ADAPTIVE REUSE OF CHINESE URBAN PLACES:
LESSONS FROM CASES STUDIES OF BROWNFIELD
REDEVELOPMENT IN US AND EUROPEAN CITIES
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Chapter One

Introduction

The word “city” has several different meanings to everyone, and the most basic interpretation for “city” is a relatively large and permanent settlement. Although there is no agreement on how a city is distinguished from a town in general English vernacular, many cities have a particular administrative, legal, or historical status based on local law (City, 1996). Nowadays, the urban planners try to figure out how to develop the city and how to improve the standard of living of urban residents. Even though, in U.S., the most cities have experienced a wide scope of “urban sprawl” and people have moved out of the center city to suburban areas, the cities did not go away. Instead, many of them are growing.

In China, cities are always the dreamland for most people living, working and studying. This is different from the U.S. urban areas. Of course, there are many more differences between China and the U.S., such as the dissimilar population scale, history background and the entirely different politics and culture. However, they
need to face the same difficulties: how to make people live better in cities, how to
develop economically sustainable cities and maintain cities’ long-term sustainability.

Whether in American or China, even in other countries, a city as the place
retaining the most historical relics and characteristics of the time play an important
role within the planning development processing. Deciding how to deal with these
historical products, especially the structures within the brownfields, is a challenge
to planners; they must help a community to decide whether to demolish such
structures. There is more potential within old but abandoned or under-used
buildings and sites than many people realize. Moreover, to meet the demands of
sustainable development, these brownfields cannot be just a small part anymore.
The adaptive reuse projects mentioned within following chapters, do not only
change the appearance of such facilities but also bringing positive impacts to the
community, such as the improved environment, increased investment and reduced
crime rate, as some projects come to be attractions.

It is believed that adaptive reuse of the old structures will be a trend of the
city improvement and revitalization. In this article there are two examples of
adaptive reuse, Promenade plantée in Paris and High Line Park in New York, to give
designers and planners a new perspective to resolve the problem of brownfields in
downtown areas and accelerate sustainable development of China.
Chapter Two

The procedure of city development

- Change of city development in the USA and China

  - USA

  Cities with a mixture of peoples, a concentration of talent and an economic surplus have provided a fertile foundation for the evolution of human culture: art study, science research and technical development. American cities have quite the same development process, but unlike other cities the American cities experience the process of “Urban Sprawl”. “Urban Sprawl” seems an important phrase to present special characteristics of the process of American cities’ development, which explains well how the American cities go from prosperity to decline.

  Since the Industrial Revolution, cities have changed more than in all the previous centuries of their existence. The population of New York increased from 313,000 in 1840 to 4,767,000 in 1910. Chicago exploded to 2,185,000 from about 4,000 during the same period (Allison, 2011). The industrial revolution especially
impacts the industrial factories. Early they were located outside of major cities, which provided waterpower for machinery. However, technological innovations satisfied the demands of the industrial production. After steam power became widely available in the nineteenth century, factories could be located in the city for convenient transportation and sufficient urban labor force. Within the major northeastern and midwestern cities such as Pittsburgh, Detroit, and Cleveland, large manufacturing zones occupied large areas and the thriving industrial atmosphere was all around. On the other hand, under these prosperous scenes, some members of the upper classes tried to move out of the center of cities and retreated to homes in the countryside. They preferred the beautiful natural landscape, better air condition and calm community environment, rather than wastewater, exhaust gas and noises. With the upper classes pursuing this kind of life, American cities experienced a long term of sprawl.

Since the end of the World War II, the American Dream contributed to sprawl. As most people know, the American Dream is been defined as a house in the suburbs and two cars in the driveway. To pursue the dream, many people have left the downtown area and other parts of the old city, abandoned their apartments, and moved to the preferred house with backyard and front garden. People were tired of the busy cities with stale air, crowded street and noisy crowds; they came to sprawl out of cities (Allison, 2011). Moreover, the rapid development of automobile manufacturing has strongly support this movement. As an auto-dependent
development on rural land, “Urban Sprawl” caused a profound influence of the city development and urban planning.

In addition, with the progress of science, technology and transportation, the economic improvement, and the reduction of natural resources, the modes of traditional industrial production have changed to information, electronic and high-tech industries. Therefore, many previous factory plants, office buildings and even rail roads have been abandoned and came to be dangerous, dirty and desolate areas. Cities lost some of their original brilliance and seemed to be dead cities.

• China

Due to the different culture and history, cities of China have a different formation process, and there are more history productions within cities. However, after the Opium War in 1840, China opened the gate to face the new world and joined the new world economic system. Since the middle of the 19th century, some industrial and commercial cities, southeast coastal cities and mining industry cities have developed rapidly with the good location, material and economic bases. During the World War II, the foreign colonists brought advanced technology, talents and funds, which improved the industry development to a certain extent (The Economical History of China, 2005). At that time many industrial plants, mines, and rail roads were built in the major cities, such as Shenyang, Tianjin, Harbin, Chongqing, and Guangzhou, etc. After the World War II, China experienced a period
of Self-development; small local industrials have developed in many cities across the country even some small-scale cities.

