CRITERIA TOWARDS REACTIVATING VACANT LANDS FOR PILSEN NEIGHBORHOOD IN CHICAGO

BY

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THESIS

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ABSTRACT

In this post-industrial era, economic shifts have led to changes in the structure of urban space and the evolution of land use. Due to industrial transformation and rapid urbanization, the traditional urban manufacturing centers have moved to suburban territories on the periphery. For example, parts of old railways declined over the years, and these abandoned railroads have led to low utilization of surrounding areas. Urban wasted spaces and lands have become the prevailing situation, with many unresolved environmental issues that cause decline in the efficient use of city land. This influences the comfort and humanity of the urban environment and damages the quality of cities and the urban landscape. However, to some extent, the free and unregulated characteristics of urban wasted spaces provide an opportunity for high levels of biodiversity and related benefits to ecological and human health. In order to improve the utilization of urban spaces, my thesis focuses on the dynamics of urbanization, examines the causes and effect of wasted lands, and explores the possibility of activating existing vacant places.

The Pilsen neighborhood of Chicago, Illinois has fewer parks and public green spaces than surrounding neighborhoods, more and more underutilized lands have recently emerged. According to the time interval of land retirement and the intervention in its current use, the development of different stages of vegetation dominates the current attribution and objective condition of the lands. This thesis, taking the Pilsen neighborhood as its research case, discusses the benefits, criteria, and methods of the regeneration of vacant lands based on spontaneous
vegetation. The regeneration of derelict spaces must be carried out according to the overall urban
development framework and the potential value of the vacancy, which should be examined
carefully.

The research consists of four phases. The first phase is an analysis of the impact of vacant
spaces in the Pilsen neighborhood in terms of three aspects of urbanism: ecology, society, and
economy. Then I argue the potential benefit and value of derelict and vacant spaces with
spontaneous plants. The third phase is to propose a reconsideration of wastelands to natural
succession as a worthy, economic and positive part of the urban landscape. The last part is the
research design of Pilsen based on a series of methods of transformation and integration of
vacancy. The goals of the research include redevelopment that could potentially activate positive
change in vacant spaces and articulating criteria for the selection of sites to be developed. This
thesis addresses the need for a new perspective on urban wasteland being integrated as potential
green and open city spaces. The outcome should provide some references for planners and the
public in the future.
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CHAPTER 1 INTRODUCTION

1.1 Topical Background of Wastelands

Western society is experiencing increasing urban pressure on every urban site due to the uncontrolled increment of urban populations, the negative effects of constant adjustments to industrial transformation, the continuous extension of urban construction areas, and the increasingly fuzzy boundaries between urban and rural areas. Millions upon millions of people are migrating to the city. With the decline of traditional industry and changes to the industrial structure at the city level, urbanization changes landscapes features, the constitute of spaces and related habitat patterns (Kowarik, 2011). On the negative side, the urbanization process has led to many abandoned sites such as industrial wastelands, derelict buildings, and vacant lands, which waste a lot of land resources and raises a series of ecological problems. Under the situation of constantly losing surrounding cultivated land due to urban expansion, a major issue facing urban environments is the emergence of a growing number of derelict and underdeveloped lands within urban areas (Brace, 2012). Urban wasted spaces appear in different development stages of cities. It reduces the spatial utilization efficiency of cities, renders the social spaces with the carrier of urban spaces passive, profoundly influences the comfort and humanity of the urban environment, and damages the spatial quality of cities and the urban landscape to different extents.

These wasted spaces are never truly dead. Paradoxically, with the accumulation of abandoned years and natural succession, species diversity in urban derelict places has apparently risen. Urban wasted places become the central issue for high levels of biodiversity in cities.
(Gandy, 2013). It is possible to integrate the wastelands with the green structure of a city without disturbing and intervening it (Mathey & Rink, 2010). More than that, the characteristics and historical change of some urban wastelands could invoke collective memory and specific felling which is sanked into a particular place. When people enter these unregulated and wild spaces, the atmosphere of the environment could inspire some specific behaviors which are different from the normal activities. In contrast to the most open spaces in the city, urban vacant spaces that have not been intervened could evoke the tension with self-natural release and the uncontrolled feeling of freedom (Edensor, 2005). Undocumented migrant groups, artists, and homeless laborers prefer these areas to conduct their activities.

The development of a metropolis is a dynamic change process of decay and revival. Hundreds of millions of people plan to migrate to the cities, and this migration is expected to reach 1.8 billion in 2025 (Brace, 2012). Since the 1970s, over the past 40 years the United States and Europe have seen an unprecedented large-scale urban transformation, resulting in generating different social, economic, and spatial conditions. The phenomenon of continuous polarization in urban centers was obvious. Some urban lands were unprecedentedly booming and regenerating, while vast discarded areas were left in ruins (Oswalt, Overmeyer, & Misselwitz, 2013). In the process of swift urbanization, a series of phenomena caused the appearance of wastelands. With the transition of social economy, enterprises have left various wasted plant buildings. And the rapid spread of urban construction and extensive land use management have caused the emergence of vacant land that has not been utilized. Meanwhile, regional adjustment causes
corresponding service facilities to fall into the wasted or half-abandoned status (Hui & Yue, 2007). In order to satisfy the trend of roads, the orientations of architecture and the stripping or triangle lands at the road juncture and other sporadic places in the process of transformation and rapid development, large quantities of derelict and wasted lands are produced (Pan & Liu, 2011). According to a survey of the number of wasted urban lands that Michael Pagano and Ann Bowman conducted in 70 cities throughout the United States involving a population of more than 50,000, 12.7% of urban land has been under-utilized (Greenstein & Sungu-Eryilmaz, 2004).

