were built, if it account by the population it could supply is 19484, however, only one tenth people move in to Songjiang new towns in 2004. The supply of housing in new town is over exceed the real demand.

Although the supply of housing is over the real demand, the existing situation is that the low income and middle income people can not afford to buy a house. Besides, from the figure we can see the topology of housing is very single, 92% of housing are commercial housing, and 99% of housing is invested by Real Estate company.
**Types & relationship of services**

Before we given analysis on the local service layers, I will divide the analysis aspect of the service layers. We have already made the cross sections of service sector with housing, industry and education as the main analysis aspects. However, what types of the services in these cross sections and do they have relationship with each other?

From analysis, as the diagrams show, there are mainly two types of services in the cross sections. One is the living services, including eating, shopping, entertainment, recreation for students, citizens and workers. The other are for industry and education. Such as the service for education, service for industry, and service both for education and industry.

The living services could serve for citizens, students and workers, while the service such as research institute and management sector serve for the education and industry and build up the connection of the two strength in new town.
Existing service
This is the spatial distribution of existing all kinds of services. The services are including business service and living service. From the map, we can see, large amount of housing are in old towns, and for new towns, the service are less and locate separately. The street life of new town is very empty compare with old town.
Service for students
This layer shows the cross section of service for students. The service street is in the middle of seven universities. On one side of the street which is near the living area of students have two floors shops. Most of the shops are restaurant, coffee house, daily used shops and some culture shops like book store. From the existing situation, we can see the location of the service street just serve students. As students is a large groups of consumer which can improve the local commercial economy, especially, in the future, the population of students will reach 100,000. Therefore, strengthen the service for students is opportunity for Songjiang new town.
Service for all group

This layer shows the cross section of service for all users. In Songjiang new town, near New Town light rail station, there is a small center which has a commercial complex that include shopping malls, restaurant, cinema. Near the commercial center and along the main road, there are some big supper markets and furniture shops.

This is the only commercial center in new town which can satisfied the existing situation of Songjiang new town. However, compared with the commercial center in old town and in shanghai center, it is less active, in the future, not only the functions but also the image of commercial center should be improved and more attractive.
**Service for housing**

From the map shows the living service of new towns, we can see, most of the living service are in middle and east part of new town. For the large sums of residential blocks in west, less or almost no service locate. Most of the living services are bottom commercial of the building along main street.

In the cities of china, almost each major street have their liner bottom commercial, especially the main street in residential area. Having convenient bottom commercial near housing is also one standard for people to choose their location of their apartment.
Business service

The business services are even less compared with living service. The layer shows the distribution and types of existing business service in new town. From the map we can see the business services are even less compared with living service. Their distribution do not have much order, and the images of the service building are poor compared with that in center.
**LOCAL ANALYSIS**

**Conclusion in service layer**
From analysis on the cross sections of service sectors with education, housing, and industry, we can have some conclusions in SWOT analysis. The strength of service in new town in that the service street for students and the existing commercial center, and also the strength should be strengthened and become opportunities for future.

Most of the weakness of service are in the cross sections with housing, education, and industry. The distribution of living services is not balanced. Most main street in west residential block do not have commercials. And the biggest weakness is in business service, as we have analyzed, the business service like insurance company, headquarters, banks, real estate company, advertisement company, intermediary agent, law offices are very important in regional network. And the research institution, technical research department are the major connections between industry and education. From the existing situation these kind of advanced service should be increased.

**Conclusion in all layers**
Through the analysis in each layer of industry, housing, education, and service sector both on their dimensions of spatial, social, and economical. We can have conclusions on each layers on each dimension. The conclusion is that industry and education are the two major strengths in new town, while the most weaknesses happen in housing and service sector. And after we have given detail SWOT analysis on service layers on different types of service in cross sections, we also find the most weakness of service are missing advanced services and some living services. And the opportunities are the improvement of commercial center and service for students.

Actually, the four layers have close relationship with each other, what is more, the strength, weakness of each layer have relation with each other. As we concluded in the relationship diagrams, Housing vacancy is biggest problem for new town, and the unbalanced and insufficient living service and weak in advanced are the reasons which result in the problem. According to the problems and the relationship between them, I give solutions to solve the problems. The solutions are providing more service for students, strengthen centrality, increased technical research institute, introducing business hub and strengthen service networks. And these are the answers in part two.
LOCAL ANALYSIS

Conclusions of problems & solutions

- No research institutions around universities
- Poor images of business services
- Less service in industry zone
- Unbalanced and insufficient service spatial distribution

Service Sector
- Spatial
- Social
- Economical

Housing
- Spatial
- Social
- Economical

Industry
- Spatial
- Social
- Economical

Education
- Spatial
- Social
- Economical

Housing vacancy
- Need more service for students and citizens
- No research institutions around universities

Strengthen service centrality
- Less cooperation between industry technical research centers and universities
- Lack business service to manage industries and providing jobs for graduate students

Unbalanced and insufficient living service spatial distribution
- Increase technical research institutions

Business hub of business service
- Strengthen service networks

Less service in industry zone
- Strong competitive power of local industry
- Good location of industry zone nearby highway

100,000 university students not faulty member
- Good location near light rail station
PART 3

Where of these service should be added?
SPATIAL STRATEGY

**Process & Methodology**
In order to find the the right place to add the missing part of services, the structure of nature and infrastructure should be strengthened first. As in the existing framework, the connectivity from new town to old town, and from industry zone to new town is not strong and clear enough. The government have already given the boundary of future development by 2030, and according to the plan, the new town will expand to the north. Therefore, considering the future development and expansion, I also strengthen the structure in future expansion area.