With implementing the policy of reform and opening up, the Chinese economy has gradually connected with the world economic system; and the structure of Chinese economy had a tremendous change. Chinese city development faced new challenges, such as the rapidly increased city population, limited urban lands, shortage of natural resources, aggravated pollution problems, and other problems of rapid urbanization. Unlike the American life style as mentioned before, urban areas especially the downtown areas are still the dreamland for most Chinese people. This massive influx of population caused shortage of lands, public service, and green spaces. At the same time, due to the transformation of industries from manufactory industries to knowledge-based industries, many original industrial plants and areas within urban area were abandoned or moved out, which caused these lands to become vacant in several valuable downtown areas without contributions. Moreover, some abandoned buildings; plants and vacant lands caused severe safety and environment issues.

- **Current city development demands**

    Even though urban sprawl has lasted for decades in American, this situation has changed in recent years; the UN reports that, in 2008, for the first time more than half of humanity lives in cities. Previously written-off places, such as Denver, Kansas City and Indianapolis are growing, attracting not only young professionals
but also retired couples who are selling their houses in the suburbs and moving back to cities because the urban area allows them to shop, seek entertainment and communicate locally without needing to drive everywhere. For the car-oriented suburbs lack rapid transit and consume energy at higher per-capita rates, as well as the positive impact on the sustainable environment, people begin to immigrate back to cities. Otherwise, cities can be more sustainable. According to a 2008 report from The Brookings institution, New Yorkers produce the smallest carbon per capita footprint in the United States. Hence, how to better develop cities to keep people living in downtown and attract more population to come back to downtown seems to be significant to city planners.

Cities are different from the rural and suburban areas and often have a long history and long process of development. They already have their inherent closed structures and modes of city development, such as the road system, infrastructure system, and block system. Either in American or in China, even cities in the world, they all face the same conditions. Cities have with the largest number of limitations of development.

What is the most important requirement for city development? The answer is lands, lands for housing, for working, for parking, for green space, and for activities. In New York City, the price of housing located along the No.5 Street is about $100,000/m²; we can hardly find the housing under $20,000/m²; even the affordable housing in Harlem the price is still high in the range between $23,000-37,000/m². The same situation is also happened in China, the average housing price
in Peking is about 31,500rmb/ m² equal to $5,000/ m². Though the housing price in Beijing is cheaper than American, compared with the per capita income of 10,000rmb about $1500 (Compare of the Housing price in Shanghai, Peking and New York City, 2006), the housing price seems unaffordable to most working-class. Due to this situation of land shortage, there are less and less green and open spaces with high density buildings. Thus how to get the effective lands and spaces, how to improve the life quality of city residents plagued developers and planners.

- The challenges of city restoration

Facing these varieties of difficulties, how to revitalize cities especially the downtown areas comes to be a tough task to city planners. Here, a great book must be mentioned, Jane Jacob’s The Death and Life of Great American Cities. Although this book, written about 50 years ago in 1961, I am so impressed that there are many of ideas she presented has really happened in the past half century, and many recommendations she suggested for how government actions can help a city regenerate and thrive have been utilized by our government today as well.

Moreover, the part two of the book is most impressing me. In that part, Jacobs described four factors that she believes are critical to the healthy development of a city: primary mixed uses, small blocks, a mix of building ages, and concentration. One of these factors of city development she demonstrated in her book is a mix of building ages. For example, the new businesses are always lack of funding and have small or no initial income, thus they cannot afford the high rents
and they usually seek for somewhere with low rents. These existed old buildings can meet their requirements, because of new buildings have to pay off their construction costs via rent, but old buildings have already done so. Rent in new buildings is therefore obviously higher than that in old buildings. Not only the buildings, there are many other kind of old structures left, such as railroads, factory plants and industry equipment.

Are these old remnants useless and just waste? Or do they still have their existing value for adaptive reuse, and can be revitalized as their brilliant past with another face. For me, the answer is undoubtedly yes.
Chapter Three

The big potential within brownfields

- Brownfields’ Redevelopment in American and China

A brownfield site is abandoned land with underused industrial and commercial facilities. The land may be contaminated by low concentrations of hazardous waste or pollution, and it has the potential to be reused once it is cleaned up. The term “brownfield” is not familiar to public, or many people think that the brownfields are lands with severely contaminated and has high concentrations of hazardous waste or pollution, such as Superfund site. These do not fall under the brownfield classification. Some countries like United Kingdom and Australia use the term to identify any previously used land.

Generally, brownfields are located in a city’s or town’s industrial section, but due to some reasons, such as the economic model shift, resource limitation and location movement, these lands are abandoned and left vacant. In an urban area not only the residential neighborhood these vacant lands all too often attract illegal
activities such as drug dealing or trash dumping. It can also decrease property values and discourage development for both the actual site and the surrounding neighborhood. However, the vacant lands may not only cause problems, but they also provide opportunities.