Chicago has a population of 2.85 million, ranks third in the big cities of the US, and is the industrial center and an important port in the central and western part of America. The prosperity of Chicago is the most direct reflection of the mutual development of American urbanization and industrialization in the late nineteenth century. The manufacturing industry that was once the pride of Chicago citizens started to decline because of the effects of development on this industry and other factors, and the central urban foundation with its dominant industries suffered erosion. Numerous companies moved away to search for more development space. By the end of the 20th century, the central business area in the Loop region was old and in disrepair, crowded and dilapidated; its surrounding living areas were also not attractive, and the industrial and living area lands for a radius of several miles were derelict (Wang, 2009). According to the Chicago Metropolitan Agency’s report, until 2008 there were 17,000 acres of wasted land in the northeastern Illinois region, 65% of which are in Cook County, with 51% of the sites in the city of Chicago (Chicago Metropolitan Agency for Planning, 2008). Recognizing the potential and
value of urban wasted spaces and focusing on how to reserve, select and catalyze positive transformation have become important research issues.

**Figure 1.1** Chicago city-owned wastelands, 2012
Source: [http://chicagolots.org/#/?pin=20172130240000](http://chicagolots.org/#/?pin=20172130240000)
Redevelopment and reconstruction of urban wastelands are being discussed at both the level of large-scale restoration of the landscape and that of small-scale intervention. Based on the spatial and cultural characteristics of the sites, there are two types of redevelopment of the sites: thoroughly cleansing all derelict features and selectively retaining some elements of that space that have unique value. Of these, the former gives new form and function to the sites, while the latter integrates old elements with a new spatial structure and achieves high added-value. For instance, in recent years, conventional planning and landscape architectural practice have paid more attention to the ecological restoration of brownfields and reconstruction of spaces such as public parks and gardens. However, large-scale design restoration needs considerable manpower and financial resources, and ignores the potential value of wastelands. Are derelict urban spaces and vacant lands potentially beneficial and valuable places which are reconsidered as worthy issue? If wasted and vacant lands could be the part of nature, is it large-scale rebuilding the natural environment by Completely removing the wastelands huge waste of the resources? Is it possible to leave wastelands to nature with small-scale design interventions, developing these spaces in innovative and constructive ways as a positive part of the urban landscape? Will their spontaneous ecological diversity be? Is it possible to incorporate them with the green system?

Facing a range of derelict spaces from the underdevelopment, it is important to understand the value of these spaces from different aspects and explore in what ways vacant spaces could contribute to environmental, society, human and economic life in the Pilsen neighborhood. There is a need to develop criteria for redevelopment, which could be valuable references for
catalyzing positive change in vacant urban areas.

1.2 Theoretical Context

The theoretical basis for this thesis is about the concept of "Wasteland". The most study often viewed wastelands as a problem of urban area which is full of crime, trash, overgrown weeds and social margin (Accordino & Johnson, 2000). However, these negative terms are not comprehensive to describe the perception of the wastelands. Ignasi de Sola-Morales, the author of Terrain Vague, wrote in her book, "Void, absence, and yet also as promise, the space of the possible, of expectation." (de, Sola-Morales, 2014, p. 26). She thought some contractive status, such as the absence and freedom, could be fundamental to evoke the potential of the void. No matter how unrestricted and empty the sight across the surface of fragmented land, it still preserves and imply the culture, the memory and history (Corbin, 2003). So studying the story behind the wastelands could be an important first step to understand the spirit of the void.

Bowman and Pagano (2004) offers a category of different types of vacant land in the book – Recycling the City. There are five types of parcels of vacancy.

1. remnant land with small size or irregular shape;
2. land with physical limitations;
3. reserve parcels held by public and private owners;
4. speculative parcels held in anticipation of increased future land value;
5. brownfields or damaged parcels;” (Bowman & Pagano, 2004)
Bowman and Pagano in their article referred city official’s operational definitions of vacancy. “This definition had greatly related to the city’s property tax structure and the plan of development. So the parcel with zero-dollar building value or with city-owned property is still defined as vacant land.” They also analyzed another typology which is called TOADS. This definition is related to the economic value of land and emphasized some potential and beneficial use in the future even if the vacancy is in the unused state (Bowman & Pagano, 2004). Economic value could be an important criterion to assess the vacant land.

For the study of the current status of urban wasted land, Matthew Gandy analyzed complex conditions of urban wastelands based on overlap between critical cultural discussions and urban ecology which has the great improvement in recent years (Gandy, 2013). Sebastien, Marion, Francesca and Sabine focused on the function of the wasteland in preserving biodiversity in the urban areas. The various factors influencing wasteland biodiversity are assessed (Sebastien, Marion, Francesca and Sabine, 2014). Urban wastelands could provide spaces to rare animals. Besides providing habitat to animals, it can harbor and protect endangered plants (Albrecht, Eder, Langbehn, & Tschiersch, 2011). According to these research, from ecological perspective, the vacancy with spontaneous plants of successional transformation has the potential to be integrated into the urban natural system. Compared to other types of urban land such as gardens, studies suggest that vacant lands show better performance in one specific function. It could provide varied ecosystem services to people (Yadav, Duckworth, & Grewal, 2012).