Besides, as Songjiang has abundant water resource, many canals are crossing its tertiary. In order to keep its nature character and proving beautiful living environment, I keep the existing water and green area and continue them in new development area. After forming the new structure, according to the types of service should be strengthened from part 2 analysis, find their right place and spatial relationship with each other and form spatial strategy. There are four layers of the strategy which are in the cross sections of service with housing, education, industry and all users respectively. Put four layers together, is the whole spatial strategy.
SPATIAL STRATEGY

Strategy layers of service with living

This is the layer of strategy which shows the improvement of living service network. Along the main road around the existing two centers in new town and old town, the bottom service street have already developed. As in the west part of new town of living service are less developed, therefore, the living service networks should be strengthened and extend in that part. New neighbourhood shopping center will be introduced which can also drive the bottom street commercial development. The ways to active lively street service is first build up some small neighbourhood service nodes along main street, then give quality to the street like landscape design.

According to local situation, there are mainly two solutions. First, as some part of the street already have good landscape, however, there is no shopping space, therefore normal two floors of daily used commercial space could be introduced. Second, as some the streets already have commercial space, however, the environment is poor, therefore, add more green space and design good pedestrian environment is an option.
**SPATIAL STRATEGY**

**Strategy layer of service center**
This is the strategy layer of service center for all users. In the existing situation, there are two service centers. One is in old town close to railway station, as there are many historical places of interest around it, therefore, the center mainly served for tourism and have traditional character. And the service range is mainly for people in old town. The other center is in new town near New town light rail station. Expect a commercial complex, many local government offices are in this area, and the government do not like the center too noisy. Therefore, as much business services functions will be add in new town, which should have good images and attracting more people. Therefore, a new center is demanded near the Songjiang University light rail station.

**Examples of new business center image**
SPATIAL STRATEGY

Strategy layers of service for industry and workers

- For technical research sector of Industry
- For maintenance sector and transportation of Industry
- Living service both for citizen and workers
**SPATIAL STRATEGY**

**Strategy layers of service for industry and workers**

This is the strategy layer of service for industry. As in the existing situation, the connection from industry zone to new town is weak. After the construction of new town business center, the linkage from industry zone to the new hub will be strengthened. More opportunities will be along the main road and for some services for industry and workers, such technical research and maintain sector of industry, and also the housing and living services for workers.
SPATIAL STRATEGY

Strategy layer of service for students
This is the strategy layer of service for students. As the improve the service for students is a opportunity for new town, and from spatial relationship, the service structure could be extended to the Songjiang University light rail station and also extend to the west part. And the service could also be combined with service for citizen. The types of service could be restaurant, coffee bars, shops of daily use and also some culture and entertainment facilities, such as cinema, Karaoke. And also for future development, the creative industry could also be considered.
PART 4

What is the *spatial expression* of these service?
**Existing situation in focus area**
On the basic whole strategy of service, I select the area around Songjiang University light rail station as my focus area for spatial design. The light rail station is above ground, and there is a bridge from light rail station to the other side of the road. The main road have six lanes of motor way and two lanes of cycle route. There is a bus transit hub under light rail station.
Plan structure & design proposals
The design task of these place is to forming a new business center in the east part of light rail station, and build up pedestrian commercial street from university cluster to light rail station. The service space will be designed combine with the nature structure and landscape design.
Programmes for users

Service for students/Workers/Citizen
- Resturant /Coffee/Tea
- Shops of daily use
- Entainment
- Recreation

Service both for students & citizens
- Resturant /Coffee/Tea
- Shops of daily use
- Entainment
- Recreation

Service for students
- Resturant /Coffee/Tea
- Shops of daily use
- Entainment
- Recreation

Service for Education
- Research institute

Service for Education/Industry
- Management sectors
- Technical research department

Service for Industry
- Test&Authentication sector
- Maintenance sector
- Transportation

Space for users

Eating and drinking place
- Resturant/Coffee/Tea
- Shops of daily use

Entainment place
- Internet bar, Cinema, book store, karaoke

Working place/Offices
- Research Institution, Bank, Intermediary company, Insurance company, Corporation Headquarters, Management and sell sectors etc...

Recreation place
- Parks, Water front

Living place
- Apartment

LS  Living place for Students
EDS  Eating & Drinking place for Students
SS  Shopping place for Students
ES  Entainment place for Students
RS  Recreation place for Students
EDW  Eating & Drinking place for Workers
OW  Offices for Workers
RW  Entainment place for Workers
LC  Living place for Citizen
EDC  Eating & Drinking place for Citizen
SC  Shopping place for Citizen
EC  Entertainment place for Citizen
RC  Recreation place for Citizen
Mixed use diagram

What we have discussed before including spatial strategy are mainly about programmes for users, such as service for students, living service or research institute and management sector. However, when we talk about spatial design, it relates with space, such as research institute and management sectors are working space. Some of the programmes such as restaurant and entrainment place already can be space. Then we make transform from programmes for users to programmes for students.