U.S. EPA (Environmental Protection Agency) defines a brownfield is a property on which expansion, redevelopment, or reuse may be complicated by the presence, or perceived presence, of contamination. Compared to Chinese brownfields redevelopments there are more systematic redevelopment process in the USA. Moreover, U.S. EPA’s Brownfields Program provides grants to encourage stakeholders to leverage the resources needed to clean up and redevelop brownfields. These funds are always used to fund environmental assessment, cleanup, and job training activities (Brownfields and Land Revitalization, 2012).

Additionally, The Brownfields Solutions Series fact sheet (August, 2008) provides an overview for program participants about the brownfields redevelopment process.

As mentioned in the fact sheet, there are four key challenges in brownfields redevelopment: environmental liability concerns, financial barriers, cleanup considerations, and reuse planning. Developer should consider the past and future liabilities associated with the property’s environmental history; for some cases the cleanup cost for a property may ultimately be more than the property’s value and the timeline for brownfields redevelopment may take longer than typical real estate development due to environmental assessment and cleanup activities. Moreover,
the reuse plan based on community goals or sound economic and environmental information may be lacking.

In spite of these challenges, there are still significant opportunities for successful brownfields redevelopment. EPA Brownfields Program Benefits document shows that the Brownfields program creates many benefits for local communities:

- Projects leveraged $18.01 per EPA dollar expended
- Leveraged 76,456 jobs nationwide
- Can increase residential property values 2 to 3 percent when nearby brownfields are addressed (Brownfields and Land Revitalization, 2012).

New life may be attracted to an area by a successful redevelopment idea. As well the successful redevelopment can create the momentum necessary to overcome the challenges associated with brownfields transactions.

Different from the situation in the U.S., China has a more complicated background of brownfields redevelopment. Due to the long history, the Chinese architectures could be categorized into 3 types. The first kind is the oldest architectures, which are built in Ming and Qing dynasty, such as the temples, palaces, and mansions. These buildings seem to be heritage buildings and need to be preserved according to specific ordinance. The second kind is the modern architectures built before the liberation, such as the churches, train stations, administration buildings and multi-story hotels, etc. These buildings were built of brick-stone or reinforced concrete structures by foreign architects; many are still
used for similar function with a little reconstruction nowadays. The third kind of architectures is the major part of adaptive reuse, which are the industrial and civil buildings constructed after the liberation in 1949. With the changing of the economic structure adjustment, many former industrial buildings and sites are not operated as before; many of them located in downtown areas have been abandoned or demolished. Unlike the civil buildings with a common space structure, these industrial buildings or structures always have unique spaces and huge building components, which are not easy for common use. Thus these industrial structures located in brownfields seem to be the important basis of the adaptive reuse and redevelopment projects.

There are some examples of completed brownfields redevelopment projects in China; and most of these projects are redeveloped for commercial uses. For instance, the Beijing watch factory was redeveloped as the Shuangan shopping mall; the Dongfeng TV factory was redeveloped as office building and luxury apartment in Beijing; and the famous project No.8 Bridge in Shanghai reused the old metal factory, etc. It is easy to find that these former projects are all located only in the developed modern metropolitan, such as Beijing and Shanghai. Like these projects most redevelopment projects aim to get more profit and attract businesses. But the consequence of the function transformation of the brownfields brings some problems, such as the population increased issues, transportation issues, public space and service issues.
Compared to the detailed redevelopment processes in the U.S., there are not any exact instructions for Chinese brownfields redevelopment and adaptive reuse. Most of these projects in China are directed by government based on the land ownership belonged to the nation. Therefore, many of the developers of projects in China do not need to be worried about the funding. Even though the government allows the private developer to participate in the redevelopment, the developer just owns the property for a certain period. Based on the peculiarity most of the private developers are focused on getting the maximum profit in the limited period, which causes unsustainable economy and the waste of resources. Due to this situation, the Chinese government plays the significant role in the redevelopment of brownfields.

Rather than the Chinese brownfields redevelopment projects I mentioned above, the two renovated projects I describe in the following chapter give another choice of brownfields redevelopment for developers and planners. Through the processes of these two successful projects we can get some unique experience of brownfields adaptive reuses contributing for a sustainable city, not only for profits.

- **Special characteristics**

Due to there be no detailed and opening resources and data of the Chinese brownfields, in this part the materials of brownfields in the U.S. will be used for further analysis.
• **Number of sites**

The U.S. General Accounting Office found that there are between 450,000 and one million brownfields sites nationally in a 2004 report. The State of New Jersey has identified 14,000 "Known contaminated sites." Brownfields sites in the City of Milwaukee have been estimated at between 1,000 and 3,000 sites depending on what is being counted. The County of Milwaukee identified at 8,004 sites in 2002. The State of Wisconsin estimated its brownfields inventory at 10,000 sites in 2006 (Paull, 2008).

