The Transformation on Brownfields based on the concept of “Organic Update”
- Study of Nanjing “Window on the World” Creative Industries Park in Qinhua District

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Abstract

The aim of this thesis is to make redesign strategy for the improvement of Nanjing “Window on the World” Creative Industries Park, following the principles of the Organic Update Concept, and that makes full use of brownfields itself favorable conditions to create a lively district that integrate into the surroundings.

The Research Question is how can the Organic Update Concept be used to improve the transformation of the brownfields in Qinhua District, Nanjing? In order to answer this question, the following two sub-questions are addressed:

1) What working principles of Organic Update can be concluded from the literature of Organic Update Concept?
2) How can the strategies found in literature and tested in the cases be adapted to the local context of Qinhua District?

By studying Organic Update Concept, I understand a concept that focus on respecting the local history and culture, also the current situation to make a long-term plan, but start with small-scale. It seems to make Sustainable Development Concept in detail and put into practice. Moreover, the concept is more applicable to the area with a certain cultural and historical background. Apart from keeping continuity of the history, it emphasis to make the area integrate into a big environment. According to the literature review, I sum up the working principles, namely, integrity, continuity, multi-function, identifiability and small-scale gradual mode and test them in the cases, and apply in my design proposal.

The main finds of this thesis prove that Organic Update Concept can be regard as a planning tool, not only used to update and develop the historic district of the city, but also can be used to transform and improve the brownfields, even for planning a city. According to the “OUC” working principles, I make a design proposal for the improvement of Nanjing “Window on the World” Creative Industries Park.

Key Words: Brownfields, Organic Update Concept, working principle, transformation, improvement, Creative Industries Park, Nanjing
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Table of content

Abstract.............................................................................................................................. i
Acknowledgement........................................................................................................... ii
Chapter1. Introduction....................................................................................................... 1
  1.1 Background................................................................................................................. 1
  1.2 Aim and Research Question....................................................................................... 2
  1.3 Challenges and opportunities for brownfields......................................................... 2
  1.4 Thesis Structure......................................................................................................... 3

Chapter2. Methodology..................................................................................................... 5
  2.1 Motivation for a case-study....................................................................................... 5
  2.2 Selection of area for design proposal......................................................................... 6
  2.3 Collection of data...................................................................................................... 6
  2.4 Analysis of the collected data................................................................................... 7

Chapter3. Theoretical outlines and empirics...................................................................... 8
  3.1 Induction to the Organic Update Concept Background............................................ 8
  3.2 The Organic Update Concept................................................................................... 9
    3.2.1 Definition............................................................................................................. 9
    3.2.2 Benefits and Limitations of Organic Update Design........................................... 11
  3.3 Organic Update approach in brownfields transformation........................................ 12
    3.3.1 The applicability of Organic Update concept in brownfields.............................. 12
    3.3.2 Working principles of Organic Update Concept in brownfields areas................. 13

Chapter4. Three cases of brownfields projects.................................................................. 15
  4.1 Laiwu Steel Industrial Area....................................................................................... 15
  4.2 Textile City of Xi’an.................................................................................................. 19
  4.3 Emscher Park........................................................................................................... 22
  4.4 Conclusion................................................................................................................. 28

Chapter5. Proposed Redesign Strategy for Qihui District, Nanjing.................................... 30
  5.1 A short history.......................................................................................................... 30
  5.2 Analysis of the Current Situation............................................................................. 30
    5.2.1 Assessment of main problems in the area now.................................................... 30
  5.3 Analysis of the local context.................................................................................... 38
  5.4 Potential Assessment............................................................................................... 40
    5.4.1 Goals and Objectives......................................................................................... 40
    5.4.2 Potential Connectivity Supplies......................................................................... 41
    5.4.3 Redesign Strategy............................................................................................. 41

Chapter 6. Discussion and Conclusion.............................................................................. 49
References....................................................................................................................... 51
Chapter 1. Introduction

1.1 Background

The word "Brownfields" first appeared in the 1990s in the official language of American Federal Government, used to refer to the abandoned industrial or commercial land which can be reused, even though it may be contaminated or potentially contaminated. As in fact, there were no unified standards about the definition of brownfields around the world for years and was not taken into researcher’s consideration seriously, it does exist in many cities and agglomerations in China and has an important influence on the development of city and long-term stability of ecosystems.

With the fast-growing economy and concomitant rapid urbanization, most municipalities and urban planner are facing the challenge about how to solve the increasingly intensified land supply-demand contradiction. However, when considering the expansion of the city, the officials and planners in China tends to occupy the agricultural land in peri-urban and rural areas, instead of transforming and upgrading the brownfields that existed in the city itself. The inefficient use and idle land is still widespread in inner city and the utilization rate of the land is not high. Judging from such circumstances, the most fundamental causes of this phenomenon can be concluded as follows:

1) Lacking of understanding of the concept of brownfields - “Brownfields create strong obstacles to urban development, quality of life and regional attractivity” (Lehner, Kipar and Peter Noll, 2011). But the concept was just introduced to China and people don’t realize the seriousness of brownfields. There is pollution existed in brownfields and may be harmful to the health of surrounding residents. Besides, only to demolish and level the ground definitely cannot solve the fundamental environmental problems, it need to do the land management and recovery before reconstruction.

2) High investment and costs - it takes long time and money to do the land assessment and pollution treatment, the brownfields may still have contaminants afterwards. And it results that the developers don’t want to take risks to invest in the brownfields transformation. In addition, the developers trend to construction blindly for the pursuit of short-term interests.

3) No systematic laws, policies and financial support - when facing the environmental damage, people have no appropriate legal assistance to protect their interests, developers included. There is no formal guidance expressly provided in terms of the testing and evaluation of land pollution, radioactive contamination as well as environmental and ecological issues.

4) No unified specific forward-looking brownfields development plan - when planning to transform the brownfields, if only changing the function to meet the current demand, along with the continuous changes of the demand and use, these new buildings will be lagged behind demand in the near future and turn into another piece of brownfields. Forward planning is useful to meet the current needs and future needs, reducing the phenomenon of resource waste and blind construction.
However, when people come to realize the importance of brownfields, these problems are still existed and hinder the process of transformation and utilization. The transformation often lead to the change of urban spatial structure and the shift of each function in the city, resulting in a new series of problems, such as traffic jam, lack of municipal facilities and so on, thereby affecting the regular life to people. But at the same time, the transformation can be regarded as a kind of opportunities and resources, it may bring about stable jobs and new vitality into the cities. Blind transformation, of course, it will only bring short-term profits rather than long-term interests. Therefore, it is necessary to find an effective way to develope and make use of brownfields. One hand, it can improve the efficiency of land use and solve the growing population and land conflict issues, thereby making sustainable use of land resources and alleviating the pressure of city space. On the other hand, it can reduce the environmental pollution to ensure the health of nearby residents and beautify the urban environment.

1.2 Aim and Research Question

The aim of the thesis is to make redesign strategy for the improvement of Nanjing “Window on the World” Creative Industries Park, following the principles of the Organic Update Concept, and that makes full use of brownfields itself favorable conditions to create a lively district that integrate into the surroundings and promote sustainable development.

**Research Question**: How can the Organic Update Concept be used to improve the transformation of the brownfields in Qinhuai District, Nanjing? In order to answer this question, the following two sub-questions are addressed:

1. What working principles of Organic Update can be concluded from the literature of Organic Update Concept? This question will be discussed in chapter 3 (theoretical outlines and empirics).
2. How can the strategies found in literature and tested in the cases be adapted to the local context of Qinhuai District? This question will be discussed and tested in chapter 5 (proposed redesign for Qinhuai District, Nanjing) and chapter 6 (conclusion and discussion).

1.3 Challenges and opportunities for brownfields

With the industrial decline and the adjustment of urban industrial structure, the early urban industrial area began to loss the value of use, some heavy polluting enterprises in inner city have moved out or changed the location and transferred, so the original site was abandoned and became an idle or low utilization land. Besides, abandoned gas stations and other commercial facilities, also warehouses, railway station and any other places were likely to be the source of brownfields incurred. Anyway, both of them have been already developed and now are not in use, also may suffer pollution, and the most important is there may be various obstacles in the process of redevelopment and reuse of brownfields. Many of these areas are located in inner city, and their broke caused a great
The Transformation on Brownfields based on the concept of “Organic Update”

Yan Kunyuan

deal of negative impact on the urban development and the city residents’ lives, thus highly attention worth paying to the problems and appropriate transformations are urgently needed to change the situation.

While in the transforming and reusing, the real value of brownfields is always covered by some visible or potential dangerous and harmful substances. Therefore, for developers, the most fundamental challenge is to clean up the pollution according to the specifications and requirements. All the planning and construction should be built in the good environment. Otherwise, it doesn’t make any sense. For urban planners, the biggest challenge is digging out the development potential of the land. It is necessary to have comprehensive evaluation, including the surroundings, traffic, function, green space and so on. Based on the assessment results, to propose specific forward-looking planning. Not only considering the situation of the site itself, but also on the entire city or a larger scope, such as its surroundings, historical context, industrial heritage. Obviously, connecting the site with the wider area, making it integrate into a big environment, and making full use of the industrial heritage in order to inherit the urban cultural contextualism could be the challenges for brownfields.

