

NODE OF TRANSPORT AND PLACE

Dilemmas, Challenges and Potentialities towards the Development
of a Mobility Urban Hub

NÓ DE TRANSPORTE E LUGAR

Dilemas, Desafios e Potencialidades para o Desenvolvimento
de um Hub Urbano de Mobilidade

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Dedication

I dedicate this research to citizens who believe in the potential of exchanges that take place in urban areas, especially as a democratic space, whether public or private, regardless the social, economic, religion, political party or nationality.

I dedicate also to the cities of Tatuí - my hometown, my *polis* - and São Paulo (that introduced me to diversity and showed and prepared me to a world of endless scales); Cities of the state of São Paulo with such different contexts, contradictions and unique challenges, which taught and keep teaching and motivate me every day to believe in the power of cities. Finally, I dedicated to everyone who helped me to live there with gratitude, especially to my family.

*Much of the recent history of urban design has been concerned with the problem of designing cities
without designing buildings (...)*¹

¹ BARNETT, Jonathan. **An Introduction to Urban Design**. New York Harper and Row, 1982. p. 13.

RESUMO

Esta tese investiga os dilemas espaciais entre um Nó de Transporte e Lugar na cidade de São Paulo a partir dos estudos de caso das estações Pinheiros, Faria Lima e Corinthians-Itaquera. Parte-se do pressuposto que as estações da rede de alta capacidade (metrô e/ou ferrovia), são ao mesmo tempo um NÓ DE TRANSPORTE, em função das conexões entre duas ou mais linhas de um mesmo sistema, e um LUGAR, articulando fluxos, atividades, pessoas e a dinâmica urbana em seu entorno. Neste sentido, a área de uma estação pode ser base de tensões espaciais, mas também ser considerada como um ponto estratégico para estruturação urbana e transformação espacial de um território, como um Hub Urbano de Mobilidade (HUM). Desse modo, o HUM é entendido como o “entre-lugar” que interconecta simultaneamente diversas escalas urbanas e modos de transporte sem ambivalências espaciais; concentra e irradia múltiplas atividades e funções urbanas bem como articula diversos agentes, públicos e privados estimulando uma alta intensificação urbana. A hipótese da pesquisa é que algumas estações do sistema de transporte metroferroviário de São Paulo, apesar de serem estratégicas para a cidade, não superaram os dilemas espaciais entre NÓ e LUGAR devido à lacuna de instrumentos urbanísticos que articulem as diversas escalas urbanas. Como resultado, reforçam as ambivalências espaciais como também perdem a oportunidade de se transformarem num HUM condizentes com os novos fluxos impostos pelas dinâmicas urbanas atuais. As categorias consideradas essenciais para a compreensão dos preceitos que norteiam a pesquisa, NÓ – LUGAR- INSTRUMENTOS URBANOS, são discutidas nas relações que se estabelecem entre elas, especialmente quando articuladas no âmbito das três escalas urbanas: Macro, Intermediária e Local. Na primeira parte da tese então é construída um método de análise espacial nas áreas das estações bem como da definição do conceito HUM. A segunda demonstra dois projetos referências na Europa: a estação de Stratford – (Londres) e a estação Central de Utrecht (Países Baixos). A análise destes projetos busca validar as categorias definidas na parte anterior, e identificar estratégias para o desenvolvimento um HUM. Na última parte, avalia-se os dilemas espaciais nos estudos de caso buscando testar a hipótese proposta. Os resultados evidenciam por um lado os dilemas e desafios espaciais entre NÓ-LUGAR-INSTRUMENTOS URBANOS. Por outro, relaciona-se um conjunto de diretrizes projetuais voltadas para potencializar as áreas das estações como um HUM.

Palavras chaves: Hub Urbano de Mobilidade; Nó de transporte e lugar; Dilemas espaciais; Estação de metrô.

ABSTRACT

This thesis investigates the spatial dilemmas between a Transport Node and a Place in the city of São Paulo, based on the case studies of the Pinheiros, Faria Lima and Corinthians-Itaquera stations. It is assumed that the stations with high-capacity (subway and/or railway) are at the same time a TRANSPORT NODE, due to the connections between two or more lines of the same system, and a PLACE, articulating flows, people, activities, and the urban dynamics in its surroundings. In this scenario, the station area may be the basis of spatial tensions, but also can be considered a strategic point for the urban structuring and spatial transformation of a territory, a Mobility Urban Hub (MUH). Thus, MUH is understood as the “inter-place” that interconnects simultaneously several urban scales and modes of transport without spatial ambivalence, concentrating and generating multiple activities and urban functions, while articulates several public and private agents. The hypothesis of the research is that some stations of São Paulo’s subway rail system, although strategic to the city, did not overcome the spatial dilemmas between node and place due to the lack of urbanistic instruments that articulate the different urban scales. As a result, reinforce spatial ambivalences, as well as they waste the opportunity to become a MUH consistent with the new flow imposed by today’s urban dynamics. The categories considered as crucial for the understanding of the concepts that guide the research, NODE-PLACE- URBAN INSTRUMENTS, are discussed for the understanding of the spatial relationships established between, articulated in the three urban scales: Macro, Intermediate, and Local. In the first part of the thesis is built a spatial analysis method in the stations areas as well as the definition of the concept MUH. The second part shows two reference projects in Europe: the Stratford Station (London) and the Central Station of Utrecht (The Netherlands). The analysis of these projects seeks to validate the categories defined in the previous part, and to identify strategies for the development of the MUH. In the last part, the spatial dilemmas and challenges are evaluated in the case studies in São Paulo seeking to test the proposed hypothesis. The results show, on one hand the ambivalences and spatial challenges between NODE, PLACE, and URBAN INSTRUMENTS among the three urban scales. On the other hand, there is a set of project recommendations aimed at potentiating station areas as a MUH.

Keywords: Mobility Urban Hub; Transport node and place; Spatial dilemmas; Metro station.

KURZFASSUNG

Die vorliegende Arbeit untersucht die räumlichen Dilemmata zwischen funktionalen Transportknoten und Aufenthaltsorten in der Stadt São Paulo. Metrostationen werden generell aufgrund der Verbindung von zwei oder mehr Transportlinien und durch ihre Funktion als lokale Zugänge zum städtischen Transportnetzwerk, als „Knoten“ betrachtet. Diese Stationen können aber auch „Orte“ sein, an denen Menschen Zugang zu mehreren Nichttransportfunktionen haben und Zeit im Stadtraum verbringen. Darüber hinaus geht die Arbeit von der Überlegung aus, daß die Bereiche der Stationen strategische Elemente der städtebaulichen Strukturierung und der räumliche Transformation eines Territoriums sind. In einer Netzwerk basierten Gesellschaft, in der Räume von Strömen geprägt sind, in denen Kapital, Güter und Menschen ein extrem dynamisches Mobilitätsmuster aufspannen, stellt die Gestaltung dieses „Knotens“ in Zeiten der Supermoderne eine neue Herausforderung dar. Die Hypothese der Forschung ist, daß einige Stationen im Metro-Schienennetz von São Paulo, die potentiell strategische Punkte im Netzwerk darstellen, das räumliche Dilemma zwischen Knoten und Ort noch nicht überwunden haben. Dadurch verstärken sie räumliche Unklarheiten und verlieren die Chance, als katalytischer Knotenpunkt ein städtisches Zentrum der Mobilität zu werden und damit im Einklang mit neuen Strömungen aktueller urbaner Dynamiken zu stehen. Die Arbeit ist in zwei Teile geteilt. Im ersten Teil wird der konzeptuelle Rahmen durch Literaturrecherche dreier Kategorien entwickelt: Knoten, Orte, und Urbane Instrumente. Diese werden in Referenzprojekten in Europa (Stratford Station - London, Utrecht Central Station - Niederlande) validiert. Im zweiten Teil werden die Zusammenhänge zwischen Transportknoten, Orten und Urbanen Instrumenten anhand von zwei Fallstudien in São Paulo, Faria Lima / Pinheiros Station (Linie-4) und Corinthians-Itaquera (Linie-3) und in drei urbanen Maßstäben diskutiert, welche die Hypothese bekräftigen: Makro (Stadt), Intermediate (Nachbarschaft) und Lokal (Station). Die Ergebnisse der Forschung heben die Ambivalenzen und räumlichen Herausforderungen, zwischen Knoten und Orten im Fokus der drei untersuchten Maßstäbe und vor dem Hintergrund von Gestaltungsrichtlinien für die Verbesserung von Metrostationen als Mobility Urban Hubs (MUH), hervor. MUH werden daher als Inter-Place verstanden, die gleichzeitig mehrere städtebauliche Maßstäbe im Wirkungsbereich des Knotens und des Ortes, sowie die beteiligten Akteure (öffentlich und privat) miteinander verbinden; hier werden vielfältige Aktivitäten und städtische Funktionen, die durch das Instrument eines lokalen Masterplans konzipiert wurden, konzentriert und gezielt verteilt.

Schlüsselbegriffe: Mobilitäts- und Stadt-Hub; Transportknoten und Ort; Räumliche Dilemmata; Metrostation

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Presentation

The main motivation, arguments and grounds of this thesis were built during the doctoral research from academic debates and specific research, but also from professional and personal background in the metropolis of Sao Paulo and in smaller towns.

The author of this thesis comes from a small/medium town², about 130 km away from the biggest metropolis in América do Sul, the sixth largest in the world: São Paulo. I consider the personal motivation of this thesis began with my arrival in the capital in 2002. My perception of distinct urban scales in setting the experience of living in a city with 11 million people was not unrealizable, on the contrary, it was remarkable.

In 2014 I joined the Post-Graduate Program in Architecture and Urbanism of Universidade Presbiteriana Mackenzie (UPM) to begin my studies on this thesis. Initially, the research was bruised toward the possibility of implementing an intermediate-scale project - for the implementation of bus lanes in the urban space and its relations - especially as to leverage this infrastructure through local connections that promote an improvement of the urban environment in terms of public projects that were intensely developed at the beginning of the research. However, these projects were quit followed by lack of effective financing over the past years. For me it was evident despite the bets and the punctual discussions at that time: it is not possible to invest on large scale in non-linear economic and political scenarios.

I also realized that construction power of linear centrality could reinforce the urban sprawl, which is a strategic trade-off, along with the challenge of intervention in wide areas.. After these first two years of research on mobility and linear urban development it was evident the necessity of **direct intervention** - on **local scale** - at the station areas, then there is a strategic change in the thesis object.

It was also in 2015 that emerged the possibility of interchanging the *Fakultät für Architektur und Landschaft* (Faculty of Architecture and Landscape Science; Faculty of Architecture and Landscape Sciences) the *LeibnizUniversität Hannover*, Germany through the Science without Borders program and the CNPq SWE program achievement that it was possible to research on spatial transformation in the areas of train stations in Europe, in hannover, a city with a unique design at the *Institut für Entwerfen und Städtebau*, in 2016, through research internship.

² Tatuí, a town in the interior of São Paulo with approximately 120 thousand inhabitants (IBGE, 2016).

As a result of this interchange, I was accepted as a doctoral student team of the German institution *Leibniz Universität Hannover*, culminating with a cooperation contract between universities. Due to the double degree, deadlines and standards to be met, **this is a bilingual thesis** produced in two volumes. The main volume, in Portuguese, once it is my native language (submitted to the Universidade Presbiteriana Mackenzie), which was translated into English and concerns to the second volume; submitted to the Gottfried Wilhelm Leibniz Universität Hannover.

So, it is expected to contribute to the discussion on the different scales that exist concurrently in urban areas, with the challenges and trade-off for spatial integration of a transport equipment in the territory and, consequently, with urban development, either a large or small, Brazilian or European city, since they are all places in the *civitas* available for citizens of the world.

Introduction

The areas of the stations have an **ambiguous nature**: they are both **Node of Transport and Place**¹. On one hand, there are dilemmas and spatial and physical challenges between them. On the other hand, the opportunity in urban (re) development in the areas of the stations articulated to the new contemporary urban dynamics. Thus, this work investigates the spatial dilemmas between a Transport Node and Place from the perspective of the possibilities of strategic stations become catalysts for the development of a Mobility Urban Hub (MUH).

The origin. An overview of the reasons

There are plenty motivations for this research. They start from the personal and subjective field, from which it transits in different ways between different urban scales (from a small city to the metropolis) to academic yearnings.

The master's thesis of the researcher² investigated the micro accessibility to the Santo Amaro train station in São Paulo made possible through the different modalities of transportation. In this research, the spatial ambivalences between the disciplines that dialogue with the city, especially in the field of transport, became evident.

Innumerable spatial dilemmas were found in the areas of the stations undermine its micro accessibility, permanence, its urban readability³ as well as its articulation with the surrounding space. So, the following question was raised: How to overcome them and transform these spaces *part* of the territory⁴ linked to a high urban intensification? The admission to the doctorate course allowed us to delve deeper into the subject from different perspectives in which the following issues introduce the research.

1 BERTOLINI, L. & SPIT, T. **Cities on Rails: The Redevelopment of Railway Stations Areas**. London: E & FN Spon, 1998, p.10.

2 BAIARDI, Y. C. L. **O papel da microacessibilidade na mobilidade urbana: o caso da estação de trem Santo Amaro na cidade de São Paulo**. Dissertation (Master degree) - Faculty of Architecture and Urbanism, Universidade Presbiteriana Mackenzie, São Paulo, 2012..

3 LYNCH, K. **A imagem da cidade**. 3^a ed. Translation: J.L. Camargo. São Paulo: Martins Fontes, 2006.

4 CONCEIÇÃO A. L. M. **From city's station to station city an integrative spatial approach to the (re)development of station areas**. Thesis. Technische Universiteit Delft: Delft, 2015.

Theoretical Assumptions and Relevance

A **Transport Node** can be configured by crossing lines of the same transport system in a given space; it is an access point to a network, but not to the territory⁵. A **Place** is understood as the space that makes creation of an identity, relation and history⁶, with multiple interpretations, but also one that conceives an inter-place⁷ as a catalyst for an affective connection, for the intensification of an indeterminate and changeable event, whether during the movement or the permanence of the people.

In the **stations areas** there is a double nature **ambiguity** - **NODE** and **PLACE** - that impose several challenges for its development. Initially, it is deemed as necessary to deal **simultaneously** with these **ambiguities**, which generally result in **various DILEMMAS and AMBIVALENCES** in the process of urban development around the stations, especially **spatial and physical**, as well as functional, temporal, financial and managerial dilemmas.⁸

In the sense of **SPATIAL AMBIVALENCES** there are distinct **DILEMMAS** in terms of scale and complexity. Regarding *functional* ambivalences, we found dilemmas both in the distinctive features of each element and in the conflict in the space of functional interests between them. What means *temporal* dilemma, the process of developing **PLACE** and **node** in the areas of the stations tends to follow distinct paths of both for scale and complexity and dilemmas in the design **interdependence**. Finally, in addition to the high *investments* required to develop an intermodal station, there are managerial ambivalences. Thus, all the said dilemmas combine or conflict in the space management of the station areas⁹.

The ambivalence inherent in the station area is, then, a **tensions basis**, but it can also be the **catalyst core** for the urban development of the area. It is challenging to articulate the “transport node” to the dimensions of “place” in station areas, or, in other words, to make them compatible, balanced, and beneficial to both.

So, the environment of a high capacity station can concentrate several activities and urban functions by virtue of the intersection of multiple transport systems in the local territory, resul-

5 RICHER, C. *L'émergence de la notion de pôle d'échanges, entre interconnexion des réseaux et structuration des Territoires*. 2008. Available at: <<https://halshs.archives-ouvertes.fr/halshs-00460325>>. Access in 25 aug. 2015.

6 AUGÉ, M. *Não lugares: introdução a uma antropologia da supermodernidade*. 9^a ed. Campinas: Papirus, 2012.

7 GUATELLI, I. *Arquitetura dos entre-lugares: sobre a importância do trabalho conceitual*. Senac: São Paulo, 2012.

8 BERTOLINI, L. & SPIT, T. *Cities on Rails: The Redevelopment of Railway Stations Areas*. London: E & FN Spon, 1998, p. 212-216.

9 *Idem ibidem*, p. 212-216.

ting in increase of people and generating an urban dynamic on **the local, intermediate and macro scales**.

Therefore, if a **node-place station** can condition the structure and development of a territory, it is evident the necessity of implementing **urban instruments** that contribute to overcome the spatial dilemmas of conception of a building as well as its surroundings.

It is about promoting the node-place station as a **Mobility Urban Hub** (MUH) understood as a nucleus that articulates with space quality, without barriers or physical interruptions of the transport systems to the urban environment. It is an urban space that articulates at least two urban scales, which brings together a dense and diversified set of uses and forms (from housing, commerce, services, entertainment, etc.), accrued over time, promoting urban intensification by integrating the NODE (station) to the PLACE (urban territory).

Several studies and instruments are discussed to boost urban development in the areas of the stations. Among them, the *Transit Oriented Development* (TOD), developed by Calthorpe¹⁰ in the planning sphere of the suburbs in the North American cities. By contradicting urban sprawl, the loss of public spaces, as well as the dependence of the private vehicle on journeys, it suggests several design recommendations. Among them, Transport Oriented Development (TOD) stands out as the design of compact communities in order to change existing settlement patterns and stimulate walking to consolidate a neighborhood unit; design of public spaces, diversity of densities and mixed uses around transportation points.

The discussion about Mobility Urban Hub (MUH) meets the precepts of the contemporary city that opposes the ideals of the modern city. Whereas the logic of the modern city prioritize the **distance and the spatial separation** between the workstations, the residences and the places where the social practices are developed, in the contemporary territory prioritize the logic of the flows and the socio-spatial integrations.

“In the past, plan and design, city and buildings, were parts of the same system”¹¹. There was no separation between the building, the street and the neighborhood. All elements cohabited in the definition of city, in their form and were equally qualified

In the precepts of Contemporary Urbanism¹², it becomes necessary to introduce new instruments and spaces that articulate the new urban dynamics and rescue the urban sense as a

¹⁰ CALTHORPE, P. *The next American Metropolis: ecology, community and the American dream*. Canadá: Princeton Architectural Press, 1993, p.78.

¹¹ LAMAS, J. M. R. G. *Op. Cit.*, p. 126.

¹² ASCHER, F. *Os novos princípios do urbanismo*. Translation: N. Somekh. São Paulo: Romano Guerra, 2010.

whole, a **harmonious set between the parties**¹³. The city is not only the place of architecture, but architecture itself. Everything is architecture, regardless of the spatial form, city or building.

Under contemporary **urban mobility concept** it can be understood as the condition under which the displacements of people and cargo in the public space take place. Urban mobility, therefore, comprises processes of movement¹⁴. It is the possibility of moving, it is a living dimension that lies at the root of urban development. At the same time, transport also includes movement: transporting devices and people into appropriate spaces by means of a technique. Following this logic, Suzuki, Cervero and Luchi¹⁵ point out that the proper **operation of transport systems** is the **basis of the sustainability of cities**.

On the other hand, Castells¹⁶ identifies the main changes that have been impacting the contemporary urban space. The author in his studies on the “network society” understands that interactions between people, companies and other organizations overlap the autonomous logic of cities in relation to spatially restricted spatial development.

Thus, the **relation time and space** acquired a **new dimension**. Time is the qualitative variable that is enhanced by new technologies, especially high-speed trains. The **spaces of flows** are revealed in the reorganization of the urban forms that are complemented with **spaces of places**¹⁷.

In stations areas converge this new urban dynamic, from the network (macro) as the spaces of places (local). With an increasingly urbanized society, the design of this infrastructure emerges as the backbone of quality in urban territory and landscape. Accessibility spaces add a previously non-existent value due to the new demands of mobility and intermodality.

Therefore, in this research it is understood that it is fundamental to deepen the role of stations in the urban territory, the relationships between the NODE and PLACE, the spatial dilemmas in these areas as well as the challenges in the articulation of the instruments of the public and private agents and society to transform the strategic station areas in a Mobility Urban Hub (MUH).

Recently, in the **European context** much attention has been paid to the station areas called

13 LAMAS, J. M. R. G. *Op. Cit.*, p. 126.

14 MEYER, R.; GROSTEIN, M.; BIDERMAN, C. **São Paulo Metr pole**. S o Paulo: EDUSP, 2004.

15 SUZUKI, H.; CERVERO, R.; LUCHI, K. **Transforming Cities with Transit: Transit and Land-use Integration for Sustainable Urban Development**. Washington DC: The Work Bank, 2013.

16 CASTELLS, M. **A sociedade em rede**. 6^a ed. Translation: R.V. Majer. S o Paulo: Paz e Terra, 2010.

17 CASTELLS, M. **A sociedade em rede**. 6^a ed. Translation: R.V. Majer. S o Paulo: Paz e Terra, 2010.

second age of the train¹⁸”, caused by the HST (High Speed Train). If the stations were built **outside the city** (19th century), and later moved **into the city** (20th century), now, in the 21st century, they are **part of the city**, merging to it¹⁹.

For Peters and Novy²⁰, the **renaissance of the station area** means a key element in the dynamics of contemporary urban restructuring, since the station is now an **urban element** to be worked and integrated into the urban territory, contributing to the space qualification.

Thus, Europe is generally aware of the saturation of the detachments by the private vehicle, as well as the challenges promoted by climate change²¹, the search for an increase in the life quality of its inhabitants, the pressure of competitiveness between cities and conscious of the necessary change in the role of train stations and the potential for rebirth in the heart of urban territory, has developed several urban projects in the areas of the stations.

With the tradition and knowledge gained about rail transport, European projects of the 21st century differ from the projects of the last century, as they aim materializing not only “us” - once they do not assure a successful development - but rather **the balance between the node and the place in the territory**²² - i.e., **the uniqueness** of the space of the station area in the territory.

For the promotion of urban development and transport the links between a transport node and a place are particularly important. With the intensification of the possibilities of the displacements in the metropolis, the stations take a role not only of access space, but a place in the territory and showing greater complexity in the spatial dilemmas in the territories that integrate the areas of the stations.

Given this scenario, accessible spaces gain a previously nonexistent value due to the new demands of mobility and intermodality. Urban plans and projects should be understood as a sys-

18 Hall, P.; BANISTER, D. “**The second railway age**”. Built Environment, 19(2-3), 1993, p. 156-284.

19 CONCEIÇÃO A. L. M. *Op. cit.*

20 PETERS, D.; NOVY, J. C. “Train station area development mega-projects in Europe: towards a typology” in Built Environment, v. 38, Alexandrine Press, 2012.

21 Climate change occurs by increasing the planet’s average temperature. Consequences of this alteration, occur several phenomena such as the rise of the sea level due to the melting of the polar caps. According to the UN, 90% sure that the rising temperature on Earth is being caused by man’s action. Among the main human activities that cause global warming can be cited the burning of fossil fuels, industrial activities and transport; disposal of solid waste (trash) and deforestation. All these activities emit large amounts of CO₂ and greenhouse gases. Available at: https://www.wwf.org.br/natureza_brasileira/reducao_de_impactos2/clima/mudancas_climaticas2/. Access on Mar 03, 2017.

22 CONCEIÇÃO A. L. M. **From city’s station to station city an integrative spatial approach to the (re)development of station areas**. Thesis. Technische Universiteit Delft: Delft, 2015.

tem of spatial, economic and social relations resulting from a process of multiple articulations among the agents involved, the recognition of sustainable urban mobility and the understanding of the morphological diversity of the urban territory surrounding the areas of the stations.

The complex and ambivalent nature of the urban dynamics where the stations are inserted in demands the participation of a multiplicity of heterogeneous factors, such as governmental sphere (federal, state, local), represented by a lots of public and private agents, as well as by several layers of civil society. The need to deal with the fragmentation of distinct objectives around the stations summarize a fundamental challenge of the urban system in how to mediate them.

Thus, it is necessary to establish a process of modernization of the functional transport nodes converting them into part of a systemic territory, in other words, a Mobility Urban Hub (MUH). It is a matter of taking advantage of the opportunity that, through a correct project design, can lead the development and, then, generate a greater urban dynamic connected to the local pre-existent.

The Research Problem

In the Brazilian context, the population explosion of cities in the main centers during the twentieth century, as well as the mismatch between urbanization and urban planning, resulted in the conception of an urban space full of contradictions where going around became a personal, environmental and mainly urban challenge.

São Paulo, the pole of the main metropolis of Brazil, is the urban context²³ chosen to discuss and deepen the research problem where two station areas were selected: Faria Lima, Pinheiros (Line-4) and Corinthians - Itaquera (Line-3) subway lines.

While the conventional transport planning approach works with 1. physical dimensions and the large scale; 2. Focus on trafficking of motor vehicles; 3. The street as any space of connection between two points; 4. Traffic forecasting and use of modeling tools; 5. Decrease of commuting time and thus segregating people from this traffic, the alternative approach to **sustainable and human mobility is observed**. This system considers 1. Social dimensions and the small scale; 2. Focus on people with or without vehicles, especially in active mobility systems; 3. The street as a space to be worked and articulated; 4. Discussion about the city model, the Urban Development Scenarios and the journey not only based on demand, but as an activity of value; 5. Encourage short commutes, reasonable travel times and integration between people and traffic²⁴.

From the perspective of urban development and transport, the links between a transport node and a place are particularly important. At the same time as the stations are essential for the promotion of macro accessibility to the transportation system and to the different areas of the metropolis, we can observe the **fragile relation of these equipment** in the urban space of the city of São Paulo. There is therefore a **paradox between node and place**: exclusively functional interventions in the field of transport that are not fully articulated with the urban fabric and the urban dynamics of the area.

Regarding the **urban planning instruments**, conflicts are also important. While the conventional approach to transportation planning prevails, which focuses particularly on motor vehicle traffic and passenger demands, current urban planning instruments encourage differential land use and occupancy parameters. In this scenario, strategic decision-making on the macro scale, but without spatial integration between the disciplines of urban and transportation especially at the

²³ To be discussed throughout chapter five.

²⁴ BANISTER, D. The sustainable mobility paradigm. In *Transport Police*, 15, p. 73-80, 2007.

intermediary and local levels demonstrates the prevalence of a sectoral and disjointed view²⁵.

Thus, the Faria Lima, Pinheiros and Corinthians - Itaquera stations choice are justified by the following reasons: they are located in strategic locations in the city, in the western zone (in a consolidated urban fabric) and in the eastern zone (where urban voids predominate in the area of the station) respectively; are intermodal stations because they connect different transport modes (subway, train and bus); and, mainly, they are inserted in areas that undergone by “urban intervention” anticipated in the scope of the planning process.

It is defended the idea that, in order to improve urban mobility and urban accessibility, not only sectorial actions, such as investments in the transportation system, or urban bring about changes in the logic of integrated urban development, reproducing the paradigms that still exist today.

Once São Paulo subway rail transportation stations are large infrastructures that require planning and large investments, it is understood that it is necessary to modernize its architectural programs, redesign the areas surrounding it and recreate its **relations with the city**²⁶ through specific instruments between the three urban scales. The structuring of a Mobility Urban Hub (HUM) challenges introducing an alternative approach to current paradigms.

25 MENDES, A. P. T., LIMA, J.M. C.S., LAGO, M. Política pública municipal e federalismo permissivo: sobreposições de competências administrativas e legislativas e o arrefecimento do controle social. **Cadernos FGV Direito Rio - Série Clínicas** - Volume 8. Available at: <http://bibliotecadigital.fgv.br/dspace/handle/10438/19490>

26 BERTOLINI, L. & SPIT, T. **Cities on Rails: The Redevelopment of Railway Stations Areas**. London: E & FN Spon, 1998.

The purpose and the Innovation

This research aims at analyzing the **spatial ambivalences** between transport node and place. From this perspective, the research aims to contribute to the discussion about urban design and urban mobility in contemporary times, **from the design of the areas of the stations** based on the understanding that integration between **urban** and **transport** policies is essential, especially between the intermediate and local scales, so that strategic stations become a **Mobility Urban Hub** (MUH).

In this sense, the specific objectives that guide the seven chapters of the thesis summarized in the second order questions detailed in Table I are:

Second order issues		
First part	Chapter 1	<ol style="list-style-type: none"> 1. What are the main urban and transport attributes that should be considered in the design of a station as a “place”? 2. How to articulate them between the macro, intermediate and local urban scales? 3. What is a Mobility Urban Hub (MUH) and what is its relevance?
Second part	Chapters 2 e 3	<ol style="list-style-type: none"> 1. What are the main design strategies used in the spatial transformation of the station areas of European projects?
Third part	Chapter 4	<ol style="list-style-type: none"> 1. How is the method applied in the spatial analysis of the case studies?
	Chapter 5	<ol style="list-style-type: none"> 1. What are the main urban facts in the urban context of the city of São Paulo? 2. How do you set up macro accessibility in the territory? 3. What were the main urban instruments used in the spatial transformations in the station areas?
	Chapters 6 e 7	<ol style="list-style-type: none"> 1. How did spatial transformations take place in station areas within the mid-scale of case studies? 2. What are the spatial ambivalences and challenges between NODE and PLACE within the local scale? 3. What are the spatial potentialities in the Corinthians-Itaquera station area?

Table 1
Second order issues.
Source: Own elaboration, 2017.

The Hypothesis

The **central hypothesis** of the research is that some high capacity stations in São Paulo's (metro railway), despite being strategic **did not overcome spatial dilemmas between transport node and place** due to gaps in the planning process between different urban intervention scales. As a result, they reinforce spatial ambivalence and lose the opportunity to become a Mobility Urban Hub (MUH) consistent with the new flows imposed by current urban dynamics.

Therefore, it is necessary to investigate the spatial dilemmas, especially the relations of the transport infrastructure - in the case of stations - with the transformations in the territory and the urban dynamics. Therefore, the main question that this thesis aims to answer is:

What are the dilemmas and spatial challenges to articulate a transport node to a place?

To contribute to progress to discover how to overcome the spatial ambivalences, it is also questioned:

How to improve spatial performance in station areas?

It seeks to identify design strategies that create spaces with better performance in station areas and in the corresponding land-use planning, in order to promote integrated urban development, whether it a small node station or a Mobility Urban Hub.

Structure of the thesis and Methodological assumptions

The thesis is structured in **three parts (figure 1)**. The first part conceptualizes, the second validates, and the third tests. It is an integrated analysis between the **categories of analysis** (NODE and PLACE) that cross the fields of **Urban, Transport** articulated with the **Urban Instruments**, analyzing them according to the **scale of urban intervention** namely: macro, intermediate and local.

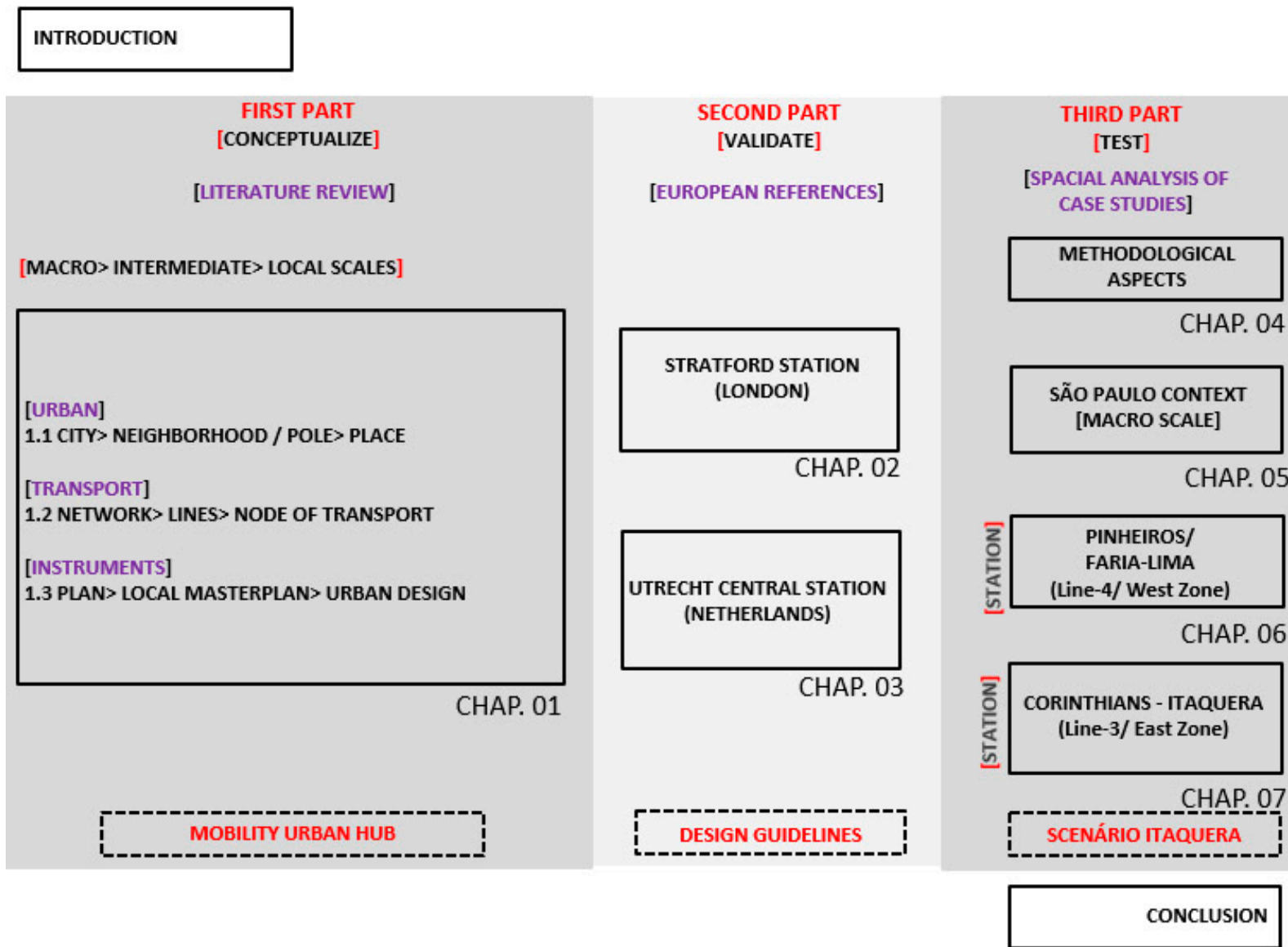


Figure 1
 Structure of the thesis.
 Source: Own elaboration, 2017.

In the first part, the knowledge produced on the theme is researched and proposed, and a **classification of categories (urban [Place], transport [Node], and urban instrument [I])** and some **variables** to aid the spatial analyzes between the three proposed urban scales.

Chapters two and three (**part two**) are intended to validate the concepts, elaborated in chapter one, by discussing two European references: Stratford station in London and central station in Utrecht in the Netherlands.

The third part of the thesis (chapters four to seven) corresponds to the empirical stage of the research. It intends to evaluate the transformations and the spatial dilemmas between transport node and place in the chosen station areas: **Pinheiros** and **Faria Lima** stations (west zone) and **Corinthians-Itaquera** (eastern zone) of the city of São Paulo, testing the hypothesis.

At the end of each part of the thesis some **considerations** were elaborated. In the first part the potentialities of the station areas are debated so that they become a Mobility Urban Hub (MUH), in keeping with the new urban dynamics of contemporary times. In dialogue with the considerations of the first part, the second part draws up project recommendations based on experience drawn from European references. In the last part, a **project exercise** is proposed in the Corinthians-Itaquera station area through research by design. This method characterizes the project as a scientific activity, an important way to ensure complementarity between theory and practice; a contribution that ends the analyzes of the spatial transformations of the case studies.

In conclusion, the discussions will be resumed during the thesis, structured on the dilemmas and space challenges in the areas of the stations of São Paulo, and the project recommendations to strengthen the areas of the strategic stations as Mobility Urban Hub.

The three urban scales

There is a methodological assumption that the understanding of the urban dynamics is placed in three different scales: macro, intermediate and local. It was decided to discuss the NO-DE-PLACE-URBAN INSTRUMENT categories in these **three urban scales** in order to promote the approach to the object of study (spatial ambivalences between the transport node and place), to distinguish its particularities and to understand the whole, as well as to analyze the particularities to qualify the whole (**figure 2**).

Thus, the recognition of the differentiation of the three proposed scales reveals characteristics and objectives of the categories analyzed. And in each change of scale the discussions and products enrich their own spatial values as well as the understanding of the relevance in the alignment between them.

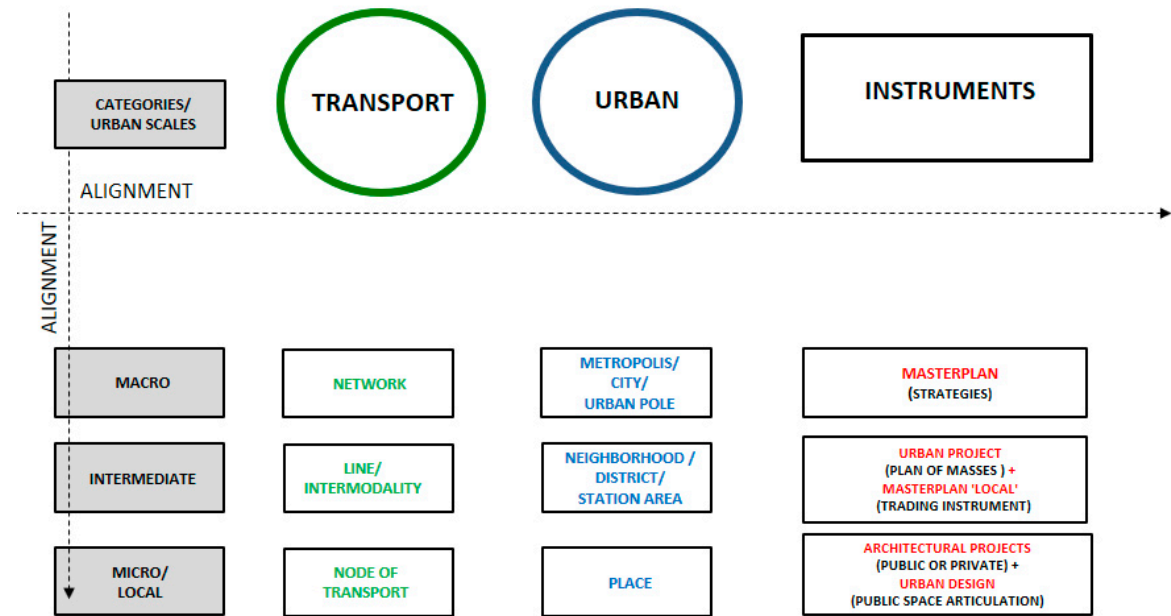


Figure 2
The alignment of articulated urban scales with the categories of analysis.
Source: Own elaboration, 2017.

Silva and Romero²⁷ affirm that to instrumentalize the analysis of the urban space through the scales is necessary to target the perception of the whole, but also of the peculiarities, establishing the understanding of the urban scales in **Macro, Meso and Micro**.

Reis²⁸ clarifies that the metropolitan scale corresponds to its urban dispersion, in which are defined the polarizations, the axes of transport and the different forms of appropriation of the urban space. It is from the range of abstractions that we derive data, areas, densities, and model quantifiable characteristics.

In turn, the **macro scale** is considered as the scale of the major infrastructures, or the city, which allows to analyze the urban structures. They are the spaces of organization, resources, production, information and communication systems; articulating different forms, from the neighborhoods to the urban dimension; defining itself in the distribution of structuring elements²⁹.

²⁷ SILVA, G. J. A.; ROMERO, M. A. B. “O urbanismo sustentável no Brasil. A revisão de conceitos urbanos para o século XXI (parte 02)”. Arqtextos, São Paulo, year 11, n. 128.03, Vitruvius, 2011.

²⁸ REIS, N. G. *Notas sobre Urbanização Dispersa e Novas Formas de Tecido Urbano*. São Paulo: Via das Artes, 2006.

²⁹ SILVA, G. J. A.; ROMERO, M. A. B. “O urbanismo sustentável no Brasil. A revisão de conceitos urbanos para o século XXI (part 02)”. Arqtextos, São Paulo, year 11, n. 128.03, Vitruvius, 2011.

Furthermore for Silva and Romero, the **meso scale** corresponds to the scale of the neighborhood, the area, of a sector. It is the scale set according to the criteria of productive space set, such as morphological relationships. It corresponds to the homogeneous part identifiable in the city, composed of a set of blocks with common characteristics. On the other hand, the conditions under which organization set take place in the local scale, of urban web, on the street, is that define at least the possession of urban space: appropriation, use and transformation of space. It is on this scale that the material conditions of their configurations in all their diversity are studied.

Finally, the **local scale** is placed³⁰ as the specific scale of the place, which corresponds to the collective space and value of daily actions. It is the scale of an observer at any point in the city. The authors also affirm that Brazilian cities suffer from the lack of a technical and methodological approach to the urban, especially on the scale of the urban design site, resulting in a fragmented and Cartesian view³¹.

The choice of **three-scale** research was made because the local scale reverberates or does not align the previous scales. Duffhues and Bertolini³² argue that even if there is an integration between transport policies and land use, it is not guaranteed that the dilemmas will be solved locally, once much of the crucial and difficult decisions occur below these strategic decisions. Hence the importance of discussing these scales that support the local scale, even to find possible gaps between them, that directly impact the materialization of space in the station area.

It should be noted, however, that the **local scale** is the main scale to be addressed in the research, as it is the existence of unresolved space conflicts between the NODE and PLACE, identifying the challenges to be overcome and the potentialities to be promoted in favor of a Mobility Urban Hub (MUH). So just identifying where the **gap** between the implementation of urban policies and the materialization of spaces emerges is that it will enable to understand where the problem lies precisely, what can cause it, and the way to approach it.

30 SILVA, G. J. A.; ROMERO, M. A. B. “O urbanismo sustentável no Brasil. A revisão de conceitos urbanos para o século XXI (parte 02)”. *Arquitextos*, São Paulo, ano 11, n. 128.03, Vitruvius, 2011.

31 Cartesian because its method establishes to verify, to analyze and to enumerate. Separating the parts through verification, so that they are independently analyzed, synthesized and enumerated, making it difficult to see the whole.

32 DUFFHUES J.; BERTOLINI, L. “From integrated aims to fragmented outcomes: Urban intensification and transportation planning in the Netherlands”. In *The Journal of transport and land use*. Vol. 9, n. 3, 2016, p. 31

part I

The spatial articulations
between Transport Node
and Place in the three
urban scales

The first part of the thesis brings together a conceptual framework related to the object of the research through an **integrated vision between urban, transportation and urban instruments**, conceptually problematizing the notions of transport node and place between the three urban scales proposed as an investigative method.

Linked to a bibliographical review, in the context of **place [P]**, it will point out the formulation of concentrated readings in the debate of compact cities and will point out how urban hubs can contribute to urban development. Starting from the tool of urban morphology applied in the scale of the neighborhoods, to finally focus on the question of the privileged “place” in the territory, where one comes in contact with the scale of the station, with the urbanity of the “place” closely linked to the urban dynamics of the hub .

In the scope of the **transport node [N]**, will be the discussion of the network macro accessibility of the transport system, micro accessibility to a node, as well as the conceptualization of what is a mobility hub.

As the spatial dilemmas between node and place can be articulated by **urban instruments [I]**, the available tools are discussed at all urban scales. It will discuss the abstraction of the Master Plan of the macro scale, but especially the gap between the masterplan of the intermediate scale and the importance of the articulating urban design in the local scale will be discussed. That said, the question that will guide the chapter is: What are the main attributes of urban territory that should be considered in the design of a subway station as a “place” based on the revision of the current theoretical framework?

chapter 1

Dilemmas and spatial
challenges between
Transport Node and Place

What we still call today, thanks to the inertia of language, collective equipment, was truly public space. A space that extended to the exterior of the building, in the atrium, in the square and in the neighborhood, just as outside the building were born and continued some of the social practices that invested it: processions, banquets and carnival parties¹.

¹ SECCHI, B. **Primeira lição de urbanismo**. Translation: M. Barda; P.M.R. Sales. São Paulo: Perspectiva, 2006, p. 100.

1.1 City, Neighborhood / Urban Pole and Place

1.1.1 The metropolis and the urban poles

To begin the studies between node and place in the **macro scale**, the **city** figure is placed as the first approximation to a place. It is on this scale that there is the purpose of developing **urban strategies**, where the great Plans, whether urban or transport, are studied to be implemented in the short, medium or long term in search of sustainable urban development for all.

The essence of the emergence of cities is based on increasing the possibilities of human interactions in social and economic exchanges. The term *civitas* latin comes from civilians manifests the goal of **forming a group of people who come together to give life to the city and submit to the same laws**. Thus, *civitas* differs from the Greek term *polis*, place that serves as headquarters, dwelling to certain people that has its own root, the citizen. *Civitas* for the Romans is that which is produced by the gathering of several people under the same laws, regardless of the desired specificity. It is confluence, **convergence of different people to the same place** that only agree among themselves by virtue of the law. The polis, headquarters, tends to isolate itself in islands relative to the others because of the rooting of its own people. The *civitas* is mobile, its characteristic is to grow, dilate and cohabit the same place by the concord of the laws, since the same aim is sought: mobile city that surpasses its limits².

Cacciari³ affirms that before the urbanistic choices it is necessary to question what is asked of a city: a place of business or a place of human exchange? For there is a contradiction between them, which may be the premise of a new creation. She says:

Before we discuss urban choices, we must therefore ask ourselves the question: what do we ask of the city? We call for it to be a space in which any kind of obstacle to movement, universal mobility, exchange is minimized, or we ask it to be a space where there are places of communication, fertile places from a symbolic point of view, where

² CACCIARI, M. **A cidade**. Translation: J.J.C. Serra. Barcelona: GG, 2009, p.10.

³ *Idem ibidem*, p.26.

is attention given to *otium*? Unfortunately, both things are requested with the same intensity, except that they can not be requested simultaneously, and therefore our position in relation to the city appears more and more, literally, schizophrenic⁴.

The traditional urban form was dissolved. The key places of the modern city form the spaces of production and exchange where the city was organized and regulated around these buildings. If the logic of the modern city was the distance and the spatial separation between jobs, residences and places where social practices would develop, now the contemporary city is the place of progressive uniformization and democratization of urban space. In Secchi's words:

[...] the destruction of consolidated systems of symbolic and monetary values, the continuous formation of new privileged itineraries, new places of commerce, leisure, communication and social interaction, a new geography of centralities, new systems of intolerance, compatibility and incompatibility⁵.

Castells⁶ produces a contemporary analysis of the information society, political and social movements, and global forces that are reshaping states and identity. For the author these movements may be comprised in a central conflict between networks and collective identities.

In this argumentative line, the construction of identity can be understood as “the source of meaning and experience of a people... a set of interrelated cultural attributes, the one which prevails over other sources of meaning”⁷. This material can be processed by individuals, by society, who reorganize the meaning of identity in terms of social and cultural tendencies, as well as their view of time/space.

For Cacciari, the contemporary city is the metropolis where there is only one process of dissolution of any and all urban identity⁸.

Within the several variables of the urban game, the most evident characteristics of the

4 *Idem ibidem*, p.27.

5 SECCHI, B. **Primeira lição de urbanismo**. Translation: M. Barda; P.M.R. Sales. São Paulo: Perspectiva, 2006, p. 93. Our Griffin.

6 CASTELLS, M. **O poder da identidade**. Translation: K.B. Gerhardt. São Paulo: Paz e Terra, 2008.

7 CASTELLS, M. **O poder da identidade**. Translation: K.B. Gerhardt. São Paulo: Paz e Terra, 2008, p.22.

8 CACCIARI, M. **A cidade**. Translation: J.J.C. Serra. Barcelona: GG, 2009, p.30.

contemporary city for Secchi⁹ are the **heterogeneity, the dispersion and the fragmentation**. The fragment is the result of the rupture, of something left over from a preceding whole, producing a series of contradictions which induce sewing and union.

Thus the results of the end of the modern city cycle demonstrate how the problems of multiplicity of urban mobility were underestimated by the lack of reflection on mobility relations, especially by their nature as an element of an urban composition, and their role in intermediation between urban materials, thus losing the whole destined to urban mobility as the element of continuity, regularity and hierarchy¹⁰.

The metropolitan form brings perception problems, but it is the functional unity of the environment of many troubled cities. Lynch claims that it is desirable that this functional unit be identified and structured by its inhabitants.

If it were a hierarchical system, even if coherent at the conceptual level, it would deny the complexities of the connections of the metropolis. If it were articulated to a dominant element, it would become insufficient as the environment increased in size. “However, when we take into account the current way of experiencing a large urban area, we are attracted to another form of organization: that of the sequence, the temporal model”¹¹.

In this context, the series of elements must have the sequential form in a line of motion, ordered by a network of these organized sequences, which can be interrupted in many points that remain readable. That is, a dynamic method of organizing a network of formed sequences, handled by the parties, not for the whole¹².

The choice of place, whether for a building or city, is inseparable from its site, its locus. In Amar’s view¹³, it is necessary to recognize that each city moves in a different way, and as a result a diversity of possibilities can arise. The urban results are more grounded in the articulation and coordination of varied potentials than in massification.

For Cacciari, the post-metropolis is the city-territory, “an indefinite space, homogeneous, indifferent in its places, where events occur that are based on logics that no longer correspond to

9 SECCHI, B. **Primeira lição de urbanismo**. Translation: M. Barda; P.M.R. Sales. São Paulo: Perspectiva, 2006.

10 *Idem ibidem*.

11 LYNCH, K. **A imagem da cidade**. 3^a ed. Translation: J.L. Camargo. São Paulo: Martins Fontes, 2006, p. 127. Our Griffin.

12 *Idem ibidem*, p.128.

13 AMAR, G. **Mobilités Urbaines – éloge de la diversité et devoir d’invention**. Paris : Éditions de l’aube, 2004.

a unitary design of the whole”¹⁴. The territory inhabited represents a radical challenge to all traditional forms of life together. There is a rapidity in the unfolding of events, large undifferentiated areas from the architectural point of view. There is an uprooting in the territory, because all forms connected to the earth tend to dissolve in the network of temporal relations.

In general, the term territory designates the space constructed by man, as opposed to what can be called the natural space. It is the space where man exerts his action, imposing order on him. The distinction between city and territory can be defined by seeing the former as geographical and social space; and the second as the space where man exercises his transforming action and appropriates it¹⁵.

The post-metropolitan territory is a **geography of events**, with no physical limits. The boundary is given by the communications network, whose metric is not spatial, since it is no longer possible to define or validate it. Thus, it is understood that the dialectic of the center-periphery in the metropolis, or rather in the post-metropolis, do not govern the same laws and dominant criteria of classical urbanism of the nineteenth and twentieth centuries. It is a territory that is deterritorialized¹⁶. It is a new metric and the urban poles are a small metric of that territory.

[P0] Urban poles – context within a metropolis

The radial city model, with peripheral nuclei, had its origin in the proposal of Ebenezer Howard for the garden city in 1898. In this case, the urban context was of a major urban center, with a limited size, surrounded by several self-sufficient urban centers, arranged along a broad green belt¹⁷.

The term center comes from the Latin *centrum* and from the Greek *kéntron*¹⁸. In the seventeenth century, it was already treated as a reference of any entity, as a point of convergence, place of meeting of certain traits. With the emergence of the Lights, “cities would be seen as centers of civilization, commerce, good or bad customs¹⁹”.

¹⁴ CACCIARI, M. *A cidade*. Translation: J.J.C. Serra. Barcelona: GG, 2009, p.33.

¹⁵ LAMAS, J.M.R.G. *Morfologia urbana e desenho da cidade*. 5^a ed. Lisbon: Fundação Calouste Gulbenkian, 2010, p. 64.

¹⁶ CACCIARI, M. *A cidade*. Translation: J.J.C. Serra. Barcelona: GG, 2009, p.54.

¹⁷ ANELLI, R.L.S. “**Mobility and Urbanization Networks in São Paulo: from the radial / perimeter of the Plan of Avenues to the directional mesh PUB (1)**”. In: *Arquitextos*, 2007, p.3. Our Griffin. Available at: <<http://www.vitruvius.com.br/revistas/read/arquitextos/07.082/259>>. Access in 15 dec. 2014.

¹⁸ TOPOLOV, C. ; BRESCIANI, S; LILLE, L.C; RIVIÈRE H. (orgs.). **The adventure of the words of the city: through time, languages and societies**. Translation: A. Novick. São Paulo: Romano Guerra, 2014.

¹⁹ *Idem Ibidem*, p.203.

Over time, the notions of center in Portuguese unite: geometric pole and referential concentration to designate a specific region of the city: *Downtown*. Recorded at the beginning of the 19th century, along the Eighth Century, the term *mall*, business, was born to identify an economically active region. Before the term *mall* is coined, the literature indicates the expression *plaza*, “which in this case did not indicate a street, but a zone dedicated to commercial transactions²⁰”.

The authors recall that cities by themselves could be seen as centers, or large centers. However, the commercial vocation of the central areas was decisive for the significance of the **center as a space of concentration of uses for the urban region**.

The center of a city, or its central area, according to Castells, is the place that concentrates the main commercial activities, services, public and private management, as well as transport terminals and vertical constructions (buildings), allowing coordination and ordination activities and communication between the actors. The center distinguishes itself from other localities in the urban environment, since it has a set of own and particular characteristics that make it a *distinct point* of urban space, such as concentration of activities, better transport infrastructure (*accessibility*), higher real estate value and symbolism, as Kneib points out²¹.

It is important to stress the difference between *downtown area and downtown*. The first expression refers to the geographical position of a region whose differential is its insertion in the core of the urban fabric²². The second refers to the

[...] abstract meaning of the word as concentration. More than a verbal contraction, it implies to recognize in this region characteristics that transcend its geographical position, **giving rise to a new character in the panorama of the city, with its own problematic and trajectory**²³.

Castells²⁴ talks about urban centrality, a space seen both as a geographic location and as a social content. In order to locate the center it is necessary to define it with respect to the whole urban structure. The notion of center is considered an integrating element, of concentration of

20 *Idem Ibidem*, p.204.

21 KNEIB, E. C. **Subcentros urbanos: contribuição conceitual e metodológica à sua definição e identificação para planejamento de transportes**. Thesis (Doctorate in Transport). University of Brasília, Brasília, 2008.

22 TOPOLOV, C. *et al.* **The adventure of the words of the city: through time, languages and societies**. Translation: A. Novick. São Paulo: Romano Guerra, 2014.

23 *Idem ibidem*, p. 206. Our Griffin.

24 CASTELLS, M. **A questão urbana**. Translation: A. Caetano. Rio de Janeiro: Paz e Terra, 1983, p. 312-314.

activities designed to favor communication, accessibility, a space of exchange, distribution, management, information issuance, which coordinates decentralized activities. But also a ludic nucleus, of availability of consumption. It is a product that expresses social forces in action and the structure of its internal dynamics.

However, the author notes that certain urban areas are giving way to a multinuclear structure, new centralities in an agglomeration. Then, on a metropolitan scale, there is room for the creation of other urban nodes, or rather, urban poles, thereby conceiving **polycentric cities** (multimodal or multicentric).

The notion of polycentric city carries the connotation of various centers and centrality; denotes the presence of centers that have more than one concentration of collective activities that belong to the entire urban system²⁵.

The poles can be called subcenters. Urban subcentres, in turn, was the name given to the new centralities that emerged in the process of urban expansion and decentralization of employment and population, observed throughout the second half of the twentieth century, especially in the USA. Villaça (1998) denominates like subcentre the diverse and balanced agglomerations of commerce and services that are not the main center; or even a replica, smaller in size from the main center, with which they compete in part without, however, equating it.

In the studies related to the New Urban Economy, the characteristic that over time has served to identify the urban centers and subcenters was, and is, the level of concentration of activities, measured through measures related to employment. In this sense, says Siqueira:

The use of employment-related measures as a determinant point for the identification of centralities in the urban and regional economy refers to the discussions on the effects generated by the agglomeration economies, present in the classic discussions of Marshall (1982), or more specifically the urban environment in Jacobs (1969). [...]. The identification of subcenters up to the early 1980s was largely due to the use of pre-established locations by planning agencies, or definitions related to the historical importance of certain locations as **growth poles**. Beginning in the last half of the 1980s, however, the identification of subcenters through quantitative methods gained strength and body in international practice²⁶.

25 JACOBS, M. **Multinodal Urban Structures, a comparative analyses and strategies for design**. Netherlands: Delft University Press, 2000, p. 16.

26 SIQUEIRA L. P. R., **Proposta metodológica para a identificação de subcentros urbanos: estudo de caso na região metropolitana de São Paulo**. In Scielo. Econ. Apl. vol.18 no.1 Ribeirão Preto, 2014

The growth of the urban strategy that has been used to contain the urban expansion in many European cities through the development of new urban centers, with the adequate connection by trains between major cities, is observed. In Utrecht, for example, it aims to increase urban density without increasing its already urbanized limits.

The greater functional diversity of urban areas through multicentricity ensures the efficiency of all metropolitan urban systems and the coordination of poles. Like this:

The urban results are more grounded in the articulation and coordination of varied powers than in massification. [...]. This should be reflected in the greater functional diversity of urban areas, multi-centeredness, the polyvalence of a part of the equipment and services, and the reinforcement of the role of transport and the various networks which, more than ever, ensure the efficiency of the whole of metropolitan urban systems²⁷.

Jacobs considers that a city is polycentric when it is part of the daily urban system where these poles are distinguished by their specialization. Referring to all functional structures, when no area can be identified as the exclusive center in this case. In this context, the principle of continuous dispersion for a complete concentration is inserted, where the centers must be identified by the concentration of collective activities conjugated in the dispersion pattern of collective activities²⁸.

Finally, the author in his thesis discussed which attribute of accessibility is the most important spatial condition to transform a node into a multimodal structure²⁹. This refers to the presence at a specified scale level, with more than one concentration of collective activities belonging to that scale³⁰.

It should be noted, therefore, that firms are preferably located in places where their productivity can be increased through agglomeration and location effects. Highly dense concentrations of economic activity accommodate local economic development through economies of

27 ASCHER, F. **Os novos princípios do urbanismo**. Translation: N. Somekh. São Paulo: Romano Guerra, 2010, p. 86. Our Griffin.

28 JACOBS, M. **Multinodal Urban Structures, a comparative analyses and strategies for design**. Netherlands: Delft University Press, 2000, p. 16.

29 *Idem ibidem*.

30 “*Multinodal refers to the presence at a specified level of scale more than one concentration of collective activities that pertain to that scale*”. In: *Idem ibidem*, p. 16. Our translation.

urbanization and location³¹.

Bertolini³² argues that metropolitan spaces in general are increasingly organized around us from specialized and integrated activities, connected through material networks in the case of transport, and immaterial networks, that is, information.

Therefore, it is understood that metropolises no longer have the possibility of opting for a compact form, but their poles can contribute to the reduction of the displacements of the traditional center-periphery dependence in the search for services.

In the city of São Paulo, studies by Nigriello and Oliveira³³ reveal the change in the intra-urban detachments of the city, with a decrease in center-periphery dependence and an increase in intra-urban connections. Therefore, urban poles are important alternatives that can reorient urban development in the face of urban sprawl without limits and hypertrophy of the area dedicated to tertiary functions in São Paulo. For Meyer, Grostein, and Biderman the urban poles are strategic to the shape of the metropolis and urban mobility. The authors state that

[...] Metropolitan urban poles assume a new role in the structuring of the metropolitan territory, especially in terms of the capacity to expand mobility and create access in all its sectors. [...] because the issue is to adapt and articulate the existing territory, creating the conditions for the installation of the new “metropolitan paradigm” mobility is the urban function with the greatest potential to aggregate and relate urban sectors segregated from the social, dispersed from the functional point of view and discontinuous from the spatial point of view. The consolidation of a spatial organization pattern described as a *metropolitan city* requires a transport infrastructure whose efficiency lies in its ability to integrate dispersed activities in the *metropolitan territory* and create strong and efficient *local articulating* poles capable of guaranteeing the socio-spatial integration of the metropolitan population³⁴.

31 ROSENTHAL, S. & W. S. “Evidence on the nature and sources of agglomeration economies”. In: Henderson, V.; Thisse, J. (eds.). **Handbook of Regional and Urban Economics**. Vol. 4. Amsterdam: North-Holland, 2004.