• **Primary barriers to reuse**

The primary barriers to reuse of the brownfields are cleanup and site preparation costs. The 1999 Council for Urban Economic Development (CUED) study found that remediation constituted 20 percent of public funds used on brownfields sites and 7 percent of total funds invested. Northeast-Midwest Institute (NEMW) reviewed data provided by Environmental Protection Agency (EPA) relative to cleanups on 271 sites funded through the brownfields program; the average cleanup cost was $602,000. The 1999 CUED study found the average remediation cost to be about $780,000. Adjusting for inflation, this finding would be that an average cleanup cost is $983,000 in 2007 dollars. The CUED study found median cleanup costs per acre of $57,000 (Paull, 2008). Beyond the cleanup cost most brownfields have site preparation costs over-and-above site assessment and cleanup. Based on the leveraging studies in Milwaukee, until more studies focus on the site preparation factor, NEMW recommends using the most conservative of the
three studies, $1/public site prep to $20/total investment, to represent the average public cost to make brownfield sites development-ready (Paull, 2008).

- **Ownership and assistance**

  Based on a survey of 400 brownfields Projects24, there were about two-thirds of brownfields sites developed by private developers, and the remaining one-third were developed “in conjunction with local government and redevelopment authorities” (Paull, 2008). But at some point in the process the survey showed that most sites in the latter group involved public ownership. The public agencies could help to address the complexity of brownfields site with their economic development tools, such as eminent domain. The same survey found that only 20 percent of the projects reporting funding information were classified as 100 percent privately financed (Paull, 2008).

  Of the site analysis studies reviewed for Paull's report, only one included a representative sample of sites that were 100 percent privately financed. In his report the Milwaukee-Chicago residential study found that about 45 percent of sites involved no public financing.

  Data on this point is insufficient to draw a precise conclusion, but clearly most sites, possibly as much as 80 percent, require some level of public subsidy in order to proceed to successful redevelopment. One reason for this, aside from the obvious extra site assessment and cleanup costs, is that brownfields sites are concentrated in lower income areas from the 1999 CUED study.
• **Prototype**

Also in Paull’s report, the NEMW estimates the following as prototypical of brownfields sites other than gas stations and dry-cleaning sites:

- Mean site size: 5 - 6 acres
- Median site size: 3 – 4 acres
- Mean site investment: $20 - $25 million
- Mean jobs created or retained (employment-producing projects only): 80 – 100 permanent full-time jobs

Above data were reviewed eight studies which included the annual US Conference of Mayors surveys and case studies in Missouri, Illinois, Milwaukee and Chicago by NEMW. Due to these studies have used different definitions and different ways of collecting data, in addition, the studies of most gas-stations and small sites are under-report, the above data are mostly described as means (Paull, 2008).

- **Availability within brownfields**

Due to these beneficial characteristics, such as large quantity, low contamination, and good location, as well as the former constructed basic facilities on many brownfield sites, there is a high possibility of redeveloping brownfields. There are, however, some limitations within the brownfields, for instance, the polluted soil and structures needs to be remediated and improved. Thus compared to other new developments brownfields need more investments. Moreover, these abandoned brownfields would be unused for a long time; not only will the
environmental and economic conditions within the site fall into a depression but also the whole community which the brownfields belong to. Deciding how to reduce the unemployment and crime rate, how to improve the economic development and bring new businesses in, and how to attract these moved-out residents back to the community all are problems that seem to be pushing people to reuse these brownfields.

However, there is still high development possibility within the brownfields. The main point for brownfields’ redevelopment is the location superiority, which is not comparable with other vacant land in a typical urban area. If the developers and city planners could efficiently utilize and redevelop these former-used brownfields which are located in the urban area, that cannot only advance the economy within the brownfields, but also could improve the level of economy and environment quality of the community. No pain no gain; while the costs of redevelopment are high, the profits are higher. Nowadays, vacant urban lands are becoming less and less available, and the price of the urban lands is getting higher and higher. These existing brownfields with formed buildings and plants can still be considered to be an effective means of resolving the problem of shortage of urban lands. Reuse of brownfields as a sustainable method of new city development is high possibility.
Chapter Four

Adaptive reuse of brownfields’ structures

There are several successful examples of the adaptive reuse of brownfield structures all over the world, including the Tate Modern in London, Water Plant in Berlin, Café Restaurant in Amsterdam, CasaComvert in Milan and Sewage Silos in the Netherlands. Most of the adaptive reuse projects have transformed their original buildings and structures to mixed-use, multi-floor buildings or exhibit spaces, due to their specific space constructs and former uses, same as the Chinese projects mentioned in Chapter III. However, the following two projects are quite different from above examples. The different ideas of adaptive reuse insert an avant-garde concept into urban planning and architecture, and bring a new image of brownfields to the public.

These two creative projects focused on the environment and open space rather than commercial use. The purpose of redevelopment was to remedy the depression impact caused by the original abandoned brownfields, at the same time bringing a green space to local residents who live and work in the downtown area. Promenade
Plantée in Paris was redeveloped in the later 20th century; High Line Park in New York City was redeveloped in the early 21st century. Both of them were redeveloped as public parks located in the international metropolitans by reusing the abandoned elevated railroads.

