



# The Landscape of Transportation Nodes: A Design Statement for the Transformation of Abandoned Railway Landscapes into Public Places through Case Studies

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Transportation nodes of urban landscapes such as airports, railways and ports have great potential since they are one of the major systems that shape the cities. Analysing their use through time and seeing how they were shaping the cities gives us the design principles to be considered for the transformation process into a public place after their abandonment. It is complex to plan their design, but the before-during-after processes should be acknowledged while dealing with a node of transportation. This paper proposes a categorization of industrial areas that are a part of transportation systems and ultimately defines a design statement for abandoned railway landscapes through international case studies. Referred sites are no longer just functional elements of the transport system but they also act as mixed-use urban nodes. Hence, they require a broader approach and broader urban planning strategies considering the future scenarios.

**keywords:** *post-industrial, abandonment, transportation landscape, railway, reclaimed landscape, railway design statement, regeneration, transformation, process design, heritage, mobility*

I nodi di trasporto nei paesaggi urbani, quali aeroporti, stazioni ferroviarie e porti, hanno un grande potenziale, poiché rappresentano alcuni dei maggiori sistemi che formano le città. Analizzare il loro uso attraverso il tempo e vedere come hanno dato forma alle città ci fornisce dei principi di design da considerare durante il processo di trasformazione che riguarda uno spazio pubblico dopo il loro abbandono. Pianificare il loro design appare complesso; occorre nello studio di un nodo di trasporto considerare i processi che avvengono prima, durante e dopo. La tesi propone la categorizzazione di aree industriali che sono parte di un sistema di trasporti e definisce ulteriormente una strategia progettuale per paesaggi ferroviari abbandonati, attraverso studi di caso internazionali. I siti a cui ci riferiamo non sono più elementi funzionali del sistema di trasporti, fungendo piuttosto come nodi urbani di uso misto. Considerando gli scenari futuri, quest'ultimi necessitano quindi di un approccio a più grande scala e di strategie di pianificazione urbana a scala maggiore.

**keywords:** *post-industriale, abbandono, paesaggio dei trasporti, ferrovia, bonifica, design manifesto, rigenerazione, trasformazione, progettazione di processo, patrimonio, mobilità*



# preface

This thesis is the result of 7 months of work that started last November with my excitement towards post-industrial landscapes. It was rather a vague idea of a design statement for transportation landscapes and thanks to my amazing supervisors, it turned into a thesis statement that I can really feel proud of. This work also puts an end to two years studying at Polimi, which have been a great experience of adapting to a new culture and environment, and also prepared me to work in a diverse and international workplace. I was able to work in innovative studios and very interesting workshops with my instructors and students from different backgrounds. Along the process of my studies, I have met many talented and wonderful people which have in one way or the other had an effect on this project, and who I want to thank for their support.

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Finally, I want to especially dedicate this thesis to my family and my grandparents whom I had the chance to see only once a year during my time in Milan. I want to thank my dear parents Ahmet & Necla and my dear siblings Mert & Özge for supporting me on this journey and understanding my lack of presence in all the family events. They are the architects of my educational path, I could not have succeeded without them.

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# Introduction

## A. Introduction of thesis

The industrial revolution introduced use with new infrastructures that characterized our landscapes resulting in the phenomena of industrial landscapes. Due to different reasons such as war, emergence of new technologies, urban development etc., these landscapes became abandoned, disused, or neglected. Traditional industries have decreased, leaving us with derelict lands. Many of these sites have been colonized and naturalized by the landscape, resulting in large fields that are now part of the city's fabric. As the urbanization continues, urban planners and landscape architects began to find ways to reclaim these lands by transforming them into public parks. Although these parks are called "brownfield parks" and examined under the umbrella of this general perspective, this thesis proposes a function-based categorization of infrastructural landscapes and examines abandoned railway landscapes under the category of transportation as branch of infrastructural landscapes.

Starting from the industrial revolution, the human activities that resulted in the emergence of industrial landscapes are examined in the first chapter: Definition of Industrial Landscapes in which a definition of brownfields and associated words is attempted to be gathered, and an overall categorization is produced before moving on to the railway landscapes. Because the abandoned railway landscapes are studied from a transportation viewpoint, categorization is an important part of this research.

The second chapter is dedicated to railway landscapes as a whole. An understanding of the railway landscape sites, the reasons that lead to abandonment are studied as well as the statistics from across the world concerning the abandoned railway sites are presented to emphasize the potential of these places to become active public areas that can be part of larger urban planning

strategies towards sustainable, resilient and just cities. The third chapter is dedicated to case studies divided into two sections: major and minor ones. The most popular projects that inspired the following projects are major case studies where an in-depth analysis concerning 12 topics is completed. The minor case studies are assessed in the same way as the major case studies, with answers to the same 12 topics but in a concentrated form. The case studies are selected according to their comparability considering their size, their age, their international recognition. Some case studies are relevant as regards to reclamation techniques, others concern the significant relationship with the community as well the relationship between human and the environment.

The final chapter before the conclusion is the Railway Landscapes Design Statement created for the transformation of them into public places after the abandonment which was one of the main aims of this research. The statement is created after a careful examination of the patterns and processes that appear in the selected 10 case studies and it consist of 8 principles that were interpreted from the case studies.

The present research studies underestimate the influence of the "mobility" notion on transportation landscapes by examining the examples in compare with brownfields that has other functionalities. By focusing on railway landscapes, this thesis aims to propose a heightened awareness of the enormous potential of abandoned transportation landscapes as an activator and connector on an urban scale, and hopes to encourage further research into the other typologies that fall under the category of transportation landscapes. Finally in the last chapter, the outcome of this research is explained and reviewed.

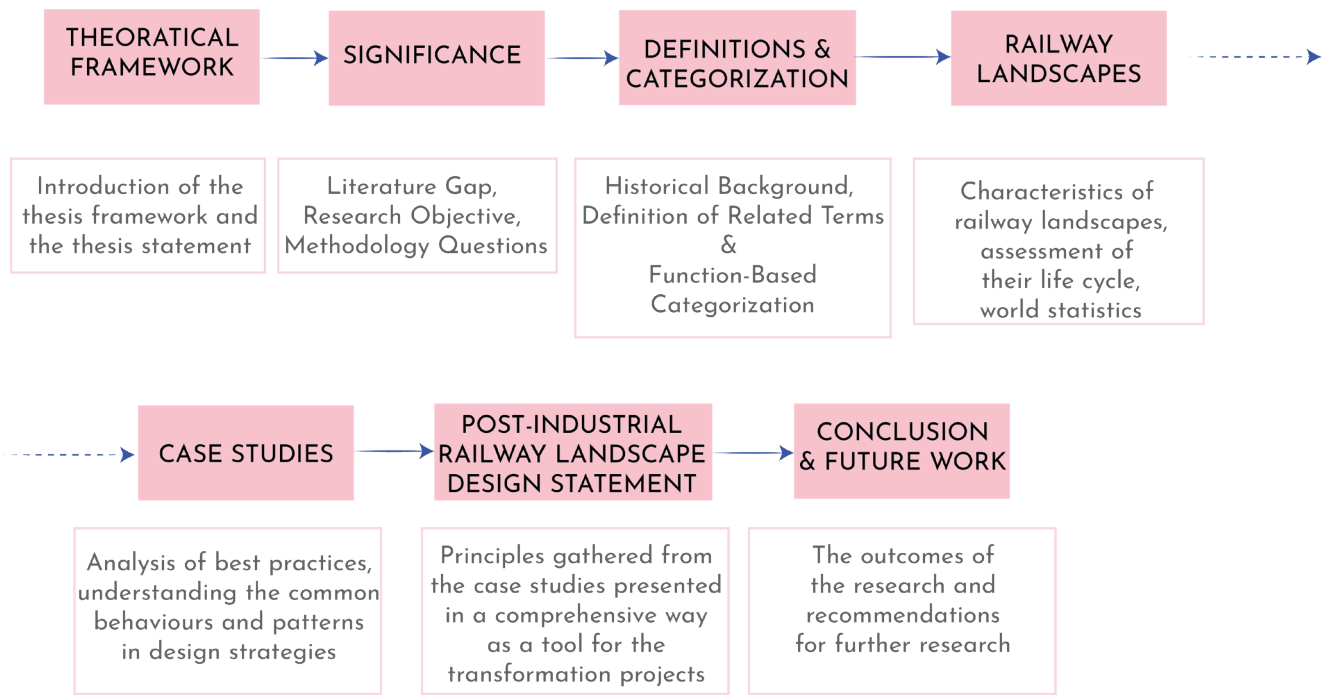


Figure 1. Research flow diagram. (by author)

## B. Research flow

The purpose of this research is to examine existing strategies of derelict railway landscapes, based on an understanding of existing project patterns on transformed railway sites as case studies from various backgrounds and perspectives in order to generate a design statement for abandoned railways to deal with present urban growth.



## C. Thesis statement

Railway stations are nodes and places. They are a part of the open space network of the city and they provide important historical value through their city-shaping infrastructures. Cities evolve with these nodes and these nodes reflect the cities. They are a symbol of the flows, the mobility; the movements of the past, current and future life. It is urgent for the life of future generations to see these nodes from a landscape architect's point of view. This thesis aims to propose an interpretation of these infrastructures as a part of the city's open space network under the categorization of "transportation nodes".

# Significance

## A. Research Gap & Objectives

There are many research papers focusing on brownfield reclamation, transformation of post-industrial areas and management of disused infrastructural landscapes. These studies, on the other hand, do not take a special approach to disused transportation landscapes. They look into best practices under the umbrella of “brownfields parks,” which is a broad term that doesn’t allow them to look into specific techniques. Hence, I propose that brownfield landscapes should be separated into categories according to their functions. For this study, I proposed making a categorization of transportation landscapes into 3 typologies: airports, ports and railways; and proposed an examination focusing on their characteristics as linking destinations and the presence of the mobility action. Because of the scope of this master thesis, this research focuses on the typology of “railways”, hoping to encourage further research on other typologies presented.

The main objective of this study is to create a design statement that will act as a guideline for the transformation of disused, abandoned, neglected railway landscapes that are no longer operating. Taking railway landscapes under the category of transportation, rather than approaching them from a general perspective of brownfield reclamation or post-industrial etc., I propose a heightened awareness of the patterns and processes of transformation through the analysis of case studies.

## B. Methodology & Research Questions

This research is framed by the analysis of case studies where patterns, common strategies and processes are examined. The investigation of existing knowledge and the study of best practices are an essential component of research culture. Hence, the quantity and variety of projects in varied socioeconomic and geographical backgrounds provide adequate information to validate the research premise.

The case studies are examined according to following topics:

- Location
- Historical Development of the Site
- Abandonment Phase of the Site
- Design Initiations
- Design Approach
- Form and Function – Physical Characteristics
- Botany
- Phases
- Site Observations
- Connection with Mobility Typologies
- Daily Operations and Maintenance
- Conclusion

### Research Questions

Ultimately, the mass of knowledge of literature and best practices are being used to develop a design statement on the issue through which the following questions are tried to be answered.

1. What principles should we follow when transforming a former railway landscape into a public place and what are the factors that contribute to the success of the project? Is it possible to create a guideline that shows not specific actions but the approach and strategies towards post-industrial railway landscapes?
2. What role does “history” play in post-industrial railway landscapes? And how can we use design to convey the many layers of history?
3. What phases does a railway landscape go through until it is reclaimed and what can we learn from the life cycle of railways?
4. What are the strategies for the preservation of characteristics of the railway landscape site?
5. Can we talk about resilience to change during the transformation of a former railway landscape?
6. Is reclaiming the post-industrial railway landscape an act of nature or humans?

chapter 1

# Definition of Industrial Landscapes

## A. History

In order to understand the industrial landscapes of today, we need to understand how they emerged since landscape is a dynamic process between human and environment that keeps changing. Landscapes are shaped by the human activity. Hence, we should explore the activity that resulted in the emergence of industrial landscapes, which we can date back to the industrial revolution. The industrial revolution was the beginning of a new era that is characterized by the domination of industry and machine manufacturing; starting in Britain and spreading through Europe until the 1880s; changing habits, labour, and landscapes. The economies, job opportunities and cities were affected by this phenomenon as well as the population. Since the industrial revolution, a critical alteration in population has occurred, resulting in a rise in the population in urban areas. People have started to migrate from rural areas to urban centres in order to find better jobs to be able to have better life conditions. As a result of this migration, urban settlements began to spread which led to the phenomenon known as urban sprawl. This term can be defined as the changes in the urban density at different distances from the city centre [1]. These distances rose in tandem with urban development, making transportation even more crucial in meeting the demands.

Around the end of the 19th century, with the second wave of industrialization, global systems of transportation and communication arose. Infrastructures to support the new urban life had to be developed. Hence, landscapes have changed accordingly. Industrial concerns have produced the logistics landscapes in which more land area is given over to accommodate the shipment, staging, and delivery of shipped goods [2]; networks of railway lines began to merge into huge areas of industrial landscape [3].

By the 20th century, Fordism created manufacturing systems that formed the foundation of current economic and social systems however the increase in population and the growing pressure of profitability resulted in exhaustion through intensifying labour[4]. These limitations later resulted in processes of deindustrialization, post-Fordism, and technical innovation.

In the second half of the 20th century, the transition from the second wave of industrialization to the third wave of industrialization began. This wave was of a different nature. It was exposing an environmental crisis, primarily caused by the unsustainable use of resources in industry. Globalisation and de-industrialisation were the phenomena, and the landscape was eventually influenced by all of these developments, with new typologies emerging such as post-industrial landscapes [5].

“Patterns of horizontal and geographic urbanization are distinctively yielding new urban geographies and landscape infrastructures at unprecedented scales, beyond the borders of political states, which have been inherited in past centuries from colonial control, imperial planning, military warfare, industrial development, and land use engineering.”

-Pierre Bélanger

## Landscape of Infrastructures

The waves of industrialization presented us new typologies of landscapes such as manufacturing lands, mining lands, waste lands and transportation landscapes. Later in Section C of this chapter, a categorization of these typologies will be presented. In the scope of this master thesis, we will be concentrating on the railway typology as a leg of transportation landscapes under the umbrella of infrastructure landscapes.

According to Oxford Language, an infrastructure is the basic physical and organizational structures and facilities needed for the operation of a society or enterprise. Landscape on the other hand is described as everything you can see when you look across a large area of land, especially in the country. Meanwhile, Charles Waldheim describes landscape as a model for urbanism and a disciplinary locus for discussion historically housed in architecture, urban design and or planning [2]. Hence, the understanding of both terms can be summarized as infrastructure being the alteration of natural environment while landscape being a vision of a piece of land that is already existing without any action but looking. Their combination offers an opportunity to redefine both notions into a more integral design brief where goals and means converge, resulting in operative landscape structures that serve multiple ends [6].

Infrastructures, by virtue of their scale, ubiquity and inability to be hidden, are an essential component of the urban landscape today [6]. They are a part of our everyday scenes. Hence, as landscape architects we should find ways to appropriate these infrastructures as landscape. This will help us to bring out the potential of these typologies to be transformed into public spaces through the understanding of the dynamic between structure and process [7].

Landscape infrastructures that facilitate different nodes of transportation can be categorized as transport landscape infrastructures. This category includes vehicular, rail, air, and port systems. For the framework of this thesis, we are interested in post-operation life of these landscapes. A description of related terms used for these landscapes will be presented in Section B: Terms and Definitions while a broader categorization will be presented in Section C.

“In the entropology of globalization, all management generates abandoned spaces. All creation as applied force entails negation; all production entails neglect.”  
-Gilles Clément

## B. Terms and Definitions

After the emergence of industrial landscapes and logistics landscapes, many terms were developed to describe these lands. Figure 1 shows the different norms that are related to the industrial landscape theme. In this chapter, selected norms will be defined in order to create an integrated understanding of the transportation landscape with a broader perspective.

The most inclusive word might be “brownfield” for the industrial landscapes. EPA, describes brownfield as a property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant [8]. Brownfield sites offer substantial opportunities for improving environmental capital due to their often high ecological potential [9]. Hence, projects developed in these sites are popular among landscape architects since they are potential sites for ecological compensation. Additionally, these sites reflect the composition through different layers that they hold such as history.

### **Derelict**

According to Oxford Languages, “derelict” means in a very poor condition as a result of disuse and neglect. Dereliction occurs due to economic shifts. Derelict landscapes require a management strategy within the concept of urbanization since dereliction attracts waste [11].

### **Wasteland**

Wastelands constitute a heterogenous group that consist of derelict land in the sense of neglected and abandoned. Scientifically, it can be described as areas damaged by industrial or other types of development which need treatment in order to be suitable for beneficial use [5].

### **Brownfield**

The world has seen major technological and economic shifts since the Industrial Revolution that shaped landscapes. Moreover, with the phenomenon of de-industrialization cities were left with abandoned factories, harbours, quarries and derelict infrastructures that are collectively described as “brownfields”.



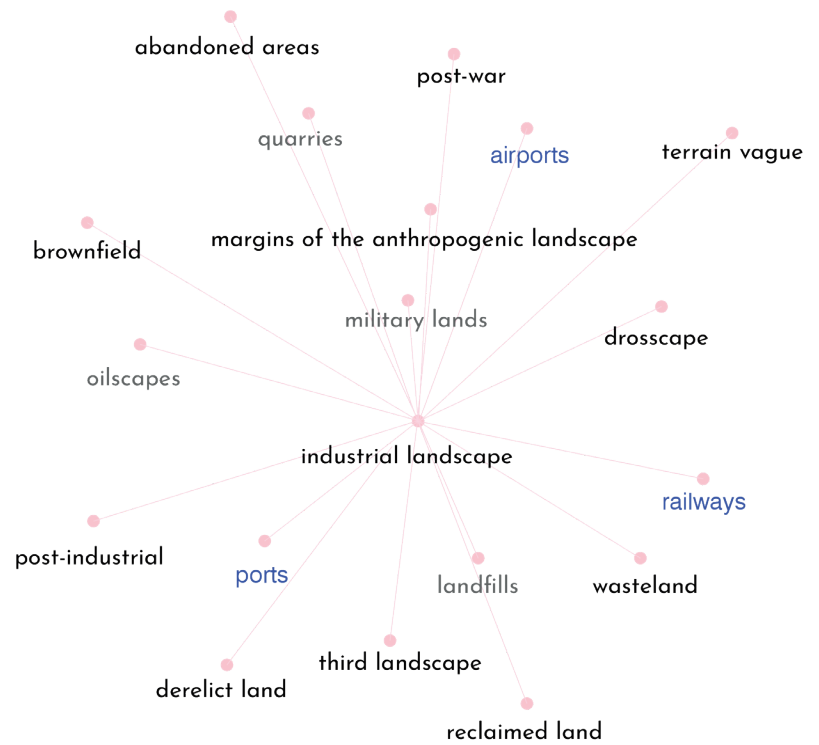


Figure 2. Cognitive map of related words to industrial landscapes. (by author)

### Third landscape

Third landscape is a term that Gilles Clément brought to the literature. According to him, “third landscape” is that of spaces that issue from the neglect of previously exploited ground. Their origin can be extremely varied: agriculture, industry, tourism etc. [10]. The Third Landscape is change, vitalism, constant shifting for subsequent adaptations [12].

### Dross

Drosscapes accumulate in the wake of the socio and spatio economic processes of deindustrialization, post-Fordism and technological innovation [13]. Zones that are considered vast and which is waste bring out drosscapes. It emerges from a wide range of societal concerns. As Berger states, the designers are responsible from not achieving drossless urbanization but create an integrated landscape that includes the inevitable dross into aesthetics and design strategies.



## **C. Categorization of Transportation Nodes**

*Towards a Landscape Typology of Transportation Nodes*

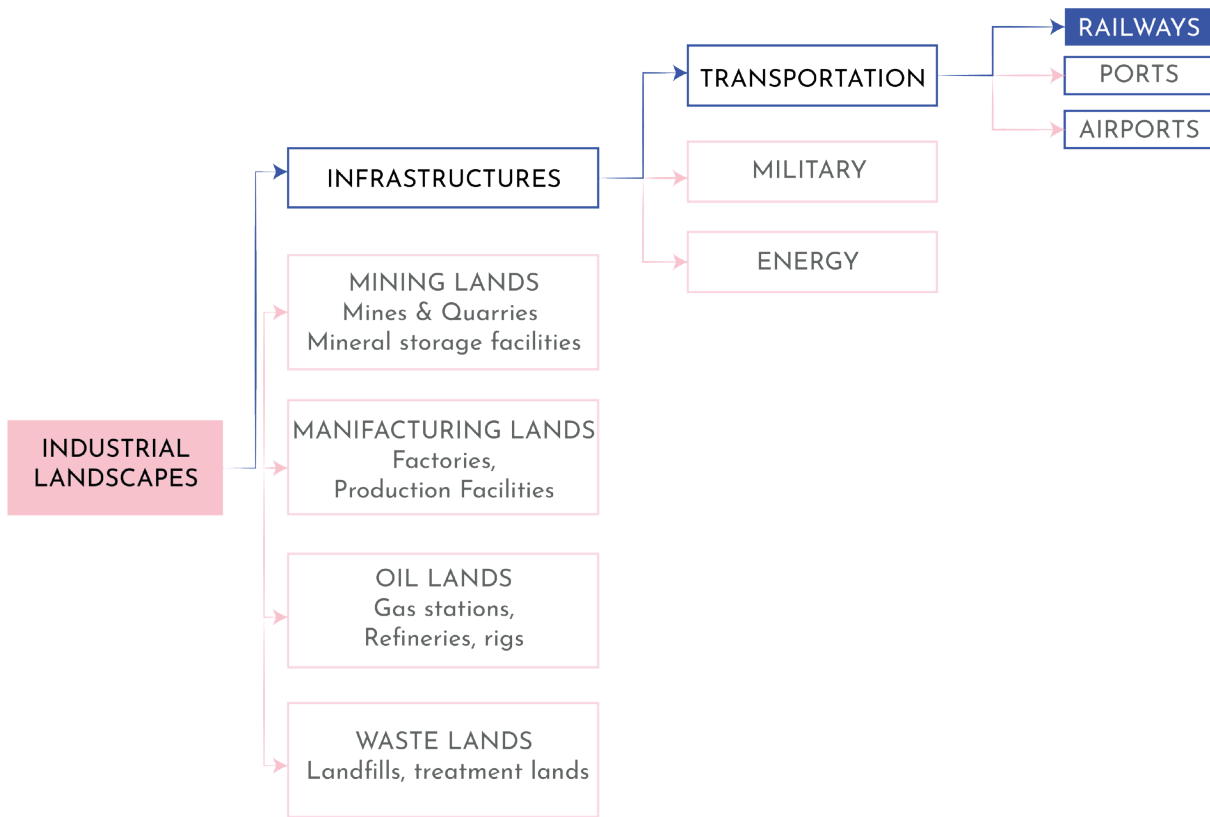


Figure 3. Categorization of industrial landscapes into typologies according to their function. (by author)

The concept of industrial areas is gaining more importance through the development of new technologies. They present a mix of typologies that consist of different characteristics such as landfills, gas stations, mining lands, quarries, or facilities of production etc. These areas have been categorized differently in different articles depending on the aim of each one. For instance, they can be categorized according to their former function, their level of contamination, their level of abandonment etc. EPA (U.S. Environmental Protection Agency) launched a classification in 2005 focusing on specific categories of brownfields such as mine-scarred lands, abandoned railway structures, underground storage tanks [14]. For this thesis study, a categorization based on the function is presented. While some of the other categorizations have a different approach about the transportation group, here it is taken as a part of infrastructure landscapes and it consists of 3 different typologies such as railways, airports and ports.