However, some of the space can serve for different users, such as a restaurant could both for workers and students, therefore, we should see which space for users could be mixed together. Besides, the focus area will be a highly mix use area cause its location and the programmes.
**Public space structure**

First conclusion from the mix use diagram is that the spaces for same users could be mixed together, and the recreation space which could be semi-public space will arrange them together. The second conclusion is by connecting the recreation space, all service space could be connected and mixed. Thus, on the base of existing green and water structure, we could develop “tree model” from public space to semi-public space with mixed service space.
Mixed space for students and working space for white collars

Along the main street near universities, one liner shopping, eating and entertainment space for students is proposed. Besides, this place could be mixed use some office area, as the main road with good accessibility is good for small offices. Therefore, the service for students, such as the restaurants could also for white collars as well.
Mixed area for white collars and citizens

The most important space for white collars who only work in the place are working space and eating space where they can having lunch. If the white collars who also live in the place they could be citizens. Therefore, in topology aspect, if living space for citizen and working space for white collars mixed together, then the related eating, entrainment and shops could serve both for white collars and citizens.
Living space both for students and citizens

Most of the living space are mixed with office area, however, pure living community can also be proposed. The living area both for students, teachers and white collars as well. And the living space could also be designed combine with public space.
Highly mix area combine with public landscape

Highly mixed service space will be developed combine the public landscape area. When the function mixed together, they do not have the definite user group. They could be used for all users.
SPATIAL DESIGN
SPATIAL DESIGN
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**AIMS & GENERAL QUESTIONS & PRODUCTIONS**

- Find a problem phenomenon which you think is serious and should be changed.
- What is the main problem phenomenon?
- Why is the problem very important and deserve to be dealt with?
- A clear, important and researchable problem statement with report, maps and photos.

**Towards the elements of problem statement, collect related data and information.**

- What are the elements that lead to and result from the problems?
- What is the existing situation of key elements and the relationships between key elements and problem set target of result elements.
- Detail analysis on the evaluation of existing element situation and the relationships among key elements.
- Form a strategy that use the key elements to achieve the target.

**SWOT maps of the elements, diagramme and maps to show relationship between the elements and problem and the target.**

- How are the key elements in the relationship for the result?
- How are the target of the key elements for the result?
- How are the steps supposed to take in the strategy?
- How make designs of key project?

**Strategy map, strategy timeline, stakeholders, operation system, key projects maps.**

- What are the key elements of the strategy?
- Where is the project in the strategy?
- What are the key projects respectively?
- How it looks like?

**Project plans.**

- Make designs of key project.
- What are the key projects respectively?
- What programmes will be contained in the project?

**Evaluation model, evaluation towards project, conclusions.**

- How to evaluate the outcomes of the strategy and key project?
- Has the envisaged goal been achieved?
- What should be improved?
## Working Method

### Methodology & Research Question Chart

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### Illustration of approached and methods

#### Problem Statement
- Literature study
- Collecting Information

#### Atlas
- Literature study
- Case study
- Analysis

#### Select elements
- Collecting Information
- Workshop

#### Know element existing situation
- Mapping data towards elements
WORKING METHOD

Analysis

Case study → SWOT Analysis of existing situation
Compare Analysis

Literature study → Find relationship network systems
Workshop

Case study → Find key elements
Literature study

Case study → Set target for key elements
Literature study

Relationship network system between key elements & targets

Design

Case study → Select key project and programme
Analysis

Case study → Design and spatial expression
Literature study

Case study → stakeholders and work system
Analysis

Strategic project design

Strategy

Analysis → Use key elements to achieve targets
Design

Case study → Stakeholders and working system
Collecting information

Literature study → Make strategy
Analysis

Design → Steps & key projects
Case study

Analysis → Strategy and key projects
Design

Evaluation

Literature study → Set evaluation system
Case study

Analysis → Evaluate production
Analysis

Design → Back to design and improve
Design

Conclusion
The Principles For Forming New Centrality
“Concentrated Decentralisation” and “self-contained Function-spatial” structure for new town plan

Abstract—As the rapid urbanization rate, suburbanization process is triggered by aim to solving evoked urban problems. Shanghai, as highest density city in China needs a functional-spatial re-organization system between centre and satellite towns and a more self-contained new town model to help forming sub centrality to share the centre’s pressure. This paper will to find out the key spatial and functional elements for new town development and explore a more self-contained new town model which can be used in China’s new town planning by reviewing the paper “Searching for Good Urban Form, from Utopian Cities to Chinese New Towns” by Jing zhou, TU Delft, of various new town development concepts and theories including “Garden cities,” “Industry Village” “Greenbelt Town Concept “, “New Urbanism” concept, “agglomeration and deglomeration of economic activities” and the central-place theory. Conclusions will be summarized after above paper review to build up a series of principles that can be used in the new town planning in Shanghai under the climate of rapid urbanization in China.