Even though the original intention of both projects was to improve the environmental and living quality of the urban area, the transformation of the two railroads has brought unexpected economic boom and population influx. Different from the common redevelopment and adaptive reuse projects reformed as offices, housings or loft studios, High Line has obtained an unprecedented success and attention. Due to its big fame, people realized that was it neither the only one nor an innovated invention, in Paris there is an earlier project that has been completed for decades.

Through these two projects, I hope to provide alternative choices for developers and planners to broaden their insight of brownfields redevelopment. In addition, we can clearly come to understand why High Line has been gaining huge success; and what will be the brownfields’ future.

- **Promenade plantée in Paris, France**

“Promenade Plantée” is a special city park located in downtown Paris, which was redeveloped based on a 19th century’s elevated railroad. The whole park was totally completed in 1994, it sits at the approximate level of the third story of a building, and it extends from Bastille Opera to the eastern city limits follows a 4.7 km (2.9 mi) path eastward (as shown in Figure 1). The original structure is a former
right-of-way of the Vincennes railway line, which connected Paris with Strasbourg and linked the Bastille Station to Verneuil-l’Étang beginning in 1859. The end of the railroad was located in Bastille Plaza, which is the center of Paris. This railroad was different from any others, because it was built on a viaduct known as the Viaduc de la Bastille. The original railroad was 14 km long, and traversed the city’s 12th arrondissement, seeming to be a long twisted queue lying in the city. You can imagine how much the railway flourish. However, it ceased operation on December 14th, 1969, while part of the line was integrated into Line A of the RER (the French: Réseau Express Régional, “Regional Express network”). The railway Paris-Vincennes was completed abandoned which announced its end of the over 100 years’ operating (Verte, 2012).

Figure 1: The location of Promenade Plantée. (Source: Official website of Promenade Plantée)
After that, the railroad brought neither commodities nor wealth, but rather crimes, drugs, and violations. The formerly valuable road came to be a thorn in the local residents’ side. With the regression of the railroad, the entire neighborhood the railroad belonged to headed toward a deep decline progression. To face this series of issues, at the early 1980s, the city of Paris considered revitalizing and redeveloping this area. The most important issue was if the elevated railroad needed to be removed, which inspired an intensive discussion from the community.

At the beginning, in 1984, the Bastille Station was demolished due to its bad quality to permit construction of the Bastille Opera. The Reuilly area designed in 1986, it incorporated the old commercial rail depot of Reuilly into a group of park areas, at the same time the railroad between Bastille Opera and Montempoiver Gate was designated to the Promenade Plantée Park as we see today. With the design by Landscape architect Jacques Vergely and architect Philippe Mathieux, the abandoned railroad was reused as part of the park to keep the old memory in people’s mind. These two designers chose the green environment to create a natural parkway for either local residents or travelers to enjoy the natural scenes as well as the historical relic, as shown in Figure 2.

The entire parkway was separated into two parts by modern building and open space; the two parts with different direction bring several diverse perspectives of the Paris city to the people within the park, as shown in Figure 3 and 4. With the changing of the upper space of the railroad, the under space was also experiencing the transformation. The viaduct on top of which the railroad is situated was also
renovated and renamed Viaduc des Arts. The arcades were reconverted into shops, galleries, and crafts workshops. The facades were designed by using wood, metal and glass, which created their own style show in Figure 5. These exhibition spaces house makers of musical instruments, cabinet makers, textile restorers, fashion designers, and other artists; about 50 artisans displaying their wares there.

In addition, there are many restaurants, coffee shops, and small cafes located there, allowing for visitors to enjoy a meal while browsing. The aging architecture provides an opportunity to these entrepreneurs with less money getting started their businesses in downtown area. One important thing to city planners is to make cities interesting, a city must have the best of its past, which can be enriched by modernization.

Figure 2: nature scenes with historical relic
(Source: photos from unofficial website of Promenade Plantée)

Figure 3: the open green space
For connecting the upper and under spaces, the western portion of the railroad has installed stairways and elevators for pedestrians and disabled persons. The eastern portion of the parkway is accessible via ramps and stairways, which is opened to both pedestrians and cyclists. The user-friendly design is not only meet the previous requirement but also convenient for today.

The whole scheme was proposed in 1983 to the Parisian Urban Department, construction began in 1988, and the first part was finished in 1989, until 1994 the project was completed. According to the City Hall of Paris, the Promenade Plantée’s 2.5-mile pedestrian walkway cost 25 million dollars. It was opened to the public in 1998 and was finished in mid-2000. There are more than 200,000 square feet of office space and addition of 75,000 square feet of new commercial space in the neighborhood since its creation. With an unbelievable speed in the beginning in 1990, 88 old buildings containing over 1,000 new residences were restored along
the linear park. The remaining 25 vacant lots were quickly leased or put under construct for housing, commerce, schools and recreational activities. Housing rent increased by 10% in the area, by the time the Promenade Plantée was finished. The government found the way to pay off the cost of maintaining the park through the revenues of the shops underneath (Promenade Plantée, 2012).