Undoubtedly, the brownfields has challenges, also opportunities. Under the influence of environmental protection and sustainable development, transforming brownfields to green space becomes an important way of sustainable urban land use planning. From the perspective of long-term development of the region, reshape the landscape and restore the ecological environment is beneficial to make old town full of new vitality and promote the regional development. In addition, the brownfields can be transformed to the theme park, creative industries park, tourist area, museum, bars and so on. Anyway, no matter what kinds of transformation, it should be according to the actual situation. The opportunities also can be offered by the brownfields itself with some potential values. For example, good location, beautiful scenery around, cultural heritage, historical context.

Hence, how to transform the brownfields and give full play to their potential have become urgent issues facing many cities. Many scholars and planners are taking up projects to seek for ways of how to transform and reuse these abandoned sites as well as the existing landscape and any other resources, while preserving the cultural and industrial heritage and inheriting city historical culture to form city features. To research a long-term strategy for the urban development and a need for a theoretical system to support the transformation of brownfields, in my perspective, the “Organic Update” concept (Wu, 1994) can offer an effective solution to the above issues. It has a positive significance for the improvement of the urban ecological environment and the perfection of the urban functions to achieve the goal of sustainable development.

**1.4 Thesis Structure**

The thesis is divided into five main parts, each of which focusing on different aspects. In chapter 2, I will give explanation of why I choose case study as the method for this thesis
and why I choose Nanjing “Window on the World” Creative Industries Park as my redesign proposal. Besides, the data I collect to answer the research questions and analyze the data to find what is the lost in existing design, and that will guide my redesign proposal in the follow part.

Chapter 3, which is my literature review part, I will introduce the Organic Update Concept, and then followed by its application in transformation of brownfield, figuring out the planning principles or strategies. Afterwards, three cases of brownfield projects analyzed with the help of Organic Update principles are listed in Chapter 4.

Subsequently, chapter 5 is my case study part, which shows more specific and further analysis on the current situation of my study area according to the main strategies found in the above parts. It is necessary to consider from an overall perspective, not just a single part. That is why I will analysis the design area as well as the surroundings. Then the redesign strategy for Creative Industries Park in Qinhua District, Nanjing will come out. Based on the redesign strategy, the master plan, illustrated analysis, perspectives will emerge.

Last parts concludes the thesis with discussion and thinking of the design proposal.
Chapter 2. Methodology

In this chapter, I will give explanation of
1) why I choose case study as the method for this thesis;
2) why I choose Nanjing “Window on the World” Creative Industries Park as my redesign proposal.

2.1 Motivation for a case-study

Case study as an effective means of research has been widely applied, especially suitable to resolve “how” and “why” types of question. Combine with the certain theoretical knowledge and practical experience to investigate, research, analysis and summary the specific and typical examples, the problem or work and then extract experience, countermeasure and the suggestion to discovery new knowledge. As listed in the aim and research questions in the introduction part, the research questions are what working principles can be concluded from the literature of organic update concept and how these working principles can be applied to improve the transformation of the brownfields in Qinhuai District, Nanjing. It belongs to “how” types of question. In order to answer my research question of how to test the feasibility and guiding value of working principles, also convenient for reader to understand, it needs a specific case to study and prove that the relatively broad working principles of organic update concept proposed can solve the practical problems about brownfields. Meanwhile, the whole transformation process of brownfields and the abstract theoretical principles can be vividly manifested. Case study is based on the actually occurred or existence instances as the research object, focus on the interaction between the theory, and practice and the different influence caused by different factors in the process of development or transformation. It is not to illustrate the theory by examples and images, but to gain the knowledge from the analysis of examples, thus giving to priority to be used for observation, thinking and analysis of practical problems.

Case study is fact-based, a record and description of what actually happened. It can not be fictional, or doping individual subjective judgment or conjecture. In this thesis, it requires to introduce the current situation of the brownfields in Qinhuai District, Nanjing, including location, architecture, public space, traffic, landscape and other aspects, and find out the problems existed, also the potential values. However, case study as methodology also has some limitations, such as with a certain arbitrariness and subjectivity. Due to there is no standardized method to analysis the data, the researchers experience and qualifications tend to affect the results of the data analysis. Moreover, it takes a lot of time to collect and analysis large amounts of data. Establish basic theory is to provide a guiding framework for the case study.
2.2 Selection of area for design proposal

The aim of this thesis is to make redesign strategy for the improvement of Nanjing “Window on the World” Creative Industries Park, following the principles of the Organic Update Concept, and that makes full use of brownfields itself favorable conditions to create a lively district that integrate into the surroundings and promote sustainable development. Therefore, Organic Update Concept is the basic theory of this thesis and guide the further study.

Due to some subjective and objective reasons, I choose Nanjing “Window on the World” Creative Industries Park in Qinhuai District, China as my study area. From the personal perspective, Nanjing as my second hometown makes me quite familiar with its cultural and history background and convenient on-site investigation. The first time I went there, because of visiting the city wall and the Crescent Moon Lake. It is quite near, but has no relationship between each other. I was just passing through the creative industries park, but was attracted by the particular entrance decoration. Plus the teacher previously mentioned that this creative industries park was brownfields before, these made me curious and went inside to have a look. It has residential area inside, but why called it creative industries park, not a community? Although it was reused again, the park looks still old, but subconsciously. I think it can get better and come up with some ideas to improve it. From the perspective of the case itself, it has a good location, historic background and other disadvantages. It is worth mentioning that “Window on the World” is the first creative industries park in Nanjing and the first modern service area in Jiangsu Province. The transformation of brownfields follows the principle of keeping the original appearance of the building and reflecting the artistic creativity. The purpose was to change from the old factory building to be 60,000 square meters of garden-style office area. As in fact, it has become a working area, but it’s not garden-style.

2.3 Collection of data

In order to answer the research questions, abundant data is necessary to be collected, including written materials and digital materials, charts. The data collected should be directional, real and up-to-date. Determine the scope of collection about the selecting case and make a clear purpose of collection can save time and effort to some extent. In this thesis, it focus on brownfields transformation and Organic Update Concept. Therefore, the scope of data collection should be limited to those key words. In addition, the data is also collected in stages. The first collection of data is to extract the view and find problems, and then to verify whether the ideas or topics is valuable or not. Afterwards gathering the information is to write an outline and draft work. The last phase of data collection is to modify the thesis. Through searching the academic articles, a detailed description of Organic Update Concept have been given in literature review part of this thesis, also including the introduction of cases of brownfields projects using Organic Update principles. Apart from searching academic articles, some other data such as maps, site photographs, official documents and any other materials which are useful to
fully understand the venue collected by searching on the internet, site research and field observation.

2.4 Analysis of the collected data

Under normal circumstances, the analysis of the current situation contains two aspects, one hand is to analysis the existing problems and advantages of the present situation, on the other hand is to assess the potential value and find out the possibility of future development. However, the aim of this thesis is using Organic Update Concept to improve the transformation of the brownfields in Qinhuai District, Nanjing. That is, except the transformation of the brownfields, also need to consider the improvement of existing condition. Therefore, the analysis of the current situation apart from two aspects mentioned above, also includes the brownfields that has already been transformed to a creative industries park. The existing problems and advantages of the present situation can be directly found or analyzed by site investigation and observation. When to analyze the existing problems in creative industries park, apart from location, five aspects such as architecture, public space, traffic, landscape and function should be taken into account. However, to find out the advantages and potential value of the present situation, as well as the possibility of future development, only depend on the informations got from site investigation is not enough, also need more data, like official documents and reports from the municipality on the general development and control planning of Qinhuai District to have a full understanding of surrounding land use, road system and future development plan. In addition, what causes the brownfields were transformed to creative industries park and what other functions can be added to this area are also important to improve “Window on the World”.

According to the working principles of Organic Update Concept, for the integrity of the brownfields, it’s necessary to pay attention to the information of the whole district, including historical and cultural background, also the surroundings. In general, it can not limited to the brownfields itself. As for continuity, before making appropriate adjustment that some worth keeping, some need to transform or some just abandon, it’s necessary to make fully understand its past and present situation. Of course, as much as possible to maintain the original buildings. In addition, to realize multifunction of brownfields, it should be according to the past and present function, also the future development trends. Therefore, it requires us to focus on brownfields planning and some official documents relate to the further development and planning of Qinhuai District. For the identifiability of “Window on the World” Creative Industries Park, that is to make it special and outstanding. Through site research, we can find out and make full use of its advantage. Furthermore, no matter the process of brownfields transformation, or the process of creative industries park improvement, from a long-term perspective, taking a small-scale gradual mode can ensure the sustainable development of the whole area. Overall, for analyzing part, the literature about the historical development of brownfields in Qinhuai District, the site photos, and some official documents on the future development of Qinhuai should be focused on.
Chapter 3. Theoretical outlines and empirics

3.1 Induction to the Organic Update Concept Background

With the deep reform of the urban economic structure and social structure as well as the change of people's life style and values, the old city inevitably generated a lot of questions. Due to the importance position in the aspects of social, cultural and economic, it had aroused attention from all sides, especially in the Contemporary Era of China, the city had extensively arrived at the accelerated development stage of urbanization. While the scholars and urban planners in China were facing the challenges about how to properly carry out urban renewal, many western scholars had begun to reconsider the movement of urban renewal from different perspectives, which was mainly in the form of large-scale transformation since the 1960s. (Li and Xu, 2008).