32 BERTOLINI, L. “Nodes and places: Complexities of railway station redevelopment”. In: *European Planning Studies*, 4(3), 1996, p. 331-346.

33 NIGRIELLO, A; OLIVEIRA, R.H. “A rede de transporte e a ordenação do espaço urbano”. In: ANTP. Year 35 - 2013 - 1º four-month period, p. 101-122.

34 MEYER, R.; GROSTEIN, M.; BIDERMAN, C. **São Paulo Metr pole**. S o Paulo: EDUSP, 2004, p.164. Our Griffin.

But for that, it is necessary not only incentives that go beyond liberating the increase of constructive density at the mercy of real estate speculation at these possible poles. It is necessary to debate the urban form in the areas of the stations. Otherwise, an opportunity may be missed for sustainable urban development and the construction of quality public spaces, as explained:

When we look at projects around stations in development, the only goal is to improve mobility. Motivated by the rapid return on investment, many leaders in these cities often opt for a limited, short-term approach, losing the long-term vision of promoting sustainable urban growth models. And this way of thinking reflects the lack of strategy and regulations to create and make viable areas of higher density in the vicinity of mobility infrastructures and high quality urban spaces.³⁵

Therefore, it is evident that the strengthening of urban poles is a possible way to reduce the spatial fragmentation in relation to the access to the main activities, as well as in relation to the reduction of large displacements that press the macroaccessibility network.

The strengthening of Urban Poles is in line with sustainable urban development³⁶. Having the definition of *development* as the expansion of human freedoms, especially in the possibilities of choices; and *sustainability* as the emergence of a new value so that it does not compromise the choices of future generations. As well as *sustainable urban development* as a new model of development that efficiently balances the resources necessary for its full functioning to all who live in it³⁷.

1.1.2 Urban form: by an urban approach in space cohesion

Historically, transport has been shown to be an inducing element in the growth³⁸ and spatial transformations of a region. In modern urbanism, the State is responsible for regulating the land division, where zoning, through the isolated building in the lot, is one of its main urban parameters.

35 SUZUKI, H.; CERVERO, R.; IUCHI, K. **Transforming Cities with Transit: Transit and Land-use Integration for Sustainable Urban Development**. Washington DC: The World Bank, 2013, p. 23. Our translation.

36 Having the definition of development as the expansion of human freedoms, especially in the possibilities of choices; and sustainability as the emergence of a new value so that it does not compromise the choices of future generations.

37 LEITE, C.; AWAD, J.C.M. **Cidades Sustentáveis: Cidades Inteligentes**. Porto Alegre: Bookman, 2012.

38 CAMPOS, V.B.G. **Planejamento de Transportes: conceitos e modelos**. Rio de Janeiro: Interciência, 2013

However, it is also understood that “the urban form can not be separated from its geographical support. (...) The site already contains in many cases the genesis and the generating potential of the forms constructed, by the pointer of a stroke, by the expression of a place”³⁹.

In this sense, the importance of the **urban form** in the intermediate scale of a neighborhood is emphasized in understanding the logic of “formation, evolution and transformation of the urban elements, and their interrelations, in order to enable us to identify the most appropriately, culturally and socially, for intervention in the existing city and the design of new areas”⁴⁰.

The urban space can be object of multiple readings according to the instruments or methods of analysis used, which will highlight the phenomena involved in the production of space. For the urban reading of these forms it is necessary to have instruments that allow organizing and structuring the elements, as well as the object-observer relationship. Urban morphology is a method that aims to study the external aspects of the urban environment and their reciprocal relationships.

Lamas points out that the notion of morphology clarifies three main points. First, morphology is understood as the study of the shape of the urban environment in its exterior physical parts and in its production and transformation of time. That said, it does not deal with the urbanization process. Second, the morphological study must identify the production levels of the urban form (urban design) and their interrelationships. Third, urban morphology deals with the division of the urban environment into parts⁴¹.

Among these parts, it is evident in this research the attributes placed and distributed in the urban scales (intermediate and local) to be debated:

- P1 – street layout – the shape of the blocks;
- P2 – occupation – plots (lots);
- P3 – building – minimum element;
- P4 – local territory – the ground being stepped;
- P5 – environmental perception – people

39 LAMAS, J.M.R.G. **Morfologia urbana e desenho da cidade**. 5ª ed. Lisbon: Fundação Calouste Gulbenkian, 2010, p. 63.

40 DEL RIO, V. **Introdução ao desenho urbano no processo de planejamento**. São Paulo: PINI, 1990. p. 85-86.

41 LAMAS, J.M.R.G. *Op. Cit.*, p. 38.

[P1] Structuring elements of urban space: urban layout and the blocks

The set of streets is what forms the urban layout, the main connecting element in the city. Roads and their network are the most powerful means by which the whole of a city can be ordered. “It is based on a preexisting geographical support, regulates the layout of buildings and blocks, connects the various spaces and parts of the city, and is confused with the creative gesture”⁴².

Initially, Coelho⁴³ discusses the assumptions widely used throughout the twentieth century: from the simplification of the logic of the desire to control the city to the logic of producing a building, from the misconceptions on which the urban reading was based. If on the one hand the building can result from the relationship between two agents in a single time, the production of the city stems from a multitude of agents with different interests in different times and conditions.

Initially it is important to read the original geological structure, a significant natural constraint for urban structuring, such as water systems, floods, relief and climate. Plateaus and valley bottoms allow for simple laying of tracks, while slopes and escarpments constitute an impediment or obstacle to the extension of the track that are configured in regular geometric systems. Like this,

In undertaking the reading of urban tracings from their relationship with relief, the most outstanding are the topographic accidents that abruptly mark the territory and which by their morphology constitute obstacles that impede or condition the implementation of the meshes, such as models, ideas or simply the extension of the tracings⁴⁴.

The decomposition of the urban fabric into elements abstracts its evolutionary process and can be performed as a method to aid in interpretative reading. This, the reading of the urban fabric is easier to understand when it is broken down into small elements, namely: 1. parcels, lots (autonomous units); and 2. public space (collective space that structures the lots).

The public space can still undergo a process of decomposition: the street, the square, elements of public character, inseparable and indecomposable. These are elements that constitute the emptiness between the blocks, another element of the decomposition of the urban elements.

42 LAMAS, J.M.R.G. **Morfologia urbana e desenho da cidade**. 5ª ed. Lisbon: Fundação Calouste Gulbenkian, 2010, p. 100.

43 COELHO, C. D. “Os elementos urbanos”. In: COELHO, C. D. (coord.). **Cadernos de Morfologia Urbana: estudos da cidade portuguesa**. Lisbon: Estudos e realizações, 2013, p. 17.

44 FERNANDO, S.P. “O traçado”. In: *Idem ibidem*, p. 38.

The shape, size and volume of a block can be born as a residual result of the tracings (assuming irregular shapes), or be a basic morphological element, which generates space by repetition and multiplication.

The figure of the block is a key element in the composition of the city⁴⁵. The block is an instrument for the organization of buildings in the road network and because of this, for a spatial connectivity, it is fundamental that its scale is articulated to the comfortable walk of the pedestrian, resulting in blocks with dimensions around 100 square meters.

Within the design of the route and its enlargement, the square is a confluence point, an identifiable morphological element of the shape of the city. The square must be seen as an intentional place of encounter, movement, permanence, events, social practices, social manifestations and urban life⁴⁶.

[P2] Occupation - the plot

The plot, the lot, is an elementary morphological component of the city's private urban space. It is materialized by dividing the block. It is the unit that delimits, in a regular or irregular way, the support to the built, to the built, to the full.

Leite stresses that the urban fabric can be influenced by the different ways and forms of grouping of the lot, but also by the different configurations and densities that result from the internal combinations between the built and the lot⁴⁷.

Among the various attributes of the plot, it is possible to highlight the set of regularities and fragmentations, to identify homogeneous groupings, their uses, occupations, fractures or points of exceptionality. It contributes to the construction of the identity character of an area, as well as the possibility of identifying the different typologies.

It is in the parcel that the singular, discrete, common buildings, or monuments, nodal points that stand out in the urban landscape and assist in the construction of the identity of the place.

Thus, the study of the morphological elements of the urban layout, the street, the square, the square and the shape of the occupation of the plot make possible the construction of both urban reading and the production and transformation of the urban space.

45 LAMAS, J.M.R.G. **Morfologia urbana e desenho da cidade**. 5^a ed. Lisbon: Fundação Calouste Gulbenkian, 2010, p. 188.

46 *Idem ibidem*, p. 102.

47 LEITE, J.S. "A parcela". In: COELHO, C. D. (coord.). **Cadernos Morfologia urbana: estudos da cidade portuguesa**. Lisbon: Estudos e realizações, 2013, p. 146.

[P3] Buildings - minimum element

Buildings are important variables, both for attracting and promoting travel due to the uses coupled to them, but also for promoting the relationship between private and public spaces. They are also the origin of the eyes of the city.

Rossi, in his work of 1965, argues that the relations between urban morphology and architectural design, the relationship between the city and the buildings, must occur in a **dialectical** way. Opposing functionalism as a determinant between form and function. He affirms that the architectural design must have cultural motivations that finds in the locus the creative and projectual energy of the **connection of the object to the space** that supports it. It also highlights the frontal criticism of the determinism of the modern movement and the simplicity of relations between form and function, based on the reading of the different urban phenomena. According to Lamas, “for Rossi, the architecture of the city **is not the architecture of the isolated building**, as in modern urbanism, but the computer principle in which the typologies that integrate the urban form are developed and structured⁴⁸.”

It is observed that, in some way, in the urban space a hierarchy exists between the buildings that perform the function of **reference bodies**, called to carry out a defined task with specific qualities and properties⁴⁹.

In this case, the facades have a formal importance, as they arise from the hierarchical position they occupy in the lot. In the traditional city, for example, the relation between building and urban space was processed by the facade. The function of the *façade*, the transition between the collective world of urban space and the private world of buildings, is thus evidenced.

In modern urbanism, the building - and consequently its *façade* - ceased to occupy urban space, and in the Brazilian case, fences and walls were inserted in the transition between the two worlds.

To realize the multifunctionality in these bodies of reference, buildings with multiple uses where the ground floor has an important character in the urban function, space that can promote the relations between inside and outside, of the active facade, private (or public) space that can be used in the permeability of blocks and transition of obstacles, in practice happened to be an equation of difficult balance from the moment that the buildings were isolated in the lots. And

48 LAMAS, J.M.R.G. **Morfologia urbana e desenho da cidade**. 5^a ed. Lisbon: Fundação Calouste Gulbenkian, 2010, p. 424.

49 CACCIARI, M. **A cidade**. Translation: J.J.C. Serra. Barcelona: GG, 2009, p. 46.

multifunctionality requires a combination of various elements, such as “providing guidance” and “letting it happen⁵⁰”, as well as an intimate relationship between the inside and outside, inner and outer.

In built spaces there is a determination to define, delimit and demarcate, especially those based on the principles of modern architecture. However, buildings of supermodernity must be not only reference bodies, but bodies must be deformed, **transformed during movement**. The distribution of matter will change constantly and unpredictably in buildings that seek to adapt to the excesses of time, space and the individual.

It is in this sense that

Global space will arise from the interaction between its various bodies: elastic, “deformable”, capable of “reciprocating”, of penetrating into one another, of being spongy. Each one will be polyvalent not only by embracing different functions within himself, possibly “confining” them again within him, imprisoning them within himself, but also entering intimately in relation to the other than himself, while capable of reflect. In this space, each part is like a monad that welcomes in itself the whole of the whole, which has in itself the logic of the whole: a universal individuality⁵¹.

Cacciari⁵² argues that in the post-metropolitan territory it is necessary that the architecture be able **to construct suitable places to use, places corresponding to the demands and problems of the own time**, being coherent with the form of the current life. It is therefore necessary to try to **overcome monofunctionality** and rigid bodies to design multipurpose, multifunctional buildings that serve different uses, people. It should not be a closed space, segregated from the whole territory, protected as in a residence, for this is the path of alienation.

Guatelli clarifies that there is a flowering of events that start to cause certain mismatches by breaking with those originally proposed by means of the momentary appropriation and utilization not thought during the original conception of a program⁵³. However, this does not mean an-

50 BERTOLINI, L. “Station area redevelopment in five European countries: an international perspective on a complex planning challenge”. *International Planning Studies*, 3:2, 1998, 163-184, p. 180.

51 CACCIARI, M, *A cidade*. Translation: J.J.C. Serra. Barcelona: GG, 2009, p. 59.

52 *Idem ibidem*, p.65.

53 GUATELLI, I. *Arquitetura dos entre-lugares: sobre a importância do trabalho conceitual*. Senac: São Paulo, 2012, p.31.

archically mixing the relationships between the **different times of the different places**. “It is above all a matter of arranging them without confusing, making the totality, the form of the whole, live in the quality of each part”⁵⁴.

However, a project dilemma is evident in the **buildings of the stations**, based only on the transport node program. This strategy, in which the program defines the identity of the object, signals that the program must be linked to the list of activities and functions defined a priori, a program to be operated according to **functional and utilitarian** precepts. Implicitly, there is the idea of the optimal, **efficient to be achieved** in the relation between functions and in a “coherent” way with the spatial organization, especially with regard to the crossing of the lines of the system, in the internal circulation and not necessarily its urban insertion and articulation with the environment.

Within the **areas of the stations**, the intensive development of offices and trade is strongly encouraged to better use the land around transport nodes⁵⁵. Calthorpe considers that station areas, despite the possibility of varying from one location to another, tend to have **high densities**, especially those intended for mixed use⁵⁶.

As the stations develop toward true integrated public transport hubs with diverse modal connections, the high connectivity of these places provides a natural condition and a strategic asset for the development of **high density** mixed urban spaces, while still optimizing the high investment of this modal node. High densities also help create new forms of urbanity.

It should be noted, however, that it is not any densification that guarantees a better intensity; in fact, sometimes it simply becomes congestion or confusion. It is in the coexistence of differences that qualitative urban energy emerges. It’s *mixity*, “instead of” density, “which can characterize contemporary urbanity”⁵⁷.

For the body of the station, the authors of the project of the new station of Utrecht, Benthem Crouwel Architects, the buildings of the stations are **cathedrals of a new era**⁵⁸. These are projects that, besides transforming the body of the station, alter the connection environment

54 CACCIARI, M. *Op. Cit.*, p.60.

55 CALTHORPE, P. **The next American Metropolis: ecology, community and the American dream**. Canadá: Princeton Architectural Press, 1993, p.78.

56 CALTHORPE, P. *Idem ibidem*, p.118.

57 MORALES, M. S. **For a ‘material’ urbanity in First lectured at QAM** - Université du Québec à Montréal. Montreal: Selecting writing, 2005, p. 146-155.

58 Available at: <<http://benthemcrouwel.com/projects/utrecht-central-station/>>. Access in Nov 29th. 2016.

around it. This integrated approach to the seasonal environment reinforces the identity and vitality of the city. They are public transport terminals that offer travelers and city dwellers several features in the area, as well as an environment for living in space-time.

The building is the origin of travel, the driving nucleus of activities and the basic generator of people's movements and events. Was postmodern architecture, then, the architecture that contrasts with the rigidity of the location of the uses of modern architecture? The tool to supplant places in the space of flows? An architecture full of meanings? The answer is not easy, but it is evident the **new role that the architecture** of the areas of the stations has acquired in the space of the flows of the supermodernity, strategic points in the places of the cities.

[P4] Local territory – the ground that is stepped

The term territory designates the space constructed by man, as opposed to the natural space, which will not be humanized, and where man will exercise his action, transforming his physical conditions, imposing his order⁵⁹.

Lamas considers that the distinction between city and territory is based on the “territory as an envelop of the terrestrial surface where the **man exerts his transforming action**, and the city as a geographical and social environment formed by a set of constructions and whose inhabitants work in the majority your inner⁶⁰”.

However, Solà-Morales⁶¹ proposes as a definition of territory not only the system of habitable spaces with their topographical, historical and social determination; but also as a starting point, **the meeting place of the formative activity**, which is at the same time architecture and city in any sense that can be given to these terms.

The local Territory is understood as that space where man effectively appropriates; where from the existing territory and its topography that is drawn and builds the city, the “ground that steps”⁶².

Public space refers to the notion of the public as an adjective of Latin root that is linked to the meaning of the *res publica*, the public thing, of the articulation between the law and the city. The space that is not necessarily public in opposition to the private space, but because it shelters mainly public beings.

59 LAMAS, J.M.R.G. **Morfologia urbana e desenho da cidade**. 5ª ed. Lisbon: Fundação Calouste Gulbenkian, 2010, p. 63.

60 LAMAS, J.M.R.G. *Op. Cit.*, p. 64.

61 SOLÀ-MORALES, I. **Territorios**. Barcelona: Gustavo Gili, 2002, p.24. Our translation.

62 LAMAS, J. M. R. G. *Op. Cit.*, p. 80.

In this way, it is possible to say that the urban fabric is an urban concept that expresses the materiality of the city, refers to a three-dimensional reality, where the permanent evolution and diversity of its physical components is found, which “includes space and building, the public and private, that is to say, the streets, the parcels, the buildings, the infrastructures, etc., that is, the whole physical city”⁶³

Jane Jacobs says the streets

[...] serve various purposes besides behaving vehicles; and the **sidewalks** - the part of the streets that fits the **pedestrians** - serve many purposes, besides housing pedestrians. These uses are related to circulation, but are not synonymous with it, and each is in itself as fundamental as circulation to the proper functioning of cities. [...] The streets and sidewalks, **the main public places of a city, are its most vital organs**⁶⁴.

The author argues that a street must have three characteristics: to be clear the separation between public and private space; there are **eyes to the street**; and the sidewalk must have users traveling uninterruptedly⁶⁵.

Thus, in launching his book in 1961, Jacobs introduced the concept of “eyes on the streets”, an important concept when considering the active facade, that is, an interaction between the activities of the lot with the public space by the people who are in it inserted.

The complexity of the sidewalk uses brings with it the **permanent succession of eyes**. There is an order that guarantees the maintenance of security and freedom. It is an order that is composed in movement and change, in order to compare it to a complex ballet, where each one has its role within an ordered whole: “The ballet of the good urban sidewalk is never repeated elsewhere, and everywhere is always filled with new improvisations”⁶⁶.

Given the assumption that the streets should have their vitality supported by a **spatial connectivity** (which facilitates the continuity of pedestrian detachments), it should be emphasized that for people, these spaces must then promote the diversity of uses and design levels of comfort and safety of public spaces.

63 COELHO, C. D. **Os elementos urbanos in Cadernos Morfologia urbana: estudos da cidade portuguesa**. In: COELHO, C.D. (coord.) Lisbon: Estudos e realizações, 2013, p. 14.

64 JACOBS, J. **Morte e vida de grandes cidades**. 3ª ed. Translation: C.S.M. Rosa. São Paulo: WMF Martins Fontes, 2011, p. 29. Our Griffin.

65 JACOBS, J. *Op. Cit.*, p. 35-36.

66 JACOBS, J. *Op. Cit.*, p. 52.

From the flowerbed to the tree, from the garden to the urban park, the green is considered a green structure and is an identifiable element in the urban structure⁶⁷. Performing precise functions as an element of composition and urban design; organizes, defines and contains spaces. Controls the climate and **qualifies the environment**.

Another element that helps in the design and the qualification of the local territory is the urban furniture, constituted by elements that equip the city like bank, fountain, signaling, shelter of transports, etc.

Contrary to the construction of a connected, qualified environment, it is also important to debate the territory's dilemma by fragmenting as a ghetto itself, surrounded by fences and walls, which denies integration with the streets, **disregards the fundamental function of the street, and necessarily with her, the freedom of the city**⁶⁸.

If, on the one hand, the conception of a fragmented, enclosed territory is overcome, there is still the spatial challenge of the non-materialization of waste spaces, *lost spaces*⁶⁹ or what is called **urban waste** here, which are only evident in the local scale .

The lost spaces are the surplus of a destructured landscape, it is the unused sunken place, far from the pedestrian flows; are the surface parking lots. Lost spaces are the lands that are on the roadside that no one cares to maintain, much less use. Lost spaces can be abandoned, remnant sites, which, for various reasons, have never been redeveloped. They are the residual areas between districts and commercially composed strips that emerge without anyone noticing. In general, the lost spaces are undesirable urban areas that need redesign. They are poorly defined, with no measurable limits, and fail to connect elements coherently. They are spaces that do not contribute positively to the environment or to the people, they are urban leftovers⁷⁰.

Trancik⁷¹ points out the five factors that contributed to the design of the lost spaces:

- (1) an increased dependence on the automobile;
- (2) the attitude of architects of the Modern Movement toward open space;
- (3) zoning and land-use policies of the urban-renewal period that divided the city;
- (4) an unwillingness on the part of contemporary institutions—public

67 LAMAS, J. M. R. G. **Morfologia urbana e desenho da cidade**. 5^a ed. Lisbon: Fundação Calouste Gulbenkian, 2010, p. 106.

68 JACOBS, J. *Op. Cit.*, p. 52.

69 TRANCIK, R. "What is lost space?" In: CARMONA, M.; TIESDELL, S. **Urban design reader**. Elsevier, 2003, p. 64.

70 TRANCIK, R. *Op. Cit.*, p. 64.

71 TRANCIK, R. *Op. Cit.*, p. 64.

and private—to assume responsibility for the public urban environment; and (5) an abandonment of industrial, military, or transportation sites in the inner core of the city.

It can be seen in the context of this research that the effect of the automobile in cities, the modernist movement, zoning in conjunction with urban policies and the transposition of activities are the main causes of the production of lost spaces; characterizing a major problem of urban design on a local scale.

Gehl in his works also widely discusses how to study life in and between public spaces⁷², and how to design cities for people⁷³. It was for decades one of the few theoretical resistances to say that cities have spaces, but also people, and that the scale of the pedestrian should be respected. It has fundamentally addressed fundamental questions regarding the quality of life in cities and the need for them to reflect on the local scale, in solutions integrated with mobility, in the dynamics that favor urban vitality and safety, as well as in the valuation of public spaces as an individual expression and collective.

Among the various attributes that should be considered by the people in urban space in planning and built areas, the following stand out: the human dimension is the one that should shape the city, not the other way round; the importance of the human senses, of small distances, since great distances refer to impersonality, to the feeling of non-belonging. It is considered that the city is alive, dense and in constant mutation. It should be safe, both in traffic protection, with priority to the pedestrian and cyclist, as well as to the issue of crime. The city must be sustainable, healthy at eye level, good for walking and cycling, good for staying, meeting people; with **life, space and buildings - in this order**. Finally, the “experience of comfort and well-being in cities is intimately linked to the mode of urban structure and the space of the city harmonizes with the human body, its senses, spatial dimensions and corresponding scales”⁷⁴.

In this way, the systems of the public spaces, the squares, the streets, around a transport node must converge to it so that they have a simple design pattern, recognizable and interconnected, avoiding sinuosities, interruptions and long paths, that is, there must be broad **spatial connectivity**.

72 Gehl, J. **A life between buildings: using public space**. Translation: J. Koch. Washington DC: Island Press, 2011.

73 Gehl, J. **Cidade para pessoas**. Translation: A. Di Marco. São Paulo: Perspectiva, 2010.

74 GEHL, J. **Cidade para pessoas**. Translation: A. Di Marco. São Paulo: Perspectiva, 2010, p. 162.

The streets should also be pedestrian friendly⁷⁵, with good sidewalks, preferably wide and with trees, without obstacles or holes, without residual spaces, lost spaces or urban leftovers. There should be qualified streets, designed in the context of **short blocks**; and still have connections with the façades of buildings, have the possibility of interaction between the inside and outside, without urban barriers that stimulate or fast walking or large monotonous routes and without urban vitality.

In this sense, it is important to emphasize the importance of the design of buildings, the minimum element that produces the uses, their combinations or mixtures and not separate uses. Like this

[...] the public component of the city elected two main elements: the street, as a common element integral to the public space; and the square, as an urban element of exception and representation. Of the private component of the city, the block was chosen as a unit of aggregation of the private space; the parcel as elementary unit; the common building, as the definer of most of the edified fabric, serial and eminently particular; and finally, the singular building, collective expression and of greater representation⁷⁶.

As a consequence, this element, the common and singular building, of the elementary and private component, will be dealt with in the next section.

[P5] Environmental perception

There are several methodologies for the study of local scale. Until then, the spatial method of the urban form was discussed. From now on, another methodological proposal related to the **subjective field** begins: perception of the environment and of the visual analyzes, since it is understood that they are fundamental attributes to be evidenced in the development of a station area.

It can be said that Cullen⁷⁷ is one of the first scholars to take up the reading of the city on the small scale, on the picturesque scale, after the rise of modern urbanism. He categorizes vi-

75 CALTHORPE, P. **The next American Metropolis: ecology, community and the American dream**. Canadá: Princeton Architectural Press, 1993, p. 89.

76 COELHO, C. D. “**Os elementos urbanos**”. In: *Cadernos Morfologia urbana: estudos da cidade portuguesa*. COELHO, C.D. (coord.). Lisbon: Estudos e realizações, 2013, p. 32.

77 CULLEN, G. **Paisagem urbana**. Translation: C. Macedo. Lisbon: Edições 70, 1971.

sion, place, and content as spatial categories in which multiple morphological categories of urban space are developed, such as color, texture of buildings, constructive details, plant elements, urban furnishings, and so on. These elements acquire an aesthetic appreciation, especially in the serial vision of a small route.

Lynch's studies in the identification of environmental images and collective memory are to this day the most influential studies in this line of research. His theory relates to three urban quality namely:

1. **Legibility**, defined as the “ease with which parts can be recognized and organized in a coherent pattern⁷⁸”, an attribute that gives people an important sense of **emotional security** by creating a harmonious relationship between them and the outside world;
2. **Identity, structure and meaning**, attributes that should compose an environmental image. Identity is understood as its differentiation with another area. Structure signals the importance that all composite images must have internal relations defined for the coherence of the whole. And, finally, the meaning of the environmental image for the observer;
3. **Imageability**, defined as that quality of a physical object that gives it a high probability of evoking a strong image in any observer. They are those urban forms that generate strong and consequent mental images when drawn, creating the “mental maps”.

In his research in the 1960s, Lynch noted that mind maps clearly evoked some urban elements, which generated coherence between map structures. In this way, he systematized the following elements:

1. **Paths**: paths along which the observer circulates, elements that structure the city in the mind of the people;
2. **Edge**: linear elements not used, but that mark the interruptions of a zone, limits in the continuity of the urban image;
3. **Districts**: areas of the city that the observer identifies as a part, in which he has his own identity, usually with precise boundaries and interconnected by the ways;
4. **Nodes**: strategic locations of the city in which the observer can enter and which has a clear function in which it stands out in the urban structure; points of physical convergence of the urban fabric, places of concentration;
5. **Landmarks**: a type of reference, but this is external and stands out in the landscape; usually physical object.

78 LYNCH, K. A *imagem da cidade*. 3ª ed. Translation: J.L. Camargo. São Paulo: Martins Fontes, 2006, p. 2.

It is emphasized here that the **nodal points** are conceptual points of reference in the city, preferably with **adequate form to maintain an attention**. A nodal point will be best defined if it has a clear boundary, and does not extend uncertainly to the sides. It will have more force if it has one or two objects of attention, transparency, overlays, light, shadow, perspectives, joints, openings, closure, movement; and the station areas can be structured as such. “But it will be irresistible if it can have a coherent spatial form”⁷⁹. It is still possible to order a set of nodal points so as to form a structure. The conquest of identity is necessary through the singular quality of the built space, as well as essential that “it be a distinct and unforgettable place, impossible to be confused with any other”⁸⁰.

In this way, Lynch established a dialectic between the image of the real urban form and that image that the inhabitants perceive. Therefore, the **image** is evidenced as an element of the urban conception of a station area.

[PX] Station as a Place: by a definition and projectual approximation

It is understood that it is on a small scale that it is facilitated the performance of the autonomous units, building by building, block by block. It is in this context that it is possible to structure the relationship between architecture and urban design.

Within this scale, it is questioned: What is place? What is space? Castells argues that for physics, space can not be discussed outside matter, and for sociologists, it can not be defined without reference to social practices: “social processes exert influence in space, acting in the built environment inherited from previous socio-spatial structures in space. In fact, space is *time crystallized*. [...] *space is the material support of time-shared social practices*”⁸¹.

Bertolini and Spit⁸² define **place** as a specific part of the city with a concentration of infrastructure, but also by several buildings and open spaces (**figure 1**), a place with physical-psychological, historical-functional characteristics established within a perimeter of development. The place in the city would then be:

79 LYNCH, K. *Op. Cit.*, p. 114.

80 LYNCH, K. *Op. Cit.*, p. 113, our griffin.

81 Castells, M. A **sociedade em rede**. 6^aed. Translation: R.V. Majer. São Paulo: Paz e Terra, 2010, p. 500.

82 BERTOLINI, L., & SPIT, T. **Cities on Rails: The Redevelopment of Railway Stations Areas**. London: E & FN Spon, 1998. pp.9 e 12. Our Griffin.

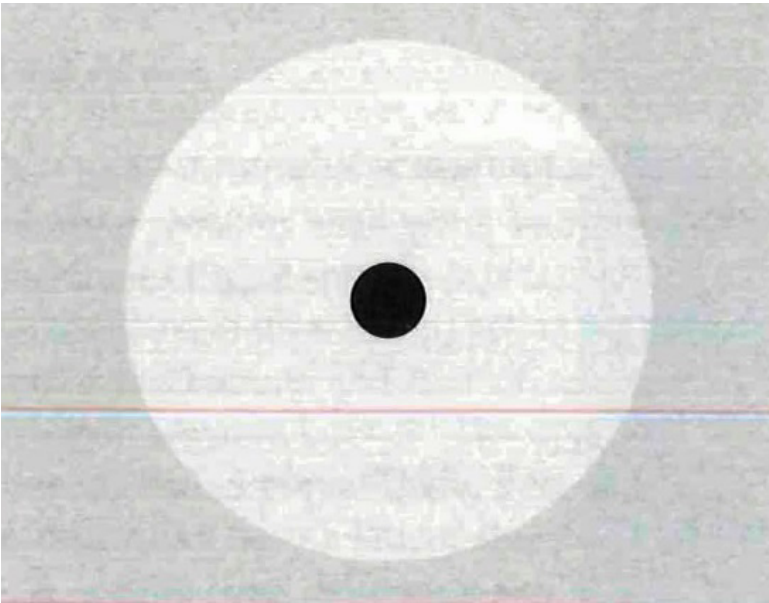


Figure 1
Station as place.
Source: Bertolini; Spit, 1998, p.13,
our treatment.

[...] All the **built and open spaces**, together with **activities** they host, contained within the perimeter designed by a 'walkable radius' centred on the railway station building, as amended to take account of case-specific **physical-psychological, functional-historical and development features**.

This definition of place in a station area seems too succinct. Cacciari in his work asks if it is possible to live without a place. He points out that a post-metropolitan territory can be inhabited, but it is only possible to inhabit it if it is to be inhabited, if it gives places. For the author "the place is the place where we stop: it is the pause - it is analogous to the silence of a score. There is no song without silence. However, in the post-metropolitan territory one is not allowed to stop, to withdraw not to inhabit⁸³.

Restoring places is a regressive and reactionary mode. Either one applauds the movement of dissolution of places, or if it is a victim, or it is a theoretical problem that must be faced⁸⁴. For the extension of the term place it is necessary to oppose it to the notion of space.

Space is an abstract idea, such as "airspace," "advertising space," "leisure space"; "Cyber space"; in space we measure distances, space between two points.

Calthorpe⁸⁵ considers that the basis of the aesthetics of the place, depending on the context, is modernism: segregation, specialization, centralization and intense connection with technology. This ideology has resulted in the segregation of activities and people; specialization and isolation of professionals and the systems they create; centralization of large institutions; and the monopoly of certain technologies, namely the automobile.

The aesthetics of the place, for the same author, has four dimensions⁸⁶: scale, rhythm, pattern and limits. Currently, the scale of the environment is established in large institutions with many bureaucracies, rather than the scale of community and neighborhood. Rhythm is defined by the electronic sound of bites and cars instead of the breath and footsteps of people. The pattern is established by mass production and by discontinuous appropriation rather than by treatment of local potentials. And limits are defined by wealth and power rather than proportion and nature.

83 CACCIARI, M. *A cidade*. Translation: J.J.C. Serra. Barcelona: GG, 2009, p. 35.

84 *Idem ibidem*, p. 36.

85 CALTHORPE, P. *The next American Metropolis: ecology, community and the American dream*. Canadá: Princeton Architectural Press, 1993.

86 *Idem ibidem*, p.II.

In another line of argument, the French anthropologist Marc Augé⁸⁷ interprets in his work the complexity of contemporary society - supermodernity - in which he produces what he calls the proliferation of “non-place”, the experience of solitude. If not places are the space of supermodernity, it is necessary to understand and explain this paradox, since the social game seems to happen more in other places than in the outposts of the contemporary, spaces that receive more and more individuals⁸⁸. In this sense, he affirms that “the world of supermodernity does not have the exact dimensions of the one in which we think to live, because we live in a world that we have not yet learned to look at. **We have to relearn how to think about space**”⁸⁹.

Thus, the city, due to its own dynamism, produces changes in the quality of space, destroying *places* and replacing them with *no places*. Thus, supermodernity consists of the figure of excess: **excess of time, space, and the individual**.

Excess of time occurs by the multiplication of events and by the superabundance of information, and not necessarily by a greater rapidity of time itself⁹⁰. The excess of space deals with the spatial superabundance, which causes changes of scale and the accelerations of means of transport.

The excess of space results in urban concentrations, transfer of population and the multiplication of non-places, understood as:

[...] both the facilities necessary for the **accelerated movement of persons** and goods (**expressways**, roadblocks, airports) and the **means of transport** themselves or the **large shopping centers**, or the transit camps where the planet⁹¹.

Non-place is opposed to residence, to personalized space. It is represented by the **fast moving public spaces**, but also by the large buildings that offer services and commerce, such as shopping malls.

The **excess of the individual (ego)** deals with the weight given to the individual reference that constitutes the paradoxical counterpoint of the **processes of relationship**, acceleration and *delocalization* that integrate the homogenization or globalization of culture⁹².

87 AUGÉ, M., *Não lugares: introdução a uma antropologia da supermodernidade*. 9ª ed. Campinas: Papirus, 2012.

88 *Idem ibidem*. Our Griffin.

89 *Idem ibidem*, p. 37. Our Griffin.

90 *Idem ibidem*, p. 33.

91 *Idem ibidem*, p. 36. Our Griffin.

92 AUGÉ, M., *Não lugares: introdução a uma antropologia da supermodernidade*. 9ª ed. Campinas: Papirus, 2012, p. 41.

Thus, the author clarifies the **anthropological place** as a counterpoint to the proliferation of non-place. The anthropological place is defined, then, as **identity, relational and historical**, that is, corresponds to **time, space and social**. It is the “concrete and symbolic construction of space that could not account only for it of the vicissitudes and **contradictions of social life**, but which refers to all those to whom it designates a place, however modest and humble it may be”⁹³.

The **place of identity** is therefore the place of birth, assigned to the residence, which constitutes the individual identity. Relational place is where in one **place different and unique elements coexist**, whose shared identities confer the occupation of the common place. And the **historical place** is that from the moment associated with identity and relationship, a minimum stability is defined.

There is also the question of the monument that “intends to be the tangible expression of permanence, or at least duration. The role of monuments as historical reference point and highlight the culture of a people, witnesses of their public memory create *magnetic* places in counterpoint to *common places*, spaces of ordinary life where most people live.

For the Venetian geographer Marco Torres, there should be few magnetic places, so that they are not trivialized and dialogue with the common spaces. He considers that the common places, together with the magnetic place, are interconnected by non-places.

Non-places are then those that can not be defined as identities, nor as relational, nor as historical. From the perspective of non-place it is possible to identify two distinct but complementary realities: spaces constituted in relation to certain ends (transport, commerce, leisure) and the relation that individuals maintain with these spaces.

The **traveler’s space** is the archetype of no place. In the field of travel, which is called “space” to the practice of places, the traveler has **partial visions**, constructs a fictitious relation between the gaze and landscape, where one must add “that there are spaces where the individual **experiences himself as a spectator** , without which the nature of the spectacle really matters to him”⁹⁴. It is the experience of one who is forced to contemplate the landscape, but can not “take possession”. Accidental travelers **then feel loneliness**, the experience of non-place as self-estrangement and simultaneous placement of the viewer, where only the movement of images can glimpse.

In a way, the user of the non-place must always prove his innocence, because he is denied being a *public being*. It is necessary a priori or a posteriori, at the entrance or exit of the space, to

93 AUGÉ, M. *Idem ibidem*, p. 51. Our Griffin.

94 AUGÉ, M. **Não lugares: introdução a uma antropologia da supermodernidade**. 9ª ed. Campinas: Papirus, 2012, p. 80. Our Griffin.

have the control of the identity or a contract in the relations of consumption. It is necessary to show the ticket of passage or credit card⁹⁵, or to be in possession of a car.

Therefore, the space of supermodernity only relates to individuals when they are identified, socialized and located at the entrance or exit. Thus supermodernity finds its full expression in non-places.

The non-place can also be visualized in the passages. The distances are enemies of the place because they are destined to shrink, to lose intensity, until it becomes only space of passage, of the fast walk.

Smets together with a team of researchers from the IVM Instituto Cidade em Movimento⁹⁶, promoted a recent discussion about the role and importance of passenger spaces. The issue of passages as a shortcut, transitional space or privileged route for cities of the 21st century, is a decisive challenge to facilitate access to different urban facilities.

Passages then emerge as the link that allows one to pass from one transport system to another, with different degrees of ease or accessibility, thus guaranteeing the successful completion of the urban mobility circuit.

Thus, it is assumed that identity, relationship and history are fundamental for spatial analysis as proposed by anthropologists. However, the anthropological place is also geometric – it has itineraries, axes or paths that lead from one place to another. They are simple spatial forms, elementary forms of social space. An itinerary, axis or path only takes shape in and by time.

The non-place is the absence of the place in itself. Non-place is a space that does not create identity but rather solitary individuality, spaces traveled, ephemeral and therefore measured in units of time⁹⁷.

95 AUGÉ, M. *Idem Ibidem*, p. 102. Our Griffin.

96 The Instituto Cidade em Movimento - **Institut pour la Ville en Mouvement, IVM**, is a non-profit association created in France in 2000. The mission of the Instituto Cidade em Movimento is to contribute to the improvement of urban mobility in all its forms, through support and execution of works, research, projects and actions according to the following themes. The IVM is also dedicated to disseminating experiences and knowledge about the “city in movement”, its culture and civic values, through national and international seminars, competitions, exhibitions, publication of books, magazines and leaflets. Headquartered in Paris, the Institute has offices in Shanghai (China), Buenos Aires (Argentina) and São Paulo (Brazil). Available at: <http://cidadeemmovimento.org>

97 AUGÉ, M. **Não lugares: introdução a uma antropologia da supermodernidade**. 9^a ed. Campinas: Papirus, 2012, p. 95. Our Griffin.

The relation **time and space** has, therefore, acquired a new dimension in the present times, because time overlaps with space, but it is the space that organizes time in network society⁹⁸.

In the **deterritorialized territory** of the post-metropolis the spatial metric makes no more sense, but the **temporal metric**. Time produces the set of new and specific spatial experiences. In order for time to open to the new spatial dimensions, a special time, not an indifferent time at all points, is necessary, homogeneous and equivalent at all times, but a time that is discontinuous, constantly decided, time cut out, neither indifferent nor homogeneous⁹⁹.

Space has become an obstacle and functions take on the aspect of events. More than *locating* a function, something happens, something happens. The **local territory** presents itself as placement of events, space is organized according to temporal measures for situations¹⁰⁰.

The view of the place as being stable and adjusted in the space-use relationship has also been replaced by the space-time relationship; places whose images change in time because of the actions that occur in space, space that is always in process, never stable¹⁰¹.

Good or bad places depend on the value judgment of what a good life is. Not all places present social interaction and spatial wealth. “It is precisely because their physical/symbolic qualities make them different than they are places”¹⁰².

As architectural making is directly related to the **production and qualification of space**, places and non-places mingle and interpenetrate. Place and place do not oppose or attract.

Augé states that there is a new spatial logic in supermodernity: “If non-places are the space of supermodernity, it can not therefore claim the same ambitions as modernity”¹⁰³. Then, the importance of the **inter-place**, free spaces of pre-configurations, uses and forms is observed. Guatelli states that there is a

98 Dieleman et al., Prove that in the Netherlands travel time, not distance, determines individual behavior. Bertolini and Dijst point out that increasing travel distances, variety of individual activities, and travel patterns occur with structural constraints. These restrictions are related to the costs (which must be within an acceptable limit) but especially with the time of displacement.

99 CACCIARI, M., *A cidade*. Translation: J.J.C. Serra. Barcelona: GG, 2009, p. 73.

100 CACCIARI, M. *Idem ibidem*, p. 56.

101 GUATELLI, I. *Arquitetura dos entre-lugares: sobre a importância do trabalho conceitual*. Senac: São Paulo, 2012, p. 31.

102 Castells, M. *A sociedade em rede*. 6ª ed. Translation: R.V. Majer. São Paulo: Paz e Terra, 2010, p. 515-517.

103 AUGÉ, M. *Não lugares: introdução a uma antropologia da supermodernidade*. 9ª ed. Campinas: Papirus, 2012, p. 101. Our Griffin.

[...] new rationality, a new intuition of **space as an (inter) active medium**, formed by **events** (read, profusion of elements and unforeseen events, sometimes ambivalent or bivalent, of immediate apprehension and reading) remote, leveraging routines and other and adverse logics. **This space** would be the one we built for our own dwelling and where, for Foucault (1986), “**we have always become something different from what we are**”, or for Derrida (1983, p.15), “where the possibility of something that would not leave us the same, “or, for Gilles Deleuze (1988, p. 87),” where the possibility of **virtual occurrence** would occur, that is, the reality of which we do not yet have the concept. “In short, it would be in space, **not in the predetermined space**, but in the “**betweens**”, in the **free spaces of presets**, that we would experience these “**moments of invention**” and create a condition for the *devenir autre*, **going beyond the limits imposed** by the natural “By the history constructed by dominant discourses.

The station area can then encompass the intermediate spaces, the space between the less intentional design, a space open to multiple interpretations, an inter-place, understood as

a **space open** to the meanings between defined spaces, spaces that would be the **catalyzing agents**, motivators of these actions of the users, of these events, of those unexpected **events** that would arise and remain **always in process**, transient, never firming as a dominant activity that could become a convention of use, and where the program would not be determined by the architect, but, **mutable**, would always be requested and conformed by these actions. In this case, the architect’s role would lie in the attempt to promote an **interaction-articulation between the defined and the undefined, the design and the non-design, the macro-organizations and spatial sectorizations** and the generation of programmatic microsystems, and in the creation of **spatial conditions** and situations so that these **events can hatch and intensify**. The challenge would lie precisely in the assembly of these joint¹⁰⁴.

The **intermediate space**, the between, is the space of “not drawing”, or of the design not clearly intentional, is the space open to multiple and non-corresponding interpretations and appropriations, able to absorb and register the marks left without, however, to acquire a sense that

104 GUATELLI, I. *Arquitetura dos entre-lugares: sobre a importância do trabalho conceitual*. Senac: São Paulo, 2012. p.33. Our griffin.

could be adopted as the most appropriate, and, in the next moment, able to return to its situation of signifier, waiting for new meanings, interpretations, interventions by the activating users¹⁰⁵.

The *in between* is a momentary place, bridge, articulation, but the station is also an abode, because there is desire to inhabit it, even if in passing. It is necessary therefore

[...] he invents correspondences, analogies between the **post-metropolitan territory** in which we live, and **buildings**, places where he can live; we have to “invent” **new buildings** that **are places** for post-metropolitan life, places that express and reflect time, movement¹⁰⁶.

It is possible for non-place to be a place, for places are recomposed; relations are reconstituted in non-places. The place is never completely erased, and the place is never fully realized. It is a complex identity and relationship game¹⁰⁷.

It is, therefore, a challenge to the capacity to build places suitable for use and events, combining **space and time, place and no place**, corresponding to the demands and problems of the time itself.

In front of the definitions of space, place, no place, common place, magnetic place, it is understood that the station area has the power to become no longer an access to the functionalist node within the logic of a modernist city, or a place - without identity, without relation, without history; space of entry and exit - but above all be conceived as a place, interval, the inter-place in space interconnections articulated with space-time in architectural making.

The place is that which is never, it becomes place by giving place to the place of our consciousness in the moment of its apprehension and recognition (moment of dwelling of the desire and the reflection, an instance), creating identity, relation and history; with diversity and public space articulator conjugated with the densities. Hence an **inter-place** is a catalyst for an affective bond, for the intensification of an indeterminate and changeable event, not a product with process and purpose. A station area in the 21st century is no longer just a network access point: it has the spacepower to be an inter-place.

105 *Idem ibidem*, p. 32.

106 CACCIARI, M. **A cidade**. Translation: J.J.C. Serra. Barcelona: GG, 2009, p. 58. Our griffin.

107 AUGÉ, M. **Não lugares: introdução a uma antropologia da supermodernidade**. 9^a ed. Campinas: Papirus, 2012, p. 74. Our griffin.

[P6] Urban intensification

The spatial relationship between node and place stimulates the form of appropriation of space, especially in the **interaction** between them¹⁰⁸. By **integrating accessibility to activities and functions** around a station, a way of experiencing the city is expanded, in the possibilities of human interaction, of the appropriation of the places.

The relationships between transport and urban are complex, as they influence directly and endogenously, but are also affected by exogenous factors such as individual attitudes, socio-economic, demographic and political variables¹⁰⁹.

Land use determines the location of human activities; the price and costs to access other parts of the city. Individual preferences and possibilities are also important variables in social and economic exchanges. That said, the individual motivations to achieve and achieve certain activities represent the demand for mobility that can only be fulfilled if there is a supply of available transportation options. This interrelationship between transport and land use is often conceptualized by means of a “transport land use feedback loop”¹¹⁰.

Duffhues and Bertolini¹¹¹ argue that intensifying cities has been a planning goal in many countries as it optimizes accessibility for sustainable modes of transport and thus contributes to increasing their participation. In this way, they define urban intensification as the increase in densities and the mix of uses. However, in order to understand this complexity and deal with it effectively, it is argued that **transport and land-use planning** must be carried out in an **integrated manner**. Thus, intensification is understood as an **increase in activities due to the ease of access by the people**, leading to a **more intense use of space by them** (figure 2).

108 BERTOLINI, L.; DIJST, M. “**Mobility Environments and Network Cities**”. *Journal of Urban Design*, London, v. 8, n. 1, 2003, p. 27-43.

109 DUFFHUES J.; BERTOLINI, L. “**From integrated aims to fragmented outcomes: Urban intensification and transportation planning in the Netherlands**”. In: *The Journal of transport and land use*, vol. 9, n° 3, 2016, p. 15-34.

110 DUFFHUES J.; BERTOLINI, L. *Op. Cit.*, 15-34.

111 DUFFHUES J.; BERTOLINI, L. *Op. Cit.*, p. 15-34.

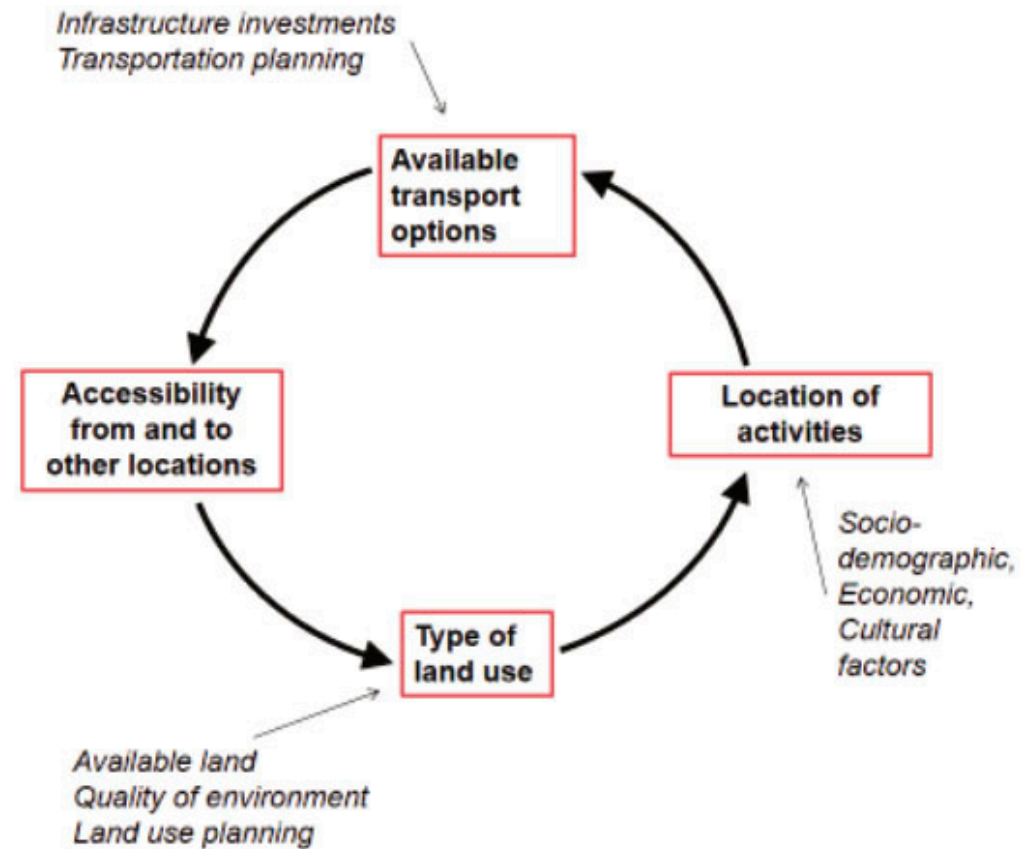


Figure 2
The feedback cycle of land use and transport.
Source: DUFFHUES J.; BERTOLINI, L. *Op. Cit.*, p. 17.

Metrolinx assumes that the main areas of the station are considered areas of intensification in its *Growth Plan*. Among the policies that this plan applies to intensification areas are:

- accommodating **population and employment growth by focussing intensification in intensification areas**;
- establishing **minimum density** targets for them that are consistent with planned transit service levels and provincial transit-supportive land use guidelines;
- **planning and designing** them to attract a significant portion of population and employment growth and provide a **diverse and compatible mix of land uses**, including residential and employment uses, to support vibrant neighbourhoods;
- planning and designing them to provide **high quality public open spaces** with site design and urban design standards that create **attractive and vibrant places**;

- planning and designing them to **support transit**, walking and cycling for everyday activities; and
- generally achieve higher densities **than surrounding areas** and achieve an appropriate transition of built form to adjacent areas¹¹².

Metrolinx also argues that the areas closest to a hub (concept to be detailed below) have high intensity and mix of uses, aiming to establish a vibrant point of activity the neighborhood. High densities are encouraged to benefit from the high level of accessibility, as well as to promote sustainable urban actions¹¹³.

For Bertolini and Dijst, the **mobility environment** is considered as the urban dimension of transport nodes that has a potential for interaction between people. On the one hand, based on spatial, temporal and institutional conditions (transport systems, on the activities of places), and on the other hand, on individual conditions and their needs, or on their own constraints, human interactions are enhanced by **diversity, intensity and duration**¹¹⁴. One can interpret that it is the use (space), of the individual and the time, as put in the definition of place by Augé.

Urban intensification seeks urbanity understood as “the set of conventional rules of the educated person who traditionally inhabited the city,”¹¹⁵ as the behavior that allows strangers to live in the same environment.

The concepts of urbanity and civility are very close, related to the behavior and culture of individuals who have as reference the urban way of life. There is an urbanity designed for people. There is an urbanity destined for places. There is an urbanity in the way of life, in the taste and fashion that different social groups choose and which they find more attractive as places and forms and not as their shared practices. There are those who hate urbanity as well.

Urbanity is articulation, complexity and difference. Articulation of floors, pavements, roadways, itineraries, supports, empty spaces. Buildings and activities are like qualifications, but in the end they are complementary to the urban base. The materials and relations between the materials are what counts: distances, rhythms, continuities,

112 Mobility Hubs. The big Move backgrounder. Toronto, 2008, p.5. Available at: http://www.metrolinx.com/en/regionalplanning/mobilityhubs/RTP_Backgrounder_Mobility_Hubs.pdf. Access in Nov 20th. 2015. Our griffin.

113 Metrolinx, Mobility hubs guidelines for the Greater Toronto and Hamilton Area. Ontário, 2011, p. 17.

114 BERTOLINI, L.; DIJST, M. **Mobility Environments and Network Cities**. Journal of Urban Design, London, v. 8, n. 1, 2003, p. 27-43.

115 ROMERO, J.L. **América Latina: as cidades e as ideias**. Rio de Janeiro: Editora UFRJ, 2004, p. 382. Our griffin.

sequences, conflicts. Space that is socially shared, yes, but not only that. Intensity of use, and of participation in the detail, the variety of the parts – almost the opposite of monumentally, except, perhaps, when it becomes conventional, repetitive, innocuous¹¹⁶.

One can understand intensification by the opposite of its meaning: a space without diversity, without vitality, or as Jane Jacobs described, the great **plague of monotony**. Faced with this plague, the author questioned: how to promote an urban vitality? She pointed out that if urban planning has urban vitality as its goal, it should

[...] *stimulate and catalyze* the largest spectrum and the greatest possible *diversity among the uses* and people in each large city district; this is the fundamental foundation of urban economic strength, social vitality and magnetism. To get them, planners must accurately diagnose, in specific places, what is missing to generate diversity, and then aim to fill gaps in the best possible way¹¹⁷.

The fact is that urban diversity itself allows and encourages more diversity. For Jacobs, there are four essential points to generate diversity: 1. Diversity of uses; 2. Short courts; 3. Diversity of buildings of different ages; 4. High density. Thus, the associations between them create economically effective combinations¹¹⁸.

This means that the urban intensification lies in the relationship between the interior and exterior in the relation between public and private, in the spaces of events that break with the natural, with the anticipated, but also in the drawing, in the form of buildings with defined uses.

Both the inter-urban intensification tend to break with the functionalist logic of isolated spaces and the concentration of activities within established architectural forms.

For this reason, urban intensification is understood as articulation between public and private domains, urban form, buildings densities, relations between full and empty; systems and transport nodes, as well as the environmental perception of the citizen. This articulation between all variables [P1 to P6, and N1 to N13] discussed so far results in an urban dynamics and the more **intense use of urban space, place and between a station area**.

116 SOLÀ-MORALES. For a 'material' urbanity. Montreal, 2005.

117 JACOBS, J. *Morte e vida de grandes cidades*. 3^a ed. Translation: C.S.M. Rosa. São Paulo: WMF Martins Fontes, 2011, p.455.

118 *Idem Ibidem*, p. 165.

1.2. Urban Mobility Network, Lines and Transport Node

[N0] The macroaccessibility and urban mobility network

The transport challenge stems mainly from the implementation of activities, and at the same time, the actions of transport are conducive to activities. The demand for movements is based on the communication requirements of urban society and its activities¹¹⁹. “The freedom to come and go in the metropolis is directly proportional to the access that each individual has to the means of transport and circulation in the city¹²⁰”.

Transportation planning aims to be a tool to aid decision making. This disciplinary field has as its working methodology the modeling: abstract model of reality, formed in conceptual, physical and mathematical terms, used as a mechanism to reproduce the operation of a real system for analysis; phenomena to be modeled in a repetitive and predictable way¹²¹.

Through the use of transportation modeling as a method one can elaborate: diagnoses (improve understanding about the system); predictions (making predictions, identifying probable future problems); alternatives (assist in identifying possible solutions); analysis (simulate courses in action); and evaluations (weighing likely consequences)¹²².

For its diagnostics, propositions and future projections, the modeling uses several variables and parameters that simulate the present and future behavior of the urban transport networks.

The traditional process of transport planning defines travel as the path between two points with specific purpose. It is, therefore, a unit of demand motivated by the displacement of a person for a specific reason between two determining points. Important points are the types of merchandise / cargo, the modes of transport, the reasons, the period of travel and, above all, the origin and destination (production / attraction); and in this context, the direction and the time of the trip are variables to be highlighted.

119 WINGO, L. **Transporte y suelo urbano**. Barcelona: Oikos-tau, 1972, p. 38. Our translation.

120 MEYER, R.; GROSTEIN, M.; BIDERMAN, C. **São Paulo Metrópole**. São Paulo: EDUSP, 2004, p.164. Our griffin.

121 STRAMBI, O. **Notas de aula. Planejamento transporte urbano**. USP: POLI, 2014.

122 STRAMBI, O. **Notas de aula. Planejamento transporte urbano**. USP: POLI, 2014.

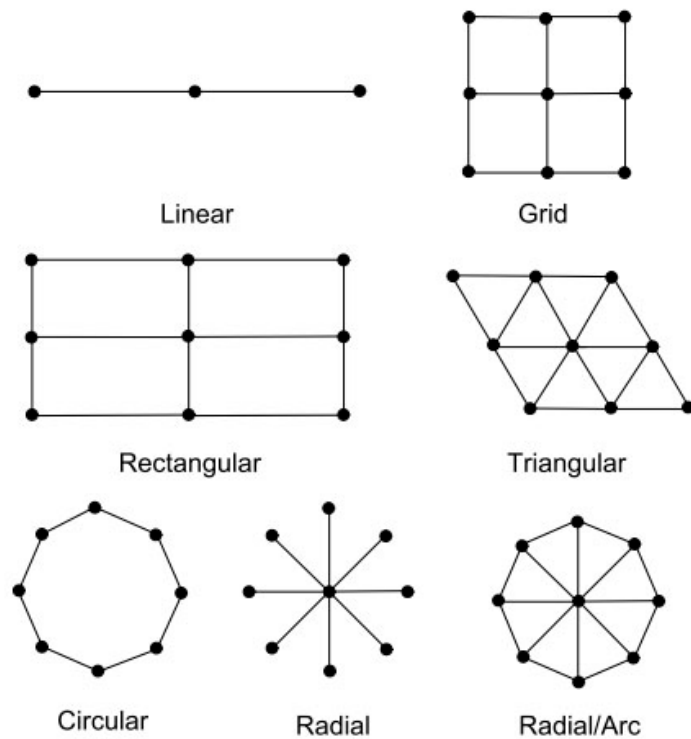


Figure 3
Examples of network design.
Source: NES, R.V. **Design of multi-modal transport networks. A hierarchical approach.** Netherlands: Delft University, 2002, p. 37.

The traditional modeling framework, supported by a database, uses the four-step model: 1^a) Generation of trips (estimation of travel totals in each traffic zone); 2^a) Travel distribution (spatial interaction, estimation of the number of trips between pairs of zones, resulting in a travel matrix - Origin and Destination); 3^a) Modal division (interaction with transport offer); 4^a) Allocation of traffic (use of transport network, evaluation of distribution of travel flow in transport systems to verify the balance between supply and demand)¹²³.

After modeling, it is possible to design a network, understood as road links (links, access links or common link), the connection of nodes (centroids or common nodes). Thus, it is possible to define the transport network as a finite graph such that: 1. Each link is assigned a traffic capacity; 2. There is a called *node of origin* from which connections of the node leave from him; 3. There is a *node* called a *destination* to which only outbound oriented connections arrive; 4. There is a flow of vehicles associated with each *connection*; 5. The total flow entering any node must be equal to the flow out of it; 6. The flows can not exceed the capacity of each connection¹²⁴.

Robertus van Nes¹²⁵ considers that there is a second possible approach to analyzing a network generically: using specific network forms. As an example, drawings of linear, mesh, rectangular, triangular, circular, radial and radial/arc networks (**figure 3**).

The role of urban transport is decisive, both in terms of local access and to make possible the expansion of urban territories and their composition on a large scale. That is why network design is essential in the balanced development of urban space.

