Dual Map 2040
Dual Map 2040: Guide to A Vital, Diverse Jining

Transformation of a resource based city in the framework towards a market economy in China: the case of Jining

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Contents

05.  Chapter 01. Overview
11.  Chapter 02. Theory Study
45.  Chapter 03. City Profile
53.  Chapter 04. Vision
69.  Chapter 05. Strategy
157. Chapter 06. Evaluation and Recommendation
Chapter 01.

Overview
Resource-based city

Resource-based city is an adapted name used in the academic field of urbanism in China, referring to the ‘cities that rose or boomed due to their natural resources, and resource industries account for a large share in the industry of the cities’ (Zhao, Z, Zhang, M, Gao, F, Zhang, Y, 2006).

International Standard

According to H Jiao and L Lu, the amount of the papers outside China that studied the resource-based cities is between 30 and 40, quite few. The majority are written by the researchers of Canada, Australia, and America, especially Canada. In Europe, there are only a few papers referring to resource-based cities are published in England, because there are not many single resource-based cities in Europe (Jiao, H, Lu, L, 2000).

In Canada, the resource-based cities are named as resource towns (GILL, A.M, 1990) or resource-dependent communities. Robinson (1962) was one of the first geographers to undertake a comprehensive assessment of resource-dependent communities in Canada. As the title of his book suggests, he was most interested in the implications of planning new communities in isolated areas of the country (Randall, J.E, Ironside, R.G,1996). A.M. Gill pointed out that single-industry resource towns are distinctive communities both socially and physically (Gill, A.M,1990). The resource-based cities in United States, Canada, Australia are mostly small cities, with thousands or tens of thousands people. The resource enterprises in these three countries are mainly private companies, the governments intervene the economy by financial approach, instead of intervene the running of resource enterprises directly. The futures of the resource-based cities in these countries fall into two categories. One is the ‘ghost town’ caused by the exhaustion of natural resources and people leaving the town in west United States. The other one is the transformed comprehensive city such as Huston and Los Angeles (oil cities). This is the choice of free market (Li, M, Zhang, M, 2002).

Resource-based cities in China

Among the 660 cities in China, there are 118 resource-based cities, counting for 17.8% of the total number (Macro Economy Research, 2002), and 154 million people are living in these resource-based cities, counting for 11.8% of total population. They are categorized with six types according to their resource industries: 63 coal mining cities, 12 metallurgical city, 8 ferrous metal city, 9 oil city, 21 forestry city, and 5 cities based on other resources. Beside, 111 out of the 118 resource-based cities in China are medium and small cities (with less than 0.5 million urban population).

The map below illustrating the dispersion of resource-based cities in China shows that most of the resource-based cities locate in the east China, where most population and wealth are concentrated. Therefore, although some resource-based cities with very disadvantageous geographic, economic, social and nature conditions will disappear after the exhaustion of their natural resources, transformation into a city with new dynamics is still the direction for most of the resource based cities in China.

The transformation of resource-based cities (aim of the project)

In this thesis, I chose one city, Jining, in the east on China, as a target to investigate how to transform this resource-based city into a city that does not rely on the resource economy anymore. I placed myself as a designer for the government of this city. I will both study the many researches about the transformation of the resource-based city and analyze the conditions of the city, to find out what the government can do, both spatially and non-spatially, to realize the transformation of this resource-based city.

Target City

Jining is a coal mining city, one of the eight national coal basements in China. It is an entity of administration consists of 4 smaller cities and 6 towns. There are 7.93 million people; 2.14 million are urban population, accounting for 27%. It is also a ‘mature resource-based city’.
Problem statement

- The main industries will decline along with the exhaustion of natural resource.
  The resource industries are meant not to be sustainable, because it is developed on the base of a very limited natural resource and large amount of labor force. Same as the situations in many resource-based cities in China, the three major coal mining enterprises in Jining are not only companies in charge of production and selling, but also departments in the government responsible for the social welfare and social facilities, like schools and hospitals. As the coals being exhausted, the coal mining companies might not be able to afford these social responsibilities anymore.
- Deterioration of ecological environment
  With large-scale mining, the ecological environment deteriorates everyday. The over-exploitation of coals leads to ground subsidence. Underground mining changed the geological structure, affecting the dispersion of ground water. The air is also polluted by the emission of dust and harmful gasses.

Research questions

- The main research question
  How to realize the transformation of Jining from a coal mining resource-based city to a city with new generator of dynamics?
- The sub research questions
  What are the possibilities of transformation of Jining, given its geographic, economic, social potentialities and nature resources?
  What instruments, both spatial and non-spatial, are needed for the possibilities of transformation?
  How can the government execute those instruments, given the role of government among all the factors that are affecting the city?

Scientific Relevance

Given the social and economic significance of this topic, the transformation of resource-based cities, it is a hot spot in the academic field of urban planning in China. However, according to the statistical analysis by Huafu Jiao and Lin Lu, of the papers about resource-based cities in China since the first study on this topic in 1978, most of the papers studied the resource-based industries, instead of the resource-based cities (Jiao, H, Lu, L, 2000). The given solutions are all focused on economic and sometimes social aspects but not spatial approaches. Therefore, a certain resource-based city is chosen from the beginning of this thesis, to investigate the approach to apply the results of the theory study to the practice, or whether they can be applied, and the approach to bridge the economic and social solutions with the spatial instruments by design, a regional design in this case of Jining.
Societal relevance

17.8% and 11.8%
As stated above, there are 118 resource-based cities out of a total of 660 all cities in China, counting for 17.8% of the total number of Chinese cities (Macro Economy Research, 2002), and 154 million people are living in these resource-based cities, counting for 11.8% of total population. The common problem of these resource-based cities is that they are developed relying on certain limited natural resource which will be exhausted one day. And the exhaustion of the natural resources will not only lead to the decline of the main industries, but thus cause certain social problems such as unemployment, loss of social welfare. Therefore, investigating a practical way for the transformation of the resource-based cities is significant for the long-term sustainable development of China.

- Mature resource-based cities
Jining is a mature resource-based city. Then what is the ‘mature resource-based city’? The life cycle of resource-based cities can be divided into 4 phases, namely development, mature, decline and exhaustion. There are 68% in the 118 resource-based cities in China are staying at the phase of ‘mature’, 12% are experiencing the ‘decline’ and ‘exhaustion’ periods, 20% is at the first phase, ‘development’. For the ones during the development phase, a lot of capital still needs to be invested into the resource industries, so no more money can be invested into other industries. However, the mature resource-based cities have got strong enough economic strength to realize the transformation of the economy of the cities, through the upgrade of the economic structures and innovative mechanism (Dong, S, Li, Z, Li, B, Xue, M, 2007), breaking away from the life cycle of ‘development, mature, decline, and exhaustion’ (Zhao, X, 2007).

- From planned economy to market economy
The problem of resource-based cities is not only the reduction of the profit of the coal mining companies and unemployment of mine workers, but also related to a series of social problems, because normally the large coal mining companies in each resource-based city are state-owned enterprises, with both character of commercialized enterprises and socialized government. The problem of resource-based cities is actually a reflection of the transformation from planned economy to market economy in China. In the era of planned economy in China, the state-owned enterprises, which mean the large coal mining companies in the case of Jining, have both the responsibility and function of enterprises and governments. The social functions which should belong to governments normally cost 10%-15% of the profit of these state-owned enterprises. These both increased the burden of enterprises, and reduced the responsibility and income of the governments, so both of the enterprises and cities become less competitive (Dong, S, Li, Z, Li, B, Xue, M, 2007). This was not a problem at the time of planned economy, when production and consumption are all planned precisely, China was isolated from the rest of the world, and fair competition did not exist in the market. However, as China entered the era of market economy, the competition of market nationally and internationally become more and more fierce, and the disadvantages of single resource-based cities become more and more obvious (Zheng, Z, 2002). Therefore, the transformation of resource-based cities is also an echo to the transformation of China from planned economy to market economy.