This project required 11 years of planning, design, construction, and open to the public, which are almost 30 years so far. The first elevated park in the world is not well known to public and with less reflection of the community as well. Until 2009 the High Line Park in New York City was completed and open to public, people have noticed the Promenade Plantée in Paris which is decades before the High Line.

- **High Line Park in New York City, USA**

  Compared to the Promenade Plantée in Paris, New York High Line is a one-and-a-half miles long linear park built on a former elevated railroad located in the western Chelsea of the central New York City. With the same condition the High Line Park is also elevated to about 30' high. However, different from the little known Promenade Plantée, High Line as a renovation project attracted a lot of attentions when the project started. Similar to the Promenade Plantée, the park formerly was a 21 km (13 mi) long railway built in 1934, and eliminated 105 street-level railroad crossings and added 32 acres to Riverside Park, as shown in Figure 6 (The High Line, 2012). It costs over $150 million dollars. Before the railroad was constructed, due to the extremely dangerous street-level transportation of the Manhattan’s West Side, even though people try their best to avoid the traffic accident, there are still many
accidents occurred between freight trains and other traffic that 10th Avenue became known as “death Avenue”. For safety, as well as the convenience of western transportation, in 1929 the City of New York approved the implementation of the railroad. The railway ran from 34th Street to St. John’s Park Terminal, at Spring Street. It was designed to go through the center of blocks, rather than over the avenue, to avoid the drawbacks of elevated subways. It connected directly to factories and warehouses, allowing trains to roll right inside building. The raw and manufactured goods could be transported and unload without disturbing traffic on the streets. The train also passed underneath the Western Electric complex at Washington Street.

Figure 6: The High Line in operation. (Source: The High Line website)
Even though it was thriving and prospering in the early 20th century, the growth of interstate trucking in the 1950s led to a drop in rail traffic throughout the nation. Until 1980, the last train was operated with three carloads of frozen turkeys, the railroad was totally abandoned, as shown in Figure 7 (The High Line, 2012). The following 10 years was a long fight about how to deal with the abandoned railway between the property owners, Chelsea residents, activist, and railroad enthusiast. During that time, the abandoned railway came to be a depression place with tough, drought-tolerant wild grasses, shrubs, and rugged trees. Moreover, the architectures along the railway had almost fallen into a serious sate of decay and disrepair.

Figure 7: Abandoned High Line from 1999-2006 (Source: The High Line website)
When people could not decide whether the railway needed to be demolished or to be re-established, in 1999, the non-profit Friends of the High Line was formed by Joshua David and Robert Hammond, advocated for the line’s preservation and reuse as public open space, an elevated park or greenway, similar to the Promenade Plantée in Paris. So far the prepare work of adaptive reuse the railway was started.

Different from the Promenade Plantée project in Paris, the implementation of High Line is full of challengers. The railway used for redevelopment crosses 23 blocks and 1.45-mile; each different part of railway belonged to different owner. Therefore, there are heavy stresses and many issues at the beginning of expropriating these properties, and some congress people in the city government are also not optimistic to this project, and the most severe difficulty of reconstruction is the funding. Under the situation, New York Mayor Michael Bloomberg and City Council Speakers Gifford Miller and Christine C. Quinn importantly supported the project. Broadened community support of public redevelopment for the High Line for pedestrian use grew, and in 2004, the New York City government committed $50 million to establish the proposed park. With the support by various parties, on April 10, 2006, the park construction began; it was designed by the James Corner’s New York-based landscape architecture firm Field Operations and
architects Diller Scofidio + Renfro, with planting design from Piet Oudolf, etc. On June 8, 2009, the southernmost section, from Gansevoort Street to 20th Street the first part, opened as a city park to the public. The second part of the park, from the 20th Street to 30th Street, has also opened on June 7th, 2011. The third part is still in the planning stage, as shown in the map on right side, which is from Openstreetmap.org and contributors.

The new High Line is still so familiar to local people, because they can find the railway track dodging in and out of the pebbles and plantings, as shown in Figure 8. When people walk in the park, they can imagine the trains full of commodities running through the buildings and seem to hear the whistle of the trains, even though no trains exist anymore, as shown in Figure 9. Different from the plantings in Promenade Plantée, the all plantings grown in High Line are local plantings, which recall us back to the depression time. All of these scenes, along with the stretches of track and ties, remind us of the High Line’s former use.

In addition, the designers created some innovative spaces as the attraction factors of the New High Line. Portions of track are adaptively reused for rolling lounges positioned for river views, and some large wood stairs are placed for taking rest and enjoying the street views, as show in figure 10. There are also art pieces contributed by local New York artists for the local birds to live in. This also provides study opportunities for local students to research the birds’ habitat.
The success of High Line is not only as a green and recreational space; the most important advantage is its positive effect on the whole neighborhood. The buildings along the railway seem to be infected by the High Line’s green; you can easy find the woody balcony with sunflowers and green shrubs, green painted walls and artistic windows, stairs and decorations, as shown in Figure 11. Now these aged
and dilapidated housing, building facing their new life, which are fulfilled with art studios, fashion shops, galleries, coffee shops and restaurants, etc. The High Line not only brings green plantings, broad open space, and better air quality; but also develops real estate, businesses, and tourism and reduces the crime rate. As the urbanist Jane Jacobses mentioned in her book “Empty parks are dangerous”, which is inspired the designers giving a new feature to this unique park. There have been no reports of major crimes since it opened.