The value of vacant land provides not only ecological service, but also cultural and social
value derived from ecological amenities. Kamvasinou analyzed whether there is value in wasted spaces for everyday life in the city, which involves planning policy, funding, ownership and management (Kamvasinou, 2011). And aimed at the characteristic and history of some urban wastelands, Edensor identified urban wasted spaces could provoke collective memory and sense of place and inspire playful activities when people enter into these unregulated spaces. Bowman and Pagano (2004) provided cities’ strategic method to maximize community health by the three principal imperatives: the fiscal, social and development imperatives. The social imperatives play an inseparable role as the description in the article “service as barriers or fences, and therefore they preserve land values by separating one type of land use from another. In addition, the area may survive in its new form and function, but the built environment no longer represents its past.” The author argues for preserving this kind of “the power of place” to record the ordinary landscape and to provide the picture of memory (Bowman & Pagano, 2004). In contrast to the over-designed spaces of the city, urban wastelands evoke an aesthetic of disorder and surprise (Edensor, 2005). In terms of relationship between human activities and wastelands, Anna-Liisa and Simon’s paper focused on behavior mapping to compare situations of the users in urban wasteland (Anna-Liisa, Simon, 2013).

For the study of transformation of urban wasted land, Manuela Mariani in her book-Terrain Vague, presented innovative ways of looking at marginal urban space, and focused on its positive uses and aspects (Manuela Mariani, 2013). Jeremy and Joern explored whether “permanent” solutions for derelict land are appropriate and analyzed the potential advantages and
shortcomings of this temporary use model (Jeremy and Joern, 2013). In the book-Recycling the City: The Use and Reuse of Urban Land, edited by Rosalind Greenstein and Yesim Sungu-Eryilmaz. This book collects same topic essays and integrates four chapters, which discusses the causes of low land-use efficiency in cities. Then based on social, economic and other four important issues, the scholars focus on different strategies that could reactive the property of the underutilization (Greenstein & Sungu-Eryilmaz, 2004). Mathey identified the meaning and method of connecting the vacant land with the green infrastructure (Mathey & Rink, 2010). Nina-Marie briefed the development of practice of restoration of wastelands and analyzed the approach to redevelopment which could form the weaving of culture and nature with history and context (Nina-Marie, 2009). Further, the choices for wasteland are many: using as a bridge to connect discrete areas; developing it as open spaces; infilling to increase density or de-densification and so on (Bowman & Pagano, 2004).

1.3 Description of Context/Site

I studied the Pilsen neighborhood, which is a community on the west side of Chicago, Illinois. Today it is easy to reach from the Loop by the CTA Orange Line and Pin Line. The rail line was founded in 1878 (Wilson, Wouters, & Grammenos, 2004), and from the mid-1800s, the development of industry, commerce and transportation began to define Pilsen (Peto, 2011).
Figure 1.2 Site location identifying in yellow, which is near Chicago Industrial Corridor and just 3 miles away from the Chicago Loop. Source: Google Earth

Figure 1.3 Aerial View of the Pilsen neighborhood. The south direction is the Chicago River, Canal Street is at the eastern fringe, sixteen Street is at the north and the Western Avenue is the western boundary of the neighborhood. Source: Google Earth
Pilsen and the West Side first came to national attention during the Railroad Strike of 1877 (Pilsen and the West Side, 2008). In the following year, the neighborhood was founded, and industry and immigration began to emerge. Industrial development occurred along the Chicago River from the late 1800s, making the Pilsen industrial corridor be one of the city’s oldest industrial developments. The corridor’s area expanded along the Illinois and Michigan canal in 1848 (Trkla, Pettigrew, Allen & Payne, 1998). Irish and Czech immigrants played a significant role in bringing the canal and railway to Pilsen. “They helped build the Southwestern Plank Road, the Illinois and Michigan Canal, and the Chicago, Burlington, and Quincy Railroad.” (Wilson, Wouters & Grammenos, 2004). When the Great Fire damaged the Loop in 1871, Pilsen became a hot choice for many Chicagoans, since people who were unwilling to spend the extra money for stone and brick building materials to rebuild their communities moved to Pilsen. Later on, during World War II, the scarcity of labor force appealed to a great number of Mexican immigrants. From this time, Pilsen began to turn even more into a varied neighborhood (Will, 2013). The exclusive Mexican culture and history of Pilsen neighborhood gradually form the status of a center of Mexican life in Chicago now (Jiang, 2015).

1.4 Research Question

Due to the highly fragmented landscapes of cities, there is a multitude of vacant lands such as railroads, the void between buildings, margin of the street and two sides of the river that have been underutilized. Redevelopment and reactivation of urban vacant spaces are being discussed
more often at the level of the large-scale restoration of the landscape. This large-scale design method needs to be supported by people, technical and financial resources, and time, as it can be expensive to maintain (Byrnea, 2014). By studying theories of urban planning, learning about the history and culture of the Pilsen neighborhood, and collecting collection in a field trip, this thesis explores the question of how to promote the reactivation of vacant lands where fewer human interventions within the space can be initiated with minimal amounts of capital. To put this in the specific context of Pilsen, I break down the question into three sub-questions below.

The questions that this thesis will discuss are firstly, the nature of the relationship between vacant lands and the dynamics of urbanization. Secondly, what parts of vacant lands have the potentials to function as a catalyst for change, and perhaps serve as an interface into the urban network? Or are derelict and vacant urban spaces potentially beneficial and valuable places, waiting for people to reconsider them as worthy parts of the urban landscape? Thirdly, is it impossible to leave wastelands to nature with small-scale design interventions, developing these spaces in innovative and constructive ways as a positive part of the urban landscape?