Key words—Suburbanization, functional-spatial re-organization system, self-contained new town model

1 Introduction
As the rapid urbanization rate in many places among the world, suburbanization process is triggered by aim to solving evoked urban problems. Shanghai, as highest density city in China, still works as a single core metropolitan that needs a functional-spatial re-organization system between centre and satellite towns and a more self-contained new town model to help forming sub centrality to share the centre’s pressure. Besides, a more self-contained new town model needs to be explored which can be used and learning from for other cities under the rapid urbanization context of China. This paper will to find out the key spatial and functional elements for new town development and explore a more self-contained new town model which can be used in China’s new town planning.

To fully comprehend the key functional-spatial elements and self-contained model in new town concept, the paper “Searching for Good Urban Form, from Utopian Cities to Chinese New Towns” by Jing zhou, TU Delft which gave a overall introduction of the new town concepts and theory is reviewed firstly. Since the first suburban concept of “Garden Cities” provided by Ebenezer Howard in 1902, over a century has passed, various development concepts and theories for suburbanization has been proposed and discussed by urbanists, economist and sociologist such as “Industry Village” concept by Robert Owen and F.M.c. Fourier, Greenbelt Town Concept in United States, the theory on “agglomeration and deglomeration of economic activities” by geographic economists (Weber, Isard, Perroux, Friedmann) and the central-place theory (Walter christaller 1933, and august Losch 1945), etc. Among these concept and theories, the key spatial and functional elements for new town development were suggested and tested as well on many successful cases such as Welwyn Garden city, London; Greenbelt, Maryland and Radburn, New Jersey . Better ways to organize these key elements to form a more self-contained new town model were discussed and experimented. Besides, some conclusions and assumptions were given by the theories on the pre-conditions and possibility results to relate the key elements for forming new centrality of new S.

Besides, the books of Urban Networks-Network Urbanism wrote by SASSEN, S and Urban World/Global City wrote by David Clark give elaborate introduction of urbanization process that will provide a clear cognition towards the historical and existing urbanization position of Shanghai and that progress under the era of telecommunication, advanced technology and international trading. And the paper “The New Town of Williamsburg: A Study of The New Urbanism” gave a elaborated introduction of new town concept especially the New Urbanism concept.

Conclusions will be summarized after above paper review to build up a series of principles that can be used in the new town planning in Shanghai under the climate of rapid urbanization in China.
2 The reasons and problems relate to suburban development

Industrial revolution which can be seen as an urban phenomenon is direct reason that leads to the growth of population. According to Krueckeberg (1983), during the industrial revolution in the 19th century, changes caused by the invention of machines and railroads took place in the structure of human society. On the one hand, the invention of machines makes the production of factories increasing, on the other hand, the creation of railroads make the transportation of raw materials to factories more effectively. The people from countryside abandoned their farmland and rush to factories for job opportunities, which caused the cities grow.

The United Kingdom, the place that starts the great revolution, became economic powerhouses dominating world trade. The rural populations that flocked to cities for jobs and economic became, in the words of H.G. Wells, ‘great surging oceans of humanity’. The environmental and social consequences of this were devastating. A German visitor to Bradford in the 1850s described being in the town as ‘like being lodged in no other place than with the devil incarnate’. This image of pollution, overcrowding, chaos, and dark satanic mills etc, so powerfully portrayed by Dickens and painted by L.S. Lowry.

The urban problems caused by the increasing numbers of people in cities, such as lack of public facilities and services, issues of pollution, decreased quality of life, and an increasing crime rate, started the engine of suburbanization. People moved out to new suburbs to protect their families from the evils of urban life. Everyone with the power to do so has moved out of urban areas and now measures their status by how much distance they can put between themselves and the city. New town concepts such as the Garden City, the Super block, and Greenbelt towns, which emerged during the late 19th century and the early 20th century, attempted to solve those urban problems.

3 New town planning concepts

In order to solve these problems, urban planners attempt to create utopian communities in the suburbs. The series of suburban planning concepts in Europe and America dating from the early 19th century including:
- Thomas More’s Utopia
- Working Community
- Garden Cities
- The Super block concept
- Greenbelt Towns
- New Towns
- Planned Unit Developments
- Neo-Traditional Developments or New Urbanism

3.1 Early Utopia ideas and “Industry village” concept

Before the popular of the classical new town concept to “Garden city”, the earliest pieces of literature about the ideal city is the Thomas More’s Utopia (1516). The author depicted ‘a very attractive ideal of towns of limited size and open internal layout spaced out at considered distances over the countryside’ (Osborn 1977). It is conclude by American urban theorist Lewis Mumford in his book The story of Utopias (1922), that the common dream of the Utopian cities is to bring the richness of the country to cities and to and bring the vitality of cities to the country.
In the 19th century by a number of great Utopian socialist reformers, including Robert Owen (1771-1858) and his French contemporary F.M.C. Fourier (1772-1837), who believed that better working and living conditions and better education for factory workers and their families could encourage work motivation and thus improve productivity. Owen successfully carried out his reform principles in the New Lanark factory in Glasgow and formalised the model of a good ‘working community’ - a small township offering every variety of employment and as far as possible self-contained (Owen 1817). Besides the experiments of social reformers, ‘industrial villages’ or ‘company towns’ emerged in the suburbs of large industrial cities, created by private industrialists who were not keen on changing property ownership but who wished to provide workers with better conditions.