The aim of the study is to create a research area for the landscapes created by the activity of transportation under the infrastructure leg of the Industrial Landscapes. Landscapes of transportation represents the past and current movements of the society while shaping the future layout of the cities. This categorization is important because the transportation function is important in shaping cities since the related infrastructures are a part of the landscape today.

In this thesis, we will be focusing on the railway typology and ultimately create a design statement for railway landscapes with aim to inspire future work related to other typologies of the transportation category.

chapter 2

# Railway Landscapes

## A. Barrier or Connector?

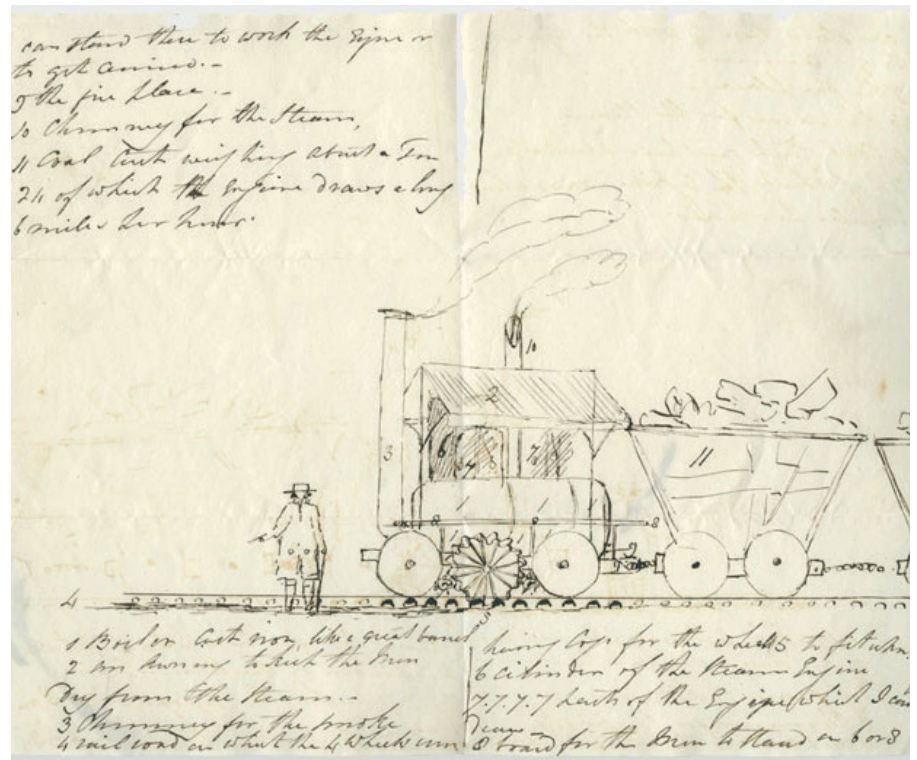


Figure 4. 1812 The first effective locomotive-powered railway.

In today's industrialized world, it is hard to imagine an urban landscape without the infrastructures which are built for the transportation activity. We can choose to look at these structures as a disturbance and an intervention on natural land, but we can also choose to look at them as a connector that links different parts of the urbanized world, as a bridge between different worlds, as the possibility to bring communities together since these infrastructures provide mobility, hence access.

Along with possibilities, the landscapes of transportation also provide us with the different layers of history. While airports changed the way we look at landscape with the invention of aerial views, ports have taught us that the edges are not the limits. And railways, a more urban-integrated type of transportation landscapes, provided us with the traces of movements throughout the history. Not only with their layout, also with the beautiful architecture of the stations. These stations were the gateways into the city and that is why they became important landmarks in the history of cities. They are a part of the architectural heritage of the 19th and early 20th centuries. Some of them are the most important buildings in the towns in which they were built in. They represent the architecture and art of their time with their decoration, highlighting the importance of this mode of travel for the community [15].

One can see these infrastructures as barriers created by roads and railways and maybe even consider them as a threat. From the landscape point of view, they act as a barrier since they create two sides and divide the natural land into two. However, they also have a major influence on social and economic development which helps the society to evolve. They provide opportunities for society by linking destinations and providing mobility as well as a panoramic experience along the way. This experience represents the dynamic interaction between human and environment because of the change in the scenery between the destinations.

In conclusion, we can say that railway landscapes are connectors as well as they are barriers. The urban pattern is highly affected by the railways, hence they are separators because of its effect on city layout where it creates the 2 sides along the railway. On the other side, they are the direct link between communities, towns, and landscapes. Once the ecological compensation is created, these typologies become the connectors as well.

Built environments and human influence is not always a negative impact on nature. The key is right here in this relationship between humanity and environment; to create the balance. Instead of viewing them as something apart from our environment, we simply should find a way to co-exist together. Because in the process of urban dynamic development, the construction of these infrastructures is inevitable.

## B. Reasons for Abandonment

An abandoned railyard includes the rail lines and occasionally some of the facilities of the railway network that are no longer being used. Thousands of meters of railroads are being abandoned due to different reasons worldwide. Some of the railways were built specifically for industrial activities on the edges of cities and they stopped working when the industrial activity stopped in the area. Some of them were abandoned due to the lack of profit. However, the abandonment happens mostly because of the fact that air travelling costs lower and it is faster. For instance, in Europe only eight out of every 100 journeys is made by rail. International rail travel is almost insignificant according to the Eurostat.[16] In this chapter we will be looking at these statistics and analyse the reasons that lead to abandonment in order to understand the full life cycle of railway yards.

## History of abandonment

The history of abandonment dates back to the world-wide economic depression between 1929 and 1939, famous as the Great Depression since “profit” is the main reason for abandonment.

### In the United States

In the United States the rail service was already well developed during the 19th century and the railway network already exceeded 430,000 kilometers of lines at the beginning of the 20th century. Based on the outdated technologies back then, the existence of a railway system came too early, leading to an inability to withstand progressive erosion of market shares by the transport on road. After the WWI, it worsened and 230,000 kilometers of lines were abandoned in the last century.

### In Europe

Europe as well was affected by the political changes and new transportation typologies which led to the abandonment of thousands of kilometers of railways. The railway use in Europe was hit by the low-cost airlines since suddenly travellers could fly to anywhere in Europe with very small prices. [17]

### In Italy

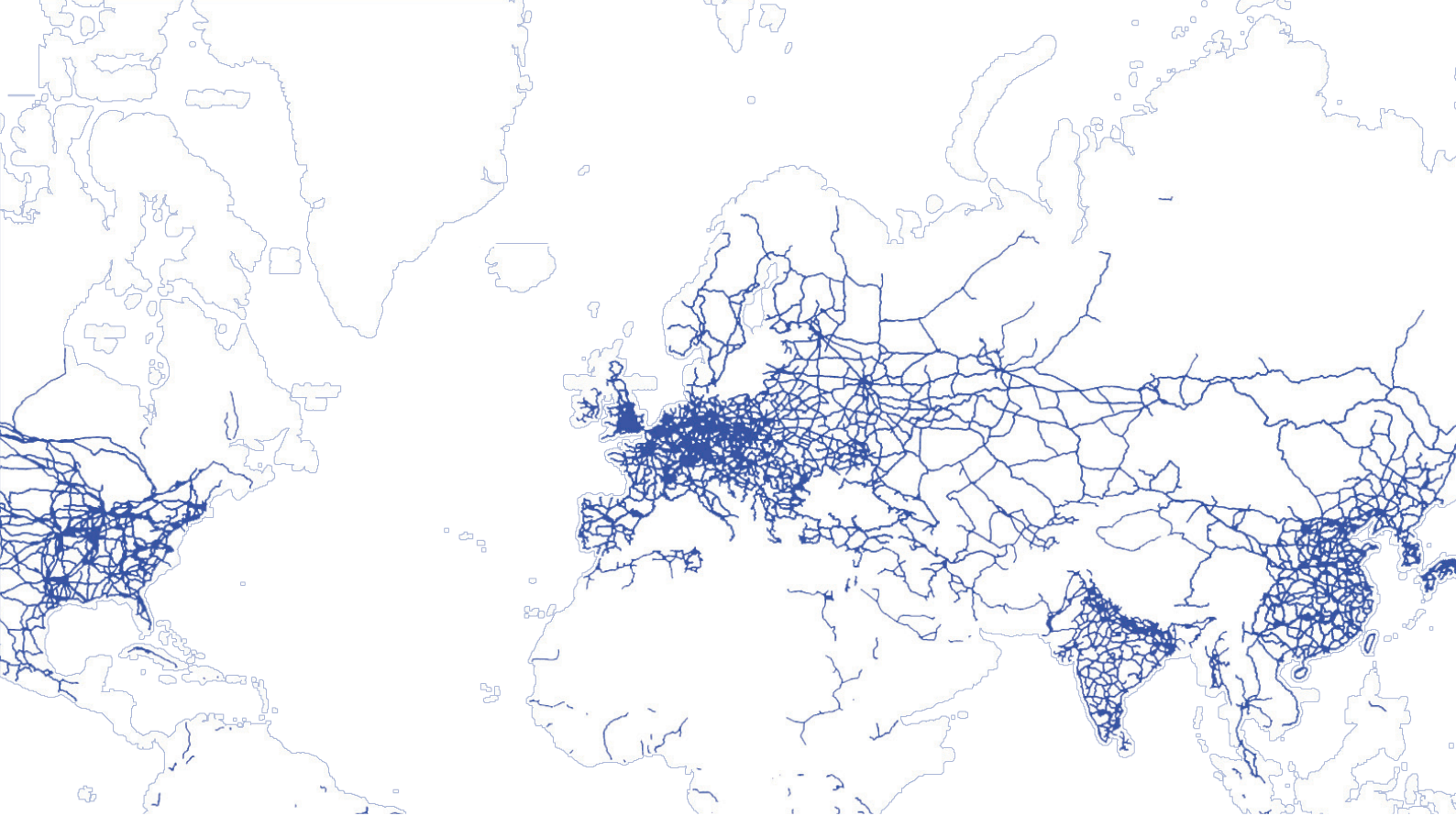
The railway transport have an important role in Italy even though it supports not the majority but covers a large part of the national territory. Since 1839, the opening of the line between Napoli-Portici, the railway network has been representing the development of industry.

The railway lines in the country, passed by from about 6000km to over 10000 by the turn of the century in 30 years since 1870. The network was then largely nationalized with the institution Ferrovie dello Stato (FS) in 1905 which expanded it in the thirties, to the threshold of 17,000 km [18].

After WWI rail transport faced competition with mobility on rubber. It suffered also during the 2007-2011 with the national railway undertaking the crisis, losing within only one year, over a quarter of its trades. The case of abandonment relies mostly on rail traffic. The trend in passenger and freight demand served by the railway system translates into increases or decreases in the supply of services and therefore in the number of trains running on the network. The statistics relating to the last 25 years show that overall circulation levels have not undergone particular variations, going from 339.00 train-km in 1990 to 375000 in 2016 however since 1990 till today a noticeable reduction in circulation is observed.

## **C. Potential of the Railway Landscapes**



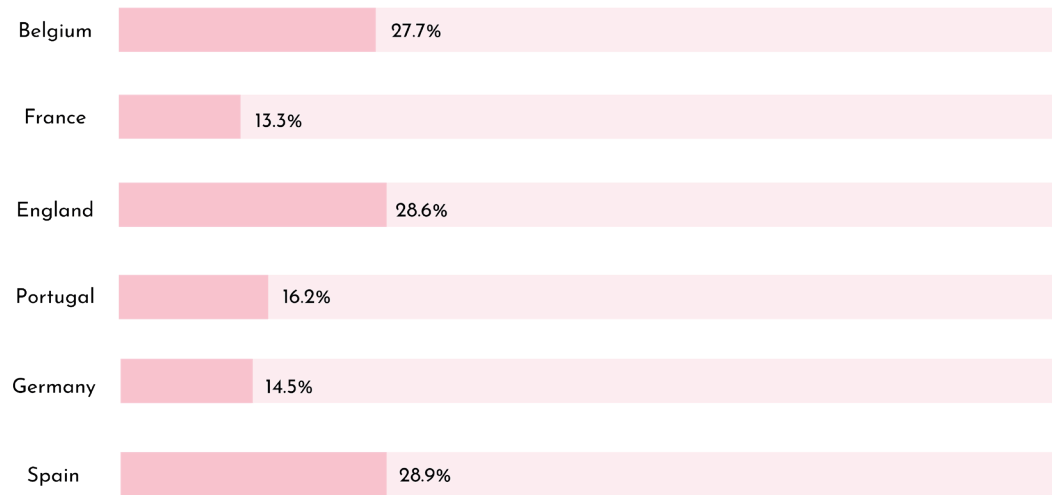


*Figure 5. Railroad lines in the world. (by author)*

## WORLD

About 2000 km of lines no longer active railways exist in Italy [19].

This number is 7600 km in Europe and 35,750 km in the US. They were one of the major systems that shaped the cities once, now they are left abandoned, waiting for their new functions in the cities. With the organizations such as Rails to Trails, redevelopment of these derelict structures are initiated. The most common case is turning them into a part of slow mobility network with bicycle lanes and promoting sustainable mobility. This is a useful and cost-effective solution for abandoned areas, but in order for these locations to reach their full potential, a more comprehensive design should be developed.



*Figure 6. Europe's long way to reclaim the disused railways. (by author)  
Percentages of abandoned railways that are converted in green corridors*

## EUROPE

The idea of reclaiming abandoned lines as greenways started in America with Rails to Trails Conservancy in mid 1960s and came to Europe during 1980s. Although there are not a certain total number of Europe's abandoned railways, we can make an assumption through the data provided by the programs of different countries in Europe. Spain with Programa Vías Verdes and France with Le Draisine E I Vélorail, Portugal with Ecopistas, England with the Sustrans Program (Sustainable Transport) and Belgium with RaVel (Réseau Autonome des Voies Lentes) can be examples of these programs which provide us with current statistics [20].

- In Belgium, 250 km of abandoned railways were converted into green trails [21].
- In France, 400 km of old rails have been converted into green trails [22].
- In England, around 600 km of railways were decommissioned and converted to greenways in 1990 [23].
- In Portugal, 733 kilometers of railway lines have been converted into trails [23].
- In Spain, 2200km of abandoned railway lines have been converted into greenways [24].
- In Germany, there are 5020 kilometers of abandoned lines have been converted into green trails [23].



Figure 7. Dismissed railways of Italy. (by author)

## ITALY

The abandonment of incomplete lines has a political extent in Italy since a substantial portion of the Italian railway network is sponsored by the state authority. The national railway company in Italy is FS Sistemi Urbani which has the task of carrying out integrated urban services based on the principles of business, rationalization, functional improvement and community service. They manage regeneration processes in transportation hubs and particularly railway operations that are no longer functional [25].

Sicily hosts almost half of the abandoned railways in Italy with almost 1000 km of dismantled lines [20].

However, only 20 km of these lines have been re-purposed as greenways and the main reason for the slow progress is the problem of funding. There is still so much way to go until a good portion of these lines are reclaimed.

Many organizations are trying to raise funds and promote the reclamation of the abandoned railway lines. Also EU funded programs such as REVER MED project by the European Greenways Association are helping the progress. This particular project aims for a green network for Mediterranean regions of Portugal, Spain, France and Italy for slow mobility and it includes the transformation of abandoned railways. Estimated length of this network is 10000 km [20][26].

Italian Greenways Association (AIG) is another organization that supports research on this for many years, creating an inventory of Italy's abandoned railway heritage and discovering that around 8000 km of lines can be repurposed.

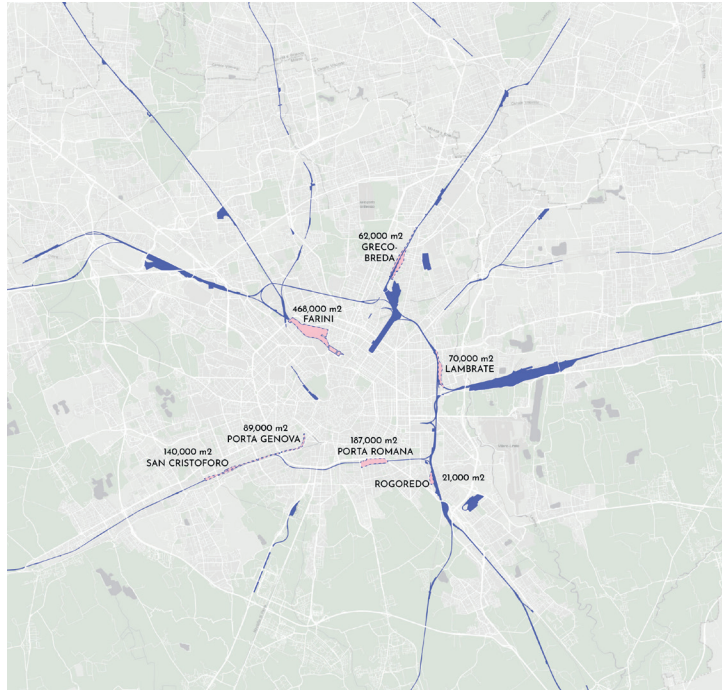


Figure 8. The 7 areas interested by the agreement (AdP): Porta Romana, Porta Genova, San Cristoforo, Lambrate, Rogoredo, Greco-Breda and Farini. (by author)

## MILANO

In Milan, the potential of reclaiming abandoned railway lines is seen and programs such as Scali Milano or “Accordo di Programma” (AdP) by FS has been initiated. The aim is to fund the city’s railway network system by the transformation of underused railway areas. [27]

International competitions are being organized to decentralize the rail yards which in total make 130 ha of urban soil. [28]

According AdP, 7 areas are selected:

- Farini - approximately 468,000 m<sup>2</sup> (618,000 m<sup>2</sup>, with the railway areas that will remain in part)
- Greco-Breda - approximately 62,000 m<sup>2</sup> (73,000 m<sup>2</sup>, with some railway areas remaining)
- Lambrate - about 70,000 m<sup>2</sup>
- Porta Romana - approximately 187,000 m<sup>2</sup> (216,000 m<sup>2</sup>, with the railway areas that will remain in part)
- Rogoredo - about 21,000 m<sup>2</sup>
- Porta Genova - approximately 89,000 m<sup>2</sup>
- San Cristoforo - approximately 140,000 m<sup>2</sup> (158,000 m<sup>2</sup>, with the railway areas that will remain in part)

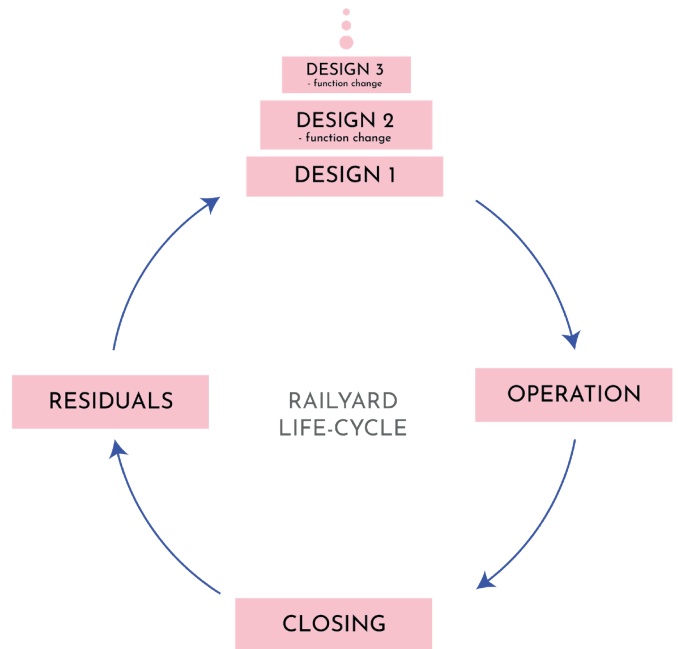


Figure 9. Life cycle of Railway Landscapes. (by author)

## LIFE CYCLE OF RAILWAYS LANDSCAPES

Understanding the series of changes that railway infrastructures undergo, hence their life cycle, is important in order to assess the future phases of the areas related with these infrastructures. Like everything else in our environment, they are born and they grow, yet, they do not have to perish; they can be repurposed while still reflecting history. Because they are a part of the transportation network and they are an expression of the various technological-industrial eras. [17]

As landscape architects we are dealing with dynamic changes in environment. These infrastructures are a part of today's environment and they have different stages that are circular. They start their lives by operating, connecting different parts of the national or international territories. After the operation phase,

because of different reasons mentioned in earlier chapters such as decrease in profit, political decisions, low demand etc. they come to the stage of closing. After that the residuals stage arrives, where the leftovers can be visible. Until their potential is realized they stay in this phase. Following this, the transformation phase begins where the site is given a new purpose, leading to the beginning of a new cycle. This new purpose goes through the same stages until its service is no longer needed and it needs to be transformed and adapted to the new needs of the society again. All past lives, leaving their traces to be told in the next life.

# chapter 3

## Case Studies

Case studies are selected worldwide based on 3 criteria in order to create comparability; their age, their international recognition and their scale.

The ultimate guideline will be created through analysis of selected case studies based on 12 points:

1. Location
2. Historical Development of the Site
3. Abandonment Phase of the Site
4. Design Initiations
5. Design Approach
6. Form and Function – Physical Characteristics
7. Botany
8. Phases
9. Site Observations
10. Connection with Mobility Typologies
11. Daily Operations and Maintenance
12. Conclusion and Comparison

## A. Major Case Studies

■ High Line

■ Promenade Plantée

Designed by: a collaboration between James Corner Field Operations (Project Lead), Diller Scofidio + Renfro, and planting designer Piet Oudolf.

Area: 2,33 km

Location: New York City, the USA

Opened to public: opened in phases during 2009, 2011, and 2014

Awards: ASLA 2010 Professional Awards, 2017 Veronica Rudge Green Prize in Urban Design





Figure 1. The site in relation to the open space network of the city. (by author)

■ Location

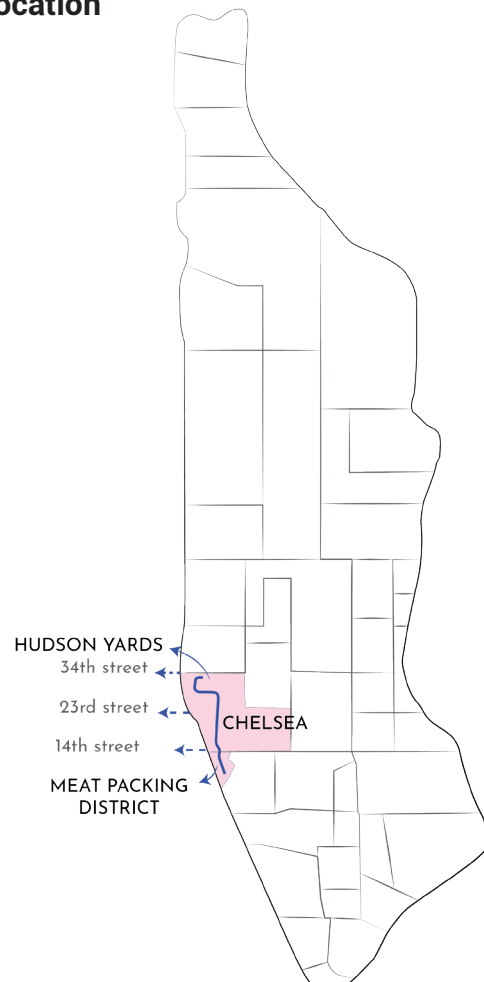


Figure 2. High Line's location in Manhattan. (by author)

High Line is a 2.33 kilometers long linear park built on an abandoned elevated railway. Designed by James Corner Field Operations (Project Lead), Diller Scofidio + Renfro, and planting designer Piet Oudolf; the park has 8 million visitors each year [1]. The project is inspired from Promenade Plantée which is the second major case study of this chapter, located on an elevated railway line that extends for 4.7 kilometers from Place de la Bastille to the Boulevard périphérique in Paris [2].