Organic Update Concept first proposed for the issue about long-term development of planning and construction in Beijing old city by Professor Wu in 1979. Without doubt, the idea of this concept proposed was based on the previous studies. In 19th century, many western architectural scholars began to analyze the correlation between architecture and nature. Horatio Greenough proposed the design rules that building need return to nature. (Mumford, 1961). Then Louis Sullivan put forward “form ever follows function” (Sullivan, 1896) and “Prairie Style” proposed by Frank Lloyd Wright, he suggested that the architecture should be coordinate with natural environment, no matter in terms of layout, shape and material. These ideas have a very profound effect on the formation of organic architecture theory.

With the accelerated development of the city, scholars gradually formed a concept of organic city. Patrick Geddes pointed out that the concept of urban organism, that was introducing philosophical and biological point of view into urban planning and regarding it as a product of social development, a complex unity. It required to consider the overall continuity of each action function, thus ensuring to get a long-term urban development. (Gu, 1988).

Afterwards, British sociologist Robert E. Howard advocated "Garden City" that has the advantages of urban and rural areas. In the early 20th century, Eliel Saarinen put forward the theory of Organic Decentralization to solve the problems caused by urban over-concentration. He regarded the city as organisms, which was inspired from the nature. The common phenomenon existed in the organisms of the nature was that they were composed of many individual cells and formed cellular tissue by coordinating with each other. (Gu, 1988). In order to retain the vitality, all organisms need to ensure the quality of the individual and mutual coordination. Saarinen pointed out the following principles in process of natural change could be applied to urban planning and design. As he discussed in the book 《The City: Its Growth, Its Decay, Its Future》, there were three principles, namely, expression, coordination and organic order. He emphasized that urban design should reflect the nature and content of the city, and the coordination not
only between the city and nature, but also between the various parts of the city and urban buildings. Organic order as "true principle of cosmic structure" (Saarinen, 1943), the same applies to urban development. Here they referred to the concept of organic provided the basis for later organic update concept was proposed.

In 1960, Kisho Kurokawa advocated Metabolism Movement and mainly introduced the time factor in architecture and urban planning. The metabolism theory pointed out that different time periods of the past, present and future could be manifested in one building or city space and a variety of culture could be existed at the same time. Whether a building or a city, after completion, will not be permanent, but to continue developing and changing. That requires us to respect the history and focus on the current, also pay attention to the future. In addition, the metabolism advocated to adopt the latest technology and improve the living facilities continuously in order to adapt the change brought from technological innovation, also focusing on the relationship between history and innovation, maintaining tradition.

3.2 The Organic Update Concept

Along with the study of urban renewal in western countries, the urban planners and designers in China were exploring the way to transform Beijing old city and keep city traditional characteristics. With the development of economic and increasing population, the alleys and courtyard in Beijing old city were facing a crisis of being demolished. Their existence were considered as the lifestyle that didn't meet modern functional requirements. As in fact, the alleys and courtyard are the unique views in Beijing and a kind of an important witness to the history of Beijing. If they were demolished, it meant that traditional culture and historic features would disappear. Conversely, if not removed, due to the long history, it indeed existed security risks and affected urban planning and construction. Hence, for the old alleys and courtyard, preserve or demolish, the issue was paid much attention and caused controversy. Until the 1980s, it appeared a relatively successful urban renewal practice: JuEr Hutong alley reconstruction project (1989-1991) charged by Professor Wu and during this project, Wu Liangyong proposed and tested "Organic Update" concept (Wu, 1994).

3.2.1 Definition

The prototype of Organic Update Concept was formed in Shicha Lake planning studies which was led by professor Wu early in 1979 (Zhang, 2007). And in this plan, he clearly stated the thoughts of Organic Update Concept. It can be summarized as follows:

1) According to the actual situation to deal with different original residential buildings. For those buildings which were of good quality and heritage value need to be retained. As for the damaged parts should be repaired, and for the building which has already ruined need to be removed and update.
2) The road in residential area reserved alley-style neighborhood system.
3) To create a "new courtyard" system that combined unit residential and courtyard dwelling form. (Zhang, et al, 2006). These thoughts were put into practice about JuEr Hutong alley reconstruction project began in 1987 and achieved remarkable success.

As Professor Wu discussed in his book 《The old city of Beijing and its Juer Hutong neighborhood》, the content of urban organic update is 1) taking the appropriate size and scale, according to the content and requirements to do the transformation; 2) Properly handling the relationship between present situation and future development. 3) Constantly improving the quality of planning and design in order to make each area achieve a relatively integrity. 4) If follow this route, gathering the numerous relative integrity, the overall environment in Beijing old city will be improved (Wu, 1994, p68). Overall, in the transformation practice process of Juer Hutong alley, it is necessary to combine the protection and transformation, integrating social relation of traditional courtyard with new residential function to build "Courtyard System" building groups and carry out a gradual phased organic update.

Judging from the literal, when it comes to the word “Organic”, people tend to think of some words such as green, healthy, life and sustainable naturally. If apply to the city, that is regarding the city as an individual of life vitality, which need to seek the harmony between part and whole and emphasis on integration with nature. Based on the study of “Garden City”, the theory of “Organic Decentralization” (Saarinen, 1943) and other relative theories, the organicity of city can be summarized as: 1) focus on the organic combination of city and nature, 2) follow the law of gradual change of urban development.

Moreover, “Update” contains transformation and renewal. It mainly refers to 1) optimize morphological structure of the historical and cultural locations, 2) adjust and improve the ecological environment in order to make the historical and cultural locations to keep up with the times development pace. Urban renewal generally refers to the self transformation process of urban districts where are bad environment, backward planning, low standard and sluggish economy. However, the old city update not only covers the entire content of the old city reconstruction, but also need to add new connotation constantly with the development of the city. (Li, 2003)

The process of urban development can be regarded as the growth of biological organisms, removing the old and corrupt part continuously and growing the new organization that has the features of the original structure at the same time. (Li and Xu, 2008 ). That is to say, urban organic update need to based on the existing urban fabric. Moreover, not only to focus on the ecological environment and technical means, but also combined with historical and cultural factors, integrate the aesthetic and cultural content into the process of urban organic update.
According to Professor Wu proposed and Juer Hutong alley planning and design, Fang explained the organic update concept contained three meanings:

a. The city is an organic integration and the various parts of city just like the various organizations of the organism, associated with each other and live in harmony to form a whole order and vitality.

b. The metabolism of organism rely on updating the cells and tissues. Thus, the courtyard and neighborhoods as urban cells also need to update, it is necessary and inevitable.

c. Urban organic update need to be the same as metabolism of organism is a kind of gradual, continuous and natural changes. (Fang, 2000).

As he explained, the organicity existed in the whole city, cells and tissues updated, also in the process of updating. This is what the basic theoretical research of organic update is mainly about and where the creativity of this concept is embodied. Therefore, organic update can be applied in the transformation of single traditional architecture, or streets of the districts, even a whole city.

3.2.2 Benefits and Limitations of Organic Update Design

In accordance with its inherent law of development, comply with the texture of the city, exploring the city’s renewal and development on the basis of sustainable development (Wu, 1994). This is what the organic update exactly means. It can be described as a concept, an idea, or a method, also a healthy process of urban development. From my perspective, I would like to regard the organic update concept as a macro guiding ideology of urban planning, which stressed that according to the current situation, 1) starting from small-scale to keep integrity of the area and then gradually expanded the planning area to achieve the integrity of the whole city. 2) It takes time and it is a gradual process. 3) It requires planners to fully consider various factors. For example, a) accelerate municipal infrastructure, b) improve culture, community and other public service facilities, c) increase public space and enhance the quality of the space environment, d) promote road construction and increase parking facilities to ease traffic congestion and resolve parking problem are included. Apart from stressing to respect for history, the organic update concept also advocates to e) keep traditional way and mix modern functions. From a long-term perspective, it’s necessary to handle the relationship between past and future. f) Remove the bad part and retain the good part, while injecting new vitality and adding new life forms can ensure the sustainable development of planning area, even the whole city, and make the city more coordination and continuity.

Compared with the way of traditional urban renewal, the traditional approach is periodic, terminated and closed, but organic update is continuous, gradual, open and with dynamic characteristics. In terms of goal, the former is mainly to obtain economic benefits, but the latter emphasizes the social, economic and environmental benefits to meet people’s multi-level needs. Moreover, the traditional approach is based on modern functionalism, but Organic Update is proposed on the basis of sustainable development. The conception
of Organic Update used to apply into the updating and development of the city historic district. For the majority of the old city areas and brownfields, there is no relatively complete scientific guidelines.

3.3 Organic Update approach in brownfields transformation

3.3.1 The applicability of Organic Update concept in brownfields

Organic Update Concept is to make the city runs better and carry out improvement on the basis of the original, which requires us to understand the history, culture, economic conditions, spatial and social patterns and other aspects of the city. A comprehensive understanding of development law of city is the essence of Organic Update Concept, also the basic condition for organic update practice. In order to make the brownfields really integrate into city life and form an organic wholeness, it is necessary to have a clear positioning from an overall perspective and take the factors into account, such as the nature of the land, surroundings, location and so on. The brownfields as one part of the city should comply with the entire urban fabric and only in this way can combine with the rest of the city and become an organic whole to maintain the integrity of the city and keep up with the development of the times. Otherwise, it will cause imbalance of urban space, environmental pollution, cultural destruction and other negative impacts.

Being the result of social development, historical improvement, the brownfields has precious values which were left by history, such as old building with period features, old tree, memorable symbols, etc. In other words, the brownfields is a witness of urban development, also the important part of urban history and culture. Fully utilize and maximize the values of brownfields to achieve the continuation of the historical context and organic update. In addition, due to the special nature of brownfields that has pollution and security risks, we need take such measure as ecological restoration, combination of prevention and treatment to realize the continuity of urban development.