Evolutionary law of industry and economic life cycle of resource-based cities. (S, Dong, Z, Li, B, Li, M, Xue, 2007)
Methodology

I used the model of approach concept in the thesis of Diana Garcia and Marcelo Sanchez to illustrate my concept of methodology. They think the traditional approach of doing urban projects that is limited on fixing the problems ‘not only gives limited solutions in a narrow period of time but also they’re not strong enough to generate or impulse (spin off process) a short-long terms transformation process able to deal economical and political uncertainty’ (Garcia, D, Sanchez, M, 2009). The proposed approach assumes that not only every problem represents a challenge but also an opportunity to generate a process of visioning the desirable future (short and long term perspective) able to generate the transformation of the dynamics of the city (Garcia, D, Sanchez, M, 2009), like the Chinese character of ‘crisis’ suggests, the crisis has both meanings of ‘danger’ and ‘opportunity’.

After choosing the topic and target city, the project continued along two lines: theory study and city understanding. The vision and strategy for the city are proposed based on the conclusions of theory study and selected city analysis. The strategy is actually a package of a series of both spatial and non-spatial specified strategies. The spatial strategies are translated to the design of mobility system and nature structure, and the non-spatial strategies refer to certain proposed programs and suggested policies. At last the strategies are evaluated to see how they can affect the city at local and regional scales.
Reference


Chapter 02.

City Understanding
1. Location

At an advantageous position

Like the ‘Blue Banana’ from London to North Italy in Europe, the southeast coastal zone in of China is the major generator of economy in this country. The 3 official major economic circles in China are all in this ‘banana’ shape zone, Bohai Economic Zone, including Beijing, Yangtze River Delta, and Pearl River Delta. Jining locates at the south edge of the Bohai Economic Zone. Therefore, it has quite an advantageous position at the national scale.
2. Urbanization

London
13 million

Paris
12 million

Jining
2.1 million
urban population

Beijing

Shanghai

Randstad
8 million

Barcelona
4.3 million

Ruhrbiet
11 million
2. Urbanization

Compared to the other metropolitan regions in the world, Jining is quite in term of area. Even Beijing and Shanghai are not as huge as it is granted, given their huge populations. However, the fast urbanization going on in China makes this situation very uncertain. Using the prediction of population in the Government Report of Jining in 2008 as reference, it is calculated that the urbanized area of Jining will grow by 2 times of the current one. However, the prediction of population is not always right, especially in nowadays, when people can move more freely to choose places to work and live. Then, how to guide this enormous process? How to capture this historical moment wisely to help the transformation of Jining from a resource-based city, to, something else?

<table>
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<tr>
<th></th>
<th>2007</th>
<th>2030</th>
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<tr>
<td>Total Population</td>
<td>8.18 million</td>
<td>9.50 million</td>
</tr>
<tr>
<td>Urban Population</td>
<td>2.09 million</td>
<td>6.30 million</td>
</tr>
<tr>
<td>Urbanization</td>
<td>25.6%</td>
<td>66.3%</td>
</tr>
</tbody>
</table>

Source: Government Report of Jining, 2008-2030
Urbanization of the Netherlands
(source: Z&B-panels_IABR, 2007)
Chapter 02. City Understanding

3. City Structure

Cities and Towns

Villages

Mines
The target city of this thesis, Jining, is actually an agglomeration of 4 cities and 6 towns and enormous villages. It is a region. As the four cities, which are Jining, Yanzhou, Zoucheng, and Qufu have the highest level of urbanization and potential of further development, the government intended to enhance the interrelation of these four cities and form a metropolitan region, namely, JYZQ.
4. Economy

Resource industries and others

Among the 4 cities and 6 towns in the territory of Jining, there are 3 resource-based cities: Jining, Yanzhou, and Zoucheng, which are also the most wealthy and urbanized area in this region. In this 3 cities, the resource-industries play a vital role in the economy, as showed in the pie of Zoucheng above. 50.4% of the total GDP is produced by the coal economy. However, in the whole territory of Jining, the other economic sectors also have certain economic vitalities, especially the service sector.
5. Transport

5.1. Get in and Get out
Chapter 02. City Understanding

Get in and Get out - Train station

Get in and Get out - Highway
The JingHang Grand Canal is currently only for cargo, mainly coals at the stop of Jining.
Chapter 02. City Understanding

Beijing-Shanghai Hispeed Train

Beijing

Jining

Shanghai

Beijing-Paris Lyon

466km 852km

Beijing-Shanghai Hispeed Train TGV

425km

Paris Lyon

<2 million

>2 million

>8 million
Jinghu highspeed train:
Beijing- Shanghai
1000 km
19 cities
4-5 hours
7 provinces
5.2 Get around
- Public transport

**Bus is the only way of public transport in the region**

Different from the integrated railway system in the Randstad, the railway system in JYZQ, including the future JingHu high-speed rail, is only for national transport, not for the public transport between these 4 cities. The only way of public transport currently in this region is bus.
5.2 Get around
- Vehicle transport

One system and two systems

Like the railway system, the highway passing by this region is also only for the transport at national level. The regional road is the only one system for vehicles to get around in this region, and it is still rather fragmented. On the contrary, Ruhr region has two integrated systems of highway and regional road for regional transport of vehicles.
Chapter 02. City Understanding

Get around - Regional road

Get around - Regional highway
Chapter 02. City Understanding

Get around - agriculture road

Get around - village road
Get around
Bicycles

The bicycles are along every road.

China is a kingdom of bicycles. In the 20th century, Chinese planners leave the space for bicycles along every road. And in 21st century, more and more people changed their bicycles into electric bicycles, riding on the same bike lanes.

Why not keep this tradition?
Get around - (electric) Bicycles

Chapter 02. City Understanding
6. Ecology

- Location of Jining in a bigger ecology system
Jining has rich and diverse ecological resources.
Chapter 02. City Understanding

1. Mountains - with forests

2. Mountains - as attraction
3. Mountains - city park

4. Mountains - without forests
5. Water - Weishan lake

6. Water - reservoir
Chapter 02. City Understanding

7. Water pond around cities

8. New waterfront project
9. Subsided land

An disaster and opportunity

The subsided land caused by the coal mining is enlarging every year. Then they are soon filled by water with biggest depth of 8 meters. The villages on these lands suffered a lot and have to move to other safe places, and a lot of precious agriculture lands are lost. However, it is not economically feasible to recover them all back to agriculture lands. On the other hand, this process is actually creating a new ecological pattern: a wetland just beside the cities.
Chapter 02. City Understanding

Water - big rivers

Water - small rivers
Chapter 02. City Understanding

Agriculture

Invaded Agriculture
7. History

History is an accumulation of events.

The spaces today are the overlapped survivors selected by the time of yesterday.

Centers and Infrastructures

The history evolution is continuous in the region of Jining. The centers of Jining Region always migrate along with the change of the human and nature infrastructures connecting outside.
Chapter 02. City Understanding

The first human settlements

The Si River connecting He River and Ji River connected this settlement consisting of Yanzhou, Qufu, Ren (Jining), Zhu (Zoucheng) to the other 3 ancient settlements in the west China.

Qufu as the regional center

The Si River and He River still played important roles in connecting Jining Region to the west. The central position of Qufu was strengthened by both its advantages position beside the Si River, and being the capital of Lu Kingdom. Zoucheng moved to the place of today, with better 'Fengshui', during this period.

B 15000-B771
SanHuangWudi - West Zhou dynasty

B 771-369
East Zhou - Jin dynasty
Yanzhou as the regional center

The Huangqiong Canal, 369, and Fengyian Canal, 581, changed the pattern of water transport in Jining Region. They made the 4 important rivers, Ji, Yen, Si, He, all connect.

Yanzhou, which was at the vital place in this water network, became the regional center.