The Super block concept which was a typical concept in the stage of ‘industrial villages’ originated in Liverpool, England in 1908, created by Lever Brothers. They intended to build Port Sunlight, with industry factory, offices, and a village for employees of the firms. Well known for planned residential areas, the “Super blocks” were comprised of parks and individual buildings. The first example of the Super block concept in America was evident in the plan of Radburn, New Jersey.

Such developments have a significant social meaning for capitalist industrial society at the present time. These early individual spontaneous experiments by social reformers and industrialists gradually created a paradigm for planned communities or townships providing a high-quality and collectivistic lifestyle that allowed people to work, live and play in healthy and pleasant conditions. Planning and design were used as tools to realize physical and social improvement. The new ‘industrial villages’ in suburbs can also be seen as the early decentralization of economic activities from the centre to the periphery by private initiatives.

3.2 Garden Cities Concept and its influences

In 1902, a stenographer produced a small book that was to transform Britain. His name was Ebenezer Howard and the book, Tomorrow: A peaceful path to real reform was later republished as Garden Cities of Tomorrow. Like many of his generation, Howard was concerned about the explosive growth of cities which he considered ‘ulcers on the very face of our beautiful island’. He put forward the garden city as a model which combined the best of the city and the countryside. So powerful was this idea that it has dominated much of the thinking about cities for the intervening hundred years.

Observing the enormous urban and social problems brought upon society by the Industrial revolution, Howard’s solution was to decentralize the over congested large industrial cities by building planned and well-balanced small towns in the suburbs. According to Howard ([1898] 1947), the Garden City "provided residences, education, employment, and recreational opportunities within a self sufficient town of under thirty thousand people." At the regional scale, Howard presented groups of cities connected to one another by inter-municipal railways. The Central City, with a population of 58,000 was located in the centre. It is surrounded by the small Garden Cities with populations of 32,000 each. Howard defined the plan as being ‘designed for healthy living and industry; of a size that makes possible a full measure of social life but not larger; surrounded by a rural belt; the whole of the land being in public ownership or held in trust for the community’ (Howard, 1919). (see illustration 1)

Howard launched two experimental projects: Letchworth Garden city (56 km north of London) in 1903-4 and Welwyn Garden city (30 km north of London) in 1919-20, both financed by private investments to put his theory into practice. After a certain amount of struggling in the initial phase, they successfully became self-contained industrial towns. As Sir Frederic J. Osborn commented, ‘the planning and developing of Welwyn Garden city became famous as the best example of whole-town design’ at that time. With his two successful projects, Howard demonstrated that his theory was feasible and able to be more widely reproduced.
THEORY SUPPORT

The meanings of Howard’s Garden city concept are very important. First of all, Howard was among the first to consider urban development in a regional perspective. Howard conceived of new urban growth pattern from the point of view of the whole city. As Lewis Mumford put it, Howard ‘attempted to improve the city as a whole, to alter the very method of its growth, based on well-defined wholes’. Howard believed rational planning intervention was a means to ameliorate the urban problems in industrial cities.

Secondly, his idea of ‘concentrated decentralization’ was original. His proposal for a regional unit consisted of a group of satellite towns bound together by a rapid transport system and was widely considered as an appealing rational alternative to the unconstrained continuous urban sprawl. Besides, his idea of rationally decentralizing the population and economic activities from a large congested city into suburban self-contained new towns highly influenced many well-known master plans of western metropolises from the early till the mid 20th century, such as Greater Helsinki Plan of 1918, the Moscow Master Plan of 1935 and Greater Paris Plan of 1965. The significance of these master-plans is significant. They symbolized the beginning of metropolitan regeneration and structural adjustment by top-down intervention.

Thirdly, he cared about the social aspects of the new city. He expected that the cities would have a ‘full measure of social life’ and that as far as possible, they would be ‘self-contained’. The later western new towns from 1940s to 1970s proved that social and cultural life is one of the most crucial issues, especially for new towns out of the immediate sphere of influence of a metropolis.

3.3 Greenbelt Town Concept and Other Concept

The Garden City concept also influenced the emergence of another development concept in the United States in the 1930’s called the Greenbelt Town. It was constructed by the Resettlement Administration under President Roosevelt’s New Deal program. According to Javis (1993), significant features of the Greenbelt Towns included: “attached homes organized around linear parks with pedestrian pathways, town centres with stores, school, recreational facilities and offices, and external greenbelts providing buffers from surrounding development.” The Greenbelt Town Concept also focused on pedestrian orientation and attempted to create a sense of community. The three Greenbelt Towns built under the New Deal Administration were: Greenbelt, Maryland; Greenhills, Ohio; and Greendale, Wisconsin.