If a clear position is the first step in the transformation and reuse of brownfields, then according to the original functional system, improve or change it for multiple purposes including ecological, aesthetic, recreational, cultural, or any other purposes conform to the concept of organic update land use. Moderate mixed function can realize its multi-function and ensure the balance of working and living. The most important thing is to make the updated region remains a complete function as a whole. No matter what kind of types it converted to, combine with economic development and environmental protection can make it keep up with urban development.

Moreover, apart from the historic heritage and cultural value, also location, surrounding environment are likely to be favorable factors to become kinds of meaningful symbols or form the attractive landscape in brownfields. At every period of history, people has its own unique living environment, lifestyle, values and customs. The differences of
environment lead to different characteristics of urban brownfields. Protect traditional psychological and historical memory to make it more acceptable by people after transformation, while maintaining the natural environment to adapt to cultural environment. What is more, the area where the brownfields located in is in decline and gradually fade out people’s daily life, in order to make it go back to people's lives and resume operation, it is necessary to strengthen the characteristic of brownfields and effectively play its advantage. Make it more identifiable is benefit to arouse the people’s interest that get involved in.

As Kevin Lynch pointed out that every place not only to continue the past, but also looking to connect to the future. Each site should be sustainable development and responsible for its future and goals. (Xu, 2008). Transformation of brownfields is a gradual sustainable development process. Reform the brownfields on the basis of existing urban fabric can reflect the periodic and continuity of organic update. It cannot completed by one time. Therefore, the transformation of brownfields should be under the guidance of a long-term development planning and carried out in phases. There is no need to expand the scale of program and projects in each phase. It’s necessary to follow small-scale gradual mode and ensure appropriate scale and reasonable distribution in a progressive development. At the same time, we need pay attention to the flexibility of the program and a series of practical factors that adapt to the changes in investment and policy.

3.3.2 Working principles of Organic Update Concept in brownfields areas

Integrity
Organic update concept emphasizes that city is a harmonious and unified whole and should be focus on the integrity of the city. Brownfields as an important part of urban public space has mutual influence on urban social patterns, cultural, economic, urban constitute. Therefore, for the transformation of brownfields, it’s necessary to study urban pattern and cultural characteristics of brownfields, follow the historical law of urban development in order to maintain the relative integrity of the brownfields.

Continuity
Refers to the correlation between urban spatial structure and levels. (Zhang, 2013). Its core purpose is considering the contact between man and nature, site and surroundings, reconstruction and historical factors. This requires us to take full use of advantages existed in the brownfields and surroundings, such as terrain, industrial heritage, beautiful scenery around, in order to increase internal and external visual or function link and make it integrate into the surroundings, also people’s daily life.

Multi-function
Brownfields were generally used for industrial and had complete supporting functions. In order to catch up with the pace of urban development, it is necessary to maintain an appropriate mix of functions. According to the different types of brownfields before, it
can be transformed into creative industry park, the kinds of theme park, tourism zones or whatever. Under normal circumstances, one area can be divided into several small areas of different functions, for example, leisure space, administrative office, activity space and so on. But anyway, it should be according to actual situation and people’s need, whether it is on the aesthetic, cultural, or recreational.

**Identifiability**
To form their own theme and style according to the nature of brownfields itself. The materials used as well as various manifestations of the landscape, has a certain symbolic significance. It can give a profound impression and attract people to get involved in the big environment. In addition, the themes and characteristics of brownfields are formed by some identify meaningful elements and are expressed by human activity, rather than relying on how luxury materials are used, or how delicate the landscape is. Strengthen the features can help people fully recognize the past experiences and memories in the brownfields.

**Small-scale Gradual mode**
Compared with large-scale transformation, small-scale gradual mode, highly targeted, is more suitable for the transformation of brownfields. It includes building group processing, traffic system, function, landscape and other aspects updating. The process of transformation is a gradual and development process that requires to inject new vitality constantly. In addition, as Mumford pointed out in the book《The City in History: It’s Origins, Its Transformations, and Its Prospects》,”urban construction and renovation should be based on human scale, rather than seeking the most gigantic and magnificent Baroque transformation plan”. (Mumford, 1961). Therefore, the small-scale here besides refers to the small planning area, also stresses the human scale that can make people feel cordial and natural. Moreover, due to the flexibility and diversity in every aspect of the actual operation, it can make adjustment on time according to planning objectives in order to adapt to the complex urban fabric.
Chapter 4. Three cases of brownfields projects

At present, there are many success researches about the old industrial land upgrading and the old city transformation, but there are very little systematic research for the brownfields development as a special object. The shortage of land resources forced the transformation of industrial areas must take the reasonable optimize resources into account. The reasonable organic update transformation of limited space and environmental resources is to seek unlimited value in a limited space. Here are examples of brownfields transformation by organic update concept, showing how cultural or history element are expressed and how the organic update principles applied in the transformation.

4.1 Laiwu Steel Industrial Area

Laiwu Steel belonged to the typical contaminated industrial area that development was relative lag. With the decline of traditional industries, Laiwu Steel industrial area gradually became industrial wasteland, which brought a series of social and environmental issues. It located in Gangcheng District, Laiwu City, Shandong province, China (Figure 4-1). The west side relying on Taishan Mountain and the east is coastal areas and territorial seas. The geography position is very superior. (Zhai, 2011). Laiwu Steel industrial area has a unique industry and cultural. It is an important part of human culture of the old industrial areas. The history development of Laiwu Steel on behalf of the progress of entire steel industry in Shandong region.

![fig4-1_location_map](source: google map and illustrated by author)

However, serious environmental pollution, relatively closed and independent external space and aging infrastructure were the main problems in the present situation of main factory. In addition, the architectural form is fragmentary and incomplete and the relationship with the adjacent building is very messy. In aspects of the landscape environment, it lacks an overall planning, the distribution of green land is uneven and mostly concentrated in the entrance part. As for the road system, the overall distribution
is more uniform, but failed to highlight the relationship between the main axis and the primary and secondary roads. Some part of the road width is too narrow to use and some of the road boundary is not clear cause that the venues have not been effectively utilized. (Li, 2012). Using the organic update principles to solve these issues and make the Laiwu Steel Industry Area works again, while reducing the waste of resources and fully exert its geographical and industrial advantage.

**Integrity**

Laiwu Steel Industrial Area (Figure 4-2) as the single center of urban form should be connect with the original administrative center, especially in aspects of function, traffic (Figure 4-3), landscape and keep coordination with other parts of Laiwu city in the urban structure.
From a macro point of view, the city is divided into two parts by the river, forming “three centers”, namely the old city center, the new administrative center and new cultural center, and “one ring”, that is city center function ring (Figure 4-4). Accelerate the connection between the region and the surrounding environment. Vigorously readjust the integration of industrial land and other lands. Combined with the urban fabric, adding new buildings to reconstruct the original order of Laiwu Steel Industry Area. Not only for establishing corporate image, but also creating a pleasant, comfortable and beautiful work environment. For the old buildings, drawing on the traditional architectural layout design techniques, taking the regular square form to adapt to the working principle of convenient and efficient. Using the lines to eliminate the slightly thick facade and add details to make the old buildings more aesthetically pleasing.

![Diagram of urban center pattern](source: google map and illustrated by author)

**Continuity**
Urban construction and industrial development has led to the urban context of Laiwu Steel Industrial Area disappeared gradually. Part of building texture in urban space is more messy and the features is not obvious. Therefore, it is necessary to focus on strengthening the continuation of the historical context and reflect urban characteristics. Continuity does not require to expand the urban space, but to take full advantage of the existing space. For example, the courtyard is the standard shape of inner court in the traditional northern official building and this architectural form not only can reduce the sun and increase the shadows, but also organize the wind to take away the extra heat. (Li, 2012). The program draws on the essence of traditional architecture, forming an internal courtyard that is consistent with the traditional culture.

**Multi-function**
Single function can not meet people’s needs and catch up with the city development, thus the industrial area should change from single-function development to a multi-function development. Depending on the actual situation, Laiwu Steel Industrial Area is divided
into four major functional blocks: administrative office area, production plant area, living area and reception area. Build different style theme park or square in different regions, thus completing the transformation. Create leisure and entertainment square, green landscape venue and other activity space in industrial area (Figure 4-5). On the one hand, it can brings vitality to this industrial area, on the other hand, it can promote the development of urban tourism.

**Identifiability**

The existing chimney, boiler room, steel housing in Laiwu Steel industrial area are the identifiable landscape elements, also the unique legacy landscape of steel city. Through the creative transformation and the utilization of terrain, to create a recreational new landscape, for example, Aishan Park (Figure 4-6) and build different style theme square, thus completing the transformation of characteristic space, so that the entire area has distinct space level on the basis of meeting the functional needs and different regions have their own characteristics. Taking the measures that use bright colors, make full use of waste materials or combined with plant landscape is to make the industrial area attractive enough to have their own characteristics.
Small-scale Gradual mode
Natural ecological environment of Laiwu Steel Industrial Area has been seriously damaged and the vegetation has been destroyed. However, the ecological recovery capabilities is very poor. In addition to do the assessment of pollution before transformation, it also requires greening in the late stage to eliminate pollution. It really takes time to solve environmental pollution problems and construct in phases depending on the different features and the primary and secondary relationship of function.