A model is a simple way of expressing causal or structural relations stripped of the irrelevances and complexities of the real world, so that they can be more immediately compressible¹²⁶. This discussion demonstrates that transport planning, especially the use of modeling for the projection of a network, is one of the disciplines that should guide decision making and not be used in isolation.

That is why, in the face of societal changes and the consolidation of new urban and environmental paradigms, the problems of the four-step model have been questioned as the main tool in network decision making without articulations with land use, for example.

123 CAMPOS, V.B.G. **Planejamento de Transportes: conceitos e modelos.** Rio de Janeiro: Interciência, 2013, p. 49.

124 FERRARI, C. **Dicionário de urbanismo.** São Paulo: Disal, 2004.

125 NES, R.V. **Design of multimodal transport networks. A hierarchical approach.** Netherlands: Delft University, 2002, p. 37.

126 WINGO, L. **Transporte y suelo urbano.** Barcelona: Oikos-tau, 1972, p. 19. Our translation.

Bertolini and Spit¹²⁷ define network as:

- a fabric or structure of cords and wires that cross at **regular intervals** and are knotted or secured at crossings;
- a system of lines or channels resembling a network;
- an interconnected or interrelated chain, group, or system [as in a network of hotels.

At the regional level it is possible to understand the network of cities as emergent and functionally connected sets of urban centers on a regional scale. A shift from the unplanned development of economic activities along the highways, for example, to a more planned and concentrated urbanization with the maximum possible functional mix over a limited number of transport axes is a counterpoint to the corridor concept¹²⁸.

Considering the context of a transport network, **macroaccessibility** can be defined in the same way as accessibility. Vasconcellos¹²⁹ defines it as “the quantity and / or diversity of destiny that the person can reach, by a certain form of transport, in a certain time”. It refers to the ease of crossing the space and reaching the desired destination. According to Wingo, the technical sense of accessibility “constitutes a relative quality that favors a portion of the ground by virtue of its relation to a transport system that operates at a certain level of service”¹³⁰.

It therefore has a direct relationship with the spatial comprehensiveness of the road system and transportation systems, being linked to the actions undertaken at the level of transportation planning, which defines the basic constitution of these systems.¹³¹

An adequate macro accessibility would be represented by a greater ease of movement through the city in any direction, whether on foot, by public or private transport¹³². The larger this amount, the more opportunities people will have to accomplish the desired activities.

127 BERTOLINI, L. & SPIT, T. **Cities on Rails: The Redevelopment of Railway Stations Areas**. London: E & FN Spon, 1998, p.10. Our griffin.

128 BERTOLINI, L.; DIJST, M. “**Mobility Environments and Network Cities**”. In: Journal of Urban Design, London, v. 8, n. 1, 2003, p. 27-43.

129 VASCONCELLOS, E.A. **Urban mobility and citizenship**. Rio de Janeiro: Senac, 2012, p. 42.

130 WINGO, L. **Transporte y suelo urbano**. Barcelona: Oikos-tau, 1972, p. 36. Our translation.

131 VASCONCELLOS, E.A, *Op. Cit.*, p. 146.

132 *Idem ibidem*.

Fluency and safety are often cited as the main objectives of urban mobility planning. Although important, Vasconcellos¹³³ states that other aspects should be considered in urban mobility planning as a whole, such as: “Accessibility (subdivided into macro accessibility and microaccessibility), service level and cost of transport, and environmental quality.

The optimum of macroaccessibility is that which also covers an urbanized surface. Its shape was defined by the Theory of Central Places in 1933 by Walter Christaller¹³⁴ in seeking the optimization of an urban network in the distribution of goods and services in its area of influence. He concludes that the hexagon is the form that provides the best subdivision within the surface of a simple mosaic, thus avoiding uncovered areas or overlaps¹³⁵.

In 1950, August Lösch deepened the Theory of Central Places by concluding that the journeys in search of a commodity to the central place are reduced to a minimum. He also defined that the central places are distributed in a transport network where intersection points or network nodes are created.¹³⁶

Thus, each network defines its locations according to its functions and hierarchy of each location and according to the characteristics of the service to be processed in the network. The implantation of urban infrastructures produces a differentiation of space, and the planning is an attempt, that is, necessary, to organize it.

It is also essential that the **network** be **multimodal** (two or more different modes) and interrelated in a clear and balanced network design in the urban space for the effective improvement of urban mobility.

As Robertus van Nes states

Multimodal transport is seen as an interesting approach to solve today’s mobility problems, such as recurrent congestion, deterioration of accessibility and negative environmental impact. The combination

¹³³ *Idem ibidem*, p. 145.

¹³⁴ He has established the following empirical relationship between the central place and surroundings: the further away the goods of the central place are from the place of supply, the greater will be their price. In this way, the goods of the central place have a limit in their displacement so that their price is competitive. In homogeneous regions, the central place is the center of the hexagon.

¹³⁵ There are other theories of urban and regional economics that address the patterns of location of activities in relation to transportation and land costs. Among them they stand out: 1. Classical: focus on production, supply and cost of agricultural commodities (main actors are Adam Smith and David Ricardo); 2. Spatial microeconomics: focus on the location of production units (von Thuren); 3. Marginalist: focus on consumption, demand and utility of products (Marshall, Christaller and Lösch); and 4. Marxist: focus on social relations (Marx, Lefebvre, Lojkine and Harvey).

¹³⁶ FERRARI, C. **Dicionário de urbanismo**. São Paulo: Disal, 2004.

of public and private transport in a multimodal transport system offers opportunities to capitalize on the strengths of the various systems, avoiding their weaknesses and therefore can be an interesting alternative to the traditional and strictly dichotomous choice between the private car or public transport¹³⁷.

Finally, it is important to talk about the notion of **urban mobility** and the counterpoint to transportation. Transport, from the epistemological point of view, is to take something or someone from one point to another.¹³⁸ With regard to urban mobility, there are several definitions.

According to the Houaiss dictionary, mobility is “characteristic of what is mobile or what is capable of moving; possibility to move (something, somebody or oneself); ease of walking, jumping, dancing, etc.; possibility to go elsewhere quickly”¹³⁹.

For urban planners mobility is directly linked to urban complexity as a “multifaceted phenomenon, with different dimensions, at social, economic and political level and the specificities of its insertion in the various spheres that the urban offers”.¹⁴⁰ Also in this sense, Meyer, Grostein and Biderman define mobility as being “*the set of population displacements in the territory*”¹⁴¹, and establish the subtle relation between population and the urban function contained in a place.

For the National Policy on Sustainable Urban Mobility, prepared by the Ministry of Cities, urban mobility is the “condition in which people and cargo travels take place in the public space”¹⁴². It is the attribute associated to people and goods that is related to the needs of displacements in the urban space, according to the activities developed.

In general, the factors that normally interfere with the mobility of people are income, gender, age, occupation and educational level. Mobility increases with income and varies according

137 “Multimodal transport is an interesting approach to solve today’s mobility problems such as recurrent congestion, deteriorating accessibility, and negative environmental impact. Combining private and public transport in a multimodal transport system offers opportunities to capitalize on the strengths of the various systems while avoiding their weaknesses, and should therefore be an interesting alternative to the strictly dichotomous traditional choice between private car or public transport. NES, R.V. **Design of multimodal transport networks. A hierarchical approach**. Netherlands: Delft University, 2002, p. 267. Our translation.

138 VALLEJO, M. H. **Sobre la movilidad en la ciudad**. Barcelona: Editorial Reverté, 2009, p.22.

139 HOUAISS, A. *et al.* **Houaiss Dictionary of the Portuguese Language**. Rio de Janeiro: Objetiva, 2001.

140 ALVES, P.; RAIÁ, A.A.J. **Sustainable Urban Mobility and Accessibility: the management of Mobility in Brazil**. São Carlos: Postgraduate Program in Urban Engineering PPGEU, 2010, p.5.

141 MEYER, R.; GROSTEIN, M.; BIDERMAN, C. **São Paulo Metropolis**. São Paulo: EDUSP, 2004, p. 28. Our griffin.

142 BRAZIL. Ministry of Cities. **National Policy on Sustainable Urban Mobility: Principles and Guidelines**. Brasília, 2004.

to the economic and social characteristics of people. People in adulthood and engaged in work activity move more than young and old. People with a higher educational level travel more. And low-income people play much more the role of pedestrians, cyclists, and public transport users, while higher-income people often play the roles of drivers or car passengers¹⁴³.

Finally, in Amar's view¹⁴⁴, there has been a change in the paradigm of the concept of urban mobility in three dimensions: informational, temporal and cultural. The first refers to changing a purely raw information system and signals a more complete conception of information: mobility applications. The second dimension, temporal, refers to the valuation of time by enriching its content and not only quantitatively. The cultural dimension identifies the potential of personification of issues of animation and access to culture, a technique widely used to stimulate the purchase of the private vehicle. Considering the importance of user empathy in the choice of modal, Amar affirms that public transport can also be exploited for its playful side and not just in a rational and operational way.

The heart of cities is in the multiplicity of choices and exchanges. However, it is impossible to take advantage of this multiplicity without being able to move easily. And the multiplicity of choices would not exist if it were not motivated by combined uses. In this context, the role of transport and the various systems is to ensure the efficiency of the urban set.

In the environmental sense, climate change reinforces the questioning of the dependence of motorized transport on the main intra-urban displacements. Gaseous pollutants, especially CO₂, produced by the burning of cars' fuels emitted into the atmosphere, are one of the major causes of the greenhouse effect and, consequently, of the increase in the average temperature of the planet Earth, and place the urgency of discussion and studies on the construction of sustainable cities and actions to increase urban resilience¹⁴⁵, especially sustainable urban mobility.

For the consolidation of a multimodal network of urban mobility, the connectivity between different modes is a key element. The places of connection between different networks are

¹⁴³ VASCONCELLOS, E.A. *Urban transport, space and equity: analysis of public policies*. 2^a ed. São Paulo: Annablume, 2001.

¹⁴⁴ AMAR, G. *Mobilités Urbaines – éloge de la diversité et devoir d'invention*. Paris : Éditions de l'aube, 2004.

¹⁴⁵ Urban resilience is the ability of individuals, communities, institutions, companies and systems within a city to survive, adapt and grow, no matter what types of chronic stressors and acute shocks they experience. Chronic stress is understood as tensions that weaken a city on a daily or cyclical basis such as: high unemployment; **inefficient or overburdened public transport system**; endemic violence; Chronic shortage of food and water. Acute shocks are considered sudden events that threaten a city like: earthquakes; floods; outbreaks of disease; terrorist attacks. Available at: <<http://www.100resilientcities.org>>. Access in Mar 30th.

of growing importance and make **intermodality** between transport systems especially through the nodes in a key challenge of the urban dynamics¹⁴⁶.

[N1-N5] Lines and transport systems

The term system comes from the Greek and means “to form a set”, to combine a set of interdependent elements in order to form an organized whole. Arrangement of the parts or elements of a whole, coordinated among themselves, and which function as an organized structure¹⁴⁷.

On the one hand, there is the idea of the **city as a planned system**, product of the implementation of large-scale infrastructure in nineteenth-century Europe. It is based on the control of the urban environment through the implementation of technical knowledge of the infrastructure, such as the implementation of drainage systems, water, sewage, electricity and gas in a hierarchical and centralized way.

In this context, it is possible to identify several systems in the scope of transport infrastructure that, because they have different logics, do not necessarily talk to one another for the design of a transport network articulated to the urban morphology of a region. Are they:

- N1 – rail system;
- N2 – subway system;
- N3 – system of bus lines;
- N4 – urban route system;
- N5 – bicycle path system.

[N6-N13] Transport node: by definition

The transport node of a network offers the possibility of access to the union of several systems (and consequently to the different destinations), but also to the place in a city. Bertolini and Spit¹⁴⁸, the main authors who support the idea of the ambivalence between the node and place, develop it initially as follows:

¹⁴⁶ SCHER, F. **Os novos princípios do urbanismo**. Translation: N. Somekh. São Paulo: Romano Guerra, 2010, p.86.

¹⁴⁷ FERREIRA, B.H.F. **New Aurélio: the dictionary of the Portuguese language 21st century**. Editora Nova Fronteira, 1999.

¹⁴⁸ BERTOLINI, L. & SPIT, T. **Cities on Rails: The Redevelopment of Railway Stations Areas**. London: E & FN Spon, 1998, p.12.

[...] Railway stations are very peculiar locations. On one hand, they are (or may become) important ‘nodes’ in emerging, heterogeneous transportation networks. On the other hand, they identify a ‘place’, a both temporarily and permanently inhabited portion of the city, an often dense and diverse assemblage of uses and forms, that may or may not share in the life of the node (Bertolini, 1996b). As redevelopment objects, most railway station areas are thus—and fundamentally—neither predominantly nodes, as for instance airports and ports, nor essentially places, as for example redundant industrial lands or waterfronts. Both node and place dynamics tend to be strong at railway station locations, resulting in a set of characteristic dilemmas¹⁴⁹.

In a context of urban growth, people need to travel, for various reasons, over great distances and to various destinations, using a variety of means of transport and involving different speeds and modes.

In view of the new forms of communication (Hall¹⁵⁰, Castells¹⁵¹, Ascher¹⁵²) and the urban transformations related to the network and the system, the transport node becomes especially important in the production and qualification of space.

Richer clarifies that transport nodes are fundamental for the structuring of the territory where it is inserted, however, it is the **public space the element that reinforces the man’s connection to the place**. This urban set - node and place - must ensure the interconnection between the city and the transport system¹⁵³.

Transport nodes such as metro and train stations or bus terminals, airports and ports are part of the transport system capable of promoting a metropolitan and even global reach (for airports) to a local the **access point to a network**. The node is, geometrically speaking, the basic component of a network.

¹⁴⁹ BERTOLINI, L. “Station area redevelopment in five European countries: An international perspective on a complex planning challenge”. In: *International Planning Studies*, 3:2, 163-184, 1998, p. 178.

¹⁵⁰ HALL, P. “Megaciudades, ciudades mundiales y ciudades globales”. In: RAMOS, A. (Ed.). *Lo Urbano en 20 autores contemporáneos*. Barcelona: Edicions UPC, 2004.

¹⁵¹ CASTELLS, M. *A sociedade em rede*. 6ª ed. Translation: R.V. Majer. São Paulo: Paz e Terra, 2010.

¹⁵² ASCHER, F., *Os novos princípios do urbanismo*. Translation: N. Somekh. São Paulo: Romano Guerra, 2010.

¹⁵³ RICHER, C. “L’emergence de la notion de pôle d’échanges, entre interconnexion des réseaux et structuration des Territoires, 2008”. Available at: <<https://halshs.archives-ouvertes.fr/halshs-00460325>>. Access in 25 aug. 2015.

Bertolini and Spit¹⁵⁴ define *node* as “a point of access to trains and, increasingly, to other transportation networks” (figure 4).

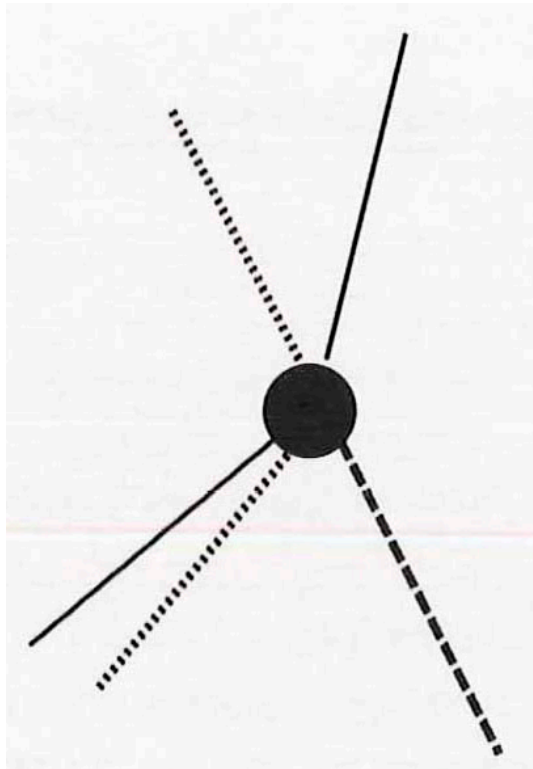


Figure 4
Station as node.
Source: BERTOLINI; SPIT, 1998,
p.10. Our treatment.

Izaga points out that nodes are the points where there is spatial accumulation of activities, which can reflect centralities according to the economic importance of the urban functions that it serves, such as production, distribution, administration, commerce, from which a **hierarchy of importance results**¹⁵⁵.

154 BERTOLINI, L., & SPIT, T. *Cities on Rails: The Redevelopment of Railway Stations Areas*. London: E & FN Spon, 1998, p. 9.

155 IZAGA, F. G., *Mobilidade e Centralidade no Rio de Janeiro*. Thesis (doctorate) - PROURB / FAU - UFRJ, Rio de Janeiro, 2009, p.88

Smets¹⁵⁶ classifies the **intermodal stations** into three types: transfers, nodes, and hubs (detailed below). Transfer refers to the transfer between any type of mode; is therefore equivalent to the concept of intermodality¹⁵⁷. Node defines the **connection point of at least two lines of a network**; a natural point of intersections, passages and internal movements; node as an intermodal convergence point when there is greater attractiveness when overlaps occur with networks of higher hierarchy (**figure 5**).

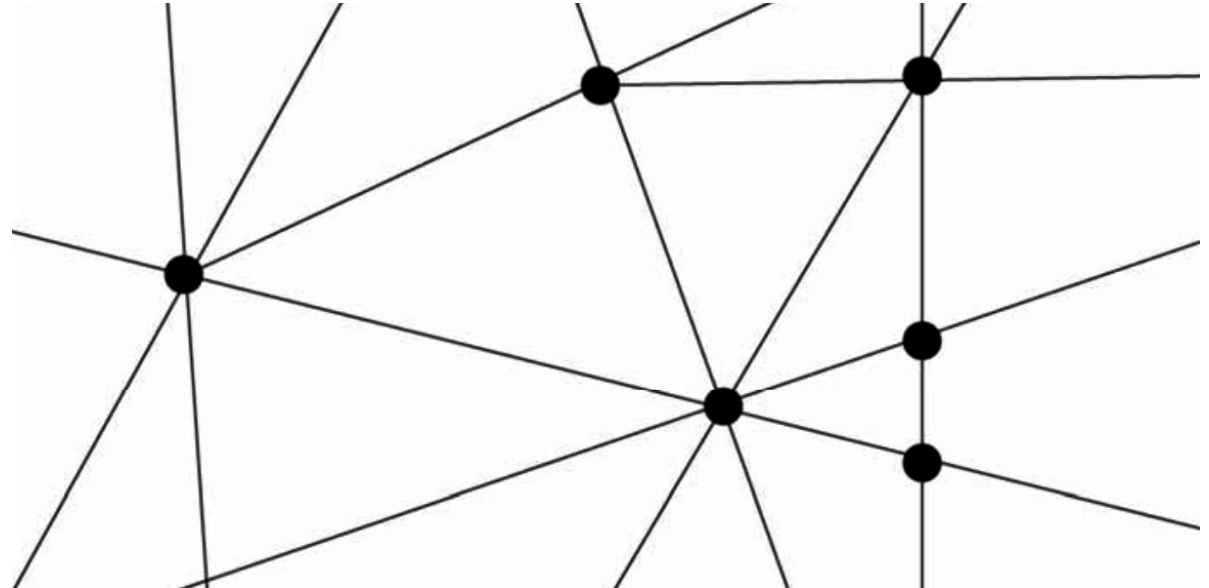


Figure 5
The transport nodes.
Source: SMETS, 2011.

In the words of Richer¹⁵⁸, transport nodes are composed of **two or more transport systems**, they are configured by crossing transport lines and **refer to the system and not to the territory**. It is a space that is characterized by frequent exchanges and influences the movement and flow of pedestrians on the local scale.

156 SMETS, M. “Transfers, Nodes, Hubs and Places: Different forms of Intermodal Exchange”. In: HUBURBS. **Metrolinx Mobility Hub Symposium, 2011**. University of Toronto John Daniels School of Architecture, Toronto, 2011. Available at: <https://www.daniels.utoronto.ca/sites/daniels.utoronto.ca/files/old/marcel_smets.pdf>. Access in oct. 2015.

157 The term intermodality is here understood as the effective articulation between different means of transport. More information see Baiardi’s dissertation, 2012, p. 14.

158 RICHER, C. “L’emergence de la notion de pôle d’échanges, entre interconnexion des réseaux et structuration des Territoires, 2008”. Available at: <<https://halshs.archives-ouvertes.fr/halshs-00460325>>. Access in 25 aug. 2015.

Within the hierarchy of a system, the importance of the node for a city or region is due to the accumulation of flows and the number of destinations that it serves. It is the space that concentrates and redistributes system users to many directions.

Richer, supported by different authors - Margail (1996), Varlet (1992) and Dupuy (1988) - also conceptualizes the terms connection and interconnection. For Margail, connection consists of “uniting”; for Varlet the connection is the meeting of two axes of the same mode of transport and interconnection means for the author the meeting of at least two modes of transport; for Dupuy, interconnection means the merging of spaces, that is, a common space for at least two transport systems.

In this fusion context, Bertolini and Dijst propose the concept of the **mobility environments**: places where mobility flows connect and that have the potential to grant diversity and frequency of human contacts. Environments that can aid in the articulation of design and planning strategies and address the challenges of increasing access in urban systems and networks. In general terms they define it as

[...] the whole of the external conditions that may have an influence on the presence of **people** in a given location. These are features of both the **transportation services** available there (e.g. capacity, speed, scale of operation, time schedules, price) and the **activity place in itself** (e.g. functional mix and densities, opening times, structure of the public space), and include institutional arrangements (e.g. regulation of entry and behaviour, as for instance ensuing from commercial or security policies)¹⁵⁹.

In Amar’s view¹⁶⁰, not feeling more attention to the **technological innovations** of modes of transport than to the emergence of new modes, he proposes that emphasis should be placed on the way of approaching the **intersections of networks**, that is, on the **poles of exchange**, as opposed to the technical concept of “transport terminal”.

Transport nodes, when inserted in a centrality, must organize themselves into three daily functions defined by Richer¹⁶¹: (1) Carrying function; (2) Urban function; (3) Service function. The **transport function** deals with accessibility, transport offer, physical coordination of transport

159 BERTOLINI, L.; DIJST, M. “**Mobility Environments and Network Cities**”. *Journal of Urban Design*, London, v. 8, n. 1, p. 27-43, 2003, p. 31. Our griffin.

160 AMAR, G. **Mobilités Urbaines – éloges de la diversité et devoir d’invention**. Paris: Éditions de l’aube, 2004.

161 RICHER, C. “**L’emergence de la notion de pôle d’échanges, entre interconnexion des réseaux et structuration des Territoires, 2008**”. Available at: <<https://halshs.archives-ouvertes.fr/halshs-00460325>>. Acesso em 25 ago. 2015.

systems. In relation to the **urban function**, it is necessary that there be a treatment of the public spaces that have direct connection with the node, as well as its urban insertion through a design that adapts itself to the multipolar structure of the territory; already in relation to the **services function**, it is necessary the security, communication of the user with the equipment, comfort, among others. In this way, the user is the beneficiary of a place of intermodality, of multiple and privileged accessibility between the node and the centrality.

Nigriello, Pereira e Metran, ao realizarem um estudo elaborado na Companhia do Metropolitano de São Paulo-CMSP, em 1999, na RMSP, identificaram algumas estações como pontos de articulação¹⁶² no território metropolitano. The authors conceptually defined these points as “places with spatial attributes that justify the association of the structural transport network with its feeder system and with the other services and activities necessary for the accomplishment of urban functions”.

Facing the definition, it is interesting to highlight what the authors considered as spatial attributes: the concentration of public transport lines and consequently generation or significant attraction of trips; concentration of trade, services and / or production activities; physical characteristics favorable to regional and local access; and physical characteristics favorable to the densification of built space. If such points of articulation encompass all points, they are considered first category and may reach the fourth.

Finally, Izaga¹⁶³ considers the nodes, like the terminals, stations, airports, as elements of the urban form of the transport along with the connections. The nodes “are reflected in the centrality of urban activities, which may be related to the spatial accumulation of economic activities or accessibility to the transportation system”.

It is important to point out that in the node scale **microaccessibility** occurs, that is, direct access to the node; “The greater or lesser facility of direct real access to the desired destinations”¹⁶⁴.

¹⁶² Nigriello, A.; Pereira A.L.S.; Metran, J. **Pontos de articulação**. ANTP: São Paulo, 2002, p.94. Our griffin. Available at: http://files-server.antp.org.br/_5dotSystem/download/dcmDocument/2013/01/10/D761A248-C6CE-4542-B161-F7FC8CAA27DE.pdf. Access in Nov 15th. 2015.

¹⁶³ IZAGA, F.G. **Mobility and Centrality in Rio de Janeiro**. Thesis (doctorate) - PROURB / FAU - UFRJ, Rio de Janeiro, 2009, p.45 Our griffin.

¹⁶⁴ VASCONCELLOS, E.A. **Circular é preciso, viver não é preciso: a história do trânsito na cidade de São Paulo**. 1ª ed. São Paulo: Annablume, 1999, p. 48.

Baiardi¹⁶⁵ analyzes in his dissertation the ways of directly accessing a station and the possibilities of **intermodality**, that is, the effective articulation between different means of transport.

Microaccessibility and intermodality to a node can occur in a variety of ways, especially on foot [N6], or by a subway station [N7], train [N8], bus stop [N9], bicycle [N10], private vehicle [N11], rental vehicle [N12] or tram (tram) [N13]. The conceptual articulation that runs from the design of a macroaccessibility network, through the analysis of the lines up to the design of the nodes to the network of urban mobility, ends.

1.3 Plan, Local Masterplan and Urban Design

[10-14] Urban planning

Urban development can be understood as the set of processes that lead to the growth of cities, either by expansion or by changes in their interior¹⁶⁶. Urban planning is a socio-spatial development strategy that can be defined as a tool used by the State to order the city space, aiming at its urban, economic and social development. Planning is synonymous with conscious driving and not being a slave to circumstances.

For Novais¹⁶⁷, urban planning is a set of techniques applied to physical space. It is defined the way in which the space should be occupied for the most diverse uses, as well as the authorization of the activities and height of the buildings in the urban soil. At this level the urban form can then be defined.

Traditional planning can be divided into three levels: 1. Strategic (where long-term and macro-scale actions are thought of); 2. Tactical (in which are considered design questions, such as

¹⁶⁵ BAIARDI, Y. C. L. **The role of microaccessibility in urban mobility**: the case of the Santo Amaro train station in the city of São Paulo. Dissertation (Master degree) - Faculty of Architecture and Urbanism, Universidade Presbiteriana Mackenzie, São Paulo, 2012..

¹⁶⁶ LAMAS, J.M.R.G. **Morfologia urbana e desenho da cidade**. 5ª ed. Lisbon: Fundação Calouste Gulbenkian, 2010, p. III.

¹⁶⁷ NOVAIS, P. **Uma estratégia chamada planejamento estratégico: deslocamentos espaciais e a atribuição de sentidos na teoria do planejamento urbano**. Rio de Janeiro: 7 letras, 2010.

architectural, geometric, signaling, among others); 3. Operational (linked to short-term actions, such as configuration of traffic lanes, frequency of services, etc.).¹⁶⁸

The way cities are managed can vary according to the cultural context in which they operate. In Brazil, in the scope of Urban Planning, the instrument of the Master Plan was designed, with municipal responsibility, enhanced with the promulgation of the City Statute, in 2001 (Law No. 10,257). Thus, the Master Plan is the main basic instrument of urban development and expansion policy, which is part of the municipal planning process [10].

However, there are several discussions about the exhaustion of belief in the possibility of controlling urban growth, intolerances, and very rigid definitions of the levels of reasoning, normative frameworks and abstractions of the Plan¹⁶⁹.

The challenge of planning in a non-rationalistic and flexible way is obvious¹⁷⁰. Sennett criticizes the excessive planning and affirms that the cities must be seen like

“complex and synchronous” (without the possibility of predicting all tendencies of urban dynamism), open, lively, diversified, “incomplete” and “porous”, within a vision of urban totality as opposed to closed cities with fully planned interiors¹⁷¹.

A new possible way of acting in the city is identified, but on an intermediate scale: the local masterplan.

168 CAMPOS, V.B.G. **Planejamento de transportes: conceitos e modelos**. Rio de Janeiro: Interciência, 2013, p.2.

169 CALABI, D. **História do urbanismo europeu: questões, instrumentos, casos exemplares**. Translation: M. Barda; A. Marco. São Paulo: Perspectiva, 2012.

170 SOUZA, M.L. **Mudar a cidade: uma introdução crítica ao planejamento e à gestão urbanas**. 11 ed. Rio de Janeiro: Bertrans Brasil, 2016.

171 Available at: <<http://www.caubr.gov.br/habitat-ii-sennett-sassen-e-burdett-propoem-uma-nova-carta-de-atenas/>>. Access in Oct 25th. 2016.

[15-16] The transversality of the figure of the local masterplan

Defining the *scale* of urban intervention in a way that promotes spatial transformations articulated with the context is challenging. Rossi¹⁷² draws attention to the fact that the problems of urban scale design “are only acceptable and concrete when referring to a ‘piece of city’” and the need for understanding the city as a set of urban facts and architecture, as opposed to the abstract schemes of drawing the big planes.

In European urban planning¹⁷³ there is an incipient urban practice that can offer clues as to how drawing can be the instrument of mediation of scale in the morphological and mediator question of the urban instruments.

In general terms it is possible to say that the government of some cities delineates a **spatial vision for the whole** territory in the macro scale, which comprises some or most of the problems: uses, volumes, heights, flows, surfaces, axes, great urban strategies. In the second moment, there are the **specialized plans** for specific parts:

a) **Structural and Zoning Plan** developed for the whole city, linking only public actors and not offering construction rights to individuals; urban strategies are to be developed and detailed in the urban scales that follow.

b) **Specialized Plans for areas**, now linking the private and effectively giving construction rights. At this stage, through a specialized plan, the public power may provide additional construction rights to private individuals in return for the construction of some “non-profitable” part or a type of infrastructure through “planning contracts”.

In another area of discussion, there is the **Urban Project** as it is known today, it began in the 1980s and was developed during the 1990s until the beginning of the 21st century as an alternative to generalist urbanism of the mass plane, still heir to the representation of a zoning and volumes in plan. Challenged the old hierarchy between the Plan and the Project, implemented by the public initiative, but developed by public-private partnerships, related to strategic areas, with possible indirect action in the rest of the city, thus opening a way for the resumption of exploration of the intermediate scale especially in Europe.

172 ROSSI, A. *A arquitetura da cidade*. Translation: E. Brandão. São Paulo: Martins Fontes, 1995, p. 171

173 SCHOLL, B.; ELGENDY, H.; NOLLERT, M. *Spatial Planning in Germany. Formal Structure and Future Tasks*. Karlsruhe, Universitätsverlag: Karlsruhe publisher, 2007. See also PALERMO, P.C; PONZINI, D. *Spatial Planning and Urban Development*. Heidelberg: Springer Publisher, 2010.

In this context, Portas¹⁷⁴ understands the need to search for a new regulation, since the “traditional” ones (that composed the block, the street and the lot, as well as the two-dimensional zoning) are not adequate to the new morphologies of the city-territory, including the figure of the Urban Project.

The author discusses that the partial sciences can contribute on the one hand only with a **program**. On the other hand, since **program and design** are non-successive but **interdependent** elements, the need for **integration** is necessary. It then proposes a **cyclical relationship**: Form-Program-Form.

The realization of the << thing >> reforms the << program >>, calls for a new evaluation and re-forms it in its turn going from a hypothesis launched on the knowledge before the reality, still and always hypothesis, launched now on the life, the use, the consumption of men¹⁷⁵

It is therefore a **different** approach from the **technocratic one**, in which the realization of form transforms the program that, once transformed, changes the form. But he points out very well that “the program is not a project, it is not an objective design, materializing in time through a” struggle “, between the unitary conception that is given coherence, vision, beyond the particular and vitalist realization, contestant of the project in the name of the right to the appropriation and invention of space¹⁷⁶”.

So, it raises the question: how to program, control, form the physical space of cities with a certain coherence during their development process? Following in the argumentative line, the author introduces the concept of structuring model, of significant structures, making use of different schemes. It would be necessary to develop a process of architectural programming, the **Meta-Program, Meta-Project and Meta-Design**¹⁷⁷.

The **Meta-Project** is understood as the structuring of the program of functions, a Project of Projects that before one or more macro-structures of urban elements defines types and articulations, where the forms of the buildings are still generic. The **Meta-Program** translates into a model of aspirations and objectives that *demand universal* response, conciliation of sectoral programs, proposing priorities and basic interrelations between the factors, to be transformed into a

174 PORTAS, N. *A cidade como arquitetura*. Lisboa: Livros Horizonte, 2011.

175 PORTAS, N. *A cidade como arquitetura*. Lisboa: Livros Horizonte, 2011. p. 23.

176 PORTAS, Op. Cit., p. 28.

177 PORTAS, Op. Cit.

precise project: the **Meta-Design** that enters in contact with its respective context, as the one that then solves the Meta-Program.

Thus, based on the concepts of Portas and the urban planning process of the European references to be dealt with in Chapters 2 and 3, we can observe the role of the figure here called the **Local Masterplan**¹⁷⁸, the urban instrument that transcends different urban scales and sectoral instruments.

While **Urban Project** is like a great project that fixes everything, ready to be built, as a Specialized Plan; a legal tool that creates precise construction rights and specifies infrastructure provisions, a certain formal, legal and temporal rigidity, **Masterplan** is being introduced into the urban planning process as a more flexible tool.

Thus, the Local Masterplan is a basic tool that serves to redefine planning tools, adapting to the rules and the process. According to Bullivant¹⁷⁹ the concept of Masterplan in contemporaneity can be thus defined

[...] masterplan is now in many people's eyes interchangeable with the word 'vision', its framework plan based on a deeply researched envisioning exercise drawing on the views, wishes and even votes of the public, because urban design is now a collective affair. These days, a masterplan is also an activity that occurs very early in any process of urban change, well before major costs for change are incurred in the delivery process. So there is huge scope, and an advantage in timeliness to hitting the mark at the speculative stage [...] Whether tending to a top-down or more bottom-up attitude, masterplanners are more likely nowadays not to prescribe a rigid blueprint, but will create a **performative set of tools** with the aim of incubating the future. As integrated sets of principles, they add utopias, not single utopia, to a city or region's public laboratory of possibilities, because any plan need to be accompanied by a lot of **open debate**, a good degree of open-endedness, and must respond generously to the innate presence of difference of all kinds found in all cities and regions. [...] In **identity**, masterplanning has become an **interdependent set of principles**, an integrated gestalt of mechanism

¹⁷⁸ Consider here as LOCAL masterplan because its translation into Portuguese, Master Plan, can bring conceptual confusion since there is no urban term that deals with this urban instrument in the Portuguese version in Brazil. As we work in this text, the local masterplan would be a third element that crosses different urban scales and urban instruments. It is not, therefore, the Master Plan elaborated by the Municipalities on the macro scale.

¹⁷⁹ BULLIVANT, L. **Masterplanning Futures**. New York: Routledge, 2012, p. 4. Our griffin. Available at: <<https://www.book2look.com/embed/9781135717834>>. Access in 19 dec. 2017.

for directing change in cities, not one single tool but a synergistic and interactive set of design tools applied to key urban issues, **including degrees of density and the effect of their relationship, mixed use and its application, cultural identities and their interaction**, ecological and economic sustainability and their satisfactory dovetailing, cluster policies, anti-flooding policies, **transport infrastructure** and families of housing models. Inevitably, a post-zoning – a more intelligent, rather than a wasteful use of land – is at the heart of a good masterplan. No one element can afford to be compartmentalised but must play its role as part of a conceptual network of interrelationships and elements that encourage social conditions to emerge or to be reinforced.

According to Bullivant's words, a commitment is made to the understanding of the urban form as an ecosystem in which the physical coexistence can be promoted through the drawing, but, in addition, the "*commitment to the making of social space able to generate a sense of ownership and connectivity*"¹⁸⁰. That is why the Masterplan requires a plural team and committed to the local complexities and with the necessary assessments to the process.

The Masterplan Local figure is understood as a **coherence scheme**, especially on the use, density and communication systems, which **is then negotiated between the parties** to be adjusted since **the viability of a plan is established over time by stakeholders**. In this way the Local Masterplan does not judge (correct or not before the law) with the parcelholder/investor, it mediates, designs, develops.

Another characteristic of the Local Masterplan is that it can be produced in a **temporal scenario** from the short to the long term provided that the smaller parts that are to be adaptable are explicit, since the very nature of this innovative urban instrument is to be able to **incorporate changes** since *keep the strategies and objectives* and the discussion constant among all involved.

Thus, through the Local Masterplan there is the advantage of articulating the **physical phases** of deployment development of the enterprise as articulating equations of the financial scope. They can therefore be selective, not necessarily covering all parts of the area with the same precision¹⁸¹. When executing a specific project, for example, it is more efficient and safe for an enterprise, expanding the possibilities of participation of the average capital (and not necessarily of the big capital), thus pulverizing the inherent risks of the process.

¹⁸⁰ BULLIVANT, L. **Masterplanning Futures**. New York: Routledge, 2012, p. 4. Our griffin. Available at: <<https://www.book2look.com/embed/9781135717834>>. Access in 19 dec. 2017.

¹⁸¹ Idem ibidem.

In order for the Masterplan process to take place in a linear manner, there is an entity that functions as an arbitrator - the **intermediate operator** - that is based on a hierarchy of codes and aspects to be considered previously established, usually represented by the figure of the public authority, whether of a municipality or a district.

The figure of the referee stands out because if there is no **moderation**, successive impasses are created between the parties involved, because everything can become equally important, where all even entities come to have the same power. On the other hand, when there is no moderator, decisions can be made based on a superior policy that is defined according to the dominant interests of the time, damaging the results. That is, for each situation, at each level of planning and political decision, what are the main aspects to be considered are discussed. When there is conflict, the presence of the intermediate operator moderates among all involved to resolve the conflict; to face the problems and above all to overcome them.

That is why it is emphasized that its area of intervention is clearly defined and “manageable” in the context inserted and cannot reflect large scales. This area needs to be flexible to self-adjust throughout the urban planning process and negotiation between the parties and thereby maintain their own design coherence¹⁸².

If compared to the first two formal and traditional stages of European planning (Structural and Specific Plan), the Local Masterplan is therefore, in the face of its flexibility, an ‘informal’ instrument that adapts constantly without losing its goals. This innovative instrument adjusts from the plane to the urban fabric, establishing a cyclical relationship in the development of the urban project.

In addition, the Local Masterplan accelerates the process because it brings stakeholders together for agreements much earlier than in formal planning, as well as allowing for adaptive specialized planning¹⁸³. It does not create a precise definition of everything, under a rigidity that could hinder the process.

Finally, it is understood that in the design of the Masterplan Local there is clearly defined a final goal and goals to be achieved in a long-term time-frame between the macro, intermediate and local urban scales; of connection strategies; the development of multiple projects, urban design that are constantly articulated among all parties involved in a coherent, flexible and not improvised way.

182 BULLIVANT, L. **Masterplanning Futures**. New York: Routledge, 2012, p. 4. Our griffin. Available at: <<https://www.book2look.com/embed/9781135717834>>. Access in 19 dec. 2017.

183 BULLIVANT, L. Op. Cit.

Subject to institutional specificities, the **Local Masterplan** would parallel this process with the development of **Meta-Project, Meta-Program and Meta-Design**.

Of course, different countries have different forms and levels of project orientation and detail. In English tradition, for example, the idea of a Masterplan can be used by local authorities to outline their aspirations for areas of change and to assist urban development¹⁸⁴.

Carmona¹⁸⁵ discusses design and design orientation as a tool in the development process: “*as a generic term for a range of tools that set out design parameters with the intention of better directing the design of development*”. However, Carmona agrees that rigid manuals are not required, but that guidelines can be a basis to be worked on in specific areas by means of **codes**, spatial attributes.

Design guidance and its codes are relevant because they are not legally defined, they only suggest data that may or may not be applied; *is a tool within the development of a process*; can follow the Local Masterplan.

The codes thus create a guarantee of the quality of the design to be achieved which can also help to ensure coordination of the various stages of the process between the various parties involved¹⁸⁶. In this way, Carmona develops **six main foundations** for the orientation of a Masterplan as well as a framework with *several codes of drawings* based on the local vision:

1. **Urban design.** Quality urban design, the main goal among all;
2. **Setting quality thresholds.** It is necessary to establish the elements that clearly unify the place;
3. **Investment up front.** The preparation of space codes should involve all political parties articulated with the great master plan;
4. **Rules for delivery that build upon a spatial vision** (rules that convey or build based on a special vision). Drawing codes are effective tools to help interpret, articulate, and deliver expressive design vision elsewhere, typically in the masterplan (table 1);
5. **Collaborative environment and partnership of interest.** Strong collaboration between the parties is a prerequisite for the successful development of efficient codes;
6. **Importance of clear and effective leadership.** Efficient leadership is critical to articulating codes and making decisions.

184 Available at: <<https://www.placeservices.co.uk/what-we-do/built-environment/urban-design-landscape-architecture/masterplans,-design-guides-and-codes/>>. Access in 17 jul. 2017.

185 CARMONA, N. “**Decoding Design Guidance**”. In: BANERJEE, T. (Ed.). **Urban Design: critical concepts in urban studies**. New York: Routledge, 2014, p. 40.

186 Idem ibidem, p. 48.

Scales of action	Masterplan	Design Code
Settlement pattern	Major infrastructure	Major roads, bridges, public transport network, design principles for combined heat and power systems.
	Structure planning	Continuity, species, relation to topography.
	Water management	Drainage, recycling, reed beds, water features.
	Road and cycle network	Road types, hierarchies, dimensions, capacities and characters, cycle network continuity.
	Open space network	Standards, open space typology and features, connectivity.
	Character areas	Centres and sub-centres, walkable catchments, parcel size and sub-divisions.
Urban form	Connections	Edge treatments, boundaries.
	Street network	Urban grain, grid types, connectivity.
	Block pattern	Block form, privacy distances, interiors.
	Building lines	Frontage continuity, setbacks.
	Plot form	Plot size, width, adaptability.
	Building location	Orientation, position on plot, overlooking and overshadowing, natural surveillance.
	Density contours	Plot ratios, dwelling per hectare, intensification nodes.
	Views and vistas	Relation to topography, corridors, back grounds.
Urban space	Open space	Standards, types forms, layout, access, landscape, planting, management.
	Public space	Patterns, types, enclosure ratios, forms, layout, connection, uses, management.
	Carriageways	Road tracking, junctions, road, specifications, traffic calming, services routing, servicing.
	Cycle and footpaths	Path specifications, cycle track specifications, paving, kerbs, gutters, road markings, other details.
	Public/private space	Principles for courtyards, mews, cul-de-sacs, covered streets, arcades, colonnades.
	Private gardens	Standards, back gardens, front gardens, roof gardens, landscaping.
	Play spaces	Standards, types, equipment, management.
	Parking	Standards, car parks, parking courts, on-street types and treatment, overlooking, lighting, landscaping.

Local character	Building forms	Bulk, massing, heights, storey heights, forms building envelopes, plan depths, adaptability.
	Building types	Detached, semi-detached, terraced/town house, flats, fronts and backs.
	Building frontage	Active frontage, entrance frequency, architectural styles, features, proportions, rhythms, expression, window/wall, ratios, materials, colours, balconies, porches, signage, shop-front design.
	Mix of uses	Distribution, proportions, mixing -vertical, horizontal.
	Townscape features	Eave lines, rooflines, chimneys, corner treatments, landmark/background, treatment, focal points, advertising.
	Heritage assets	Integration, preservation, management.
	Street trees	Species, numbers, placements.
	Soft landscape	Standards, planting, species, biodiversity, lawns and verges, planting beds and areas, planters.
	Public realm	Street furniture, bollards, boundary treatments/materials, public art, fountains, paving materials, colours, utilities equipment, street lighting, amenity lighting, bus shelters, CCTV, public toilets, cycle storage and parking.
Technical factors		Environmental standards and energy efficiency, access standards and disable parking, refuse storage and recycling, tenure mixing, affordable housing, management and maintenance issues.
Note: It will not always be necessary to include all these elements in a masterplan or design code.		

Table 1

Design codes, building on the site-based vision. CARMONA, N. "Decoding Design Guidance". In: BANERJEE, T. (Ed.). *Urban Design: critical concepts in urban studies*. New York: Routledge, 2014, p. 55. Our adaptation.

It is understood that Table 1, together with the six fundamentals, indicates a way of integrating the urban design through the Local Masterplan. And *project* structures can be used by local authorities to outline their aspirations for areas of change and help promote development.

For a better visualization of the figure of what is here referred to as the Local Masterplan, the use of this instrument will be described in the European references in the second part of the thesis (chapters two and three). Thus, the same figure, the same term, will observe the same objectives, but in different urban contexts.

Finally, if on the one hand the big plans want to define and control everything, the Masterplan offers the possibility of flexibility and dialogue with the context. Therefore, the imperative to create urban design tools as part of a Masterplan can manifest itself as a set of adaptive principles¹⁸⁷.

187 BULLIVANT, L. **Masterplanning Futures**. New York: Routledge, 2012. Available at: <<https://www.book2look.com/embed/9781135717834>>. Access in 19 dec. 2017.

Definition of the perimeter of intervention in a station area

A point to highlight in the elaboration of a local masterplan is the clear definition of its **urban perimeter**.

In the context of urban intervention in a station must go beyond its immediate surroundings. Bertolini and Spit¹⁸⁸ when defining a place in the city promote a way to work around the areas of the stations that do not consider only a radius of 500 meters - a method widely used in the traditional scope of transport planning to define the area of direct influence (approximately one radius of 500/600 meters) and indirect (in the case of a larger radius).

In this way the authors identify four points to delimit an intervention perimeter in place of an abstract ray. They are: walking radius; functional-historical; topographic; and perimeter of development.

1. Walking radius

The walking radius as the maximum acceptable distance for the pedestrian movement is preferably 10 minutes, depending on the conditions of the place, can be reduced to 500 meters, a comfortable walking distance within the stipulated time. However, since the walking radius does not always coincide with the actual course, the distance may vary beyond the conditions of the space. In this way new variables can exist, such as the urban morphology and conditioners of the users, such as age.

It is important to note that this proposal of the 500 meter radius converges with the radius proposed by Calthorpe¹⁸⁹, as developed for the Transit-Oriented Development (TOD), which suggests a radius of approximately 600 meters, to be also adapted within the time of 10 minute walk.

2. Historical-functional elements

This variable considers the station area equal to the sum of functional elements with a strong localization link of environmental evidence. Its purpose is to include in the perimeter the area of the station as a place in the city, all buildings and spaces that maintain relation with the station or that play a role or historical role of relevance in the surroundings.

188 BERTOLINI, L. & SPIT, T. **Cities on Rails: The Redevelopment of Railway Stations Areas**. London: E & FN Spon, 1998, p.12.

189 Author of the book *The Next American Metropolis* (1993), where the concept of TOD, Urban TOD, Neighborhood TOD, was developed within the framework of discussions on new urbanism in the United States of America. By the words of the author TOD is defined as: “A *Transit-Oriented Development (TOD)* is a mixed-use community within an average 2,000-foot walking distance of a transit stop and core commercial area. TOD mix residential, retail, office, open space, and public uses in a walkable environment, making it convenient for residents and employees to travel by transit, bicycle, foot or car”. Ver CALTHORPE, P. **The next American Metropolis: ecology, community and the American dream**. Canadá: Princenton Architectural Press, 1993, p. 56.

3. Topographical

It considers a priori the area of the station as an abstract rectangular cutout where all the elements should be included in the analysis, avoiding assumptions and combined technical questions with those of the users.

4. Perimeter of development

Corresponds to the perimeter to be demarcated as part of a specific redevelopment plan or project in the station area.

Bertolini and Spit point out the importance of considering a perimeter that conforms to a comfortable walking time for the pedestrian, articulated to the urban morphology, the identity of the place (buildings and / or important or significant spaces) and the functional systems (such as lines), as well as the preexistence of the environment (development, climate, etc.).

Thus, in this method, the advance of not treating the areas of intervention in the surroundings of a station or transport node in a homogeneous and abstract way, is evidenced.

To specify the perimeter of development of a masterplan in a place of the city, and not any area, it is necessary, therefore, to highlight the premises, challenges and potentialities, both within the transport node and the place, especially articulating them when **shaping the perimeter due to the inclusion of new data and the conditions of the place**.

The definition of the perimeter of development of a masterplan is a dynamic process in which each analysis considered during the diagnosis of the urban dimension can change the initial conditions, as in a natural process of creation of any project developed by an urbanist architect.

[17] Urban design as an articulator between node and place

In the German context, urban planning [Städtebau] addresses more specific issues than urban planning [Stadtplanung] which deals with broader issues. There is the French current which may consider planning a concept very close to the notion of urbanism. There is also the American current whose translations of terms into Portuguese refer to certain conceptual concerns.

It starts from the assumption that there is a design and process gap between the intermediate and the local scale, a dualism between plan (urbanism) and project (architecture). To give shape to the urban environment, Lamas explains that it is not possible to have just as levels of space production the programming, the plan and the project. “For there to be form, there must be

urban design”¹⁹⁰ And, “In all the transformation of the territory, an operation is indispensable that defines the relations and interconnects the constructed elements, the different architectures. This operation is essentially urban and has as its instrument the urban design”¹⁹¹.

The figure of the **urban design** is understood as that which structures, that unites and relates the different morphological elements or the different parts of the city. In the context of the local masterplan the urban design is the element between the macro planning and the design of the micro scale buildings.

For Del Rio, urban design in a broader sense can be understood as a disciplinary field “that deals with the physical-environmental dimension of the city, as a set of spatial physical systems and systems of activities that interact with the population through their experiences, perceptions and actions everyday life. It seeks to deal with the production, appropriation and control of the built environment, processes which are necessarily permeated by the temporal dimension “.

Architecture and urbanism have the spatial dimension that unites them with the same objective: transformation of the territory. However, they differ in practice.

Urbanism implies the conduction of a plan in time; in the mediation and resolution of conflicts, of games between agents and political, economic and social actors; of the disputes between public and private in the enjoyment of urban space. It is the macro and intermediate scale. Already the architectural project is directly linked to the accomplishment of the work, to the construction, to the micro scale.

However, throughout the 20th century, with the development of modern urbanism and its complexities, the separation between “urbanism” and architecture took place. The normative theory about the form of the city is in a precarious state¹⁹², but “in the past, plan and design, city and buildings, were parts of the same system”¹⁹³. There was no separation between the building, the street and the neighborhood. All the elements competed in the definition of city, in their form and were equally qualified¹⁹⁴. The city is not only the place of architecture, but architecture itself. Everything is architecture, regardless of the spatial form, city or building.

190 LAMAS, J M.R.G. **Morfologia urbana e desenho da cidade**. 5^a ed. Lisbon: Fundação Calouste Gulbenkian, 2010, p. 125.

191 *Idem ibidem*, p. 125.

192 LYNCH, K. **A boa forma da cidade**. Translation: J.M.C.A. Pinho. Lisbon: Edições 70, 2012.

193 LAMAS, J. M. R. G. *Op. Cit.*, p. 126.

194 LAMAS, J. M. R. G. *Op. Cit.*, p. 126.

Wealth lies not only in the quality of each of the spaces, but in the way in which the various spaces are linked and organized. It is therefore necessary to reflect on the practice of architecture in the different levels of space production, in the articulation and alignment of the **three urban scales** proposed in the structuring of this thesis: macro, intermediate and local. Plan, articulate and build. It is necessary to draw the city together with the building, transport node and place / between-place.

Analytical Matrix with Drawing Codes and Instruments

As discussed throughout the chapter, we constructed the main variables to be considered in an intervention in the surroundings of a station area within the categories of **transport-urban-instrument** between the **three urban scales**.

For the macro scale, it is pertinent to understand the urban context and the network design of macro accessibility where strategies are planned. In the approach of the scale, which can be a Neighborhood or Urban Polo, varying according to the previous context, it is possible to design and analyze the urban form and to study the ways in which the transport lines can cross the intermediate territory. Finally, in the scale of the place it is possible to find and dialogue with the spatial dilemmas between the transport node and place. It is on the scale of the station that microaccessibility is improved as well as the qualification of space, making it a place either for those who only pass through the station area, or for one who remains to perform any other activity that is not related to the function of transport.

Thus **figure 6** summarizes the design codes and instruments to be considered for the development of an **Urban and Mobility Hub** (HUM) as a result of the combination and articulation of the urban function and the transport function.

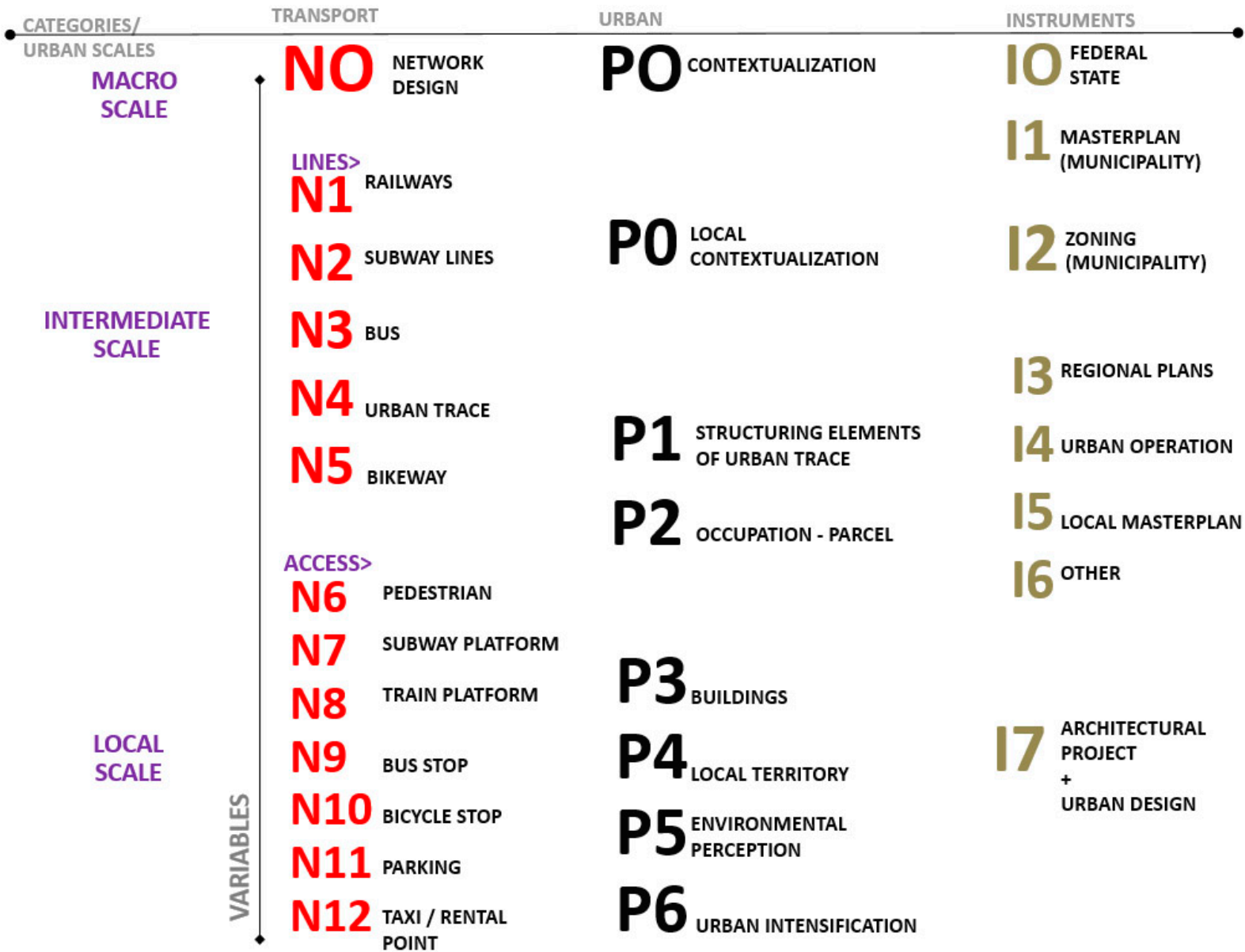


Figure 6
Set of variables articulated the categories node-place and urban instrument to be analyzed in the areas of the stations.

● Considerations

Mobility Urban Hub:
new concepts, new
paths

Urbanism is concerned with the transformations of the territory, the way in which they occurred and occur, the subjects who promote them, the results, the problems that arise and induce new transformations. It is a practical activity producing very concrete results and spaces of different types and conformation. “It is the testimony of a vast set of practices, that is, of the continuous and conscious modification of the state of the territory and the city”¹.

In practice of the vocabulary of transportation planning there is already a notion of **hub** and its application in cities. The Hub is traditionally known as the concentration of connections in some points due to the need for economic rationality that ends up creating preferential routes. Airports are the best expression of the concentration of passenger and goods traffic in a domestic or international connection of a particular region or country. But, on the other hand, Amar² argues that today’s urban mobility is questioned, requiring fundamental internal redefinitions.

Amar³ suggests that station areas are a complex of urban interchange. A hub is a specific type of node that, because of its strategic position in the territory, acts as a point of concentration in itself of the lines of lower hierarchy, and the consequent irradiation of transport lines to access the other points, thus reducing the numbers of connections (**figure 7**).

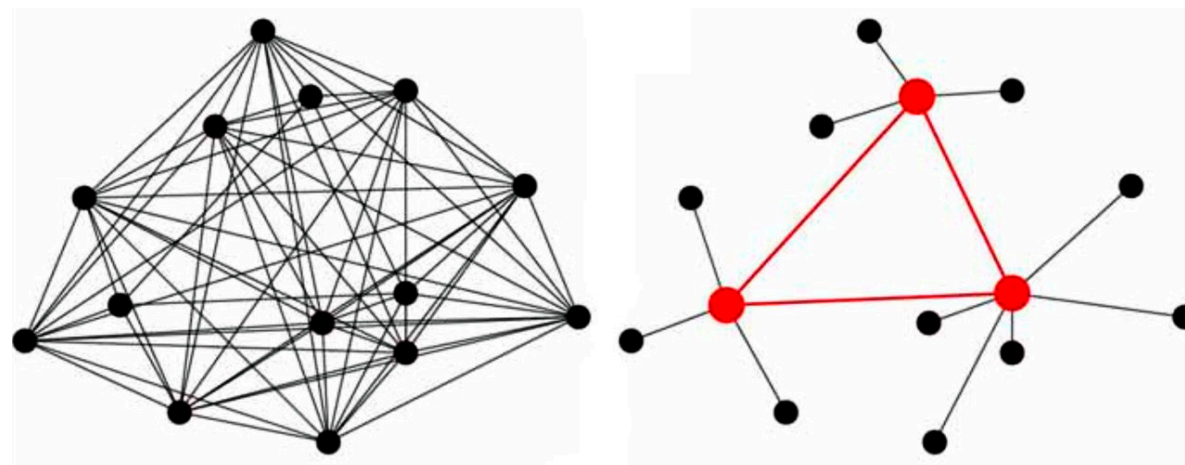


Figure 7
Network of nodes and hubs, respectively.
Source: SMETS, 2011. Our treatment.

- 1 SECCHI, B. *Primeira lição de urbanismo*. Translation: M. Barda; P.M.R. Sales. São Paulo: Perspectiva, 2006, p. 18-19.
- 2 AMAR, G. *Mobilités Urbaines – éloge de la diversité et devoir d’invention*. Paris : Éditions de l’aube, 2004.
- 3 AMAR, G. “Complexes d’échanges urbains, du concepta u Project”. In: Les Annales de la Recherche Urbaine, 71, 1996, p. 93-100.

The notion of the term hub of a transport system allows connecting all types of movements, people, services and goods. On the one hand, it connects very different spatial scales, because it concentrates in a single point a set of routes of long, medium and short distances and the consequent increase in the number of connections by working different scales and destinations. On the other hand, due to the concentration of routes and destinations, a diversity of activities, services and people are concentrated.