Jining as the regional center

In 1289, Yuan Dynasty, the trail of Jingshong Grand Canal was moved to east, passing by Jining. And Jining also became the administration of the Grand Canal management. This promoted the boom of Jining into a regional center.

369 - 1289
Jin - Yuan dynasty

920 years

1289 - 1898
Yuan - Ming

609 years
Chapter 02. City Understanding

The Importance of Yanzhou Rises again

In 1898, Qing Dynasty, Yanzhou became a station of the national railway, JinPu Railway (1009 km). The importance of Yanzhou rose. However, Jining stayed at the position of administration center.

'Resource Economy'

In the last decades, including the period of planned economy, coal mining was the major force to push the urban development in this region since the first coal mine in 1966. So Jining, Yanzhou, and Zoucheng, the three resource-based cities were the most developed and urbanized cities. Jining is still the administration center and biggest city in this region, but the pattern of centralities is not yet clear, because the resource economy is becoming less and less important and new national highways were just constructed in 2000.

1898 - 1966
Qing - Min guo
68 years

1966 - now
44 years
Chapter 03.

Theory
The City is not a machine

-- Questions on overall land use planning method in the framework towards a market economy in China

Abstract

China is now experiencing a major transformation on both economy and policy, which means the transformation of economy of China from a planned economy towards a market economy, and the ongoing process of decentralization from central government to local governments. However, the planning system which has a strong character of planned economy has become less and less effective confronting these transformations. This paper introduced the planning system in China, the influence of the transformation stated above on Chinese urban planning, and the reaction of Chinese urban planning field to these transformations. The master plan is a central instrument for planning in China and land use plan is in accordance with the master plan. This paper suggests that the large-scale overall land use plan is not a suitable planning method in China, because it is a simplified way of understanding and planning the cities.

Key Words

Overall land use planning method, economy transformation, policy transformation, China

1 Introduction: Changing economy and the unchanging planning

As China transforms towards market economy, land becomes an extremely valuable resource, and every government realized the importance of urban plan. The function of plan is also changing: from restricting economy to guiding economy. Urban Planning method is a reflection of economy and political model. In China the political and economic model is experiencing a transformation from central planned economy to market economy and decentralization of political power. But the planning method didn’t have big change, and the effect of planning is weaker and weaker confronting the fast social and economic transformation in China. So in this paper I am going to investigate that how could the urban planning method in China cope with the transformation from central planned economy to market economy. However the dominate method of planning in China is actually the same as before: a master plan for the whole city, with legal status. However, this powerful tool starts to appear its weakness confronting the fast changing environment in China. This leads the Chinese urban planning to a sick situation, which means that the status of planning is more and more important, but the effect is weaker and weaker. (Zhang, J, 2003) Urban planning in China becomes very ineffective.

As a consequence of the central planned economy, urban plan was a total top down activity to arrange various resources, like assembling various components in a machine, in a very efficient way. The function of plan was normally to restrict urban development, especially in big cities. Why did this happen? How can urban planning cope with this new situation? This new situation means the variable urban spatial structure caused by the transformation towards market economy.
China urban planning system: master plan is at a central position.

According to the 'City Planning Law of the Peoples Republic of China,' the planning system in China consists of 3 layers: city and town system planning, master plan, and detailed plan. For the City and Town System Planning, Ministry of Construction is charge of making the national one, and province government is responsible for making the provincial city and town system planning, but the city domain one is not mandatory and normally included into the Master Plan. In the next layer of Master plan, the local municipality is in charge of making the Master Plan, an overall, comprehensive plan, similar to the master plan in America authorized by the Standard City Planning Enabling Act drafted in 1928 by an advisory committee to the Department of Commerce. 'The city master plan is a long-term, general outline of projected development; zoning is but one of the many tools which may be used to implement the plan.' (Department of Commerce, 1928) The master plan in China has a strong character of planned economy borrowed from the popular method in North America around Second World War: discuss the character of urban development and predict the future population first, and then confirm the land use, organize spatial structure, and confirm the system of road transport and other infrastructure. Lastly, make urban master plan and urban detailed plan. The Regulatory Detailed Plan is the next step after the Master Plan and should be accordance to the Master Plan, including infrastructure and land use.

The function of Regulatory Detailed Plan is similar to the master plan in America described by Haar 'This plan (master plan) commonly includes a 'zone plan' or 'zoning plan' for the 'control of the height, area, bulk, location, and use of buildings and premises.' (C, M. Haar, 1955). Zoning plan in this layer is not mandatory.

The last layer is called Construction Detailed Plan, which is in charge by both government and private developer. (B, Yang, 2003) The nature of Construction Detailed Plan is an urban design according to the Master Plan and Regulatory Detailed Plan. This is a strict layered planning system made in the period of planned economy in China, with Master Plan as the central legal instrument. However, this powerful tool starts to show its weakness confronting the fast changing environment in China. This leads the Chinese urban planning to a sick situation, which means that the status of planning is more and more important, but the effect is weaker and weaker.' (Zhang, 2003)

Changing economy in China from a planned economy to a market economy with the force of globalization

After 1978 China has been experiencing the economy transformation inside the society and the pushing force from outside (Zhang, 2004), which means the transformation from towards a market economy and the force of globalization. On one hand, 'the private real estate developer emerged as a formidable force to which localities could mostly only react:'(M, Neuman, 1998), and on the other Foreign Direct Investment became the hot target the local governments fight for and ask planners to adjust the master plan to cope with this. In this circumstance, planners found it harder and harder to implement their plan made according to the regulation stated above.
4 Changing policy in China: Decentralization which fosters more powerful and free local government and severer competitions.

According to the rapidly changing economy environment, the central government keeps dispersing more right to the local governments, instead of planning everything for the cities during the period of the planned economy. This decentralization made the local governments change from a passive actor as an outspread department of the central government to a more enterprise entity. Local governments tend to making the decision and act according to the local economic interest, like enterprises more and more. (J. Zhang, 2004) In this context, developing local economy, strengthening the city competitiveness has become the central mission of local government, and thus the competition between municipalities became more and more severe.

5 The Current Situation and Critiques towards the master plan

Facing the fast changing economy and policy, the doubt towards the absolute legal status of master plan has never stopped, as H Chen stated in the Annual Conference Forum, ‘We never stopped rethinking and improving the making and implementation of master plan, but the valid period of planning is shorter and shorter, and furthermore, the effect is worse and worse. Facing this situation, we, planners became more and more depressed.’ (B, Yang, 2005) And the problem of master plan is that the future population cannot be precisely predicted, and thus the prediction of land use cannot be precise either (B, Yang, 2005). The planner in planning ministry of Nanjing also argued that ‘Planning is a process that has to be continuously improved; therefore master plan should be a dynamically optimized, instead of a fixed plan valid for many years’ (B, Yang, 2005).

Therefore the Chinese planners should realize the natural flaw of master plan, lack of flexibility and simplification of the complex system of the city for example, instead of complaining the too short time given for making master plan, and the not fully implementation of local governments. Besides, planners need to realize there are more profound driving forces of the development of cities beyond the arrangement of the colorful Euclidean zoning on the map and the strong will of the local governments. Master plans are not free to manipulate the geography of employment as they please; but that this follows economic laws which, though difficult to analyze in detail, cannot be broken with impunity; that in planning for the future need to start with a new respect for economic forces, with a belief that we may bend them but we cannot break them.’ (D, Bell, 1973)

Actually these critiques are not fresh for us. Brown strongly doubted (Taylor, 1998) the feasibility of the detailed blue print planning or master plan and realized actually it can be concluded from his point that the blue print plan can actually be totally abandoned, but this suggestion would be questioned: ‘the thinking of abolishing master plan looks odd at the first town can be constructed without any master plan’ (Brown, 1966). However, he suggested another alternative at that time although he didn’t make a clear alternative proposal. We might see planning in the light of a game of chess, divided into a series of moves each limited and decisive in its own terms but each striving to secure maximum freedom for successful manoeuvre in the subsequent stages (Brown, 1966). This was quite modern proposal at that time to understand plan as flexible strategies (Taylor, 1998). The government of Barcelona has given a very good and creative practice on this idea by, not making any master plan. They claimed that ‘From the point of view of planning this was important because we were absolutely against the idea of master plans. The master plan is a way of factoring in the globalization of the city but without considering the individual identities of each quarter. For that reason we decided not to do a master plan for Barcelona but to complete small architectural projects and to understand that the master plan was just the culmination of all these small solutions’ (C, Landry, 2006). It is a very creative solution.