We will follow the research methodology that is mentioned in the structure, starting from the history of the development of the area and to the abandonment phase till the present.

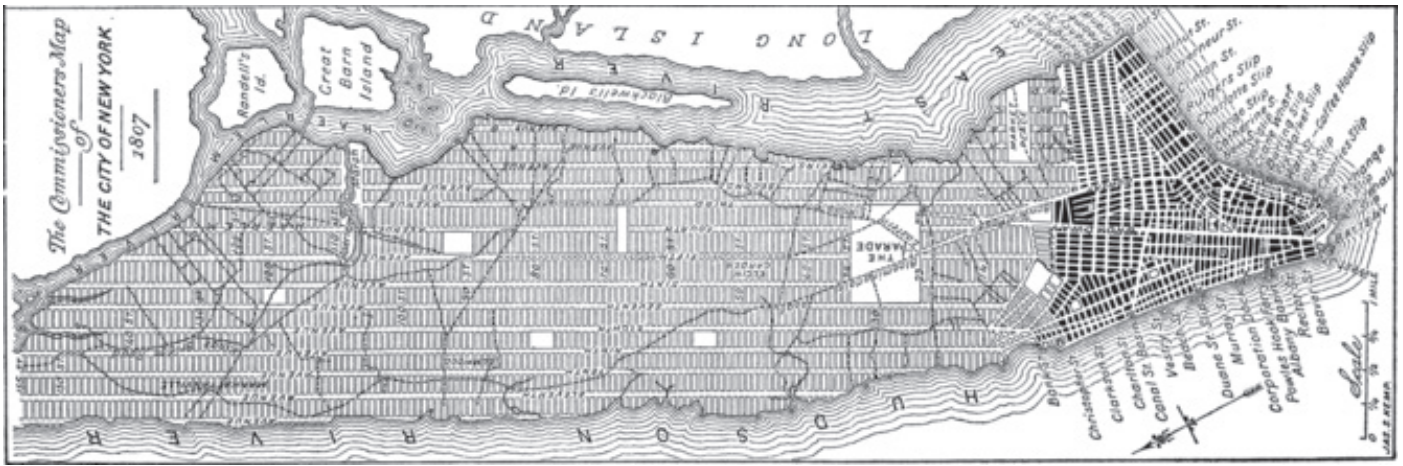


Figure 3. Commissioners' Plan of New York in 1811.

## ■ Historical Development of the Site

Geologically, Manhattan is one of five boroughs of New York City, located on the western shore of the United States. The borough is primarily contained inside Manhattan Island, limited by the Hudson River on the left and by the East River on the east which are both tidal.

The site's history dates back to 1600s. Prior to the European settlement, the first settlers made use of waterways of the region and created paths that form the site's basic layout. European settlement began in the 17th century and till the 18th century, little activity occurred including agriculture and fortifications. The original coastline remained almost the same approximately following the current route of the High Line [3].

In 1811, Commissioners' Plan of New York became an important turning point in the layout of the Manhattan Island.

The plan was drawn to answer the increase in population. The grid layout accommodated the massive population growth and it affected the city's later three-dimensional metamorphosis. Central Park, which was not included the plan has been added later in 1853 [4].

Another key development in the 19th century was the construction of the "West Side Line". The Hudson River Railroad was granted permission by the city of New York in 1847 to construct a railway line on Manhattan's west side as far as Canal Street, known as the West Side Line.

During the mid-1800s, New York Central Railroad freight trains on street-level rails provided supplies to lower Manhattan but created deadly circumstances for people; 10th Avenue became known as "Death Avenue" because of the fact that the trains killed more than 540 persons by 1910. In response to this, the "West Side Cowboys" patrolled 10th Avenue, which were the men on horses hired by the railroad to warn people of the trains by waving red flags from 1920s until the 1940s [5]. To warn pedestrians of approaching trains, the cowboys waved a red flag during the day and a red lantern at night [6].

In 1924, the city's Transit Commission wanted to remove the street-level crossings for the West Side Improvement project, paving the way for the elevated rail line. In 1933, the High Line welcomed its first train calling it the "West Side Elevated Line." By 1934, the line had become fully operational, shipping millions of tons of meat, dairy, and vegetables [5].

The establishment of an industrial zone along the Hudson in the mid 1900s was accelerated by the combination of the rail infrastructure and waterfront activity and technological advancements continued to change New York geographically and socially.



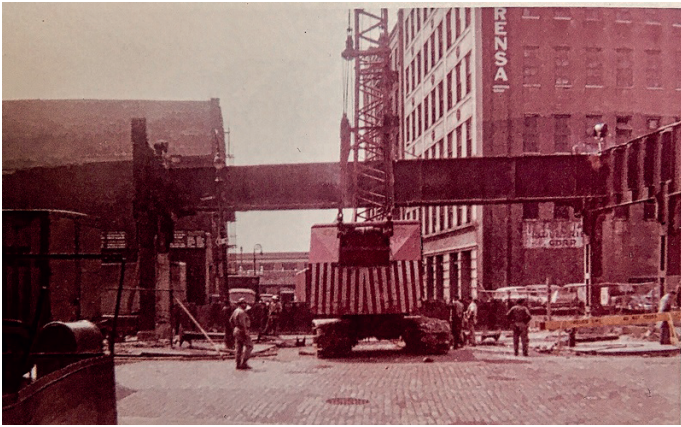


Figure 4. High Line Demolition- looking west on Perry Street. Photo by Peter H. Fritsch (1962).



Figure 5. High Line Demolition- crane with wrecking ball mounted on the trestle. Photo by Peter H. Fritsch (1962).

## ■ Abandonment Phase of the Site

After the mid 1900s, the growth of air-transport and inter-state trucking started to affect rail traffic on the High Line and on national scale [3]. Train use declined and by 1960, destruction of the High Line's southern section had begun [7]. By the 1970s, the demand for rail transport declined to a great extent and resulted in a continuous fall in the number of trains running on the route. By the 1980s, all traffic stopped [3] [5]. Later in 1991, a further section between Bank and Gansevoort Street was demolished as well [7].

The 1980s-1990s were the abandonment years of the High Line with the discussion that started in 1983 on the idea to use the High Line for other purposes that was going to continue for more than a decade. The Trail System Act was established by Congress the same year, allowing citizens to avoid onerous land rights concerns when converting former train lines into recreational spaces [5].



Figure 6. The High Line Pool ideas competition entry, by Nathalie Rinne, an architecture student in Vienna, Austria for a mile-long lap pool.



Figure 7. Ideas competition entry by John Cleater-Detour of Brooklyn, New York.



Figure 8. The Big Apple Roller Coaster ideas competition entry by FRONT Studio of New York, New York.

## ■ Design Initiations

A non-profit organisation called ‘Friends of the High Line’ (FHL) was founded in 1999 to campaign for the High Line’s preservation and inclusion to the city’s open space network. This group organised exhibitions and fundraisings under the campaign named ‘Save the High Line’ with the help of photographer Joel Sternfeld. His photos were a critical point in the campaign since they made a big impact on the awareness including a feature in the New Yorker Magazine in 2001 through which his work gained international attention. They were such a significant instrument for the FHL that he was regarded the organization’s third cofounder [8][3].

In 2003, FHL organised a competition for the ideas to transform the High Line into a public park which resulted in the entry of 720 ideas from 36 countries [5]. Concepts were expected to be distinct and surprising as the High Line itself, hence the participants were encouraged to be daring and visionary to develop extra-ordinary concepts.

“If you love nature you need to love the city because the city is the only solution given the population growth.”  
-James Corner

## ■ Design Approach

The site is not a usual site considering its characteristics of being a former train line, being above the ground, its linearity with limited width and its extreme length of 2.33 kilometres. Furthermore, it is located in a metropolitan area with high population. New York in 2004 had 8,104,079 inhabitants according to New York’s Department of Health statistics [11].

The main aim in this design was to create a “shared landscape” as James Corner explains in an interview with reSITE where he talks about the concept [12]. He describes as follows “We all need to understand that cities are beginning going to become denser we’re going to have to share them and we’re going to have to share the space and share the resources.”

The High Line project tackles a wide range of urban challenges such as the reclamation of unclaimed public space, adaptive re-use of old infrastructures, and preservation as a strategy for sustainability. The site is transformed through a strategy called agri-tecture which is a term describing the combination of agriculture and architecture [13].

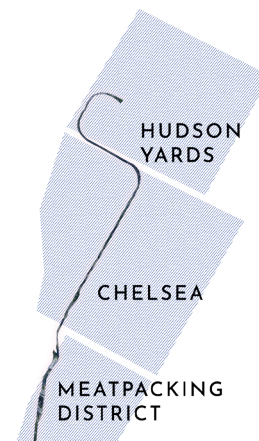


Figure 9. Three districts of The High Line. (by author)

This area of Manhattan’s west side features critical junctions that have been disrupted by massive multi-block projects, and it has become dangerous to travel from midtown to the far west side at times due to the continual transit of heavy trucks. As a result, the residents had a difficulty with accessibility. Hence the design had to respond to this problem.

To most, High Line can be just a park built on a historic elevated rail line but it was always meant to be more than just a park. The project was about reimagining public space to create connected healthy neighbourhoods and cities. It was about creating connections and pedestrian experiences. Ultimately today the High Line connects 3 neighbourhoods; the Meatpacking district, Chelsea and Hudson yards [14].



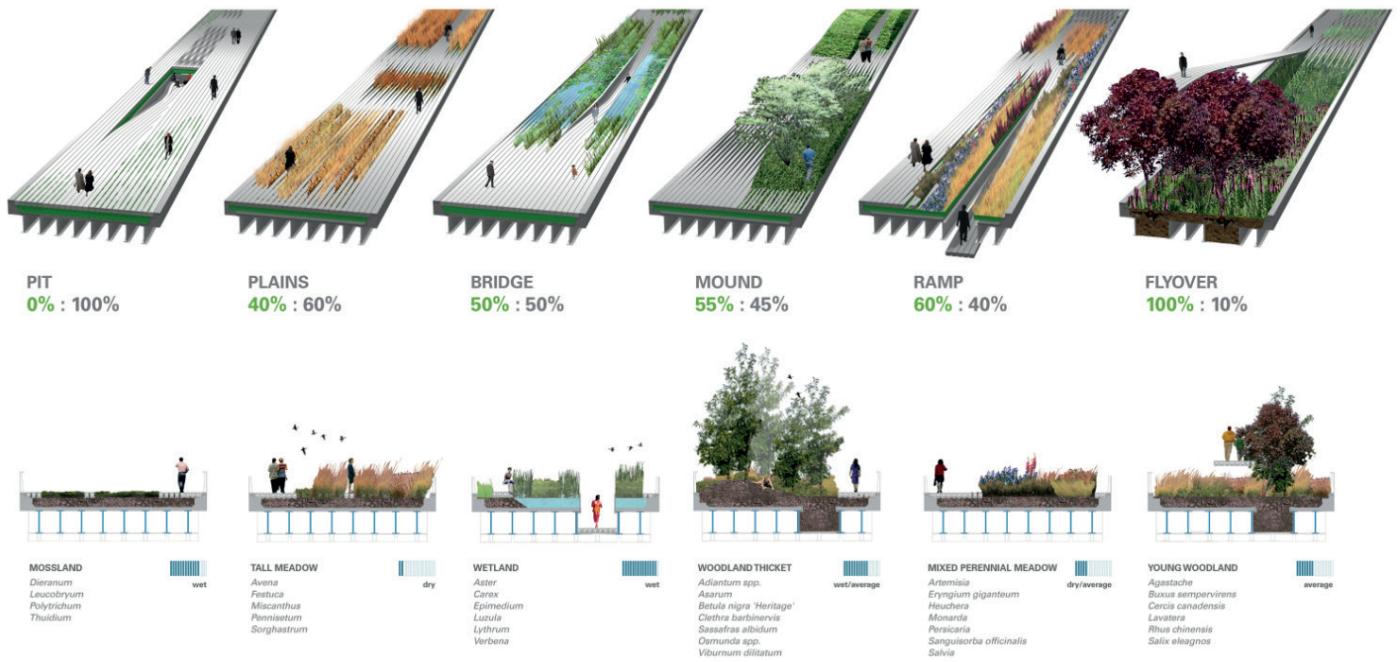


Figure 10. Diagram illustrating varying relationships between paving (hardscape) and planting (softscape).

## ■ Form and Function – Physical Characteristics

“It is better to live in a state of impermanence than in one of finality.”

As mentioned before, the site is characterized by its linearity. And as summarized in their slogan “Keep it! Keep it wild; Keep it slow; Keep it quiet; Keep it simple!” [15], it stands out thanks to the attribute to the residuals of the former function by preserving the qualities of the original landscape.

In the High Line Design Statement, they explain as follows: “its singularity and linearity, its straightforward pragmatism, its emergent properties with wild plant life – meadows, thickets, vines, mosses, flowers – intermixed with ballast, steel, and concrete.” By leaving the rail trestle in place, the design team were acknowledging the site as a real entity, both in terms of structure and material existence.

Corner’s team characterizes High Line’s purpose in the design statement as “the retooling of an industrial conveyance into a post-industrial instrument of leisure, life, and progress.” The team wanted to create “a sense of slowness, otherworldliness, and distraction” [17].

The project is formed by a series of micro-landscapes along the elevated track. The varying width creates opportunities for the outdoor rooms. These micro-landscapes offer different activities at different paces such as sunbathing, sightseeing, walking, resting etc. Furthermore, since the project was open to public in phases, different environments unveils themselves throughout these phases. The newly unveiled environments include the Thicket, the Lawn, the Seating Steps, the Flyover, the Viewing Spur, the Wildflower Field, the Radial Bench, and the Cut-Out [18]. The park is additionally enlivened with temporary, site-specific art installations.

The hard and softscape is beautifully combined in this project in order to create this “slowness” experience in which one can partake of the changing urban fabric along the linear park.



Figure 11. Diagram illustrating areas divided according to the planting design.

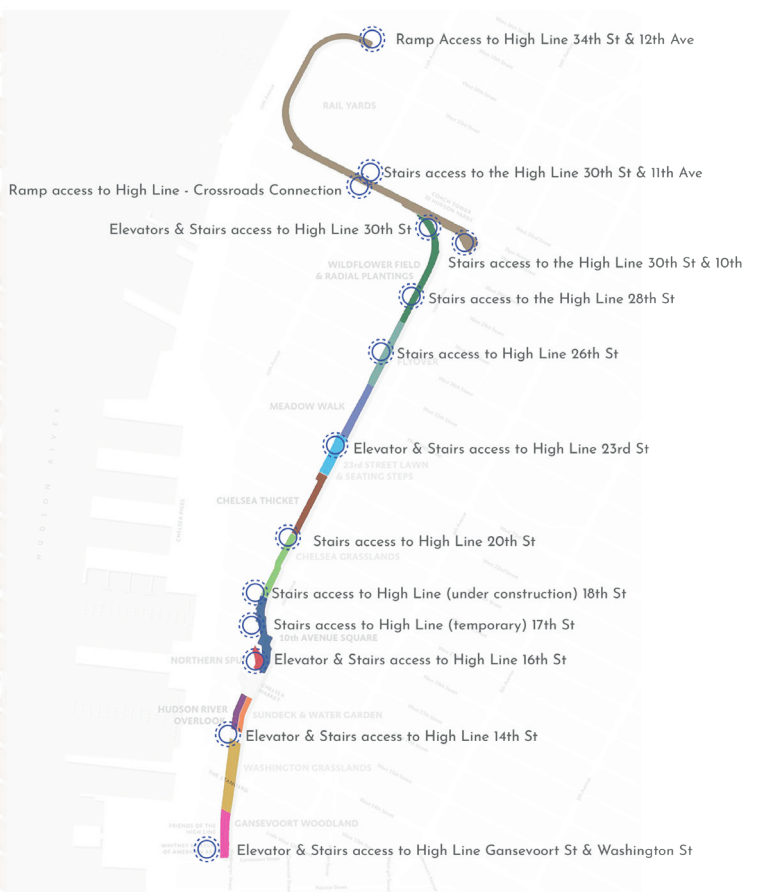


Figure 12. Entrance points to the High Line. (annotated by author)

## ■ Botany

The plant variation is very important in this project because of the experience it provides to the visitor. Famous landscape designer and horticulturist Piet Oudolf designed the vegetation in High Line park. He is known for his approach of capturing nature’s ‘emotion’. In High Line, we see this approach as he created a “sense of nature that somehow feels completely at home in its setting above bustling city streets” [19]. His idea was to create something that people are reminded of nature through an urban oasis by evoking a prairie in the middle of the city.

Before the design even began, in the abandoned rail-ways, there was already a succession of plants that covered the old tracks. Botanist Richard Stalter documented 161 species in his article on the flora on the High Line in 2004 [20]. According to this article, high vascular plant species diversity on the High Line were present because of several factors such as human visitation as a prospective source of transferred seeds and new species, human disturbance including trash deposition, trampling, soil compaction, and fire. We can see this wild landscape in the insightful photos of Joel Sternfeld. These triggering photos were ultimately responding to a long-felt but previously unspoken need.

Piet Oudolf explains the softscape design in his book *Gardens of the High Line: Elevating the Nature of Modern Landscapes* in a detailed way. In the book, the sections of the botany of the High Line are mapped. 13 garden stands out in this map: Gansevoort Woodland, Washington Grasslands, Hudson River Overlook, Sundeck and Water Garden, Northern Spur, 10th Avenue Square, Chelsea Grasslands, Chelsea Thicket, 23rd Street Lawn & Seating Steps, Meadow Walk, Flyover, Wildflower Field and Radial Plantings, and Rail Yards. In all of these gardens, it’s very important that a sense of wildness comes through.



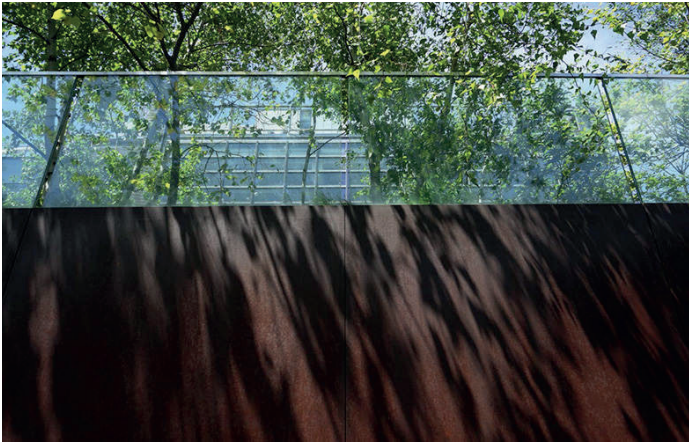


Figure 13. Spring shadows cast by Gansevoort Woodland tree trunks and foliage play over steel tracks

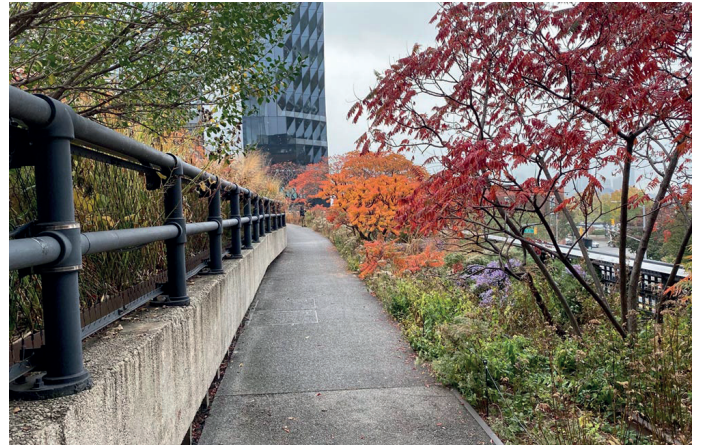


Figure 14. Autumn season in the High Line.



Figure 15. Winter season in the High Line.



Figure 16. Spring season in the High Line.



Figure 17. Summer season in the High Line.

The harmony of the vegetation with the existing structure is outstanding. The vegetation compliments these structures rather than stealing attention.

The High Line was designed in a way to allow visitors from any of its entry points to be led to an exhilarating garden. Furthermore, the designers wanted to allow visitors to experience the seasonal changes, different textures and different layers through vegetation. That's why, seasonal patterns and structural qualities of the plants are taken into account. Quoting Lisa Switkin from James Corner Field Operations: "We scripted the experiences we wanted along the line—areas of transition, places to pause and gather, or intimate alcoves" [21].

Visitors will be able to experience the varied habitats on exhibit for many following years, observing subtle changes in pattern and composition and hence the never-ending celebration of the living process [21].





Figure 18. View of where the High Line's original concrete deck was removed, revealing the historic steel beams below.

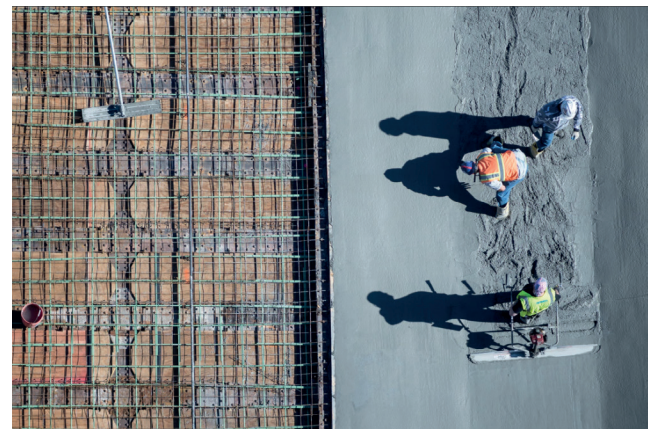


Figure 19. Contractors pour concrete on the High Line in Section 3, which opened in September 2014.

## ■ Construction Process

It took community engagement, years of planning and a multidisciplinary design work to create the High Line as well as more than 2 years of construction. The process to build this design started with removing everything first, including the rail tracks which were tagged, surveyed, and stored in order to put in their original location later with the integration into the landscape design [22].

After the site preparation, sandblasting operation was applied to the steel elements and then the steel was repainted to match the original colour of the High Line. The next step was waterproofing and repairing the concrete for the repurposing reasons.

The final step of the construction was laying the pathways and the other elements of the landscape design such as the urban furniture, lighting and the vegetation. Concrete paving was used in the paths and stairs were installed in some locations. An important step was removing the High Line's concrete deck in order to allow visitors to pass through the structure of the High Line itself and reveal the original framework of steel beams and girders [40].

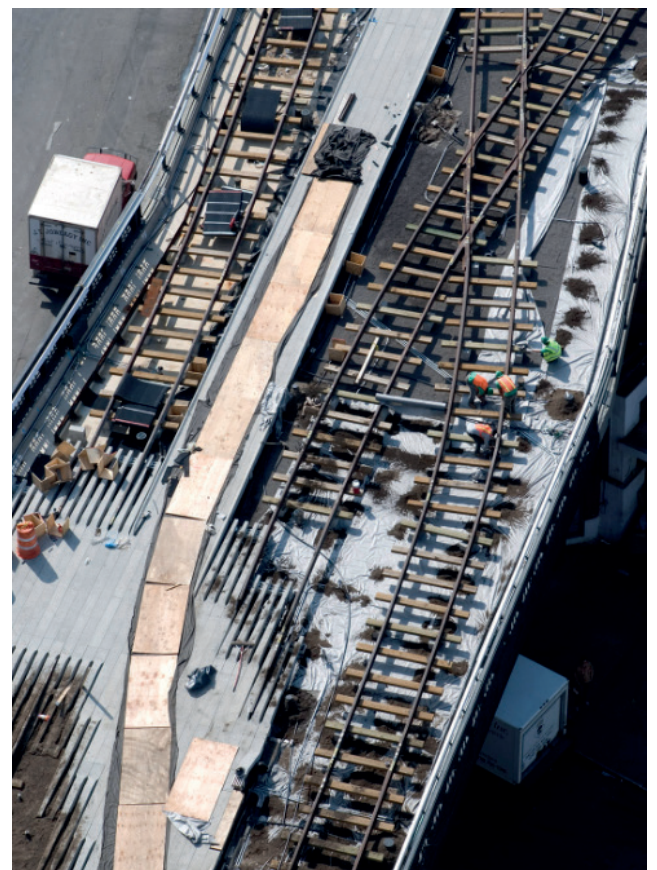


Figure 20. View of the reinstallation of the High Line's original railroad tracks into the new landscape and pathway system. Visible below the tracks are the base layers of the High Line living roof system that make up the planting substructure.