4.2 Textile City of Xi’an
Textile City of Xi’an belongs to the Soviet model industrial buildings in the early years since the founding of new China, also one of the important textile production base. It located in the east of Xi’an (Figure 4-7). The old factory building, old residential apartments that all masonry exterior with gray bricks were still existed, reveal the rich atmosphere of years old workplace environment can be seen everywhere. Currently, except two companies are operating normally, the other companies are already policy bankrupt. With the development of high-tech industry and decline of textile industry, it turned into a waste plant gradually. The workshop with 10,000 square meters was idle. Due to it was abandoned for a long time, the external environment was poor. Not only affected the image of the entire city, but also hindered the development of regional economy which lead to serious social problems.

![Fig. 4-7 Geographic location](source: google map and illustrated by author)

The whole terrain in the area is relatively flat, the internal road system is imperfect and lack of connection with surrounding the city. So the old industrial factory area of textile city is relatively closed. It includes the old industrial plant with a certain industrial heritage value, warehouses, office space, a straight line network, railway lines, the trees that growing well, the abandoned structures and production facilities that was used for industrial production, such as sewage treatment pond, chimneys, water towers, etc. The infrastructure is relative complete and the condition of internal green is good, especially
the green on both sides of the road. However, the development of regional economic is relatively slow and the image of whole region is outdated.

**Integrity**

With economic, social, cultural harmonious development, adjust the industrial structure of textile city, optimize space resources and excavate textile characteristics and culture, while strengthening ecological construction and establishing the coordination relationship with neighboring cities to keep the integrity of the old industrial factory area of textile city, and shape a new image of the city. In order to achieve this goal, one planning roadway inside the area as the axis, the large scale green area adjacent to urban roads and the open space of the textile city park as a starting and the end point, provide a good view in the sight. The axis links the entire area with the west side of Third Ring road and the east side of Fangxi City road closely and forms a from east to west urban development axis (Figure 4-8), thus promoting the development of the whole region.

In addition, in aspect of industry, except continue to develop the textile industry, also inject new content. 1) the international high-end market as the goal, take advantage of Xi'an textile technology to establish a professional research and development institution and then increase the results into production, integrate the ability of textile industry to produce green textile products. 2) in order to extend the industrial chain and broaden the field of textile industry, including the development and manufacturing of textile equipment and processing of textile products, it's necessary to enhance market competitiveness.3) promote the south and north development of silk and woolen goods to form province integrated pattern.

In addition, the planning introduces the tertiary industry to make the industrial structure includes the textile, trade and logistics, cultural and creative, real estate and tourism five industries. It reflects the organic update concept that based on the development of existing industries to enhance new industrial structural system. (Chen, 2010).

**Continuity**

Focus on the dialectical relationship between protection and renewal, also the integration of traditional culture and modern culture. Keep the textile culture characteristic on the
basis of respecting the original urban fabric and combined with its own characteristics to create a textile cultural characteristics city. Keep the continuity of urban cultural while driving the comprehensive renaissance of urban area. There is a north-south railway line throughout the whole old factory area. Relying on this railway line, the old factory area has formed an industrial heritage axis which connects five textile mills in the whole lot, and become the most concentrated industrial heritage monuments. Meanwhile, add the cultural and tourism facilities to make the continuation of the historical context and improve the cultural taste of the lot.

**Multi-function**
Diverse city space can maximize to contain the occurrence of a variety of social activities, and diverse social life can keep the urban vitality. It’s necessary to make full use of rich culture and space characteristic and mix function appropriately. The textile city plant is divided into six functional areas, which are ecological park area, creative industries and cultural area, upscale residential area, core business area, textiles research and development area, logistics and management office area (Figure 4-9). Create a region that has diverse urban function and strive to economic, cultural and social development of the region.

**Identifiability**
The volume of part original structures such as chimneys, water towers, pipes in the old factory area is large and not suitable for large-scale move. They are all the symbol of the industrial age and become the industrial design elements that can be used. Through appropriate updating techniques to represent with a new image in front of people, such as ecological planting, changing colors. For example, the chimney tower is very tall. We can make full use of this feature to make it become a marker of this region. Also combined with the marker as landscape element, open up the surrounding land and become an open space.

**Small-scale Gradual mode**
Follow the rules of organic update urban gradual development to handle the relationship between current and future. Meanwhile, focus on dynamic sustainable development of urban renewal and implement in phases to achieve the goal of a comprehensive update
ultimately. In this thesis, the short-term goal is to carry on corporate restructuring and investment promotion to construct new textile industrial park and establish textile products research and development institutions. Change part of the textile enterprises to business center and conduct internal transformation of shanty towns and communities. Through the operation of the textile industry and business to earn money used in the next step of development. As for medium-term objectives, migrate the former textile enterprises gradually and then create creative industries and logistics parks, further improving the development of center business district, at the same time, introducing the tertiary industry and increasing employment opportunities to form Xi’an textile spatial layout and new industrial structure. For the long-term goals, relocation of the whole textile industry, build international trade center, and form textile cultural and creative industries park and textile logistics park to realize comprehensive revitalization and development of the textile city and surrounding area. (Chen, 2010).

4.3 Emscher Park

Emscher Park is located in Ruhr, Germany (Figure 4-10). It was an important industrial base before. After 150 years of industrial development, this area formed a mining and steel manufacturing industries as the main industrial zone. (Zhang, 2013). Abandoned mines, mining machinery, tall chimneys, stockyards and any other industrial constructions were left over from the original industry. The park is crisscrossed by canals, railways and roads. Therefore, the area has the most intensive industrial landscape and the most serious environmental pollution in the central industrial zone of the entire Ruhr area. For example, Emscher River was no longer a natural river, but an open sewer, that the carrier of domestic sewage and industrial wastewater discharge. Underground coal mining caused a considerable degree of ground subsidence. All underground sewage pipes were likely to be destroyed. However, being the center of the heavy industry in Germany for more than 150 years, the Ruhr Area today is a green metropolis. (Kretschmann, 2013).

Fig. 4-10 Emscher Park location schematic diagram
(source: http://www.brd.nrw.de/regionalrat/archiv/Archiv,
The original source: Project Ruhr, Master Plan Emscher Landshaftspark 2010, Klartext, 2005)
Among the landscape areas, no matter from the perspective of overall scale, design concept or popularity of the park, North Duisburg Landscape Park is the most prominent one. (Wen, Zhang, 2012). In terms of the overall design concept, it keeps the integrity and consistency with Emscher Park and extends the function. It becomes an important part of the new landscape sequence on the entire region. As far as I am concerned, the most outstanding feature of the Emscher Park is transforming the brownfield into public recreation and entertainment venues, and as much as possible to retain the original industrial facilities, while creating an unique industrial landscape.

**Integrity**
The regional Emscher Landscape Park consists of several individual parks, industrial naturescapes, and artificial landmarks. (available: [www.emscherkunst.de](http://www.emscherkunst.de)). However, industrial areas, squares, green spaces, gardens, woodlands, canal tributaries and waterfront both are relatively independent but very harmonious on the whole. There is no strict axis in the park, but canals tributaries and a relatively straight axis connect the entire space (Figure 4-11). As Word Bank described the Ruhr Metropolis “create a continuous, graduated green system with regional green belts and local green connections, resulting in a network of landscape-related open spaces at the edge of estates through into the residential areas. A continuous system of footpaths then makes this network of open spaces accessible to the region’s residents and visitors”. (Word Bank, 2006), there is no obvious peripheral marginal line or surrounded garden wall, but directly integrate with the city roads. In terms of spatial organization, it can independent from the rest of the city, also can perfectly blend with the city.

![Green belt schematic diagram](source: http://www.brd.nrw.de/regionalrat/archiv/Archiv,
The original source: Project Ruhr, Master Plan Emscher Landshaftspark 2010, Klartext,2005) and illustrated by author)

**Continuity**
A large number of industrial heritage as witness of industrial culture and important tourism resources were almost protected and utilized. Some were transformed into vivid
landscape sketch and various industrial buildings or constructions were given new function. For example, in the North Duisburg Landscape Park, one of the Emscher Landscape Park (Figure 4-12).

1) the thick walls become a venue for people to sport climbing,
2) the ore and coke storage silos turn to be a comprehensive venue provided for Children’s activities and exhibition.
4) Gasometer, it is transformed into a training ground for rescue divers.
Old Administration Building is transformed into a youth hostel,
parts of Power Plant are changed to information center for tourists or restaurant.
Blast Furnace 5 now is a viewing tower, an iron staircase on Blast Furnace 5 leads high up onto a visitors’ platform.
Casting House is updated to be an open air theatre, etc.
In brief, facts proved that this kind of transformation is a good way to keep the continuity of industrial history and culture (Figure 4-13).
Multi-function

Emscher Park is not only a park, it covers the Emscher region with the unique cultural characteristics, including rivers, nature reserves, agriculture and forestry areas, and some urban areas, economic trade zones, sports and cultural activities areas and so on (Figure 4-14).

Re-used and re-organized the brownfield to create modern commercial, service facilities and science parks. Meanwhile, arranged a lot of green open space (Figure 4-15). to make sure that various workplaces are building in a beautiful high-quality ecological and architectural environments, like “working in the park.” (Liu, Zou, Li, 2007)
Even if North Duisburg Landscape Park as a small part of Emscher Park, from the function analysis map (Fig 4-16), we can find that the various parts of the whole park are combined very closely. Each region has a certain connection with river. Recreation area as the center of the whole park combined with several surrounding area into a wrap-around combination. The combination between sports area and the area with more plant is also very unique. In a word, organic unity of the various parts combined together. However, each function point of various functional areas are distributed evenly, like inquiry stations, restaurants, bathrooms, landscape zones. (Wen, Zhang 2012).