Then what did the professionals in China react to these critiques?

6 Reaction of planning field of China for the changing economy and policy environment.

After all the failures of master plan, there appeared two types of planning experiments. One is local oriented strategic planning, and the other is central government oriented immediate (construction) plan. (B, Yang, 2005)

6.1 Strategic plan

Strategic plan is a positive reaction of local municipalities as the power keeps be released from central government and thus the mayors got more freedom to decide the development of their own cities. Compare to the traditional Master Plan, strategic plan is more flexible without the many technical regulations and can be more ambitious to meet the requirement for the more and more severe competitions between cities. However, there are two main problems of this strategic plan. First, The local governments in China focus more on its own profit as running enterprises, as described in the theory of ‘Urban Growth Machine.’ (J, Logan, H, Molotch, 1984) And because of the lack of democracy and weakness of NGOs, the Chinese cities actually have become ‘super enterprises’ controlled by local government and a few politicians’. (J, Zhang, 2004) The strategic plan in China is now actually the plan of the local government itself, the ‘mayor’s plan.’ Therefore, instead of saying that strategic planning is trying to search a scientific, realistic develop strategy, it is more proper to say that it is a develop concept with combination of the local government willing, develop goal, and city marketing. (J, Zhang, 2004) The similar opinion was also claimed by Kearns and Philo in 1993 that in the public sector is often transformed into city marketing (Kearns and Philo, 1993). Secondly, because the master plan is still the central instrument of planning and it covers almost every field of the city’s future development, including infrastructure system and land use for every plot, and master plan is normally valid for 15 years, the conflict between master plan and strategic plan has never stopped.

6.2 Immediate Plan

The immediate planning is a reaction from central government responding to the more and more obvious ineffectiveness of master plan and that some local governments just using master plan to apply for more construction land. It focuses more on the plan of projects that can be constructed within 5 years and the relationship with the master plan. So it still is an ‘additional product’
of Master Plan. Planners gave a big hope on this immediate planning because it is more practical, and it is from comprehensive to limited rational planning (B, Yang, 2003), in accordance of the usual thinking of gradual transformation‘(B, Yang, 2003) This may predict the direction of transformation of the master plan’ (B, Yang, 2003)

Therefore, we can see a quite complicated situation in the field of urban planning in China, with the master plan with a strong character of the planned economy, and also the strategic plan and immediate plan adopted from Europe and North America into the ‘Chinese situation’. Crossing the river by touching the stone can describe this scene vividly. However, it seems that the critiques and improvement of the master plan in China missed one important part, the comprehensive and overall land use plan in the master plan.

7 Land use plan in overall and comprehensive master plan

There are 2 most important instruments in Master Plan, infrastructure plan and land use plan. The governments attach great importance to land use in master plan. In the master plan of Tianjin 1997-2010, the function of land use plan is lifted onto a top level as ‘the important guarantee for economically and socially sustainable development, important method for promoting rational and orderly construction of urban and rural, prerequisite for market resources to play basic roles, and the ‘dragon head’ for land management and the basis accordance of administration according to law’ (Tianjin Ministry of Urban Planning, 1997)

However, the master plan is not so fully accepted everywhere. Since there start to be attack on the idea of comprehensive planning and its main instrument, plan, critiques were also launched on several fronts against the main tools of the plan- zoning and land use regulation. (M, Neuman, 1998) The 4 maps below (figure 7.1, 7.2, 7.3, 7.4) show the master plans in 1996, 2009-2030, and the official current land use map in 2009 and the mapping of commercial activities of Zoucheng, a middle-sized city in China, we can find the following phenomenon.

1. The real situation of land use is actually very different from the neat plan picture. It is much more ‘messy’ than the plan.
2. Comparing to the land use plan, the urban infrastructure developed basically along the master plan, because the infrastructure is invested by government.
3. Even the land use map of current situation can not really reflect the city functions. Take commercial use for example, the location of the shops are not always red (the color for commercial)
7.1 The origin and popularity of land use planning method

Where does land use planning, this world wide planning instrument come from? Why is it so ‘popular’? Is it really necessary for urban planning?

The origin of modern planning attributes to Haussmann’s plan for Paris at the middle of the 19th century, and the movements for improvement of hygiene in Germany, Britain, and the United States. After that, many comprehensive city plans with combination of practice and theory made great influence: Barcelona plan by Cerda in 1859, Letchworth Garden City by Howard, ‘the 1893 Columbian Exposition’s Great White City, Danning Burnham’s and Edward Bennett’s 1909 Plan for Chicago, Arturo Soria’s Lineal City of 1882 for and extension of Madrid, Walter Burley Griffin’s 1912 plan for Canberra, and Otto Wagner’s 1893 extension plan for Vienna were some of the most prominent. (M, Neuman, 1998) Besides, some utopian plans are also influential: Camillo Sitte’s The Art of Building Cities (1889); Ebenezer Howard’s Garden Cities (1898); Tony Garnier’s Industrial City (1917); Le Corbusier’s Plan Voisin (1925), Raitia City (1933), and A Contemporary City of 3 Million Inhabitants (1992), and Frank Lloyd Wright’s Broadacre City (1935). (M, Neuman, 1998) All of these pioneers concreted their idea into real project or design, but none of these projects or proposals were so widely accepted as the idea of planning the city by land use, since Chapin’s Landmark Urban Land Use Planning shifted the core of planning from design to land use, which symbolized the move from the complex unity of the city to land units segmented into categories’ (M, Neuman, 1998) And the 1926 Supreme Court decision in the case of Village of Euclid v. Ambler Realty Company and the 1924 United States Department of Commerce Standard State Zoning Enabling Act shifted the emphasis away from plans, designs, and urban form to zoning, laws, and land use. Lawyers and planners were to replace designers and engineers as the leading professionals shaping urban growth policy. (M, Neuman, 1998)

Why do the politicians accept this land use planning method so quickly and naturally? The reason can be explained by Newman’s words precisely: ‘land use models fit more neatly into the way North American institutions dealt with real property (deeds, laws, zoning).’ (M, Newman, 1998) Chapin’s underlying rationale used land use suitability as the guide for calculating land use supply and matching it with demand. (M, Neuman, 1998) And the influence is continued until today. In Netherlends, although there is no large scale overall land use plan as the one in China, the urban projects need to be translated into land use plan to have legal status. In China, where the governments and planners accept this land use plan naturally since we borrowed this method from western world, governments regard land use plan as an effective instrument to realize either their master plan, strategic plan or immediate construction plan. Because China transforms towards market economy, land becomes an extremely valuable resource, and land use plan is considered as a very important tool to utilize this valuable resource. Thus the spatial and functional specialization is a ‘trend’ and ‘major land-use strategies’ in China now partly due to the processes of comprehensive urban planning and urban renewal, and the joint processes of privatization and investment.’ (P, Gaubatz, 1999)