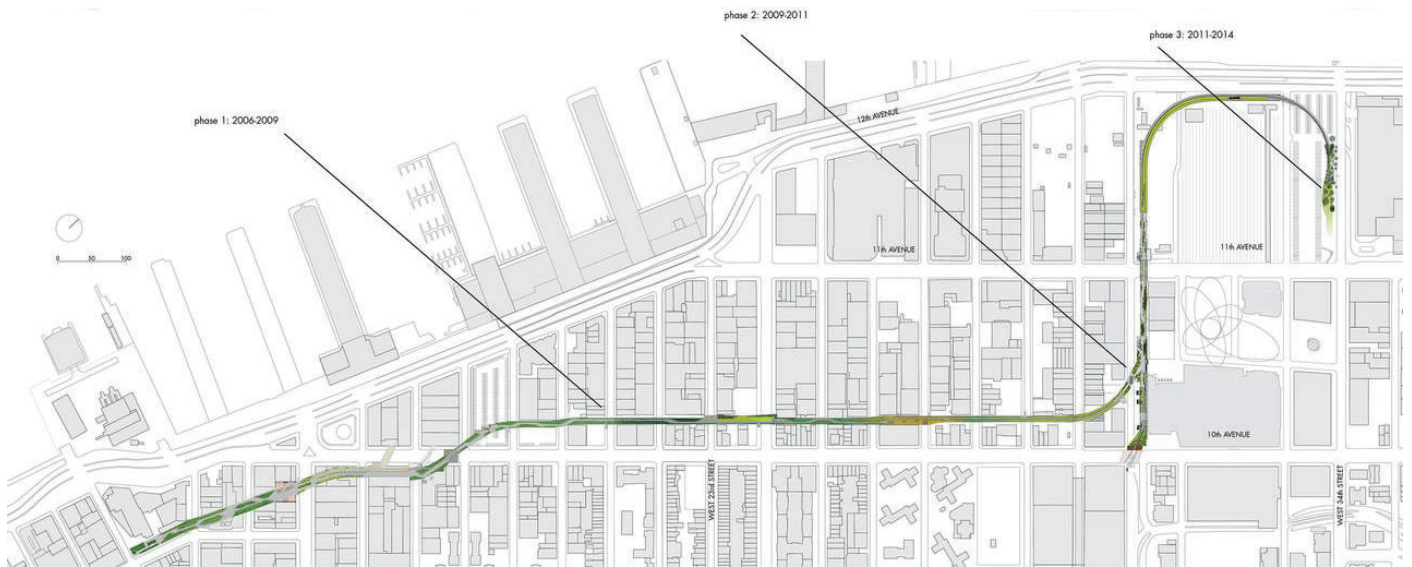


Figure 21. High Line Site Plan showing phases.

## ■ Phases

The highline was opened to public in 3 phases over a period of eight years. In 2006, the construction began with Phase 1 encompassing nine blocks opening in 2009; Phase 2 covering ten blocks opening in 2011; and Phase 3 beginning in 2012 and opening to the public in 2014. And still, Friends of the High Line keeps working on future phases of the project [24].

Phase 1 was about welcoming visitors and introducing them to the site. Hence, it was important to show the wilderness of the plantation complementing the existing layers of steel beams, rivets, and guardrails. Here, section 1 transforms 0.8 km of infrastructure into parkland, from Gansevoort Street to West 20th Street on the west side of Manhattan [25].

Concrete walkways were important in this phase since they were leading people to the edge of the trestle platform, offering them a view of the city and the Hudson River but also engaging with other complex elements, creating unexpected views and giving the “slowness” experience. 210 plant species were carefully selected to create a native, resilient, and low-maintenance landscape. The highlights of this phase was reducing the need for irrigation with green roof systems, open joint paving that allows the water flow in the site, and finally energy efficient lighting selection which creates safety in pathways and allows visitors to enjoy the cityscape at night [25]. With all these features, phase 1 was awarded in many platforms such as ASLA, International Green Roof Association (IGRA) and Rockefeller Foundation [24].

Phase 2 covers section 2 which is narrower and

straighter since the corridor is not as varied as the first section in width. It covers the part from 20th Street in West Chelsea to the West Side Rail Yards at 30th Street. Since the first phase was very successful, the expectations were high for the second phase of the project as well. This part has a more intimate scale since it is surrounded by interesting components such as historic warehouses, residential complexes and new development on both sides. With this distinct identity, section 2 gives the feeling of engagement to a smaller neighbourhood while being detached from the huge metropolis [26][27].

One third of the section 2 is elevated about 2.5 meters above the vegetation, allowing people to stroll on the metal structure called Philip A. and Lisa Maria Falcone Flyover. More access points and ADA-accessible elevators (Americans With Disabilities Act) are added. Distinct rooms are constructed in this phase such as The Chelsea Thicket; Wildflower Field; 23rd Street Lawn; Philip A. and Lisa Maria Falcone Flyover; and the 26th Street Viewing Spur and the Seating Steps where the performances takes place [42]. In this section, except the trees, visitors gaze down on the plants rather than seeing it at line of sight. The section ends with a slow rise on the pathway where the concrete decking has been removed to reveal the original structure [26][27]. Section 2 was also awarded by ASLA.



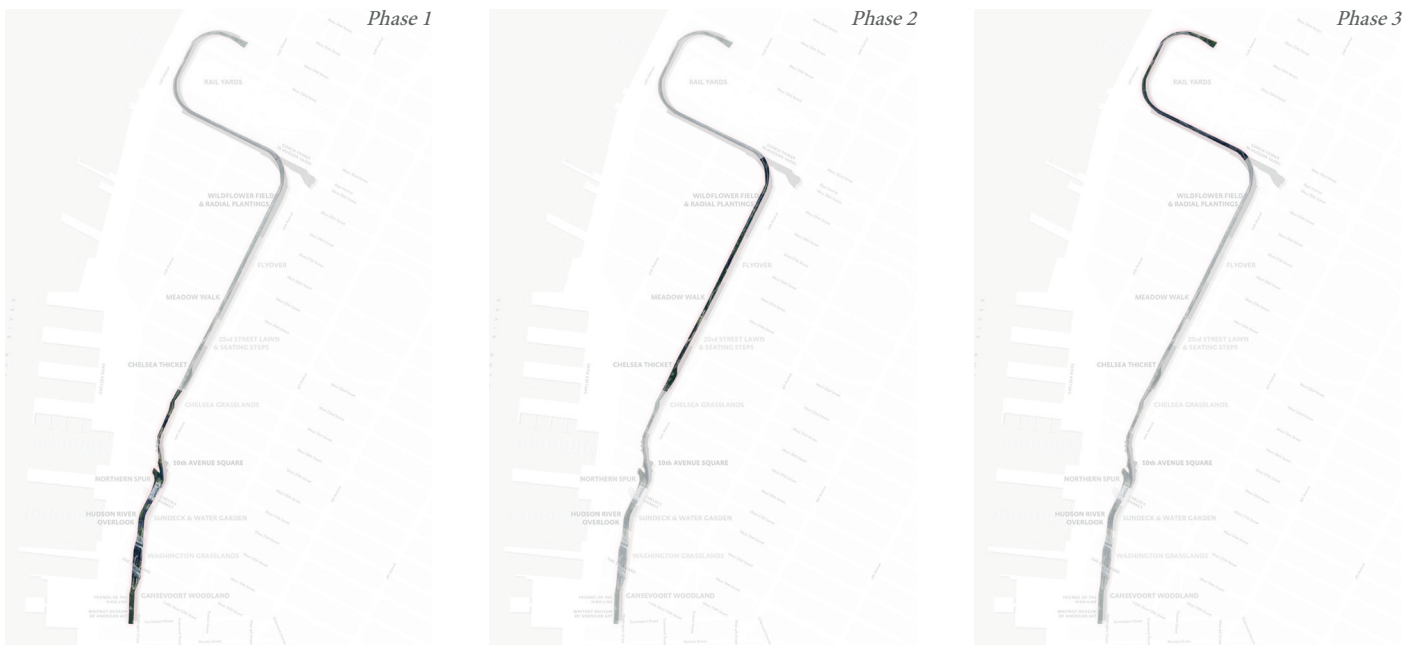


Figure 22. High Line Construction Phases.

Phase 3, covers section 3 which is the final section of the High Line. It is also called The High Line at the Rail Yards. It connects Gansevoort Street to 34th Street.

The opening of this phase completed the northernmost zone. It includes the areas of the Pershing Square Beams; Interim Walkway; and the CSX Transportation Gate. Broad views of the Hudson River and city can be seen along a lean path and the vegetation consists of self-seeded plants in this section. This area aims to bring the evocative image of the urban fabric that developed after the trains stopped running in the rail lines to the sight of the visitors [28].

The 11-hectare development that was expected to add 16 new skyscrapers to the city skyline nearby the Hudson Yards was one of important factors to be considered in this way. Especially, with high standards that the first and the second phases set for the project. 30th Street Grove, characterized as a “serene meeting location,” is one of the new additions. It contains a succession of picnic spaces and furniture items that are designed in a way to look like an extension of the paving which was also used in previous phases. James Corner describes this area as “perhaps the most authentically subtle design, where the ‘original’ High Line landscape, with its self-sown grasses and flowers emerging from old tracks, wood ties, and stone ballast, remains intact” [29].

The development of the High Line still continues with the community engagement and the work of Friends of the High Line. The extensions of the project to create further connections are being discussed as members of the design team presented the possibilities for improved, safer access to Moynihan Train Hall and Penn Station on a virtual meeting about the High Line - Moynihan Connector on October 26, 2021 [14].

## ■ Site Observations

The site has a distinct character with its combination of history and the density. Manhattan is more dense any city in the country and one of the most populated areas in the world [30][31]. Hence the project's success lies within the architectural setting the site provides. The designer team made the most the views that the city offers and connected people from different neighbourhoods with a beautiful linearity. The residents, the people working in packed buildings and the tourists showed great interest to this transformation because not only it provides wilderness of nature within their daily routine, but it also shows their own district from a different view.

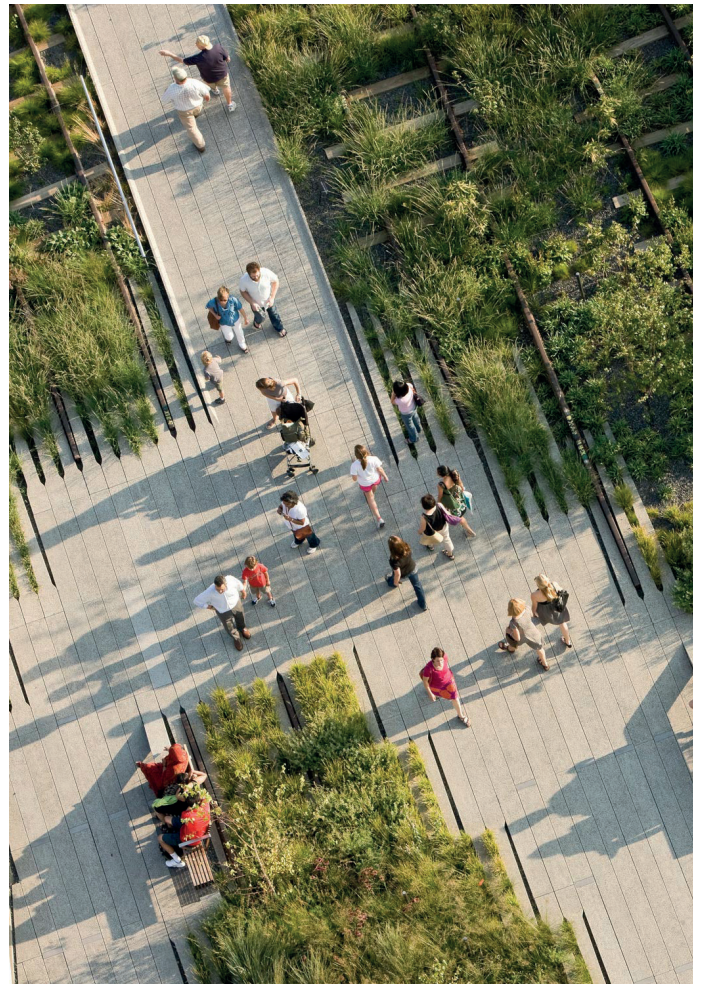


Figure 23. High Line aerial view.

## ■ Connection with with Mobility Typologies

The High Line is located in a well-connected area. The site's characteristic density and the existence of diverse user types help the connection with different mobility typologies to reach the park. There are 4 different bus routes connecting towards different parts of the project. There are several bus stops in the Chelsea district. The biking routes are available almost every street that leads to the park. One of the subway lines directly brings people to the Hudson Yards area. Therefore, we can say that it is very accessible. Taking into consideration the access points which is mentioned in the Botany section, there are 14 entrance points and multiple of them includes elevators and ramps.



Figure 24. Transportation Network around the site. (by author)

- Bike route
- Bus route
- Subway route
- Subway stop
- Bus stop

## ■ Daily operations and maintenance

This project is iconic in terms of community engagement, the scale, and the attention it brought to the potential of the transformation of abandoned railway landscapes. It started with an inspiration from the “Promenade Plantée” and now it is a supreme example that can reference and inspire many further projects. However, the budget used in this project makes it one of the most expensive parks in the world with an annual operating budget averaged around \$3 million a year [32]. The total cost for the first 2 phases was \$152.3 million [33]. The efforts of the community and the Friends of the High Line made this happen and the organization still continues to create budget which comes from private donations. Even though it is designed in a way to sustain itself and require minimum maintenance, it still needs budget for operating. Nevertheless, it is beneficial for the neighbourhoods it connects since the The High Line has resulted in around \$2 billion in new developments [34].

## ■ Conclusion

All in all, the High Line presents us the alternative ways to transform an abandoned railway landscape to an urban public space. The scale of the project provides enough space to create varied spaces for varied uses. Each section of the site is carefully designed and each of them aims for giving wide-ranging perspectives to the user. The elevated characteristics are used wisely for the design since the designers found ways to re-introduce the city from different angles to the locals and introduce the surrounding to the tourists. Thanks to the elevation, the users experience their city above the ground. Hence, attention to ground appears in some parts of the project. In addition, different levels of sight are provided within the site. The use of vegetation here is incredible because their mass and form contribute to this experience by framing or highlighting different parts. The botany in this project was the key to all proposed senses. For instance, the wilderness in the design recalls the abandonment years of the railway where it was covered with vegetation that we see from the photos of Joel Sternfeld. It is finding na-

ture in the city instead of an escape from city.

Furthermore, being in one of the densest areas in the country while being surrounded by historical elements is a rare combination to find elsewhere and the design definitely elevates this combination with its features. The materials, textures and patterns in both hardscape and softscape of the project compliment the industrial features and celebrate the history of railway.

The phasing is a strategy to learn from. Because each phase was a key factor in this project to understand the needs of the users in the meanwhile. Each opening provided an input for the next phase and contributed to the success of the whole project. This strategy was also important to engage users. It can actually be referred as process design which was brilliantly handled in this case. The user engagement brought an incredible popularity which certainly contributed to the cultural development of area.

# Promenade Plantée Coulée Verte René-Dumont

Designed by: Philippe Mathieux and Jacques Vergely together with Patrick Berger, Andréas Christo-Foroux, Vladimir Mitrofanoff, Roland Schweitzer, Pierre Colboc

Area: 4.7 km

Location: Paris, France

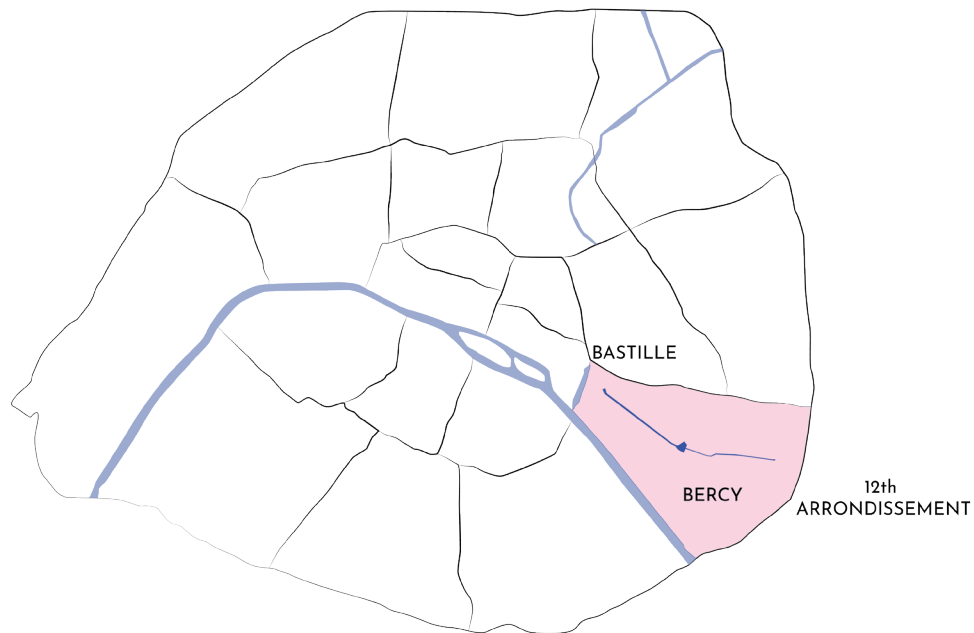
Opened to public: opened in phases during 1994-2000.





Figure 1. The site in relation to the open space network of the city. (by author)

■ Location



Promenade Plantée or Coulée Verte René-Dumont is a 4.7 km long linear park built on an old elevated railway. The park is the first example of a transformation of an abandoned railway into a public park that inspired many others such as the High Line in New York.

Figure 2. Promenade Plantée's location in Paris. (by author)

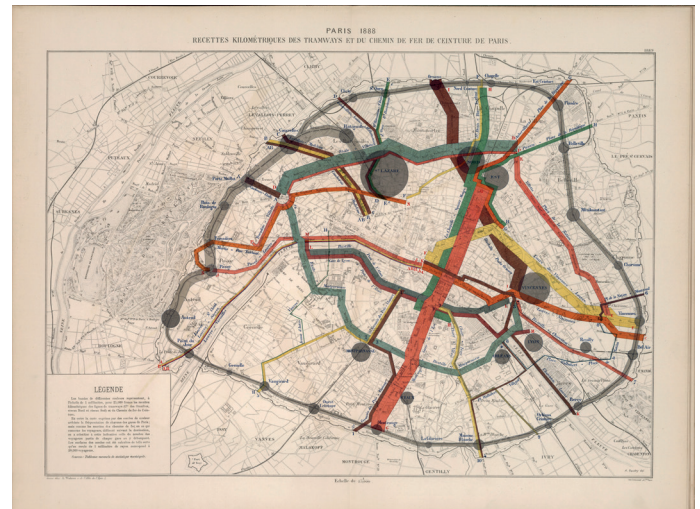


Figure 3. Historical map showing rail lines in Paris in 1888.

## ■ Historical Development of the Site

The former railway was opened in 1859 as The Vincennes railway, operating between the Place de Bastille and Varenne-Saint-Maur [1]. Trains ran on the lines for 90 years until it was abandoned in 1969. The line hosted one of the earliest railway stations of Paris, Gare de la Bastille, which was the second busiest terminal in Paris with 12 million passengers per year by the 1889. As in other nations, the Great Depression had an impact on operations, and the Vincennes Railway was unable to compete with alternative modes of transit such as bus and subway. On December 15, 1969; the last train departed from The Gare de la Bastille towards the lines of Promenade Plantée making it Paris' final steam locomotive terminal [2]. Later in 1984, the Gare de la Bastille was demolished due to the construction of Opéra Bastille although it was recognized as historic.





Figure 4. Viaduc des arts in 60s as Gare de la Bastille.



Figure 5. Gare de la Bastille shortly before its demolition.

## ■ Abandonment Phase of the Site

The site was abandoned in 1969 because of the introduction of bigger trains and new technologies. The shift to truck-and-trailer freight transportation led in the development of new terminals along the suburban perimeter, causing several rail routes to deteriorate such as the Bastille–Vincennes railway [3]. Beginning in the mid-1960s, with the development of the Réseau Express Régional (RER), Regional Express Network, passenger system dealt with the ultimate blow. The RER A rendered numerous previous rail lines obsolete, and the Bastille–Vincennes railway was ultimately decommissioned in 1969 [3][4]. Even though this new network was one of the world’s busiest commuter lines, the Bastille–Vincennes section in the inner-city centre remained inactive as a forgotten heritage of French industrial legacy until 1980. For a decade, the route was invaded by wild weeds and piled with junk and garbage. Hence, a need for an intervention was clear [5].

## ■ Design Initiations

The construction of the Bastille-Vincennes line was a representer of the government's authoritarian development plans, which were centered on France's growing industrialisation [3][6][7][8].

It was obvious to Parisians that this industrial heritage was to be claimed since it became a habitat for rebel locals. Bird watchers, underage drinkers, drug traffickers, and urban explorers found refuge in the abandoned rail bed. Meanwhile, under the viaduct, a variety of small business found place such as auto repair shops, studios, etc. [9].

This situation was disturbing for the residents of the 12th Arrondissement which locates alongside the abandoned rail line. Together with officials, different groups requested solutions. While some wanted it to be demolished, some of the groups wanted the construction of a commuter line or even the restoration of the freight operations.

In 1978, the Atelier Parisien d'urbanisme, a non-profit organisation that works on the subjects of urban and societal developments as well as public policies, began to develop large-scale designs for Eastern Paris in 1978. Both the 12th and 13th Arrondissements were in this plan. The proposal was emphasizing green space and cultural features between Western and Eastern Paris.

Given that the citizens were traumatized by the demolition of major Paris landmarks throughout the 1970s with motives such as environmental consciousness and longing for a precapitalist Paris of craftsmen, merchants, and petit quartiers, they responded well to the proposal. Because of the historic significance of the Bastille-Vincennes train line and the city's severe

need for more green space, the concept of converting it to a public park received widespread support from governmental, charitable, and commercial sectors.

In 1983, SEMAEST was founded for the economic regeneration for neighbourhoods in the east of Paris and a new group of planners took the opportunity to broaden the programme as Plan-programme Est de Paris. They supported the notion of converting the Bastille-Vincennes train line into a linear greenway for the city. When the Atelier announced its new general layout for the Bastille railway in 1985, SEMAEST planners were already planning to connect the Promenade to existing ZACs and, eventually, to the transformation of Eastern Paris [3][10]. Hence, plans for additional residential and commercial development in ZAC Reuilly centered on the greenway's design, the restoration of the Gare de Reuilly and the establishment of the new Jardin de Reuilly as the primary pivot point of the Promenade Plantée [3][11].

As a result, plans for additional residential and commercial development in the ZAC Reuilly centered on the greenway's design, the restoration of the Gare de Reuilly, and the establishment of the new Jardin de Reuilly as the primary pivot point of the Promenade Plantée (Varlet 1997, 78-84). The transformation of Gare d'Orsay into a museum at the time also inspired planners to consider adaptive reuse of industrial heritage elements, hence they proceed with Promenade Plantée and the Viaduc des Arts [3][12].