Before WWII, many garden cities were built in cities around the world influenced by Howard’s Garden city model. Some of them were independent or semi-independent industrial towns; some were not strictly garden cities but satellite sleeping towns or suburban communities. The residents of the satellite towns were greatly dependent on the central city for employment and social-cultural activities, the former resulting in a certain amount of inconvenience and sometimes long-distance commuting. At the same time, a number of design innovations were made in connection with community planning, for example the concept of the ‘Neighbourhood Unit’ and the ‘Radburn’ model. Clarence Perry (1929) defined the size of a neighbourhood unit based on the radius of a five-minute walk from the centre where major public facilities are located. Clarence stein expanded the model by connecting several neighbourhoods to form a town. The Radburn model was characterized by its curvilinear street layout, its segregation of pedestrians and vehicles and its cul-de-sacs (see figure 7). Well-known examples are Sunnyside Garden city (1924) and Radburn Garden city (1928) in the United States, which were highly influential on later new town designs.

4 Urban theories relate to new town development

A number of important indications can be derived for the validation of Howards Garden city and new town concept, such as theory of Agglomeration and deagglomeration of economic activities and the central-place theory.

4.1 Theory of Agglomeration and deagglomeration of economic activities

A number of important indications can be derived for the validation of Howard’s Garden city and new town concept. Many geographic economists (Weber, Isard, Perroux, Friedmann) had observed and explained the agglomeration and deagglomeration of economic activities in a city.
The clustering of industries and services allows individual firms to enjoy the benefit of the large scale of economy. The agglomeration of services stimulates a concentration of the market, further leading to the enlargement of business clusters. The dynamic process continues until the negative effects of agglomeration such as congestion, excessive taxes or competition outweigh the advantages. Then, moving-out occurs. Much empirical evidence reveals that the large metropolis as a whole has continuously strong agglomeration forces, while the deglomeration movement is more subtle and often intra-metropolitan. Moreover, evidence shows that the decentralization of individual agents often appears to take place in a dispersed and unrelated pattern, resulting in the inefficient organization of land use and the infrastructure. The conclusion can be drawn that if the city is left to develop entirely according to the free market, over congestion and dissipated land use is inevitable. This verifies the necessity of top-down coordination, which is the essence of new town movement.

4.2 Central-place theory
The central-place theory (see illustrate 2) (Walter Christaller 1933, and August Losch 1945) similarly explained the effect of an agglomeration of services, and proceeded to formulate a system of central places in hierarchical patterns. The basic assumption was that higher and lower level services are differentiated by the threshold of potential clientele. There are a number of major prominent centres in urban regions, where most of the high-level services and activities such as headquarters or museums that rely on potentially large groups of people are concentrated. Small centres mainly consisting of daily supplies on the other hand are ubiquitous. Thus for a new town, there is a dynamic positive relation between its level of activities and its population scale. Howard and other new town advocates did in fact realize that ‘no small city could be wholly self-contained’. It indicates that the relationship between new towns and central cities should not be one of separation but one of many connects. Similar opinions can be found in the Organic regions theory by Patrick Geddes (1904, 1915), the theory of Organic Decentralization by Saarinen (1918, 1942) and the General system Theory by Bertalanffy (1968). The general conclusion of these theories was that the idea of a very small size and the over separation of certain garden cities and new towns could be obstacles to their vitality.

However, the central-place theory mainly deals with the distribution of services. Studies and observations of the behaviour of not-for-profit and special urban land use show that functions such as universities, high-tech companies, exclusive medical care and entertainment facilities, tourist resorts etc. are much more foot-loose in location. Once established, they tend to form their own independent centralities. Examples are the Disneyland theme park, high-tech parks and campus towns. These provide references for possible businesses in new towns.

5 Shanghai new town development in the context of China Rapid urbanization
Shanghai, as a global city that plays an important role in the national economy and concentration nodes to provide professional service in global capital, is the most population city in China. Millions of people from other parts of the country rushed to Shanghai for jobs and economic opportunities. The density in its central is already over that of Paris. Since 1958, the government began to develop its satellite towns to release the population pressure of centre, however, half of the century has already past, the satellite towns still not work effectively and independently, the density in center is still over 10 times higher than that of satellite town’s average level, the GDP of satellite towns are also far behind compared with center.

5.1 Context and challenges of China Rapid urbanization
The histories of economic growth in the economically advanced areas since the mid 18th century and in many developing countries in the 20th century have shown that, in market economies, whenever industrialization has taken place, it has always been accompanied by rapid urbanization (Bairoch, 1988; Berry, 1981; Lampard, 1954/55; Hoselitz, 1953).
THEORY SUPPORT

Indeed, these two parallel processes of modernization have been so intimately related and their paths and tempos of evolution so closely synchronized that they are often seen as one and the same process. The concentration of industrial production in urban places has, on the one hand, promoted economic specialisation and facilitated economic efficiency and, on the other, created numerous jobs in the cities, causing massive rural-urban migration.