There are three ways of this specialization: ‘reorganization of the city around multiple business and service centers, increased district specialization and the establishment of large-scale development zones.’ (P, Gaubatz, 1999) The specialization in land use has caused many single use and gated urban living districts as a model for minimum-risk development (Mars, Hornsby, 2008). Or ‘economic development zones’, which both limit the types of commercial development within their bounds and are planned with a separation of uses. (P, Gaubatz, 1999) They are designed to attract and utilize outside capital investment resources’ (P, Gaubatz, 1999) Most development zones are discontinuous from the built area and located on the urban fringe, sometimes at long distances from the city, where farms are expropriated and arable land transformed. This generates dispersed development. (Mars, Hornsby, 2008)

7.2 Critiques on land use planning method

Although land use planning method is so adorable among governments, Lewis in 1949 already started to give caution on it. The danger is that it (zoning) may be considered a substitute for city planning and that, a zoning plan having been adopted, enthusiasm and interest may die out. Zoning is not a substitute for a city plan.’ (Lewis, 1949) Newman also stated that Plans were filled with words and numbers rather than maps and designs. It became difficult to envision the future of the place being planned through the haze of statistical data and quantitative analysis (M, Newman, 1998). The most severe opponent of land use planning method might be the writer of the Death and life of Great American Cities, the staunchest supporter of diversity essence of big cities. She pointed out that it is so easy to fall into the trap of contemplating a city’s uses one at a time, by categories. Indeed, just this-analysis of cities, use by use-has become a customary planning tactic. The findings on various categories of use are then put together into ‘broad, overall pictures. The overall pictures such methods yield are about as useful as the picture assembled by the blind men who felt the elephant and pooled their findings. The elephant lumbered on, oblivious to the notion that he was a leaf, a snake, a wall, tree trunks and a rope all somehow stuck together. (J, Jacobs, p144, 1961) It is thus not hard to understand that the land use planning actually simplified the complex functioning of cities. It makes urban planning into a game of assembling machines by different components: residential, office, commercial… One the other hand, when we look back to the early comprehensive physical plans, which was then criticized as lack of flexibility, such as Barcelona plan by Cerda in 1859, we can find actually it has generated so much diversity of city life. Isn’t it ironic for the land use planners?

8 Conclusion

Land use master plan has an increasing limitation confronting the changing economy, and the real life-the real scale. So considering the much failure, we need to rethink the necessity of land use planning method, based on more profound observation and research on the functioning of cities. And in the process of implementation, both planners and governments need to think about what elements can/should be controlled, and what cannot/ should not be controlled. For the big scale overall land use plan in China, on one hand, it cannot control the actual use of every urban plot, and on the other, the urban plots that are strictly constructed according to the simple color in the mazer plan became single-functional urban areas. Planning a city is different from assembling a machine. The large scale overall land use planning in China is simply not suitable for the changing economic and political environment in China. What is the best method of planning? No one can give an ‘correct’ answer. But to make a good plan, instead of just arranging the colors on the map, we need to understand the cities more, and more. Let us finish this paper with the understanding of uses (not land uses) of cities by Jane Jacobs:
Intricate mingling of different uses in cities are not a form of chaos. On the contrary, they represent a complex and highly developed form of order. The fundamental problem with Euclidean zoning is that it incorporates an overly simplistic notion of what constitutes an ordered environment—a notion that ignores how cities actually operate. (J, Jacobs, 1961)


STANDING COMMITTEE OF THE SEVENTH NATIONAL PEOPLE’S CONGRESS OF PRC. (1990), City Planning Law of the Peoples Republic of China.


Chapter 04.
Vision
Vision

From a resource-reliant economy to a diverse economy pattern

As stated in the 'methodology' part in Chapter 1, the approach of this thesis is not only providing a short-term perspective to fix the problems, but set a vision, a long-term perspective, regarding the problem as both a challenge and opportunity.

The vision of Jining is to transform into a vital city with diverse economies. The comparative advantages of this city will shift from resource industries to other economic sectors, so will be the job opportunities.

Then Jining will not suffer from the possible economic and social decay brought by the exhaustion of coals.

The solution for the decay of resource-based city is not to save the resource-economy itself, but lying somewhere else.

There are 5 directions of new economies for the vision of Jining, business service, tourism service, chemical and manufacturing industry, agriculture, and medical industry.
Chapter 04. Vision

Explanations

1. Theory support

Transformation is the only strategic choice

Proved by both the domestic and abroad practices, the transformation of resource-based cities is the only strategic choice for resource-based cities to break away from the predicament (Dong, S, Li, Z, Li, B, Xue, M, 2007):

Old work and New work

The coals in Jining not only brought the coal mining industry, but also a series of spin-off economies, for example, the chemical and manufacturing industries as the direct deputy industries, and service economies such as business, legal, and health care as the indirect deputy industries.

In the model of the development of the economy of cities by Jane Jacobs, the cities always have to experience the shifting of the main economies. At the same time when the old works develop and decline, a series of more new works will be generated from the old works. Some of them will grow stronger to become the main economies in the city again, becoming another old works, while the others will die out. Cities can stay alive and become stronger and more complicated during this process.

So we can consider the transformation of Jining from a coal mining city as one middle stage in the long evolution history of the city, helping the ‘new works’ to become stronger ‘old works’.

The paper ‘Study on Industry Transformation Development of Resource-Based City: A Case Study of Jining’ by Zhao, is a research aiming at finding the advantageous secondary industries for Jining. It concluded that the most competitive industries in Jining except coal mining is the further processing of coals, mainly coal chemical industries, manufacturing of transport facilities, biological and medical products.

Besides, the primary and tertiary industries also are playing important roles in the city.

2. The condition of the city itself

The mode of industry transition development in Jining
(source: Study on Industry Transformation Development of Resource-Based City: A Case Study of Jining, Zhao, X, 2007)

Generation of new works from old works
(Source: J, Jacobs, 1969, the Economy of Cities)

Percentage of GDP in each economic sectors, Jining

<table>
<thead>
<tr>
<th>Sector</th>
<th>Percentage</th>
</tr>
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<tbody>
<tr>
<td>Agriculture</td>
<td>12.3%</td>
</tr>
<tr>
<td>Industry</td>
<td>55.3%</td>
</tr>
<tr>
<td>Service</td>
<td>32.4%</td>
</tr>
<tr>
<td>Coal mining</td>
<td>17.6%</td>
</tr>
<tr>
<td>Coal chemistry</td>
<td>4.9%</td>
</tr>
<tr>
<td>Electricity (by coal)</td>
<td>4.8%</td>
</tr>
<tr>
<td>Machine manufacturing</td>
<td>7.3%</td>
</tr>
<tr>
<td>Medicine and Biology</td>
<td>7.7%</td>
</tr>
<tr>
<td>Clothes</td>
<td>3.9%</td>
</tr>
<tr>
<td>Others</td>
<td>9.1%</td>
</tr>
<tr>
<td>Coal Industries</td>
<td>29.8%</td>
</tr>
</tbody>
</table>

D: new works
A: old works
3. Location
Chapter 04. Vision

The maps on the right showed the study by Mars, N, Hornsby, A, about a future megalopolis in China. They overlapped the regions in China with most productive agriculture, highest GDP, most dense population and so on, and got a belt-shaped region stretching from Beijing to Shanghai in east China. They named this area 'JingHu'. Jing is the initial name of Beijing, and Hu is the initial name of Shanghai.

Coincidently, Jining is in the middle of this megalopolis in making.

What does this mean to Jining?

How should Jining act in this Jinghu Megalopolis, a dynamic and extremely complicated city system?

(source: The Chinese Dream, a Society under Construction)
Understanding the Trend from the Existing, comparison of JingHu with another mature megalopolis: BosWash
Megaregions

In the report America 2050, it was predicted that most of the nation’s rapid population growth, and an even larger share of its economic expansion, is expected to occur in 10 or more emerging megaregions: large networks of metropolitan regions, each megaregion covering thousands of square miles and located in every part of the country.

The five major categories of relationships that define megaregions are:
1. Environmental systems and topography
2. Infrastructure systems
3. Economic linkages
4. Settlement patterns and land use
5. Shared culture and history

While every megaregion may not share every one of these characteristics, the possession of several indicates a stronger and more cohesive megaregion.