These three questions are answered through four phases of research. In step one, I overview the development of vacant spaces in Chicago and discuss the causes and effects of vacant lands in the Pilsen neighborhood specifically. The research for this part is discussed in Chapter 1. In step two, I collect the data, classify and analyze 5 scenarios and 8 sub-scenarios for vacant lands, as well as identifying current conditions and potential resources. Step two required site visits in order to identify criteria for site selection with potential benefits. For the third step, I propose
both immediate and long-term design solutions via a detailed design strategy for the community, which is a long-term community-based plan for subsequent remedial zoning maps through a series of phases. Finally, I evaluate and discuss the outcomes of my design strategies with respect to my initial goals.

Facing a range of spaces leftover from dereliction or underdevelopment, my research outcomes could be the discovery of the value of these spaces from different aspects, in what ways of vacant spaces might contribute to environmental, human and economic life in Pilsen, and developing criteria for redevelopment which could catalyze positive change in vacant urban areas. At the landscape scale, the result could provide guidance for the redesign and transformation of wasted spaces. At the urban planning scale, the results may provide advice and strategies for urban planners to think about how to integrate the vacant land as a valuable element in the urban planning, helping people to rethink the meaning of these areas. Based on the research outcomes, urban vacant and spontaneous nature could form a valuable complementary element to the positive use of city space.
CHAPTER 2 RESEARCH PROCESS

2.1 Research Methodology

The initial strategy for developing a community wasteland theory was to interpret and identify key ideas from preceding theories and precedents. The sequential methods utilized in this thesis are to interpret, describe, evaluate, and do design proposal.

Since urban vacant spaces are the results of various factors, it is important to understand the context of Pilsen’s neighborhood, including a brief history of its industry, environment, policy and land use. The mosaic of neighborhoods that exist in the city today arises from the complicated population statistics of Pilsen, and the relevant history of industries and economy could explain which areas were developed and which became derelict and vacant. The past environmental records document how spirits have attached to wasted spaces in different historical stages.

Describing the site means data collecting, mapping, as well as data analysis. The process of literature review extracts four important elements or factors. These are the cultural imperative, social imperative, ecological imperative, and economic imperative. Those four elements help to form the frame of analysis and criteria in a comprehensive way. Fieldwork is mainly a method of investigating patterns in urban derelict spaces and confirming the images of Google Earth. After overviewing the conditions of the community, data on property of vacant lands and spatial distribution in this neighborhood was collected by fieldwork and web research. After analyzing and comparing the typical parcels to find out the most common characteristics and effects, I could generate a variety of scenarios including culture, ecology, and economy and then conduct
pattern mapping of vacant spaces in Pilsen based on different scenarios. Combined with the literature review, these methods yielded a social–ecological assessment and the criteria for the wastelands of the site.

The neighborhood was assessed for related conditions. Based on the criteria, the possible parcels were selected. Together with the previous standard, the idea and landscape interventions will be developed for several specific scenarios.

Figure 2.1 Research framework

2.2 Research Process

2.2.1 History

In 1889, Jane Addams, a reformer of American settlement, came to this area and opened one of the first settlement houses in America. Wave after wave of different ethnic and racial groups settled in the Pilsen Neighborhood (Pilsen and the West Side, 2008). In the 1930s, by virtue of
developments in the field of transportation, Pilsen has the original advantages of the location. The Chicago River and nearby canal provided the opportunities to exploit the industrial area for it. Pilsen had a well-developed industrial economy, including stockyards and other metal plants (Wilson, Wouters, & Grammenos, 2004). However, the region’s expanding expressway system such as Interstates 90/94 and 55 made suburban markets more accessible. Starting in the 1970s and continuing over the next twenty years, the model of the job base and economy gradually shifted. The focus moved from manufacturing to a more service-oriented economy (Daley, 1998). Changing the configuration of industrial and dilapidated interior facilities cannot support the operations of these plants. Many factory and plants became the abandoned properties and then were left in the Pilsen industrial corridor (Richard & Daley, 2003). From this period onward, many industrial vacant lands began to appear. The US Census Bureau Website’s statistical data indicates that billions of manufacturing jobs were lost between 1970 and 1980 (US Census Bureau, 1970). This is the main cause of the significant reduction of the population in Chicago’s south. In 1985, industrial jobs continued to move out of central urban areas to suburban communities, causing continuous population decline and increasing vacancy in Pilsen. Over these twenty years, deindustrialization is the main cause of wasted and vacant lands. The railroad which tracks along Sixteenth Street first started in the 1890s and was abandoned in 1982. Due to new transportation and manufacturing trends, freight traffic along the line declined over the years, some track and railroad trestle were all that remained, and all of the grade crossings were paved over. The old railroad influenced the ecological and economic structure of surrounding areas,
gradually forming more and more vacant spaces. In 2006, the Pink Line of rapid transit line became the part of the Chicago 'L' system, which is a 11.2 mile (Wikipedia, 2012). This elevated railway restricted utilization of the spaces under the tracks and caused strips of vacancy along the traffic road Figure 2.2 shows the causes of vacancy in the Pilsen neighborhood.
Development of history of Pilsen neighborhood and causes of vacancy

1840
1900
1960
1970
1980
1990
2000
2010

Figure 2.2 Development of history of Pilsen neighborhood and causes of vacancy

In the 1850s, Irish immigrants who helped construct the Illinois and Michigan Canal.