During the Maoist period (1949-1978), the cities stagnated and eventually declined, primarily as a result of the collectivisation of the economy, the state's monopoly of the production and distribution systems, the prohibition of sideline production, and the elimination of the free market system. These policies almost eliminated the functions and foundation of the towns (Mo, 1987; Fei, 1989; Skinner, 1985; Tan, 1986). Since 1978, a series of policy changes have brought the towns back to life again and greatly altered the patterns of urban development. China started the dramatic process of reforms moving from a planned economy to a socialist-market economy. Land that was formerly exclusively owned by the state was privatized in the late 1980s, and housing was made a legitimate market commodity from the beginning of 1990s on. Since then, cities have been experiencing rapid growth.

The rate of urbanization in the country increased from approximately 13 percent in 1978 to 36 percent in 2006, and is planned to reach 70 percent by 2050, which means that 12,000 people per year are expected to migrate from the countryside to the city. As asserted by economist Joseph Stiglitz, Nobel prize-winner in 2001, urbanisation will be China's biggest challenge in the 21st century.

Besides its role in accommodating and stimulating economic growth, other important tasks for China's urban development are balancing urban and rural segregation, regional differentiation and providing a modern quality of life to all urban dwellers. Meanwhile, as cities are expanding and condensing rapidly, similar problems such as the degradation of the environment and the quality of life formerly afflicting western industrial cities are severely confronting large Chinese cities. In order to tackle these urgent issues in transitional urban china (J. Friedmann 2005), developing new towns has become a widely adopted urban policy.

5.2 Shanghai new town plan

The development of Shanghai's satellite towns is divided into three phases. The first stage (1958-1985) is the starting suburban planning and construction period. The purpose this stage is to ease the population and industry pressure from the old Shanghai's downtown area. As the housing and living service facilities is not enough, coupled with the categories of industry is too single, after 10 years of development, the result is not satisfactory. The small scale of satellite towns could not development independently and self-sufficiently. The business and life services were still relying on Shanghai Central City. In 1985, seven major satellite towns only can absorb only 7.44% of total Shanghai population.

The second stage is the "One City, Nine Towns" stage (see illustrate 3). In 1999, the plan population of "One city, Nine towns" is 1.025 million people in all. The purpose of this stage is to ease downtown population and to promote urbanization process in the suburbs to help the transformation of the old downtown area. As the function is mainly for living and lack of supportive industry, the rapid transport links, public services and supporting facilities can not keep up with the development, the "One City, Nine Towns" development model is still not satisfactory. Generally the new satellite towns become the "empty town" with the actual very limited absorbed population from the downtown. In 2007, the intake population of Songjiang New Town, Anting New Town, not reached 20% of the planning population.

Illustration 3  Shanghai central and its new towns
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The third stage is the satellite town development period under the “Eleventh Five-Year Plan”, which proposed the continuous construction of the nine satellite towns with a total plan population of 5.4 million. The plan focuses on the development of Songjiang, Konggang, Jiading - Anting New Town. In addition to Lingang new town, the other satellite towns still not work effective.

Shanghai is in the stage of transformation from single core city to a multi-core city, the series of transformations both undertake in the city centre and the surrounding satellite towns. However, the development of Shanghai’s satellite town are not effective enough that Shanghai is still a single core city and do not have a sub-centre that can share its pressure effectively. The gap of the power level between the conra and satellite towns is very great disparity. The development of satellite towns is unbalanced. The inner suburbs developed faster and better than the outer suburbs. Southwest and southeast suburbs developed relatively slower compare with other satellite towns.

6 Principles summary from literatures for Chinese new town develop
According to the review of above new town concept and related theory, the principles are summarized that can be used in the new town planning in Shanghai under the climate of rapid urbanization in China.

6.1 Self-sustained and compact model
Most importantly, in order to decentralise the existing urban pressure in mega cities and absorbing superfluous labour from rural area, the overall aim of new towns is to create a new and efficient regional centrality. Self sustained in socio-economic terms with diversity of functions is very important. Single function model like just being suburban sleeping towns is not enough, on the contrary, the more compact model both in spatial and function aspects for the self-sustained new towns is worth to explore.

6.2 Relationship with parent city and clear regional position
However, as Howard and other new town advocates realize that, in fact ‘no small city could be wholly self-contained’. It indicates that the relationship between new towns and central cities should not be one of separation but one of many connects. The self contained model for intra-new town and its position in network model in regional planning are both needed. These demands may arose the questions and decisions, in the relationship between the new towns and its large parent city, to what extent of the independent of the new towns should be, what kind of function and activities in the new towns should have connection with parent city, how complementary of the functions could be, and how competitive it can be? Different new towns have different roles in different context with its parent city. To give the answers, comprehending the practical context of the parent city is prerequisite.

Besides, the ‘concentrated decentralisation’ regional model was also proposed by Howard of the concept of Garden cities. His proposal for a regional unit consisted of a group of satellite towns bound together by a rapid transport system and was widely considered as an appealing rational alternative to the unconstrained continuous urban sprawl. In many mega cities of China, less of the have formed efficient rapid transport system like metro or light rail system connect with their satellite towns. Some places where have better infrastructure connections with the parent city will have a good pre-condition to be well developed, while the other places where the physical connection is not efficient are obstacle to be well developed.
6.3 Special function and new centrality
The observations of the behaviour of not-for-profit and special urban land use show that functions such as universities, high-tech companies, exclusive medical care and entertainment facilities, tourist resorts etc. are much more foot-loose in location. Once established, they tend to form their own independent centralities. From this point of view, if a new town has the potential to become new centralities with the kind of not-for-profit functions, and form related self-contained intra system, it is more possible and easier to realize both of the self contained model and the network regional model. However, not every new town has the potential and conditions to form this kind of centrality.