Northeast Megalopolis, identified as early as 1961 by geographer Jean Gottman, is defined by relationships in each of these categories and, accordingly, is one of the strongest and most easily recognizable megaregions, the BosWash.

BosWash

BosWash is a heavily urbanized megaregion extending from Boston to Washington, covering New York, Phildelphia, Baltimore and numerous middle and small-sized cities in northeast America.

The various cities contained in the region - most especially Washington. D.C., Baltimore, Phildelphia, New York City and Boston - are, while discrete and independent, uniquely tied to each other through the intermeshing of their suburban zones, acting in some ways as a unified super-city: a megapolis.
Chapter 04. Vision

The major cities in BosWash are all connected and boosted by the backbones of 2 infrastructure systems: the 2 important national highways: Interstate 95 and US 1, and the only current high-speed rail in USA from Boston to Washington, D.C.. In the JingHu megalopolis, there is also a backbone system connecting most of the major cities in this megaregion. Similarly, this back bone consists of a north-south highway, JinngHu highway way, and a future high-speed railway, JingHu high-speed railway, which will be finished in 2012.

Backbones of highway and high-speed rail in BosWash

The major cities in BosWash are all connected and boosted by the backbones of 2 infrastructure systems: the 2 important national highways: Interstate 95 and US 1, and the only current high-speed rail in USA from Boston to Washington, D.C.. In the JingHu megalopolis, there is also a backbone system connecting most of the major cities in this megaregion. Similarly, this back bone consists of a north-south highway, JinngHu highway way, and a future high-speed railway, JingHu high-speed railway, which will be finished in 2012.
Study of the backbone system of cities in BosWash

A large network of metropolitan regions

The thin line of major cities in BosWash consists of various sizes of metropolitan areas, namely ‘Greater Blabla’, e.g., Greater New York, Greater Boston, and so on. Every city and town is covered by different metropolis area, even with some overlaps on the borders of neighboured metropolis. It means the cities in BosWash have a certain hierarchy and certain preference of relationships with other cities. Actually the BosWash megalopolis is a large network of metropolitan regions. Every ‘Greater’ metropolis has its own role, which is highly defined by the central city in that metropolitan region.
After study of the functions of each city in this complex system, one principle can be revealed: the central city of each metropolis has the most diversity of functions, or roles. Similarly, the less central cities in each metropolis serve for their central cities with more simple roles.
The current system of JingHu

Along the backbone (Jinghu high-speed rail) in JingHu megalopolis, there are only 2 real metropolitan regions: Beijing-Tianjin Metropolis, and Yangtze River Delta Metropolis.

Future JingHu, a network of metropolitan regions

Unlike the backbone of the BosWash which is along the seashore, the cities along the backbone of JingHu are mainly inner-land cities. Given the rising importance of port cities in China, the future metropolitan regions in JingHu megalopolis are more likely to be the combination of the major inner-land cities and port cities, like the structure of the current Beijing metropolitan region and Shanghai metropolitan region.

Among the 19 cities along the JingHu High-speed Railway, except the Beijing and Shanghai metropolitan regions, there are 3 more cities have the connection of highway and railway with the port cities. Jining is one of them. Therefore, the city belt from Jining to the port city Rizhao might become the central cities of a new metropolitan region in this JingHu megalopolis. The potential of this new metropolitan region has also been noticed by the national and provincial governments, the name is ‘LuNan Economic Belt’. 
Lunan (means south Shandong province) Economic Belt
Conclusion
Jining, a centrality with diversity
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Chapter 05.

Strategy
Who are shaping the region? What they can do? What do they need?

Private

- service companies/owners
- private service owners
- They follow customers, infra and commercial spaces
- infrastructures, properties, spaces (normal biz)
- Developers
- Infrastructure construction
- Environment regulation
- Develop Programme
- Land Use
- Jining City

Public

- Government
- Qufu
- Yanzhou
- Zoucheng
- other towns

Privazing Public

Business Service
Tourism Service
Chemical and Manufacturing Industry
Agriculture
Medical Industry
How to realize this vision?
What is the spatial reflections of these economic forces?
What is the spatial condition for fostering these economic forces, and further more, for other emerging economic activities?

What are the factors shaping this region?
What the government should and can do?

The diagram on the left is the starting point to answer these questions.
As individuals, small business people, or enterprises, we are looking for different factors to choose a place to live and work, to open our business or factories. Although these are bottom-up activities, the government can guide them to happen in the frame of the long-term vision of the region, by provide the things they need.

On the other hand, the government should admit the fact that they cannot control everything. The private companies and individual are rather dynamic flows that can choose any place to settle down. Even the land use master plan which still has a legal status in China is also always changing, because they are realized by the developers which have their own consideration of profit, and market demand.

I placed myself as a designer for the government. Therefore, from the perspective of the government, the factors shaping the region are divided into 2 categories: ‘slippery’ and ‘stable’. In the dictionary, ‘slippery’ is defined as below:
1. tending or liable to cause slipping or sliding, as ice, oil, a wet surface, etc.: a slippery road.
2. tending to slip from the hold or grasp or from position: a slippery rope.
3. likely to slip away or escape: slippery prospects.
4. not to be depended on; fickle; shifty, tricky, or deceitful.
5. unstable or insecure, as conditions: a slippery situation.
(Source: www.dictionary.reference.com)

Therefore, those dynamic flows that cannot be directly controlled by the government are categorized ‘slippery’. These flows are the direct factors that can create the desirable new economies in the vision, and thus the actors that government should attract. The other category ‘stable’ are the public works that government directly plan, invest and even construct: human networks and nature networks.

These two categories need different strategies. For the slippery elements, the government should use indirectly approaches to guide, such as policies, programmes. And the public works, the stable elements can be directly designed and realized by the government.
Strategy: 
Stable Framework and Dynamic Flows
Stable Framework
Chapter 05. Strategy

1. Existing and Planned major regional structure - attractions for urban development

Jining is well-connected with various national infrastructures.
Is the centralities of cities always at the geometrical centers? The answer is not. Looking at the reality today, it can be found that the meeting places of the cities and national infrastructures are actually the hot spots for investment and urban development, so these areas will face the highest pressure for urban expansion in the future. The maps above showed the potential urban development areas triggered by different national scale infrastructures passing by the cities.
Overlap: the areas facing highest pressure of urbanization
areas with highest pressure of urbanization

mountain system

subsided land 2020

Weishan Lake

Typologies of XL landscapes
'Coincident' complementation of urbanization and landscape
—Proposed framework of reserved areas for urbanization and nature protection

When I overlap the pattern of potential urbanized areas and major landscape areas in Jining region, I found that coincidently, they fit. So why not leave the areas with highest pressure for urbanization for future urban land, and leave the rest areas open for both landscape and agriculture? It will be much easier than protecting some high value land as nature when every developer wants to swallow it.
Human Network
Legend of human networks

How to realize the XL urban and nature structure?
In reality, the human network and nature network are functioning with varies scales. Networks at different scales are connected and influencing each other, but also have their own principles of function. Borrowing from the approach of Rem Koolhaas, let us call the different scales XL, L, M and S. In the rest part of this chapter, I will layer out the different scales of human and nature network to tell the different design principles and design results.
A more convenient public transport network consists of train station, LRT, and bike or electric bike in the whole region, both urban and rural areas. Written in the news of Time and CNN, and the book of Thomas L. Friedman, 'within less than 10 years, China has changed all the bikes and motorcybles into electric bikes. There are 40 million electric bikes in China!' It is a quiet but wonderful revolution in the field of low-carbon transport. But the electric bike is not suitable for long-distance regional commuting. So why not combine the Light Rail Transport (LRT) with the electric bikes? Every LRT stop and even more places such as gas stations, shops, public spaces can provide the charge stations for electric bikes. Therefore, the LRT system is design with the principle that the people in every (future) urban places can access the LRT by their electric bikes.
present
A faster and more efficient road network, consisting of highway, national road, regional highway, regional road, and a ring of boulevard.
Fill in the M scale infrastructure - urban fabric
Unlike the regional networks, the urban fabrics are built piece by piece. It depends on the master plan of each city.
Existing urban fabric (red lines)

Future urban fabric in the master plan of each city (yellow lines)
Suggestion for a smaller scale urban fabric

The urban blocks in each city’s master plan are all around 400m * 400m, which is too big not only comparing with the western blocks but also with the existing urban blocks in each city (Jining, Yanzhou, Zoucheng, Qufu). Jane Jacobs stated the importance of small block for generating urban diversity. Then what size of urban block can generate most urban diversity? Well, this might be a question that cannot have an exact answer because the context of each city is quite different.