In the 1890s, the Pilsen neighborhood was settled by Czech immigrants who took the railroad from the East Coast.

The Great Fire ravaged the Loop in 1871, Pilsen became one of the hot new destinations for Chicagoans who relocated to spend the extra money on brick and stone building materials.

In 1889 Jane Addams would come to this area to open one of the first settlement houses in America. Wave after wave of different ethnic-racial groups settled in Pilsen Neighborhood.

In the 1920s, Pilsen had a thriving industrial economy with steel yards, meat packing plants, steel mills, and fabricating plants. It took advantage of the stringing opportunities provided by the south branch of the Chicago River, the Illinois and Michigan Canal, Lake Michigan, Iowa Raisin and the confluence of multiple railroad lines.

1950s, Mexican-Americans have settled in Pilsen neighborhood because of the inexpensive housing and proximity to the many factories that employed them. The urban fabric of Pilsen originates from its early settlement pattern of small compact residences located very close to the growing industry, resulting in a patch of various land uses within the community. The planning and zoning codes that restrict the ways landscape can be incorporated into development.

This railroad first start in 1890s and abandoned in 1962. Due to the new transportation and manufacturing trends, heavy traffic along the line declined over the years, some track and a viaduct still remain, and all of the grade crossings are paved over.
Figure 2.3 The main typology of vacancy in Pilsen

With development of urbanization, readjustment of the industrial structure, and integration of land use and traffic routes, the typically high-density, low-rise community of Pilsen saw the recent emergence of more and more underutilized lands. The area of green space is lower than in the surrounding communities, and the number of public spaces in Pilsen is below the average for Chicago. The green open space of Chicago is approximately 8.5% of the land, while 2.4% of the land area of Pilsen is green space (Hansmann, 2014). Pilsen has been a center of Mexican life. Most existing cultural and art activities and programs happen in wastelands and vacant spaces. The lack of public spaces is a long-term problem in Pilsen. In 2012, Chicago's Department of Planning and Development (DPD) initiated an effort to draft a land use plan that improved and
expanded access to parks and open spaces. Therefore, the large number of vacancies and lack of public spaces in Pilsen has become a significant contradiction.

**Figure 2.4** The percentage of the green space of the land area of the surrounding neighborhood near Pilsen
Figure 2.5 Population Density of Pilsen Neighborhood. Source: US Census, 2010

Figure 2.6 The number of public spaces in Pilsen below the average of Chicago.
2.2.2 Land Use

The following series of land use diagrams locates vacancy in grey while illustrating the industrial development, economic transformation, and ratio of land utility of the Pilsen neighborhood over time (see Figures 2.7-2.9). From the 1930s to the 1970s, Pilsen had a thriving industrial economy, augmented by immigration due to inexpensive housing and proximity to the many factories that employed them. As can be seen from the diagrams, a large amount of vacant land had been used during this period. From the 1970s through the 1980s, the major type of employment base moved away from manufacturing. The service-oriented economy dominates the entire market. “The changing industrial needs and obsolete facilities have led to the abandonment of many industrial properties” (Richard & Daley, 2003). In addition, planning and zoning codes restricted the ways that landscape could be incorporated into development. Meanwhile, the continuous population decrease resulted in vacant buildings, and over the years, many vacant lands re-emerged.
Figure 2.7 Land use plan in Pilsen, Chicago, IL, in 1939.
Figure 2.8 Land use plan in Pilsen, Chicago, IL, in 1973.
Figure 2.9 Land use plan in Pilsen, Chicago, IL, in 2012.
2.3 Data Analysis and Results

2.3.1 Economical Value

One strategy that governments utilize to improve their residents’ quality of life is based on cities’ revenue-generating systems, which consists of property taxes, income taxes, and sales taxes (Bowman & Pagano, 2004). States and cities spend tax revenue on public services and public investments. Exploring various ways to boost and maximize revenue is the government’s long-term goals. Therefore, vacant land is an importance source and potential component in the strategy of increasing and maximizing the city’s revenue (Bowman & Pagano, 2004). The strategy of redeveloping vacant land depends on the general taxing authority and different tax structure. The relationship of different proportions of property, sales, and income tax revenue of the city with use of vacant land determines the potential economic value of that vacant land. In other words, for example, a sales-tax-dependent city has a large number of vacant spaces located in commercial zones, so conversion and development of these vacant lands will be more conducive to increasing tax revenue for the city than vacant land in residential or industrial zones. According to 2015 data from the Illinois Office of the Comptroller (IOC), Chicago does not have a local-option income tax and allows municipalities to tax only real estate and retail sales. The total property and sales taxes revenues of Chicago are $869,841,000 (74.98%) and $308,878,000 (26.02%), respectively. Compared with sales tax revenue, revenue percentages for Chicago show that property taxes tend to be a greater source of revenue (CMAP, 2015). Based on data and analysis, property and sales tax revenue constitutes nearly all of Chicago’s general tax collection,
but its primary source of income is the property tax. Chicago is a property-tax cities.