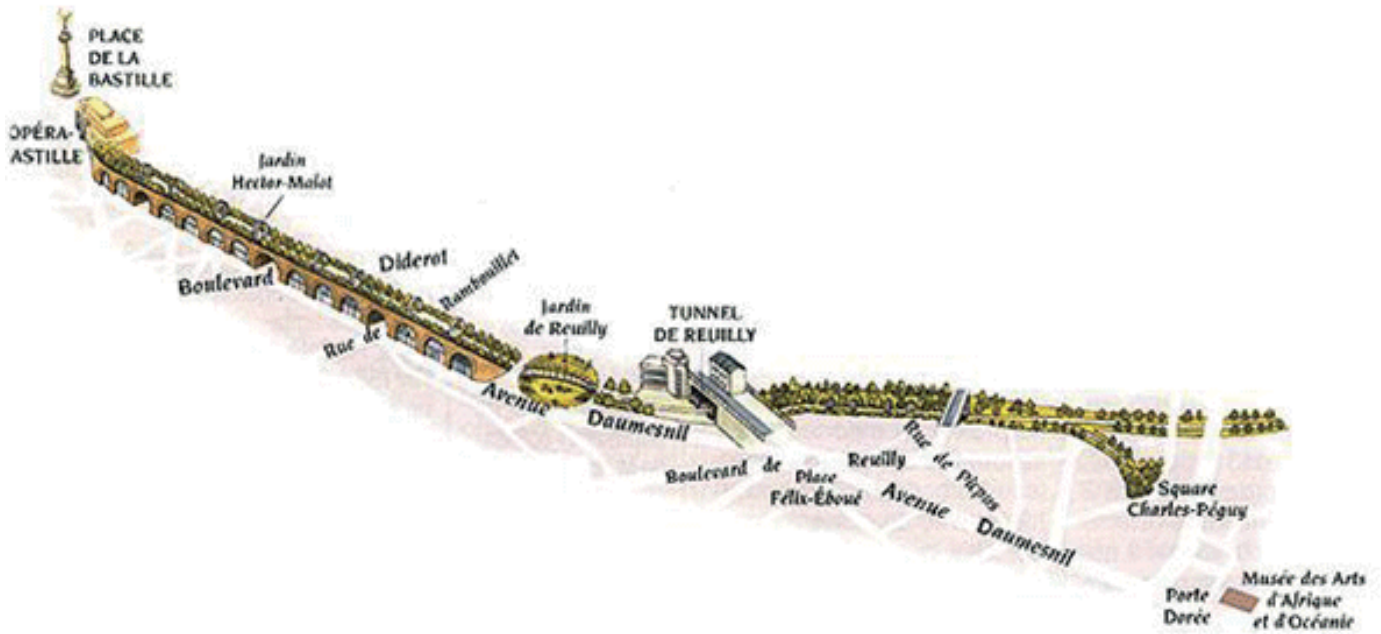


Figure 6. Areas along the Promenade.

## ■ Design Approach

The design approach towards the transformation of the lines was centered around “place-making”. It was all about repurposing space, remaking place. We see a transformation from space to place through architectural imagination, ecological awareness, and social sensitivity.

According to landscape architect Pierre Donadieu, designers strive to “anticipate the city” by employing agile, dynamic, and adaptable strategies [3][14]. Rather than establishing the urban landscape through closed-ended structures, designers coordinate reclamation and rehabilitation initiatives within a framework that ties existing conditions to future expansion and provide venues for human drama and experimentation.

The success of the Promenade is tied to an ongoing presence of people – their bodies, emotions, trajectories and memories because human actions is necessary for the conversion of space into place [3][15]. A range of place-making routines; walking, jogging, relaxing, picnicking, bird watching, reading, conversing, seeing, and being seen are all activities that the Promenade encourages. It serves as an amenity for

nearby inhabitants, a destination for Parisians, an attraction for visitors, and a laboratory for horticulturists and landscape students.

Motion, connection, and destination are the main acts that it constructs for with its unique viewpoints, with its ability to frame slowness, rest and contemplation. It simulates a panoramic view as experienced from a train’s window, and elevates it with a peripheral vision over buildings and the sky [3][16].



Figure 7. Four districts of The Promenade. (by author)

## ■ Form and Function – Physical Characteristics

The Promenade Plantée runs for 4.7 kilometers across eastern Paris, establishing a linear condition in varying height that connects the Place de la Bastille to the city's outskirts, the Bois de Vincennes [3][17]. It runs through the four quartiers that make up the 12th Arrondissement: Quinze-Vingts, Bercy, Picpus, and Bel Air. It starts near the Opéra Bastille, where the Bastille-Vincennes and the great Paris-Strasbourg line was operating before.

First 1.5km covers the Viaduc des Arts which continues along the Avenue Daumesnil through the Quinze-Vingts quarter, leading the visitor down a path varying in height from two levels above the street to ground level.

From Quinze-Vingts quarter, it reaches to Bercy quarter which is an old warehouse district near the river Seine. From the Bercy quarter, the line continues on elevation and shifts to a series of bridges, platforms, embankments. After Bercy, the promenade continues into the Picpus district. The elevated section ends halfway through Picpus at the Jardin de Reuilly, which was the railway's former maintenance yard. Here, the visitors can pass over the park through a wooden footbridge or stroll around the park's peripheral trails. After the Jardin de Reuilly, the promenade has two passages at or below the grade of the street which passes through a tunnel under Boulevard Périphérique and

crosses the suburban SaintMandé to ultimately connect to Bois de Vincennes.

Designers Matthieu and Vergely designed the rail bed as a traditional linear promenade with vegetation, seats, pergolas, and arbors. They planned a series of pauses in which the plantation fades and little ponds, plazas, nooks, and lingering furniture gain space.

Under the elevated portion, Viaduc des Arts finds its place. It presents a consistent layout of the areas outlined by the 71 great arches. As mentioned before, the viaduct's arched spaces were already hosting shops on the street level as well as small lofts above for storage and illegal apartments, all surrounded by collected temporary facades. These illegal premises were demolished and replaced with boutique craft and artisanal shops. The store windows all speak the same architectural language of wood, metal, and glass, giving the street a sense of uniformity and harmony [18]. It gives rise to the urban revitalization of the Parisian avenue that the viaduct generates [19].

Pierre Colboc was the lead architect for the ZAC Reuilly redevelopment site, thus he worked on the Jardin de Reuilly. He kept the semicircular form generated by the curve of the rail corridor as it follows the Avenue Daumesnil and opens towards the old SNCF rail yard, The Société Nationale des Chemins de fer Français





Figure 8. Distinctive pergola at the Promenade.

– state’s railway company. This dramatic shape and the panoramic condition describes the park. On the east part of the garden, the Promenade splits into 2 paths; a pedestrian and a bike path which arrives to an underpass with 5 rock waterfalls within. Through this underpass, the promenade completely changes. Before the “art gallery” portion of the park was in a different characteristics on top of the viaduct, after the underpass there comes the surface boulevard. The two zones are linked by an arched bridge as well. The elevated portion of the path is divided by open stretches with panoramic views and closed sections, some of which pass through dwellings [20].

The second section of the park creates spontaneity with its shift and expands in numerous places with small gardens that give the impression of being deep in a natural environment, underlined by the absence of architectural language and the luxuriant wild climbers, unpruned trees, ground cover plants, and a tunnel in a grotto with stones and flushing water[18].

The first of its kind, this elevated promenade on an abandoned railway line offers a new experience to locals, presenting their city from different points of views and levels, which gives birth to the phenomena of elevated urbanism that provides a rich platform for human dramas, actions, and public culture. The promenade draws attention to the urban fabric, par-

ticularly the elements that are not visible from the roadway. The verticality is mixed with high vistas, and pedestrians can embrace everything at once since the elevation places them on a similar level with the surroundings.

The promenade is an alternate route constructed specifically for pedestrians and cyclists to add to their leisurely mobility experience, displaying the city as a whole piece of art and transporting them away from all the commotion and travel issues that they would ordinarily confront [21].

The movement was the key action before through the operation of transport. Hence, today the line continues to give space to the action of movement; as of movements of people, goods, and ideas throughout France.

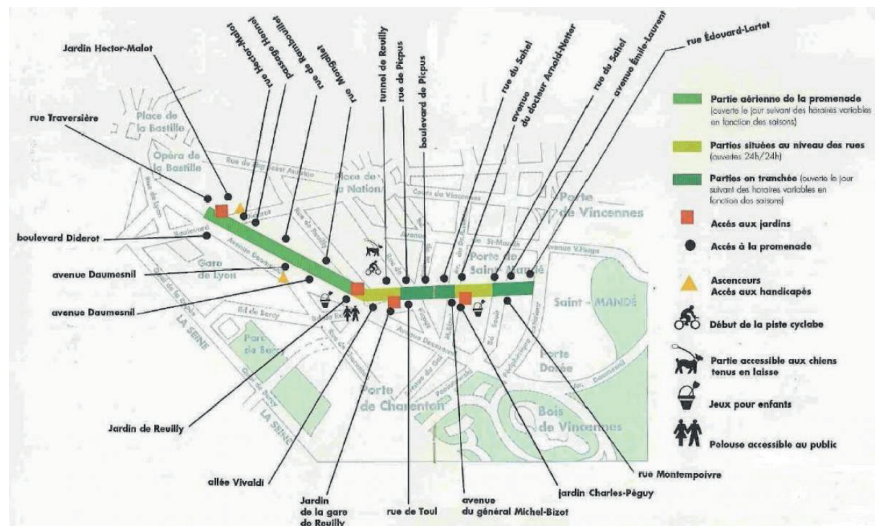


Figure 9. Map showing different sections of the Promenade.

## ■ Botany

Promenade Plantée means “walk with trees” however locals generally refer to the site as “La coulée vert” which can be translated as “green flow”. Hence, we can understand that botany and movement is combined in the design of the site.

The designers took reference from horticulture itself as the whole concept is based on the French landscape practice of *préverdissement* which means to encourage a particular botanical scheme through initial plantation [3].

The whole design invites visitors to experience an aerial nature walk in the city. While the elevation difference and the direction shifts create spontaneity, the botany as well compliments this idea. The visitors are never bored and the route has variety of pauses in which the users have options.

High and low vegetation create different environments as some of them ripple in wind as in a natural marshland and others show formal patterns. In some parts a narrow path edged by dark trees welcomes the visitor while on some parts courtyards provide places for recreation or resting with shadow trees [22]. Furthermore, an arbour takes attention in the design which gives a characteristic identity to this particular project, distinguishing it from other similar projects that was developed later in Paris.

To avoid creating a weary environment, the colorful flowers and topiaries are not present in all areas of the projects. Therefore, a small part of the park is devoted

to ornamental shrubs and trees. Beautiful textures and patterns present themselves in this part [20]. The park’s designers picked rose varieties to ensure that these exquisite plants bloomed for as long as possible. However, in the spring, all eyes are drawn to the vibrantly flowering forsythia shrubs and dense tree plantations [23].

A part of the promenade is along the axis of Canal St. Martin in which lindens and lavender beds are planted in order to frame the view. The water feature here is perfectly blended with the bushes and compliments each other, reflecting the sky and the lavender flowers [20].

### Gardens of the Promenade

Jardin de Reuilly, which was formerly the railway maintenance yard of the historic train line is the most popular garden along the Promenade. The Jardin de Reuilly is located near the medieval Chateau de Reuilly, which functioned as a summer residence for the Merovingian Kings, according to the entry sign. It covers 1500 sqm and includes a large circular lawn, plant terraces, playgrounds, statues, rose garden and services for visitors such as an open-air café [24].

It is also accessible through ramps by wheelchair and baby-stroller users from the main entrance on Avenue Daumesnil.

There is a *bersot* effect in the planting design which is a French term of 17th century that proposes to form a covered living gallery as a highlight of the garden from plants. This effect is given in the park with bamboo corridors [23].



## ■ Construction Process & Phases

Originally the designers Berger, Matthieu, and Vergeley planned the project to open in 3 phases between 1988 and 1994 [3]. However, the conversion to park took place between 1988 and 2000; with only the first phase being completed in 1994.

In the first phase, the elevated section of the Promenade was developed by Matthieu and Vergeley, which comprises more over one third of the project.

In the second phase, the Viaduc des Arts was restored under the direction of Peter Berger. During the renovation process, the illegal structures and their made-up coverings were removed and cleaned up, returning the arches to their original form. While 11 of the arches are still visible to passing traffic, the remaining 60 arches were equipped with glass curtain-wall facades with regulated signage, color schemes, and usage. Translucent facades cover the back section of the arcades to disclose the structure's thinness while maintaining the illusion of transparency and depth [19].

The artisans started occupying the vaults in 1994 and it was completed in 1997.

In the third and final phase, the link to ZAC Reuilly site where there was a continuing redevelopment at the time was completed and the greenway Eastward was stretched towards its completion.



Figure 10. The Promenade Plantée route (dotted line) through the 12th Arrondissement, showing (1) the Opéra, (2) the ZAC Reuilly boundaries, and (3) the Boulevard Périphérique.

## ■ Site Observations

The Promenade gives a sacred place to locals while offering them the big picture of their city. Inside you feel protected, close to the city yet far from the noise of it. The main point is the movement since one of its characteristics is linearity and its final destination is a big park. Walking, riding a bike, taking stops in some parts along the way passing through different avenues and experiencing all the change. Moving along the promenade, there is a feeling of contrast since one can experience both the dynamic existence of commerce and the serenity of vegetation.

The most renowned stretch of the Promenade, the Viaduc des Arts, on the other hand, exemplifies the characteristics of the 12th Arrondissement, with traditional artisan stores and authorities who support and commit to artisanship. This area plays an important role in East Paris' economic reconfiguration with its hundreds of high-end artisanal stores and boutiques; raising property values and reshaping the residential environment [3].

- - - Bike route
- Bus route
- Subway route
- Subway stop
- Bus stop

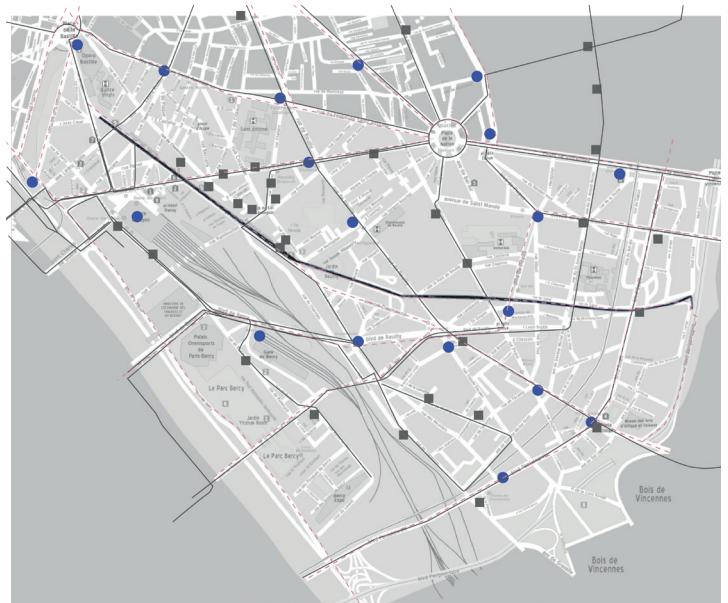


Figure 11. Transportation Network around the site, annotated by author using base map from wikimapia.

## ■ Connection with with Mobility Typologies

The Promenade is located in a well connected area. Since there are many landmarks along the route that attract visitors, many bus lines and metro lines are present.

Figure 8 shows 24 access points to the Promenade with the possibility access through ramps. Therefore, it is very accessible. The beginning is in Bastille, which is a major place with metro lines 1, 5, 8. And along the viaduct and the Daumesnil avenue there are metro and bus lines.



Figure 12. Signboard at the site.

## ■ Daily operations and maintenance

Although there is not much information online about the daily operations and maintenance at the Promenade, there are some inconsistencies in the park related to orientation caused by the lack of signboards. Some of the signboards as shown in the figure above are obsolescent. On the other hand, issues with being known with 2 names (Promenade Plantée and Coulée Verte René-Dumont) causes problems with directions [25].

It is known that the maintenance is the responsibility of the municipality, however, there is a lack of documentation related to budget.

## ■ Conclusion

The Promenade Plantée paved the way for future reclamation projects on abandoned railways. Being the first, it showed the opportunity of transforming decommissioned railway landscapes into public spaces. Although it was the first, we still find less information about Promenade Plantée than the High Line which makes it harder to compare. It is hard to find sources that explain the Promenade without mentioning the High Line.

Furthermore, the official name Coulée Verte René-Dumont includes René-Dumont who was one of the first ecologists to suggest in the early 1970s that we need to be careful with our planet. This shows that there was an intention to promote the Promenade as a place for ecology, as a tribute.

With its place-making, planning, and design tactics, this iconic project offers a lesson for landscape architects to learn from. With its adaptable qualities and multi-layered traits, it effortlessly accommodates Parisians and visitors. A stroll in the park might provide insight into the past. Furthermore, the Viaduc de Arts adds to its layers by displaying the features of the neighborhood in which it is located. Its signal achievement is the communication it exemplifies between the society, the history and today's city life.

A development like this boosts the economy in which it is located while also protecting the cultural aspects as Promenade Plantée proves.

## B. Minor Case Studies

- Parque Lineal Ferrocarril de Cuernavaca
- Scalo Porta Romana
- Shelby Farms Greenline
- Atlanta BeltLine
- Parkland Walk
- The 606 Bloomingdale Trail
- Le Chemin Des Carrières
- Lines of Life
- Parco Lineare



## Case Study 3:

### PARQUE LINEAL FERROCARRIL DE CUERNAVACA

Designed by: Gaeta-Springall arquitectos | Arch. Julio César Gaeta Gorriz and Arch. Lourdes Belén Springall del Villar

Area: 4.5 km

Location: Mexico City, Mexico

Opened to public: 2017

Awards: 2018 Barcelona Landscape Biennale

“We do not want to generate a finished project, rather, we try to generate a project direction from an open vision that from the socialization and participation of the people can build a process and project in the medium and long term.”

- The Design Team

Built in 1898, Cuernavaca Railway connected Mexico City to the Acapulco port for many years until the use of the railway was declined due to the Mexican Revolution. In 2012, the fire that completely ruined the famous railway station designed by Porfirio Díaz was giving signals that some actions needed to be taken to bring out the charm of the valuable heritage in the site [1].

In 2016, the local municipality in Mexico City launched an international competition for Parque Lineal Ferrocarril de Cuernavaca. The design team of Gaeta-Springall Arquitectos became the finalist of the competition. In the 10th International Landscape Biennial in 2018 it was awarded as well. Currently, a part of the railway is operating with 3 trains per day [2].

Public users found habitat there in the site even though there was a lack of security and services. The design team answered to these needs and also to the needs of Mexico city since there is a lack of green space and water. The city has been dealing with drought, hence water crisis caused by low rainfall [3].



Figure 1. Location of the corridor. (by author)



Figure 2. A section of the masterplan of the project.



Figure 3. Painted rail tracks.

As a response, the design team proposed an urban forest that will be a part of city's open space network and water served as didactic element during the design phase. They created a long-term project that will be built and improved throughout time in accordance with the city's ongoing evolution.

The 4.5-kilometer-long urban forest, which is of similar size with Promenade Plantée, unites 22 neighbours, serving over 50,000 people. As other case studies, this project also uses landscape urbanism as a key to generate the principles such as sustainability, biodiversity, connection and inclusivity. The active participation of locals and stakeholders added to the success of the project.

In 2017, the first section of the project which covers 1.4 km of the total length was completed and only 3 months later the park became a success with its program open for use 24/7. Its success lies behind the link established between different districts in response to metropolitan size demands, and the process design as the team designed future phases and actions for long term and medium term scenarios.

Rain gardens were created to celebrate the water and became a focus with its given elevation. A continuous red line along the corridor created a connection between features as well as a celebration on the rail lines. [4]

The plant selection was made according to the phasing, they were designed to grow successively as in the program of user integration over time.



Figure 4. A sample of the planting design.



Figure 5. Extension of the rail tracks as sitting elements.



Figure 6. Before and after of a section of the project.



## Case Study 4:

### SCALO PORTA ROMANA

Designed by: the OUTCOMIST team, Diller Scofidio + Renfro, PLP Architecture, Carlo Ratti Associati, with Gross. Max, ARUP, LAND

Area: 1,1 km | 190,000 sqm

Location: Milano, Italy

Opened to public: In process

This project is particularly interesting because a section of it will host the 2026 Winter Olympics.

An international design competition for the masterplan of Scalo Porta Romana was launched by the municipality. The process includes public consultation where the team collects comments from citizens that will re-shape the ultimate masterplan [1][2].

The team took into account large scale plans that affect the site such as the municipality's strategy plans and the vision of "Green Rays of Milan". 68% of the surface is open spaces including an urban park with 3500 trees that contributes to ForestaMi project launched by the municipality of Milan which aims to plant 3 million trees by the end of 2030 [3][4].

The proposal reflects the site's industrial past while re-viving it with contemporary initiatives centered on a sustainability mindset with the principles of inclusivity, biodiversity, resiliency, connectivity and wellbeing. It pays homage to its rich past while providing shared living and working environments for a diverse group of residents, students, office workers, athletes, and visitors. Remediation of the old industrial site is created with intention to spread to the adjacent districts, each of which shapes the characteristics of the locations it reaches [5].



Figure 1. Location of the railyard. (by author)



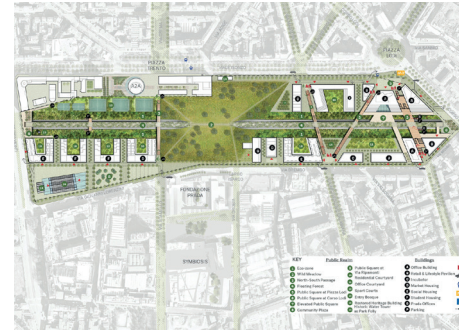


Figure 2. Masterplan of the project.



Figure 3. Wetlands in the Ecozone area.

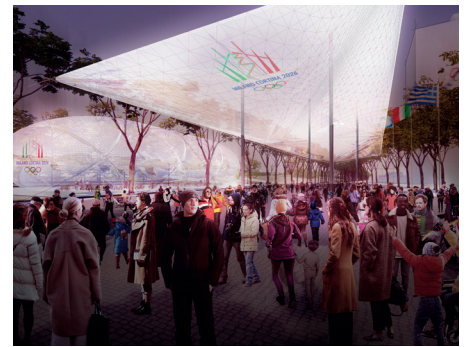


Figure 4. Olympic village.

Scalo Porta Romana is designed with the strategies such as “meanwhile uses” to engage users during the construction phases. This strategy is key to properly meeting the demands of the users, allowing for a test run before the construction is completed and allowing for subsequent phases to be adjusted based on what has been seen during the interim use.

The masterplan aims for a quality of open and green spaces in the urban context. It has a central park demonstrating Lombardy’s nature, eco-zones, connections, elevated forest that ensures an East-West connection that runs for 1.1 km while giving designated walking trails with unexpected views of the surrounding region, and a homogeneous building complex that will host offices, residents, student housing, and temporarily the Olympic Village. Ecozones are located next to railway lines creating horizontal connections along the East-West axis with variety of characteristics defined by the selection of their vegetation including wetlands and thematic islands [6].

The process design is important in this part since it will become the focal point of another major urban and real estate change, chaired by Prada Holding, Coima and Covivio after the Olympics [7].



Figure 5. Heritage building proposed with its new function as the Olympic Fitness Center.



Figure 6. Community Garden in the Ecozone area.