For Smets⁴, hub means from the connection within a same network, but also the connection with other networks not obvious. Transfers are most evident because of the interconnections between distinct hierarchical networks. Hub is a space that connects large bodies to small local parts, is the interface between long-distance distribution trips to the site. Thus, the hub has the advantage of being more efficient and comfortable by being an articulator and distributor between different links, by staying in the same space, concentrating links, reducing the number of transport lines while continuing to radiate all other connections.

Because of the motivation of intermodality, hubs are usually internalized to optimize flows. Due to these characteristics in the area of transport, the hub is usually urbanistically more isolated due to the imposition of the network hierarchy, making it difficult to interact with activities that are not directly linked to the transport function. In some cases, the internalization of malls is already visualized, which benefit from the high accessibility of the hubs to compensate the urban isolation. Hubs are usually also monumental spaces, to create an urban landmark to fill the emptiness in which it ends up⁵.

Faced with the definition of the hub, Smets points out the following dilemma: **the efficiency of transport against the urban meaning**. He then suggests, in his presentation, the issues of readability of flows during intermodality that do not exclude persons other than travelers; a space comfort that does not necessarily signal encapsulation, especially of **identity through meaning**, creating a place that fits people's minds in terms of what they experience, not only because of the iconic appearance of a hub. It introduces, then, the term hub like place linked to the memory of the environment; a space that provides the civic character of the place.

4 SMETS, M. **Transfers, Nodes, Hubs and Places: Different forms of Intermodal Exchange**. In: HUBURBS. Metrolinx Mobility Hub Symposium, 2011. University of Toronto John Daniels School of Architecture, 2011. Available at: <https://www.daniels.utoronto.ca/sites/daniels.utoronto.ca/files/old/marcel_smets.pdf>. Access in oct. 2015.

5 SMETS, M. *Op. Cit.* Available at: <https://www.daniels.utoronto.ca/sites/daniels.utoronto.ca/files/old/marcel_smets.pdf>. Access in oct. 2015.

The Smets presentation held for *Metrolinx* encourages research by the agency that developed a mobility plan for the Toronto metropolitan area⁶. Generally speaking, with a 25-year horizon, the plan aimed to create a systemic intervention powered by high-capacity mobility networks focused on the *Mobility hubs*. Based on nine major main objectives, divided into three main areas (continuous mobility, *placemaking* and successful implementation), they considered the following objectives for a *Mobility Hub* (figure 8).



Figure 8
 Mobility Hub Objectives.
 Source: Metrolinx, 2011, p. 9.

⁶ Available at: <<http://www.metrolinx.com/en/regionalplanning/mobilityhubs/default.aspx>>. On the Metrolinx website you can consult the various researches and studies developed between the years 2008 and 2011.

- A) **Continuous Mobility**
 - 1. Perfect integration of modes at the fast transit station;
 - 2. Safe and efficient movement of people with high levels of pedestrian priority;
 - 3. Well designed transportation station for a high quality user experience;
 - 4. Strategic parking management.
- B) **Placemaking**
 - 5. A vibrant and mixed-use environment with a greater intensity of land use;
 - 6. An attractive public space;
 - 7. A minimized ecological footprint.
- C) **Successful Implementation**
 - 8. Flexible planning to accommodate growth and change;
 - 9. Effective partnerships and incentives to increase investments, public and private..

This, they define *Mobility hub* as more than a simple station, but as an access point. They are areas of stations, places of connection, intense concentration, places with several vibrant activities, especially places where users can also experience the moment while they are heading to the station:

Mobility hubs are major transit **station areas** with significant levels of transit service planned for them in the RTP [Regional Transportation Plan], high development potential, and a **critical function** in the regional transportation system as major trip generators. They are **places of connectivity** where different modes of transportation — from walking to highspeed rail — come together seamlessly and where there is an **intensive concentration** of employment, living, shopping and/or recreation. In addition to serving as places to arrive, depart and wait for transit, successful mobility hubs have the potential to become **vibrant places of activity** and destinations in themselves. Currently, many of these sites offer little more than vast parking lots, but they **could be much more**. The RTP imagines a future in which these areas become true mobility hubs, with local transit service, cycling and pedestrian networks, secure storage facilities for bikes, car-share drop-off areas and more. They will become locations for major destinations such as office buildings, hospitals, education facilities and government services. They will be places carefully designed to improve the transit **customer's experience from the moment he or she approaches a station**, by offering amenities such as heated waiting areas, traveller

information centres, cafés and restaurants, as well as services such as daycares, grocery stores or post offices⁷.

Izaga⁸ considers in the scale of the urban (local) fabric the nodes the space where the macro-scale accessibility networks intersect, denominating them as **network points**, according to a method that relates **circulatory dimension and territorial dimension**⁹. Here the network points are interpreted as the communion between the node and the place. Thus, for the author, the set of two or more network points form what she calls the **mobility pole**.

Based on Richer and the other authors above it is understood in this research that the term transport node consists only of an access point to a transport system due to the connection of **lines of the same system in which they are not articulated to the territory**. On the other hand, a hub approaches the term **interconnection of different systems in the same space**.

The place, in an area of the station, must be understood as the one that creates identity, relation and history, but also conceives an inter-place as a catalyst for an affective connection, for the **intensification of an indeterminate and changeable event** either during the movement or permanence.

The structures of transport networks (hubs and radial connections) increasingly mark urban systems and networks¹⁰. Because it has not found an expression in the bibliographical research that simultaneously articulated the spatial challenges in the transport and urban areas in the areas of the stations as well as put the *urban* as the protagonist of the spatial transformations, a term is proposed that represents a qualitative leap between the node and the location: **mobility urban hub**.

That said, it is understood that a **mobility hub**, within a network hierarchy, is one that connects all **modes of transport** existing in the urban context related to the different **urban scales**, from the local to the metropolitan. The mobility hub is the core of the local area of the station area, articulating with spatial quality in intermodality. **The pedestrian is the protagonist** of the accesses and the exchanges, and where there is an effective intermodality in the same building;

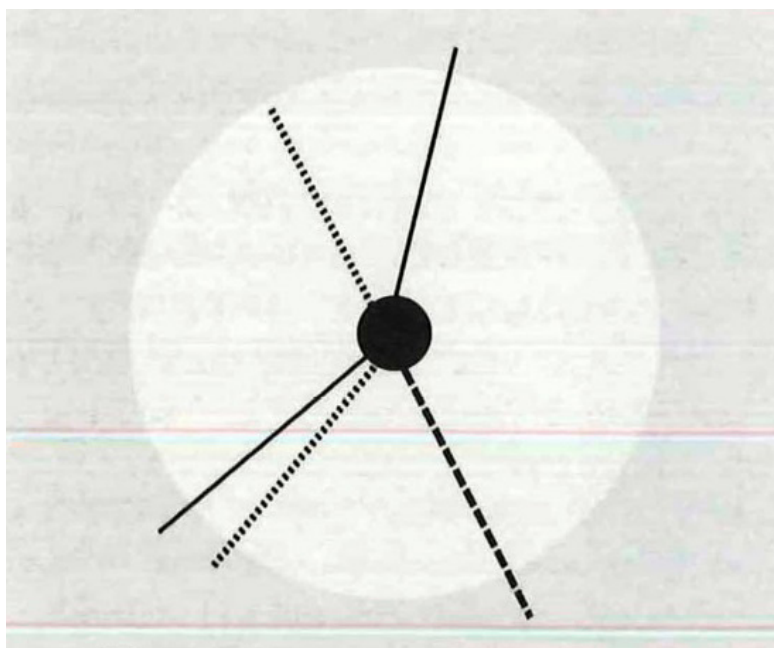


Figure 9
Station as node and place.
Source: BERTOLINI; SPIT, 1998,
p.14. Our treatment.

7 Available at: <<http://www.metrolinx.com/en/regionalplanning/mobilityhubs/default.aspx>>. Access in Nov 18th. 2015. Our Griffin.

8 IZAGA, F. G. **Mobilidade e Centralidade no Rio de Janeiro**. Thesis (doctorate) - PROURB / FAU - UFRJ, Rio de Janeiro, 2009, p.88

9 STATHOPOULOS, N.; AMAR, G.; PENY, A. “**Forme et fonctions des point- de-réseaux**”. In: Revue FLUX, n. 12. Paris, avril-juin 1993, p. 29-47.

10 ASCHER, F. **Novos princípios do urbanismo**. São Paulo: Romano Guerra, 2010, p. 64.

an interconnection with public transport, with active systems (bicycle), private and rental vehicles with space quality and efficiency.

A city can be strategically designed or transformed into polycentric, with several poles. However, using the logic of the term hub in transport, the potentiality of the term for an urban hub is evident.

Thus, **urban hub is the central place of an area of influence that concentrates minimally two urban scales** (from the local, passing through the neighborhood, city, metropolitan, being able to reach the global scale); and which still brings together a dense and diverse set of uses and forms (from housing, commerce, services, entertainment, etc.) accumulated over time, where a mobility hub is the articulating nucleus that promotes a high urban intensification.

The articulation between *mobility hub* and *urban hub* concentrates diverse activities and urban functions by virtue of the intersection of networks in place, and radiates urban dynamics with high intensification of people between the local, intermediate and macro scales.

The **Mobility Urban Hub (MUH)** is not any space that represents the concentration of lines of the transport system. It is first of all a place in common for at least two distinct transport systems that intercommunicate through a public articulating space, from walking to high-speed modes, flows and activities that merge with the territory as part of a single network, whether it urban or transport.

That is why urbanism is a more important concept in a mobility hub, it is the whole to be constantly transformed over time. The **Mobility Urban Hub (MUH)** is the combination of urban function and transport function with no spatial ambivalence; instead, they are functions that add up and aggregate in the spaces of flows, spaces of passage and permanence; to access, to inhabit, to enter; of economic and social exchanges that are intensely intercommunicated as a single body in place (**figure 10**).

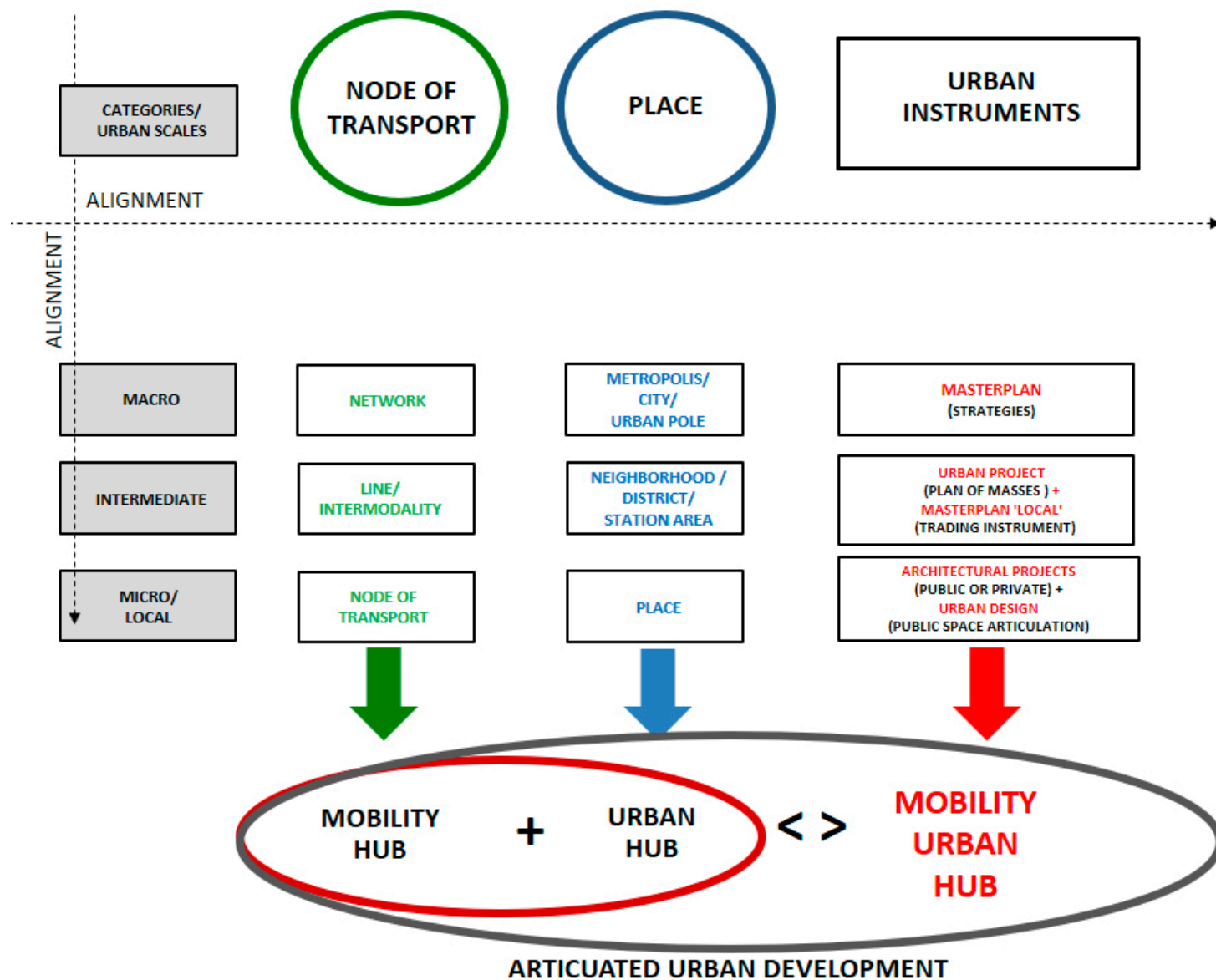


Figure 10
Alignment of the scales in the transport, urban and planning process for the sustainable development of an articulated mobility hub to the urban hub.

part II
European References

Possible paths to be tracked

*The city is subject to contradictory questions. In order to overcome this contradiction is a bad utopia. It is necessary, instead, to **give it shape**. The city, in its history, is a perennial **experience** of shaping the contradiction, the conflict.*

Cacciari, 2009, p.7

Chapter two and three aims to address european reference projects in which the train station buildings have been modernized, renovated, expanded and linked to the urban design and its surroundings, so that they are references on the way to be followed in the design of a mobility and urban hub.

This stage is part of the study carried out through the CNPQ Scholarship at Leibniz Universität Hannover (Germany) in 2016. During the internship, it was tried to establish a referential, theoretical and empirical framework of the **new role of the train stations areas**; a process that has already taken place in the European territory, motivated by the introduction of the¹ Hight Speed Train (HST).

After extensive studies, **two stations** were selected that have relevant urban projects that have undergone the reconfiguration of old “we” in the territory for mobility hubs articulated to urban hubs. These are: **Stratford Regional Station** (London – England) and **Utrecht Central Station** (Utrecht – Netherlands).

In this chapter will be presented first the context of the high-speed trains in Europe, the justification for choosing the two stations as a reference, and subsequently, its details - at the macro, intermediate and local scales – by means of the node and place categories.

Understanding better the mechanisms that led to the achievement of urban projects abroad, especially the urban design of these stations, it will be possible to identify ways to **overcoming spatial dilemmas** in the architectural and urban areas, as well as **validating concepts** discussed in previous chapters and outline some **project strategies**.

This chapter opens space for an articulated discussion of strategies that aims paradigm changes to the modernization of transport nodes in mobility hubs, bringing to the foreground the question of the architectural and urban design of a station as a central core in the development of a true urban hub.

In this sense, the question that guides the second part of the thesis structure (chapters two and three) is: what are the project strategies identified in the areas of the stations in European projects?

¹ A high-speed train (HST) is defined as the one designed to operate regularly at speeds higher than 200 km/h. The first country to have a HST was Japan, with its *Shinkansen* (called *Ballet Train*) in 1964. The British and French people acquired the technology in the 70's with the *Train à Grande Vitesse* (TGV), and the Germans acquired it afterwards. Available at: <<http://www.railway-technical.com/trains/>>. Access in: August 17 2017.

European Context

The European context is a dense, diverse, largely urbanized continent. In the face of the existing urban challenges, many years have been given strong attention and several studies have been carried out to the station areas with HST.

Europe in general, aware of the saturation and limitation of personal vehicle detachments, as well as the challenges promoted by climate change, by seeking an increase in the quality of life of its inhabitants, the pressure of competition between cities and, in particular, aware of the **necessary change in the role of train stations** and the potential for **rebirth** at the heart of urban territory, Europeans have developed several urban projects in the areas of the stations. With the tradition and knowledge acquired about rail transport, the projects of the 21st century are different from the projects of the last century, since they aim to materialize not only “nodes” - knowing that they do not represent the guarantee of development success - **but rather the balance between the node and the place in the territory** (Conceição, 2015), that is, the **uniqueness of the station space in the territory of the station area**.

Through extensive projects, programs and financing, the **European Union** (EU) has been of the hegemony of the automobile to more sustainable modes such as rail transport, including cargo transport.

For example, the **strengthening of transport links by railways** between different nationalities and territories, promoted by the *Trans-European Transport Network* (TEN-T) program, which is attributed great importance to the EU's economic competitiveness and their balanced and sustainable development².

This program aims to triple financing of transport infrastructure, with concentration on competitive projects and focusing on **nine major transport corridors in Europe** (Figure 1). By 2030, this new corridor network will connect “94 major European ports with rail and road links; 38 key-airports with rail connections in major cities; 15,000 km of railway line upgraded to high speed; and 35 cross-border projects to reduce bottlenecks.” (European Commission, 2014³).

² EU. Infrastructure. Available at: <https://ec.europa.eu/transport/modes/rail/infrastructures_en>. Access in: August 17 2016.

³ European Commission. € 11.9 billion to improve European connections. Available at: <http://ec.europa.eu/transport/themes/infrastructure/news/corridors_en>. Access in: 17 mar. 2016.

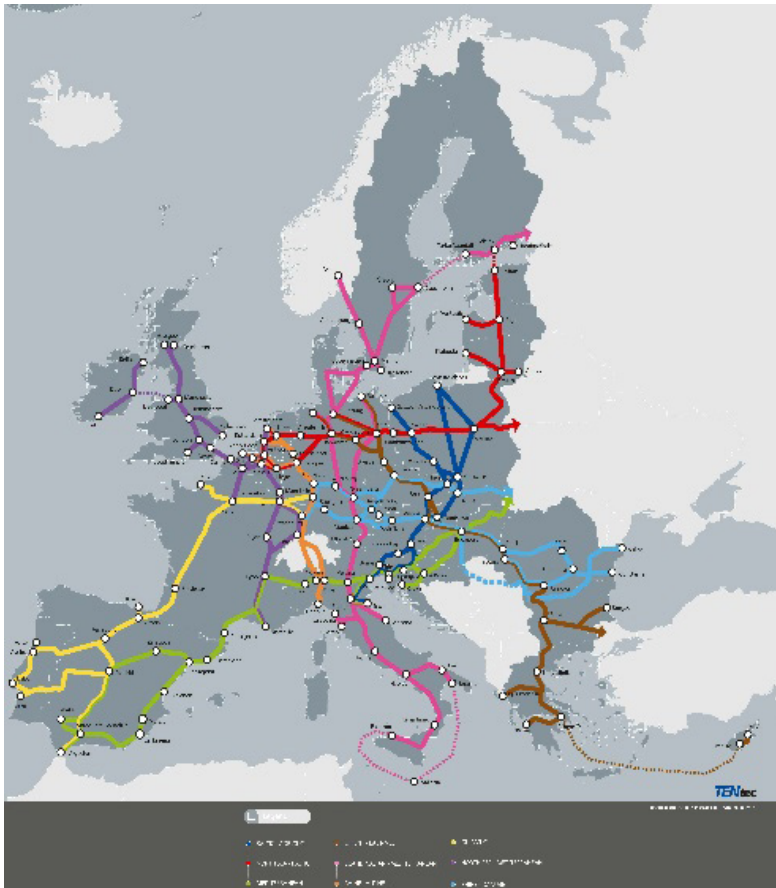


Figure 1
Trans-european transport network. Ten-t core network corridors.

Source: European Commission, 2013. Available at: <https://ec.europa.eu/transport/sites/transport/files/infrastructure/tentec/tentec-portal/site/maps_upload/09_01_2014SchematicAo_EU-corridor_map_outlined.pdf>. Access in: 14 mar. 2017.

This HST transport network is also strategically important for 500 to 1000 kilometers displacements, since the aircraft and the train are modal that compete for these distances.

According to the European Commission study, the HST has ample advantages for the consumer in routes with up to 500 kilometers. In these terms, the time of travel under rail is smaller, since it offers more central accesses, which in turn have a greater urban connectivity than the areas destined to the airports. The journey under rail also has other advantages, such as: smaller bureaucracies (*check in* and dispatch of suitcases), greater flexibility in booking / purchase of tickets, greater possibilities of choice in the schedules and connections, more space for the traveler, possibility of use of technology, such as *wi-fi*, and use of detachment time on the train as working time. (Aviation Environment Federation [AEF], 2000⁴).

Choice of stations

For the choice of European references, several stations were studied during the bibliographic review. During the internship 20 projects that suffered a significant urban transformation in the station and/or its surroundings, and/or city, preferably after the year 2000 were pre-selected and visited. Are they:

Germany

1. Berlin Central Station.
2. Stuttgart Central Station.
3. Hannover Central Station.
4. Hafencity station in Hamburg.

Netherlands

5. Hague Central Station.
6. Central Station in Amsterdam.
7. Rotterdam Central Station.
8. Arnhem Central Station.
9. Breda Central Station.
10. *Utrecht Central Station*.

⁴ Aviation Environment Federation (2000). From planes to trains: Realising the potential from shifting short-haul flights to rail, London: Friends of the Earth. Available at: <www.foe.co.uk/sites/default/files/downloads/planes_trains.pdf>. Access in: 13 mar. 2016.

England

11. King's Cross Station.
12. St Pancras Station.
13. DLR line in the Docklands region.
14. *Stratford Station*.

France

15. Lille Central Station.
16. Bordeaux – VLT in the town and station Mériadeck.
17. Strasbourg – VLT in the city.

Belgium

18. Leuven Central Station.

Portugal

19. Oriente Station in Lisbon.

Denmark

20. Norreport station in Copenhagen.

After this pre-selection, the criterion used to choose the European stations to be searched was the fulfillment of the following criteria:

- a) within the **node** area, stations that had the support for **High Speed Trains** (HST);
- b) in the **urban** context, stations whose immediate surroundings had undergone **spatial transformations**, and which were not limited to just a change / reform of the station body;
- c) within the scope of the **urban instrument**, which included an **Urban Project** whose station was the core of a project of significant spatial transformation and urban development.

The projects of the Hague, Amsterdam, Rotterdam, Arnhem and Breda stations based on the *New Key Projects* program are therefore exceptional in the European context, especially in the architectural program, but they do not serve as well as the **Utrecht station** to the Item c.

Hannover and Berlin did not undergo significant spatial transformations in their surroundings. Berlin continues as a large “isolated” island, without strong connections with the urban fabric. Hannover for Expo 2000 suffered only occasional interventions in its station, without the role of contemporary urban design. The Stuttgart's central station is currently developing the

urban project called *Stuttgart 21*, one of Germany's largest urban projects. However, during the analyzes it was observed that the motivation promoted by the alteration of the complex configurations of the new mobility hub overlaps with the motivation of urban order.

The English stations also underwent intense architectural and urban remodeling⁵. In contrast, the spatial transformations in the Stratford station area stood out in relation to the King's Cross station, including the question of the complexity of urban instruments and the design of one in the Urban Hub.

In Portugal there is no HST. Norreport and Leuven are small stations that also do not meet the requirements presented, despite excellent renovations in the respective stations. The French tram lines are not characterized as *station*, but are good integration studies between transport and land use. The Lille Europe Station, a pioneer in the process of spatial transformation in the station areas between a mobility hub and an urban hub, dates back to 1994, being outside the time parameter adopted.

Therefore, according to the methodology of choice, it was decided to study deeply two stations, which are significantly representative in the node and location categories: **Stratford** (London) and **Utrecht** (Netherlands).

After the analyzes developed in the chapter, it was considered that the urban transformation of the areas of these stations, through an **integrating urban project**, created and potentiated **urban hubs**. The analyzes validated scenarios for overcoming spatial dilemmas in the process of transforming a mobility hub into an core of urban hub development, which can contribute to the design of planning strategies in the station areas.

⁵ The running project for the new Elizabeth line (of the Crossrail consortium) stands out. This line is under construction and has the potential to be the subject of a separate study after completion.

chapter 2

**Stratford
Station**

- London

*The city is subject to contradictory questions. In order to overcome this contradiction is a bad utopia.
It is necessary, instead, to give it shape .The city, in its history, is a perennial experience
of shaping the contradiction, the conflict.*

1 CACCIARI, M., **A cidade**. Trad.: SERRA, J. J.C., Barcelona: GG, 2009; p.7 (our translation).

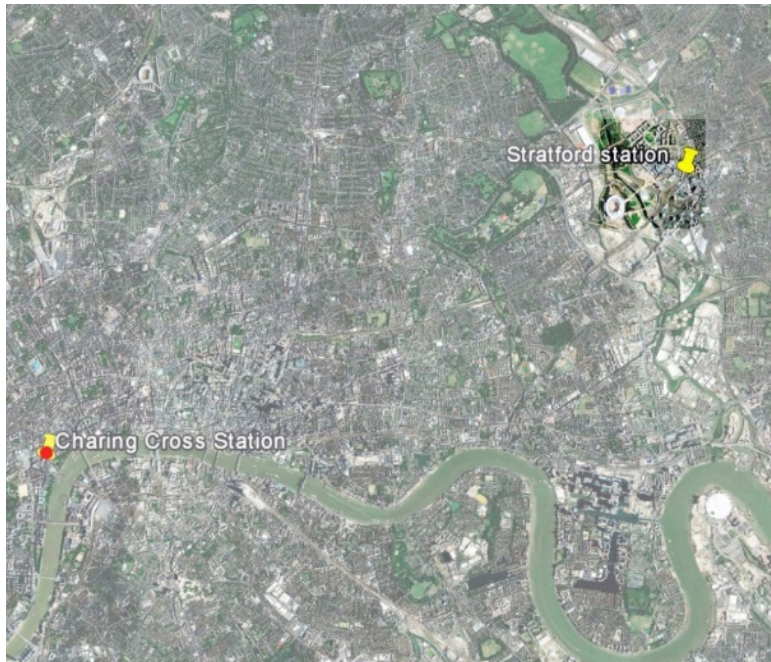


Image 1
Location of Stratford in relation to the Charing Cross station.
Source: Google, 2016.

London, the capital of the United Kingdom² and the fifth world's economy, with approximately 12 million inhabitants. Even though England is one of the world financial centers, most part of the population has chosen to leave the European Union in 2016 during a process called Brexit.

Among other factors, the global market points to important political, social and economic changes. The future in the city of London is uncertain, and the possible certainties that the bonanza and economic stability of the last decade may not be the base for future analysis of a present, filled with intense and deep changes.

The fact is that in July 6th, 2005, the city was chosen to host the Olympic Games of 2012 in the Stratford area, which was one of the biggest boosters of the urban regeneration projects in Europe.

Stratford is located in the east side of London (image 1), also known as East End, 10.3 km from the Charing Cross Station to the North of the Thames River and contemplated by the London Borough of Newham³.

Motivated by the Olympic Games of 2012, the area around the Stratford Regional, here called only by Stratford, was and still is a space for one of the biggest urban projects ongoing in the European Union with an area of 267 ha. The objective is to create a new Urban and Metropolitan Hub, and the core of this thesis is one of the biggest transportation's node in London.

It's understood that, even with some uncertainty, the London Legacy has the bases for continuity of the spatial transformation initiated in 2002. The LLDC – London Legacy Development Corporation, created in October 2012, is the current responsible for the urban planning of the designated perimeter in the Queen Elizabeth Olympic Park, which is looking to conceive a new metropolitan center for London, where people can access a place to work and to live in⁴ upon the opportunity created by the Olympic Games in the Queen Elizabeth Olympic Park, which occurred for approximately 2 weeks in the year of 2012.

In this chapter, the analysis of the Stratford station will be presented, the path of which is separated by urban scales (city/metropolis – macro, neighborhood/district(borough) scale, station area scale, local scale) and the main urban instruments. The chapter ends with a summary of the main points placed within the Stratford station.

2 The UK comprises four countries: England, Scotland, North Ireland and Wales, which became part of the European Union in 1973.

3 The *Greater London* administrative area has 32 boroughs, with independence of the city's administration.

4 Available at <http://www.queenelizabetholympicpark.co.uk/>. Access in 10 Apr. 2017.

2.1 City Scale



[P0] Place

Over hundreds of years, the United Kingdom has been consolidated with approximately 65,511 million inhabitants (2017). For London, the number of inhabitants can vary according to the region of the city. Only in the urban area of London, there are more 10,549,00 (2017), representing 16% of the population of the UK. For Inner London, there are 2,859,400 (2001); Greater London 7,172,036 (2001); London Metropolitan Area there are 12-18 million of people.⁵

London is the second place in the rank of the indicator of competitiveness of the European Commission (European Competitiveness Report, 2013), only behind the city of Utrecht, in the Netherlands. The economy in London is dominated by the service industry, being responsible for 22% of the GDP in the UK, with approximately 35% of its activities linked to professional services and in the construction industry. It's also famous as a financial center, headquarter to various national and international corporations and also for tourism.

In July 2005, the city of London was chosen to host the Olympics of 2012. Newham was one of the six boroughs which hosted the games and has the biggest area of the Olympic Park, which comprises for example the Olympic Stadium and The Athletes Village⁶. Due to its industrial history, the land in the Olympic Park went through a decontamination process to host the games.

⁵ Available at <http://worldpopulationreview.com/world-cities/london-population/>. Access in 08 Apr. 2017.

⁶ When London hosted the Olympic Games, it was divided in three areas to accommodate the competition: The Olympic Park Zone (Olympic Stadium, Aquatic Center, Copper Box, the Velodrome, the Press Rooms, Radio and TV – IBC and MPC and The Olympic Village), the Thames River Zone and Central Zone. The sports' gym was temporarily built for basketball, hockey and water polo.

[N0] Node in the European network

The Londoner node is part of the eight corridor North Sea-Mediterranean network (**image 2**) of the Trans-European Transport Network, TEN-T Core Network corridors⁷.



Image 2

European Connection- North Sea-Mediterranean.
 Source: TEN-T Core Network Corridors, 2016.
 Available at: http://ec.europa.eu/transport/themes/infrastructure/ten-t-guidelines/corridors/maps_en. Access in 23 Oct. 2016.

Due to institutional, technical and urban complexities, the high-speed trains' implementation in the UK, when compared to Germany, the Netherlands and France, is significantly behind. There's been only the implementation of the HST 1 (connecting St. Pancras to the English Channel and operated by Eurostar). The HST 2 is being taken into study (connecting London to Birmingham in the first phase).

[N0] Node in the metropolitan network

In the metropolitan area, Stratford in one of the most important node (**image 3**). Between 2013 and 2014, 218 million passengers used the railways of the borough⁸.

⁷ There are nine corridors that belong to the *Core network corridors*, which comprises public and private resources, including the European Union. It has as a goal, among others, to promote clean fuel and the urban integration to the TEN-T. Available at: http://ec.europa.eu/transport/themes/infrastructure/ten-t-guidelines/corridors_en. Access in 21 Nov. 2016.

⁸ Available at: <https://www.london.gov.uk/in-my-area/newham>. Access in 08 Apr. 2017.

2.2 Scale of the neighborhood / Station Area

[P1] Place

The word Stratford comes from the old English form and it means “the road with one fort”. Fort, because it referred to the place where the roman road to Colchester crossed path in one of the many branches of the Lea river⁹.

Stratford is currently part of Newham’s borough¹⁰ (**image 4**). Until the years of 1850, it was considered a rural area, when the arrival of the train tracks (1839) and of the Royal Docks (1855) to the South of the current station, followed by several industries, transformed the landscape of the city. In 1851, the population of West Ham, the old borough which Newham was part until 1965, was of 18.817 inhabitants. This number went up to 267.903 in 1901.¹¹

Between 1839 and 2006, the Stratford Depot took place where it’s now the International Train Station (to the North of the docks). The Stratford Depot is the most complex railway system in the United Kingdom, covering an area of 60 acres¹² (**images 5 and 6**). The movement initiated by the opening of the Northern and Eastern Railway lines in 1840, which later joined the Eastern Counties Railway¹³ and the Stratford station, opened in June 20th, 1839. In 1847, the construction services were initiated and the maintenance of engines and trains where the Old Stratford works took place.

During the Second World War, the area was bombed. In the decade of the 1970, part of the area became Stratford London International Freight Terminal, with several huge warehouses, some of them connected to the railway. However, in 1975, the urban situation aggravated due

9 HARRIS, C.M. **What’s in a name? Origins of Station Names on the London**. London transport museum: Londres, 2001.

10 The boroughs are subdivided in smaller regions, here denominated by neighborhoods.

11 Available at: <http://www.momentumproject.org.uk/our-borough/a-short-history-of-newham>. Access in 23 Oct. 2016.

12 YORK, M. Workes of Stratford Depot remembered at new high-speed station. 2012. Available at: http://www.newhamrecorder.co.uk/news/workers_of_stratford_depot_remembered_at_new_high_speed_station_1_1477039. Access in 23 Oct. 2016.

13 The Great Eastern Railway – GER was formed in 1862 by the merge of ‘Counties Eastern Railway’ with other smaller railways. In 1902, the ‘Northern and Eastern Railway’ were absorbed by the ‘GER’.



Image 3

Stratford station in the context of the Londoner metropolitan network and the Charing Cross Station (Central).

Source: TFL, own treatment, 2016.



Image 4

Borough de Newham e respective neighborhood

Source: Mayor of London

to the increase of unemployment in the region and the closure of the docks, the replacement of the labor work for the machinery and the population evasion in an area of destroyed land by the industrial pollution during decades.

In 2014, the Newham's borough had the second largest poverty child rate in London (41%); one of the highest unemployment rates in London (8,6%); the biggest overcrowding rate (25%) and of families in temporary homes (28,5 for 1000 families) of all neighborhoods on London. Currently, the estimated population is of 250 thousand inhabitants and the job creation is still one of the biggest challenges in the area ¹⁴.

Image 5
Stratford Depot with steam trains. Rail lines around Stratford and warehouses in 1914, respectively. Source: York, M., 2012. Available at: https://en.wikipedia.org/wiki/Stratford_Works. Access in 20 Apr 2017.

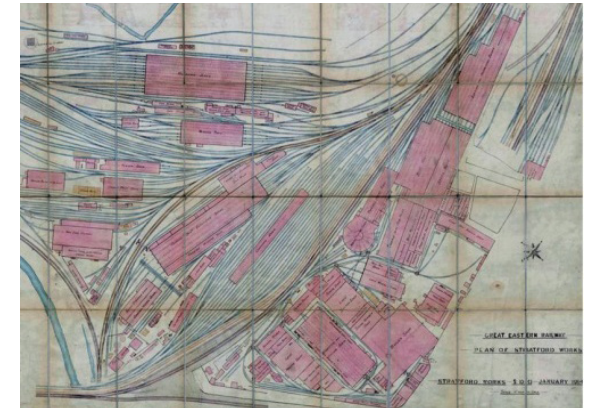
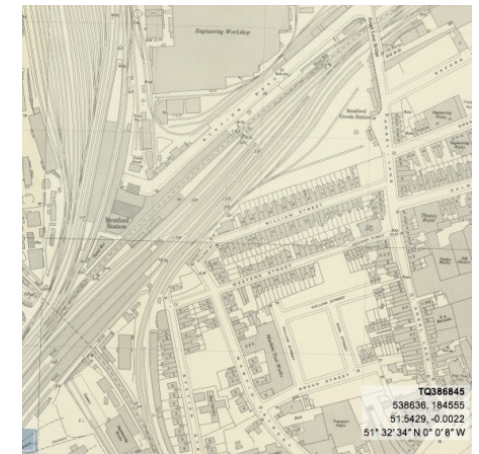


Image 6
Implementation of the old Stratford station. Stratford station in the decade on 30. Source: Yonder, 2017. Available at: <https://yonder.e2o.org/t/historical-photos-of-e15-e20-area-please-contribute-if-you-can/2143/21>. Access in 30 Apr. 2017.



¹⁴ Available in: <http://www.londonpovertyprofile.org.uk/indicators/boroughs/newham/>. Access in 20 Oct. 2016.

On the other hand, the London City Airport is also located in this borough to the south of the station (where the docks were once located), The Siemens Crystal, the Excel Exhibition Centre, **Stratford Center** and the **Westfield Stratford City** (one of the biggest malls in the European Union)¹⁵. The last two buildings are part of the study area in the station's scale. Stratford region is part of the "Opportunity Arch", huge area in urban transformation catalyzed by the preparation for the games of 2012 (**image 7**). In 2002, there were 29 thousand inhabitants in the Stratford neighborhood. In 2014, this number went up to 38 thousand people¹⁶.

Thus, the borough of Newham aware of its high rates of economic and social inequalities, notices an opportunity to transform and change, presented by the investment in the Olympic Games. A shared idea has been developed with the neighboring community, so that together they can guarantee a legacy to convey in a social and economic opportunities which are present in other areas of London whose process is detailed below.

[N1+N2+N3+N4+N5] Transport system lines

The Stratford station is one of the biggest and most complex transportation node in London, articulating the Stratford station, Stratford International and two more bus terminals located in its surrounds.

a) The Regional Stratford station was initially opened in 1839. It connects the following lines (**image 8**):

- *Central Line* – red
- *Jubilee line* – grey. It was connected to the station in 1999.
- *London Overground* – Orange
- *Docklands Light Railway (DLR)* – Green, opened in 1987. There are connections to other cities.
- *TFL Rail* – Blue
- *Abellio Greater Anglia* – Dotted grey

This means that only in this station, there are 12 distinct directions. Estação Stratford International:

¹⁵ Available at: <https://www.london.gov.uk/in-my-area/newham> Access in 20 Oct. 2016.

¹⁶ Available at: <https://www.london.gov.uk/in-my-area/newham>. Access in 20 Oct. 2016.



Image 7

Opportunity Arch, respectively. Source: Newham's Core Strategy, 2012, p.18. Mayor of London. Available at: www.london.gov.uk/in-my-area/newham. Access in 14 Mar 2017.

b) International Stratford Station:

The international Stratford station, located 800 meters from the Stratford station, was designed and built in a way that the Eurostar (or any other service of train connection) stopped in Stratford before moving towards St. Pancras station. However, the operators have chosen not to stop at this station so far¹⁷. Therefore, despite the name “international”, it only serves local and regional services. It connects to the following lines:

- *Southeastern High Speed* – Blue and dotted yellow. Opened in 2009.
- *Docklands Light Railway (DLR)* – Green.
- Opening forecasted of one station of the *Crossrail* line in 2019, called *Elizabeth Line* – Magenta.

c) Bus terminal with local and regional services – south bank (Stratford Bus Station).

Located in front of the Station, it assists the London Borough of Newham area. It’s currently managed by the TFL (Transport of London).

d) Bus station to the city of Stratford - north bank (Stratford City Bus Station).

Connected to the Westfield shopping mall, it was opened in 2011.

The Stratford station is covered by both zones 1 and 2. This way, it’s possible that passengers who have the tickets for the zone 1 use it without being charged extra for the transference between zones, whereas the passengers who have the zones 2-3 tickets can use it without having to pay for the access to zone 1.

In terms of daily connections, the station is strategically connected through the avenues A12, A112, A118.

There’s a bicycle track called Cycle Superhighway – CS2, alongside the main entrance of the station, in the High Street and Broadway street, connecting Stratford to Aldgate (**image 9**).

¹⁷ The International Stratford was designed and built in a way that the Eurostar (and other international services) could stop in Stratford before going to St. Pancras Station. However, due to technical problems, the operators haven’t chosen to stop in Stratford so far. The trains cross it to access the St. Pancras station. However, there’s a fast service between St. Pancras and Stratford run by another company called Southeastern, with an estimated time of travel of 10 minutes. This service is called Javelin High Speed.

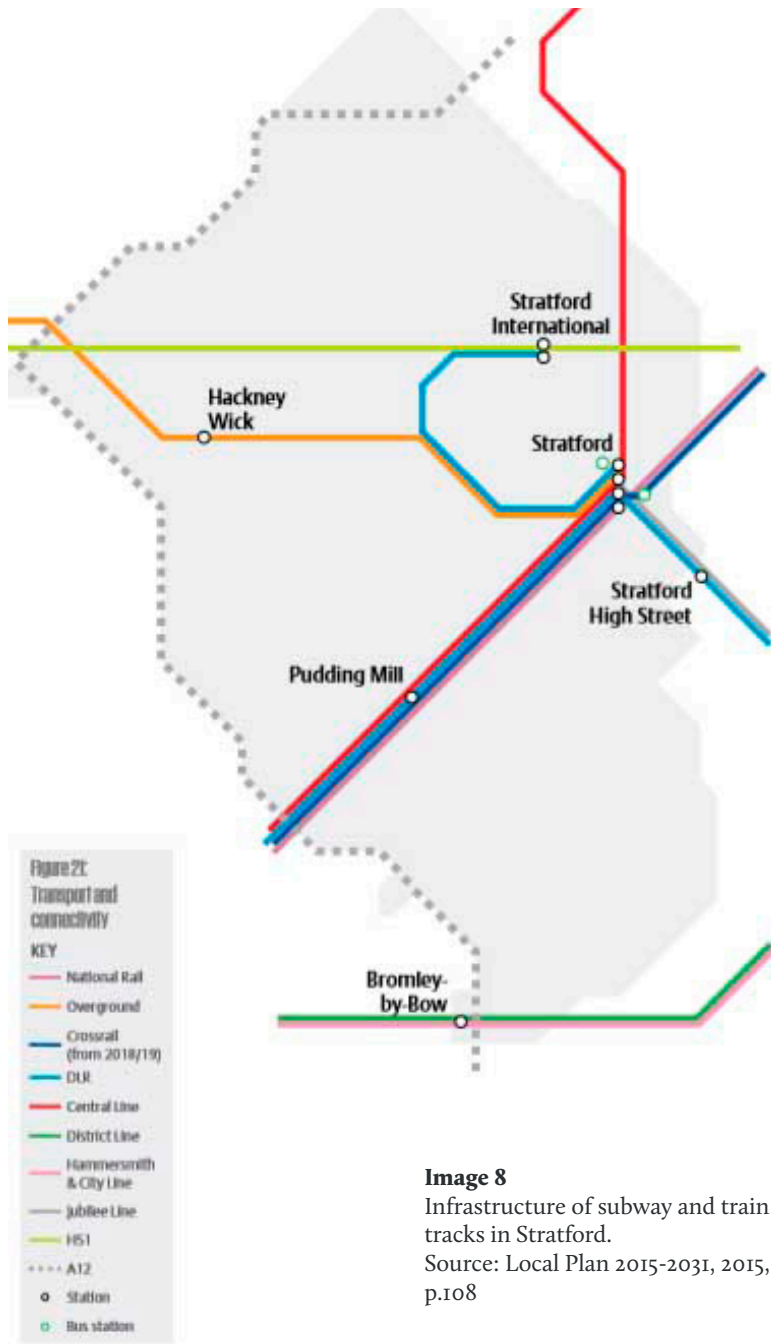


Image 8
 Infrastructure of subway and train tracks in Stratford.
 Source: Local Plan 2015-2031, 2015, p.108



Image 9
Bicycle track in the Stratford station area.
Source: Author and TFL, 2016.

2.3 Process: the instruments and projects

It's not the goal of this thesis to deepen the discussion of the urban instruments related to the implementation of the urban projects in the station areas, but to present them briefly, by reason of it has been observed that they are part of the tripod (node – place – instruments) to an effective materialization of the local development.

That being said, it's observed that the planning system in the United Kingdom is complex and it involves several sectors, and unique legal rationale and urban.

The city of London used to suffer with several urban problems at the end of the 1990's, such as imbalance between several areas of the city and an investment deficit in the transportation infrastructure. In 1998, Richard Rogers was hired to elaborate the Urban Task Force to diagnose problems and create urban guidelines, which ended up with the creation of the London Strategic Plan 1998-2004.

The agencies GLA (Greater London Authority), LDA (London Development Agency) and LTGDC (London Thames Gateway Development Corporation) identified the regeneration urban areas and the opportunity areas. The LTGDC was the agency involved in the regeneration of the east London, an area with the highest inequality index of the city and poorer inhabitants.

In November 2004, before the final decision that London would be the Olympic host, the Olympic Park Project had been revealed, in which it was said that the following boroughs would host the games: Tower Hamlets, Newham, Hackney and Waltham Forest. Newham had been contemplated with most territorial area of the project.

All in all, the plan for the Stratford area involved a progressive plan of three steps: 1. The Olympic Games itself; 2. The Conversion Plan, the removal of some installations and adaption of the area and 3. Legacy Plan, aiming at the urban development at long-term, besides the Transportation Plan.

In the first instance, there's the National Planning Policy Framework (NPPF), which orients the local planning authorities in the elaboration of plans and decisions over applications of sustainable planning. The latest version is from March 2012.

In London more specifically, the local planning authorities are the boroughs. There has been developed and articulated four plans which refer to the different acting scales. For a better understanding of the complexity of the urban planning process in London, four plans concerning different scales of action are highlighted They are:

1. *London Plan*;
2. *Stratford Metropolitan Masterplan* (SPG – Supplementary Planning Guidance)
3. *London Newham Core Strategy* and;
4. *Local Plan 2015-2013*.

About Stratford case, It's also important to highlight the part of the London Committee for the Olympic Games (LOCOG) and Olympic Delivery Authority (ODA) of 2005 as the most important agencies responsible for the organization of the Olympic Games¹⁸.

The LOCOG was the organization responsible for the planning and development's supervision of the Olympic and Paralympic Games in the summer of 2012, formed right after the victory of London in the international competition to determine the host city for 2012.

¹⁸ Before the formal establishment of ODA, London Development Agency (LDA) and Transport for London (TFL) it was invited to perform the development projects needed for the Olympic Park and the transportation infrastructure.

The ODA was responsible for delivering the necessary infrastructure for the Olympic and Paralympic Games, the adaptation of the Olympic Park with the construction of new installations and places (through the consortium agreement CLM – CHSM *Hill, Laing O’Rourke and Mace*) and the removal of the temporary locations utilized by the Games.

2.3.1 London Plan – Regional Scale

The London Plan is a guide for the development of London which follows the orientations of the NPPF. The latest version is from 2016. The first London Plan was published in February 2004, following for reviews in 2008 and 2011. In all plans, Stratford appears as OA – Opportunity Area¹⁹.

In 2004, the London Plan dealt with general strategies of planning and proposals to support the candidature of the Olympic Games in 2012.

It had been diagnosed that “the suburban London stock is losing its attraction as a location for strategically important office-based activity. Renewal of the stock and new development should therefore focus on a few types of key locations where a market can be established for new and existing occupiers as in case Stratford”.

It had also been said that “Stratford International Railway Station and their surrounds as attractive to international investment because these areas should benefit from their potential for access to external gateways such Gatwick, Heathrow and Stansted Airports”.

In the 2008’s version, when it was already known that London would host the Olympic Games, it is reinforced that “London 2012 Olympic and Paralympic Games present a unique opportunity to secure and accelerate the delivery of many elements of the Mayor’s strategies”, in which strategies are detailed and the importance of the opportunity of the legacy to be left in the area. The London Plan emphasizes the importance for London as a rejuvenation of the east area of the city, including the guarantee of a lasting Olympic legacy.

In 2011, there’s a change in the structure of the London Plan presentation. It has been established the elaboration of the Olympic Supplementary Planning Guidance (OLSPG) by the mayor and the creation of the Olympic Park Legacy Company to lead the development and the management of the Olympic Park after the games, to the extent that the development of the Olympic Park should be built and conceived in a way to assure economic, social, environmental and mobility sustainability for the generations after 2012.

¹⁹ Available at: <https://www.london.gov.uk/what-we-do/planning/london-plan/current-london-plan/london-plan-chapter-two-londons-places>. Access in 26 Aug 2016.

There's a review of the plan in 2011. London acknowledges the goals of transforming a once "opportunity area" in an area of strategic transformation have been met for the next 25 years. So, the GLA reassures the commitments in motivate the continuity of this planning as part of a longer process which aims at connecting the physical improvement through the Local Plan with socio-economic changes in a long-term.

2.3.2 Stratford Metropolitan Masterplan (2011) - District Scale - Neighborhood

The Stratford Metropolitan Masterplan (SMM) was elaborated by the London Borough of Newham in February 2011. The general plan establishes an agenda for the development in Stratford, but it's not a formal document of planning politics. However, the future plans which have been developed – both the Newham's Core Strategy (2012) as the LLDC Local Pan (2015) – to be presented next – are based in aspects of the Masterplan for its own content.

Having said that, the Stratford Metropolitan Masterplan is put as a base document which has provided some details and orientations to translate aspirations into reality inside the formal planning politics to Stratford. It's therefore considered a Supplementary Planning Documents (SPDs), which provides support to the implementation of the Local Plan.

This plan is the starting point for the Newham borough to take on a proactive role in determining the future of Stratford as its main center. It has established an inclusive spatial view to the whole area and has shown how the Stratford development should be manifested.

The biggest goal of the Stratford Metropolitan Masterplan was to articulate the aspirations of the Newham's borough in creating a new metropolitan center in Stratford, as well as a center for the surrounding communities. The SMM has also acted as a reference board for the Newham's borough in the negotiations with the stakeholders about the development of the future.

The Stratford Metropolitan Masterplan's fundamental objectives are:

- To develop Stratford into London's eastern gateway;
- To secure the benefits of Stratford City and the Olympic Park for local residents;
- To link together Stratford City, the Olympic Park in legacy, the existing town center and local communities to create an integrated and coherent Metropolitan Centre;
- To ensure the existing town center shares the economic growth of Stratford City and the Olympic site;
- To strengthen the Council's powers to ensure high quality development. (SMM, 2011, p.6)

Therefore, its aspirations were based in three macros:

a) Stable & balanced communities:

Stable communities: to strengthen the identity of the current and future inhabitants and to stimulate them to stay in the neighborhood.

b) London's Third City:

Economic ambition: the creation and diversification of work front, education and art, becoming the third most important region of the city, only behind City and Westminster.

c) Alternative & diverse economy

Aspiring for sustainability/ innovation; development guided in smart solutions, such as the use of clean energy, public transportation and the incentive to a more diverse and innovative economy.

The masterplan was developed in close consultation with the Core Strategy and the Olympic Legacy Supplementary Planning Guidance (OLSPG), as well as the wide range of interested parts and communities, developing plans for several parts of the city (Stratford Metropolitan Masterplan, 2011).

In the SMM's plans, it's observed the perimeter of the Masterplan (**image 10**). Due to the complexity of the area and its goals (such as being the stage to an Olympics with its own rules), the study is divided in three big areas:

- 2012 Games and Legacy (which comprises a big part of the Olympic installations);
- Stratford City (comprises the Westfield Mall, Stratford International Station and the Athletes' Village);
- Stratford Metropolitan Masterplan Area (which comprises a big part of the existing neighborhood, nearby the two areas above and the Stratford station).

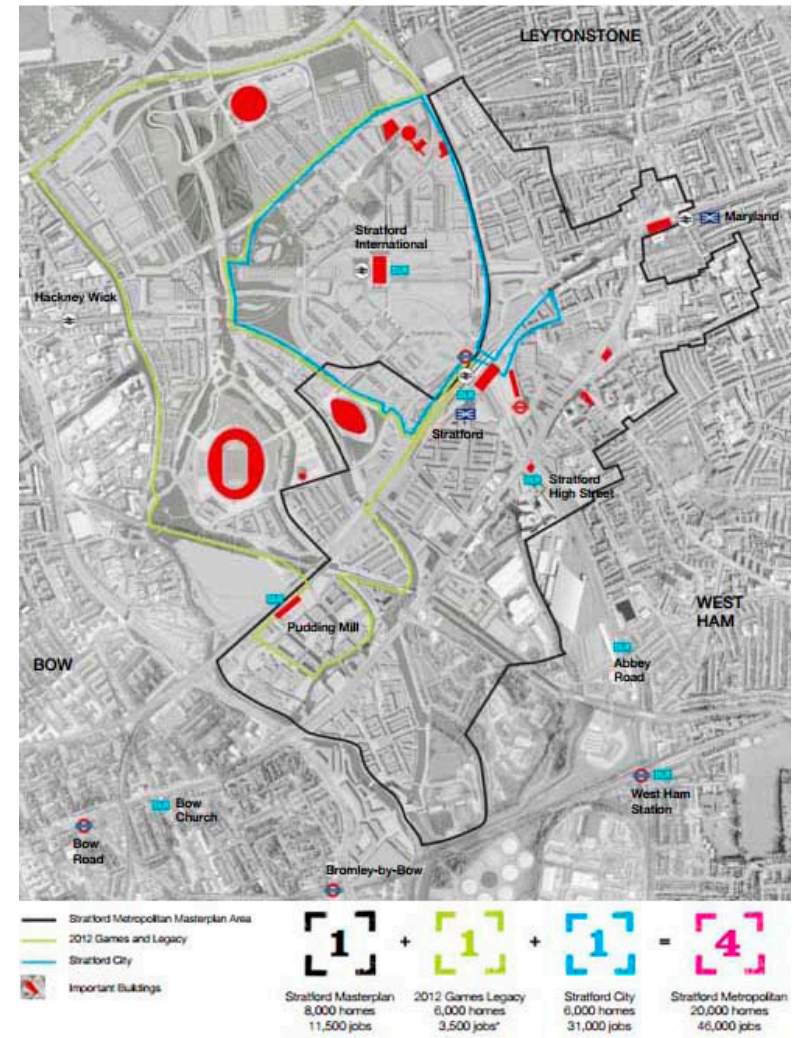


Image 10
 Area boundaries of the Metropolitan Masterplan Development Framework - SMMDV
 Source: SMMDV, 2011, p.23

It's pointed out that to keep the cohesion of the plan and to optimize the development of Stratford as a Metropolitan Center, several studies have been held, which comprised the three areas as in Proposed Connections (**image 11**) that exceeded all the barriers (a river or a train track), Highway Network proposed (**image 12**), Public transport network (**image 13**), Pedestrian and cycle network (**image 14**), Town center fringe (**image 15**), Building heights (image 16), Tall building zoning and suggestion of urban landmark (image 17– upon demolition of the existing constructions), analysis of the location of Education and Health Provision (**images 18 and 19**, respectively), .All these plans can be visualized in the Overall Spatial Strategy (**image 20**).

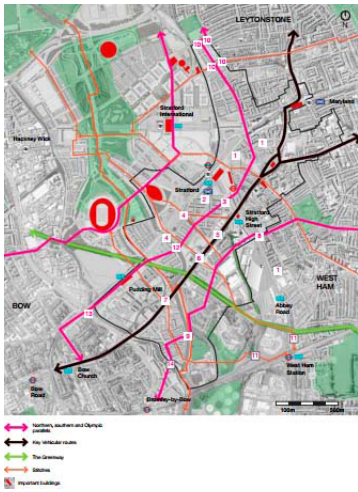


Image 11
Proposed links.
Source: SMMDV, 2011, p.50.

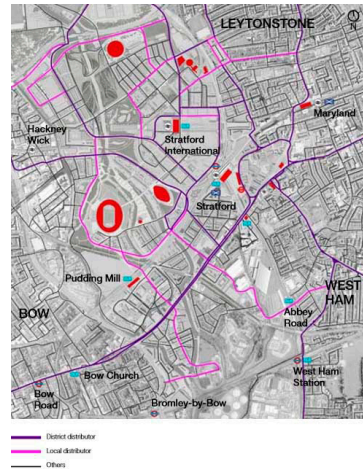


Image 12
Highway Network proposed.
Source: SMMDV, 2011 p. 52.

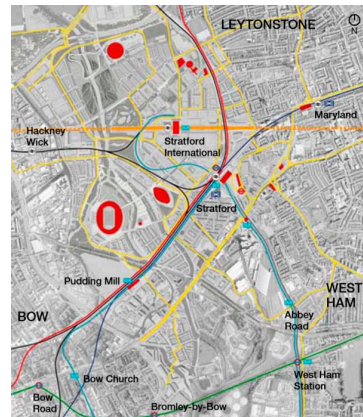


Image 13
Public transport network.
Source: SMMDV, 2011 p.53.

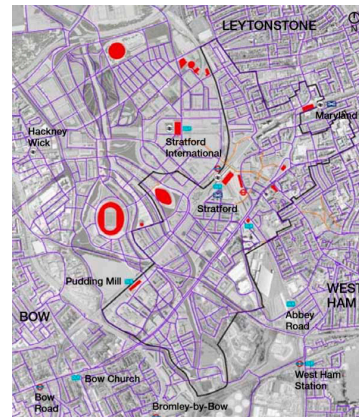


Image 14
Pedestrian and Cycle network.
Source: SMMDV, 2011 p.53.

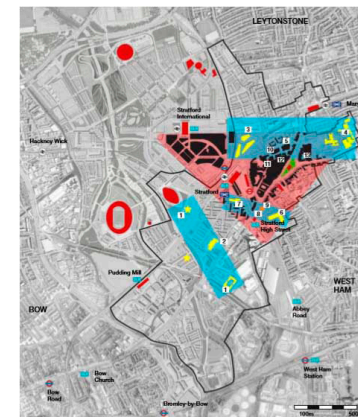


Image 15
Town center fringe
Source: SMMDV, 2011, p. 39.

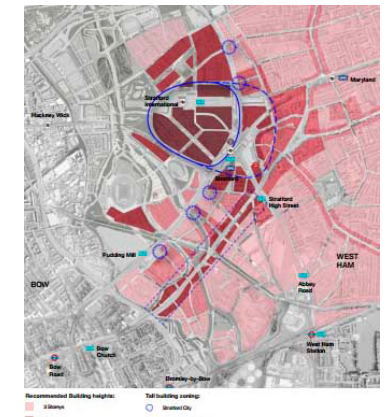


Image 16
Building heights.
Source: SMMDV, 2011, p. 43.



Image 17
Tall building zoning and suggestion of urban landmarks.
Source: SMMDV, 2011, p. 45.

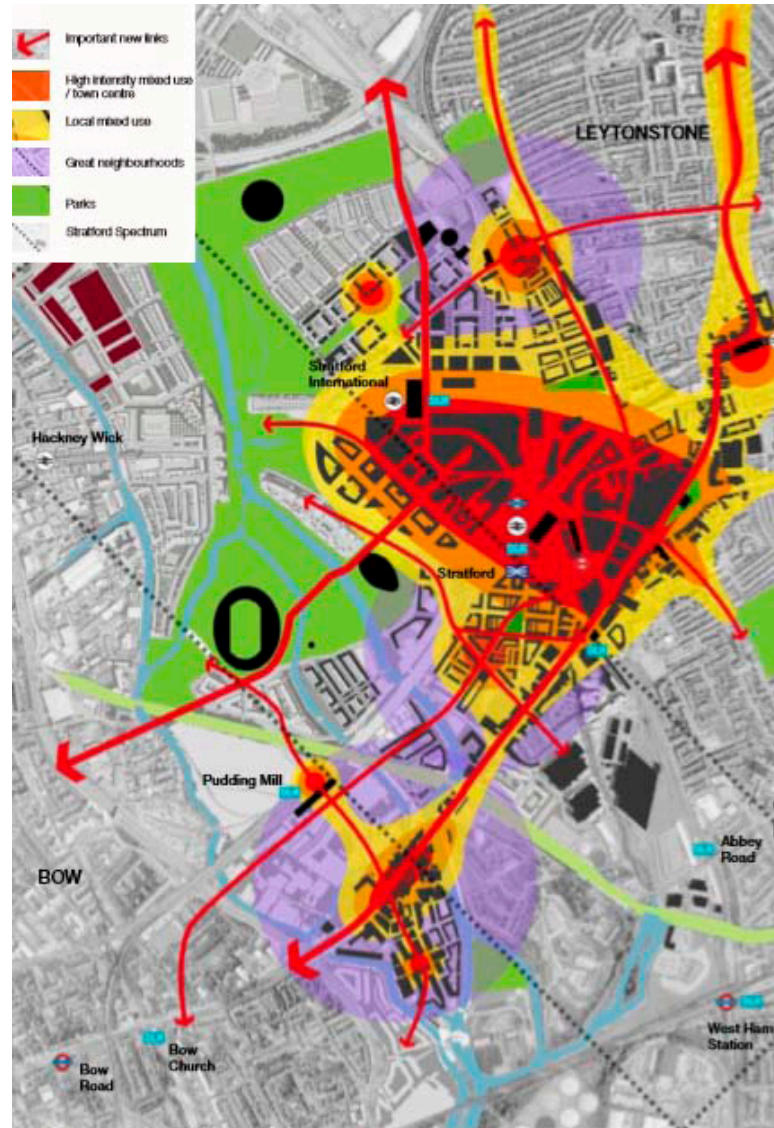


Image 20
Overall Spatial Strategy of SMM.
Source: SMMDV, 2011, p.35.