Identifiability
After appropriate transformation, the legacy of brownfield became an unique landscape, large-scale plant construction, railways, bridges, settling ponds, canals, large machinery were included. In fact, the old industrial building itself just was the unique symbol of the park, for example, Blower House Complex (Figure 4-17) and Gasometer (Figure 4-18) in North Duisburg Landscape Park.

Small-scale Gradual mode
When deal with the piece of brownfield by ecological means, it takes three steps:
1) Retained the original structures and made full use of the original factory waste materials as much as possible.
2) Protected the vegetation in the factory and allowed weeds to grow freely.
3) Water recycling adopted the scientific way of rain flood processing to achieve good effects on ecological protection and landscaping.

Peter Latz maximized the retention of historical information of factory and used the original "waste" to shape the park, thereby minimizing the need for new materials and saving investment. (Xu, 2007). It took several years to transform the brownfield into integrated leisure and entertainment parks. And associated with many branches of projects were gradually completed in the next few years. From 2002 to 2006, the park was expanding continuously (Figure 4-19).

In order to maintain sustainable development of Emscher Park, the government formulated the Emscher Park Master Plan (2001-2010) in 2001. Except to continue the original strategy, the new planning also provided the new development goals of Emscher Park, including the next 20 years will focus on the development of new Emscher region and so on.

4.4 Conclusion

The three cases have same common characters. 1) Both of them were industrial land use and suffered different degrees of pollution; 2) has a rich industrial heritage, such like old industrial plants, chimney, etc; 3) has a good geographic location; 4) in aspect of transformation way, almost start from the architecture, traffic, function and landscape four aspects; 5) experienced the process of changing from wastelands to the main part of the city; 6) transformation promote the urban development, including economic, social, cultural and tourism.
But there are also some distinct differences. a) Different range of brownfields, Emscher Park scattered throughout the whole Ruhr area, but Laiwu Industrial Area and Textile City of Xi’an are relatively concentrated in certain areas; b) different terrain features and surrounding environment provide different favorable conditions for transformation c) different positioning and results, Emscher Park just like the green connector that connect the abandoned industrial areas in series, but Laiwu Industrial Area maintains the original function, continue to develop the steel industry while introducing the other industries, still belong to the industrial area. The transformation is just to revitalize old factory. As for Textile city of Xi’an, the goal is to create a new urban area that has distinctive industry and good living environment.

From the case-studies, the following conclusions can be drawn:
1) To create a pleasant atmosphere which is suitable for people to live or work in is the main purpose for the transformation of brownfields.
2) A clear positioning on the basis of a comprehensive understanding of the content in terms of physical, social, economic and urban management is very important.
3) Determines the range of update area and the priority update lot, then propose the overall development strategy according to the change of urban dynamic development.
4) It is necessary to maintain the relative integrity of urban fabric in the brownfields and take such measures as keep the original location and pattern, retain the valuable elements and remove those elements which have no actual effect.
5) New elements to bring vitality to the brownfields during the transformation of brownfields, for example, new industries and more green and public space.
6) According to the degrees of pollution or planning objectives to make a long-term plan, but start with small-scale, implement in phases and ultimately achieve the goal of a comprehensive update (from point to area).
7) Take full advantage of favorable factors, such like topography, surroundings, culture and history, etc.
Chapter 5. Proposed Redesign Strategy for Qinhuai District, Nanjing

5.1 A short history

Creative Industries Park was established in February 2006. It is the first largest urban industrial park and provincial key modern service area in Jiangsu Province, which was built by Nanjing municipal people's government and Nanjing Shuntian industrial company. The predecessor of the Creative Industries Park was once thriving industrial plant in the last century, including Nanjing Lanpu Electronic Company (formerly Radio Factory, founded in 1967), Nanjing Automobile Factory (founded in 1958), Nanjing Electronic Ceramics Corporation (formerly Radio Components Factory, founded in 1958) and Jiangsu Jinling Machinery Manufacturing Plant, founded in 1954). As the industrial land, there is a certain degree of pollution.

In addition, with the progress of the times, some of the old plant gradually abandoned and turned to be brownfields. Following the principle of keeping the original appearance of the building and reflecting artistic creativity, the planners tried to transform the old industry plant into garden-style office area, and maximize the retention of architectural characteristics of all the old industrial plant, and industrial and cultural heritages elements. However, the transformation indeed has solved some of the problems existed in brownfields, but it still has some problems that affect the future development of the park. Moreover, there are still some potential values in creative industries park need to be fully utilized. In this thesis, I focus on the Nanjing “Window on the World”, which was brownfields before and now transformed to creative industries park.

5.2 Analysis of the Current Situation

5.2.1 Assessment of main problems in the area now

In the impression of Nanjing people, the new Qinhuai District today is the center of Nanjing city, a bustling area. It has Xinjiekou and Confucius Temple two major commercial circles. In addition, this area gathered a lot of cultural landscape and historic attractions, also including modern skyscrapers. Moreover, creative industries park transformed from brownfields was supposed to be a major highlight of this region, but the fact is this area just like the common office areas. In order to improve the transformation of my study case and make it stands out, it is necessary to find out and resolve the problems existed in this area.

The problems in the first phase of creative industries park planning
Architecture
1) Too many different architectural styles make the whole area looks disorganized. The buildings near the main entrance with the bright colors look modern and fashion. However, the buildings on the other side used for residential look old and part of the building wall have been damaged (Figure 5-1, 5-2). 2) Boring architectural forms make it fail to highlight its advantages, especially in the important position in the focus of attention. 3) The building facades have not been prominent treatment, it needs an appropriate integration to reflect the corporate culture. 4) The overall tone of the buildings in the entire area is given priority to with warm color, but it is not obvious.

Public Space
1) The distribution of outdoor space environment is uneven, mostly concentrated in the entrance part. 2) The external space is relatively closed and independent, and almost are used as parking lots, but still unable to resolve the parking problem (Figure 5-3). 3) The shape is quite normal and the space with a little green, generally exists between architecture and construction (Figure 5-4). 4) There is no leisure square provided for people to rest. 5) As for the public facilities, only a few trash can are put in front of the buildings, even the street lights are not visible along the roads.
Traffic
The overall distribution of road conditions is more uniform, but failed to distinguish the primary and secondary roads. Because there is no fixed parking lots, the cars parked everywhere on the roads, especially on the secondary roads (Figure 5-5). It results that the roads are too narrow to pass and affects the appearance of the whole area. The boundary of some roads are not clear enough, which leads to some venues have not been used efficiently. In addition, there are three entrances in this area and the primary and secondary entrance is not clear. No matter the outside visitors or workers, both are free to enter in. Although there is a guard room, but useless (Figure 5-6). The floating population is complex and the traffic lines for production, working and external reception haven’t been classified.

![Fig. 5-5 Parking on the Secondary Road (source: photos taken by author)](image1)

![Fig. 5-6 The Main Entrance in Phase I (source: photos taken by author)](image2)

Landscape
The plant landscape design in the first phase does not form an overall landscape features. Only sporadic green is planted along the roads and some potted plants are put in front of the building. In addition, the processing of the nodes is rough, just hard pavement. There is no landscape sketches, not even a chairs.

Function
The bulletin board in the entrance says the first phase of the industries park is divided into six functional areas, respectively are architectural planning and design, advertising design, consulting and planning, online animation software, industrial design and art design. However, the fact is the park still retains the old building used as residence.

**The problems in the second phase of the industries park planning**

Architecture
Due to the materials of exterior wall mainly adopts gray imitation stone brick, the overall color is more simple but elegant and without losing the vitality. Part of the building facades use red metal mesh plate and glass curtain interspersed in the gray exterior of old building (Figure 5-7). In addition, the combination of advertising and building facades
make the building facades more diverse (Figure 5-8). Compared with the buildings of the first phase, it is relatively unified and full of visual impact.

Public Space
Most of the public space is open, but lack of security and a sense of hierarchy. There is rarely public facilities in the space. As for semi-private or semi-public space exist only between the buildings. It is worth mentioning that the mountain massive green area, quiet environment and the geographical advantage that close to the city wall provide an opportunity to create the public space. Take full advantage of the park terrain, the mountain after transformation into leisure space, thereby improving the shortage of public space throughout the park. But the lack of a sufficient number and type of facilities, landscape node influence people's desire to stay and rest. Therefore, the public space should be further improved.

Traffic
The road system includes park main road, street and mountain recreation trail three types. There is 2 entrances in the second phase of creative industries park.

Landscape
Some nodes handled properly, but the layout design of landscape plant has no feature. Meanwhile, the creative industries park lacks of landmark landscape, resulting in its identifiability is poor. It needs to fully integrate the various elements to bring people to the feeling of artistic beauty. And the style of facilities and pavement is innovative and unique.

Function
Compared with the first first phase of the industry park, the function is very single. It is divided into two functional zoning, the enterprises area and leisure scenic area.
Conclusion
From my perspective, to some extent, the problems now existed in the creative industries park can reflect the issues in the transformation of brownfields. Combined with the working principles concluded from the Organic Update Concept, the problems are as follows:

Integrity
1. From the perspective of architecture - The buildings at different stages of the creative industries park are completely different, no matter in terms of building tone, appearance, the use of materials and building facade treatment. The architectural layout mostly is semi-enclosed and the spacing between the buildings is relatively small. In addition, the boundary of each building is not clear. They do not look like a whole. Therefore, it needs an appropriate integration to reflect the corporate culture.