## Case Study 5:

### **SHELBY FARMS GREENLINE**

Designed by: Richie Smith Associates (RSA)

Area: 10km

Location: Tennessee, United States

Opened to public: 2010

Awards: ASLA, Tennessee Chapter - Merit Award

The old railway line ran between Cordova and Memphis as the Tennessee Midland Railroad starting from 1886. [1]

It was abandoned and become a dumping ground for household and industrial debris until in 2008, EPA assessed 10 km of the area under a \$347,080 EPA 104(k) Brownfields Hazardous Substances Assessment grant. Various metals and poly-aromatic hydrocarbons were discovered in the soil during the grant's environmental evaluations. This data was used while building the route, and pollution was handled [2].

The history of the Greenline is connected to Shelby Farms since between 1929 to 1964 the farm served as a working farm for prisoners of Shelby County Jail. The project includes community gardens along the trails as a tribute to this part of the history.

Shelby Farms Greenline is currently one of the most popular trails in the city of Memphis that runs for 10 km. Transportation Planning and Design Engineer of the project, Stephen Edwards describes the trail as a secluded place that makes you feel like you are not in the city at all. It creates connections along many districts, increasing security in the low-secured neighbours, increasing the wealth and well-being and contributing to user needs.

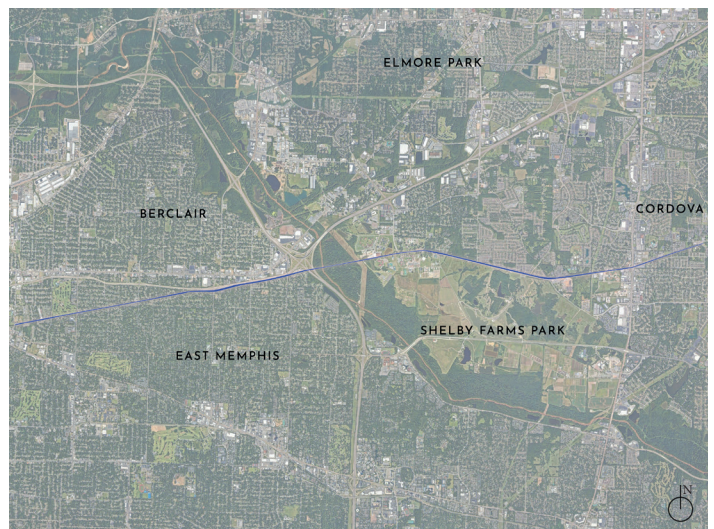


Figure 1. Location of the corridor. (by author)





Figure 2. Map of the site.



Figure 3. Historic railroad bridges of timber construction.



Figure 4. During construction of the greenline.

It is anchored by the Shelby Farms Park that is 5 times larger than the Central Park, offering variety of activities from horseback riding to fishing and kayaking. It has a natural and woodland theme. The extensions of the Greenline are continuing to be developed with new amenities and service points. It corresponds with municipal planning strategies that changed the city into a cyclable environment, given the fact that there were no bike lanes in the city in 2010 when it was built [3].

A non-profit organization The Greater Memphis Greenline (GMG) which is devoted to creating a network of multi-use trails across Shelby County is working on the further development of the project. As seen by the High Line's enormous success, this type of collaboration leads to further interacting with the city's people and making the Greenline the spine of the city [4]. Today the estimated number of users is 200,000 per year.

Furthermore, the organization predicts planting trees along the Greenline will deliver \$6 million in environmental health benefits each year [5].

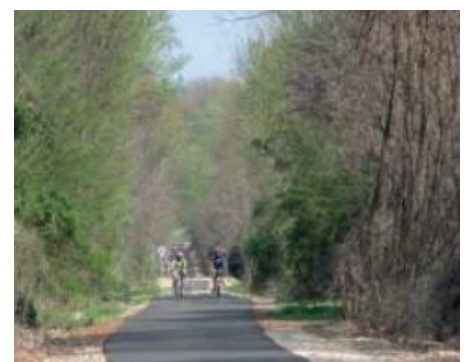


Figure 5. After construction of the greenline.

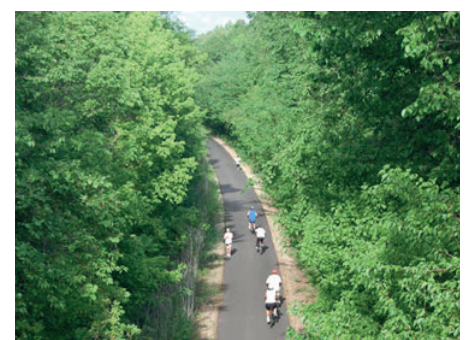


Figure 6. Bird eye view of the greenline.

## Case Study 6:

### ATLANTA BELTLINE

Designed by: Georgia by Perkins + Will and Kimley Horn

Area: 53 km

Location: Atlanta, United States

Opened to public: 2005

Atlanta Beltline is located on an historical area with several railway corridors. The transformation took place on a 35 km long railway loop and the total trails are 53 km. The Southern railway was serving both local and long distances, a section of the railway corridor is still active which makes it a hybrid project that has disused rails that are not operating since decades and active rails on the north-west and the north side. The project was created with the establishment of Atlanta BeltLine Partnership in 2005 which is a nonprofit organization that works for the vision, construction and funding. They also work on programs to further develop the area with more activities and engagement of users as well as economic development through business and residential projects. Following 2005, they had a 6 months program where they consulted to community input to shape the project of multi-use urban trails. The quarry on the west side was purchased by the City of Atlanta and turned into reservoir park. In 2006, The Atlanta BeltLine Affordable Housing Advisory Board (BAHAB) was formed to give priority to affordable housing. Later, the area for the Boulevard Crossing Park was acquired. Finally in 2007, first piece of Right of Way (ROW) was purchased in the NE corridor. In 2008 the project was filled with more green space with additional trees and parks as well as trails. In 2009 PATH foundation built the Nortside Trail. Later, public exhibitions, playgrounds, skatepark and art projects were included and the program expands. The first major section of walking and cycling trail opened in 2012. In 2014, the trails connection to parks were completed. The Partnership continues to



Figure 1. Location of the belt. (by author)



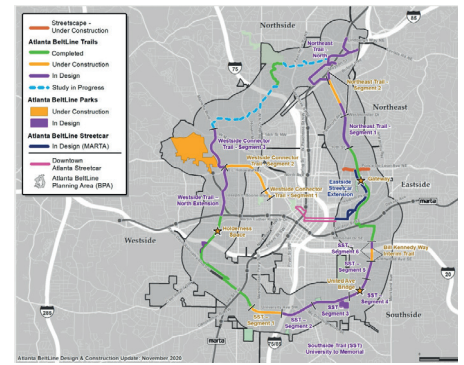


Figure 2. Map of the trails.



Figure 3. Installations on site.

work non stop to develop the project to this day, finding federal and private funding. The last major funding was provided by the Metropolitan Atlanta Rapid Transit Authority (MARTA) with \$570 million [1].

The BeltLine connects 45 neighbourhoods in which the poorest and the richest exist. Hence, it has the ability to transform the city considerably more profoundly than similar initiatives such as New York's High Line [2].

More than 2 million people visit the site which shows the need for alternative ways to circulate in the city.

However, there was a conflict between the regeneration process over gentrification controversies that led the urban designer of the project idea, Paul Morris, to resign. Despite the fact that the projects' objectives include affordable housing, many people have been disappointed by the rise in housing costs, which has raised concerns about systemic racism and inequality as well as the displacement of many people. Following the demonstrations, the team claimed that they will try their best to keep their commitments about affordable housing and resident-centred development [3][4].

The projects promises 5600 units of affordable workforce housing, \$10 billion in economic development, 50 thousand permanent jobs, 35 km of pedestrian friendly rail transit, largest outdoor public exhibition in the south, 75 km of improved streetscapes, 5.2611 km<sup>2</sup> of new green space, 4.4515 km<sup>2</sup> of environmental cleaning. An average of 35% of these goals have been accomplished so far [1].



Figure 4. Rail tracks on site.



Figure 5. The Freedom Parkway on the Eastside Trail.



Figure 6. The Eastside Trail from Virginia Avenue. Figure 7. The Eastside Trail with native grass



## Case Study 7: **PARKLAND WALK**

Designed by: Maurice Pickering Associates

Area: 4.4 km

Location: London, England

Opened to public: 1984

The Parkland Walk is 4.4 km linear nature reserve project located on a former railway line. The historical rail line started operating in 1862 as a steam service from the East Coast Main Line towards the suburban services for the Great Northern Railway. In 1873, it was linking Finsbury Park to Alexandra Place. The idea to turn into a park after its abandonment due to war started in late 1980s.

The Parkland Walk was opened to public in 1984. Later on, a plan to build a dual highway along the park's path created a movement among locals and environmentalist forming the non-profit organisation Friends of the Parkland Walk in 1988 and the highway plan was cancelled. Later on the organisation cooperated with The Conservation Volunteers (TCV) in association with British Trust. The organisation continues to work on the conservation of the reserve while dealing with issues regarding encroachment as well as any nearby projects that may endanger its ecosystems. In 1990, the park was recognized as a nature reserve [1]. It offers a break from the urban ecosystem with its natural activities such as birdwatching, wildlife trail as well as daily visitors of dog walkers, runners and cyclists. There is an art trail demonstrating the local artist Ben Wilson's mini artworks.

Due to its natural characteristics, botany and ecological conservation play an important role in this project. The actions are the responsibility of Haringey and Islington councils which have management plans for the future of the park taking into consideration that it is a crucial link between other parks such as Highgate Wood, Queen's Wood and Finsbury Park.



Figure 1. Location of the corridor. (by author)





## Case Study 8:

### THE 606 | BLOOMINGDALE TRAIL

Designed by: Michael Van Valkenburg Associates,  
Ross Barney Architects, Arup

Area: 4.3 km

Location: Chicago, United States

Opened to public: 2015

The Bloomingdale Line, presently maintained by the Chicago, Milwaukee, St. Paul & Pacific Railroad Company, was one of the last remaining passenger railroads in the United States to follow the instructions of the City Council on the ordinance to elevate all rail tracks by 1899 for safety reasons. Elevating the line created big concrete bathtubs filled with dirt, stones, and other drainage material. The walls, which are about 2 meters thick at the base and have stood the test of time for over a century, provide a solid foundation for The 606, the Bloomingdale Trail [1].

The rail line was operating until the 1980s giving service to a small manufacturing sector in furniture, bicycle, confection and instrument making business in the north-west side of the city. As a result of the lower demand, activity diminished, resulting in a lack of usage of the corridors by trains. By the 1990s, freight services on the train route were ceased.

In 2004, the neighbours that were against seeing the line deteriorate, became organized to create a trail along the railway corridor. Their efforts opened the way for the Trust for Public Land to take over as the project's principal private manager, working alongside the City of Chicago, the Chicago Park District, and the Bloomingdale Trail Friends.

The elevated embankment with 37 bridges was requesting a big amount of work to repair and renovate. In 2009, the engineering and design work began, fol-

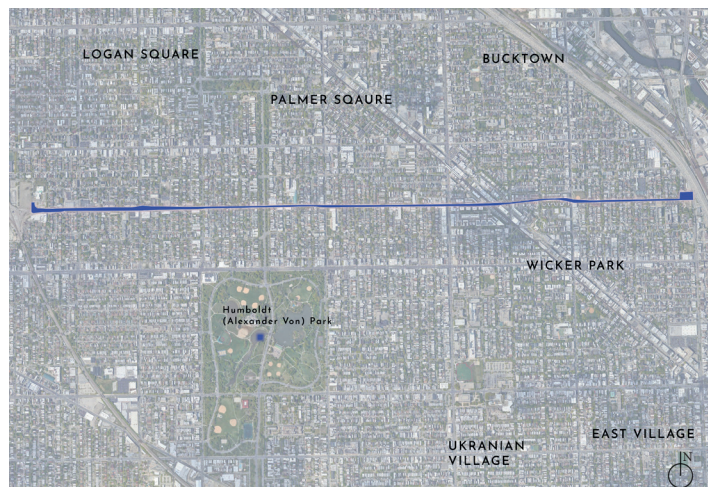


Figure 1. Location of the corridor. (by author)

lowed by the construction in 2013. While there was an incredible effort to re-use the existing structures as much as possible, an iconic new bridge was built for Milwaukee Avenue [2].

As the previous cases did, Blooming Trail also connects diverse communities along its 4.3 km route. The design proposal was very promising for weaving the neighbourhoods within this designed landscape.

They transform the former railway line into a slow mobility parkland with paths for cycling and walking. The project's budget was \$95 million in total and its finance relied heavily on the cycling infrastructure. Successfully, it received \$50 million in financing from the US Department of Transportation because it qualifies as an alternate transportation route, covering a significant portion of the project's total budget. Although private donations are helping to fund most of the park, it is one of the Chicago Park District's most expensive capital projects in recent years [3].

Apart from the slow mobility network, it proposes a program with features such as wheel friendly plaza, enlargement of the park along the trail, connections to neighbouring streets, re-using existing structures for recreation, enhancing access points, seating along the pedestrians paths, performance venues, poplar grove and phenological planting.



Figure 2. Bird eye view of the design.



Figure 3. Milwaukee Avenue Bridge and Overlook Stair.

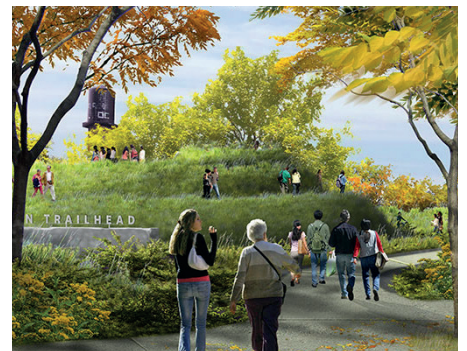


Figure 4. Western Trailhead at Ridgeway.

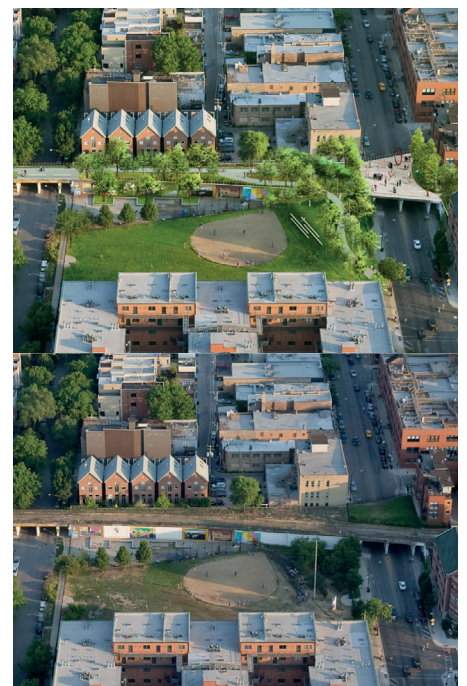


Figure 5. Churchill Field Park, Before and After.



## Case Study 9:

### LE CHEMIN DES CARRIÈRES

Designed by: Reiulf Ramstad Arkitekter and Parenthèse Paysage

Area: 11km

Location: Rosheim, France

Opened to public: 2019

Awards: 2020 Rethinking the Future Awards

The 11-kilometer-long Rosheim-St Nabor railway started operating 1902 to provide service to the sub-Vosges hills' quarries and to convey people between five communes. When the quarry company bankrupted in 2003, the freight service ended.

The disused railway was under the responsibility of Communauté de Communes des Portes de Rosheim and they announced an open call for the transformation of the railway in 2016. Norwegian landscape architecture firm Reiulf Ramstad Arkitekter in collaboration with Parenthèse Paysage won the competition with their idea of reconversing the rail tracks with cultural pavilions, along an 11km long pathway and it distinguishes from others with is designed structural elements [1].

The project has a strong ability to tell the story of the past. It has 4 chapters on the 4 train stops, each one demonstrating different characteristics of the surrounding landscape through framing different views with steelwork as well as creating openings in the site. It is a complete artwork of story-telling with 3 stories; the water, the land and the most obvious one - the story of travel.

“The journey to discover forgotten landscapes or to take a different view on everyday landscapes is addressed to both local users and tourists. Like the old track that offered a dual function (industrial and passenger transport), the route has a double vocation where the functional must rub shoulders with the imaginary of travel.” Explains the architect.

In the first chapter, we see a curvy pavilion that acts as a landmark together with the existing tracks of the



Figure 1. Location of the corridor. (by author)



railway. Also a water feature is present in the area, the Boersch river, presenting the history of the link to outside world since it historically provided connection to the world and according to the team's statement, it reflects the true cleanliness a place. Hence, the design team enlarged the riverbed and created access to water through an open space amphitheatre. Throughout the different chapters, we see different landscape frames bordered by the weathered steel plates, such as the one towards the St. Odile mountain to highlight the transition to the open landscapes. The former train station at Ottrott was renovated to tell the history of the railway service. Finally in the last stop, we see the quarries reconquered by the nature. The name of the project *Chemin de Carrières* means "Quarry Path" which demonstrates the importance of the final destination along the path [2].

The route, like the old railway that had dual purposes (industry and passenger transportation), has a dual mission in which the function must coexist with the fantasy of travel; while connecting 5 towns and creating new relationships along with public areas for both residents and visitors [3].

Along the route, different services are provided for the user such benches, information points, picnic tables etc.

The project showcases a beautiful mixture of human-made world and the nature with structural interventions. Architectural elements successfully demonstrate the idea to reverse the trend of urbanization and design rural areas attractively through the emphasize on their inherent qualities.

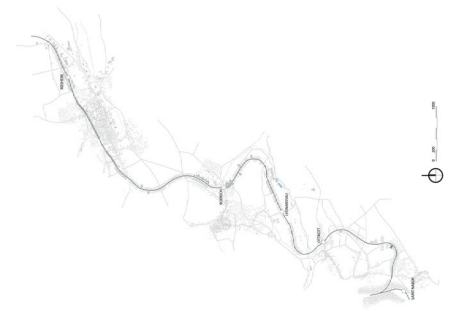


Figure 2. Site plan.



Figure 3. Rail tracks.

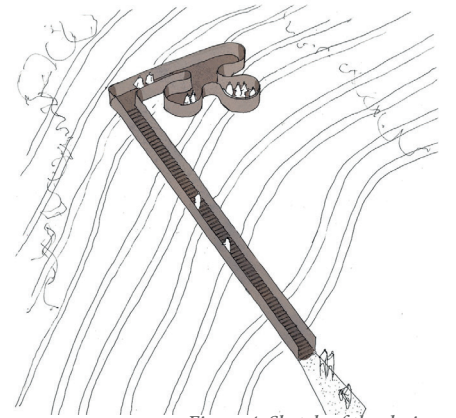


Figure 4. Sketch of the designer.



Figure 5. Designed platform.



Figure 6. *Portes Bonheur* framing elements.

## Case Study 10: **LINES OF LIFE SINGAPORE PARK**

Designed by: Nikken Sekkei Architects with Tierra Design, Arup Singapore & MKPL Architects, Turenscape International

Area: 24 km | 16100.0 sqm

Location: Rail Corridor, Singapore

Opened to public: In progress

The 24km railway line started operating in 1903 to connect Singapore to Malaysia. It traverses through most of Singapore's natural environments, making it known as the "Green Corridor." The railway was abandoned in 2011 due to new modes of transport and also due to openings of other rail lines.

Its location was appreciated by the development department of Singapore and the works began to revitalize the corridor with activities along the route and the surroundings as well as to preserve the historic presence along the rail.

The government had a vision to turn the corridor into Singapore's version of High Line with the entire linear public space being used to link and regenerate the surrounding districts while also providing valuable green space. Hence, the international competition the "Singapore Railway Corridor" was announced by the Singapore Development Department. The competition was including 3 parts; the master plan and design of the railway corridor, the affordable housing project in Choa Chu Kang, and the renovation of Tanjong Pagar train station [1].

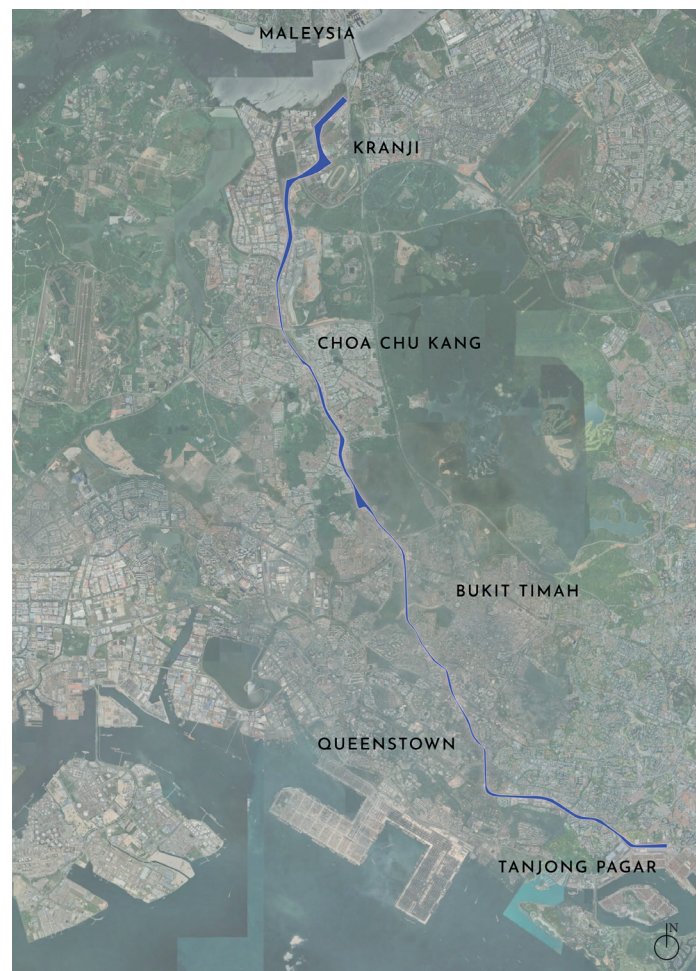


Figure 1. Location of the corridor. (by author)





Figure 2. Masterplan



Figure 3. The train station park.

Many well-known firms from around the world joined competition and Chinese landscape firm Turenscape in collaboration with MKPL have won the design rights for two parts of the project; affordable housing and railway station renovation while Tierra and the Nikken team won the masterplan part.

Nikken, Tierra and Singapore-based Arup formed the design team. Singapore's urban development department chose their proposal because it incorporates green space, walking paths, and cycling paths, as well as the development of the surrounding area over the next few years, ensuring that the entire old train line is well integrated into the surrounding environment.

The design includes green spaces along the Pang Sua Canal, providing social places where locals can rest and interact with the water along the flood plains. Residential towers are connected through elevated decks over the forest textures. The elevation, vertical and horizontal elements are beautifully combined in the masterplan.

The ultimate goal is to establish a “seamless connectivity” that allows users to feel the emotional, functional, and experiential advantages of the area's rich past and ecosystem. It emphasizes the community-centered experience via the construction of new affordable housing [2].

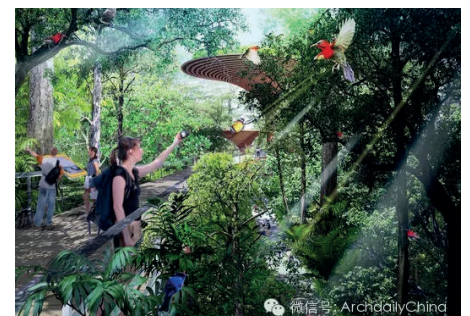


Figure 4. Eco-centre for camping and education.