However I made an analysis on the existing urban blocks of Jining, the most urbanized city in this region, and found that the street facade of the blocks with size of 200 meters to 300 meters are most commercialized (with most ground floor shops or companies). Although this is the result of a comprehensive and scientific research, the blocks of around 200 meters do have a human scale for attracting urban diversity and it can be more flexible for different urban typologies than 100-meter blocks in, for instance, Barcelona. Therefore, on the basis of the existing master plan, I suggest to divide the blocks further more to have urban blocks around 200 meter.
Jining
dispersion of commercial activities in Jining
blocks with completely commercialized edge (ground shops and businesses on the street facades)

sizes of the blocks with completely commercialized edges
Chapter 05. Strategy

Case of the master plan of Qufu

Strategy:

- from one 450m block to four 210m blocks and two 30m roads
- from 1800-meter ground floors to 3360-meter ground floors
What can be filled in the urban blocks with 215 meter * 215 meter?
Chapter 05. Strategy

- a downgraded regional road from the existing national road
- reserved nature area
- 4 lanes reduced from 8 lanes
- bike lanes
mode of regional public transport: bike / electric bike + Light Rail

electric charge station for e-bikes

tram stop

new urban development
Chapter 05. Strategy

Nature Network

XL L M S
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<thead>
<tr>
<th>CITY PARK</th>
<th>PARK (PUBLIC SPACE)</th>
<th>WOODS</th>
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<tbody>
<tr>
<td>Running</td>
<td>Landscape View</td>
<td></td>
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<tr>
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<td>Feeding</td>
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<tr>
<td>Feeding</td>
<td>Planting</td>
<td></td>
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<tr>
<td>Liu Niao</td>
<td>Liu Niao (Bird singing)</td>
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</tr>
<tr>
<td>Zoo</td>
<td></td>
<td>WOODS</td>
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<tr>
<td>Walking</td>
<td>Planting</td>
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<td>Sight Seeing</td>
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<tr>
<td>Sight Seeing</td>
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<td>Feeding</td>
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<td>Grass Skite</td>
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<td>Excercise</td>
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<tr>
<td>Playground</td>
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</tbody>
</table>
samples of parks on different scales

(source: Z&B-panels, JABR, Zandbelt&vandenBerg)
Chapter 05. Strategy

GREEN COUCH

vision image

water system

altitude map

water source places

higher mountains

Permanent Forests

Temporary Forests
Green Couch means the mountains at the east of the Jining region. These mountains are one part of the Taishan mountain system in Shandong Province as introduced in Chapter 02.

The water system is an alive network. And the Green Couch is the source. These east mountains are vital for the whole ecologic system of Jining not only for the little climate but also for the water system, because the water source of almost all the rivers in the Jining region. However, this area was deforested in the last decades.

On the other hand, nature is quite a slow dynamic that needs time to be beautiful and have vital ecological effect. Therefore, recover the ecological system of the east mountains is the first urgent for the whole nature network in Jining region.

Not all the mountains will be preserved strictly. The flat areas in the mountains with ‘brown earth’ is one of the best soil for agriculture. These areas will be left open. The mountains with higher altitude and rich water resources (springs) should be preserved as permanent forest for both nature beauty and water source places. The left part will be the so called temporary forests. Large scale agriculture such as fruit planting is allowed here.
Chapter 05. Strategy

Permanent and Temporary
Blue heart means the areas extending from the subsided lands in the middle of JYZQ to Weishan Lake at the west, the biggest lake in Shandong province with an area of 1266 square kilometers. This area is an sensitive and fragile ecological area. The subsided land is still enlarging and no complicated ecological system has formed yet. Some parts are directly next to the cities and thus easy to be invaded by urban development. So a defense line consists of forest is designed to frame and protect this wetland area. Because the four biggest coal mines locate in this blue heart, so after the exhaustion of the coals, these mines can be the industrial landmarks with new functions such as recreational parks or agriculture, integrated with landscape elements in this regional park.
Chapter 05. Strategy

GREEN BLUE BELT

XL - Green Blue Belt

Green Blue Belt is the connecting landscape elements of green couch and blue heart. There are 3 principle for the design of Green Blue Belt.

1. Ecological principle
Jining has very rich water system consisting of both small and big rivers. The banks of these rivers will be preserved for forests and natural bushes, to keep the soil.

2. Landscape principle
As the agriculture been modernizing and scaling up, the countryside view might become a dessert of modernized agriculture. Therefore, around the city and towns, some areas are preserved for traditional, walk-able agriculture land.

3. ‘Fengshui’ principle
Fengshui is a very complicated traditional science (it is argued that it is not scientific) in China. In this thesis, I used the most common principle of Fengshui to guide the landscape design regarding to the arrangement of different landscape elements. It is called ‘CangFengNaQi’. It is concluded that human settlement should be at the south of mountains or forest and at the north of water. The reason is that in the mountains or forests can block the major wind, northwest wind in the winter, and open spaces especially water at the south can allow major wind in summer to cool the climate. This can create a nice and healthy little climate in the city.
1. Ecology principle

2. Landscape principle
3. ‘Fengshui’ Principle
Chapter 05. Strategy

GREEN BLUE BELT
XL Nature Network
L - Recreational Parks

The recreational parks are designed with 3 principles:
1. They are subdivided from the XL scale open spaces, not to occupy more lands from urban development and scaling up agricultures.
2. Approximity to the cities, for the easy access of citizens.
3. Some recreational parks are also established on the site of historical spots and valuable coal mines, so the parks can be identified with these elements and also help to protect them.
Urban Landscape pattern by Forman

**M - City Parks**

The city parks are designed based on 2 principles:

1. Like the theory of self-similarity. The city parks are subdivided again from recreational parks. In this way, the edges of open spaces become longer and more complicated.

2. The city parks are set on the junction of rivers and main roads. In this way, the ecological system along the river, the ‘Green Blue Belt’ can have a bigger plot in the city for species. On the other hand, by the main urban roads, the city parks can be accessed by more people and thus be more lively.
S - Neighbourhood Parks

5 minutes green spaces: every place in the city can reach a S scale green space within 5 minutes.
Nature dynamic and Human Dynamic

This is a hilly area in the north east area of Zoucheng, without agriculture or good ecology, as showed in page 125. However, it is not easy to turn it into agriculture use because it is in a hot spot area for urbanization of Zoucheng. Therefore, it would be better to prepare this area as a city park and start to recover the ecology system from tomorrow, because the dynamic of nature and dynamic of urbanization are at different speed. Nature needs time to become beautiful and have ecological effect, while urbanization is happening very fast and flexible. So when the city development sprawl here in the future, this place is already a beautiful city park, adding extra charm for this new urban area.
Chapter 05. Strategy

Public Transport

Private Transport
After setting these 2 frameworks, what will and can happen?
2. Dynamic Flows
Tourism

The hometown of Confucius is the strongest image for Jining region.
From one spot to a system

Normally, Qufu is the only destination for tourists in this region. The other tourism spots are not yet been discovered. However, with the more convenient public transport and new recreational programs, the tourist might be willing to stay here for more than one day.