![Fig. 5-9 Building layout of the Creative Industries Park (source: made by author)](image)

2. From the perspective of traffic - There are east, north and south three entrances in the first phase of creative industries park. The north and south entrances connected to form a north-south main road, while the east entrance, which is located between building 5 and building 4 directly faces the west entrance of the second phase (Figure 5-9). This is the only contact between these two areas in terms of traffic.

3. From the perspective of public space - In phase II, use the air corridor structure to connect the buildings with natural landscape. At the same time, make use of the terrain condition to create a leisure space in the mountain area, also provide a book club, activity room, restaurants and other activity spaces for people. But the line of the sight is blocked, people can’t see the scenery behind the mountain (Figure 5-10, 5-11, 5-12). On the one hand, it improves the accessibility and convenience of public space. On the other hand, it strengthens the relationship between the second phase and the mountain to keep the integrity of this area. However, Phase I and II just like the single individual, there is no similarities and connection between them. So there is no contact inside the park, not to mention the relationship between the creative industries park and
surroundings.

Fig. 5-10 The relation between Phase II and the natural landscape
(source: made by author)

Fig. 5-11, 5-12 The scenery behind the back mountain
(source: photos taken by author)

**Continuity**

1. **From the perspective of architecture** - The brownfields left dozens of well-preserved buildings, which has spacious interior space and abundant form. The high-ceilinged space of plant construction mostly has 3.3-5 meters storey height, and retains traces of the industrial history. In phase I, there are 19 buildings, which are transformed from the original industrial plant. Moreover, in phase II, there are 12 industrial legacy buildings. On the basis of original scale and pattern, to transform the building facade. Due to the old industrial plant were used as industrial building in original internal space, now apply to various creative industry enterprises. To some extent, it can keep the continuity of old industrial culture. However, some structures with industrial value have been demolished before transformed into creative industry park, affecting the continuity of industrial civilization.

2. **From the perspective of landscape** - The plant allocation of the creative industries park mainly keeps the arbor and shrub of the original industrial plant.
Moreover, the flower beds and trees of the primary and secondary roads are also the original industrial heritage.

**Multi-function**

*From the perspective of function* - The main types of enterprises stationed in the park are on software, advertising and cultural creative design. In phase I, there are six functional areas, respectively are architectural planning and design, advertising design, consulting and planning, online animation software, industrial design and Art design area. In other words, both of them belong to the enterprises area. However, in phase II, apart from the enterprises area, there is a leisure scenic area (Figure 5-13). Therefore, although the park is quite open, because of single function, except the enterprise workers, no one else to visit the park.

![Functional zoning map](image-url)

**Identifiability**

At first glance, the plant allocation of creative industries park is messy, and the landscape is obsolete. In contrast, the visual environment of the second phase is much more better, especially the unique logo design and oriented brand. Nanjing “Window on the World” Creative Industries Park is also known as Creative East Eight District. When Professor Zhang named for the park, considering that the park is located in the east of the city, and the most dynamic time of one day is 8 o’ clock in the morning. He wants this creative industries park can have vigorous development and become a sunrise industry. This logo can be seen in the second part of park. For example, the public space (Figure 5-14), entrance square (Figure 5-15), even the parking area. It can easily make people aware of creative industries park’s existence. In other words, there is a certain identification. However, in phase I, there is nothing special that can make people feel refreshing.
Small-scale Gradual mode

According to the time of planning and construction, the whole creative industries park is divided into two parts. Due to the first phase of East eight area is built earlier than the second phase, the overall structure and environment of the first phase give the impression that the park is relatively old. It is located between Lanqi Street and Guanghua East Street. Relying on the original industrial plant to do the transformation and follow the principle of maximize the retention and reuse. While the second phase is located on the east of the first phase and adjacent to the city wall. They are separated by Lanqi Lane. Based on the continuation of creative industry of the first phase, the second phase more emphasis on improving the environmental landscape of internal park through the accumulation and complementary of physical space.

In the future, phase III of Creative Industry Park will be built, located in the positive north of phase I and II, just on the other side of Lanqi street. Combined with the industry positioning of phase I and II, phase III will be dominated by advertising media and build as the culture media industrial park (Figure 5-16). This is not only for the supplement of industry and improvement of scale, but also for the upgrading of the overall image.
5.3 Analysis of the local context

Location
Nanjing “Window on the World” Creative Industries Park is located in Baixia District. Baixia District is the important financial and commercial business center in Nanjing. In the impression of Nanjing people, Baixia District is the city center and a bustling area. Compared with other Districts, the life quality, living environment, public service facilities are relatively advanced, also in terms of transportation and planning is still better than other area. In addition, it has ancient building complex, the best preserved private houses and famous attractions, like Chaotian Palace, Xinjiekou, Ganxi’s former residence and so on. But on Feburary, 2013, Baixia District has been withdrawn and merged with the original Qinhuai District to become the new Qinhuai District. The original Qinhuai District is known for Qinhuai river and Qinhuai culture. It has Confucius Temple business center. After the two districts combined, the future development of the new Qinhuai District will be subject to more attention (Figure 5-15). “Window on the World” Creative Industries Park is divided into two parts by Lanqi Street, the west part is the first phase and the east is the second phase. It is located in Guanghua East Street, the original Baixia District, Nanjing.

Government Developing Orientation
According to the official overall plan for the next 20 years of the new Qinhuai District, it will take gradient space overall development strategy that based on the current situation to optimize the west part, extend the east and integrate the middle part. The district is divided into five planning areas and three developing axises will be established (Figure 5-18). The study area belongs to Technology Innovation And Entrepreneurial Area, and along historical and cultural axis. Moreover, the back side of study area is Ming Dynasty city wall scenic belt. Part of them now are in the planning and construction, such like...
repairing city wall and expanding the creative industry park. Therefore, under this overall planning requirement, the study area can be first analyzed within the whole Technology Innovation And Entrepreneurial Area, which will give a more macro sight into my case and redesign to meet the demand of future development.

![Image](image.jpg)

Fig. 5-18 The overall plan for the next 20 years on spatial layout and
(source: Nanjing Planning Department
(http://news.longhoo.net/nj/njxw/content/2014-04/01/content_11186047.htm)
and made by author)

**Culture and history**
The new Qinhua District gathered a lot of cultural landscape and historic attractions, creating a good natural and human environment for the transformation of brownfields and the improvement of creative industries park. What is more, the closest cultural and historical scenic to the study area is Guang Hua Men Ming Dynasty City Wall, which has 600 years of history and is located in the back side of creative industries park. It is not only an important symbol of Qinhua District, also witnessed the development of the entire Nanjing city. In order to make the study area integrate into the whole city, the connection between the city wall and creative industries park, especially phase II is an important part of redesign. In addition, along Ming Dynasty City Wall, there is a Crescent Moon Lake park and they complement each other greatly (Figure 5-19). In brief, the surrounding scenery provides an opportunity for the future development of the park. Moreover, creative industries park retained the original old factory buildings and made a moderate transformation to maintain the continuity of industrial cultural and history.
5.4 Potential Assessment

5.4.1 Goals and Objectives

In order to improve the creative industries park, an overall planning objectives and positioning needs to be set according to the official developing plan. In addition, from the perspective of organic update working principles, the problems now existed in the park also should be taken into consideration. The goals and objective are as follows:

<table>
<thead>
<tr>
<th>Working Principles</th>
<th>Goals</th>
<th>Objectives</th>
</tr>
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</table>
| Integrity          | Strengthen Connection &Weaken Boundaries | ▪ Connect the Phase I and II  
▪ Connect the Phase II with Mountain  
▪ Create Pedestrian Friendly Spaces  
▪ Increase Density |
| Continuity         | Keep Industrial History | Have Positive Building Facade |
| Multi-function     | Long-term Use | ▪ Mix Functions for Lively Areas  
▪ Redesign Parking  
▪ Create More Green Space |
| Identifiability    | Attract People | ▪ Attractive & Friendly Entrance  
▪ Widespread Use of Logo |
| Small-scale Gradual mode | Consider the Natural Environment | ▪ Create Meeting Space (public or private) |

Fig. 5-19 The cultural and historical scenic in the surrounding area (source: baidu map and illustrated by author)
5.4.2 Potential Connectivity Supplies

From my perspective, in order to make the study area integrate into the surroundings, not only to integrate building facades and combing the park traffic, but also make full use of city wall as an appropriate potential resource to create the connectivity. How to link the study area with surroundings is an important issue for improving this area. The creative industries park possesses the characteristics that many parks do not have - its good location and rich brownfields cultural connotation. With these advantages, for example, the back mountain, it can be a good resource to connect the creative industries park and the city wall. Anyway, the creative industries park after transformation can be an important part of the city.

5.4.3 Redesign Strategy

Integrity

According to the goals and objectives I mentioned above, the first goal is to strengthen the connection and weaken the boundaries. In another words, connecting the two parts of creative industry park, the second part and back mountain is also the key to maintaining the integrity of the park. Meanwhile, it is also essential to link this are with the surroundings.
To strengthen the two parts, I would like to start from architecture, public space, traffic, landscape and function these five aspects.

1. **Architecture** - focus on strengthening the transformation of building facade, especially the buildings of the first area. Keep unity with the buildings of the second part both in aspects of color and material as much as possible to reflect the corporate culture and establish corporate identity.