Figure 5. Sitting elements

## Case Study 11: **PARCO LINEARE**

Designed by: Marco Navarra - StudioNowa

Area: 14 km

Location: Caltagirone/San Michele di Ganzaria, Italy

Opened to public: 1999

Awards: 2003 winner of the gold medal for L'opera Prima Triennale di Milano

Parco Lineare, located in Sicily region, is built on the historical railroad that was connecting Dittaino-Piazza Armerina to the UNESCO heritage town of Caltagirone. The rail corridor was offering views of San Michele di Ganzaria and Mirabella Imbaccari towns between its destinations. A section of the railway is part of Salvatorello, an 8-kilometer-long greenway which was the first example of such an intervention. [1]

The historical railway was built between the 1920s and 1930s, and provided service for about 40 years until 1971. The orography of the site, especially in the stretch of the Caltagirone-San Michele di Ganzaria was challenging to built infrastructures hence the railway was inserted into the original landscape like a furrow. The change in the topography due to cut and fill works is still visible today moving along the residual path where a syncopated rhythm of openings and closings is present towards the landscape [2].

The railway site was abandoned because of the frequent landslides and the disruption from the inclusion of short stretches within cultivated fields [3]. During the abandonment, the site found new forms and reasons to survive and kept its identity, overcoming the violence of the last three decades' territorial transformations.

The area is home to agricultural activity with 18th century farmhouses and there is a Roman villa present which the design proposes to weave along the path. Hence, the project focuses on the discovery of ancient agricultural, ecological, and historical landscapes in the Sicilian region between Erei and Iblei through the creation of new points of view. The objective of the project was concerning not only the environmental recovery, but a subtle and more complex operation of reconstruction of the invisible links between landscapes, artifacts and history, which can stimulate a



Figure 1. Location of the corridor. (by author)

wider regeneration of resources which are no longer used such as peasant artefacts, monumental and environmental assets etc.

The design idea was to transform the “equipped nature trail” into a “light infrastructure” as a linear park that is formed by different widths along the corridor. Cupressus species frame the view in some parts along with an arched pergola and bushes were used in steep planes. Apart from the pergola, metal structures are placed in different areas of the project. The rail tracks are not visible, the colourful paving is dominant in the design. This coloured paving on the former railway line draws a cycle path [4]. This characterized the project hence the park is referred as “linear cycle park” in some sources. The path can also be used for trekking, jogging, skating, and the linear park began. Event are-





Figure 2. Masterplan.

as, eating areas, shelters for bikes, small shops are also proposed to accommodate users.

The project develops the theme of the landscape by 2 levels that are continuously intersecting : the material construction of the park such as the row of trees, the surfaces, the gardens, the colours, the smells, etc. and the construction of ways of seeing as well as recognizing agricultural and natural landscapes through the use of different principles. The designers use both classic and contemporary tools; the use of framing and highlighting the horizon line as the classic and the creation of sequences, assemblies and trolleys being the contemporary [2].

The team proposed a long-term strategy that includes interventions in different phases over a long period of time. They also created a definition of material work and operations where they classified the materials into lines, points and surfaces and planned operations ranging from maintenance to restoration and from philological reintegration to new construction. However, the park is currently in a condition of neglect and vandalism [5]. Even though there are no official declaration about this, we can assume that it is because of the maintenance and the lack of daily use of the park. It can also be a problem of the budget needed for the future phases.

All in all, the project proposes to transform this railway landscape into a field of aesthetic, economic and social energy. And apart from the greenway initiatives, it is one of the first examples in Sicily to initiate the reuse of old railway sites with the establishment of recreational and cultural activities.



Figure 2. Cyclists on the route.



Figure 3. Metal structure.



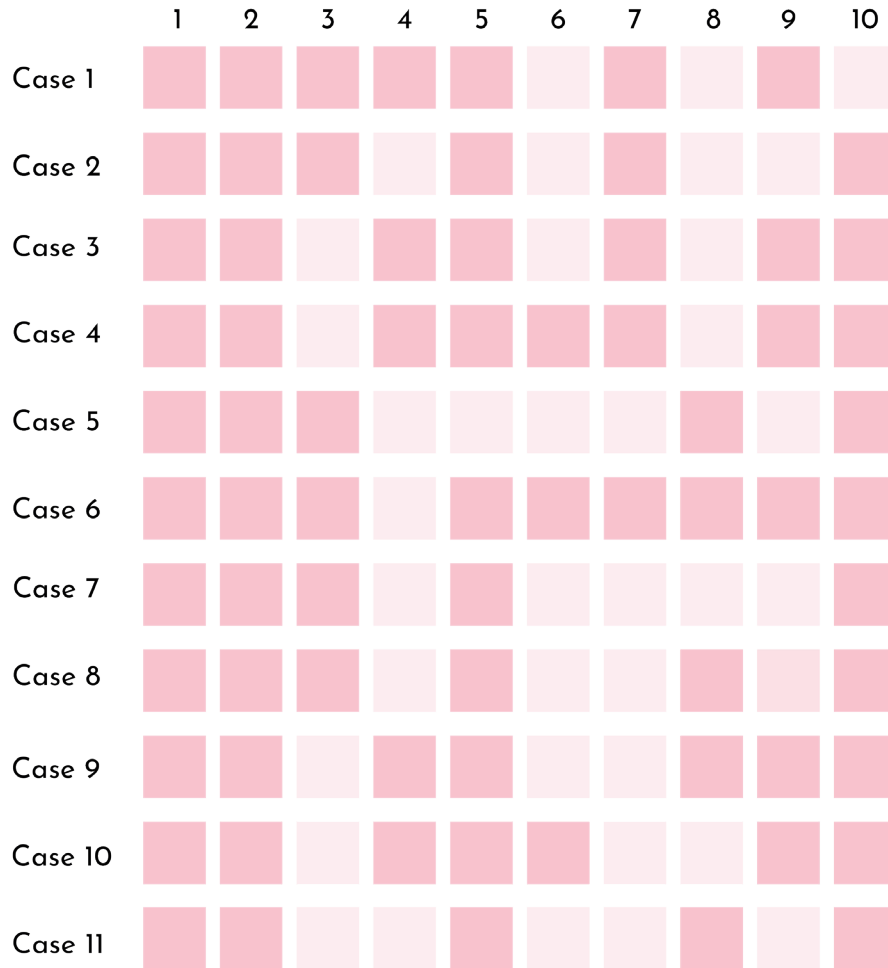
Figure 4. Agricultural lands on the site.



Figure 5. Arched pergola.



## C. Comparison of Features



### CASE STUDIES LIST

1. High Line, New York
2. Promenade Plantée, Paris
3. Parque Lineal Ferrocarril de Cuernavaca, Mexico City
4. Scalo Porta Romana, Milan
5. Shelby Farms Greenline, Tennessee
6. Atlanta BeltLine, Atlanta
7. Parkland Walk, London
8. The 606 Bloomingdale Trail, Chicago
9. Le Chemin de Carrieres, Rosheim
10. Lines of Life Singapore Park, Singapore
11. Parco Lineare, Caltagirone

### FEATURES

1. Heritage conservation
2. Biodiversity / ecological compensation
3. Non-profit organization and public involvement
4. Competition to receive the best proposal
5. Adaptive reuse strategies
6. Housing as a part of the project
7. Construction in phases
8. Slow mobility / new mode of transportation
9. Rail track visibility
10. Structural design, new installations

# Railway Design Statement

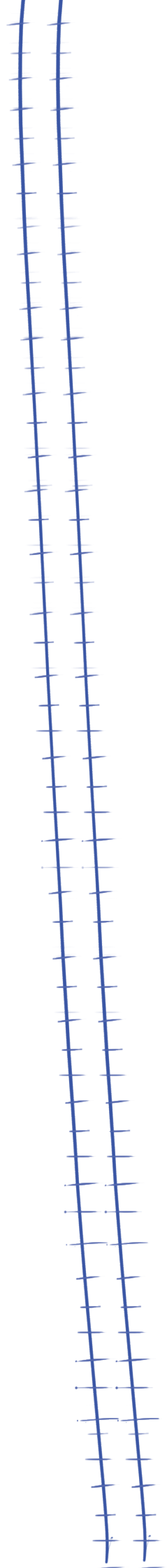
## A. Design Principles

- i. Community involvement
- ii. The natural process as a design form – Ecological compensation
- iii. Heritage - The story telling of the site's history
- iv. Adaptability - ability to answer the needs of today
- v. Sustainability
- vi. Integration of users
- vii. Perception
- viii. Mobility

The analysis of the case studies provided the criterias towards a successful place-making transformation. After a careful reading, these are summarized under 8 topics as shown above.

## Railway Landscape Design

'Railway landscape design' refers to the landscape of railway stations and their facilities. In the frame of this thesis, we are analysing the potential of railway yards that are no longer in use. In the next chapter, a design statement will be presented based on the selected case studies. The importance of the design of post-industrial railway landscapes in terms of form, function, aesthetics, integrity and accessibility will be discussed.



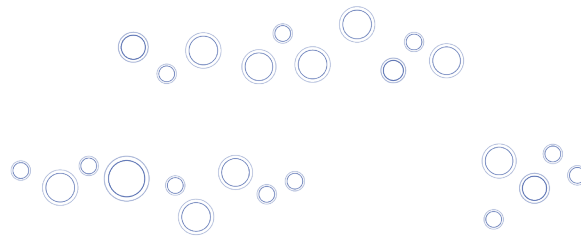
Railway landscapes consist of 3 elements which are lines, points and areas.

■ **lines**



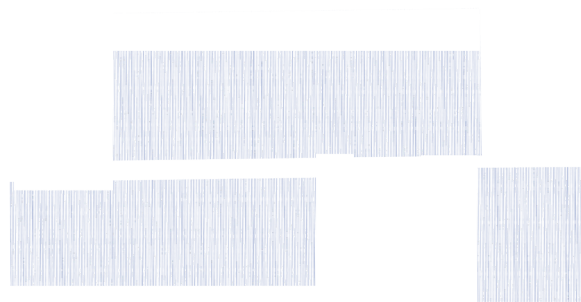
Rail tracks can be represented as lines.

■ **points**



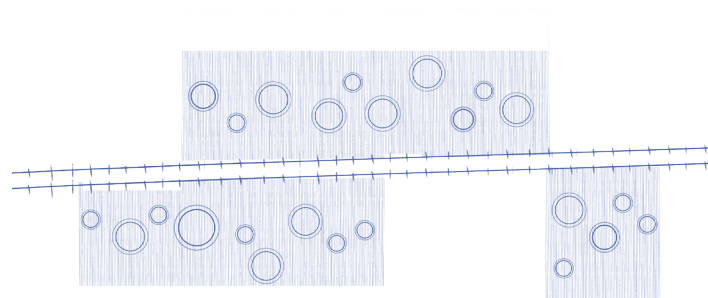
Stations or other vertical elements can be represented as points.

■ **areas**



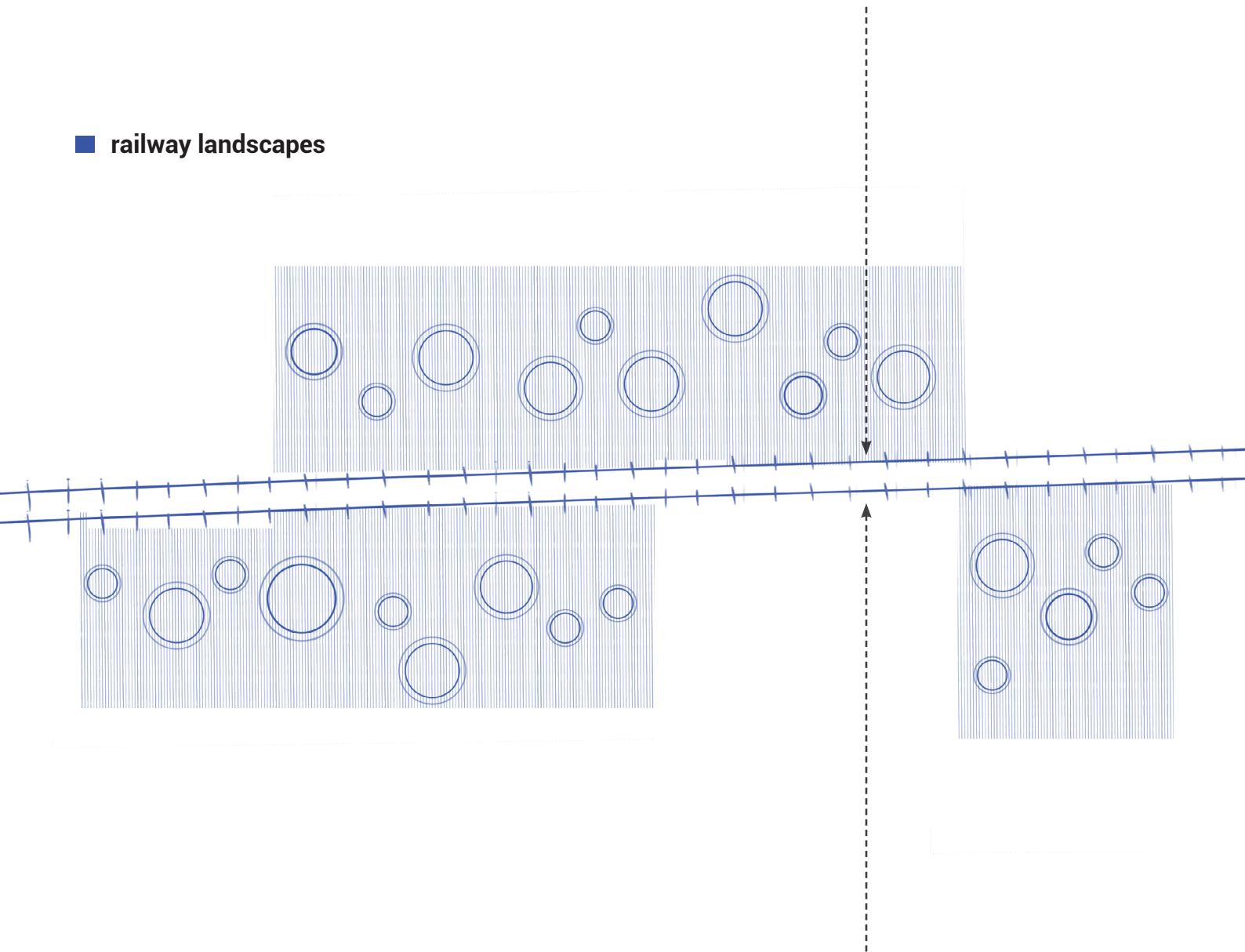
Multiple points can create surfaces with their relativity.

■ **railway landscapes**



Together; lines, points, and areas constitute railway landscapes.

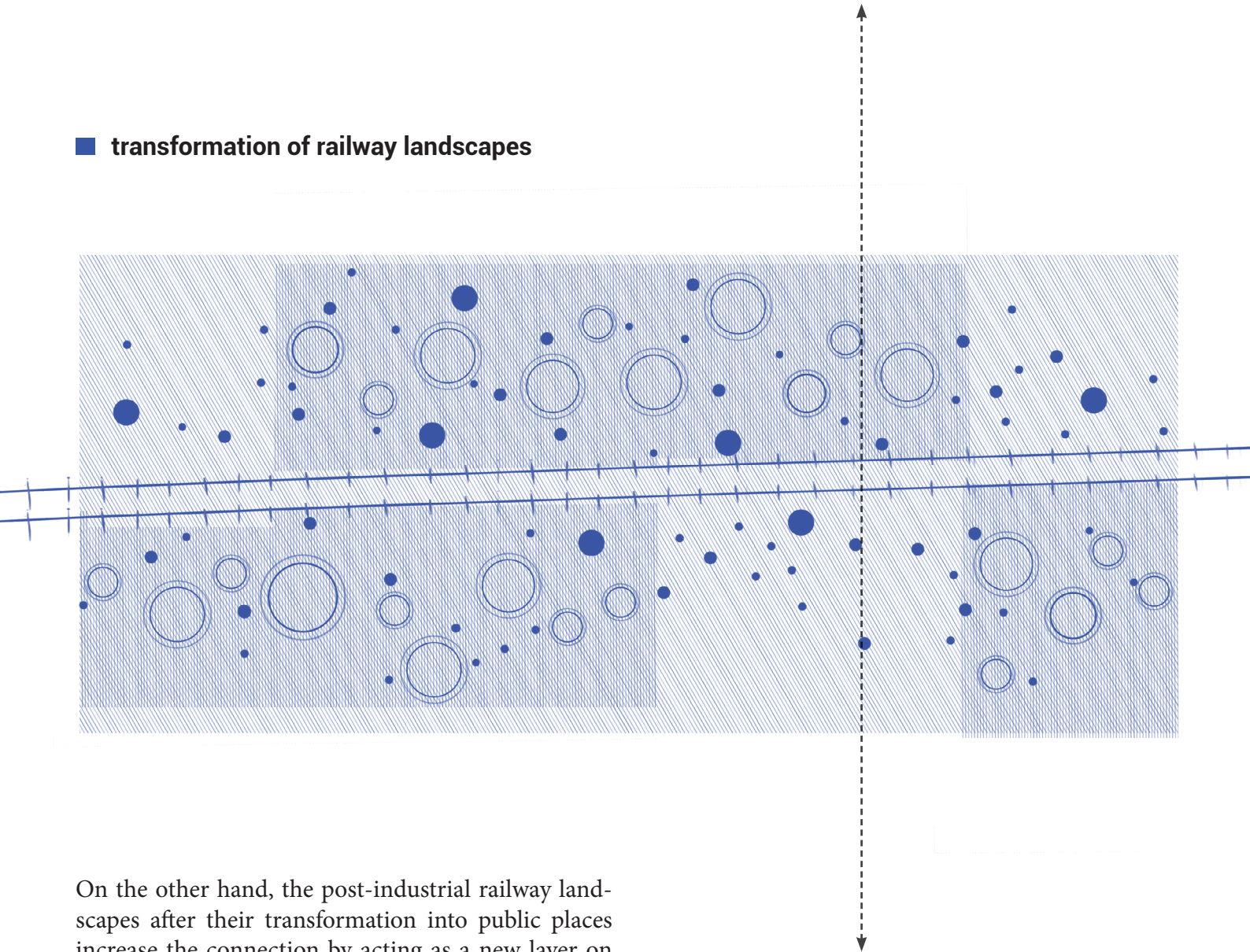
■ railway landscapes



As we discussed in Chapter 2: Railway Landscapes, railway landscapes can be barriers as well as connectors. Since they divide the landscape into 2, the opposing sites might lose connection.

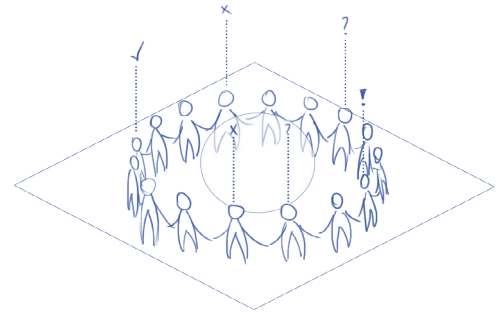


## ■ transformation of railway landscapes



On the other hand, the post-industrial railway landscapes after their transformation into public places increase the connection by acting as a new layer on the existing site with new programs and by providing multiple access points from each side. These sites should respond to contemporary demands, as indicated in the section on the life cycle of railways. These requirements alter over time as the environment changes. New nodes are developed by users and designers in the process of transformation. These nodes connect the site to its surroundings and create extensions into the neighbouring communities.

# Design Principles



## I. COMMUNITY INVOLVEMENT

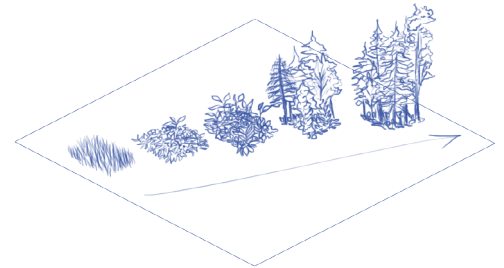
Designers and officials should create a platform to hear the community before initiating a transformation project of an abandoned railway site into a public area. The project cannot properly answer the needs without the community involvement. Non-profit organizations put up tremendous effort in these areas, both in launching initiatives and maintaining them once they are completed, in terms of budgeting and future growth. They provide the medias to communicate with locals and their needs as we have seen in most of the case studies. It is nearly difficult to fail once the community, stakeholders, and project designers work together to alter the place in the best possible way. There is also a sense of belonging provided to locals through their involvement in the process which helps engaging users as well as detecting the requirements with a diverse variety of opinions from individuals near to the project.

### ■ Competitions for design approach

Competitions are an indirect way to reach community opinions because the entry teams provide research on the area before presenting their design in which we can see surveys with local residents. This is a good strategy towards an adequate proposal for the site and its users.

### ■ Design solutions from case studies

We see the success of community involvement in many case studies. High Line for example, was an amazing collaboration between authorities, community, and the non-profit organization Friends of the High Line. To this date, the organization continues to search for funding for the maintenance and future development of the project. In Promenade Plantée, Paris Municipality's semi-public operator SEMAEST has been contributing to the development of the project. Although they do not have as many public meetings as the High Line, the team was eager to hear local residents' opinions on the future of the abandoned railway. In Parque Lineal Ferrocarril de Cuernavaca, Scalo Porta Romana and the 606 Bloomingdale Trail, the municipality launched a competition which is an indirect way through entries, because most teams conduct surveys with local residents to get insight into the site's requirements. In Shelby Farms Greenline, Atlanta BeltLine, Parkland Walk, a non-profit organization worked for the vision in collaboration with the community. These organizations also have members that are residents on the site, allowing for direct involvement on the design. In many cases, these organizations are formed by the neighbours themselves.



## II. NATURAL PROCESS AS A DESIGN FORM

### ecological compensation

#### ■ Reclamation

Certainly, the first thing that needs to be dealt with is the residuals of the previous industrial activity as in all brownfield transformation projects. We have seen in the case studies especially in the major ones, that the post-industrial site has already been reclaimed by nature, with wild vegetation growing on the train tracks, generating spectacular images that drew the attention of photographers. In some ways, this scenario was a wake-up call. This does not, however, imply that we may invite users to the area immediately. Before taking any action, a reclamation project should be completed to remove the toxic substances from the soil. Several techniques are being used currently for the decontamination of the polluted soil such as phytoremediation which is a part of bioremediation techniques [1].

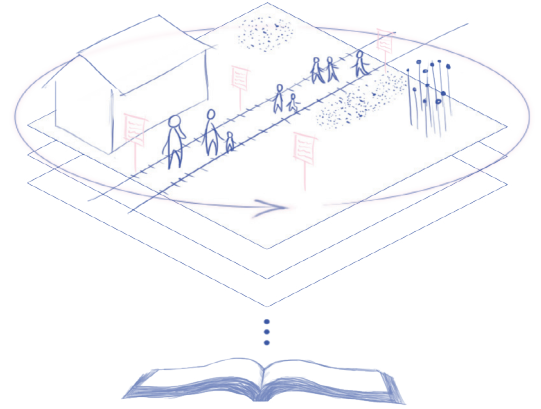
#### ■ Natural process as an input for the design

Landscape design is a dynamic field of study that changes through time and space. Hence as landscape architects, we design the process rather than the state of the place. Considering the changes, we should be able to propose a process design that considers all the phases. The elements that show these changes are obviously the vegetation which changes the scale, texture, colour and even the function of the space through time. We may notice these results as a result of ecological succession, which is a process that we aim to understand and design accordingly. Hence, the selection of vegetation plays an important role.