Image 18
Education Provision in Stratford.
Source: SMMDV, 2011, p. 63.

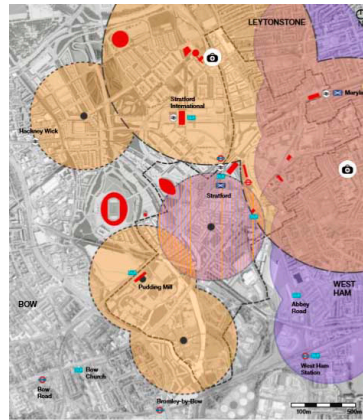


Image 19
Health Provision in Stratford.
Source: SMMDV, 2011, p. 61.

Finally, there are also spatial strategies through key projects distributed in 4 focus-areas visualized in **image 21** (SMMDF, 2011)²⁰. They are: Chobham Farm (where the release of formerly industrial land occurred to facilitate the development of a new residential neighborhood); Stratford Old Town (a local center serving worker’s houses in the neighborhood); Greater Carpenters Neighborhood (the most critical location immediately adjacent to Stratford Station, it was once the place where there were many industrial sheds); and Sugar House Lane (one of the few areas of Stratford which remain industrial characteristics with immediate waterside access).

Also, strategically, there are brief details of the key-areas, as for example the Stratford Old Town Concept Plan (**image 22**).

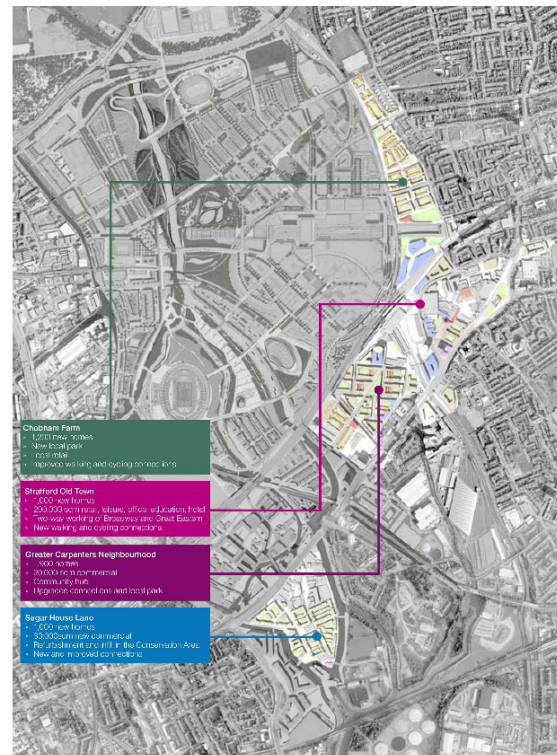


Image 21 (left)
Focus areas of the SMMDF.
Source: SMMDF, 2011, p.10.

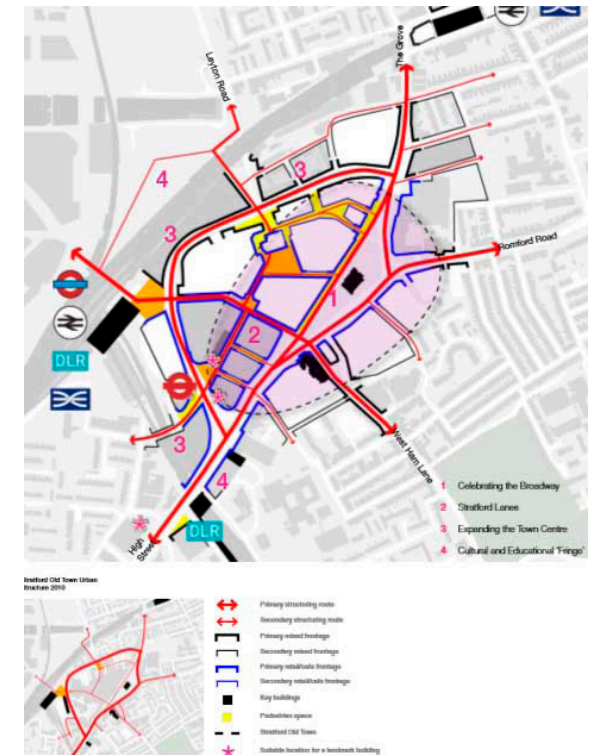


Image 22 (right)
Stratford Old Town Concept Plan.
Source: SMMDF, 2011, p.74.

20 Stratford Metropolitan Masterplan Development Framework - SMMDF, 2011. Available at: <https://www.newham.gov.uk/Pages/ServiceChild/Planning-policy-documents.aspx#StratfordPlan>. Access in 19 Apr. 2017.

However, when the visits on the site occurred, it was observed that many of the characteristics of the places presented in the plans are no longer part of the current situation, showing the evolution of the plan of 2011 to its effective implementation. Most part of these areas are being demolished and giving place to new buildings, apparently aimed at housing with business in the ground floor.

Therefore, it's observed in the SMM the importance of a spatial strategic view of a whole area with significant proportion between the urban fabric existing the new neighbor, once a huge isolated island between the water of the rivers or the tracks, exceeding the limits of the own borough. It's apparent the concern in how to connect the old existent "neighborhood", whether by new edifications and uses, active facades and the appreciation of the existing activities.

2.3.3 Local Plan: Newham Core Strategy - LPNCS (2012) - District Scale - Neighborhood

Core Strategy is the most important document of the Local Plan, called Local Development Framework (LDF). The instrument of the Local Plan substitutes the Unitary Development Plan. It establishes a plan for a series of principles for the borough, which include work, housing, infrastructure and the main places to be developed in the next 15 years (which means up to 2027). The latest version is from 2012 and is complemented by the Local Plan Detailed Sites and Policies Development Plan Document of 2016²¹.

The Local Plan sets out a vision and framework for development in the borough. It addresses needs and opportunities across a number of themes, including housing, the economy, community facilities, infrastructure, and the environment.

The Local Plan is the starting-point for considering whether planning applications can be approved. Along with the London Plan it forms the Development Plan against which individual proposals are assessed. (Newham, 2017²²)

In general, the Local Plan Newham Core Strategy seeks to build sustainable communities in high-quality neighborhoods, where the residents feel safe and choose to live and work, a mix of usage and correct balance of residences with a rise of social integration; it also pursues the cre-

21 Available at: <https://www.newham.gov.uk/pages/services/local-plan.aspx>. Access in 28 Oct 2017.

22 Available at: <https://www.newham.gov.uk/pages/services/local-plan.aspx>. Access in 27 Oct 2017.

ation of 37,500 new houses and 24,000 new work positions. (Local Plan: Newham Core Strategy, LPNCS, 2012)

In the key diagram of this plan (**image 23**), it has been highlighted the regeneration areas (orange), job hubs (blue), purchasing growth area (SR), Open Spaces (OS) and the transportation networks (Newham’s Local Plan – The Core Strategy, 2012) in which the “Arch of Opportunity” has been maximized.

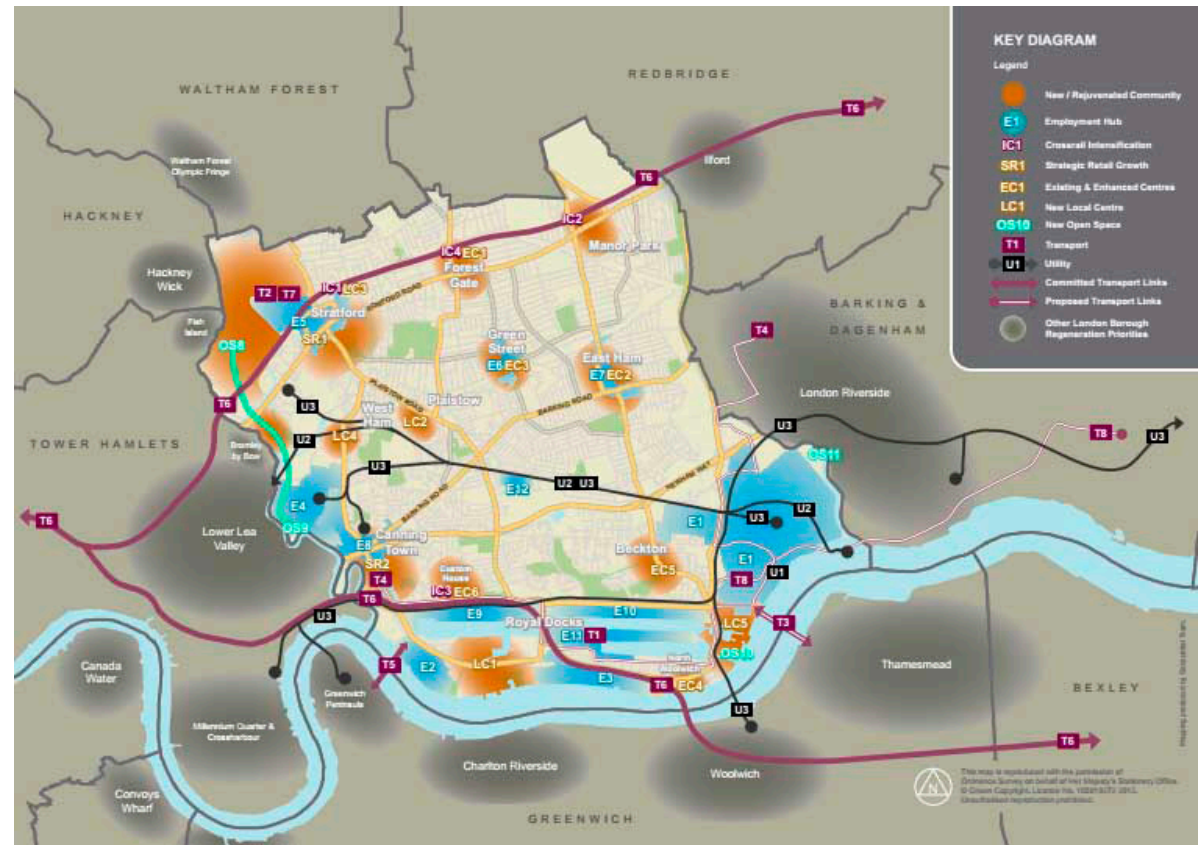


Image 23
 Key Diagram of the Newham’s Local Plan - The Core Strategy.
 Source: Newham’s Local Plan - The Core Strategy, 2012, p.33

This Plan considers that the Stratford neighborhood plays an important role in the delivery of the Olympic legacy and a thriving Metropolitan Center, as well as one of the best infrastructure hubs in London. Stratford is the link between the Old Town and the surrounds, such as the Olympic Park. Thus, it details projects and strategies for the whole borough, such as spatial strategies, biodiversity, open spaces, green areas, connecting corridor, mobility infrastructure, etc.

Also, it shows strategic sites. In the case of the surrounding of the Stratford Station, the areas So4, So5 and So6 stand out (image 24).

The area **So4 Chobham Village** aims at becoming a residential area of low density, except for the areas which surround the station, the transition between the adjacent areas, especially with the neighborhood created for the Athletes Village.

So5 Stratford Central stimulates a meaningful expansion of the space for stores, but it a mixed usage, public spaces, etc., integrating the Stratford City and the Olympic Legacy, prevailing a medium/high density.

So6 Carpenters District looks for an extensive remodeling to create an area of mixed usage, tied to the usages of the community and downtown.

However, one of the relevant points to this thesis, as its own name says – Core Strategy – is the strategic view in which the whole district is englobed. It's a general view of the borough, focusing mainly in the internal links, in the inter-relation between sites, the articulated territory and to the metropolitan context, especially in the understanding on how to make it a Metropolitan Center.

2.3.4 O Local Plan: 2015-2031 through London Legacy Development Corporation - LLDC

Localism Act 2011 is a Parliament law that changed the powers of the local government in England with the objective of facilitating the return of the decision's power from the central government to the communities. This is the reason why the London Development Agency was suppressed, replaced by the Greater Authority Land and Property (GLAP). In the section 8 of this law, it's possible that the London Mayor have the powers to create the Mayoral Development Corporations (MDC), and its goal is to regenerate the parts of London which have been identified as the mayoral development areas, suppressing the former Urban Development Corporations.

In the case of the area of this study, it was created in October 2012 the London Legacy Development Corporation (LLDC) which was then responsible for the urban planning of the perimeter agreed as the Queen Elizabeth Olympic Park and surrounds, and no longer the borough.

The LLDC took over the assets and planning of the Olympic Park Legacy Company (OPLC), as well as the planning powers of the Thames Gateway Development Corporation and the Olympic Delivery Authority (ODA).

Hence, the London Legacy Development Corporation (LLDC) became the Local Planning Authority, replacing the traditional planning powers. It makes the decisions about planning in the

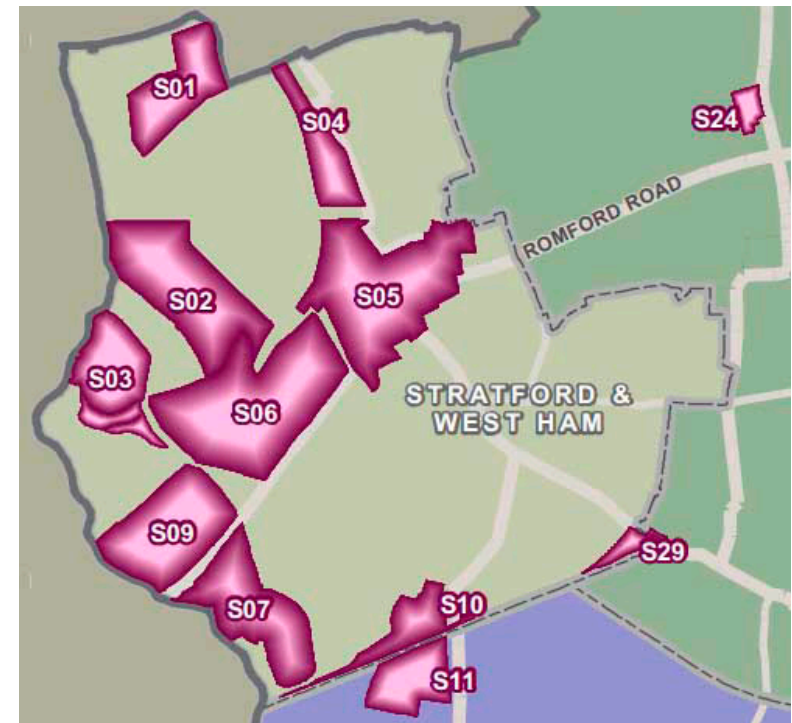


Image 24
Strategic sites of the Newham's Local Plan - The Core Strategy.
Source: Newham's Local Plan - The Core Strategy, 2012, p.37

area surrounding the Queen Elizabeth Olympic Park, including small parts of other boroughs. Initially, the corporation used the existing Local Plans to later have their own.

Thus, the LLDC adopted in 2015 the Local Plan: The Legacy Corporation Local Plan: 2015 to 2031, with the necessary strategies to the ongoing development of the area and to have the decision power to approve the projects of the same, to guarantee the continuity of the development policies initiated for the Olympics. According to the LLDC, its objective is:

promote and deliver physical, social, economic and environmental regeneration of the Olympic Park and its surrounding area, in particular by maximising the legacy of the 2012 Olympic and Paralympic Games, by securing high-quality sustainable development and investment, ensuring the long-term success of the facilities and assets within its direct control and supporting and promoting the aim of convergence²³.

The guidelines for the area and strategic policies are:

- Developing business growth, jobs and lifelong learning;
- Providing housing and neighborhoods;
- Creating a high-quality built and natural environment;
- Securing the infrastructure to support growth;
- Creating a sustainable place to live and work;

In the strategic breakdown for the development of the Local Plan: 2015-2031, the key diagram (**image 25**) shows the aspirations for the area as a whole, denominating the surrounding of the station as Town Center (big blue circle) which should be connected to the current downtown (Stratford Old Town).

It has identified the spaces available for the implementation of the political strategies by dividing them into 21 subareas (**image 26**). The key pedestrian connections and the key visual perspectives have been detailed (**image 27**).

It's the objective of this research to analyze the immediate surroundings of the station, and therefore the areas SA 3.1, SA 3.4 (that englobe the station, west and south) and the areas SA 2.1 and SA 2.2 (to the north) have been briefly detailed. The area of the Stratford Center, nearby to the area in the east of the station, doesn't belong to the acting perimeter of the LLDC and, consequently, hasn't been analyzed in this context.

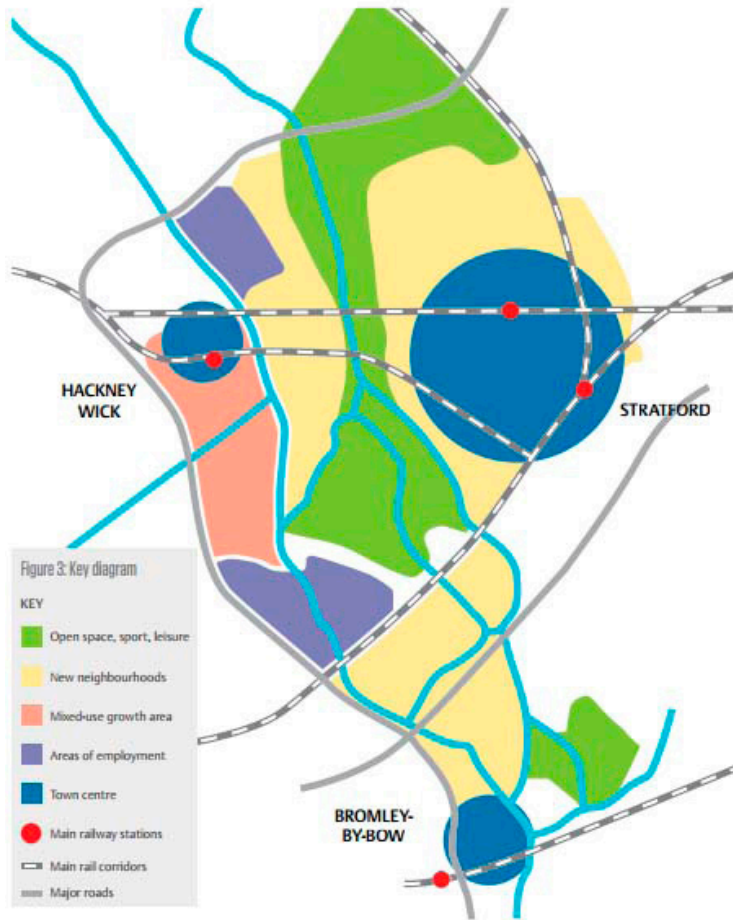


Image 25
Key diagram of the Local Plan.
Source: Local Plan 2015 to 2031,
2015, p.25.

23 Newham London, Local Plan, 2015, p.5

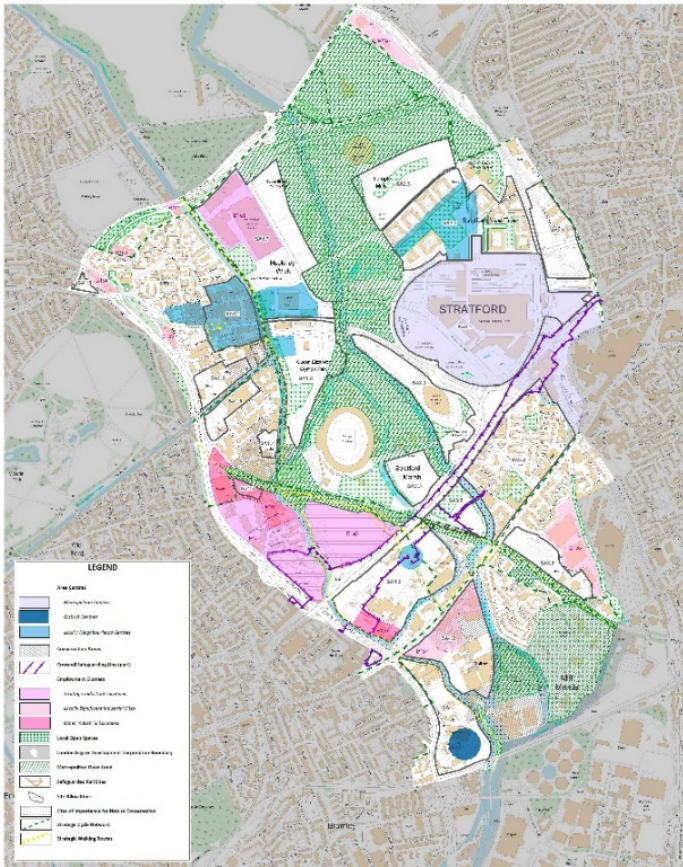


Image 26
Acting perimeter of the LLDC, synthesis map with the principles and division of the 21 subareas.
Source: LLDC. Local Plan Policies Map. Available at: <http://www.queenelizabetholympicpark.co.uk/-/media/lldc/local-plan/adoption-july-2015/detailed-plan-policies-map-a2p-v29g.ashx?la=en>. Access in 04 feb. 2016.

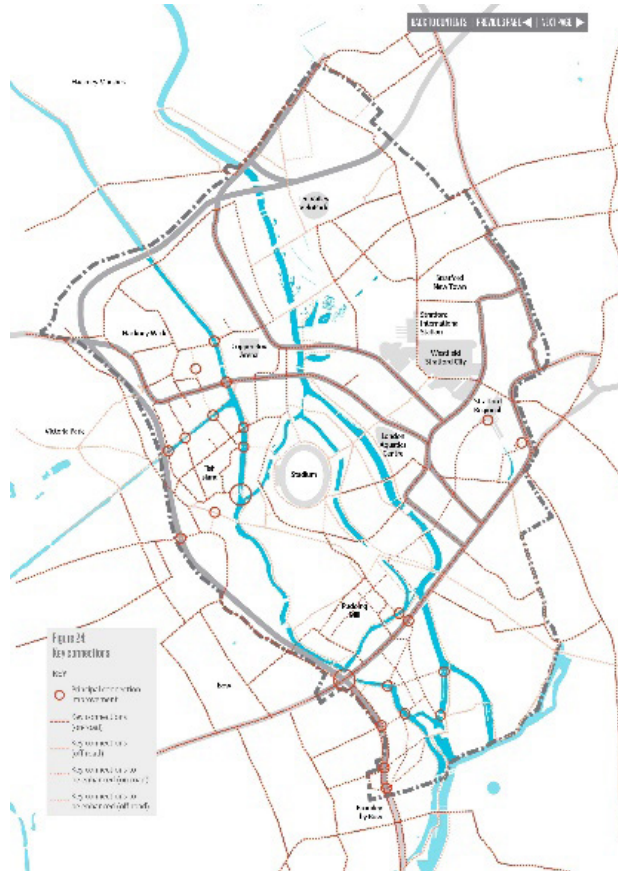


Image 27
Key pedestrian connections. Key visual perspectives.
Source: Local Plan 2015 to 2031, 2015, p.116 and 88 respectively.

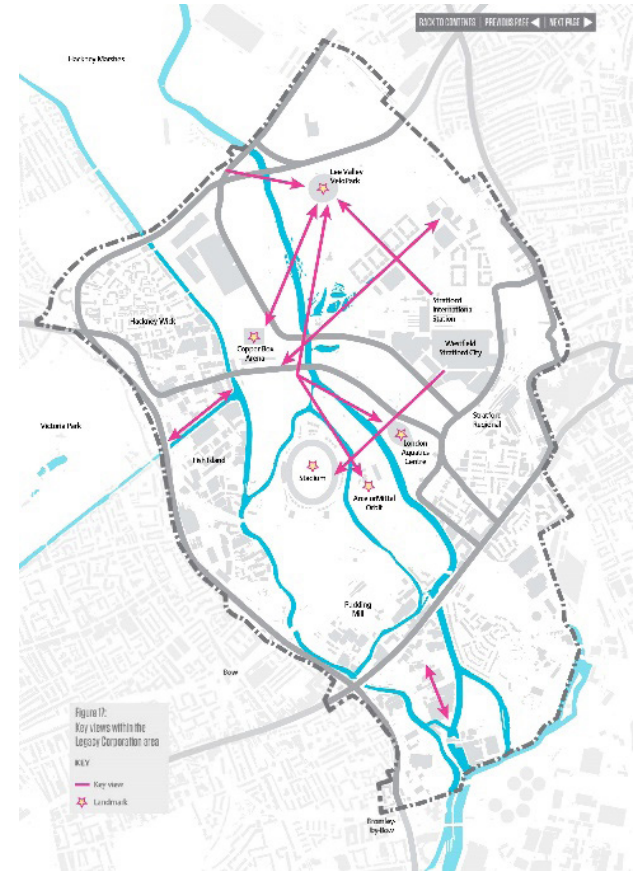


Figure 17
Key views within the Leicestershire Corporation area

The area SA 2.1 Chobham Farm (**image 28**) is oriented to the residential use of medium density of mixed property and active facade and an area of 0,84 hectares of open spaces.



Image 28
Subarea SA 2.1 of the Local Plan.
Source: Local Plan 2015 to 2031,
2015, p.182.

The area SA 2.2 East Village 9 (**image 29**) – the old “Athletes Village” has not only been oriented as a family residential of medium density of mixed property with active facade, whose developer was the Lend Lease, an open space area, but it’s also a Local Center which foresees local businesses, such as a small supermarket, pharmacy, etc., to stimulate people to walk and use bicycles.

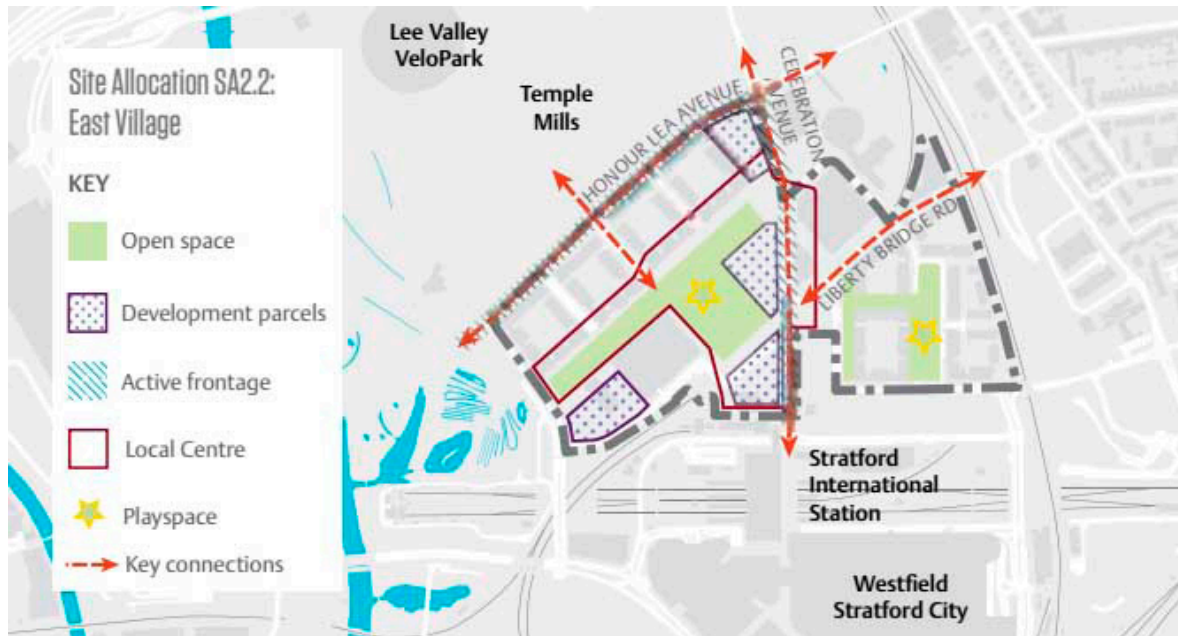


Image 29
 Subarea SA 2.2 of the Local Plan.
 Source: Local Plan 2015 to 2031,
 2015, p.187.

Currently, the East Village has 2.818 apartments (and forecasts the expansion of another 2.000), from which 1.439 have been rented by the Get Living London, while the others (1.379) are of property and managed by the Triathlon Homes (a joint venture between the private and public sectors), which offer a mix of social earning, shared property and medium income²⁴.

To the subarea SA 3.1 Stratford Town Centre West (**image 30**), it has been established a variety of residential uses on the ground floor of active facades to reinforce the connections with the surroundings, in special of a bridge to the east over the existing rails. It has been foreseen the formation of the Metropolitan Centre (big shopping area) denominated by Stratford City, where it was developed a project of mixed use whose main developer is the Westfield Group (shopping mall).

It's highlighted, for example, in image 30 the photo caption that indicates the development parcels. Those blocks are destined to the construction of big ventures to be visualized next (in the stations' scale) denominated as International Quarter.

²⁴ Available at: <http://www.eastvillagelondon.co.uk/about-us>. Access in 20 Nov. 2016.

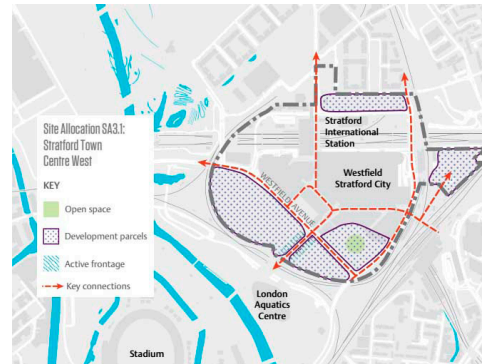


Image 30
Subarea SA 3.1 of the Local Plan.
Source: Local Plan 2015 to 2031,
2015, p.200.

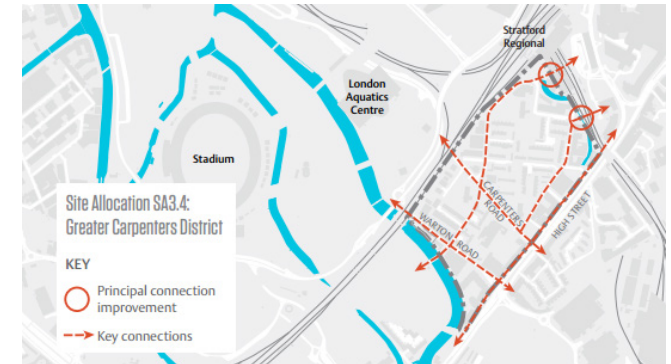


Image 31
Subarea SA 3.4 of the Local Plan.
Source: Local Plan 2015 to 2031,
2015, p.200.

Finally, the area SA 3.4 Chobham Farm (**image 31**) anticipates open space, the transition of the level between the East Village to the low density in Leyton Park to the east, active facade in Leyton Road and Herietta Street and connections between the east and the west.

The LLDC produced the Infrastructure Delivery Plan (IDP) in 2013 which identifies the necessary infrastructure to support the planned growth inside the area of the Legacy Corporation and to identify the costs and the financial gaps for this infrastructure ²⁵.

In February 2017, a plan and chronogram were created – the Local Development Scheme (LDS), to revise the current Local Plan, predicted to be completed in October 2019.

2.3.5 Other instruments

London has the complexity of instruments proportional to its size and history. The London Legacy Development is here mentioned because, despite of its work in the region, it's also the owner of land inside its area. Those actives and interests are utilized in a way to allow it to meet the regeneration objectives and development established in the Local Plan – in fact is the masterplan.

²⁵ Information regarding the plans of the LLDC have been extracted from their website. Available at [http://www.queenelizabetholympicpark.co.uk/-/media/lldc/local-plan/adoption-july-2015/lldc_localplan_2015_interactive100dpi-\(4\).ashx?la=en](http://www.queenelizabetholympicpark.co.uk/-/media/lldc/local-plan/adoption-july-2015/lldc_localplan_2015_interactive100dpi-(4).ashx?la=en). Access in 09 Apr. 2017

The Section 106 Agreements and CIL are important tools which support the development established by the Local Plan, and can or not be used, depending on the project. The Section 106 Agreements is a law that grants planning obligations in areas where there's interest of implementation of relevant planning policies, such as the condition that for a new habitational building to include 50% for public housing.

The Community Infrastructure Levy (CIL) is a paying form made by square foot of new space for the investor/developer to the Local Council. The amount raised will be used to cost new infrastructures, such as schools, transportation and open spaces to support new housing and jobs.

Therefore, there's a wide complexity in the instruments in London and a long urban process which culminated to the creation of the LLDC. In **image 32**, it's possible to visualize the diagram which synthetizes the main instruments for the urban development of the study area in the current days.

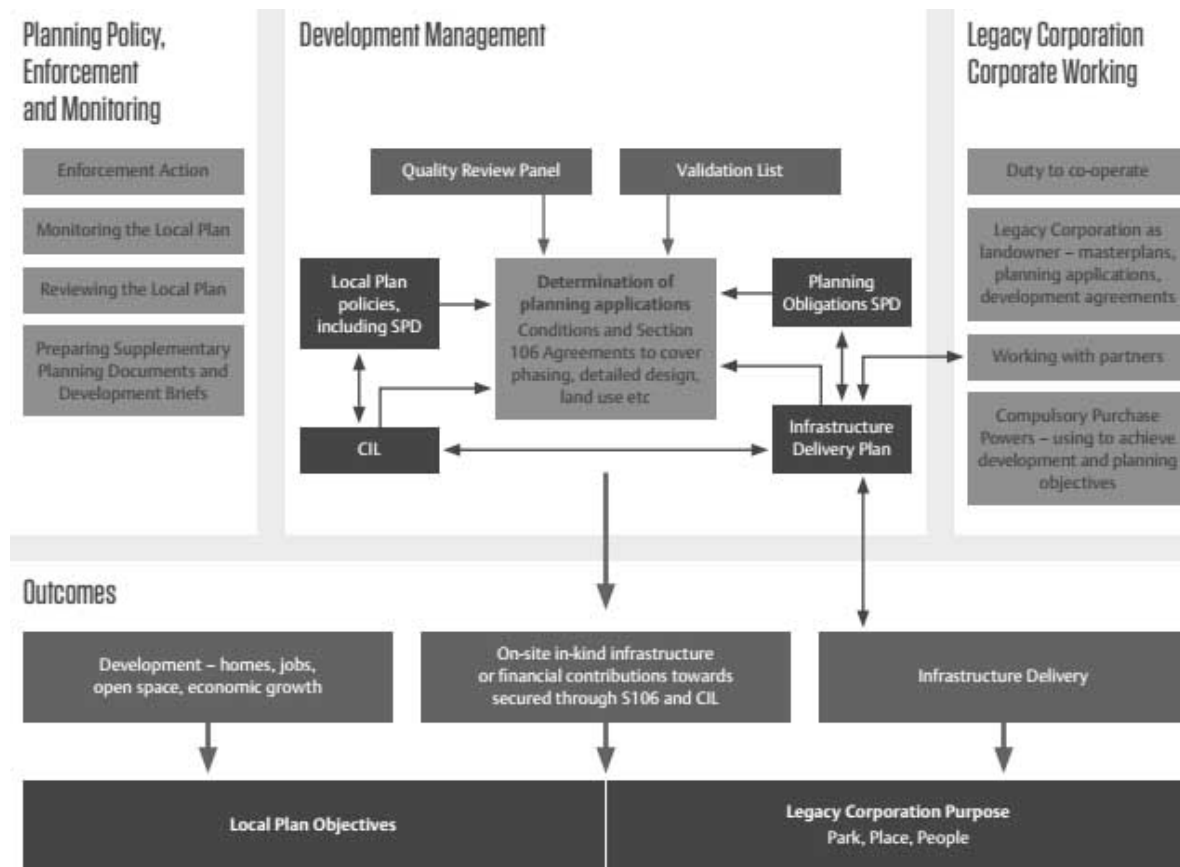


Image 32
Flowchart of planning processes in local scale in London.
Source: Local Plan 2015 to 2031, 2015, p.232.

2.4 Station Scale



[N6+N8+N9+N10+N11+N12+N13] Node of Access

Stratford has an exceptional strategical connectivity in view of the London network and also high local complexity. Next, the micro-accessibility is detailed in different ways to follow (pedestrian, bicycle, bus, train, private car, taxi).

[N6] Pedestrian

The microaccessibility to the Stratford station through the existing neighborhood (east to the station) can occur in a big part through the interior of the Stratford Center shopping mall, which has an entrance both facing the station and the Broadway Avenue. This internal access is straight, without the requirement of a sinuous way. You can also access the station by surrounding the mall, but the way through it is shorter.

As soon as you leave the mall, there's an entrance square for the station (**image 33**). Following the direction to the Olympic Park (west), it's necessary to go beyond staircases (**image 34**). There's a second intermediate level access to the station in this set of staircases and reach the access of the Town Center Link Bridge, built in 2012, 12 meters wide (**image 35**), over the train connecting the Stratford station to the Westfield mall.

To continue in the Olympic Park direction, it's mandatory the passage through the Westfield Stratford Mall utilizing an open street with stores facing this spatial connection (**image 36**).

Those internal streets will naturally connect to the Olympic Park using the Stratford Walk Bridge (Waterworks River) in a design of high readability of spatial connection, due to the continuity of shifts (**image 37**). Through the west side, there's also a direct access to the station that can occur in front of the Westfield Stratford City (**image 38**) using the Montefichet street, which will connect through tunnels to the main hall entrance of the Stratford station and several accesses of the existing lines of the node.

It's relevant to highlight the main ways of accessing the station – both east and west sides occur mainly through the usage of the internal access of two distinct malls.



Image 33

Entrance square to the Stratford station.

Source: Author, 2016.



Image 34

Connection stairways between the Stratford station and the *Center Link Bridge* access.

Source: Author, 2016.



Image 35
Town Center Link Bridge access
 (between the Stratford square and Westfield).
 Source: Author, 2016.



Image 36
 Access through “internal and urban streets” in the inside of the Westfield Mall.
 Source: Author, 2016



Image 37
Stratford Walk Bridge between Westfield Mall and Olympic Park after the exit of the mall.
 Source: Author, 2016

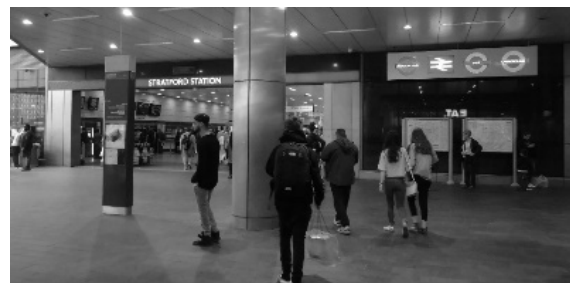


Image 38
 Access straight to the Stratford station through Montefichet street and internal connections.
 Source: Author, 2016

[N7] [N8] Train and subway

It is difficult to identify what the train and subway lines would be in Stratford. There are nine train links and 200 trains in the rush hour. This is the reason why the intermodality between lines is complex and branches off through several paths and platforms inside the Stratford station (image 39).

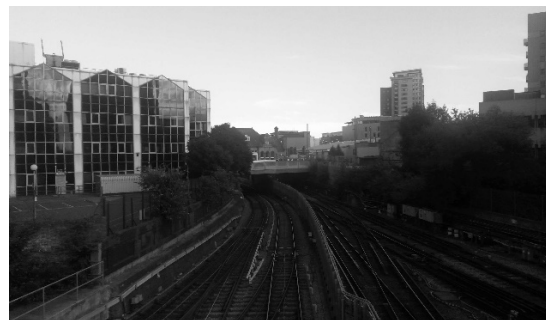


Image 39
Tracks in the Stratford station area.
Source: Author, 2017.

[N9] Bus

The buses which assist the Stratford City bus station connect with the boroughs of Newham, Waltham Forest and Tower Hamlets.

The current bus terminal (east to the station) used to be in the ground floor of a garage building (**image 40**) which was demolished to the current configuration (**image 41**). Previously, the access to the station could occur through the underground level. According to the TFL, the design of the bus station is a local icon and an important reference. It was projected by the *Architen Landrell Associates*.

There are other lines which comprehend the Stratford International station. There are parking lots for buses in the Westfield Stratford City – west to the station, located in the Montfichet street (**image 42**), denominated of Stratford City Bus Station.



Image 40

Old bus station in Stratford.

Source: Available at: < http://www.londonbuses.co.uk/_routes/prefix/s1-t.html > Access in 04 feb. 2016.



Image 41

Bus station in Stratford Regional.

Source: Author, 2016.



Image 42

Stratford City Bus Station – west to the station.

Source: Author, 2017.

[N10] Bicycle

There are 8 parking lots for bicycles in different places around the stations, which connect to the Westfield Stratford City (**image 43**). However, if not linked to the infrastructure of the mall there are very few places in the adjacent area of the station because there are usually a few spaces to park the bikes on the sidewalks.

There's the *Santander Cycles*, a service to rent a bike for short distances, preferably within 30 minutes. The stations to rent concentrate in the park region. There's only one spot in the Westfield and another in the East Village. Comparing to other central areas of London, there are few options of this service, except for the west area in the surrounding of the Queen Elizabeth Olympic Park, there aren't more spots in the other neighborhoods (**image 44**).

Thus, it's observed that there are few parking possibilities of bicycles in a relevant transportation node as the one in Stratford.



Image 43
Bicycle parking in Westfield.
Source: Author, 2017.

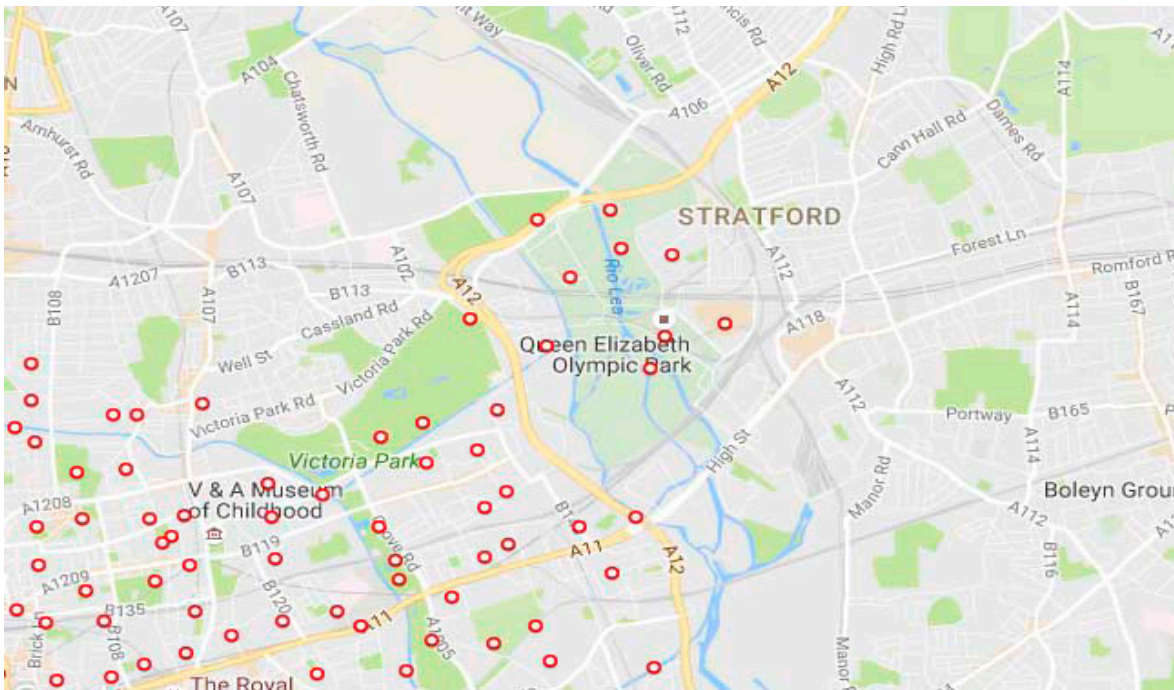


Image 44
Renting bicycle spots using the *Santander cycle service* and an example of a local spot.
Source: TFL, 2015 e author, 2016, respectively.

[N11] Private Car

The parking is possible in private garages, such as in the Westfield Shopping Centre, Stratford Centre or Stratford International (**image 45**). In the surrounds of the Stratford and Stratford International stations, there are few parking spots in the street.



Image 45

Private parking in the Stratford Center (east) Westfield. (west).
Source: Author, 2017.

[N12] Taxi (minicab)

It's possible to use the car service next to the Stratford station in front of the Stratford Center in a specific space and in the surrounds of the Westfield Stratford City (**image 46**) in the Montfichet street.



Image 46

Taxi stops in the surrounds of the Stratford station, east and west, respectively.
Source: Author, 2017.

[N13] Tram

Not applicable as there are no tram lines at Stratford station.

Thus the microaccessibility in the Stratford station area is visualized in the image 47.

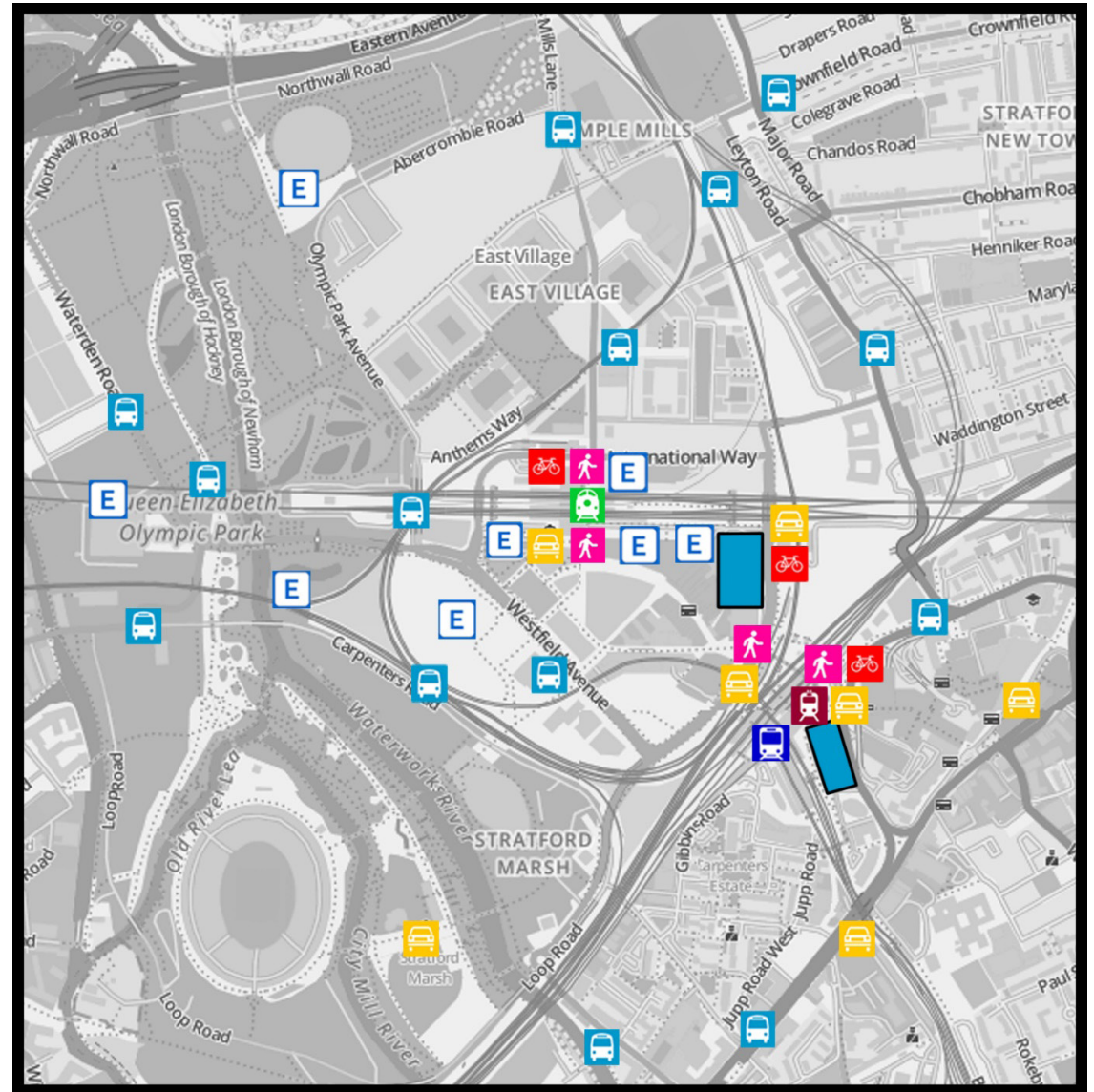


Image 47
Microaccessibility in the Stratford station area.
Source: Author, 2017.



[P5] [P6] [P7] [P8] Place in the territory

Station's architecture

The Stratford Station was remodeled by the WilkinsonEyre office after winning a competition due to the extension of the Jubilee Line in 1994. Its construction was finalized in 1999²⁶.

The building stands out for its curvy extruded roof (images 48 and 49). However, the architecture of the station represents only a **big distribution hall** of passengers (image 50) for the many possibilities of access to the lines that meet at the Stratford Station.

As an example of this distribution hall of access to the lines, the platform which will give access to the DLR line is placed, designed by the Alsop Architects in 2009. The coverage of this platform is an extension of the coverage of the Stratford Station; However, it has an architectural language completely distinct (images 51, 52).

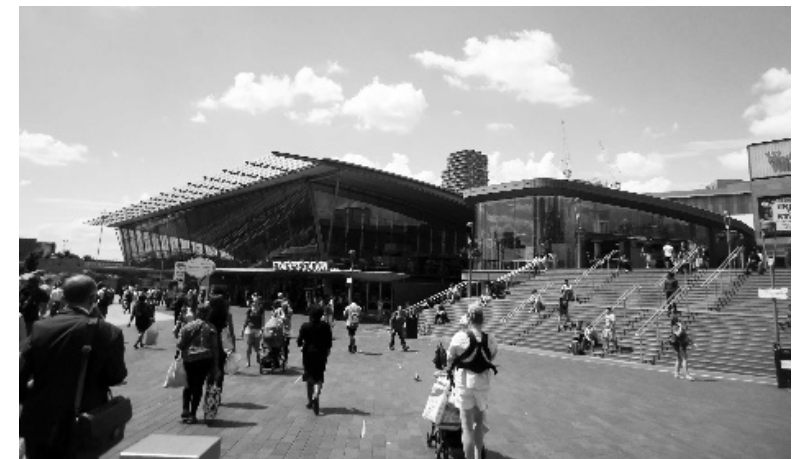


Image 48 (this page and next)

Stratford Station.

Source: Author, 2016; Adrian Welch (Available at: <<https://www.e-architect.co.uk/london/stratford-buildings>>. Access in 24 Apr. 2017) respectively.

²⁶ WilkinsonEyre, 1999. Available at: <http://www.wilkinsoneyre.com/>. Access in 04 fev, 2017.



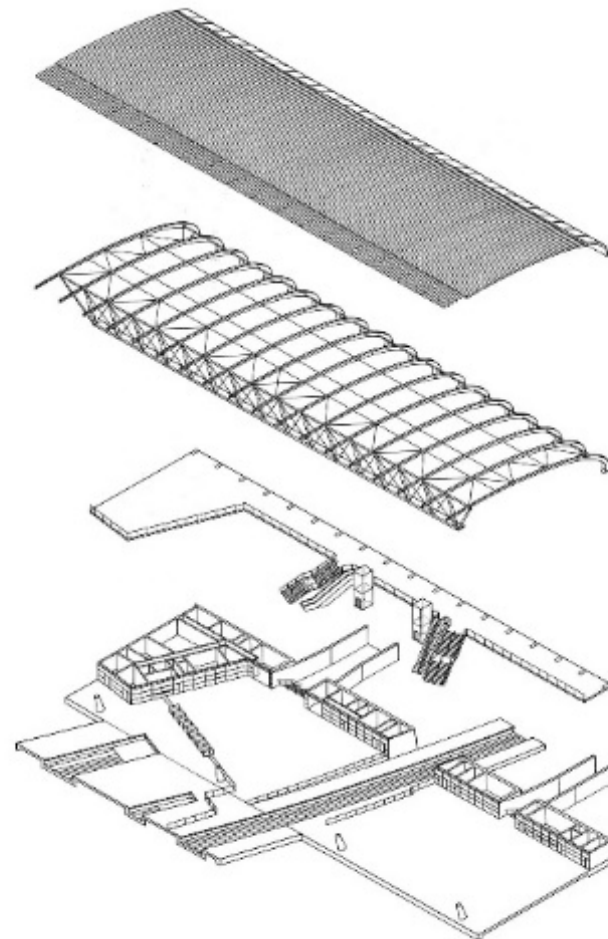


Image 49
Stratford Station Distribution Hall
Source: Wilkisonseyre, 2017 (Available at: <http://www.wilkisonseyre.com/projects/stratford-regional-station>. Access in 24 Apr. 2017) and author 2016.

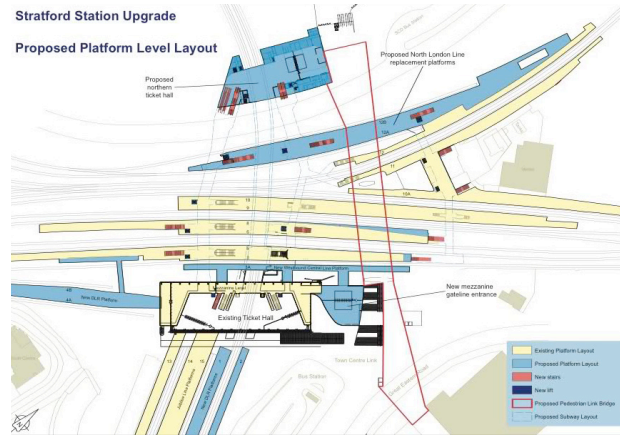
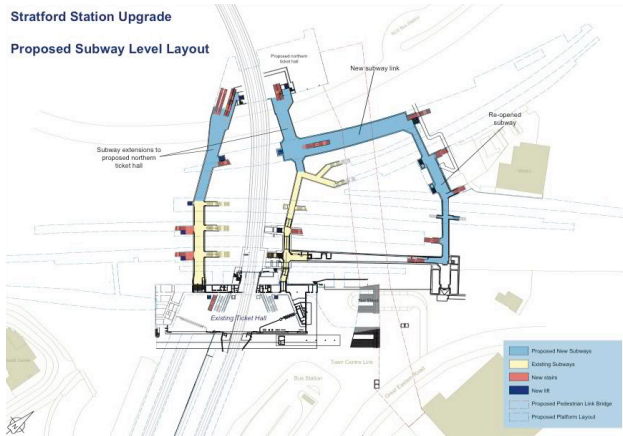


Image 50
Study of improvement to the access of the train and subway lines in the Stratford station in the platform level and the subway level, respectively.
Source: Open buildings 2017. Available at: <http://www.wilkinsoneyre.com/projects/stratford-regional-station>. Access in 24 Apr. 2017.

Image 51
Blueprint of the access platform to the DLR line. Section Regional station of Stratford and the back and the access platform to the DLR line.
Source: Arcspace, 2017. Available at: <http://openbuildings.com/buildings/stratford-dlr-station-profile-2525/media#>. Access in 14 Mar 2017.

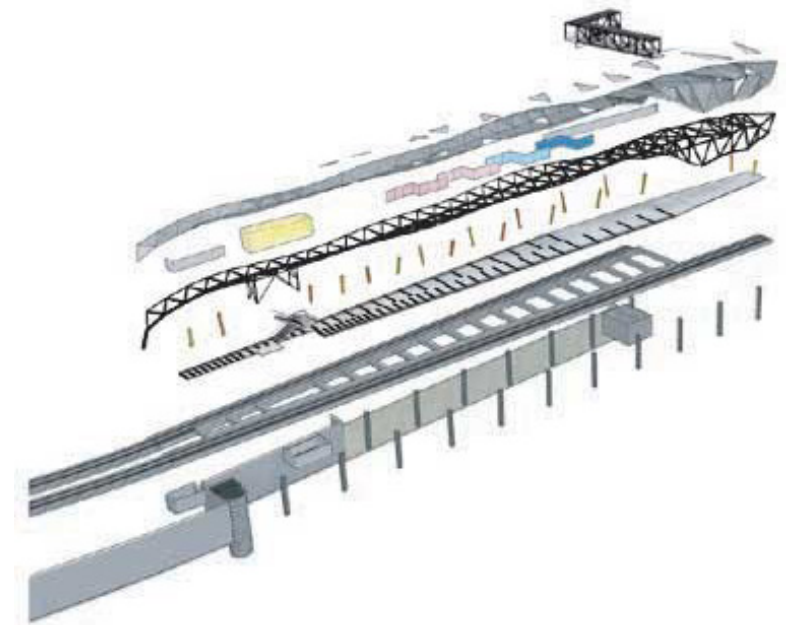
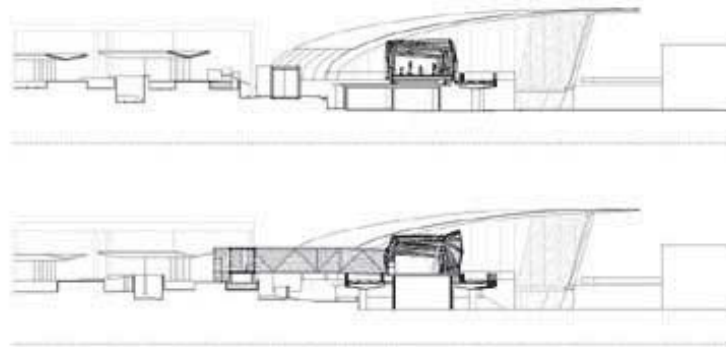




Image 52

Boarding and departure platforms of the DLR line.

Sources: Arcspace, 2017 (Available at: <http://www.arcspace.com/features/alsop-architects/stratford-dlr-station/>. Access in 28 Apr. 2017); Author, 2016, respectively.

Local territory

Historically, the Stratford area used to be one of the poorest areas of London, with old industrial buildings (**image 53**), contaminated and empty land.



Image 53

Old shed in the Stratford station area.

Source: Author, 2017.

For the materialization of the urban transformation in the area of the station Stratford diverse strategies were created. Past and present are visible somehow, such as the construction of the largest urban commercial center in Europe – Westfield Stratford City Shopping (**image 54**) and the remains of the popular market of small vendors – also the Stratford Shopping Center, opened in 1974 (**image 55**), as well as the node of the train lines which have already been the biggest railway complex in the United Kingdom.

Image 54
Westfield Stratford City Shopping.
Source: Author, 2016.



Image 55
Stratford Center facades (first facing the square of the station and second facing the neighborhood).
Source: Author, 2016.



On another hand, some existing buildings have been demolished in the area as housing complexes of social cooperatives, such as the Clays Lane Estate, in 2007, together with another residential area, two nomad communities, some shops and small industries²⁷.

The current urban transformation in the surrounding of the station is noticeable, beginning with the old Athletes Village – current East Village. The history of the East Village began in

²⁷ Available at: <http://rioonwatch.org.br/?p=4927>. Access in 18 Nov. 2016.

2005 as part of the Stratford City Masterplan. In 2007, the Olympic Delivery Authority carried out an international competition and in 2008 the constructions began so that in July of 2012 the place could be used as an Olympic Village. In November 2013, the place received the first residents; in 2014, the first shops opened. In this area in the East Village (**image 56**) there are 14 hectares of open spaces and parks, uses of energy efficient technologies to recycle water, the encouragement for walking, so that the principles of urban sustainability are met and it's then possible to achieve quality labels such as the Code for Sustainable Homes Level 4, among others.