Figure 2.10 Variation in revenue reliance in Cook County from 2009-11. Source from: Chicago Metropolitan Agency for Planning analysis of Illinois Office of the Comptroller data.  
http://www.cmap.illinois.gov/about/updates/-/-asset_publisher/UIMfsLnfMB6/content/municipal-reliance-on-property-sales-and-income-taxes-and-their-relative-stability

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</table>

Figure 2.11 Revenues sources of Chicago City, 2015, source from Leslie Geissler Munger, Illinois Comptroller.
Through the website of the Department of Planning and Development (DPD), I examine the taxing authority and real estate inventory of Chicago, focusing on property taxes. The general taxing authority could be significant in understanding and estimating potential value of the parcels and nearby area. Through the statistical data, I could identify which vacant parcels have the possibility to be reconsidered for reservation, integration and improvement (Bowman, 2003). In general, I classify a total of ninety-five parcels as vacant. These parcels cover over 445,200 square meters and total size of every parcels from 60 to over 212,280 square meters; 69% of the vacancies are smaller than 400 square meters, 23% range between 400 and 4000 square meters, and 8% are larger than 4000 square meters. Based on an analysis of property and land values, the majority of vacant land privately held. Among ninety-five selected vacant parcels, sixteen are city-owned with zero-dollar land value, while seventy-nine vacant land parcels are privately owned and amount to 95.13% of the estimated total available area. Moreover, the results show that 42.43% of privately owned vacant land parcels have zero-dollar value and are mostly located along the transportation system.
Figure 2.12 Spatial distribution of private and city-owned vacant land in Pilsen, including number and area.
Figure 2.13 Spatial distribution of zero-dollar value and not zero-dollar value vacant land, including number and area.
Bowman (2003) has stated that, “The city’s fiscal structure such as property-tax-dependence, sales-tax-dependence and income-tax-dependence makes the status of vacant land more or less crucial in generating adequate revenues for the city’s service-delivery responsibilities” (Bowman, 2003). This indicates that the pattern of vacant lands is closely tied to land use zoning plan of the surrounding area. Given the previous analysis of Chicago’s revenue sources, property and sales tax revenue constitutes nearly all of Chicago’s general tax collection, and its primary source of income is the property tax. According to zoning conditions on the City of Chicago’s official site, roughly three-fifths of vacant lands are located in residential areas and most of lands are private, while one-fifth of vacant lands are located in commercial areas. This implies that four-fifths of the vacant lands in Pilsen have enormous revenue-generating potential to improve the value of nearby real estate. The diverse pattern and arrangement of vacant lands has created different ranges of contagion effect on the nearby property. In other words, a vacant parcel in the middle of the block affects the adjacent parcels, while an irregularly shape vacancy on a corner has an effect extending to other blocks. In Pilsen, there are a variety of spatial configurations of vacant parcels, and the most common form is a broken line of semi-open multiple vacant parcels scattered mid-block, which affects the value of more than twenty properties. Figure 2.14 displays the pattern of vacant land in Pilsen, visually demonstrating that vacant lands spreads their undesirable value and have impacts beyond the borders of the block.
Figure 2.14 Current land use of Pilsen Neighborhood and the zoning designation of vacant land.
Figure 2.15 Number and area of different land use potential (zoning) of vacant land in Pilsen Neighborhood.
2.3.2 Ecological Value

Many vacant lands with a variety of transformation of succession of vegetation have made a positive contribution to ecology. One characteristic of vacant lands is that they are integrated in dynamic environments. For instance, given the time, soil condition and different types of its current use, different development of vegetation decides the appearance of vacant land. Distinctive plant and animals adapted to the different physical natural environment. So each type of the land with the different development of the vegetation is dominated by specific fauna and flora species. They provide the opportunities to depict different types of nature. Corresponding,
distinctive fauna and flora species are accompanied by various ecological services (Mathey & Rink, 2010). There are approximately four types of vacant land which is in different succession, and Figure 2.17 provides the details. The category is based on a previous study by Juliane Mathey and Dieter Rink, which in turn refers to another previous case study in Germany, Ruhr Area, Berlin, Saarland.

“1. Young wasteland with pioneer vegetation
2. Older wasteland with persistent ruderal vegetation
3. Old wasteland with ruderal tall herbaceous vegetation
4. Wasteland with spontaneous woodlands” (Mathey & Rink, 2010).

**Figure 2.17** Looking east towards railway corridor with spontaneous vegetation.

**Figure 2.18** Looking north towards post-industrial vacant land which is in the period of young wasteland with pioneer vegetation
In Pilsen, a great number of vacant lands now have vegetative cover. “Vacant lands at different stages of success offer good conditions for habitat mosaics, wilderness, undisturbed and derelict areas, and a variety of plant and animal species.” (Mathey & Rink, 2010). Via the rough statistics, 62% vacant land in Pilsen is covered by grass, shrubs and trees. In terms of the four stages, the vacant land with annual ruderal vegetation is the most common type. It is estimated that the residential areas have 30.7% of unoccupied parcels of land, showing that there is negative correlation existing between various categories of green covering within a parcel as well as the condition of green covering around its neighborhood. The vacant parcels act as the characteristic of resilient spatial gathering for the adjacent space. This suggests that a vacant area with high green density could be the link to green matrix of neighborhood. This offers different kinds of ecosystem facilities. Considering these aspects, these results conclude that the current condition of unoccupied spaces are now offering numerous kinds of ecosystem facilities linked to the existence of green land covering, including production of food, overflow modification, as well as leisure. In some cases, vacant spaces with an elevated quantity of green covering might be significant in safeguarding from advancements or improvements. In the meantime, numerous of them that are really vacant might have the possibility of changing into more useful urban spots and the productive space with ecosystem facilities. About 69.3% of vacant land with spontaneous vegetation is located in transportation-related land such as the railroad or highway. As the assessment report for Millennium Ecosystem stated, besides the ecological basic functions such as providing food and controlling floods, the ecological service also includes social and cultural
function. (Millennium Ecosystem, 2010). These vacant lands near the highway or railroad create a social buffer which separates the neighborhood. In the next part, I will discuss social and cultural value.