Figure 11: The green impact on the neighborhood. (Source: by Min Wang)

The High Line Park is not only a park limited within its boundary, which seems to be a green dragon extends into the whole Chelsea area. At this point, High Line Park is not a normal park in the downtown area anymore; it declares that the renovated demand of modern cities. The success of High Line brings an alternative
choice of recycling former structures to develop the open and green space in the city.

That’s why the “New Yorker” magazine ranked it as the one of the top ten most significant architecture events in 2009.
Chapter Five

Keeping the Best in the City

- What Do Chinese Cities’ Need?

In the 1980s, the major transportation model of almost all Chinese cities was bicycle-based. The asphalt roads seemed to be a luxury city decoration, therefore people always called them ‘big roads’ to express their broad shape and unobstructed view. During that time, the roads were not only to be roads, the medium of transport, but rather the playground for children before sunset, the cool place for elders in the hot summer nights and the work room for housewives. At that time, we all were thinking about the scene of busy and prosperous streets, which only happened in the movies and out of reach. However, after 20 years’ developing, these dreamy street views have become reality. An observer can see various motor vehicles all over the roads, and come to be owners of these vehicles. Who could have imagined that the monster with four wheels that drinks gasoline would be the necessity of new city families? The ‘big road’ in my childhood’s memory already is
the tiny one-way street merged in the broader transportation system; and cannot afford the requirements of the vehicles.

Based on the data published in the American vehicle magazine “Wardsauto” in 2011, in China the per capita ownership of vehicles has reached one car for every 17 people. And the total ownership of vehicles has reached 78 million, which are 4 million more than in Japan and ranked second in the world. Not only is the demand of roads increasing fast, but also the demand of residence housing, office room, green and recreational spaces. ‘Humble Abode’ and ‘Dwelling Narrowness’ described the housing phenomenon in China. These popular words say something important about the popular mode in China today. To face the large amount of influx urban population, and rapidly decreased spaces of housing and offices, most developers and local governments prefer to sacrifice open and green spaces to meet the development demand. Thus, the bungalows and country cottages are replaced by high buildings and large mansions. Moreover, the original abundant recreational green spaces are replaced or reduced for other economic uses. City residents only live in the reinforced concrete boxes full of automobile exhaust and creep to their unknown future.

It is difficult to imagine that our next generation will live in this worse urban environment, how could we create a better future for them in this bad circumstance? Due to these specific conditions, the Chinese cities’ needs come to be obvious to city planners. They attempt to change the plight, and start to consider how to give the city residents a sustainable city and a green future.
- **Developing Opportunities**

  The modern Chinese city is changing its face from chasing profits to a new appearance of green spaces, and sustainable environment, and this more rational pursuit is no longer based on sacrificing the past as a condition. Because of the history is easily forgettable, people sometimes blindly pursue new things and deny things without the immediate worth with thoughtlessly.

  High Line Park was established by the same situation. It is not a tumbledown site, or a waste collection anymore; it is the most popular destination in Chelsea. High Line also faced demolition and destruction in the past as one of the most worthless historical structures in the world. However, High Line is the lucky one, which not only is reserved in its original look but also reborn with a new mission of the modern times. People who built the railway a hundred years ago had the good will to bring merchandise and profits to the city; today the planners, architects, supporters and governments have the good will as well to bring healthy, green and beautiful city life to the residents. That’s why the High Line Park attracted so much focus on its development and implementation rather than the Promenade Plantée, which was reconstructed 30 years earlier than High Line Park. It is not a normal park anymore; it is people’s hope of how the new city could be.
Chapter Six

Conclusion

In 1978 Rem Koolhaas presented in his book *Delirious New York: A Retroactive Manifesto for Manhattan*, the city as world of the “fantastic” disguised as the pragmatic, calling it the Rosetta stone of the 20th Century. He presented a super modern metropolis that he saw with his surrealism water-prints, photos, postcards and maps, by which the Century Park, Skyscraper, Rockefeller Center, the United Nations Building and Radio City Music Hall composed his utopian New York style. Thirty years later, this kind of delirious city filled with architecture mutations, utopian periods and irrational phenomenon, has become more and more present outside of the New York City. We cannot deny that some projects like High Line Park seem to be joined in this delirious movement, as part of the crazy city.

As Rem Koolhaas explored in his book, the city development process has internal consistent and coherent factors and relations, even if it seems unrelated, and High Line’s establishment with lots of attention has confirmed the demand of New York City’s development. Within fast-paced and high-intensity city life, people
have been satisfied with the material life, such as the spacious office and living rooms, efficient transportation, and convenience shopping places, etc. Now they are inclined to integrate their material and spiritual lives. Based on this pursuit, the green spaces come to be an effective catalyst between the two factors. Creating the possibility of green space within the limited and costly urban spaces seems to be an issue for city planners and designers to continuously explore. To face such urgent demands of green spaces, new kinds of roof gardens, green façades, urban farms, and some new architecture standards and criterions have come into our view. Indeed, these amounts of existing brownfields and structures without usefulness in the urban area may after all be accepted as the advantageous basis of developing city green spaces.