6.4 Relieve polarization and top-down coordination
As society becomes increasingly market-oriented, the segregation of the urban rich and poor is exacerbated. New town development should therefore contribute to achieving social balance and diversity. That is to say, the new regional growth poles with centrality should aim to boost the economy of the less developed region. According the theory of Agglomeration and deglomeration of economic activities (regional Development and Planning-a reader, J. Friedmann, 1964), the large metropolis as a whole has continuously strong agglomeration forces, while the deglomeration movement is more subtle and often intra-metropolitan. If the city is left to develop entirely according to the free market, over congestion and dissipated land use is inevitable. In order to change the polarization which caused by market economy, the top-down coordination to create conditions for new centrality in less developed area, which can be reflect both in policy regulation and spatial plan is very important and necessary.

6.5 Service activities for potential clientele
What is more, according to the central-place theory, that levels of services are differentiated by the threshold of potential clientele. Define the clientele and the related service activities are also important. For China's special context with massive rural-urban migration of floating population, which is also the spatial users of new town and also the potential clientele, what kind of services activities should supply for them needs to be given emphasis on.

6.6 Full measure of social life and good community with identity and quality
Review the Garden City Concept, Industry town, Green belt town and other new town concept, all of them are trying to create a sense of community. Among which are called for better living conditions, like suggested in Howard's Garden city concept of "healthy living", "makes possible a full measure of social life", "surrounded by a rural belt"; in Owen's "working community" model in Glasgow of creating "better working and living conditions and better education for factory workers and their families "; in the Broadacre city concept by Frank Lloyd Wright (1934) of individual houses in a dispersed low-density urban layout, with private cars used at will. ; in the Greenbelt Town Concept of "attached homes organized around linear parks with pedestrian pathways", etc. In the new town movements which took in UK, French and The United States, most of the plan and designs focused on pedestrian-friendly orientation, interesting community designs, to attempt to create a sense of good community and realize the 'full measure of social life, as conceived by Howard. In the aspect of realizing 'full measure of social life' and creating good community for living, the new towns in China is till on the way of being challenged.

Modern urban china is currently suffering from an identity crisis. The country has a very long tradition of constructing planned cities. However, there have been insufficient attempts made at integrating valuable historical planning ideas and design elements into modern city-making, nor are there enough endeavours aimed at creating new urban characteristics, which is important for new towns. In addition, in terms of design, a common problem of the city-making process is the emphasis on the rapid increase of quantity rather than attention for urban quality.
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6.7 Collaboration between public and private stakeholders
The development of a large-scale long-span project such as a new town requires consistent policy support and effective governance. As Chinese society is in a transitional phase from a centralist to a liberal and market-oriented economy, the manner of collaboration between public and private stakeholders is playing an increasingly important role in determining the viability and vitality of a new town. From the present situation, the market economy has already brought out some problems, especially in Real Estate investment of housing, many new towns become Real Estate towns rather than Real towns. Top-down coordination will still be needed, and a better way of collaboration mechanisms among centre government, local government, public and private sectors and other investors are needed.

7 Conclusions
In order to find out the key spatial and functional elements for new town development and explore a more self-contained new town model which can be used in China’s new town planning, the paper “Searching for Good Urban Form, from Utopian Cities to Chinese New Towns” by Jing zhou, TU Delft, of various new town development concepts and theories including “Garden cities,” “Industry Village” “Greenbelt Town Concept”, “New Urbanism” concept, “agglomeration and deglomeration of economic activities” and the central-place theory are reviewed. The principles that can be used in the new town planning in Shanghai under the climate of rapid urbanization in China are summarized, among which the relationship with parent city and clear regional position, relieve polarization and top-down coordination, service activities for potential clientele, full measure of social life and good community with identity and quality, collaboration between public and private stakeholders are very important guidance for Chinese new town planning.

8 Recommendations
Through reviewing the literatures on new town planning concept and related theory, many of the theories and idea are based on a certain context which includes the reasons to research them and the ways by using the theory to tackle actual problem. The new town develop process in China is similar to that happened in western world between 1940s and 1970s. Besides what are reviewed and mentioned in this paper, various theories based on practice in Europe and America are well worth to learn. However, as to the model which can tackle the practical problem in Chinese new town development, new theory under the certain context should be researched and explored.

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As a student from china, who used to grow up, live and study in metropolitan cities (Shanghai, Tianjin, Xian), the different kinds metropolitan phenomena influenced me lot and infiltrated in the ways I am living , thinking and also the ways looking at them.
As an urbanism student, I want have a more profound view in the realm of the development of the peripheral space around big centrality and work on the relationship between the peripherals and the central core, the networks among the different peripheral nodes in regional scale for the aim of releasing the pressure from the over density global cores and setting up their unique positions. Through the process of reading and learning the concept, many questions have already found their answers.
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