Figure 2.19 Four stages of succession. Source: (Mathey & Rink, 2010).

Figure 2.20 Surface of vacant land with the different succession of vegetation in Pilsen Neighborhood.
Figure 2.21 Vacant lands with vegetation or pavement, green color indicates grass cover or bared soil, green color indicates pavement.
1. Space under the transportation infrastructure. Vegetated area within 8m. most of vegetation is grass.

2. Vegetated area within 10m adjacent to railway tracks. And public access and use mostly restricted. Form: linear.

3. Rubbish and pollution maintenance to prevent vegetation encroachment on tracks. Form: linear.

4. Industrial or commercial purposes. Long-term idle after use, covered with spontaneous vegetation.

5. Industrial or commercial purposes. Long-term idle after use, covered with soil.

6. Vacant parking lot, commercial purposes.

7. Space at the street corner. Covered with spontaneous vegetation, residential land use.

8. Space at the street corner. No pavement and no vegetation.

9. Space between two or three buildings with sport, herbal vegetation used by birds.

**Figure 2.22** Examples of vacant parcels with different situation.
2.3.3 Social and Cultural Value

Bowman (2003) developed an ideal of vacant land based on the research of Kevin Lynch, which was based in turn on impressions that residents had of the city. He thought the areas that were amid the recognizable landmarks and districts were blank to residents, absent from mental maps and thus resulting in virtual vacant land. Therefore, increasing and strengthening landmarks in the environment could in a sense help to shape and expand the valuable neighborhood image. Physical elements can be established as landmarks if space is prominent and if they contrast with nearby elements or background. In addition, people could more often remember local elements that represented sequences or clusters (Lynch, 1990). From this perspective, the sequential spaces of tangible vacant lands that always contrast with their backgrounds have the potential to be integrated with other physical elements and serve as a catalyst for realizing a vision of expanding the neighborhood image. In Pilsen, the arts and culture are longstanding traditions. During several visits to the site, I observed different types of vacant lands and artistic work positions. In exterior outside spaces, besides the museums and galleries that have been declared architectural and artistic landmarks, murals are painted on the wall of buildings. In a sense, parts of murals are difficult to recognize out of context and lack the power of place. According to the Pilsen Quality-of-Life Plan, murals that decorate local walls have existed for three decades or more. Some arts programs such as music or film festivals utilized vacant or underused spaces for galleries and music venues. In addition, Pilsen’s culture is also presented along 18th Street, the first area of a Mexican commercial cluster (Pilsen
Quality-of-Life Plan, 2006). These artworks should represent the valuable neighborhood image of Pilsen. Xinnan Jiang (2015) has explored the creative art community in her thesis, saying, “Art forms in a variety of creative communities are painting, music, dancing, literature, and murals. The space and landscape for those art forms have their required support functions: such as storage, creation, vending, performance, exhibition, participation, and viewing.” On the one hand, the vacant land could meet the requirements of space and function of various art forms. Conversely, the artists and art programs that connect with vacant land could preserve the memory of the ordinary landscape. This connection will also give a sense of security, inspiring neighbors to interact more with each other. The value and function of vacant spaces near murals and paintings have great potential to be shaped by these art programs and artists, enhancing the image of the neighborhood.

![Figure 2.23](image)  
**Figure 2.23** Gray loft building and wall murals in 18th street.
Figure 2.24 Position of artistic work with vacant lands.
2.4 Specific Criteria for Pilsen Neighborhood

The criteria for vacant land of Pilsen have three main categories: property imperative, ecological imperative and social/cultural imperative. Below are the detailed criteria for value of vacant land.

**Property imperative:**
- primary private-owned;
- primarily property-tax-dependent and minor sale-tax-dependent;
- enormous revenue-generation potential of residential and commercial parcels of zoning;
- vacant lands that are mostly located in residential areas interact with nearby real estates;
- a variety of spatial configuration form of vacant parcels;
- a clear buffer in transportation-related land separates the areas and protects the property;

**Ecological imperative:**
- the majority is vegetative land cover;
- strong spatial clustering
- provides the uncertain cityscape;
- various stage of succession and ecological service;
- negative correlation between vegetative cover of vacancy and the nearby parcels;
- a soft buffer separate land use;
Social/Cultural imperative:

- reference to history of the place;

- Mexico cultural heritage tradition

- various artistic landmark and art form which is closed to vacant parcels

- vacancy that contrast with background with potential for interaction and landmark

- expand and enhance the image of the neighborhood
CHAPTER 3 DESIGN PROPOSAL

In the third phase of the thesis, the purpose is to explore design strategies that could reactivate vacant lands to natural succession. According to the criteria developed previously in the study, I preserve and develop different parts of these spaces in innovative and constructive ways as a positive component of the urban landscape. Design strategies are divided into three steps: increase, connection, and integration.

3.1 Increase

Increase means to create several areas that have natural landscapes based on these parcels, which refer to the ecological value discussed in Chapter 2. These lands with rich vegetation resource in the third or fourth stage of success will effectively connect and expand their areas along the railway corridor and canal corridor. Biological reconditioning practices will break up the urban soil, promote soil porosity and organic matter, and accelerate the cycle of nature succession.