Image 56
Meanders of the East village, once the Athletes Village.
Source: Author, 2016.

There are new housing units immediately next to the stations as in the buildings of **image 57** which were under construction in 2016.



Image 57
Stratford Station area and surrounding residential buildings.
Source: Author, 2016.



Image 58
Arcelor Mittal Orbit Tower in the Olympic Park and the stadium on the right side of the image.
Source: Author, 2016.



Image 59
London Aquatics Center and Waterworks river.
Source: Author, 2016.



Image 60
Copper Box Arena.
Source: Author, 2016.



Image 61
Chobham Academy in the East Village.
Source: Author, 2017.



Image 62
Stratford Old Town.
Source: Author, 2017.



Right next to the East Village, there's the biggest park built in Europe 150 years ago: the Queen Elizabeth Olympic Park (**image 58**), surrounding the Lea river, with 25 hectares of green space of high quality in a place which was once contaminated or forgotten. In the park, the sports equipment is designated to the Londoners, with easy access and the possibility of use, such as the London Aquatics Center (**image 59**) and the Copper Box Arena (**image 60**).

In 2013, the Chobham Academy (**image 61**) was created, a school which can assist 1800 students aged between 3-18 years old. The infrastructure of this school was first used for the Olympic Games. There are still some universities, such as the University of East London and University Square. There's still a health clinic – Sir Ludwig Guttman medical Centre in the new neighborhood.

This new infrastructure set, equipment, buildings and people add and connect spatially to the areas around, specially the Stratford Old Town (**image 62**) to the east of the station, where the traditional Stratford Circus and Treater Royal Stratford East meet (**image 63**).



Image 63
Royal Stratford East Theatre and Stratford Circus.
Source: Author, 2017.

Finally, the project called International Quarter South (**figure 64**) stands out between the station and the Olympic Park. This project foresees 4 million square meters of A class offices, 25 thousand workers, 333 new habitational units in an area of 9 hectares. There's also the International Quarter North (**figure 65**) next to the Stratford International Station. A skyscraper is expected, with a mixed use – and an apartment can cost 615 thousand pounds. Both ventures were in construction in 2017.

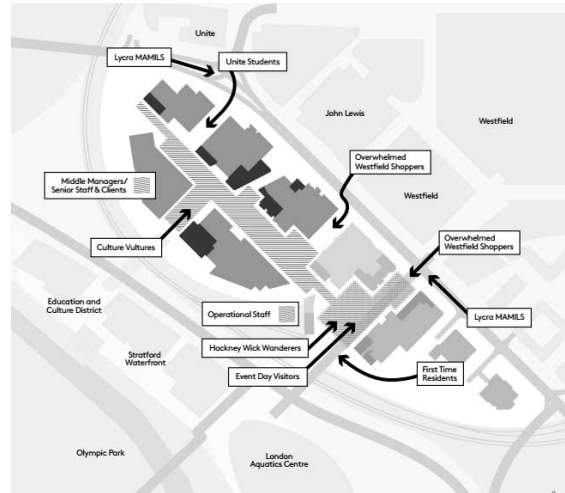


Image 64

International Quarter South in construction and the area's masterplan.

Source: Author, 2017 and International Quarter London, respectively.



Image 65

International Quarter North area and the sales' advertisement of a 1 bedroom apartment.

Source: Author, 2017.

Even 5 years after the Olympic games, the Stratford Station area remains a building site. In the remaining areas, many constructions are expected, buildings for different usages, with the prevalence of constructions of mixed usage, educational (UCL) and business²⁸.

It has been observed that in the immediate surroundings of the station, there's the prevalence of the architecture with characteristics of an international city (**image 66**) and not necessarily with the local identity, which can be observed as you move away from this center.

Image 66
New buildings surrounding the Stratford station.
Source: Author, 2017.



Probably, by not inserting the old inhabitants in the same area, adding to the real estate speculation and pressure for new housing in the whole city of London, the urban project contributed for a meaningful gentrification²⁹.

On the one hand, it is the open spaces and public spaces of connection that articulate the feeling of belonging of the London population, as people using these spaces in a day of intense heat in the city or in the refreshment with the use of water (image 67), in practice sports and leisure.

However, it is questioned whether the density that is developing there will be sufficient for an urban intensification of the Stratford neighborhood as projected in the plans as well as of the social connection of the 'international cities' with the 'real city'.


²⁸ Available at: <https://www.e-architect.co.uk/london/stratford-buildings>. Access in 30 Apr 2017.

²⁹ Available at: <http://www.getlivinglondon.com/find-a-home/1-beds-11-logan-close-london-e20-0.aspx#.WDHeelx-T7IU>. Access in 20 Nov 2016.



Image 67
Children playing in front of the
football stadium in London in the
open spaces available.
Source: Author, 2016.

2.5 Stratford Station Synthesis



The aerial images from 1945, 2003 and 2016 respectively, synthetizes the spatial transformations which occurred in the region (**images 68, 69, 70**). The rivers Lea, City Mill and Waterworks have been pointed out (natural conditioners) and the main railway lines, key structuring elements of the territory. They are clearly spatial and meaningful boundaries which have been transformed in an isolated island throughout the years.

The city of London has the peculiarity of having a metropolitan complexity like the reality of São Paulo: they are both huge metropolis with great numbers and urban challenges.

Through two visits in the site (2016 and 2017), it was possible to investigate the current project called Local Plan from the LLDC as an European reference in the urban regeneration and its starting point was the Olympic Games of 2012. The spatial transformations orbit in the hub of the station aiming at putting Stratford as a new metropolitan hub.

Before the beginning of the Olympic Games, contaminated and empty land by the industrial use for over hundreds of years prevailed in the area, surrounded by industrial sheds and houses for workers. It was an area with high index of social and economic inequalities. So, the opportunity of spatial transformation boosted by the Olympics did not go unnoticed.

In few years, after the political decision of London being chosen in 2005 as the host for the games, several projects were developed and implemented in the area of the Stratford station to transform it in an effective urban hub.

The institutional structure created for different moments and challenges presented - Olympic Games, the urban regeneration of the creation of jobs and housing - is extremely complex. However, not only the results of this spatial transformation, but also the long-term planning calls the attention to reach the final objective, which is still ongoing.

On another hand, there are critical people who question the urban transformation process coming through big events. According to the report from the Centre of Housing Rights and Evictions (COHRE)³⁰, more than two million people were dislocated from their residences between 1998 and 2008 due to the Olympic Projects which occurred in many cities.

³⁰ The Olympic Games have displaced more than two million people in the last 20 years. 2007. Available at: http://tenant.net/alerts/mega-events/Olympics_Media_Release.pdf. Access in 18 Nov. 2016.

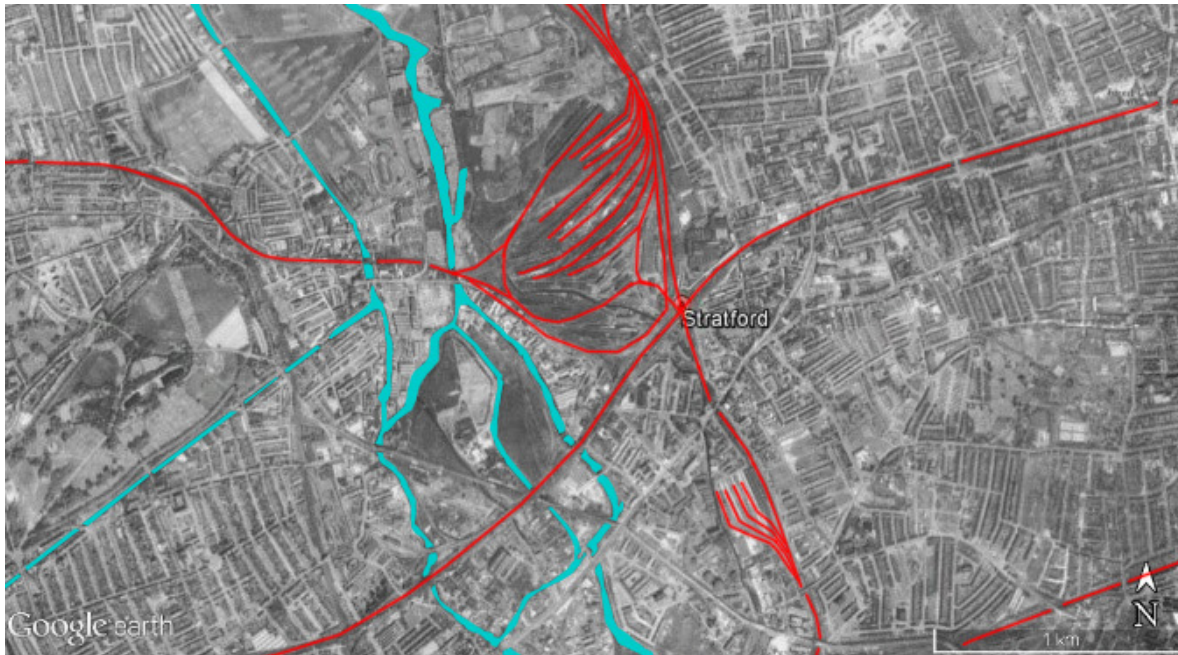


Image 68

Aerial image of the Stratford station and surrounds in 1945.
Source: Google Earth, 2016, author's treatment.



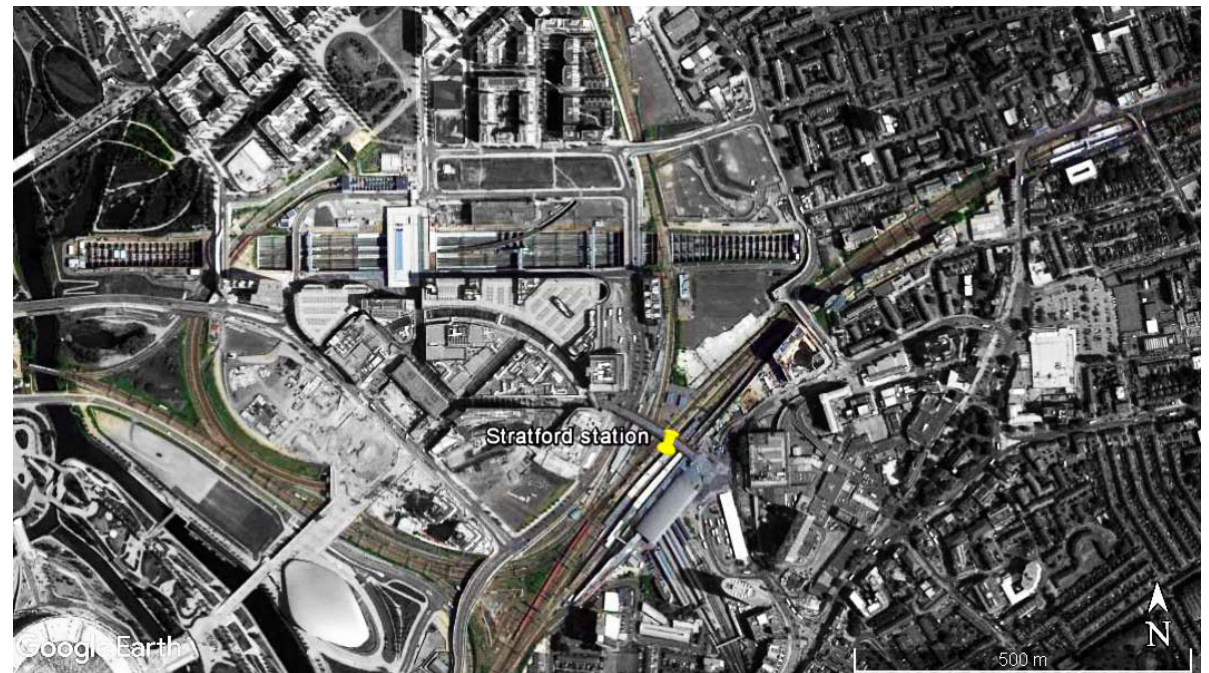
Image 69

Aerial image of the Stratford station and surrounds in 2003.
Source: Google Earth, 2016, author's treatment.

Image 70
Aerial image of the Stratford station and surrounds in 2015.
Source: Google Earth, 2016, author's treatment.



Image 71
Aerial image of the station, focusing on the Stratford Regional station.
Source: Google Earth, 2016.



The writer Ashok Kumar criticizes the Olympic project itself in relation to the gentrification and the spectacular architecture according to the accumulation capitalism, because the desire for any games is necessarily:

to shock, to fast track the dispossession of the poor and marginalized as part of the larger machinations of capital accumulation. The architects of this plan need a spectacular show; a hegemonic device to reimage the rights, spatial relations and self-determination of the city's working class, to reconstitute for whom and for what purpose the city exists. Unlike any other event, the Olympics provide just that kind of opportunity³¹.

There's also the issue regarding cost x benefit, such as the investments spent in the construction of the soccer stadium, currently being used by a local team.

Even after the gentrification occurred in the area, the Stratford City field associated with the implementation of office center and stores, as well as for the residential development, cultural, education, uses of the community, the strategy of strengthening regional ties as well as placing it on the international scene is evident.

There's always an ambiguity between node and place. According to mobility, the Stratford Station is the main transportation node in the borough of Newham and the main starting point in the neighborhood. It's an extremely complex and spread transportation hub.

Indeed, a meaningful spatial transformation occurred in its surroundings in which it has qualified the access to the pedestrian, but not in the architecture of the station that in fact symbolizes a great hall of entrance to the subway and train lines. The incentive to the use of bicycles in the environment is underdeveloped in this important transformational node, but perhaps due to the restoration of this policy in the city, one can be optimistic with the integration of this modal in a competitive way. And lastly, there are several private parking lots in the buildings in the area around, especially in the shopping malls and many access avenues. Therefore, it's observed that the remodeling of the station itself didn't have as a goal the creation of a concept of an exclusive transportation terminal.

The spatial connectivity in the area of the station is the highlight of the urban legacy in the transformations which occurred due to the urban qualification of the public spaces and the intensity of the direct relations of the use of the land.

³¹ Want to cleanse your city of its poor? Host the Olympics. Available at: <http://ceasefiremagazine.co.uk/olympics-opportunity-cleanse-city/>. 2012. Access in 18 Nov. 2016.

Bertolini and Spit (1998), when analyzing the urban planning in an attempt to elaborate a masterplan for the station area in general has taught four main lessons which could be extracted.

The first important lesson is “quality” of the relation among all the players involved, including the population. In London/ Newham/ Olympic Park/ Stratford, the relations were extremely complex and briefly presented here. However, they were not completely drained in the analysis.

The second main point refers to the concept of integrating the node -place. To what node is concerned, it's intense, deep-rooted territory, and its strength still prevails in the urban sphere in transformation, such as, for example, not having another station unit being built, which would certainly be highly complex.

The third lesson, which completes the second, refers exactly to the question of the place when facing spatial problems, which is the case reached in an area in which the huge urban and empty areas prevailed. So, there are new connections and meaning to the emptiness are inserted: an Olympic park. In its surrounds, there's a confrontation differentiated by the destruction of the existing buildings and the insertion of new ones in the landscape.

The fourth observation refers exactly to the interaction between node and place, as reinforced in this thesis. Having the urban transformation of one of the biggest Londoner transportation node as a goal, the diversity of the activities and the quality of the project prevails in the conception of the station as a node -place.

Even though it's still a development phase, it's troubling the matter of the price and access to new housing facing the high prices in the market, including the ones designated to social housing (usually 20% cheaper than the market value). London also doubts the real need to insert one more skyscraper in the landscape at the moment.

However, the spatial strategies that emerge are exactly the conception of a masterplan for the whole area, linked to the articulated design of the public space. This masterplan articulates all the areas surrounding the station, the old and new urban references; it has an urban design which articulates to the adjoining neighborhoods, stimulates active facades and the landmarks; incentives to multifunctional and specific different densities. For example, the Town Center Link Bridge (2010) stands out, connecting the station to other trails – the area with the Olympic Park, through the Westfield Mall and the Athletes Village.

It was a masterplan within an “Urban Operation” that evolved in the case in the creation of an LLDC agency, designed as a political strategy to take advantage urbanistically to the maximum economic opportunity that were the 15 days of Olympic Games in the city.

A lot has been built, and there's a lot to build in the area of the station, but it's clear that up to this moment the role and importance of planning and the instruments used for the transformation of Stratford.

To the west of the station there was once a big empty place, now filled with a new meaning: a park surrounded by new projects and eventually, skyscrapers in a big part of its perimeter. It's challenging to know if the acting perimeter of the LLDC will transform in a city inside a city, an island of international constructions or as a Metropolitan Center integrated to the city of London and its residents.

It's not possible to evaluate the impact of these changes in the urban identity of the area, the British landscape and the appreciation of the local assets, but the spatial transformations that took place around an old transport node are evident, today as mobility hub as the nucleus of urban hub of Stratford, as the one used as a reference in the European study.

● **chapter 3**

Utrecht Central Station

- Netherlands

Space is the expression of society. Since our societies are undergoing structural transformations, it is reasonable to suggest that new forms and spatial processes are now emerging¹.

¹ CASTELLS, M. **A sociedade em rede**. MAJER, R. V. (trad.), 6. ed. São Paulo: Paz e Terra, 2010. p. 500 (our translation).

Chapter three will follow the same methodological path as the Stratford station. It is developed by the analysis of the categories node and place by the urban scales (city/metropolis – macro, neighborhood/district scale – intermediate, station area scale, local) and by the main urban instruments. The chapter ends with a summary of the main points placed within the central station of Utrecht. To close the second part of the thesis, the main design strategies identified in the areas of Stratford and Utrecht stations are summarized.

The city of Utrecht² is centrally and strategically located in your country. It is the fourth largest city in the Netherlands, behind only the capital Amsterdam, Rotterdam (which has the largest seaport in Europe), and the political capital Hague.

The current Central Station in Utrecht receives approximately 88 million people per year. The number of users of the Central Station is expected to increase to about 100 million by 2020, reason enough to expand the station³.

Thus, in view of the expansions of the station, the drastic urban transformations since the 1960s, and the possibility of implementing public policies at the national level, the Municipality realized that it would not be enough to expand the station node, but integrated urban development in the station area.

With this desire, the CU2030 project, an audacious urban project in which the Central Station is the nucleus of the urban development of its surroundings, is concretized, aiming to make the Utrecht Station area safer and more habitable, as well as to face the challenges of growth effectively sustainable.

At the new Utrecht Central Station, all forms of public transport are under the same building – concept of a single terminal – allowing smooth transfers between trains, buses, trams and bicycles, enabling high pedestrian accessibility.

In the renovation and extension of the new station there are shops and restaurants and other services situated on one side of the main hall, replicating a vibrant street; and on the other side it is possible to experience the light of the sun flow freely within the space, qualifying it. The new station is part of the urban fabric, with logical paths and a better connection between different neighborhoods of the city⁴.

2 Utrecht in Portuguese is translated by Utreque. Due to the translation into the English language and the lack of information about the city in the Portuguese language, it was decided to use its own name in Dutch.

3 Available at: <<http://cu2030.nl/page/en-ov-terminal>>. Access in: 20 nov. 2016. All information about Utrecht Central Station was taken from the official website CU2030 between November 2016 and March 2017. In order to avoid redundancies, the notes in this chapter have been omitted to repeat the dates of access.

4 Benthem Crowel Architects. Available at: <<http://benthemcrowel.com/>>. Access in: 04 feb. 2016.

The name CU2030 makes a pun with the English expression “see you”. See you in 2030: this future announced in the name of the project is searched now, so that strategic stations are not just nodes, but *node-place* stations, like cathedrals of a new era.

3.1 City Scale



[P0] Place

Utrecht is the capital and the most populous city in the province⁵ of Utrecht. It is located in the center of the Netherlands, and due to this privileged location is the most important node in the country, both road and rail (**figure 1**).

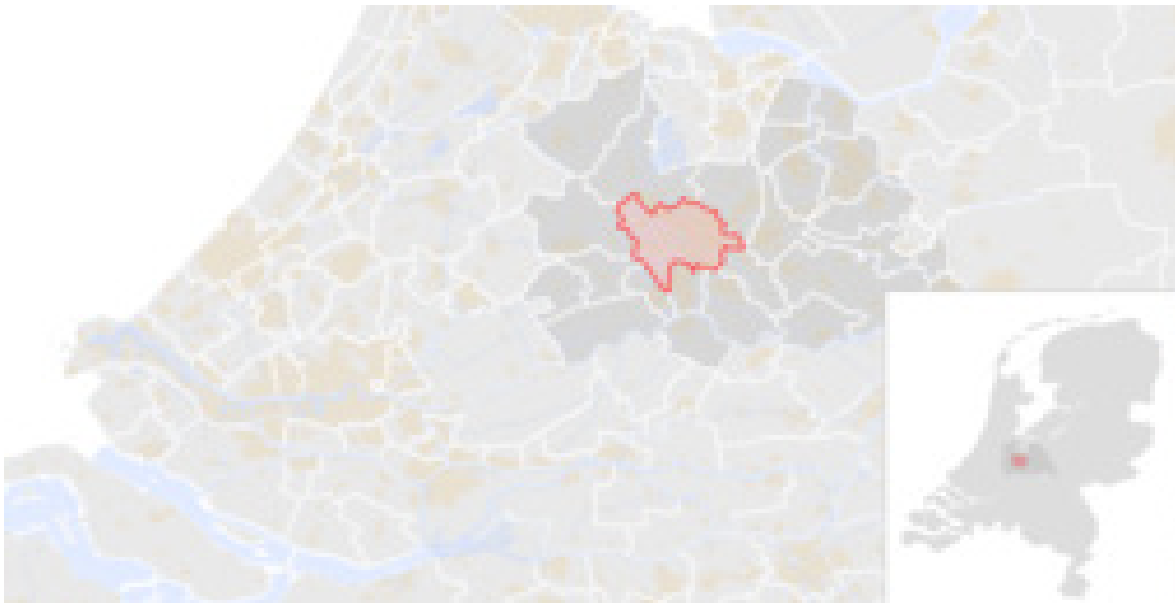


Figure 1

Location of the city of Utrecht in the Netherlands.

Source: Wikipedia, 2017.

⁵ The Netherlands, also known as Holland, has 12 provinces that represent the administrative layer between the national government and the local municipalities. The provinces of North Holland and South Holland are the best known.



Figure 2
The streets of Utrecht in the medieval quarter. In the background, Dome Tower.
Source: author, 2016.

Currently, there are 324,295 residents (fourth largest city in the country) and 230,069 jobs; with 17% in business services; 16% in healthcare and 13% in the creative sector. The main employers of the municipality are: The University Medical Center of Utrecht; The multinational bank Rabobank; The University of Utrecht; The French multinational company Capgemini; and the city hall. The city has an industrial port located on the canal built between *Amsterdam-Rijnkanaal*, and has led for several years the ranking of the European Competitiveness Report⁶.

Utrecht has the largest housing development in the country: in 2009, there were 129,281 houses, and in 2015, 147,512. The city currently has 330 thousand inhabitants, of whom 60 thousand have arrived in the last 10 years; and the projection for 2030 is 390,220 inhabitants (Municipality of Utrecht⁷

Utrecht is also a university town with 30,500 students at the University of Utrecht (founded in 1636), headquartered at *Utrecht Science Park*, a multidisciplinary research and training center.

In anticipation of increasing population, the strategy is to maintain the same surface, thus increasing its density and compactness, while preserving the existing green urban structure, in addition to optimizing the transport infrastructure.

Utrecht is also a historic city. In 1122, Utrecht was elevated to the city by the emperor Henry V, and in that same one began two important constructions: the wall that surrounded the city and the *Oudegracht*, the old canal.

Architecturally, the city stands out for some monumental buildings, cellars, old churches, especially the Tower of the Dome (**figures 2, 3, 4 and 5**). Culturally, there is the TivoliVredenburg (Contemporary Music Complex, revitalized by the CU2030), the Rail Museum and the Dutch Film Festival.

6 European Competitiveness Report. Available at: <http://ec.europa.eu/growth/content/european-competitiveness-report_en> Access in 04 feb. 2016.

7 Utrecht Municipality [*Gemeente Utrecht*], 2016.



Figure 3
The canals in the old center of the city.
Source: author, 2016.



Figure 4
The streets and squares of the old center of Utrecht.
Source: author, 2016.



Figure 5
Old downtown streets.
Source: author, 2016.

[N0] Node in the European network

As a European hub, the Dutch city of Utrecht is part of two corridors of the *Trans-European Transport Network*. Are they: Corridor 2 – Red – *Northsea Baltic*; And Corridor 6 – Orange – *Rhine Alpine* (figure 6).

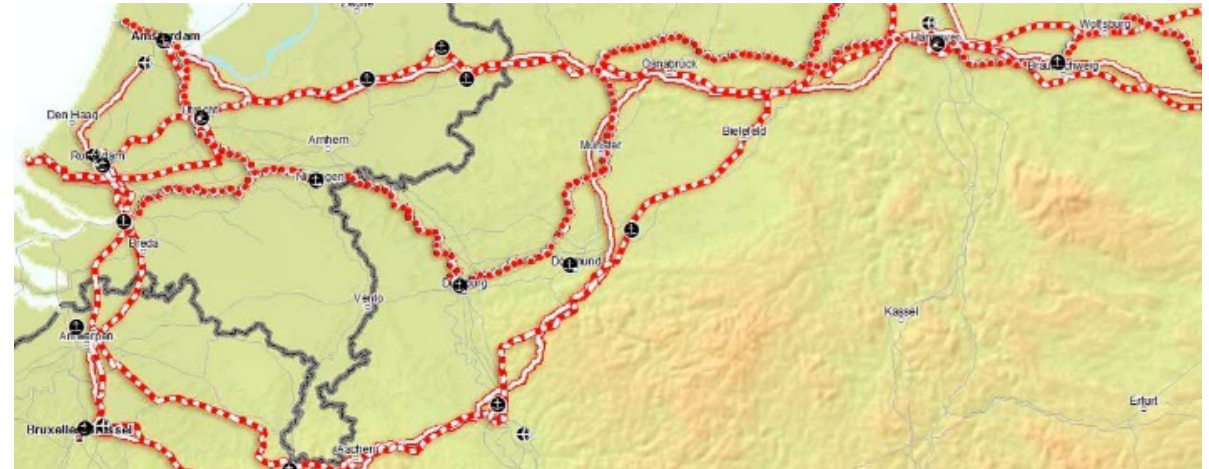
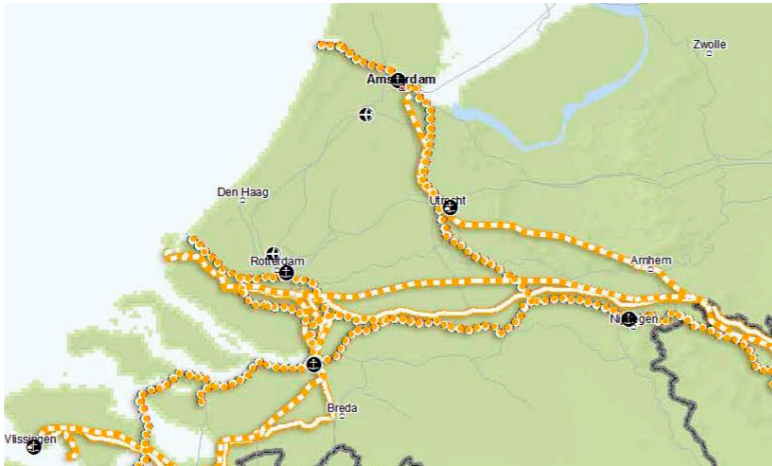


Figure 6

European connection. Corridor 2 – Red – *Northsea Baltic* and Corridor 6 – Orange – *Rhine Alpine* *Trans-European Transport Network*, respectively.

Source: *TEN-T Core Network Corridors*, 2016.

Transport Network in Utrecht

The Netherlands is recognized worldwide for the promotion of the intensive use of bicycles for urban displacement - in the city of Utrecht there are 245 km of bicycle paths -, and it is currently being discussed the construction of several highways that connect municipalities and are exclusive to bicycles.

The operation of passenger trains is managed largely by the NS – *Nederlandse Spoorwegen* [Dutch Railways: largest railway company in the Netherlands]. On the other hand, the management of the railway infrastructure network, as well as the responsibility for the construction and maintenance of the railway infrastructure in the country, is from *ProRail*, which disembarked from the NS in 2003. Both have their respective headquarters in Utrecht.

The Utrecht public transport system [U-OV – *Utrecht - Openbaar Vervoer*] provides local bus and trams services in the region⁸, where 300 buses and 26 trams feed the trunk network of the trains⁹, in search of the effectiveness of the concept of door-to-door mobility.

To aid the readability of public transport Utrecht is subdivided into eight areas, each with a color. Every day, 70,208 passengers depart or leave Central Station and there are 6,550 train departures per week¹⁰. In addition, it is estimated that one hundred thousand cyclists circulate daily through the city, in which 1 million bicycles are still calculated, representing the proportion of three bicycles per person.

The number of daily journeys related to work to / from the city is 444,560, with: 51% corresponds to the displacement per car, 15% by public transport; and 34% by other means (including bicycle). The displacements **to the city** of Utrecht per day are 122,660 trips; and the displacements **of the city** are of 80,600¹¹.

That said, the public transport network map summarizes the city's public transportation system (**figure 7**).

For use of public transport (*openbaar vervoer*) there is a unique card called *OV-chipkaart*. The journey is paid according to prices calculated according to the place of departure and arrival (kilometers rotated), being necessary the *check in* and *check out*. The card is national and can be used on the train, subway, bus and tram.

There is also a generation of public transport called the *Hoogwaardig openbaar vervoer - HOV* [Quality Public Transport]. The HOV serves urban and regional transport and aims to meet high requirements in terms of flow and average speed in trams and express buses¹².

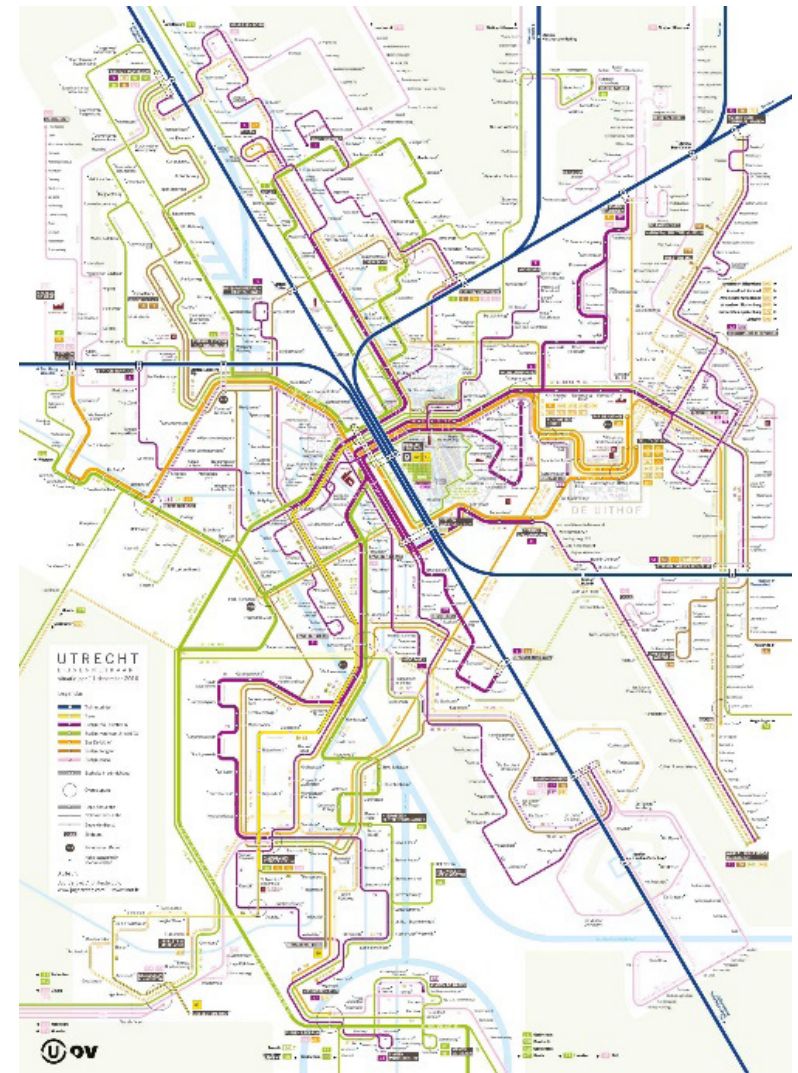


Figure 7
Map of the public transport network of Utrecht.
Source: U-OV, 2017.

8 Available at:<<https://u-ov.info/plan-mijn-reis/visit-utrecht-area/>>. Access in 14 mar. 2017.

9 It should be noted that there is no subway system in the city.

10 Utrecht Municipality [*Gemeente Utrecht*], 2016.

11 Utrecht Municipality [*Gemeente Utrecht*], 2016.

12 There is a HOV, for example, between Central Station and the university.

3.2 Scale of the neighborhood / Station Area



[P1] Place

The city of Utrecht is subdivided into ten neighborhoods, each with its own Council. The central station is located immediately on the edge of the old medieval canal, and between what is here called New Center of Utrecht, or new **Urban Hub**. Most of the CU2030 project is part of the *Binnenstad* [City Center] and a small portion of the *ZuidWest* neighborhood [Southwest], as shown in **figure 8**:

The early 20th century station (**figures 9 and 10**) and the surrounding area were demolished in the postwar period (the 1960s and 1970s) and being radically changed.

In the 1970s, based on modernist concepts, a new station was built (now with the station design under the rails), a *shopping mall*, *Hoog Catharijne*, in brutalist style and a Vredenburg music center¹³; In addition to the transfer of the exhibition center (*Jaarbeurs*) from the east to the west side (or from the city side to a peripheral area) and the conversion of part of the old canal structure into a high-flow for automobiles (*Catherijnebaan*) **figures 11 and 12**).

The huge shopping and office complex, which encompasses cultural, sports and housing facilities (here called HC – *Hoog Catharijne*), was gradually built and considered a success in the economic arena¹⁴.

It is necessary to emphasize the role of the implantation of the complex *Hoog Catharijne* in the urban fabric slightly touching the medieval territory. The idea came from the municipality aiming to expand the old center/central area¹⁵. In 1963, the town hall incorporated the idea of

13 Hertzberger H., *Lições de Arquitetura*. 3 ed. São Paulo: Martins, 3 ed. 2015.

14 BERTOLINI, L. & SPIT, T. *Cities on Rails: The Redevelopment of Railway Stations Areas*. London: E & FN Spon, 1998.

15 In 1962, an investor approached the City of Utrecht to construct a restructuring plan for the station area motivated by the change of the exhibition center (*Jaabeurs*) from east to west of the station. It was also proposed to build a shopping mall HC (Hoog Catharijne) along with a ring road, to the east of the station. In 1964, the contract was signed and work began, with increasing of popular opposition to the private urban intervention plan. In 1968, the works are resumed, and in 1970 it is partially inaugurated. In 1973, Princess Beatrix inaugurated the main part of the project: 75,000m² of shopping areas and offices BERTOLINI, L. & SPIT, op. cit.

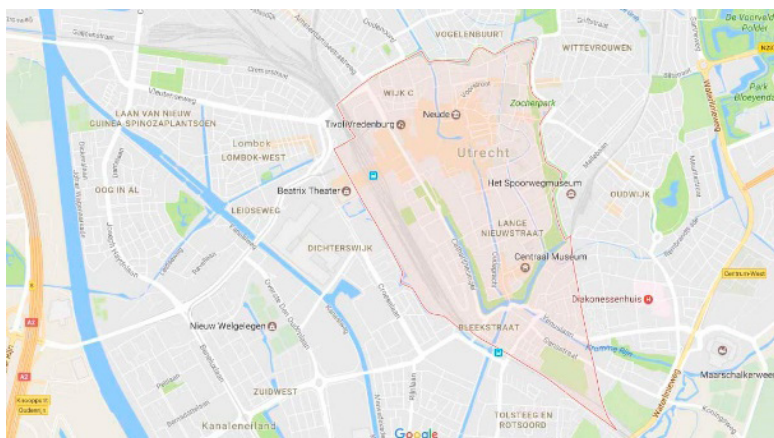
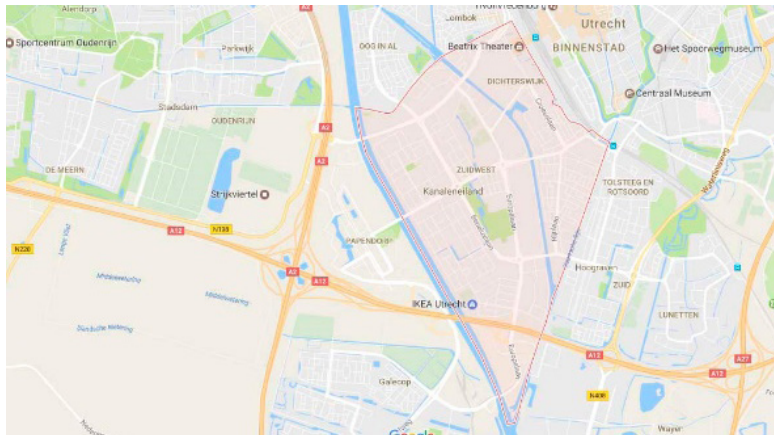


Figure 8
Location of neighborhoods of *Zuidwest* and *Binnenstad*.
Source: Google Maps, 2017.



Figure 9
Old station before the first major reform in the 60's.
Source: CU2030, 2016.



Figure 11
Space with predominance for circulation of automobiles, viaducts and "underpasses", the station area.



Figure 10
Facade of the old station, tram lines, wagon, bicycles and pedestrians on the same level and space.
Source: CU2030, 2016.



Figure 12
The brutalistic facade of the HC mall before the CU2030 project.
Source: Google Earth, 2016; CU2030, 2016.



Figure 13
The station after the first major renovation and its respective surroundings in the west sector. And the west façade in 1972.
Source: CU2030, 2016.



building the mall and garages around the station, as well as improving the crossing of the *Catharinesingel* canal.

In 1966, an agreement was reached with *Ducht Rails* for this extension to reach the train station and the crossing of the rails (**figures 12 and 13**). For that, it was necessary to demolish the train station and other buildings, some of them with historical-cultural value.

In the west area, adjacent to the station, there was, for example, the *Van Gend & Loos building* – 1984 (**figure 13**); which was later released, providing space for expansion of the railway lines.

It was part of this complex, four purchasing wings, the train station, the *Vredenburg* music center and a space for exhibition center (*Jaarbeurs*).

This project suffered intense popular demonstrations against the implantation of this great infrastructure of purchasing in the urban fabric and of transport (**figure 14**). However, in 1973 the largest mall in Europe was opened at the time, under intense protests (**figure 15**).



Figure 14
Street access to the station (east) and interior of the Utrecht Central Station before the renovation and extension of the CU2030.
Source: CU2030, 2017.



Figure 15
Urban insertion of *Hoog Catharijne* and protests on inauguration day, 1973.
Source: Wikipédia, 2017. Available at: <https://nl.wikipedia.org/wiki/Hoog_Catharijne>. Access in: 11 feb. 2017.

It was agreed between the Municipality and the investor that the mall would be the main connection between the station and the city center. Originally, there were more street-level stores that were not survived because of the presence of homeless people and drug users attracted by the heating of the environment.

This complex has always been criticized for its complexity of connection with the station, the brutalist architecture and its image associated with drug users and, therefore, to an unsafe and unpleasant place.

Due to its location, between the station and the medieval center, the HC forced pedestrian flows through the maze of shopping malls and through an intense traffic of cars. This urban context over the years has created a paradox of difficult resolution: high concentration of people and functions, demand for ever-increasing transport, to the detriment of habitability and spatial harmony in the surroundings of the station.

It is on the bulge of this complex spatial antecedent - the physical separation between the station area and the historic city center into two distinct and non-harmonic parts, the maintenance delay and neglect in the station area, as well as the constant increase of passengers and of the city itself - which, after years of debate and several *masterplans*, emerges the CU2030 project, whose process will be detailed below.

The CU2030 project aims to build a new and renovated area that seeks to address this space complex: **connection between the “two cities” to form a coherent center**; Improvement of the quality of the public space, with habitability and safety in the vicinity of the station; return of water to the old canal; expansion and design of a terminal station integrated to all modes and connected to the urban fabric; and the densification of the soil, attending to a growing demand for new spaces and diversification of activities, without stimulating urban sprawl and land use.

I will first highlight the role that the *Hoog Catharijne* complex aims to have in the city (one of the main agents of the CU2030 project) because it is an important **element in the renovation of the station area**. The current investor in charge of the complex, Corio, aims to make the remodeling of the mall a space for a meeting point, in which one can try and see something that makes the **consumption cathedral** a competitor to the height of the aggressiveness of the internet sales. The project also aims to think globally about the conception of public spaces and their relations with buildings, the great station, and the movement of people, converging with the concept of city as a place of meeting and exchange for all.

In relation to the Exhibition Center (*Jaarbeurs*), in 2014 an agreement was designed with the Municipality. The premise is that the Jaarbeurs concentrate their activities on smaller territory and that the city of Utrecht rebuilds the liberated parties. However, to enable this redevelopment, the structure for the future of the Exhibition Center is being prepared.

[N1+N2+N3+N4+N5] Transport system lines

Utrecht Centraal is the city's main train station (figure 16). By the 1994 *Rail 21* program, the station had undergone extensive renovations, extensions, and adaptations, such as increased ramifications of rails, platform extensions, tunnels for cars and bicycles, a new compact bus station, new parking lots for cars, and access rationalization for automobiles¹⁶.

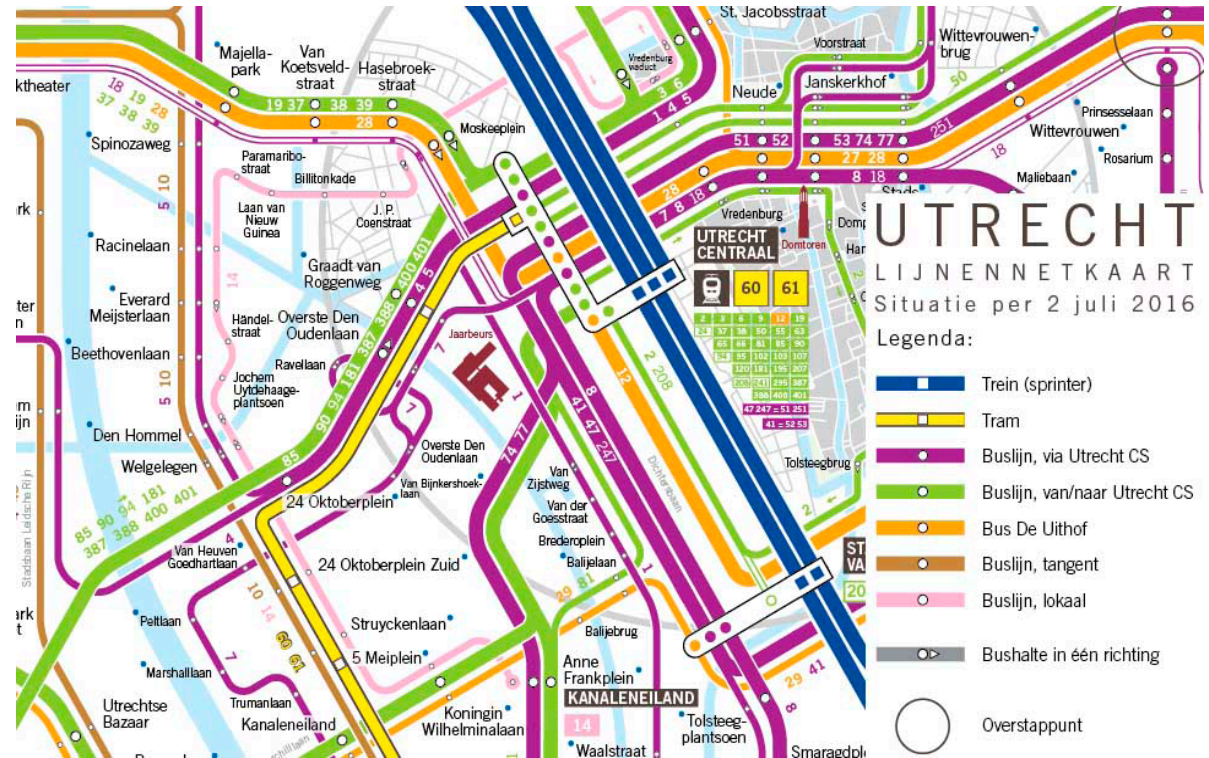


Figure 16
Central zoom on the public transport network map.
Source: U-OV, 2017. Available at: <https://u-ov.info/plan-mijn-reis/lijninformatie/lijnnennetkaart/#14/52.0900/5.1200>. Access in 14 mar. 2017. Treatment of the author.

Since the former building and its surroundings were unable to cope with the increase in passenger numbers, in the CU2030 project the Utrecht Central Station **was rebuilt three times its original size** to house a new station complex integrated between trains, buses, trams and bicycles.

16 BERTOLINI, L. & SPIT, T. *Cities on Rails: The Redevelopment of Railway Stations Areas*. London: E & FN Spon, 1998.

The Central Train Station connects with surrounding stations through a new generation of smaller trains called *Sprinter*. In the official city map (**figure 15**) they are identified by the blue color.

By means of the train there are also the regular lines of the intercity service (IC) for the main cities of the country, with night service; and direct connection to *Schiphol* Airport, the largest in the country. There is also the *International InterCityExpress* (ICE) service for neighboring countries.

As mentioned, the Utrecht region is subdivided into eight areas, each having its own distinctive color and symbols, which improve the readability of buses and trams in their destinations (**figure 17**).

The main medium of **public transportation** within the city is the **bus** operated by the company U-OV. There are approximately 55 lines in the Utrecht region¹⁷, including night lines. In some parts of the city there are exclusive lanes for bus movement. In the official map of the city, the five bus lines (*Buslijn*) are identified by different colors, depending on the region served by the line.

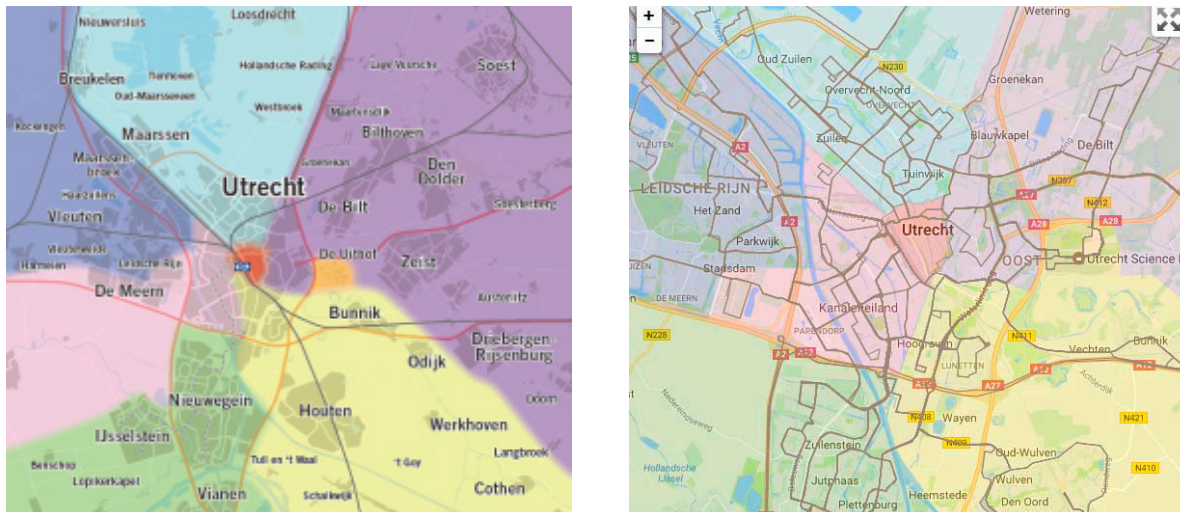


Figure 17
The areas of origin/destination in the region of Utrecht identified with colors in the territory.
Source: U-OV, 2017.

¹⁷ U-OV. Available at: <<https://u-ov.info/plan-mijn-reis/lijninformatie/lijnfolders/>>
Source: U-OV, 2017. Access in: 01 feb. 2017.

In the eastern area, prior to the urban renewal of the CU2030, there was a bus terminal that is under reconstruction along with a new housing building on it. Currently there are platforms for boarding / disembarking for buses under the main structure of the station in the west sector, immediately next to the train lines. There is a second temporary terminal on the west side, adjacent to the station, along with a *tram* terminal. There is a bus stop which concentrates the arrivals and departures of international connections buses adjacent to the *Jaarbeurs / Beatrix Theater* building (west sector) located at *Croeselaan Street - 6*

There are two lines of **fast trams** (*Utrecht sneltram*) operating in the south direction of the city, connecting the suburbs *Nieuwegein Zuid* and *IJsselstein* (9292, 2016). In the map of **figure 15** the *Utrecht sneltram* are identified by the yellow color.

It is under construction the extension of the current tram line in the east (**figure 18**), passing by the station, bordering the center and following to the university city (*Science Park De Uithof*), since some studies indicate that the existing bus structure Will not support the growth of users. The start of the operation is predicted for 2018 of this new section of tram. By 2020 it is estimated that 45 thousand people a day will be transported between the central station and the university, in a distance of 8 km.

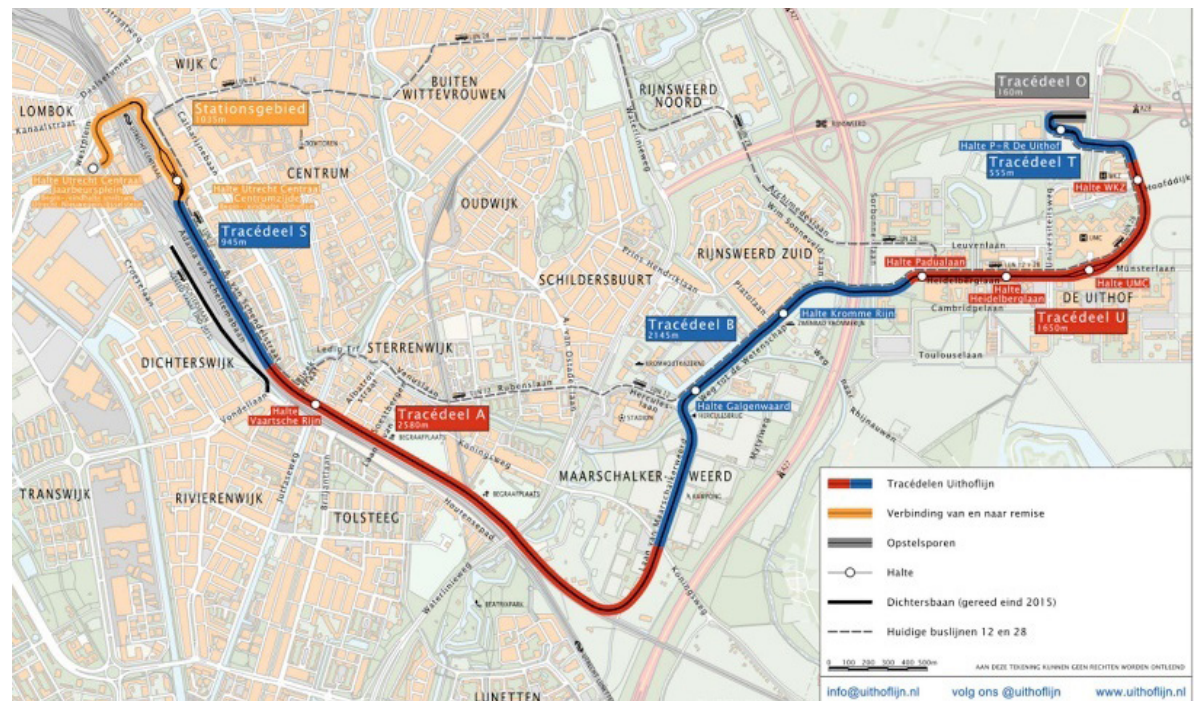


Figure 18
Extension of the tram line to the University City of Utrecht.
Source: Uithoflijn, 2017.

On the **U-OV website**, you can obtain detailed information on the location and direction of the buses. Dynamically, when you move the mouse on the white balls, which represent the stops, you can see all the lines that pass through it. The same happens when passing the mouse over the gray lines, with a unique detailing of that line. The color of the map, consistent with the colors of the bus and tram lines and the concentration of the lines (“rectangular” terminals) on the platforms parallel to the train line and in the area adjacent to it, is also highlighted (**figure 19**).

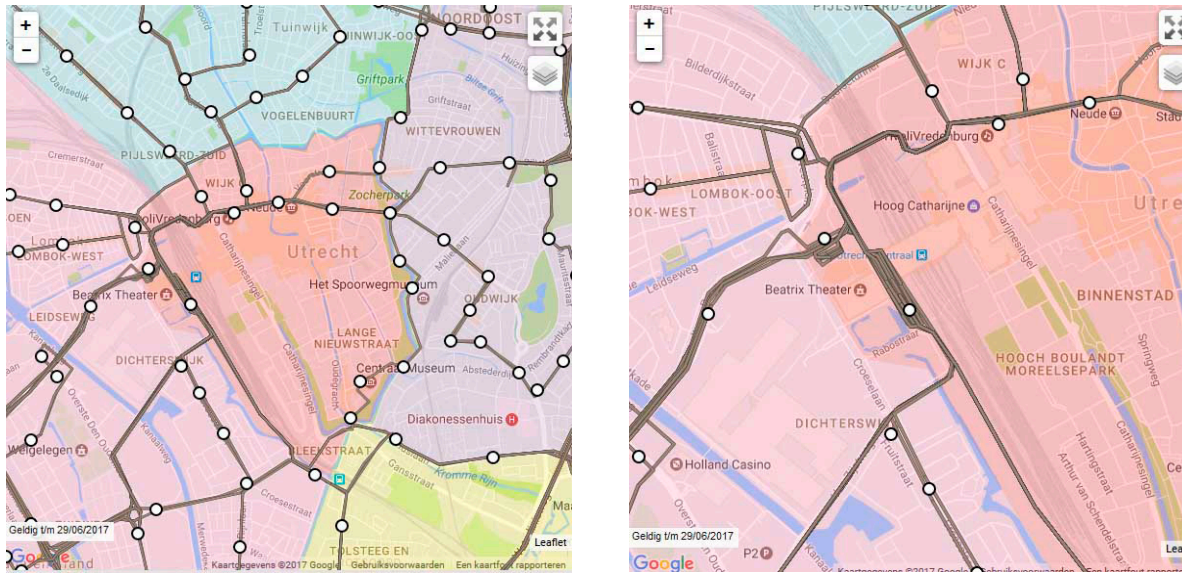


Figure 19
Detailing of the bus/tram lines and stopping points in the surroundings of the center and zoom in the Central Station, compatible with the urban fabric.
Source: U-OV. 2017. Available at: <https://u-ov.info/plan-mijn-reis/lijninformatie/lijnnennetkaart/#15/52.0899/5.1101> Accesso em: 07 feb. 2017.

There are several **bicycle paths** in the surroundings of the station and private and public parking, covered or not. Public bicycles can also be rented at four points near the station by means of a public transport card (OV-chipkaart). These possibilities are part of the stimulus to improve the *door-to-door* transport policy, complementing the train or bus trip to the Central Station. In the **figure 20**, it is possible to visualize the location of the parking / bike rental points in the year of 2017.

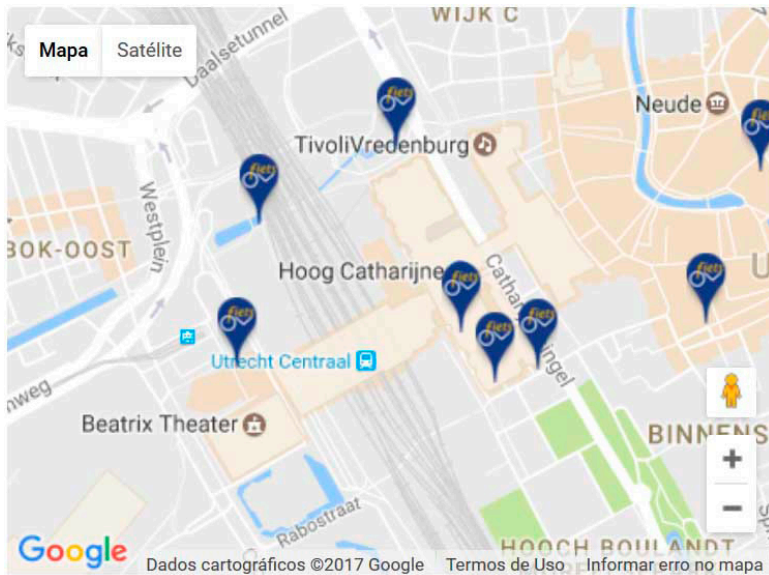


Figure 20
Location for public bicycle rentals (OV-fiets)
Source: OV-fiets, 2017. Available at: <http://www.ov-fiets.nl/huurlocaties?locatie=utrecht>. Access in 14 mar. 2017.

Utrecht was considered, along with Amsterdam, and Eindhoven, one of the five best cities to pedal in 2015¹⁸. With the remodeling of the station will be **33 thousand points** of internal parking for bicycles, the first to be ready was the one located in *Jaabeursquare*, under the staircase (west side) in 2014. The option for internal parking is precisely to free the public space, making it more attractive.

As the east is the old medieval quarter and its canals, the main access road by car is on the northwest side of the station by *Croeselaan avenues*, *Graadt van Roggenweg* and *Vleutenseweg*. The former expressway between the mall and the medieval city was then suppressed and maintained only a local circulation in both directions.

3.3 Process: the instruments and projects



3.3.1 New Key Projects

The Dutch territory is covered by physico-spatial plans. In the Netherlands there are three levels of government: national, provinces and municipalities. Within the scope designed for each sphere, the national government is responsible for outlining the spatial plans formulated by specific reports – *National Physical Planning Key Decision*. From it, the coordinates that guide the regional plans of the provinces (*streekplan*), the plans in the scale of the municipalities (*structuurplan*), and those of zoning (*bestemmingsplan*), the latter being one of the most important of the three levels¹⁹.

The Netherlands, with a view to the new European HST (High Speed Trains) network and the new possibilities that the link would create for urban development around the stations, revise in 1997 a project called *New Key Projects or Nieuwe Sleutelprojecten* – NSP.

According to the national government, *New Key Projects* are projects where **not only the railway station is transformed** (for the arrival of the high-speed line), **but also the environment,**

¹⁸ The 2015 Copenhagenize Index. Bicycle-Friendly Cities. Available at: <http://copenhagenize.eu/index/index.html>. Access in: 01 mar. 2017.

¹⁹ BERTOLINI, L. & SPIT, T. *Cities on Rails: The Redevelopment of Railway Stations Areas*. London: E & FN Spon, 1998.

main differential in relation to the old project. Thus, the initiators aim: a) to improve the physical and economic structure of the country, providing new jobs; (B) develop better management of increased mobility; C) lead to an intensive policy of land use in urban areas; and (d) improving the socio-economic vitality of urban areas²⁰.

This plan involves six Dutch cities (Amsterdam South Axis, Rotterdam, The Hague, Utrecht, Breda and Arnhem) and is managed by the *Ministry of Housing, Spatial Planning and the Environment – Ministerie VROM*] In the quest to reconcile public interests (Municipality) with private agents in the revitalization of station areas²¹.

The process of decision and interlocution between governments of different scales took place in four stages:

- **Exploration:** national government check whether the proposed site initially receives the status of a *New Key* project;
- **Inquiry:** local authorities and national government together outline the content and financial aspects of the project to reach an agreement of intent;
- **Elaboration of plans:** the municipality elaborates a masterplan that will be later examined by the national government;
- **Financial agreements:** elaboration of agreements for the implementation of public-private partnerships and definitive conception of the national government²².

The same authors point out that *New Key Projects* was a new way of combining the efforts and financing of different levels of government with the private real estate development, that is, a strategy to integrate the different agents that make the diverse decisions necessary in projects large and complex.