They can experience different atmosphere in this region, including the area extending from Qufu to Zoucheng with a lot of historical spots. And it will be also interesting to take the forest steam train modified from the current cargo steam train, to have a tour in the four former coal mines which then will become theme parks, museums, agri-ainment places and so on, to have fun and experience the memory of industrial era.
Tour of Former Coal Mines
Chapter 05. Strategy

Tourist steam train

Jisan coal mining theme park
Business

The major business flow is passing by the east of Jining region.
It is at the interfaces of different ‘fields’ or ‘regions’ of places that the urban qualities we understand in situ as ‘centrality’ emerge (Read, S, Fuchs, A, 2008).

As the centralities of business are profoundly influenced by the different scales of infrastructures. The radical change of the XL, L, M, and S scale human networks in this region will change the structure of centralities too. How will this happen?
Current relationship of the business centralities and scales of infrastructures

National scale: national highway, national roads, and railway stations

Regional scale: regional roads

City scale: city main roads
Chapter 05. Strategy

• Corridors overlap the infrastructures at 3 scales: national, regional, and city

• Intersections centralities in each city
At the city level
–Corridors, grids, and intersections

Yanzhou

Jining
The pattern of business in the city contains both small and big scale ones. The small scale businesses tend to locate along the urban fabric (M scale human network), and large scale businesses, the centralities tend to locate at the junction of bigger infrastructures.
Chapter 05. Strategy

How will the proposed human network influence the pattern of businesses in this region?

**New pattern**

**Corridors**
the three scales of infrastructures according to the proposed human networks

**Grids**
the existing and planned urban grid of each city

**Regeneration and expansion**
The urbanization in this region will not only happen in form of urban expansion but also regeneration. This map shows the possible places for urban regeneration, including the villages-admist-cities, and old industrial sites.

**Regeneration and expansion**
This map shows the possible places for urban expansion, according to the proposed nature framework.
New pattern of businesses in JYZQ
the important national infrastructures for cargo in Jining region
The JingHu High-speed Rail can release the pressure of passenger transport on the existing JingHu railway, and thus expand the capacity of cargo transport on the JingHu railway, which is already the busiest railway in China.
Who are shaping the region? What they can do? What do they need?

PRIVATE

- Service companies/owners
- Private service owners
- Government
- Infrastructure construction
- Environment regulation
- People
- Followaffordable housing, jobs, convenience, environment
- Industry enterprises
- Endow customers, infra, and financial aspects
- Infrastructures, proper labor, spaces (normally big)
- Follow heavy infrastructure
- Reach/ceiling business
- Diminish or else functions after the exhaustion of coal
- Coal exploitation company
- Coal chemical industry company
- Manufacturing company
- Aluminum company
- Service company

PUBLIC

- Developers
- Jining City
- Jining
- Qufu
- Yanzhou
- Zoucheng
- Other towns

STATE-OWNED ENTERPRISE
- Yanluang Corporation
elements attracting the chemical and manufacturing industries
1. proximity to large infrastructures
2. proximity to the cities

best places for chemical and manufacturing industries
Chapter 05. Strategy

Business Service
Chemical and Manufacturing Industry

Railway Hub
Urban centralities along the corridors
Chapter 05. Strategy

Business Service
Chemical and Manufacturing Industry

Railway Hub Industrial park: logistic and manufacturing
Corridor: national infrastructures

LRT

existing situation: fragmented industrial area at the north of the city

Green Blu Belt: reserved nature
Since most of the production and education of medical and hospitals, including one leasing teaching hospital are all in Jining. Then besides the expansion of biological and medical factories, a new medical center or a sanitarium is proposed, utilizing these existing resources. It can locate at the east of the city, on the future corridor connecting Jining and Zoucheng—and at the edge of one recreational park. So the medical center can also be part of the city, generating diverse urban functions, and use the nature beauty.
urban development
Agriculture
Before 1949, Landlord system

1949-1958, ‘Give Land to the Farmers’

1958-1984, ‘People’s Commune’

1984-now, ‘Household Responsibility System’

21st century, Scaling up?

Scaling up of agriculture

The mode of agriculture is decided by many factors. A important one is the level of production of the society. The success of the ‘household responsibility system’ in 1984 and the failure of the ‘people’s commune’ campaign are both because of this.

Now China has got a higher level of production, less labor force is needed in the farm. It is the time to start scaling up the agriculture. Actually this process is already going on in many places in China. It is called ‘Fanzudao-bao’. Several villagers, normally with the unit of village, combine their lands into bigger pieces, and collaborate to form a stock company for modernized agriculture. Then more people can be freed from the farming work and go to the city. The lands are still owned by the farmers in form of stocks.
Agriculture

Once the policy of ‘Fanzudaobao’ can be proved in Jining region, the process of scaling up agriculture might happen very fast. However, we need to be alert that like extensive urbanization can invade the historical districts, the modernization of agriculture might also destroy the traditional, nice countryside landscape. Agriculture land can become a dessert for a single crop. Therefore, certain lands should be kept from the scaling up process, keeping the countryside accessible and beautiful. These non-scaling up lands are the landscape frame set in the nature network.
Conclusion

Dual Map – 2 Stable Frameworks

This network of public works, the human network and nature network is what the government can directly design and implement. It can provide an environment of convenient, efficient transport and attractive nature beauty, an environment for attracting more people and further investment.
Economic vitality – Dynamic flows

On the basement of 2 stable networks, an ‘economic biodiversity’ can be promoted by several programs, policies, or rules as introduced before. Moreover, there might be other new economic vitalities can emerge in this region beside the 5 economic tops I proposed before as the region become more attractive, because the economic evolution is rather a dynamic process. However, I don’t what they are.
Chapter 06.

Evaluation
Evaluation

Regional/ City scale

Time - New layer on the thickness of history

In the thousands years of history of Jining region, mainly referring to the four major cities JYZQ: Jining, Yanzhou, Zoucheng, Qufu, the ‘resource-based city’ will only be a temporary title that will become one piece of the memory of the region. While most of the coal mines will be diminished along with the exhaustion of coals, the left coal mines with new functions and the new wetlands around the cities caused by the coal mining will be the new layer adding onto the more and more thick history of Jining region.

Space - a new balance after the extensive urbanization

Dynamic. As in all over the China, Jining region is and still going to have a huge dynamic in terms of space transformation and demographic restructure because of the extensive urbanization. This tremendous dynamic makes the future even more chaotic and unpredictable. This is the reason why a relatively stable framework for the things that we can predict and control and a series of programs and rules are needed in this project: even a huge land will be invaded by urban development, another part of land will be given back to the agriculture from the empty villages and mines, furthermore, after 30 years, the nature framework set today that cannot be eaten by the urban expansion will be more beautiful and able to provide more ecological effects.

A new balance of the regional structure will be formed when the dynamics of urbanization become stable: more people living in the cities, creating both large scale and small scale business which can provide more job opportunities than the countryside economy. The left coal mines and subsided land will be a unique quality of the regional open space, namely blue heart, a popular destination of holiday for the citizens. And some empty villages with great nature beauty can provide the space for the citizens to live in the nature.
National scale

A network city hub

With the construction of human network, Jining, Yanzhou, Zoucheng, Qufu will be more interconnected, and the communication will thus be more convenient. Even the JinngHu high-speed train will only stop at Qufu, and the accessibilities to the other major national infrastructures are rather uneven, the advanced public and private transports can allow each city to enjoy the opportunities. This is the advantage of a 'network city'. With convenient interconnect infrastructures and shared nature wonders, Jining might be the only network city on the backbone of JingHu megalopolis, a unique quality comparing to other mono-centric cities on the line.
Dual Map 2040

Guide to A Vital and Diverse Jining
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