## ■ Design solutions from case studies

- We see an exceptional planting design in the High Line case. Piet Oudolf's work in High Line teaches us the dynamism of landscape through his design with its perfectly examined daily, seasonal and yearly changes.
- In Parque Lineal Ferrocarril de Cuernavaca, the natural process as an input provides the solution to the water crisis through the design of an urban forest.
- In Scalo Porta Romana, we see the ecological compensation through the vegetation typologies such as the elevated forest, eco-zones and wetlands as well as environmental remediation works on the areas occupied by the maintenance buildings.
- In Shelby Farm Greenlines, we see a higher pollution because of the use as a dumping ground during the abandonment phase that required a larger budget for the environmental assessment compared to other cases. Here, the trees leading to a significantly large park serve as a form of compensation because of the environmental health advantages they provide.
- In Atlanta BeltLine, the act of compensation is provided through the transformation of the quarry into a reservoir park and a large amount of green space.
- Parkland Walk teaches us about environmental conservation measures and how to employ meadows, shrubs, and trees in a balanced way to effectively depict ecosystem functions. It also contributes to a large-scale environmental issue in England, which has seen 97 percent of its meadows disappear.
- The 606 Bloomingdale Trail, the natural processes act as a didactic element through phenological planting which is a method that observes the timing of nature to determine the actions on crops.
- Le Chemin des Carrieres does not have a planting design since the idea behind the project is framing the natural characteristics of existing landscape through land art which is not the cover of this section of the chapter.
- The Lines of Line Singapore on the other hand, has an essential characteristic for natural processes because of the presence of a large ecosystem along the linear park and the Pang Sua Canal. The project is very important because they propose to enhance the existing ecosystem and the biodiversity through their landscape design. The Nature Society of Singapore (NSS)'s active and initiative involvement in the conservation process of the green corridor is also remarkable.





### III. HERITAGE & HISTORY

#### ■ Railway tracks

Post-industrial sites present both intangible and tangible heritage in different forms. Railway lines, for example, reflect previous traces, societal mobility, and the link between two destinations, whilst stations represent the spots where people welcome their loved ones across large distances or even on a daily basis when they return home after work. The linearity depicts the panoramic view of the scenery that the traveller enjoys as they go across yards. Thousands of memories are formed along these linear structures. More importantly, these sites encompass the industrial development through new modes of transportation as well as the evolution of society through new technologies. Hence, it is crucial to be able to tell the story of the past through the design when transforming a railway landscape into a public park.

Railway tracks are undoubtedly the most distinguishing features of the railway landscape from other post-industrial landscape typologies. Their linear form of setting is the demonstration of the past traces. It is important to re-use these valuable heritage infrastructures, which are occasionally demolished due to municipal decisions.

We see in the case of High Line and Parque Lineal Ferrocarril de Cuernavaca that the tracks inspired the form of the design. High Line highlights them by forming a pattern out of their arrangement that shapes the sitting elements, whereas Parque Lineal Ferrocarril de Cuernavaca employs paint to extend the lines throughout the project which emphasizes them. In the case of Shelby Farms Green Line and Parkland Walk, the rail tracks are not highly visible but we can see paving along the rails to create trails for slow mobility. Atlanta BeltLine has both paved and visible tracks, however they are not highlighted in the design as well as previously mentioned cases.

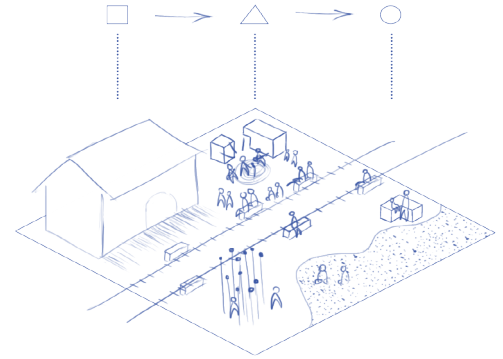
## ■ Architectural elements

Architectural elements are the most visible heritage structures thanks to their vertical form and the fact that the user can see them at eye level. The stations, in particular, with their historical decorations and structures, depict the architectural era of the time and provides re-using opportunities for the transformation project to help meet the site's contemporary demands. We see the renovation of the railway station in the case of Lines of Life Singapore. Although in most other cases the stations are demolished, other structural elements such as viaducts are kept waiting to provide habitat to new usage. For instance, in Promenade Plantée, we see an exceptional transformation of a viaduct into an artisanship landmark. In Scalo Porta Romana, the Squadra Rialzo building, the maintenance building of the former railway is proposed to be restored to its original configuration since it is the most representative element in the area from an architectural view.

The elevation of the rail tracks is also present in most popular case studies. These are arguably the structures that shape the cityscape the most. The elevation is exploited in the design of the High Line and the 606 The Bloomingdale by making the most of the views it offers. Although they don't present a high architectural background as in Viaduc des Arts in Promenade Plantée, they make the projects quite appealing.

## ■ Rail yards

Rail yards represent a large cover of urban soil used for the maintenance and support systems of the railway operations. They may or may not contain rail tracks. The buildings on these railyards largely lack architectural design hence they are of little historical significance. However, the railyards continue living in different forms and they might be the areas with the most potential because of the large scale. We see a good example of the commemoration of the history in Promenade Plantée. In this project, the railway's former maintenance yard is now hosting the Jardin de Reuilly which is one of the landmark destinations along the Promenade. In other cases, there is not a significant example of an area representing a historical function, however, the mobility action is being represented along the trails.



## IV. ADAPTABILITY

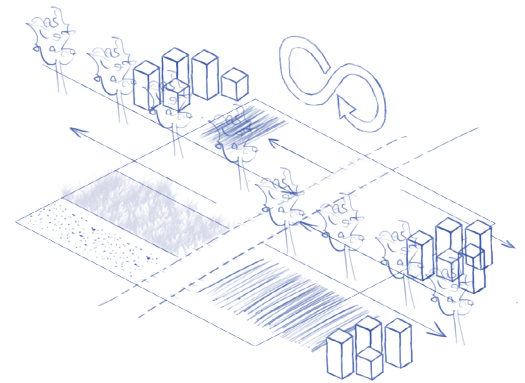
### ability to answer the changing needs

Adaptability is very important for the transformation of former railway landscapes because when the function of a place changes the existing elements provide material for the re-use strategies to adjust the current needs of the site. This way, the old materials continue living in other forms to accommodate new users while saving budget on new material production.

On the other side, adaptability makes the features of the site more resistant to change. In certain ways, the adaptable design preserves the features and helps in their survival while the environment changes and evolves.

#### ■ Design solutions from case studies

All the case studies have adaptive design approaches while some have more flexibility than others. The High Line continues to grow and improve to adapt the contemporary requirements. The Promenade Plantée promises future expansions and highlights its concept of “anticipating the city” and employs dynamic and agile strategies. The embankments’ use for sitting in Parkland Walk, event venues that can accommodate variety of activities in the 606 Bloomingdale Trail, and also in Atlanta BeltLine, the interim use in Scalo Porta Romana and the 24/7 use along with short and long term strategies of Parque Lineal Ferrocarril de Cuernavaca to answer metropolitan demands are just a few of the highlights we can learn from the case studies. All in all, they all propose a process design which offers different scenarios to answer the changing demands of the users through time.



## V. SUSTAINABILITY

All landscape architectural projects must be sustainable, not only environmentally, but also socially and economically. This principle indicates that the site may continue to exist without the need for more assistance, allowing it to self-sustain without an additional labour. Because, as we discussed in the last section, the environment continues to change and evolve, and the landscapes we construct will do the same. We must ensure that it achieves so without imposing excessive requirements. All types of sustainability require a large-scale process design.

### ■ Ecological sustainability

Ecological sustainability lies in the relationship between humans and nature. When designing a former railway landscape, we should use existing species to create the flora, prioritize endemic species, and mimic nature to assist environment deliver ecosystem services. This includes the amount of space allocated to plants as well as a thorough examination of the soil to determine the effects of previous railway activities. Shrubs and herbs should be used in combination with wildflowers to create a low-maintenance arrangement. To achieve the best ecological sustainability, species should be chosen based on their climate and water/soil requirements. Aside from the planting design, a balance of hardscape and softscape materials should be employed to create permeable surfaces that take use of the environment.

### ■ Social sustainability

Social sustainability means creating liveable environments to achieve the greater goal of creating healthy, equal, and just cities. This type of sustainability is the least discussed, yet it is just as crucial as the others. Affordable housing, educational development, mental health support, safe and secure places for current and future generations are just a few of the acts that ensure social sustainability.

### ■ Economical sustainability

Economical sustainability works together with ecological and social sustainability. The actions mentioned earlier in the first type of sustainability, such as picking low-maintenance plants, are also aligned with economic sustainability because the cost will be reduced by doing so. However, economic sustainability entails much more. It entails assisting the socioeconomic development of the communities with whom the site is associated as well as ensuring long-term economic progress. It covers energy efficiency, re-use methods, increasing the use of renewable energy sources, minimizing waste, affordability, assisting in the stabilization of costs, and finally producing self-sufficient, minimum-waste landscapes.



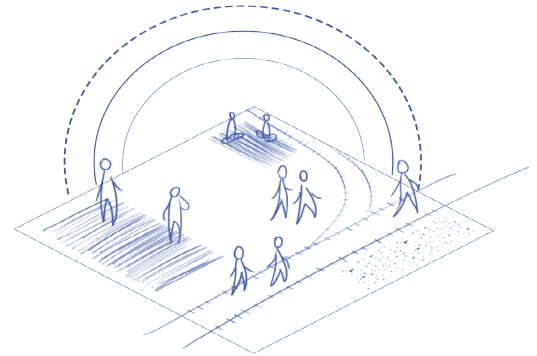
## ■ Design solutions from case studies

All case studies have strategies towards the sustainability of the project. They all have re-use strategies and low-maintenance vegetation. At the same time, all of them offer a safe and secure place as well as connecting neighbourhoods along the corridor, which provides social sustainability.

- In the High Line and the Promenade Plantée, re-use strategies are dominant.
- In Parque Lineal Ferrocarril de Cuernavaca, the solution towards the drought problem is important because it is a long term approach that adds to the sustainability of the project.
- Scalo Porta Romana has eco-zones, wetlands providing biodiversity and student housing as well as resilient design strategies.
- Shelby Farms Greenline has a big contribution to nature and the residents through its wild forest character and also its strategies towards the health and well-being of the residents.
- Atlanta BeltLine turned a quarry into a reservoir park which is a great contribution to ecological sustainability since the ecosystem services are enhanced.
- Parkland Walk promises sustainability towards the balanced use of meadows shrubs and trees as well as conservation of the meadows while the 606 Bloomingdale Trail contributes to the envi-

ronment by promoting slow mobility.

- Le Chemin Des Carrieres, takes attention with its services for the 5 towns it connects and the natural strategies such as the enlargement of the riverbed.
- Lines of Life Singapore on the other hand is the only project that connects nations and while doing so it promotes the ecological aspects of the corridor.
- While the green spaces and dense trees provide both social and ecological sustainability through increasing safety, ecosystem services, permeable surfaces that allows infiltration, they require a big amount of budget. Hence, the selection of the vegetation is crucial in terms of creating a low-maintenance project. It's a question that comes up in the case studies when we observe budget issues.



## VI. INTEGRATION OF USERS

The transformation of a space into a place is determined by its users. They are the essential component of place-making practices. Hence, engaging users is a crucial part of the process design for the transformation of former railway landscapes. The new function provides attractiveness for the place, however, since the abandonment phase of the site create an unsafe habitat that lacks security, the target group might need to be convinced beforehand. To do so, we should take advantage of the construction process by mapping out areas to be developed in phases in order to communicate with different target groups.

### ■ Phases

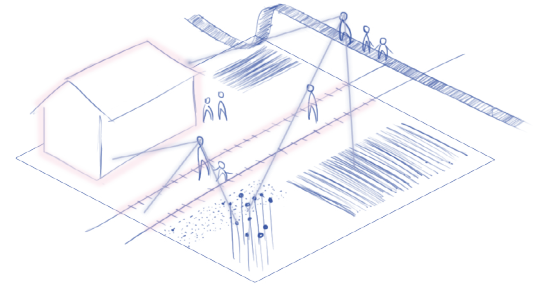
Construction of a landscape architecture project requires years to be completed. This is a considerable amount of time to be wasted. Hence, a timeline of construction should be developed, mapping out areas to build in early, middle, and late stages and the opening to public should be in multiple phases. Each phase contributes to the success of the next because user's interactions with project features provide the best outputs for the following phases. It will serve as a test run to assess what works and what doesn't in the design, allowing users to provide direct input. It is, in a sense, including users in the decision-making process, which will help increase their connection to the site.

### ■ Meanwhile uses

Meanwhile uses is also another strategy to take advantage from the construction process. It is a way to active the site before the construction is completed. This strategy proposes pop up areas such as cafes, playgrounds, event areas to use the sites' unconstructed parts temporarily to engage with users. It benefits both the local community and the project's budget since the pop-up spaces can include small businesses. It targets everyday visitors, individuals passing by on their way to work, and people looking for a night-time activities. Additionally, the visitors can follow the evolvement of the project, experiencing the growth of vegetation and being imposed to the image of the site in early stages.

## ■ Design solutions from case studies

- Promenade Plantée, opening in 3 phases initiated this idea since it was the first ever example of a transformation project on an abandoned railway.
- High Line attracted global attention and proved the success of the phasing strategies. The fact that each phase was more effective than the previous one demonstrated to the following initiatives the importance of phasing.
- While most of the case studies are recent projects, hence their phasing success has yet to be discussed; Atlanta BeltLine and Parkland Walk both employed phasing to begin attracting users and encouraging their visits.
- On the other hand, Scalo Porta Romana promises a good community engagement by combining phasing and interim use strategies.



## VII. PERCEPTION

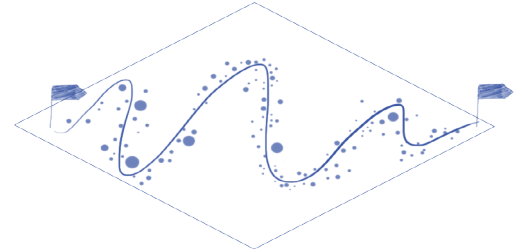
### experience of the user

The transformation of a former railway site includes a negligence. These places are often neglected and forgotten, and are in poor condition throughout their abandoned stages, waiting to be discovered and used by the community. Hence, transforming them gives the community a new perspective on the site. In some cases, the community has realized the value of these places and has claimed them, urging towns and authorities to take action. And in some cases, the site's value is realized by the municipality. In any case, the design of transformation altered how these sites were seen. Perception is created by highlighting the historical layers, the past traces and its relation with the community. In addition, renovating the harmed features provides the storytelling that was not obvious to the visitor before the transformation. Using the existing structures is a strategy to elevate the visitor's experience of their own city, creating new meeting places, activity areas, framing views in a way that the locals have not experienced before. These sites should reflect the co-existence that was discussed in the chapter "Barrier or Connector", how we live together, the combination of human-made and natural world.

#### ■ Design solutions from case studies

- All the case studies provide new views to the visitors and change their perception of both the city and the site that has been transformed. Visitors interact with industrial residuals in a way that they have not been able to interact before. While some of them have a bigger affect than others maybe because of the elevation they provide, others find ways to impress visitors with other characteristics.
- High Line, Promenade Plantée, Scalo Porta Romana, the 606 Bloomingdale Trail create different perceptions through a combination of elevation and ground level views.
- Le Chemin Des Carrieres on the other hand creates the elevation through a platform design and also adds to the perception by framing natural views on the site. While some may object to the designers' framing, it should be noted that they do not limit the visitor's vision; rather, they highlight certain vistas that the visitor may have passed by without noticing. Apart from the structural elements that helps to the perspective of the visitors, the place-making itself also adds to it because users' perception of a place develops with their experience in the site.
- Each case study recommends a range of activities, some of which are unique to the neighbourhood and others which are adaptable enough to meet changing demands.





## VIII. MOBILITY

We cannot talk about railway landscapes without talking about mobility, since they were once the major transportation providers in the history. Even the linear form of them represents the movement. Hence, it is important to be able to read this in the site as well as re-using this functionality to adapt to new conditions. Railways were designed to connect places and they should continue to do so. While some projects employ this as a design aspect, others, such as Rails to Trails initiatives, use it as the entire idea. Making former railway landscapes a mode of transportation as a part of the “slow mobility network” appeals government funding since it aligns with municipal vision plans’ sustainable transportation aims while also poetically enabling the sites retain their historical purpose as connectors.

The city’s other transportation networks are normally connected to the railway stations; however, after the transformation of the abandoned sites, new access points along the corridors should be established, as well as linking these access points to various stops of other modes of transportation.

Finally, another important consideration should be connecting the site to other open spaces in the city through mobility links in order to establish a network of open spaces. This will activate the site by creating connections towards the city’s other amenities.

### ■ Design solutions from case studies

- The selected case studies have different designs to create a cycling route that can be a part of the slow mobility network of the city that we can learn from.
- For instance the 606 Bloomingdale Trail works with the government to increase the mobility. The slow mobility strategies are more dominant in this particular project compared to the other 9 projects.
- The increased access points help the mobility by connecting the site to different modes of transportation. High Line and Promenade Plantée are exceptionally accessible which adds to their success.
- Atlanta BeltLine connects 45 neighbourhoods which did not have a particular relationship before the project. Hence we can say that the transformation of the abandoned railway landscapes into a public places improves the mobility between neighbouring communities as the corridor does not only link the two ends but also the neighbourhoods it passes through.

# Conclusion

Abandoned railway landscapes are special because generally they are very integrated to the urban fabric and they are characteristic in terms of their linear form and the way they allow us to see the exact traces of the past movements through the rail tracks. In this way, they differ from other typologies such as airports and ports and the number of disused railways are too high to ignore as stated in the Section C of Chapter 2. The thesis demonstrates the enormous potential of these areas to be part of the city's open space network and transformed into a public place.

The outcomes of this research are the categorization of industrial landscapes in a function-based perspective and a design statement of abandoned railways created from the analysis of process designs in best practices which were presented in the case studies. The accumulated knowledge of research and practice examination provided the base for the design statement.

Our work as researchers is based on the combination of design practices and theory. Hence, technical details are not included in this study. Additionally, landscape architecture is a dynamic discipline that evolves across time and space. Hence, rather than suggesting particular actions, principles are presented in the design statement which covers a variety of examples and highlights from chosen case studies to be interpreted as design approaches and be adapted to any abandoned railway site. In order to answer to a wide range of target groups such as researchers, designers, planners and authorities, the design statement has an extensive form of principles.

The examination of best practices yielded 8 principles that should be followed in order to create the greatest potential transformation of former railway landscapes. These are community involvement, natural process as a design form, history and heritage, adaptive design, sustainability and management of the project, perception of users, integration of users and the mobility both as historical function and as the accessibility of today. The thesis' findings can inspire landscape architects, academics, and educators, as well as help interested parties extend their perspectives by providing the cumulative knowledge on the issue.

The research findings show that the finance is the criticality of the whole transformation process. Some suggestions are presented in the design statement in order to find the budget such as community involvement together with stakeholders and integrating the site with the slow mobility network of the city for which the ministry of transport might propose funding; however even if the budget is found for current construction, daily operations and maintenance require continuous funding. The sustainability principle recommends various measures that can be performed in order to create a low-maintenance landscape, however considering the scale of the projects, we cannot really talk about small-budget projects as High Line is known for being one of the most expensive parks in the world and 606 Blooming Trail being one of the most expensive capital projects in recent years. Hence, further research on budget and financing stability is urged, as it will aid authorities in understanding the needed politics and metrics.

## ■ Reflections on the research questions

**RQ1: What principles should we follow when transforming a former railway landscape into a public place and what are the factors that contribute to the success of the project? Is it possible to create a guideline that shows not specific actions but the approach and strategies towards post-industrial railway landscapes?**

I have introduced a design statement that shows the principles to be followed for the transformation of post-industrial railway landscapes. Each principle is learned from the best practices and they work together to create the best transformation possible by being able to adapt to a variety of railway sites. This design statement can thus be used by anybody who is studying, designing, constructing, or proposing a transformation on a former railway site.

From this research it is concluded that the key properties of a successful transformation project are the community involvement, natural process as a design form, history and heritage, adaptive design, sustainability and management of the project, perception of users, integration of users and the mobility both as historical function and as the accessibility of today.

Apart from these 8 principles, attention to life cycle of these sites and the process design including future phases are the factors that contribute to the success of a project.

**RQ2: What role does “history” play in post-industrial railway landscapes? And how can we use design to convey the many layers of history?**

History is an essential component of a post-industrial railway landscape because the site itself is the representative of the past movements in both tangible and intangible ways. Tangible, because infrastructures such as rail lines depict accurate remnants of the past and intangible because it represents a transition in society’s economic, industrial, and technological growth. Therefore, the transformation design should convey these intangible and tangible heritage layers. This should be done with storytelling where the us-

ers are able to read the site easily during their visit. Railway tracks, architectural elements and railyards should be incorporated in a way that tell the story of the past. As the design statement suggests, highlighting, extending, emphasizing, and exaggerating these elements can be a way to demonstrate what was not easily readable before or re-use strategies can be employed to ensure that some of the features live on in different forms.

**RQ3: What phases does a railway landscape go through until it is reclaimed and what can we learn from the life cycle of railways?**

This thesis frames the phases that a railway landscape goes through before it is reclaimed in 3; first one is the operation phase, second one is the closing phase with very few operation and the third one is the abandonment/residuals phase. Understanding these phases provides strong inputs for the last phase which is reclamation phase. This last phase is also referred as “transformation” phase where a new design is introduced to the site.

To sum up, the life cycle of railways consists of 4 phases. These are operation, closing, residuals and the transformation with a new design. Residuals being the abandonment phase, is where we can see the leftovers. During this phase the site hosts different groups of people usually associated with illegal activities. Until their potential is realized they stay in this phase. The transformation begins after that, along with reclamation. And until the next functional change, the new design starts following the same steps of the cycle. Understanding these stages of the site’s life cycle can help with transformation design because we can construct a landscape that is resilient to change and adapt to new conditions even after the operation ends.

For further explanation, please refer to Section C of Chapter 2.



**RQ4: What are the strategies for the preservation of characteristics of the railway landscape site?**

Linearity and mobility are the most important characteristics of the railway landscapes. Hence, the mobility function should be incorporated to the design strategies. Making the site a part of city's slow mobility network can be a strategy for instance. This way, it will continue linking destinations and also the communities that it crosses through. Restoration and re-use strategies are also crucial in terms of preservation, which helps demonstrates the tangible and intangible heritage while preserving residuals.

**RQ5: Can we talk about resilience to change during the transformation of a former railway landscape?**

Preserving the site's qualities while answering the contemporary demands is the key for resilience to change as well as for the process design. Designing the process means the consideration of future changes in the urban settings and the environment. Hence it helps the site be prepared for these changes. A successful estimation of future can be done by learning from best practices that were implemented decades ago. Hence, we can interpret what we have learned from them and incorporate it to our process design towards a resilient landscape.

**RQ6: Is reclaiming the post-industrial railway landscape is an act of nature or humans?**

The answer to this question is both, nature being more dominant and in some cases demonstrating a call for action. The abandoned sites are initially reclaimed by nature with wild vegetation invading the structures as witnessed in the High Line and the Promenade Plantée, however, later on these areas provide habitation to not only vegetation but also people. The viaduct in the Promenade Plantée was claimed by illicit stores before turning into Viaduc des Arts. In the High Line, the nature reclaimed

the site first, taking the attention of photographers. Hence, nature may be the voice calling for action, but people start reclaiming these abandoned sites way before the authorities realize.

■ **Future Work**

The transformation of abandoned railways into a public place is a great investment on the way to truly sustainable, resilient and just cities. Thousands of kilometres of rail lines are waiting to be reclaimed around the world. This research proves the importance to reclaim these landscapes and provide a guideline for their transformation that can be followed by designers, planners and authorities as well as stimulate further research on the other typologies such as airports and ports in the academic world. I propose that by examining them under the "transportation" category, we can trace the past movements to plan the future of related sites. In addition, further study on budget and funding stability is needed to help policymakers grasp the necessary politics and measurements.

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