Through the redevelopment and redesigning of the abandoned brownfields, the core area of downtown became a green machine, which positively impacted the city. Should designers and planners redevelop these abandoned structures or demolish the abandoned structures? The two city governments of Paris and New York faced this dilemma. Additionally, who will bear the cost of maintaining the park and how could they make the projects feasible to their cities. This is a big issue for the community.

China has a dilemma similar to these cities. However, looking at the implementation of these two projects, it is feasible to establish the high cost projects in cities, not only could the Chinese government pay off the investment and maintenance but the project could also self-finance by raising money and taking
advantage of private funds. This is what made the Promenade Plantée and High Line possible. They are perfect examples of how a big city can partner with the private sector in order to “recycle an existing structure into a neighborhood connector” (The High Line, 2012).

As a part of the city, these brownfields and industrial heritage structures need to be transformed into another role of the modern city, which makes the city more environmentally friendly, restores the neighborhood surroundings, lets the potential cost become both an asset and an originator of wealth for an entire section of the city, and raises money and takes advantage of private funds. All of these things can make such projects feasible.

<table>
<thead>
<tr>
<th>Promenade Plantée</th>
<th>High Line</th>
</tr>
</thead>
<tbody>
<tr>
<td>Original built: 19\textsuperscript{th} century</td>
<td>Original built: early 20\textsuperscript{th} century</td>
</tr>
<tr>
<td>Complete year: 1994</td>
<td>Complete year: June 8, 2009 (first part), June 7, 2011 (second part).</td>
</tr>
<tr>
<td>Length: 2.9 miles</td>
<td>Length: 1.6 miles</td>
</tr>
<tr>
<td>Total area: 16 acres</td>
<td>Total area: 6.7 acres</td>
</tr>
<tr>
<td>Buildings travel through: 2</td>
<td>Buildings travel through: 2</td>
</tr>
<tr>
<td>City blocks crossed: 20</td>
<td>City blocks crossed: 23</td>
</tr>
<tr>
<td>Total streets traversing: 21</td>
<td>Total streets traversing: 25</td>
</tr>
<tr>
<td>Maximum width: 100ft</td>
<td>Maximum width: 188ft</td>
</tr>
<tr>
<td>Minimum width: 30ft</td>
<td>Minimum width: 30ft</td>
</tr>
<tr>
<td>Height: 30ft above</td>
<td>Height: 29ft above</td>
</tr>
</tbody>
</table>
I still can remember that when I was in primary school, I needed to walk 15 minutes from the bus station to home. It seemed a quite long distance to the young me, and I have no specific image of the journey, except an aged beans processing plant. I was too young to observe what the plant architecture looked like, but the only thing I can remember was the huge red brick wall with sporadic green moss, a giant metal device with deep red rusts, and a towering plane tree beyond the wall. In good weather, the rays of sunshine poured in through the plane trees leaves and sprinkled sparkling spots on the wall. I cannot forget that shining wall and cherish it even now. Within the post-industrial cities, most of these industrial plants were abandoned and demolished with little trace. The beans processing plant, which is the only clear memory in my childhood, was replaced by a modern office building. Even though this is a high-qualified office building with small windows, clean board asphalt roads, and the similar small street-trees, it seems to be too regular. We still miss the past, which is built irregularly by imperfect things. These imperfect things load people’s memories, which are not focused on the architecture per se, but more focused on the space, structure and scale of the cities. These legacies of industrial structures certainly bring us the new experience of city architectural scales and space structures, which are different from the common ones.

Rationally, using these brownfields can not only let the city residents experience diverse city spaces, but also can innovate the area around the brownfields. Who knew the Railway, which caused the entire Chelsea area to face
depression, would also bring the area towards brilliance after redevelopment. The influx of new businesses, offices and residents pushed the economy of Chelsea to a new peak. Different from a new development project, adaptive reuse projects need more diligent analysis, research, and design. We should consider keeping the old structures’ history and memory; on the other hand we should endow the old structures with the spirit and soul of the new century. The redevelopment of the brownfields’ structures to conserve these disappearing historical buildings is not a bad alternative choice for city planners to face today’s city issues. China is looking for a way of redeveloping its brownfields today. I hope this article will help to inspire the Chinese city planners to get some references of adaptive reuse for application in the future.
Bibliography


La Promenade Plantée, (1999-2002). Promenade Plantée Unofficial Website,


Promenade Plantée, (2012). Promenade Plantée Official Website,
Promenade Plantée, (2012). Wikipedia:


The Economical History of China, (March 3, 2005).

The Economist, (2009). China’s car market--More cars are now sold in China than in America.


Verte, C., (2012). Promenade Plantée,  