2. **Public space** - for me, to adopt the similar landscape element can be a good way to keep the unity of the public space, such like the figure 8. It can be applied into a sculpture, sign and all kinds of landscape nodes. On the one hand, it enriches the landscape effect, thus by providing a comfortable working and communication environment. On the other hand, as a landscape element of the whole park, it can keep the integral unity, and become the a major feature of the park.

3. **Traffic** - an important factor to strengthen the two parts of park. I suggest on the basis of current situation to add a bus station on the main road between the first part and the second part of Creative Industries Park (Figure 5-21). It can increase the accessibility of the park, while ensuring the park is open to the citizen. In addition, due to the brownfields transformation background and natural surrounding environment, I would like to create tourist routes throughout the whole new Qinhuai District (Figure 5-22). In this way, not only can promote its historical background so that people understand the significance of brownfields transformation, also can promote local tourism and economic development.

![Fig. 5-21 External traffic map](Source: made by author)
The Transformation on Brownfields based on the concept of “Organic Update”

Yan Kunyuan

4. **Landscape** - in the first part of Creative Industries Park, I design undulating flower bed to change the present situation of single landscape level, thus corresponding with the mountain landscape of the second part. Moreover, attached to the undulating flower bed, I create a narrow leisure zone and form the landscape axis of the first part. Overall, this narrow Leisure landscape zone combined with the air corridor of the second part to form a landscape ring (Figure 5-23). Apart from the three main public spaces marked in the Figure 5-23, the rest are almost located among buildings.

![Fig. 5-22 Tourist attractions in New Qinhua District (Source: baidu map and made by author)](image)

![Fig. 5-23 Landscape analysis map (source: made by author)](image)
Here are some ideas about this three public space. For Node 1, I think this space can be handled like the intention map shows (Figure 5-24), each enterprise has its private garden, meanwhile different private gardens constitute an overall open space. Node 2, I suggest to adopt this kind of pavement (Figure 5-25), to some extent, it can change the atmosphere of heavy industry, and rich the park landscape to create a warm and comfortable communication environment. Moreover, Node 3, the original courtyard is used as a parking area, I would like to add small undulating flower beds in this space so that make the landscape coherent and turn it to be a leisure public space.

5. **Function** - parking is a serious problem of this park. I suggest to build a parking lot in the west corner of the first part. It meet the functional requirements and avoid the phenomenon that cars park everywhere, thus affecting the appearance of the park. In addition, create more public and green space in different parts of the park to meet the recreation demand. As for back mountain, take full advantage of the terrain elevation, and create a mountain scenic area provided for people to enjoy the natural scenery.

To strengthen the connection between the second part and back mountain, I would like to keep the present situation that using the air corridor to connect is a good way. However, only use the air corridor to connect the second part with back mountain is not enough for
the integrity of the whole park, also need to replan the mountain scenic area. Because to some extent, it represents the whole park, and affects the connection between the park and the city walls. In order to avoid the sight to be blocked, I suggest to create a watching tower or platform to make people convenient to see the scenery behind the city wall, thus making the whole park integrate into surroundings (Figure 5-28).

Continuity
From the perspective of continuity, the second goal is to keep the industrial history. It requires to maximize the retention of the original industrial buildings. But for this area, it does not like Emscher Park has a lot industrial heritage, such like tall chimney, gasometer and so on. However, when it was brownfield, it was just a common power plant and except old, the buildings do not have any other features. Not to mention the industrial culture. So for this problem, I prefer to reflect the industrial history and culture by details, such like paving, furniture and walls. There is no need to build a typical industrial building deliberately, but it is necessary to have a positive building facade that can convey the message of the history (Figure 5-29, 5-30).
Mix-function
It is my third goal. As far as I am concerned, mix-functions is benefit to long-term sustainable development of Creative Industries Park. 1) Add more green space, on the one hand, it can meet people’s need, on the other hand, provide a good atmosphere for communicating. The green space of the park is very rare. But due to the green space of the second part is more concentrate on the back mountain. So I more focus on the green space of the first part. 2) Add a parking lot in the corner of the first part of Creative Industries Park to solve the traffic problem. Why this area? Because it is close to the main city road and quite near the restaurant, so parking is relatively convenient. Overall, the whole park is divided into seven functional areas: Entrance Area, Enterprises Area, Parking, Restaurant, Leisure Area, Mountain Scenic Area, Commercial and Enterprises Area (Figure 5-31).

![Function map](source: made by author)

Identifiability
For a park, from the flow of people, we can know whether the design of the park is successful or not. But how to attract people to get involved in the park. Background, location, culture or any other elements can be the reasons to gather people there. For me, the entrance part is very important. It can arouse people’s curiosity to go there and have a look. If people stop at the gate, how to find out the beautiful things inside the park. In the first part of Creative Industries park, it has three entrances, the North Entrance, the East Entrance and the South Entrance (Figure 5-32, 5-33). Except the south entrance, the other two entrances do not have any features. Compared with the entrance of the second part, it looks more poor. Therefore, I more focus on the design of Entrance Area, especially in the first part of park (Figure 5-34, 35).
Redesign the park entrance, I prefer gray and red as the basic color to keep unity of the building of the park. Meanwhile, remove the parking lots, and replaced by green space (Figure 5-34, 5-35).

Moreover, widespread use of Logo can give people a deep impression. To some extent, it can be a feature or a symbol of the park to make people remember this area. And reflect the corporate culture and content. Now Creative Industries Park has a good logo (Figure 8), but lack of flexible application. In fact, it can be applied as landscape furniture or signage that has the character of orientation (Figure 5-36).
Small-scale Gradual Mode

Creative industries park now has two parts, in the future it will have another part. Because of the limitation of small scale, it can’t show the gradual mode obviously, like Emscher Park. As far as I am concerned, small-scale gradual mode have similarities with the spirit of sustainable development. Both of them proposed to be continually modified in order to pace with times development. Therefore, in this park, apart from starting with the small area, I emphasize the human scale, or nature environment should be taken into consideration when creating the meeting place for people. In my design, I add more public and green space, especially in the first part of the creative industries park. And the public facilities, including bench, street light and so on should be added to meet people’s need.
Chapter 6. Discussion and Conclusion

Organic Update can be described as a concept, an idea, or a method, also a healthy process of urban development. Although it is common to applied into the transformation of historical site, as far as I am concerned, from the working principles concluded from literature review, 'OUC' can be a planning tool, not only used to update and develop the city historic district, also can be used to transform and improve the brownfields, even for planning a city. However, it also has some limitation. The concept at beginning proposed is only the specific measures against a particular region. Because of successful transformation, it was paid attention by people, and then more scholars to refine and explain this concept, but only applied to some historical sits transformation. Therefore, due to the limitations of OUC being used, I can not find out any relative brownfields cases, only some historical industrial plant. When I study and explain the cases, almost from my own perspective, so the arguments I proposed maybe subjective, not so objective.

Organic Update Concept itself emphasized that respecting the local history and culture, based on the current situation to make a long-term plan, but start from small-scale. To some extent, there are similarities between the Organic Update Concept and Sustainable Development Concept. However, the difference is that “OUC” more concerned about the specific implementation. It is more inclined to guide people how to operate and put into practice. In addition, it focuses on keeping the integrity of the city and how the area link with surroundings. In general, this concept is a good planning concept. However, when Organic Update Concept applied into brownfields, it should be according to the actual situation of brownfields. For example, the degree of pollution, scale of brownfield, the culture and history background and the location, all these factors should be taken into consideration. Follow the working principles to achieve the goal step by step.

Research Questions.
The answer to the research questions of this thesis can be summarized like this:
1) What working principles of Organic Update can be concluded from the literature of Organic Update Concept?
The main working principles are:
a. Integrity - with focus on a harmonious and unified whole;
b. Continuity - with focus on corelation between different urban spatial structures and levels
c. Multi-function - with focus on mixed functions;
d. Identifiability - with focus on relationship between landscape and history;
e. Small-scale Gradual Mode - with focus on human scale and continuous small scale development processes.

2) How can the strategies found in literature and tested in the cases be adapted to the local context of Qinhua District?
The main strategies applied to the “Window on the Word” Qinhua District are:
1. Focusing on the transformation of building facades to create unity;
2. Add bus station between the two parts of the park;
3. Create tourist routes throughout the whole new Qinhuai District;
4. Add a parking lot, restaurant, commercial and enterprise area;
5. Create a narrow leisure zone;
6. Create more public and green space;
7. Strengthen the connection between the second part and back mountain;
8. Redesigning the park entrance.

This thesis contributes to the application of Organic Update Concept to the brownfields transformation and provides the theoretical and empirics for the future brownfields transformation study. Of course, there are some limitation here. Due to the wide range of study, the limitation of the time and my knowledge, the research is not deep enough. In addition, there are still some problems existed in the research, such as how to solve the problem of industrial pollution when it was brownfields, how to carried out in stages and what’s the order, also where to start and so on. In the long term, brownfields as the main part of the city will no longer an obstacle to the process of urban development. Instead, it will become a favorable factor to improve the efficiency of land use and beautify urban environment, also promote economic development.
References

Chen, S.Y. (2010) Old industrial factory space environment, update the design of organic - Case study of Textile City of Xi’an, Xi’an University of Architecture and Technology.


Li, X. (2012) Organic old industrial space environment planning study - Laiwu Steel Industrial District as an Example, China Academic Journal.


Websites:


The New Qinhui District Planning Consultation. [online] Available at: <http://news.longhoo.net/nj/njxw/content/2014-04/01/content_11186047.htm> [Accessed 01 April 2014]