Majoor and Schuiling also point out that the municipality is the main administrator and directly responsible for the development of the *New Key Project* in its region, since it has a leading role in the *masterplan*, receiving the subsidies, establishing partnerships with the private sector and signing agreements with the central government. It is also noteworthy that *New Key Projects* is an interesting attempt to establish extremely complex connections between a national level plan for infrastructure improvements and redevelopment projects for local stations.

20 Ministry of VROM (*Volkshuisvesting, Ruimtelijke Ordening en Milieubeheer*), 2006.

21 MAJLOOR, S., SCHUILING, D. New Key Projects for station redevelopment in the Netherlands. In: **Railway Development: Impacts on Urban Dynamics**, 2008. p. 101-123.

22 MAJLOOR, S., SCHUILING, D., op. cit., p. 109-110.

With regard to the development of public policies in the neighborhood of national stations, the authors Bertolini and Spit²³ highlight the following plans:

- 1986: *Verdichting rond stations* [*Densifying around stations*], putting compact cities and public transportation in an integral way;
- 1988/1991: The *Fourth Report in Physical Planning / Extra* discussed mobility and urbanization and the consequences of car dependence on cities, such as pollution, energy and land consumption;
- 1990: The *Second Transport Structure Plan* formulated the *Rail 21 programme* (1994), which envisaged the increased use of trains and the importance of railroad investments;
- 1997: *Urban Key Projects*, which focused on the modernization of high-speed stations and the development of adjacent areas on the municipal scale, as it envisioned **the urban nodes as representatives of the propulsion engines at the core of local urban development**. This program encompassed the stations in the cities of Amsterdam, Rotterdam, The Hague, Utrecht, Arnhem and Breda, as mentioned above.

3.3.2 The long process for the birth of the CU2030 project

At the municipal level, it was years of political and technical discussions among all the agents involved in how best to transform the Utrecht station area.

In the 1970s, since the construction of the *Hoog Catharijne* (HC) complex, which mainly involved the largest *shopping mall*, as well as offices, cultural, sports, and housing facilities, there were ideas for improving the Central Station area. Despite the economic success of the HC complex, urban issues of spatial integration, urban/architectural design and security of public spaces have failed²⁴ creating a difficult space erosion between Central Station and the city center/Medieval town.

The HC complex deprived the city of a direct relationship with the station by coupling itself directly in the station's architecture to the detriment of public spaces – such as the suppression of the canal and the construction of road rings on the ground floor of the immediate surroundings of its enterprise.

23 BERTOLINI, L. & SPIT, T. *Cities on Rails: The Redevelopment of Railway Stations Areas*. London: E & FN Spon, 1998. p.87-88

24 BERTOLINI, L. & SPIT, T. *Cities on Rails: The Redevelopment of Railway Stations Areas*. London: E & FN Spon, 1998.

On the other hand, Ottens and Ter Welle-Heethuis²⁵ emphasize that the HC avoided abandoning the functions of the old center and complemented the tertiary activities in the station area and the center, which was not Competitive market. They also affirm that the number of dwellings in this region has radically reduced due to specialization in commerce, new flows, passers-by and new night dwellers (homeless and beggars): “*The monofunctionality of HC has produced other monofunctionality. Because HC is not a pleasant place to be, hotels, restaurants and cafés have multiplied in the historic centre, as well as specialized shops*”²⁶.

Also part of this process of spatial transformation in the area of the station was the *Jaarbeurs* Exhibition Center, which throughout the 60s had transferred its facilities, which were in the center of the city on the east side, to the then peripheral area on the west side and along the rails.

The main points of this process (1986-1997) posed by Bertolini and Spit²⁷ are:

- **Utrecht City Project (1986):**

The Municipality, aware of the urban failure of the implementation of the HC complex in the territory, the separation with the medieval city and station, the insecurity created in the surrounding public spaces and increasing criticism, creates the *Utrecht City Project*, later changed to *Utrecht Centrum Project* (UCP).

The project aimed to solve the architectural and urban design flaws of the station area with the elimination of barriers and the “island effect”. It was also intended to encompass the improvement of the quality of the public space, the diversity of functions and the reduction of car dependency, as well as to enhance the role of the economy in the tertiary sector²⁸.

The plan presented was considered weak, and was not signed by those responsible for the HC project. The train company (NS – *Nederlandse Spoorwegen*) had financial considerations regarding viability.

25 Ottens and Ter Welle-Heethuis apud Bertolini and Spit, *Ibid.* p.101.

26 *Ibid.*, p. 101.

27 BERTOLINI, L. & SPIT, T. **Cities on Rails: The Redevelopment of Railway Stations Areas**. London: E & FN Spon, 1998. 104.

28 BERTOLINI, L. & SPIT, T, *op. cit.*, p.93.

- **Masterplan (1993):**

New private partners entered in the elaboration of the masterplan presented, but the three main agents²⁹ had little representation (HC – shopping, NS – train, *Jaabeurs* – exhibition center).

Thus, the final product presented in this cycle was, a *spatial-functional concept (Ontwikkelingsmaatschappij)*, also considered to be weak despite intense transformations in infrastructure and a robust program of activities.

As a provocation, a coalition of residents and environmentalists BOCP (*Bewoners Overleg City Project*) published their own analysis, in which they highlighted their suggestions for the area, based on their needs and not only on the physical-financial balance of the project. Are they:

- The Project had to be multifunctional.
- The public spaces must be not dominated by large-scale facilities.
- The plan must reflect the needs of the area, not trade-offs between what is imposed by the central government and what is desired by developers.
- The impact of traffic on the quality of public spaces must be more seriously considered.
- Natural features must be protected and expanded.
- Noise caused by trains had to be controlled at the source so that residential areas would not have to be confined to marginal locations.
- 10% of the dwellings must be social housing including apartments for disabled persons.
- Existing buildings and structures that were in good condition had to be put to better use and not demolished³⁰.

- **Spatial-Functional Concept (SFC) (1995)**

At the end of 1993, due to criticism of the *masterplan*, a *Spatial-Functional Concept (SFC)* was proposed, which deals more with urban design issues than with discussions of what should be built (program). In 1995 it is presented with the general objectives of “*realization of high-quality*

29 Briefly is set these names, HC - shopping, NS - train company, Jaabeurs - exhibition center, as principal representatives of their respective agents to understand them as simple unit. However, it is important to emphasize that the complexity of these companies is greater than described here, for example, the NS train company itself, which was divided over the years into NS and ProRail, with different purposes activities and with characteristics that are assimilated to the private sector after the fission. Or even about the complexity of all private investors and partners that have been developed / created in private ventures.

30 BERTOLINI, L. & SPIT, T. **Cities on Rails: The Redevelopment of Railway Stations Areas**. London: E & FN Spon, 1998. p. 102.

public spaces; strengthening of the economic structure of the city and region; and concentration of labour-intensive employment around the public transport node.”³¹. It is also a premise of the functional question that the modal node in the project should be the integrating element. For this, the multiplicity of functions was fundamental, which also subsidized economic issues. And as a strategy, development was phased within subareas.

- **Solutions Guidelines** (*oplossingsrichting*) (1996)

However, some delicate points had not yet been resolved. Only in 1996 the dilemmas for the development of the area are confronted. It is the first time that HC, *Jaarbeurs*, NS and Municipality have come together to deal directly with the core of the project and its challenges in a holistic way, especially the space function of the “ground floor” in the buildings – that is, what Which could be demolished.

As a starting point, they prepared a diagnosis of the area, which considered the potentialities: demands by offices due to the good location of the station in the Dutch network, the popularity of the HC and the historic center and the international reputation of the *Jaarbeurs* exhibition center); and the frailties: wide perception of unsafe and unpleasant areas, ambiguity of what is public and private and the connections between the train station, HC, exhibition center and city center.

They then developed guidelines for the design of the public space. Parts of the HC would be demolished and others drastically modified. *Jaarbeurs* would diversify into cultural and entertainment activities. And NS would devise a single terminal; A knot encompassing all modes³².

Thus, this plan presented a configuration in which all partners would have significant advantages. It would keep the route of passage through the mall to the center of the city, without the design of the former “labyrinth”, but still in the first level (premise of the HC). A station to access the station and more open spaces inside the mall would also be implemented. On the west side, there would be activities whose spaces would not be compatible with the urban fabric of the old city, and which would need wide access. It was explicitly requested a design guideline: design of an urban boulevard that would solve the dilemma of habitability and accessibility.

A provisional urban design plan was then drawn up, summarizing the discussions to date, the VSO - *Voorlopig Stedenbouwkundig Ontwerp* (1997).

After consultation and detailing, the *Definitief stedenbouwkundig ontwerp* [Final urban project] and the *Bestemmingsplan* [Local binding plan] were elaborated to be officially debated and taken for approval by the Council of the Municipality.

³¹ Ibid., p. 103.

³² Ibid., p. 104.

Thus, it can be seen from the description of this process that, in the face of the remnants of the trauma of the transformation that occurred in the heart of the Netherlands through a *top-down* decision of the government in the 60s, there was a long institutional process for the development of the area of the station, which also suffered intense popular demonstrations and political pressures contrary to the projects presented. The table by Bertolini and Spit³³ summarizes this process well:

Phase 1: Hoog Catharijne, 1962-1973	
1962	A property developer proposes to the municipality an integral restructuring plan for the station area, to have the name of Hoog Catharijne (HC)
25 February 1964	Contract between the developer and municipality signed
	Public Protests
1968	Construction of HC starts
23 September 1973	Inauguration of the main component of the plan: a 75 000m ² shopping centre
	Economic success but public criticism
Phase 2: rise and fall of the public-private partnership, 1986-1993	
1986	The Utrecht City Project (UCP) , a new initiative for the station area, is launched by the municipality, the Algemeen Burgerlijk Pensioenfonds (ABP), the Jaarbeurs, and the nation railway company NS
1988	An ' agreement in principle ' is reached by the four partner Public concern
May 1993	Master plan is presented. ABP does not sign it; NS signs with reservations
	Contrasts within the partnership
Phase 3: rise and fall of municipality – developers company, 1993-1995	
December 1993	A framework agreement for the establishment of a development company incorporating the municipality and three property development firms is approved by the city council

Table 1
Utrecht Centrum project, summary of the main phases.
 Source: BERTOLINI, L. & SPIT, T. **Cities on Rails: The Redevelopment of Railway Stations Areas.** London: E & FN Spon, 1998. p. 100.

³³ BERTOLINI, L. & SPIT, T. **Cities on Rails: The Redevelopment of Railway Stations Areas.** London: E & FN Spon, 1998. p. 100.

	Former partners are out of planning process; public concern continues
June 1995	The development company publishes a ' spatial-functional concept '
	Contrasts with former partner and public not solved
Phase 4: rise of a stakeholders platform, 1996-1997	
February 4:	After a (destructive) joint evaluation of the spatial-functional concept, an administrative platform is started, involving the original four key actors
June 1996	The solution guideline is published
	Elaborations and consultations
February 1997	The provisional urban design plan is presented
	Public reactions
End 1997	Expected presentation of a definitive urban design plan to the city council
Phase 4: implementation, 1998-2008	
1998	Hoped for constructions start, so that the whole project could be built, in phases, by 2008

However, there were still many controversies and political pressures, such as those that came from a party that opposed the plan as a megalomaniac. This opposition party eventually won the local elections and succeeded in stopping the development plan, with the exception of the station itself³⁴.

The political solution was finally adopted in 2002 after holding a referendum to choose between two conceptual *masterplans* for the area: Plan I (**Extended**) and Plan A (**Compact**).

The 2002 referendum resulted in the preference for Plan A (**Compact**), with fewer offices and shops, more housing and two main axes instead of one³⁵. And in 2003 the city of Utrecht finally developed the masterplan for the station area, close to the premises of the 1996 *Solutions Guidelines* for connections and public spaces.

³⁴ MAJLOOR, S., SCHUILING, D. New Key Projects for station redevelopment in the Netherlands. In: **Railway Development: Impacts on Urban Dynamics**, 2008.

³⁵ MAJLOOR, S., SCHUILING, D., op. cit.

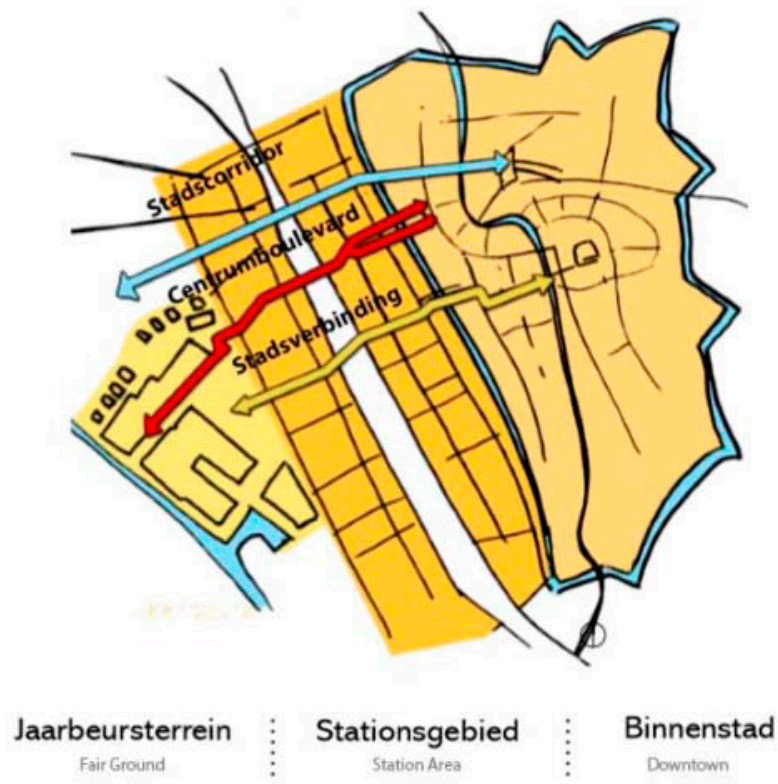
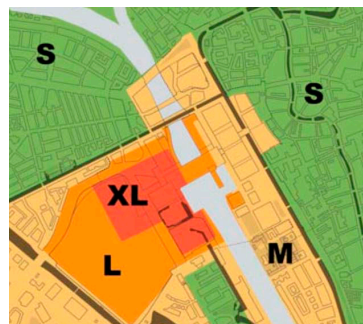


Figure 21
Diagram of CU2030 urban design synthesis and of the intervention areas, with emphasis on the main urban connections.
Source: *Ector Hoogstad Architecten*, 2012, in CU2030. Available at: http://cu2030.nl/pivotx/templates/cu2030/images/downloads/stedenbouwkundigplan_stationsplein_oost_december_2012.pdf/ Access in 04 fev. 2016.

Figure 22
CU2030 Project Density Diagram.
Source: Gemeente Utrecht, *Masterplan*, 2003, p. 37.



Another factor that provoked the renovation of the station area was the withdrawal of the urban landscape from large bicycle parking areas, seen as an obstacle in improving the quality of the public space. To overcome this challenge, an area of 8,200 parking spaces was projected to the west and 14,000 thousand places to the east. In this region was projected the largest bicycle garage, with 12,500 places available in a single space (**figure 21**).

Thus, the project of the Utrecht station area (*Stationgebied Utrecht*), denominated CU2030, has consolidated itself as an urban project that reformulates and transforms the urban spaces in the station area.

The investors of the urban project are: *Gemeente Utrecht* (City Hall); *ProRail*; *NS Real Estate*, *Jaarbeurs*, and *Hoog Catharijne Owner Corio*, being the last three of the private sector.

The main designers of the masterplan were William Smits, Frank van der Zanden of the city of Utrecht, and Henk Bouwman of the *HKB Stedenbouwkundigen*.

Once the partners have been defined, the funding issues, the area to be redeveloped, the public debate and the design of a communication channel, it is now possible to detail the final project, delimited in three main areas of the master plan (**figure 22**):

1. City center/medieval town, to the east of the station;
2. The Central Station area;
3. New center – exhibition area, west of station.

Therefore, having as antecedents a high spatial negligence in the area of the station; The physical separation of the (medieval) historic center of the city and the station area into two separate parts; An increasing number of passengers; And a growing city, the CU2030 project aims to connect the “two cities”, thus forming a coherent center, especially in relation to the ground level, the level of public spaces, the desire to get water back to the old canal, the Improvement of public space, habitability, clarity of travel and safety, integrating these new spaces into the urban network (CU2030) (**figure 22**).

The highest densities (**figure 22**) are concentrated immediately to the west of the station, diluting towards the new city, while to the east are intermediate densities when compared to the west, and larger densities compared to the old city.

The CU2030 Urban Project aims to make the station area a pleasant place to access and stay, making it comfortable again. For this purpose, the guideline is to create not very large public spaces and buildings that fit the scale of the area. The *Grid Map* demonstrates the new structure of the station area, whose boundaries are specified between the public and private spheres (**figure 23**).

The masterplan aims at the public space a good relationship between traffic and convivial space, with clear boundaries and space transitions, and a strong identity of the public space.

The planned activities program (**figure 24**) covers housing, work, shopping, entertainment and movement. They reinforce the need to influence the use of the station area in order to achieve the objectives of improving the public space.

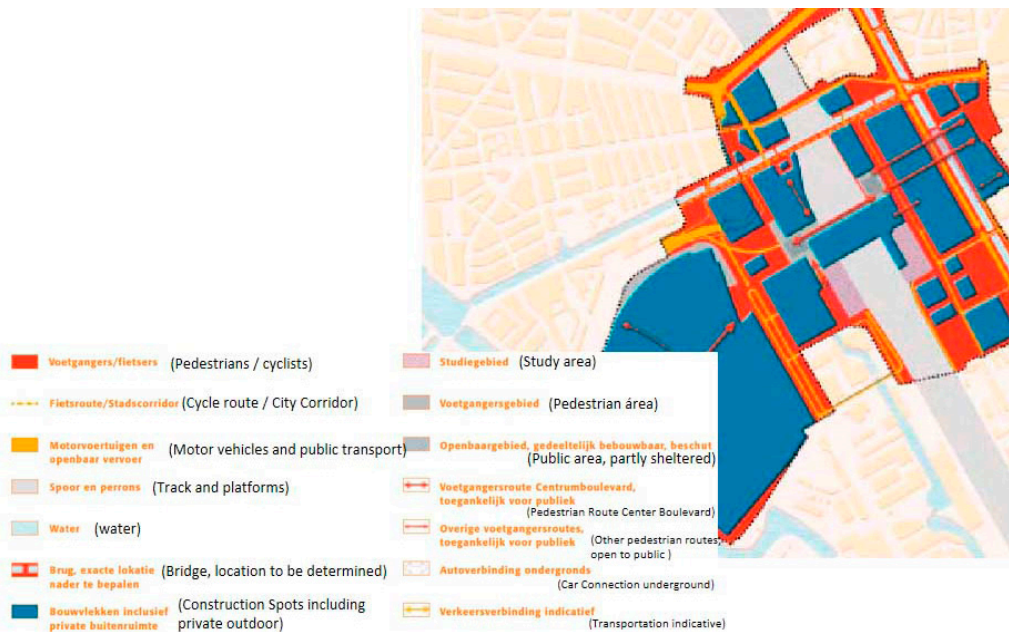


Figure 23
Grid Map (*Rasterkaart*)
Source: Utrecht Municipality [Gemeente Utrecht], *Addendum-masterplan*, 2005, p. 6. Available at: <http://cu2030.nl/images/2014-03/1.12-addendum-masterplan.pdf>. Access in: 11 feb. 2017.

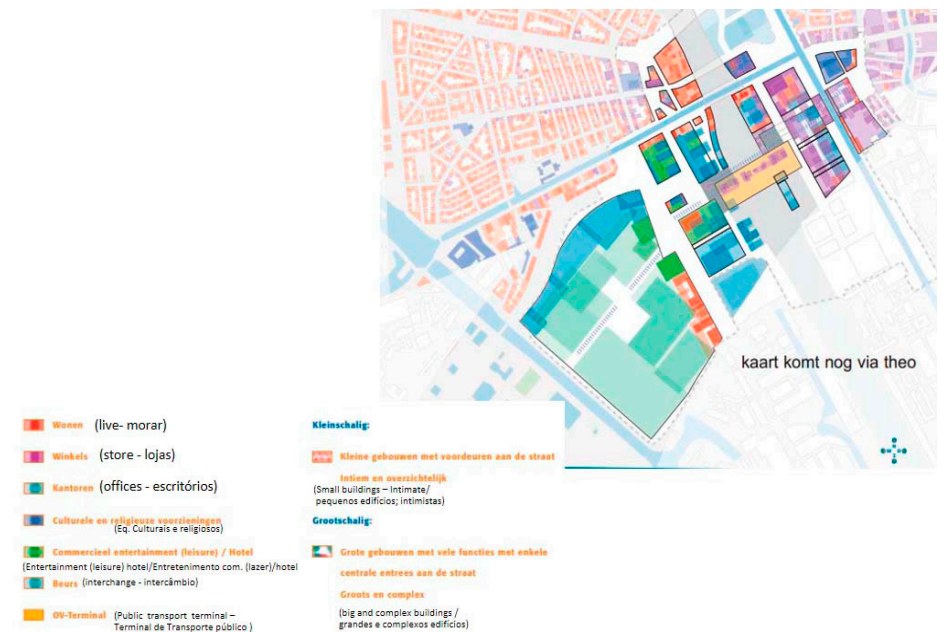


Figure 24
Initial program of the activities proposed in the *masterplan*.
Source: Gemeente Utrecht, *Addendum-masterplan*, 2005, p. 10.

Finally, the CU2030 project is subdivided into 5 subareas, and 2 phases³⁶ (figure 25).

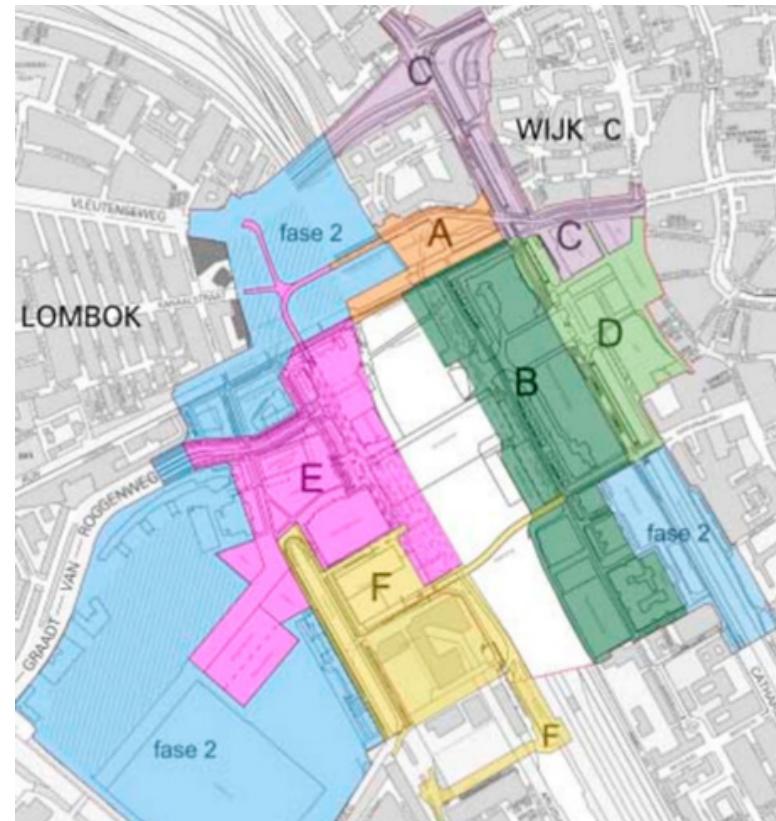


Figure 25
Sub areas of the CU2030 project.
Source: Gemeente Utrecht, *Voortgangrapportage*, 2011, p. 24.

- 36 The first stage is aimed at:
- A: Smakkelaarsveld, openbare ruimte; Smakkelaarsveld, vastgoed (Bibliotheek).
 - B: Renovatie Hoog Catharijne; Nieuwe Stationsstraat, openbare ruimte; Nieuwe Stationsstraat, vastgoed; Stationsplein oost.
 - C: Woon-/winkelgebouw De Vredenburg Muziekpaleis; Vredenburg noord; Vredenburgknoop Catharijnesingel noord Paardenveld
 - D: Vredenburgplein; Entreegebouw Nieuw Hoog Catharijne; Catharijneknoop Catharijnesingel midden
 - E: Stads kantoor; Mineurslaan, vastgoed; Tijdelijk busstation
Tijdelijke eindhalte tram; Stationsplein West; Jaarbeursplein, openbare ruimte
Jaarbeursplein, vastgoed; Kop Jaarbeurs
 - F: Croeselaan, openbare ruimte; Knoopkazerne; Rabobrug; HOV Mineurslaan; OV-terminal
- For the second phase: Catharijnesingel zuid; Lombokplein incl. Tunnel; Van Sijpesteijnkwartier; Jaarbeursterrei

Structured plan of the station area [*Structuurplan stationsgebied*]

In 2006, there were revisions and some changes due to the maturity of the plan, such as environmental issues, which were presented in the document *Structuurplan stationsgebied* [Structured plan from station area].

The plan presents a planning framework and outlines its development. The importance given to the use of public space, connections, especially to pedestrians (figure 26), and transport infrastructure network (bike paths, public transport, car access etc) connected in the station as a whole are highlighted again (figures 27, 28, 29).

In analyzing the projects developed, it observes the strategies of design in **how to make the station an integral element of an urban project** that makes it a great *urban hub* is observed; part of an urban mobility project, detailing areas and uses, richness of diversity, density and, above all, the activities of the buildings in its surroundings. In 2015, based on this process, the zoning of the CU2030 project is shown in figure 30.

Synthetically, the designs of the buildings on the west side are characterized by high density, with activities linked to offices and to the uses of entertainment and leisure, such as cinemas, casinos, hotels. There is also that of the exhibition center and a few dwellings, which ended up concentrating more to the east along with the shopping mall HC.

In the hall of the building destined to the city hall are several models with the detail of the project (figure 31), in which it is possible to glimpse the materialization of all the CU2030 project.

With regard to environmental and constructive issues, it is important to note that the new Utrecht center aims to be a model of sustainable urbanization. The area was selected as a pilot for sustainable transformation by the *European Climate-KIC Smart Sustainable Districts (SSD)* program along with the *London Queen Elizabeth Olympic Park*, where integrated, intelligent and sustainable systems will be tested.

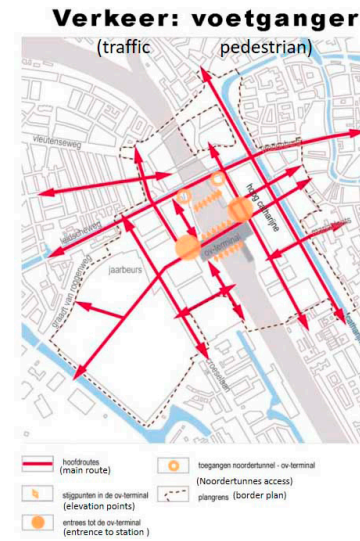


Figure 26
Pedestrian Connections.
Source: Gemeente Utrecht, *Structuurplan stationsgebied*, 2006, p. 40.

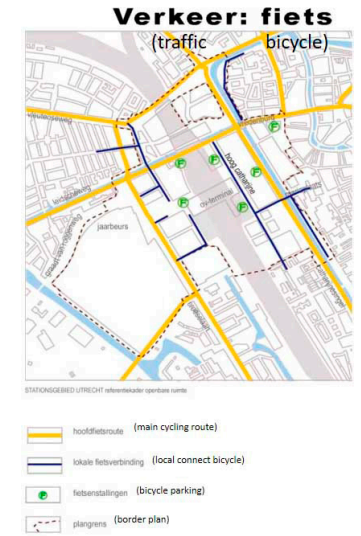


Figure 27
Bike paths around the station.
Source: Gemeente Utrecht, *Structuurplan stationsgebied*, 2006, p. 40.

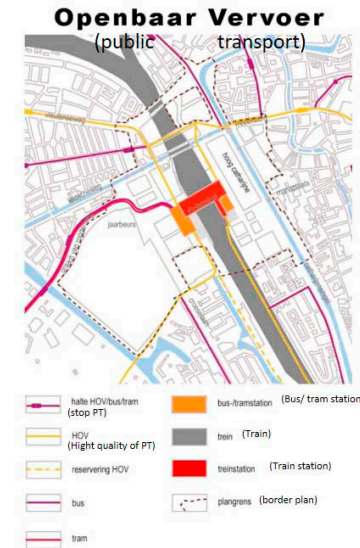


Figure 28
Public transportation.
Source: Gemeente Utrecht, *Structuurplan stationsgebied*, 2006, p. 41.



Figure 29
Automotive access network.
Source: Utrecht Municipality [Gemeente Utrecht], *Structuurplan stationsgebied*, 2006, p. 41.

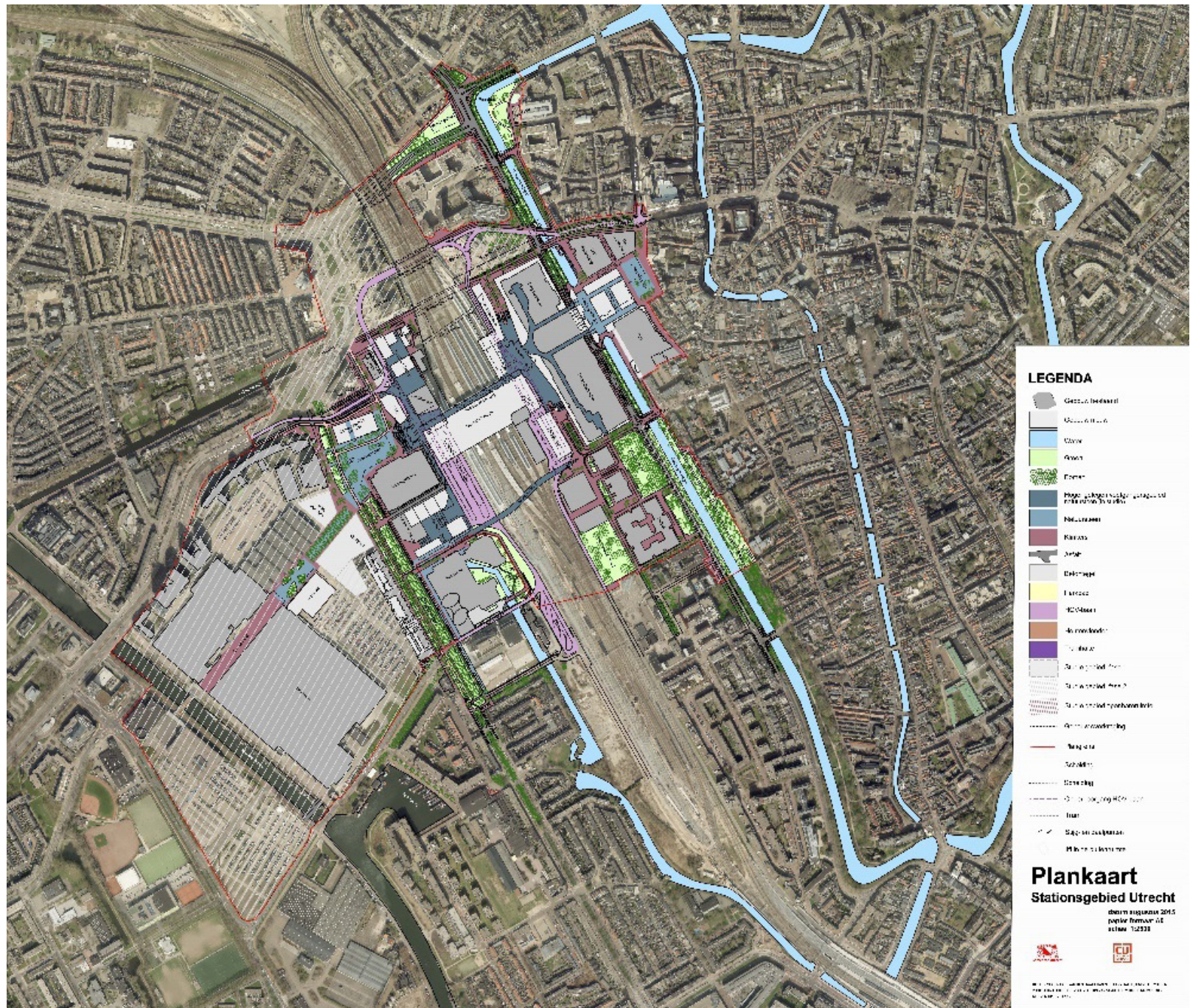




Figure 31
Physical model in which the colors of the uses foreseen in the new buildings are highlighted.
Source: CU2030, photo of the author, 2016.

Progress in construction of buildings and a new place

After years of discussions, the CU2030 project was developed: a masterplan in which the station is the nucleus of development. In addition to the remodeling of the station, the spatial transformation encompasses the demolition of some buildings, the renovation and extension of others, as well as the construction of new ones.

The constructions started in 2012 have a strict delivery schedule of the buildings. There is clear and objective work planning, with semiannual reports on the evolution of construction, verifiable by means of perspective designs. Completion of the first phase is planned for 2021. The start of the second phase is expected to occur between 2020 and 2030.

To finalize the presentation of the CU2030 project, we detail the several subprojects³⁷, largely elaborated by the private initiative, but based on the masterplan's design guidelines. The importance given to these subprojects is emphasized in that they indicate possible project strategies, as well as collaborate to discuss the functional program of a masterplan in a station area.

The presentation of the subprojects is separated by the buildings in use, under construction and in development in the year 2016, respectively in the east sector, Central Station and west.

Buildings in use

East Sector:

Are they:

- **De Vredenburg (Mixed use)**

De Vredenburg (Figure 32) is the first major project to be completed in remodeling the station area. Built under an old 16th century castle, the mixed-use building has shops on the ground floor and upper floor accommodation, as well as a garage for bicycles in the basement. Finished in 2012. Client: Corio. Architect: Architectenbureau Arn Meijs (Source: CU2030, 2016).

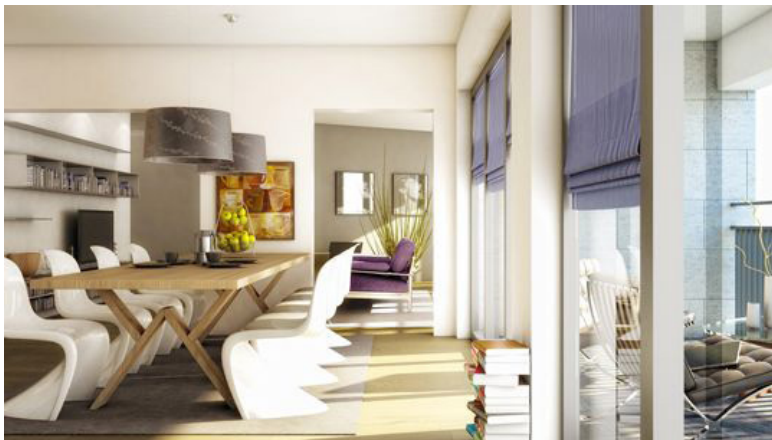


Figure 32
De Vredenburg Project - mixed-use
building (shops and dwellings)
Source: CU2030, 2017.

³⁷ All information on the subprojects described here has been taken from the CU2030 site. Available at: <<http://cu2030.nl/pagina/alle-projecten>>. Access in: 20 mar. 2017.

- **TivoliVredenburg – Music Palace**

The concert hall (**figure 33**) was officially opened in 2014, after a major renovation of the previous building and extensions. The main hall designed by the architect Herman Hertzberger was maintained. There are five concert halls, a large cafe and other support facilities. Client: County. Architects: *Architectuurstudio HH, Jo Coenen & Co Architects, Architectuurcentrale Thijs Asselbergs, NL-architects* (Source: CU2030, 2016).



Figure 33
Music Palace.
Source: CU2030, 2017.

- **Vredenburgknoop (Bridges)**

The new *Catharijnesingel* canal has a new set of bridges (**figure 34**), as the routes of the new Utrecht Central canal are among the busiest in the city. The *Smakkelaarsveld* bridges carry approximately 25,000 bicycles and 2,500 daily buses that travel on different branches of this bridge to improve road safety at this important joint node. Finished in 2015. Client: County. Architect: *Movares* (Source: CU2030, 2017).



Figure 34
Vredenburgknoop – bridges
Source: CU2030, 2017.

- **Utrecht Centraal (Utrecht Central Station)**

The Central Train Station (**figure 35**) was officially inaugurated in December 2016. Now it is a place with a **unique connection** between trains, trams, buses, bikes and cabs that connect perfectly under one roof and without space barriers.

Figure 35
Utrecht Central Station.
Source: *Bentham Crowel Architects*,
2017.



Requested by ProRail, the project is authored by *Bentham Crowel Architects*, which has developed it since 2003, extending the station from 8,000m² to 25,000 m².

Currently its daily capacity is 284,000 users, and 88 million per year. By 2025, an estimated 360,000 daily users; and to 2030, 100 million per year.

The station is part of the aforementioned *New Key Projects*, 1997, which aims not only to renovate the railway station as a transport node but also to its surroundings, as this integrated approach to station areas identity and vitality of the city.

According to Bentham Crowel Architects, the projects of the new train stations are “are also referred to the **cathedrals of a new era**: *public transport terminals that provide travelers and city dwellers with various comforts and functionalities in the area*” (*Bentham Crowel Architects*, 2017, emphasis added)³⁸.

The station, now separated from the HC building, is contemplated at both ends by wide squares, connecting quickly and simply the east and west sector. The body of the building, about 18 meters high, was designed so that in the northern sector there was a *promenade*, a public walk, a public street that crossed the rails without the use of the card, with a direct connection of 300

38 Available at: <<http://benthamcrowel.com/projects/?cat=infrastructure#infrastructure-utrecht-central-station-1631>>. Acesso em 04 abr. 2017.

meters between the banks . Inside, on the one hand the atmosphere of a street was reproduced, with restaurants, shops, etc., making the station vibrant with the presence of a mezzanine. In the southern sector of the building, through a skin of glass, was privileged a wide view of the city and the rails (*Benthem Crowel Architects, 2017*).

According to architects Jan Benthem and Mels Crowel the idea of 285 by 35 meter ceiling ripples was influenced by the existing roofing. The current ripple also represents the logical distribution of functions in the station, as well as a wave that radiates a dynamic movement and functions spatially as a reference, urban landmark in the territory. Finished in 2016. Client/Developer: ProRail. Architect: Benthem Crowel Architects with cooperation of Movares Engineering Agency (Source: CU2030, 2017).

To aid in the analysis of the building, and the nucleus of urban development, a schematic plan and perspectivated sections are presented (**figure 36** and **37**).



- **Moreelsebrug (Footbridge)**

The Moreelse footbridge (**figure 38**) is under the train tracks in the south section of the station. The east-west crossing, about 275 meters long and 10 meters wide, occurs exclusively for pedestrians and bicycles. Finished in 2016. Architect: CEPEZED. Client: County. Source: CU2030, 2017.

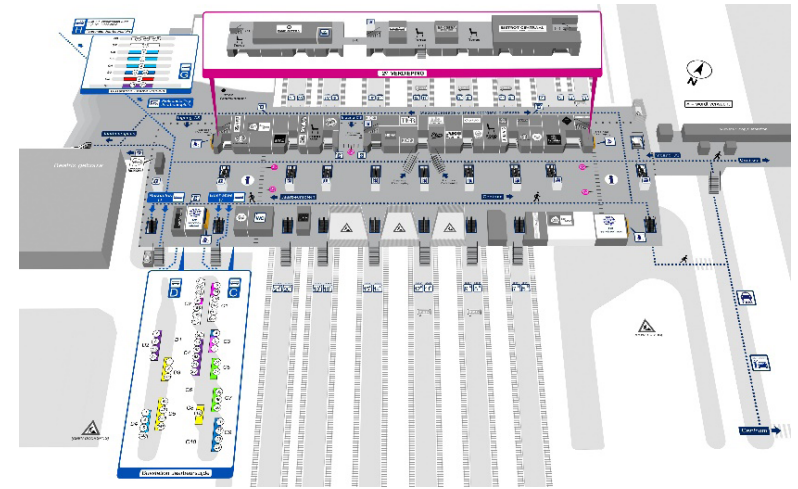
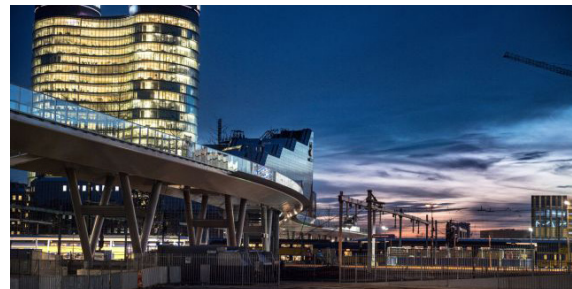


Figure 36
Schematic plant of Utrecht Central Station.
Source: CU2030, 2017.

Figure 37
Prospects section of the station.
Source: *Benthem Crowel Architects, 2017*.

Figure 38
Moreelsebrug – Footbridge
Source: CU2030, 2017.

West Sector:

- **Stationsquare West (Elevated Station Square – west)**

The 8-meter-high elevated west-station square (**figure 39**), serves as an entrance to both the Central Station and the office buildings of the city hall icon. Under it there is a garage for 4,200 bicycles. The small square has a grand staircase that can be used as a grandstand during the performances and events at the *Jaarbeursplein*. Opened in 2014. Client: Municipality. Architect: Kraaijvanger Urbis.



Figure 39
Elevated Station Square – west.
Source: CU2030, 2017.

- **Stadskantoor (City Hall)**

The prefecture building is a reference building in the CU2030 project (**figure 40**). It concentrates all the services of the city, except the one related to urban rubbish. It has approximately 93 meters of height and 65,000m² of gross area for 2,500 workstations and 2,200 places for parking of bicycles in the basement. Finished in 2014. Client / Developer: Dutch Railways Architect: Dirk Jan Postel, architecten bureau Kraaijvanger.



Figure 40
Stadskantoor (City Hall).
Source: CU2030, 2017.

Buildings under construction

The buildings and areas that are under construction until 2016 are:

Eastern Sector:

- **Stationsplein (Eastern Square Station)**

From the east station square (**figure 41**) the pedestrian can choose the following path: access the station, the HC shopping or the historic city of Utrecht. This square will be elevated and will give access to the mall in the fastest way, through the great coverage of circles. Down the stairs, there will be direct access to the old center as well as **the largest bicycle parking lot** in the world (12,500 places), which will have several levels. (Developer: Utrecht Municipality; Architect: Ector Hoogstad Architecten. Deadline for submission: 2018).



Figure 41
Project of Station Square.
Source: CU2030, 2017.

In this new space will be created several uses, such as additional entrances at the street level for offices in *Hoog Catharijne*, space for small shops and restaurants both at the street level and the square. Start: 2013. Deadline for submission: 2018. Client: Municipality; Architect: *EHA Arquitectos*, in collaboration with *Buro Sant en CO* (landscape design) and *Royal Haskoning* (engineering).

- **Het Platform (Platform building)**

Around the new East Station Square there will be two new buildings. In the north sector, Noordgebouw [the Northbuilding] (**figure 42**), building that will be of mixed use: shops, office, hotel and residences. And in the south section of the station, the residential building called “The Platform” (**figure 43**), which will be located under the new bus and tram station.



Figure 42
Northbuilding – Noordgebouw – mixed use.
Source: CU2030, 2017.

Figure 43
Platform building – formerly called
the South Building.
Source: CU2030, 2017.



The Platform building will have 200 rental apartments with additional commercial facilities, a gym, restaurant and lounge bar in 18,500m² based on the sustainability concepts of BREEAM – *Building Research Establishment Environmental Assessment Method*. Start: 2016. Deadline for submission: 2017.

- **Hoog Catharijne (HC Shopping)**

The shopping mall *Hoog Catharijne* (figure 44), one of the largest mall in Europe, is the oldest (37 years up to 2017) and visited from the Netherlands. In it, the remodeling and expansion of the *shopping mall* takes place, going from 67,000m² to 102,000m², with more space and natural light. Through the mall there will be two straight axes that will connect directly the historic center to the Central Station of Utrecht. Three important sectors stand out in this project: 1^o) The remodeling of the façade after the physical separation with the station; 2) The construction of a new building facing the *De Vredenburg* square and a new access door to the station; 3^o) Building icon, colorful, mixed use, as element of connection between these two ‘terminal’ buildings.

Developer: Corio. Architects: AMA Nederland Architecten and Altoon + Porter Architects. Start: 2009. Deadline for submission: 2019.

Figure 44
Hoog Catharijne shopping mall project and the 3 buildings that make up its current configuration.
Source: CU2030, 2017.



- **Catharijnesingel (Channel Catharijne)**

The *Catharijne* Channel was grounded in the 1970s. Currently, in the northern sector, the old canal is being restored, surrounded by terraces, shops, trees and living spaces to contemplate water and walking (**figure 45**). Being that first priority was given to the construction of the bridges and buildings that surround it.

The northern sector was finalized in December 2015 (first phase), and in the southern sector the completion is estimated in 2020, no longer being considered a project to be started in the second phase as it had been previously communicated. Developer: Municipality.



Figure 45
Demolition of the avenue and design of the *Catharijne* Channel north sector already built.
Source: CU2030, 2017.

- **Smakkelaarsveld (Smakkelaars Square)**

It is intended that the bicycle parking space in the northeast sector of the station area be transformed into a square without parking, aiming at a pleasant space in which people will have contact with the water (**figure 46**). It was planned to build a library in this area, which was not approved by the city council. It is in the discussion phase what can happen in this sector.

Bicycle parking at this location will be possible until 2018, when construction of the parking lot under the station square on the east side will be completed.



Figure 46
Smakkelaarsveld – revitalized square.
Source: CU2030, 2017.

West Sector:

- **Jaarbeurssquare (Jaarbeurs Square)**

After a space destined for use of buses, cars and taxis, the transformed space of *Jaarbeurssquare* (**figure 47**) will be destined to a large square of access and permanence. Underneath it, there will be a car garage. The square will still be surrounded by several residential buildings, services and leisure. Start: 2012. Developer: Municipality. Architect: Deadline for submission Okra Land: 2018.

Figure 47
Jaarbeurssquare Project.
Source: CU2030, 2017.



- **Temporary bus and trams terminals**

To improve public transportation in the city and region, the trams lines (**figure 48**) will expand, especially on the east side of the station. In 2017 the trams end on the west side, but will continue to the east side of the station until they reach the University City of Utrecht (Utrecht Science Park). Deadline for submission: 2018.

Figure 48
Temporary terminal of trams and buses while the works of the surroundings are not finished.
Source: CU2030, 2017.



- **Croeselaan Avenue**

Croeselaan is the main access road to the west of the station (**figure 49**). Several company headquarters will be in this way, which has been reformulated for a future *boulevard* of trees, less traffic of cars, and adapted to new demands, such as those of urban infrastructure necessary for the new density of the road. Deadline for submission: 2018.

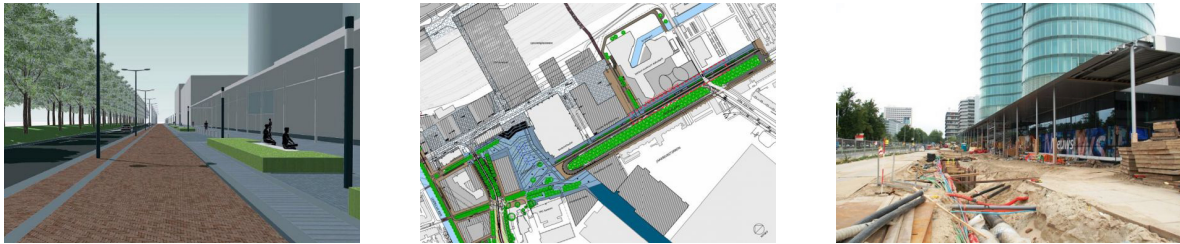


Figure 49
Revitalization on the avenue
Croeselaan.
Source: CU2030, 2017.

- **Buildings in developing elaboration of project**

Finally, it is highlighted the projects that are in development. A wide variety of projects of different uses are observed. On the website of the CU2030, in the Dutch version, there are 8 projects under construction, 11 projects in development and 12 projects in use, totaling **37 different projects**.

- **World Trade Center – WTC**

It is symbolic for the city of Utrecht to build the *World Trade Center*, an international office environment in the station area in Utrecht, as a venture of this order greatly enhances its ability to attract international companies.

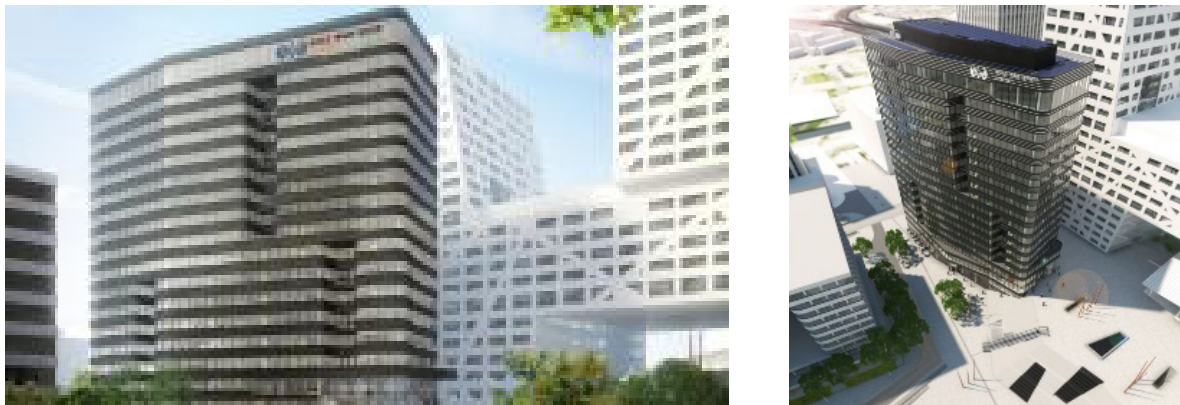


Figure 50
Project of *Leeuwensteijn* – WTC.
Source: CU2030, 2017.

The advent of the *World Trade Center – WTC* (**figure 50**), located partially in front of the city hall building, was initiated in 2009, from the negotiation process that resulted in the purchase of the Crane Borch office building by the Municipality as this territory was to the extension of the tram line in the east section of the station. As a result, *CBRE Global Investors* had the right to expand the adjacent *Leeuwesteyn* office building.

The 26,000m² *Leeuwesteyn* office building was demolished in 2016 and replaced by the *World Trade Center* with 32,000m² and 70 meters high. The building will also have the BREEAM sustainability certification. There are 2,000 workstations forecast. Opening expected for 2018. Investors: *CBRE Global Investors*. Architecture: Roberto Meyer MVSA Architects.

- **Forum (Square)**

The Forum project (**figure 51**) connects the entire west side between *Van Sijpesteijnkade* and *Moreelse* bridge. It is an elongated square, about 7.5 meters above the ground. It is therefore the entrance to the offices and houses that will be on the edges. Under this square there will be a lot of bicycles that will have several entrances along it, including a bike path.



Figure 51
Forum – high connecting square
between buildings along the west
sector.
Source: CU2030, 2017.

- **Building Rijnkade (mixed use building)**

Rijnkade (**figure 52**) is a 7,000m² mixed-use building (shops and houses) to be built between the new canal and the old V&D department store. Beginning of forecast: 2019. End of forecast: 2021.



Figure 52
Building Rijnkade – mixed building
 - stores and housing.
 Source: CU2030, 2017.

- **Jaarbeurspleingebouw (Buildings in the square of Jaarbeurs)**

The *Jaarbeursplein* building (figure 53) is located in the square of the same name, which will give access west to the station, and should be built 90m high, for predominant use of offices and shops on the first floors, totaling 50,500 m² of total area. Beginning of forecast: 2018.



Figure 53
Jaarbeurspleinbuilding – corporate buildings.
 Source: CU2030, 2017.

- **Rijkskantoor de Knoop (Node of offices for public sector)**

Knoopoffices is a building formerly occupied by the Ministry of Defense. It will be partially demolished, renovated and enlarged to house new offices of several Dutch government agencies, totaling 30,000 m² of construction (figure 54). Finishing of forecast: 2018.



Figure 54
Knoopoffices - Node of offices for public sector)
 Source: CU2030, 2017.

- **Bioscoop (Complex of movie theaters)**

A complex with 14 movie theaters and a food court is planned, totaling 14,000 square meters (figure 55). Delivery forecast: 2017.



Figure 55
Complex of movie theaters.
Source: CU2030, 2017.

- **Amrath Hotels**

Amrath Hotels (figure 56), consisting of two towers, will have 250 rooms, 350 apartments and support services such as meeting rooms, shops, etc. Estimated delivery time: 2020.

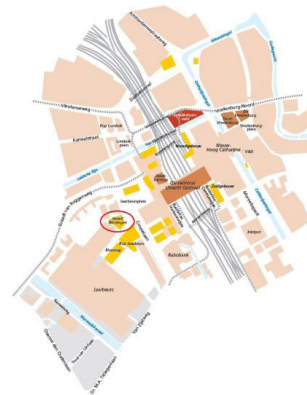


Figure 56
Amrath Hotels.
Source: CU2030, 2017.

- **Healthy Urban Quarter (available area in search of partners)**

The municipality recently launched the *Healthy Urban Quarter* (figure 57) in search of a partner for the development of the building located on *Croeselaan* Street in front of the Beatrix building. It aims to develop a mixed building that encompasses housing, employment, leisure, culture and hospitality.

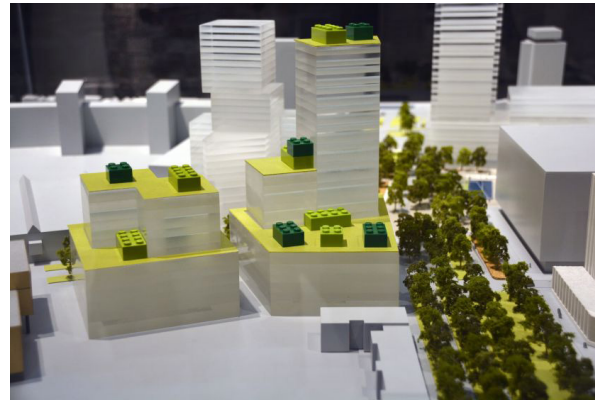


Figure 57
Area in search of partners.
Source: CU2030, 2017.

- **Buildings of *Van Sijpesteijnkade* (monument and residential building)**

In the northwest area, it is planned to build new offices. For this, most of the existing buildings will be demolished, but the *Van Sijpesteijnkade* monument will be maintained.

A new tower will be built (**figure 58**), consisting of apartments between 50 and 65 m² (200 to 300 new apartments). On the ground floor there will be commercial facilities, such as restaurants, totaling 25,000 m².

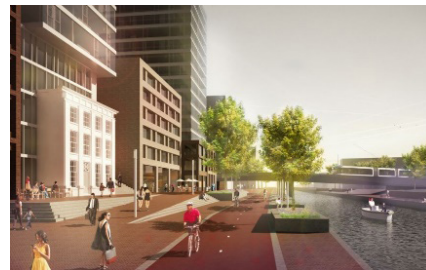


Figure 58
Buildings of *Van Sijpesteijnkade* and historical heritage.
Source: CU2030, 2017.

The area belonged to the station and was passed to the developer and builder of the tower, *Wessels Zeist*. Architecture: *OeverZaaijer Architects*.

- ***Jaarbeurshalls* and grounds (exhibition center)**

It is planned to build a space for fairs, with greater interaction with the exterior (**figure 59**). As the exhibition space will concentrate its activities in a smaller area, it was possible to release eight hectares of land available for development next to the station in the west sector. There will also be a boulevard and a pedestrian link from the *Jaarbeursplein* to the *Merwedekanaal*. Expected Completion: 2023.

Figure 59
Exhibition center and boulevard.
Source: CU2030, 2017.



- **Vredenburgplein (Remodeling of the local market square)**

Vredenburgplein is a connection square between the medieval city and the station area, being used as a stage for street fairs since medieval times.

The square project was debated in 2015 with the surrounding population and businessmen. From these discussions the desire for the remodeling of the square was that it become a place for stay and meetings.

The redevelopment of *Vredenburg Square* (**figure 60**) will produce an important meeting place for people who can go to the mall, the concert hall or the station. Under it there is a garage for 1,200 cars. Deadline for submission: 2018.

Figure 60
Vredenburg – Square for local market.
Source: CU2030, 2017.



- **Westplein/Lombokplein (square)**

For *Westplein*, the Municipality – together with the development group Central Lombok – is preparing the development of a square where once there was the junction of heavy traffic. It aims to make space less conducive to car flow and more enjoyable to people (**figure 61**).

Figure 61
West-Lombokplein Square
Source: CU2030, 2017.



This is shown in **figures 62 and 63**, after the detailing of the main projects of the CU2030, the global vision of the progress of the urban project in 2016:

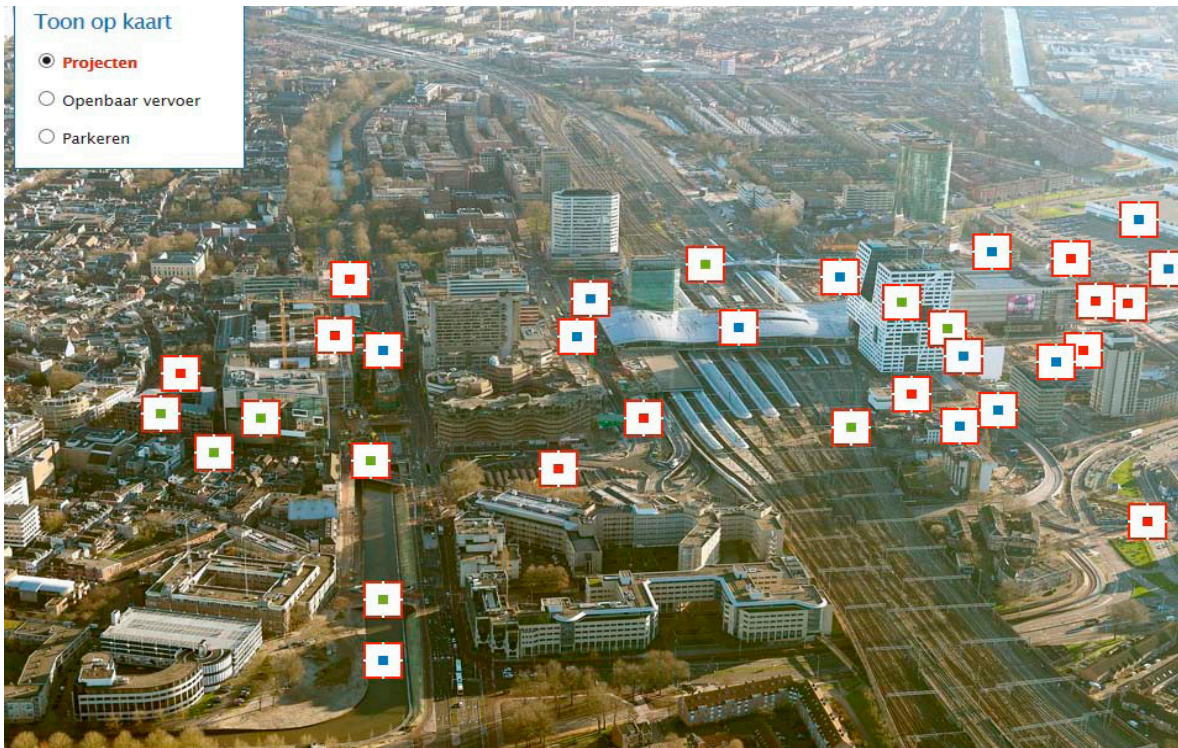


Figure 62
Overview of the progress of urban project works until 2016.
Legend of the square symbols:
Green: finished; Red: under construction; Blue: on development.
Source: CU2030, 2017.