According to a USDA report, in Pilsen 95.3% of the land composition is urban soil. “An urban soil on a parcel in a metropolitan area has typically been moved, graded, and/or or compacted over time, often as a result of construction and demolition activity at the site” (EPA, 2011). So the urban soil is more often compacted, and there is not sufficient organic matter. Moreover, a large amount of construction debris makes them an unsuitable growing medium for plants (EPA, 2011). The poor condition of the soil of vacant parcels that are in the pioneer vegetation stage should be reconditioned.
Figure 3.1 Soil component and type map in Pilsen Neighborhood. Source: USDA, Natural Resource Conservation Service http://websoilsurvey.nrcs.usda.gov/app/.

Figure 3.2 Compacted urban soil lack sufficient organic matter and porosity. Credited by Liz Vogel.

Based on the condition of urban soil, the next step is bio-drilling and adding native prairie grasses. Some cover crops have strong root that could break the compacted soil and reconnect the topsoil and subsoil. This procedure will increase permeability and gas exchange. During the biological action, the roots in the appropriate depth exchange water with environment and nutrients, increase soil moisture (Lounsbury, 2014). Larger crops like radishes and lupines are better choices to deal with compacted soil. When finished with the preliminary improvement of porosity, moisture, and nutrients in the soil, native prairie grasses are mainly chosen to plant and redevelop the vacant lands due to their durability.
Figure 3.3 Bio-drilling: Cover crop roots can help ailing soil and increase infiltration.

Figure 3.4 Urban Soil Remediation Phasing Diagram.

3.2 Connection

Connection means to build relationship and communication between separated parcels to form a green system in the neighborhood, and to create breach between the green corridor and small-scale residential parcels. Mosaics of different successional parcels will provide the
possibility of high urban biodiversity and natural gardens that have not been maintained to stabilize the value of the nearby real estate.

**Figure 3.5** Perspective of different stage of successional public space with abundant ecological diversity.
3.3 Integration

Integration means incorporation with art programs that could strengthen community programs and expand temporary spaces for arts and culture. The target parcels were near a murals wall. A series of vacant land as artistic spaces for creating murals and placing artwork could be landmarks that enhance the interaction and the image of the neighborhood, so the value of nearby vacant spaces will be promoted. Furthermore, the neighbors and the government will be encouraged to invest in these parcels due to the improvement of the environment and property value. These parcels are expected to zone key sections of Pilsen for the potential to concentrate revenue-generation. Ecological value and social value contribute to a stable community and promote the economic vitality of the neighborhood. Compared to traditional large-scale transformations of vacant land, these three strategies entail lower economic costs for transformation and maintenance.
Figure 3.6 Scenario of vacant space integrated with art installations.
CHAPTER 4 IMPLICATIONS AND CONCLUSIONS

4.1 Outcomes

Vacant lands are usually negative marks of insecurity, deterioration, disarray or crime. This thesis, takes the Pilsen neighborhood as a research case, analyzes the historical factors, discusses the benefits, develops criteria of value and methods of the regeneration of the vacant lands based on the three imperatives of property, ecology and society. Based on the spatial pattern, structure of revenue-tax and cultural characteristics of the Pilsen neighborhood, vacant land is closely related to residential zoning and has the enormous revenue-generation potential to improve the value of nearby real estate. Moreover, unoccupied land with unconstrained vegetation may add to the preservation and increment of biodiversity. This benefit could offer new perspectives to the city. Furthermore, a meaningful incorporation of ecological pattern of urban vacant land with cultural artifacts such as murals as well as other artwork could enhance the image of the neighborhood, form a series of landmarks, and form a sense of security and stabilize the value of nearby property. The criteria of worth of vacant land might be functional to site selection and production approaches of integrating empty parcels into a green system. The rejuvenation of vacant spaces has to be approved in accordance with the overall urban improvement context as well as the potential value of the vacancy, which should be assessed carefully.

4.2 Contributions

This thesis researched the value of vacant land in the Pilsen neighborhood, developed the
criteria of evaluation, and designed strategies for integrating vacant land. This thesis presents methods that can turn vacant lands into positive urban spaces. The research process analyzes the historical and cultural factors that has caused the pattern of vacancy of Pilsen neighborhood and explores the current fiscal, ecological, and social situation. Given these three aspects, the state of Pilsen neighborhood might improve the image of the neighborhood as well as have great potential as a new urban green land to be conserved. These opportunities are proposed to enhance the biodiversity of different successional stages as well as cultural value of vacant lands in improving solution approaches. I think these criteria could be applied to other similar US area and neighborhoods. The method of data collection and analysis during the process could be useful for further theoretical study and practice. At the city scale, urban planners as well as governments could take an examination of these criteria when making the planning policies of the cities.

4.3 Future Study

The criteria for this research are based on the Pilsen neighborhood. The scope of application of the criteria requires to be practiced into different scales of cities in future research. This thesis argues that proposed solution strategies aim at vacant land with spontaneous vegetation. Compared with transformation of vacancy to artificial green space that needs to be maintained and structured by large capital investment, these strategies of preserving the vacant lands as urban green space require less capital input. But the thesis has also raised several limitations that
canto be explored in further studies. Specifically, the unpredictable succession and growth of vegetation and landscape needs turning vacant parcels with pavement into positive spaces. In addition, is it better to combine an artificial leisure land with conserving vacant lands with ecological diversity? Future research is required in exploring these questions further.
REFERENCES