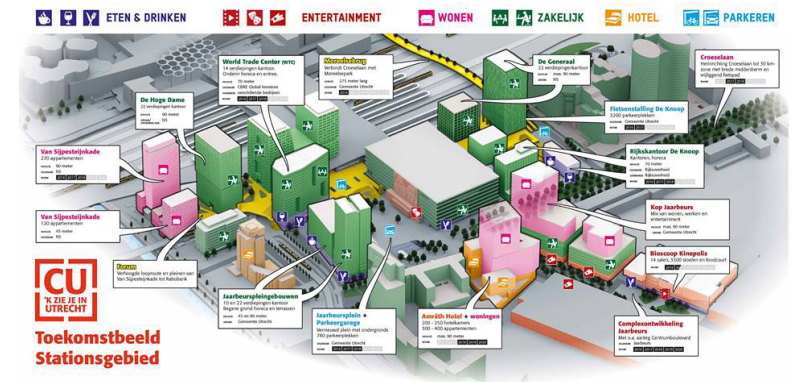
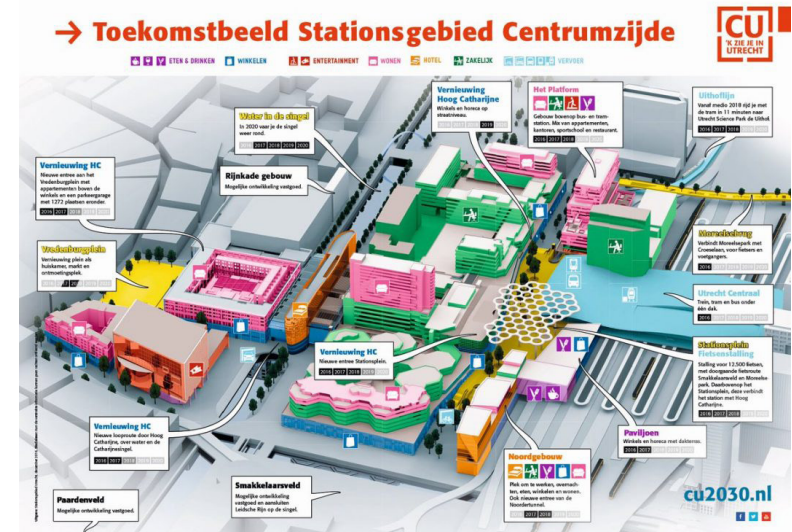


Figure 63
Perspective of the Utrecht Station area with the proposed program in both the east (Stationgebied Centrumzijde) and west (Toekomstbeeld Stationgebied) sector respectively.
Source: CU2030, 2016.

Proposed program

After analyzing the main projects of the CU2030, the complexity for defining the activities program and building height are clearly observed.

The program of activities provided in the Addendum Master Plan³⁹ puts: *Living* = 2.070m²; *Offices* = 180.395m²; *Stores* = 38.084m²; *Leisure* = 63.500m²; *Culture* = 33.500m²; *Hotel* = 29.040m²; *Hospitality* = 2.000m²; This amounts to a total of 4,414,519m² in this phase of the masterplan development process.

As a result of the information acquired there is a complexity in the closure of the numbers but otherwise throughout the development of the projects, this quantitative and definition of the program is updated and revised.

From the numbers, we can observe the non-predominance of dwellings in the area of the station, under the justification of the price of land, in exchange for the large proportion of footage used for services and consumption activities.

So, it is observed from the datas (table of Bertolini and and Buijze, 2013) the complexity of the numbers and the adjustment itself to the projects actually executed.

3.4 Station Scale



[N6+N8+N9+N10+N11+N12+N13] Node of Access

The project developed for Utrecht Central will be the place for direct connections between trains, buses, trams, taxis and bicycles. The area is still under construction and much of what is described here will still be transformed, but it is certainly possible to visualize the concept of the materialization of a single terminal.

³⁹ Utrecht Municipality [*Gemeente Utrecht*], *Addendum Masterplan*, 2005, p. 13.

The CU2030 was asked about the updating of this data, but no answer was obtained on this issue until the finalization of this research.

[N6] Pedestrian

When leaving the station in the **west sector**, the pedestrian immediately faces a small square (**figure 64**) that currently directs him to a wide staircase (**figure 65**). In the future, this raised square will expand on its borders and connect the buildings that are parallel to the train line (the aforementioned elevated plaza called *Forum*). In the staircase between the station and the *Jaarbeurs* square you can choose between the use of escalators or elevators. The *Jaarbeurs* is under construction, and will be a second and wide square that will link the station with the surroundings (**figure 66**).



Figure 64
Small elevated square of immediate access to the west sector station and future enlargement - *Forum* (under construction);
Source: author, 2017.



Figure 65
Artistic intervention at the west entrance of the station in the year 2016.
Source: author, 2016.



Figure 66
Future large west access plaza - *Jaarbeurs* under construction (*Jaarbeursplein*).
Source: author, 2016 and 2017 respectively.



This area of the station was the scene of an artistic intervention in the year 2016 in which colored curtains in the form of circles were installed at some points of the grand staircase (**figure 65**). It was a stimulus to those who wanted to sit and protect themselves from the cold, and also an intervention in the landscape of the station area. It was a simple aesthetic-functional element that temporarily qualified an area that is undergoing intense reforms.

Access by the pedestrian east of the station undergoes profound changes. During the visit in 2016, access to the station was obligatory to pass through *Vredenburg Square*, then the *Achter Clarnburg* lane to finally reach the entrance gate to the mall (sequence of images of **figure 67**). At the mall, the passage was through a long and tortuous path to actually reach the station hall. It was precisely this scenario that aimed to change with the creation of the east access plaza and with the remodeling of the flows in the reform of the HC.

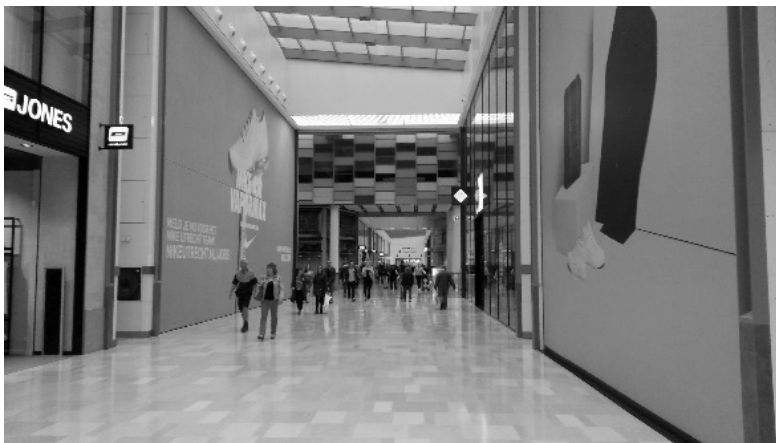
Figure 67
Old course for access to the mall through the Medieval city.
Source: author, 2016.



In the year 2017 the scenario above has partially changed. Leaving the station, it was still obligatory to go through the old part of the HC, then cross the HC icon building (and be able to view the exterior landscape of the reconstructed canal), then cross a completely new part of the mall to finally leave the square *De Vredenburg* and reach the medieval city (sequence of images of **figure 68**). In July 2017, the station was still attached to the mall. However, the way through the mall was shorter and less tortuous than the scenario visualized in the year 2016.

Certainly, the high point of access to the pedestrian should be the materialization of the east square, currently under construction, in which there will be the decoupling between station and mall, the creation of a public space and the offer of choice to the citizen, the way to choose on your journey (follow the mall or go down the street to the medieval center).

Figure 68 (next page)
Sequence of images of the new access from the exit of the station to the square of articulation with the medieval city.
Source: author, 2016.



Spatial connections between east and west for pedestrians and cyclists

Due to the presence of the rails, the spatial connections between the east and west sides are significant and one of the great motivators of the CU2030.

There are several key spatial connection moments in the station area worked in four ways: 1st) Under the rails in the station area (**figure 69**); 2nd) Under rails with direct connection to the platform – Nooertunnel (**figure 70**); 3rd) On the rails - *Moreelsebrug* Passarel (**figure 71**); 4th) Inside the station, without the need to have a ticket, or by the side of the station building itself (**figure 72**).

The *Moreelsebrug* footbridge, 295 meters long by 10 meters wide, was inaugurated in December 2016. It serves both pedestrians and cyclists. It was financed by Rabobank Bank, located in the building adjacent to it as a counterpart to the city of Utrecht to build its headquarters.

Figure 69
Passage under rails, continuity of *Smakkelaarsveld* street.
Source: author, 2016.



Figure 70
North tunnel [Nooertunnel].
Element of connection and direct access to the platforms of shipment.
Source: author, 2017.





Figure 71
Rail pass on *Moreelsebrug*.
Source: CU2030, 2017.



Figure 72
Side and inside passage of the station.
Source: author, 2017.

[N7] Subway

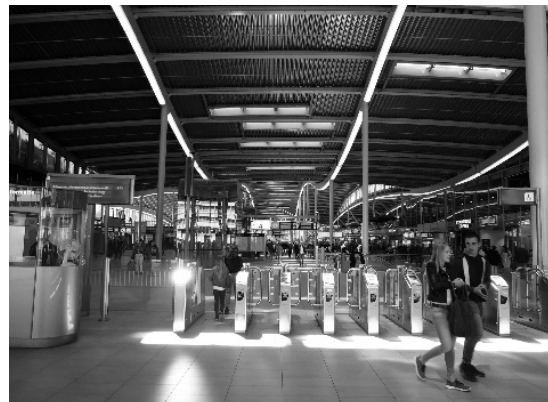
Not applicable as there is no subway system in Utrecht.

[N8] Train

Utrecht Central Station offers 21 boarding and disembarking platforms for trains (**figure 73**). To do this, it is necessary, in most cases, to perform check-in and check-out on the turnstiles at all access gates at station. If the user does not have an access card, there is the option of not crossing such locks. From the station hall access to the platform takes place both by physical stairs and by escalators and elevators. It is also possible to directly access the platforms by passing *Norodertunnel*.



Figure 73
Platform for boarding / disembarking, northern sector. Ratchets for check-in and check-out; escalators and elevator from the hall to platform access.
Source: author, 2016.



[N9] Bus

There are several easily accessible bus stops with high urban readability in the station area (**figure 74** – east sector). And the mixed-use building is under construction that will have a bus terminal on the ground floor called “Platform” in the east sector.



Figure 74

Bus stop on *Vredenburg* street, east section of the station.

Source: author, 2016.



Figure 75

Bus station inside the station - west sector.

Source: author, 2016.

In the **west sector** there is a bus terminal located parallel to the train lines (**figure 75**), with access by the station and a second (temporary) (**figure 76**). This terminal was deployed next to the *Jaarbeursplein* square, after the demolition of a garage building. The demolition of the building was necessary for implantation of the tram line in the east direction (to be presented below).

Figure 76
Bus terminal (provisional) located
in front of the building of the
prefecture (west).
Source: author, 2016.



[N10] Bikes

There are well-marked and wide bike paths in the surroundings of the station, such as the one on Av. Vredenburg (**figure 77**).

The construction of the bridge over the canal, with pedestrians and cyclists separated from cars and buses in an important circulation node of the region (*Vredenburgknoop*) stands out in the road and urban design remodeling.



Figure 77
Current cycle path on the street Vredenburg and the bridge for pedestrians and cyclists (*Vredenburgknoop*)
Source: author, 2016.

On the other hand it is also possible to visualize the current scenario – public spaces largely occupied by bicycles: both in the north sector, adjacent to the mall (*Smakkelaarsveld* street – parking to be removed in the future – **figure 78**), as in the south sector, in *Moreelsepark* (**figure 79**).



Figure 78
Bicycle parking on the street *Smakkelaarsveld* located in the vicinity of the northern sector.
Source: author, 2016.

Figure 79
Bicycle parking in the *Moreelsepark*
street, south sector.
Source: author, 2016.



Just to avoid that the public area of the station area is not dominated by bicycles, it is planned to build the already outstanding largest bike rack in the world, with space for 12,500 bicycles, under the future east access plaza, along with other parking lots scattered in the area of the station. One of these areas is already finished in the west sector under the elevated square of the station – *Jaarbeursplein* (figure 80) opened in 2014.

Figure 80
Direct bicycle path access to the
station and bicycle ladder under
the stairway *Jaarbeursplein*.
Source: author, 2016.



The bicycle path is already finished on *Av. Croeselaan* (figure 81), however, there will still be major changes to include a network of bicycle lanes connected directly to the new parking lots along the elevated square of the Forum itself, and thus an intermediate moment is presented here.



Figure 81
Bicycle path in the Av. Croeselaan
in front of the Rabobank building.
Source: author, 2016.

There are also spaces for bicycle repairs (**figure 82**), near the bicycle parking lot, on *Smakkelaarsveld* street for example.



Figure 82
Bike rental, bike rental and repairs
in the immediate vicinity of
Smakkelaarsveld.
Source: author, 2016.

[N11] Private car

The east part of the station undergoes intense changes in the circulation of automobiles, especially in *Catharijnesingel* street. The space formerly filled with viaducts and loons has been replaced by spaces for pedestrians and cyclists, as well as the return of the old canal (**figure 83**) and a “small” double-way road adjacent to the canal.

Even with the full incentive to use bicycles and public transportation, there is still a significant number of private parking lots in commercial establishments (**figure 84**), especially inside the mall (*interparking*), with 6 different entrances (P1- *Spoorstraat*; P2- *Spoorstraat*; P3- *Stationsstraat* P4- *Stationsstraat*; P5- *Rijnkade*; P6- *Rijnkade*), totaling only 3,098 vacancies in this area.



Figure 83
Catharijnesingel Street in the process of changing urban design with the retaking of the canal in the urban fabric.
Source: author, 2016.

Figure 84
Av. *Catharijnesingel* and access to one of the private parking lots of the shopping mall (P5) in the south sector.
Source: author, 2016.



The western sector is the best way to access the station these days by means of a private car (av. *Croeselaan* or *Graadt van Roggnweg* – **figure 85**). The large-scale parking is possible in the Jaarbeurs car parks (**figure 86**). In the CU2030 project, it is planned to build parking lots in various parts of the station area, such as in the subsoil of Jaarbeurs Square.



Figure 85
 Av. Croeselaan, access by car by the west sector.
 Source: author, 2016.

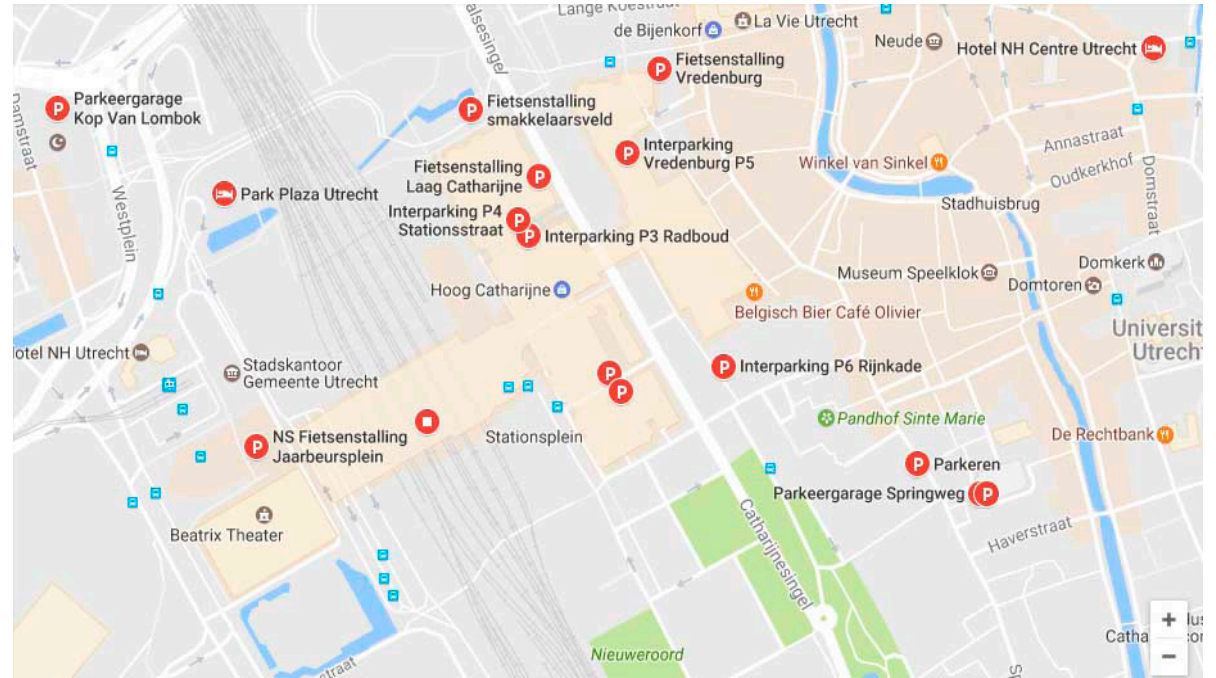


Figure 86
 Points for private car parking.
 Source: Q-park, 2017.

Not found in on-site *in loco*⁴⁰ visits, parking lots called *Park P + R (Park & Ride)* in the vicinity of the station that were connected to the NS train network⁴¹ and that they give discounts when used in conjunction with public transport⁴². There are specific spaces called *Kiss & Ride* to encourage rides. There is still no room for the use of car sharing such as those available from *Greenwheels*. Through interviews with city officials, it was informed that this type of service will be available in the area of the station when it is finished remodeling.

40 In addition to the visit, this information was searched on the sites, as well as through emails with this and other questions sent to the Municipality, which were not answered,

41 Available at: <<https://www.q-park.nl/nl/parkeren-bij-q-park/p-r-terreinen>>. Access on 3 Jul 2017.

42 Available at: <<https://www.q-park.nl/nl/parkeren-bij-q-park/p-r-terreinen>>. Access on 3 Jul 2017.

[N12] Taxi

Currently, there is a taxi rank on *Stationsplein* Street (**figure 87**) in the **east sector**. The taxi stand in the **west sector** is located near the tram and bus terminal in the *Jaarbeursplein* square. Both squares are located immediately at the exits of the station. It is believed, however, that these locations will be changed upon completion of the CU2030 project.

Figure 87
Taxi stand in the *Stationsplein* (east) and in the vicinity of the tram terminal (west).
Source: author, 2016, 2017 respectively.



[N13] Tram

Currently, tram is a terminal terminal link up to *Nieuwegein* (**figure 88**). This situation, however, will change. It will be remodeled to have a lower current platform height and will connect with the line that will follow up to the university. Buses in this square will be transferred in the future both to bus stations located at the station and to the building under construction in the eastern sector.

Figure 88
Tram terminal next to the bus terminal and access to the station - *Jaarbeursplein* Square (temporary). And access street adjacent to the tram terminal.
Source: author, 2016.



Finally, the images in **figures 89** and **90** synthesize the location of the main points of modal articulation with the station in the year 2017; the urban form given in the concept of a single terminal.

From the analysis of this projective and constructive process it is understood that the objective of the materialization of a single terminal with the possibility of exchanges with all modes was achieved in a fast, safe, efficient and quality way.

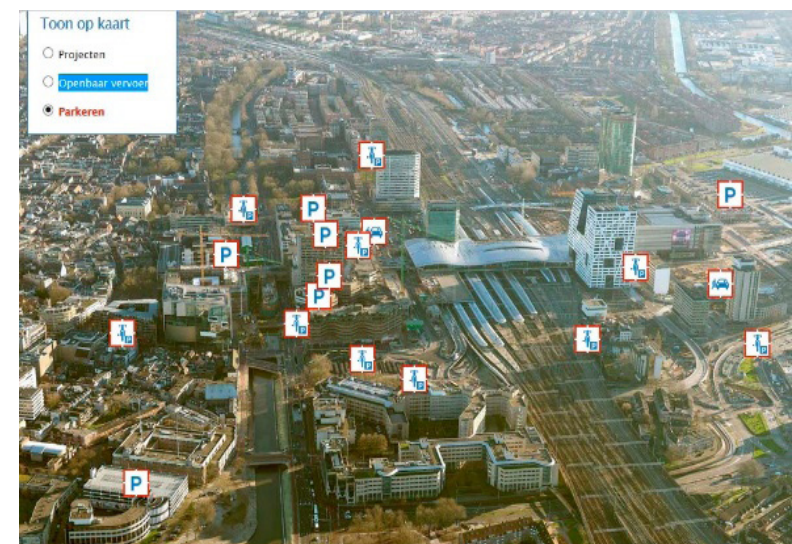
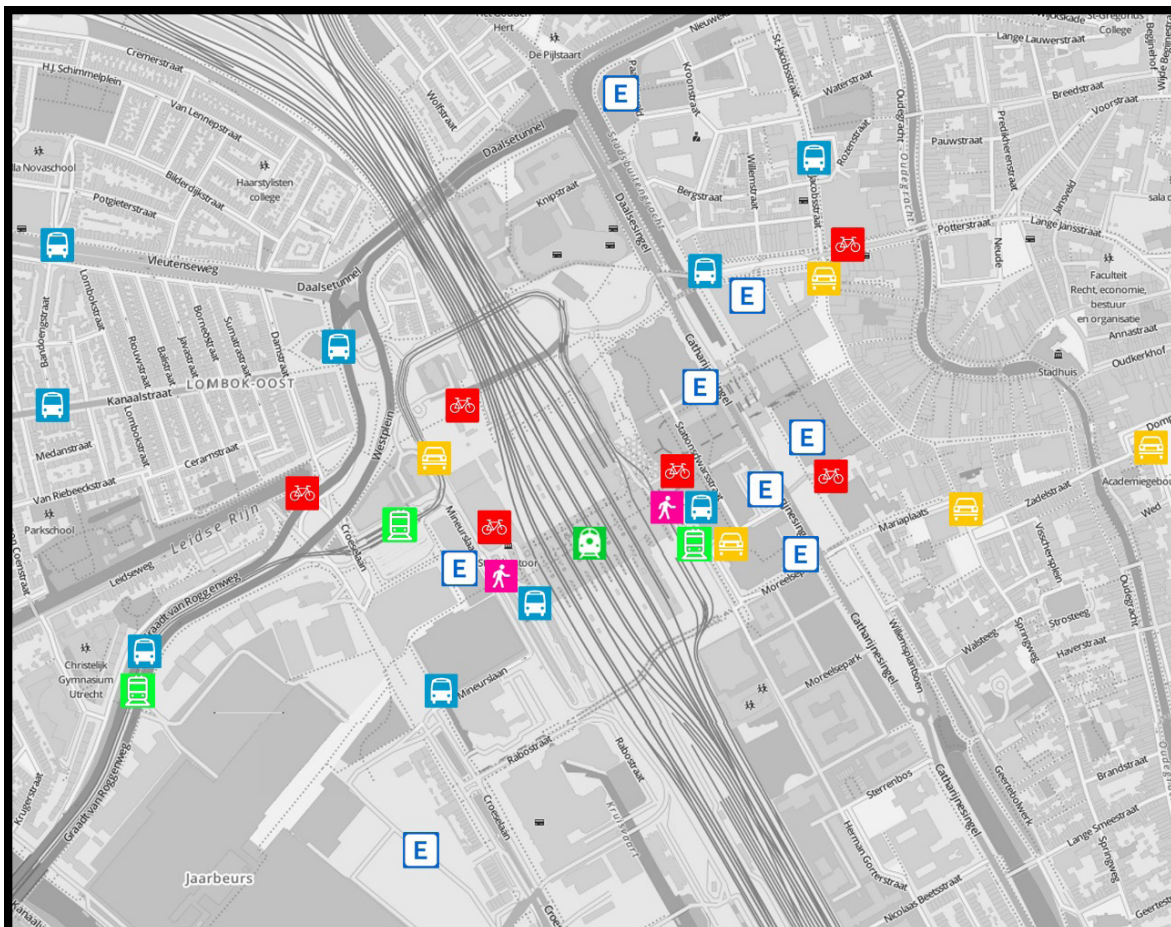


Figure 89
Location of access points by public transport and taxi; Parking spots for cars and bicycles, respectively.

Figure 90 (left)
Predicted microaccessibility after completion of CU2030 project.
Source: Own elaboration, 2017.

[P5] [P6] [P7] [P8] Place in territory

The CU20230 project area is under construction and it is not possible to fully analyze the spatial transformations that have occurred. But with the official inauguration of the station on December 7, 2016, with a schedule of works consistent with the projects presented and plans developed in great detail, it is believed that it is possible to observe the changes already taking place and to envisage the expected final results, having as reference the design of a *node-place* station.

The station has become a unique building with two new squares at both entrances/banks, one of which is located next to the medieval city and the other next to the *Jaarbeurs* (convention center), an area with enormous potential for urban expansion.

For the analysis of the place, the analysis distinguished the 1. East, 2. Station Architecture and 3. West territories, since these signalize distinct moments in the relation with tissue.

1. East

The eastern sector is undergoing intense transformation (**figure 91**). In addition to the recovery of spaces for pedestrians and cyclists in the immediate surroundings of the station, the design decision of the **rupture of the body of the station** with the body of the shopping mall is observed.



Figure 91
Station area in the east sector, undergoing intense transformation.
Source: author, 2016.

It shows the return of the old canal (partially built), the possibility of interaction with it and the stimulus to the passage and permanence of people, and no longer the priority of the passage to the car. The new buildings, with architectural quality and active façade, stimulate an interaction between the private and the public, security and comfort, exchange between the eyes of the people in the city, in an own and coherent urban scale for such, as opposed to the great scales and infrastructures.

In the contact with the old city, there is a reformulation of the shopping mall *Hoog Catharijne* (figure 92), the construction of mixed-use buildings, with shops on the ground floor and housing on the upper floors (*De Vredenburg* – figure 93), hotel (also with housing and shops – figure 94) and the Music Center (figure 95).

Thus, the simplification of urban connections and the qualification of public space, together with the improvement of accesses, are high points of the project, as well as the **rescue of water in the territory**, being an important element in the rescue of the **local identity**, revitalizing the landscape and encouraging the citizen to remain in the public space. The transition to the medieval city takes place in a clearer and smoother way than that present in the previous scenario.



Figure 92
New facade and new access of the HC facing the medieval sector.
Source: author, 2016.

Figure 93
Mixed-use building – *Vredenburg*
Source: author, 2016.

Figure 94
Hotel under construction within the scope of HC shopping. North and South facades respectively.
Photo: author, 2017.



Figure 95
Music Center *TivoliVredenburg*
enlarged and renovated. And the
preservation of the old music
center.
Source: author, 2016.

2. Station Architecture

As already mentioned, the official inauguration of the station after renovations and extensions took place on December 7, 2016 (**figure 96**). The interior of the station was the scene of various activities such as music concerts, various presentations, yoga, cinema and even weddings (**figure 97**).



Figure 96
Interior of the station after renovation and enlargement.
Source: author, 2016.



Figure 97
Several activities inside the station on the day they occurred during the opening.
Source: CU2030, 2016.

The stage of the station is not only for the passage, there are several points of permanence, that even value the surrounding landscape. An example of this is the inclusion of several benches in the hall of the station, available either for the contemplation of the view or the flow of people from the station (**figure 98**), or for the passage of a social manifestation (**figure 99**).

Figure 98
Spaces to stay with different types
of seats, for example.
Source: author, 2016.

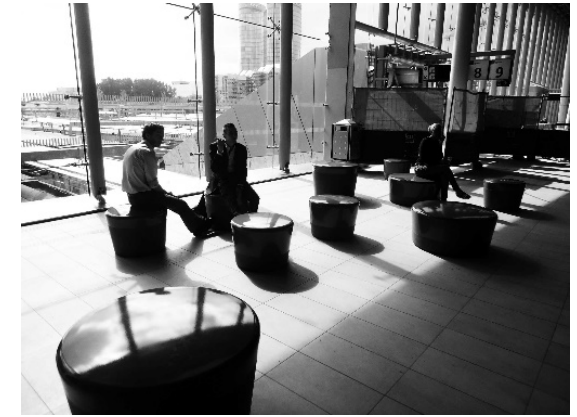


Figure 99
Restaurant on the mezzanine of
the station and passage of a de-
monstration.
Source: author, 2016.



At the station, in addition to the transport service and the urban connection between the banks of the rails, various services such as shops, supermarkets, restaurants, etc., are located on the ground floor (**figure 100**). Some of these establishments are, for example, *Albert Heijn to go*, *Burger King*, *The Döner Company*, *Kiosk*, *Leonidas*, *Starbucks Coffee*, *Julia's*, *HEMA*, *Urban Salad*, *Nespresso*, *broodje Gerry*, *Yoghurt Barn*, *Hair Salon*⁴³. Added to these services are a waiting room, toilets, lockers and ATMs.

⁴³ *Shops and restaurants*. Available at: <<http://www.ns.nl/en/stations/utrecht-centraal.html>>. Access in 04 feb. 2016.



Figure 100
Shops, restaurants and services on the building's body.
Source: author, 2016.

In the architecture of the station it is still possible to choose not to cross it by its interior space. To do so, there is a large lateral passage, in the southern sector, connecting both margins (**figure 101**). From the flow of people who use the station itself, like the other services in it, there is a high urban intensification.

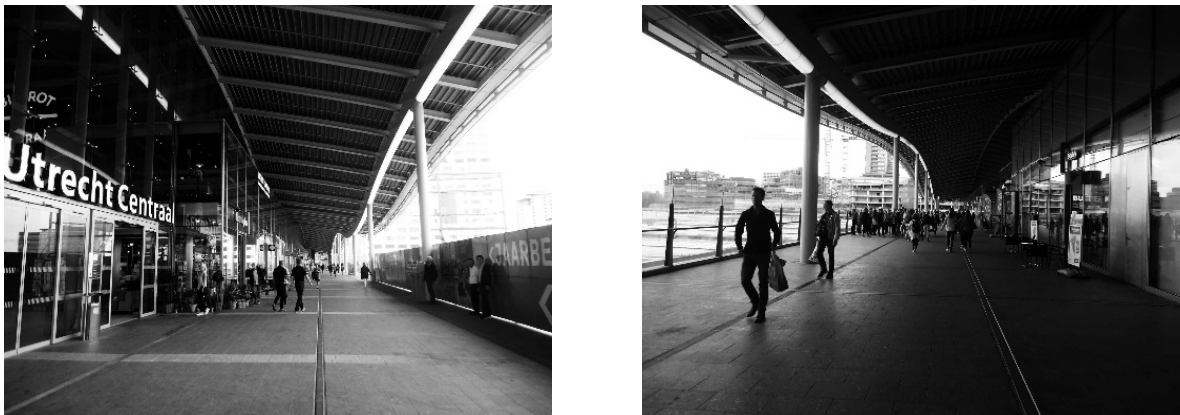


Figure 101
Side passage connecting both sides of rails, as an option for those who do not wish to pass through the interior of the station.
Source: author, 2016.

3. West

From an old catwalk, passing through empty spaces destined largely for parking lots and unimportant areas, the west bank undergoes intense spatial transformations, with emphasis on the construction of several buildings and the new use of public spaces and their joints, especially the new relationships. In 2015 (**figure 102**), remnants of the formerly existing square with car and bicycle parking and the *Leeuwensteyn* building, located opposite the town hall, are demolished months later.

Figure 102
Image from area of *Jaarbeusplein* in the year 2015.
Source: Google street view, june 2015, author's treatment.



In *Jaarbeusplein* square, a large public space of access to the station and of connection with the urban fabric, in addition to some buildings, like the WTC, is under construction (figures 103,104 and 105).

Figure 103
Station, at the time under construction, no current staircase and old connecting catwalk between the banks. And aerial view of the transformations in progress on the west side.
Source: CU2030, 2016.



Figure 104
Construction of the WTC building in front of the city hall.
Source: aurora, 2016, 2017 respectively.





Figure 105
Large square building (*Jaarbeursplein*).
Source: author, 2016.

There is a staircase in the square that serves not only as a passage but also for permanence and as a stimulus to the enjoyment of sight (**figure 106**). The staircase was crafted with different materials in its finish, and its steps encourage the passer-by to sit, since it is intended to be used as a grandstand facing the *Jaarbeurs* square. Before the staircase, there is a small existing square that will be enlarged and articulated with the buildings that will be parallel to the train line, resignifying the entrances to the buildings through this raised square and the articulation between the buildings, thus increasing the possibilities of urban intensification.



Figure 106
Staircase access to the station, also serving as stay.
Source: author, 2016.

The main access to the west side, is by the av. *Croeselaan* (**figure 107**), and in the future it should be on the boulevard of the Exhibition Center (*Jaarbeurs*) to the station (**figures 108 and 109**).

Figure 107
Croeselaan Street, with access to
Central Station and one of the
largest buildings in the city, the
Rabobank
Source: author, 2016.



Figure 108
West facade of the Central Station,
partially prefecture building on the
entrance and lateral access connec-
tion between the banks.
Source: author, 2016.





Figure 109
West entrance of the Utrecht station by the raised square.
Source: author, 2016.

3.5 Utrecht Station Synthesis

Utrecht, heart of Holland, encompasses a Central Station as the pulsating core of an important urban project. By means of two site visits (in 2016 and 2017) and bibliographical research, it was possible to investigate the CU2030 project as a design reference in the urban renewal of the station area, and establish it as the best European model for a mobility hub.

After an intense description of the city of Utrecht and its transport modals in three urban scales, it is believed that it was possible to understand the great challenges facing the materialization of the spatial transformations in progress in the Utrecht station area, summarized in the images (figures I10, I11, I12).

Figure 110
Urban landscape in the Utrecht station area before the CU2030 project.
Source: CU2030, 2011.



Figure 111
Landscape in the Utrecht station area with the CU2030 project under development.
Source: CU2030, 2016.





Figure 112
 Transformation of the landscape
 in the station area of Utrecht in
 1950/57, 2014/2015/2016.
 Source: CU2030, author changes
 (image ~ 1950, CU2030), 2016.

From the inauguration of the HC shopping mall in 1973 until the 2002 referendum, there were 29 years of intense discussions and many governance failures to the development of a unique urban project in the area of the station, aiming to make it a pleasant place again but also a significant urban hub, a new level in the Dutch and European scenario.

Officially, the discussions began in 1986 with the presentation of the *Utrecht City Project*. Several other plans and projects followed, and in 1996, after intense and complex negotiations, a *Solutions Guidelines* was presented to transform the station area. However, this proposal, as well as other proposals, failed, largely due to the complexity of the area, to the non-convergent aspirations, to the demands among the various actors involved and to poor communication (Majoor, Schuiling, 2008)⁴⁴.

Only with the 2002 referendum seal, in order to choose and strategically approve the concept of large-scale renovation of the station area, is it finally that a deadlock between the population and the project proponents/investors was finally finalized. Thus, in 2003 the *masterplan* was released, which later resulted in the CU2030. Work began in 2012, with the completion of the first phase in 2020 and the second in 2030.

It was also tried to demonstrate that the challenges and difficulties to be overcome were not few, but fortunately they were not paralyzing. There is always the ambiguity and dilemmas between the *node* and the *place*, as clarified by Bertolini and Spit⁴⁵. As a *node*, one of the initial reasons for the transformation of the Utrecht station area was the insertion of high-speed trains with funding outside the municipality. However, in 2001 this investment was abolished. As indicated by Majoor and Schuiling⁴⁶, the high investments for the maintenance of train speeds before the intense urban reformulation, as well as the necessity of HST (high speed train) in a small country were questioned. They also point out that the challenges for the redevelopment of a station environment are not the lack of potential or good projects, but the difficulty in decision-making, institutional fragmentation; and in the management of a process that occurs in different domains of interaction, where different actors operate with different interests, goals and means, and at different temporal scales.

44 Majoor S., Schuiling D., *New Key Projects for station redevelopment in the Netherlands em Railway Development: Impacts on Urban Dynamics*, p. 101-123, 2008.

45 BERTOLINI, L. & SPIT, T. *Cities on Rails: The Redevelopment of Railway Stations Areas*. London: E & FN Spon, 1998.

46 MAJLOOR, S., SCHUILING, D. New Key Projects for station redevelopment in the Netherlands. In: *Railway Development: Impacts on Urban Dynamics*, 2008. p. 101-123

Bertolini and Spit⁴⁷ when evaluating the planning process in the attempt to elaborate a masterplan for the station area, largely failed during the 1990s, posed four great lessons from this process.

The first is the importance of the quality of the relationship between all the agents involved, including the population; a process that only found a solution in 2002, with the referendum, reinforcing the analysis of Majoor and Schuiling.

The second point refers to the integrated concept of node-place. Within the node, it reinforces the integrated view among all modes, in the design of a **single terminal** to minimize the difficulties and discomforts of intermodality in the user's perception

The third point, complement of the second, refers precisely to the question of place, in the sense of facing the spatial dilemmas and providing possibilities for a new **meaning in space**.

And finally, the fourth observation refers precisely to the interaction between *node* and place as reinforced in this thesis, where there is both a spatial balance of the node and the place united in a common goal - urban development integrated into the station area.

Bertolini and Spit⁴⁸ also describe the financial challenges to be faced and overcome. After the implementation of the HC complex in a quasi-authoritarian manner, with the consent of the government in 1973, the decision-making process and the elaboration of a **single masterplan** were difficult, in which long-term private partners were responsible for developing their respective areas for complications in the redistribution of values. On the other hand, the surplus, together with the national government, would finance the parties that would not make a profit. It is difficult, therefore, to find the balance between the project's self-financing between the whole and the parties, even in developed countries, with consolidated democracies and with the financial contribution of the European Union.

It follows that the strategy of stipulating the **phases of the detailed project**. The detailing of these phases is essential. to ensure the execution of the project as a whole, as well as of its own financing. It is surprising how Utrecht can faithfully make the works feasible in harmony with the planned schedule.

Facing the fragility of the spatial connection between the western sector of the city and the medieval center, the precariousness of public space and monofunctionality, an urban project was conceived with guidelines for the design of the public space, reinforcing its potentialities:

47 BERTOLINI, L. & SPIT, T. **Cities on Rails: The Redevelopment of Railway Stations Areas**. London: E & FN Spon, 1998.

48 BERTOLINI, L. & SPIT, T, op. cit, p.107

good location, proximity to both the *Jaarbeurs* exhibition center as with the old center and other areas of the city. Thus, the new center of Utrecht has been redesigned to improve urban life in a global way, to make it healthier for its inhabitants and to launch Utrecht in the competitiveness of the world scene in attracting new companies.

In the initial project, on the east side most of the housing was concentrated, as well as the expansion of the Music Center. In the west sector, offices, large facilities for culture and leisure (cinema and theater complex, food and casino), hotels and some housing were concentrated. On the other hand, it is for this sector that the expansion is planned towards the free areas of *Jaarbeurs*, in a new phase of urban project that is under discussion.

It is clear that the objective was not only to improve the mobility of the Central Station in a single environment, but also to improve the quality of life of the people, and for that many work fronts were part of the CU2030. By the own words of CU2030, the Central Station is considered the station of the future, in that it is considered more than a station. It is a **station area**, in which the station itself is the pulsating nucleus of a new urban hub: a place for housing, shopping, work, leisure, fun, travel and meetings⁴⁹.

In the light of **mobility**, the implementation of effective pedestrian policies, the design of quality public spaces, the development of new *tram* lines and the management of motorized traffic, the expansion of the bicycle parking lot, as well as the design of several space solutions for the entire transport network, add many qualities to the running project.

The implementation of large infrastructures is not observed in the area of the station. The micro accessibility and intermodality in Utrecht between modals occur smoothly, without spatial barriers, especially for pedestrians and cyclists. Modal integrations occur almost in the same space and time, with high urban legibility and without detriment to environmental perception.

In order to do so, there was an aggressive alteration of the road axis on the east side: ruptures between buildings for the creation of large access plazas around the station, **explosion of densities and uses**, and space qualification. Modernizing only the station would be somewhat mediocre and insufficient as evidenced by successive expansions of the station once occurred. Transforming its space and immediate surroundings made Central Station a model of urban design in the urban transformation that a *node* can realize and in the urban potentialities that come from it. It can be seen that the goal of creating the **concept of a single and integrated terminal** in the public space has been reached.

49 What is CU2030? Available at: < <http://cu2030.nl/page/english>>. Access in: 15 jan. 2017.

The **spatial strategies** that most emerge are exactly in the design of the public space in the masterplan, in the strengthening of the connections between east and west of the station with the urban network, with clarity, security, and architectural quality in the projects inserted in the lots but in harmony with the basis of the project as a whole. A single terminal station is designed, which integrates all nodes with mastery of intermodal harmony, with preference given to the pedestrian, without harming other modes, without harming the public space.

The **access stations to the station** are important elements. On the one hand, the parasite of the shopping mall with the station was broken, and on the other, the public space was strengthened with the design of the boulevards, which solve the dilemma of accessibility and habitability.

In the scope of the proposed program the weight given to the stores is evident: to the consumption itself. On the other hand, the commercial towers that signal the search for a new global identity are not skyscrapers that attack the urban landscape, rather they connect to the territory, not isolating themselves (in small territories). The construction of the old canal demonstrates the **rescue of the local identity**. In this sense, the preservation of part of the music center building as well as a small building in the *Van Sijpesteijnkade* also signal the maintenance of buildings related to the **local architectural heritage (figure 115)**. A strategy that strengthens local history and the image of the city, making it more competitive. Thus, the set of **new densities** proposed are articulated with the public spaces, with the transport systems and with the new activities, and seem to indicate a **good project establishment**, signaling an **urban intensification of the area of the station**.

It is challenging to work on the ambivalence of implementing a traffic distribution scheme and at the same time working on the quality of a public space plan. So the goal of designing a healthy urban living around Utrecht's Central Station made it more of a modernized node, making it a pleasant place for people.

It is interesting to note that the 1997 *Solution Guidelines*, as pointed out by Bertolini and Spit⁵⁰, were further developed in detail, and that the plan in execution in 2017 is in line with these strategies 20 years later!

On the other hand, perhaps the biggest challenge is meeting the wishes and demands of station users and citizens in general. In the case of Utrecht, the 2002 referendum was the decisive factor in the turnaround of 29 years of discussions, finally cancelling a masterplan. The CU2030 titled project predicts and aims the future. We will waiting.

50 BERTOLINI, L. & SPIT, T. *Cities on Rails: The Redevelopment of Railway Stations Areas*. London: E & FN Spon, 1998.

● **Considerations**

**Design guidelines for
spatial transformations
in the stations areas**

With the objective of extracting **project strategies for the spatial transformation of European station areas as the nucleus of local urban development**, it is to be stated, above all, that these references are inserted in different urban contexts, and that it is not possible to transfer models directly without the due analysis, filters and adaptations to the urban context which is sought to transform. If the logic of the principles underlying the transformation of these stations from an articulated mobility hub to the urban hub is understood and identified, it will be possible to exploit the criteria for successful processes of urban design and planning for the strategic performativity of potential node-location stations.

The **Stratford** station area was in a large **urban void** in one of London's poorer regions, even though it was a strategic hub for London's metropolitan network. The Olympic Games of 2012 have been the trigger for the transformation of the area, where before the productive historical vocation was predominantly industrial. It is noticed that from the emptiness where the Olympic park was inserted, it was worked to **integrate it in the surrounding urban fabric**, as well as in the conception of a **new place identity** in the Stratford station area.

Even with a long **and complex process of urban planning**, which occurred before, during and after the Olympics, it is observed that the strategy persisted to have the Stratford station area as the nucleus of the development of Metropolitan Center, enriched with new and various activities and services, as well as the **increase of residents** in the area that have integrated through the core of the station and its edges. However, gentrification and rising real estate prices are inevitable, even with some complex planning mechanisms to avoid raising the cost of land and the cost of living.

The **Utrecht** station area in the Netherlands, with a productive vocation of local scale based on services has the context of a **consolidated urban fabric** that affect its east edge. However, the presence of a large shopping mall segregated the station itself as well as the medieval center.

Since the establishment of the Hoog Catharijne (HC) mall in the 1970s, which forced the removal of main access to the station by the surface of the urban fabric transferring it to the upper floor, was gradually neglected the public spaces around the station that became obsolete and dangerous.

Utrecht has uncovered **throughout its planning process**, before culminating in the CU2030 project, failures that can be conceived when considering redevelopment by looking only at some parts, or when there is no balance between the parties involved and affected, such as development of a large enterprise like HC, which sought only commercial exploitation in detriment of the spatial quality and the destruction of the material and environmental patrimony of its surroundings.

In this way, after decades of discussions, the convergence of the CU2030 project managed to overcome significant bottlenecks in the planning process. In 2012, it began to implement one of the best urban projects in Europe around a station. In 2030, all the works will be completed in the surrounding of the station and the design of a new urban project will be signaled after the completion of the CU2030. It is, therefore, necessary to **plan and phase** the implementation of the projects.

Common points in both stations reveal strategies for capturing a high **volume of investments**. For Stratford, the match generated by the Olympic Games was fundamental. For Utrecht, the Central Government *Key Projects* were fundamental, especially when this project stipulated six strategic stations in its country that needed to remodel not only the project of the stations, but especially its surroundings. On the other hand, it is important to note that both had at some point the motivation of implementing a **high-speed train** in the mobility hub, but that in neither of them actually occurred.

Stratford and Utrecht, each one in its context, demonstrated the complexity of articulation between the agents involved, whether public or private, which reinforce once again the importance of both the medium and long term planning process, as well as the **masterplan as a basis for negotiation between all parties involved**, starting with the definition of the perimeter of performance.

It is evident in both the importance given to the **spatial connectivity**, especially pedestrian and urban articulating design between the different parts developed by masterplan. There are no barriers to access to the stations for any modal, as they are all closely related. Squares **and the open spaces** are key points in the qualitative access to the stations through the physical space. There is a **balance between all modals** and absence of major barriers and infrastructures for the passage or permanence of the pedestrian. There is then a **high urban readability** in the station area.

The urban mobility situation in the station area was not analyzed before the contemporary interventions, but the projects clearly show the **preference given to the pedestrian**, both for improving connectivity and for the quality of public spaces. It is also evident the preference in the connectivity of the environment given to public transport over individual motorized transport, which is contemplated with quality, but not as the protagonist of the space, which is actually given to the nucleus of the stations. In Utrecht, with the largest **bike rack** in the world, the intermodality of this mode is observed, taking it out of public space and **integrating it into the station's architecture**.

In the issue of the **program of activities** in the immediate surroundings of the stations the **mixed use** as an adopted action articulated to the **different models** is a clear strategy. It is evident

the preference for the construction of corporate towers, putting these areas at the top of the urban hierarchy in the international competition. Common in both stations are the activities related to leisure/culture, be it cinemas, theaters, music centers or sports. The presence of mall in the “door” of access is another significant demand in the program of the areas of the stations. However, it became clear in the architecture of these new malls the need to open up to the surroundings, to harmoniously strengthen the relationship with the station and not to close itself in a large concrete box. Finally, there is housing construction, but it is not always a preponderant demand, especially low income, which makes it an economic and social challenge to balance this use in the program of all the activities in the immediate surroundings of the stations.

Finally, the **architecture of the stations** prevails in relation to the technical functionalities of the transport infrastructure, and the stations are conceived as **urban landmarks**, preferably at nodal points. It is hoped in the articulation between the public and private domains both a deliberate equation and an **urban intensification**. The technical view for constructing a station has been overcome in favor of the quality of the spaces in both stations. It's not about neglecting transport technical views, that there is a lot of and evolution all the time, but to integrate, and to strengthen the role of spatial measures for the quality of place and of node.

In Utrecht, the complexity of integrating all modals under the same roof is clearly seen in the same building, the design of a **mobility hub**. In the Dutch city, in rescuing the canalized channel in the decade of 70, potentiated its own local identity. Stratford, with the materialization of the Olympic Park, created a new identity in an old industrial area, conceived an **urban hub** in the context of the London metropolis.

In Utrecht and Stratford the development of the local masterplan is visible, whose design intentions are not legally defined by drawing codes. Returning the fundamentals and codes for guidelines of a masterplan proposed by Carmona⁵¹ is evident the materialization in both stations of:

Clear strategies and objectives for the design of a place;

- Effective governance among all stakeholders;
- Planning financing and implementation phases;
- Presence of a mediator to articulate codes and make decisions;
- High quality of urban design

⁵¹ CARMONA, N. “Decoding Design Guidance”. In BANERJEE, T. (Ed.). **Urban Design: critical concepts in urban studies**. Nova lorque: Routledge, 2014, p. 40.

The spatial vision in the projects of the studied stations stands out in the development of:
1. settlement pattern; 2. urban form; 3. Urban space; 4. local character and 5. technical factors⁵².

Thus, the necessary infrastructures have been adapted, enlarged; the network of space connections in the new space implemented; was designed, designed and negotiated the shape of the blocks and insertion of buildings, open spaces, public spaces, paths and parking lots. New uses and densities inserted for each specific place and so many other codes, variables and attributes discussed in part I and II of this thesis.

New uses and meanings are given to the areas of the stations for an urban intensification and appropriation of the space and the interrelationship between the transport systems of a Mobility Urban Hub (MUH). Thus, an urban space with an articulated identity for a station of relevance is more a design guideline to be evidenced, where an **urban experience is fostered**, not just simple access to a station, target to be obviously achieved but no longer as a pure segregating model in urban territory.

⁵² CARMONA, N. op.cit.

part III

**Spatial dilemmas
in São Paulo
stations areas**

In the first part of the thesis a theoretical framework has been constructed and reviewed, based on the knowledge produced on the subject and leading to a **codification of categories and variables**, that has been used for and confirmed in the qualitative analysis of European references (second part), then to be the basis for the case study work.

This third part of the thesis corresponds to the **empirical stage** of the research in which we intend to evaluate the **transformations and spatial dilemmas between transport node and place – and the interactions with planning frameworks – in the areas of the stations** chosen by means of the investigation of the **three urban scales**, in the light of the research repertoire and its instruments, with the aim of **testing the hypothesis**.

The constructed path of this last part will initially cover the details of the method used in the analysis of the case studies in the three urban scales (in the node and place categories) and the justification of the choice of the stations in São Paulo (**chapter 4**). Then, the macro-scale analysis of the city of São Paulo (**chapter 5**), the intermediate scale in the Pinheiros/Faria Lima station area (**chapter 6**), and later Corinthians-Itaquera (**chapter 7**) will begin. Facing the potential of the existing urban voids in the latter, the chapter will be finalized with presentation of an urban scenario for Itaquera.

Thus, the descriptive, exploratory and deductive analysis of the case studies will enable the construction of a critical view on the chosen stations: highlighting their challenges and spatial potentialities. The objective is to verify the necessary conditions for the areas of the stations to positively promote spatial transformations so as to boost urban development on the local scale.

Therefore, it is posed as the guiding question of chapters six and seven:

1. **How did the spatial transformations occur in the areas of the stations in the scope of the intermediate scale?**
2. **What are the spatial ambivalences, challenges and potentialities within the local scale?**

For the contextualisation of the stations as well as the urban analysis of the macro scale, chapter five, destined exclusively for a brief discussion of the city and São Paulo, the second order question that guided the chapter was: 1. What are the main relevant urban facts in the historical context? 2. And how is the network configured in the urban space and the macro accessibility? 3. What were the main urban instruments?

Finally, as the research presupposes that there is a spatial ambivalence in the station areas between the node and the place - but this base of tension is also a catalytic nucleus of spatial transformations for the integrated development between a mobility hub and an urban hub, the conclusion will resume the discussions of the first part, in conjunction with the second.

chapter 4

**Method of analysis for
approximation in the
station area**

Basically, obviously, there are the roots of urbanism in the practice of the object of architecture and engineering, and the complex relationships that are established between the clipboard and construction site¹.

¹ SECCHI, B. **Primeira lição de urbanismo**. BARDA, M., SALES, P. M.R. (trans.) São Paulo: perspectiva, 2006, p. 133.

Facing the analysis gap in the micro scale and the interlacings between urban scales identified throughout the research, the **method to analyze each case study** is separated into **three distinct urban scales** (macro, intermediate, micro) interconnected according to the structure of the thesis which reverberate in urban structures (city/metropolis; district/neighborhood/station area; place/station):

1. **Macro – City**
2. **Intermediate – Neighborhood/Station Area**
3. **Micro/Local – Place/Station**

Each scale is approached by the **tripod of the categories** in the field of Transport, Urban and Planning, namely: **node of transport [N], place [P], and urban instruments [I]** based on the construction of concepts discussed in previous chapters.

1. **Macro > Place in the city > Node in the network > Masterplan**
2. **Intermediate > Place in the neighborhood > Node in the line > Urban Project**
3. **Local/Micro > Node of access > Place > Project and Urban Design**

After the process of trimming the study area it was necessary to construct a methodology for reading the areas that resulted in the conception of a **set of variables** articulated with the proposed **categories: [P] Place**, which vary from P₀ to P₆; **[N] transport node** [N₁ to N₁₃] and **[I] urban instrument** [I₁ to I₇] conceptually discussed in chapter one and detailed below.

1. Macro > **P₀** > **N₀** > **I₀-I₁**
2. Intermediate > **P₀-P₂** > **N₁-N₅** > **I₁-I₆**
3. Local/Micro > **P₃-P₆** > **N₆-N₁₂** > **I₇**

Carmona² argues that the problems of urban complexity lead the researchers to adopt **mixed methodologies** for the investigation of urban design as the 1. Research by evidence or sources (primary or secondary) Research by knowledge (can be subjective or objective) Research journey [Inductive vs deductive].

The first investigates the data or evidence at the source (primary) while the secondary source analyzes and interprets existing data. The second method in the scope of subjectivity is

² Carmona M. *Explorations in urban design: an urban design research primer*. Farnham: Ashgate. Carmona, M(ed). 2014, p. 1-11.

based on perceptions and observations and there is no right or wrong knowledge. The deductive method starts the search from general to specific, beginning with theory and testing through evidence [*Evidence-based design*³]. And lastly the inductive method, on the contrary, by means of the evidence and observation follows for the general and in the conception of theory.

Thus, the research can be considered as a **descriptive** method because a systematic explanation of reality occurs, from the **primary source**. It is restricted to **recording the fact** because it does not seek an explanation why reality is showing itself this way at first. It is also an **exploratory** research because the central question of the research questions ‘what, how and why’ of spatial ambivalences in the areas of the stations since it aims to identify, define, illustrate some relevant phenomena, explain some specific characteristics and interrelated effects through of the researcher’s **subjective analysis**, that is, some assumptions already exist in advance. Finally, it is an **empirical/deductive** research (Reis⁴, Carmona⁵) because the assumptions are tested and evaluated, that is, the hypothesis is confirmed through the interpretation and application of accumulated knowledge, data and information. Thus, there is the **methodological tripod** of the descriptive, exploratory and empirical study⁶.

The advantage of this method lies in the possibility of deepening the question, but on the other hand it may hinder generalizations on the basis of a single case. That is why the decision was made to **analyze two stations areas** and increase the possibility of more assertive conclusions. In this way, one learns from the past in order to avoid the errors of local intervention in the present and minimizes the risks of drawing in the future.

The chosen **temporary clipping** begins with the conception of the subway stations, in the case of the oldest one referring to Red Line, which began its studies and works in the 1970s, shortly after the conception of the Companhia do Metropolitano – [**Metrô**] Subway (1966) . It ends with the last municipal management in 2016, which represents the closing of a cycle of interventions at the stations associated with the launch of the current Master Plan (2014).

For this purpose, several on-site visits were carried out in the case studies, which took place in the years 2015 and 2017, for data collection, confirmation of information and photographs

3 KARIMI K., VAUGHAN L. **An evidence-based approach to designing new cities: the English New Towns revisited**. Chapter 22 in *Explorations in urban design: an urban designer research primer*, M Carmona, UK, 2014.

4 REIS, N.G. **Notes on dispersed urbanization and new forms of urban fabric**. São Paulo: Via das artes, 2006.

5 Carmona M. op. cit. p. I-II.

6 Jong, T.M. de, Voordt, D.J.M. van der (eds.). **Ways to research and study urban, architectural and technological design**. Delft: Delft University Press, 2002.

in black and white⁷ and videos. The field survey, the interpretation of the documents and data, as well as the elaboration of diagrams, were guided by the observation and reflection of the researcher⁸. In addition to the methodological framework, the interviews conducted with Metro and City Hall employees held in 2015 and 2017 to collect information from the primary source.

The maps consulted were: General Plan of the City of São Paulo (1897), Topographic Map of the Municipality of São Paulo conducted by the company Sarah Brasil S/A (1933); Topographical Charts of the Municipality of São Paulo, carried out by the Executive Group of São Paulo – Gregran (1974) and in the Digital Base of the Municipality of São Paulo (2004 and 2015), which were elaborated on the **diagrams**.

This is detailed below, the scales approach, the categories of analysis and the objective in the search for evidence.

4.1 Macro scale of the city



The urban form of cities undergoes major transformations in which they do not follow a single pattern: there is considerable variation depending on the characteristics of historical, territorial and institutional contexts⁹. Given, therefore, the importance of the contexts for a better understanding of space is presented a brief historical / urban, economic, mobility contextualization of the case studies in São Paulo city.

The objective in the macro scale is to investigate the great **urban strategies** adopted in this scale for the urban development of the metropolis and the urban challenges to be faced in the implementation of these public policies. This discussion will take place throughout **chapter five**. The synthesis of this analysis is seen in **Table 1**.

7 Black and white photographs were chosen due to the omission of colors in the constitution of the urban frames presented for prioritisation of the formal aspects of the built space. Still, black and white photographic images, because they do not have the colors of the real visible world, enable the awakening of creativity, giving the freedom to chromatinize them through imagination.

8 As the intention of the research is to learn with the spaces themselves, their characteristics and how this can be experienced by the users, it is emphasized that the direct observation in the place was the preferred method for collecting the evidences.

9 Castells, M. **A sociedade em rede**. MAJER, R. V. (trans.), 6^{ed}. São Paulo: Paz e Terra, 2010. p. 487.


Macro scale - City scale		Categories		Question	Objective	Purpose: Develop urban strategies.	Challenge: Implementation of strategies in the short, medium and long term.
		Place in the city	Urban history-context [Po]				
Socioeconomic data [Po]			What is your current socio-economic role?	Brief contextualization			
Node in the network	Macro-Accessibility [No]				How is the macromobility of the city? And how is the network configured in urban space?	Analysis of the displacements in the metropolis.	
Urban instruments	Federal [Io]		What were the main urban plans and instruments?		Identify and systematize such plans and instruments.		
	Metropolis [Io]						
	Municipal [Ii]	Plans					

Frame 1
Synthesis of graphic analysis in the macro scale.

For the macro scale analysis block of the **City** scope, same context of the two case study stations, in the **Place [P]** category there will be a brief presentation of the metropolis and city of São Paulo through historical / urban contextualization and socioeconomic data [Lo] supported by a bibliographical review of the authors and data presented throughout chapter five. The area images will serve as an approximation in the area of the transformations that occurred during the decades taken from the site Geoportal (1958), Orthofotos, and Google.

For the category **Transport node [N] in the network**, the historical analysis of the macromobility of the city of São Paulo [No]. For the third category - **urban instruments (I)**, the main urban plans of São Paulo are presented as the Strategic Master Plan of 2014 [I1] and its complements as the Soil Land Use and Occupancy Law (LPUOS), usually called the Zoning Law [I2], as well as the Mobility Plan [I6]. In the scope of transportation planning, the PITU 2025 plan, the last official plan made available by the State of São Paulo, is presented, as well as the main federal laws that support state and municipal laws (Io).

4.2 Intermediate scale of the neighborhood and station area



It is intended to investigate in this urban context the **urban transformation in a cohesive and integrated way** in an area, the materialization of a dynamic neighborhood both within the node and the place after the definition of macro and meso scale strategies. It is important to point out that a neighborhood has no specific perimeter. It is only used as an urban study reference for this intermediate scale, less abstract than the macro of the city. In the case of this thesis, it is therefore desired to investigate how the spatial transformations occurred in the areas of the Pinheiros/Faria Lima and Itaquera subway stations.

For **Place [P]** category, there will be a brief contextualization to present the subcenter under study through its **historical context** [Po] and its socioeconomic data [Po]. In the second moment, the cartographic analysis will take place through its historical-morphological evolution in the station area, “before” and “after” the implantation of the subway infrastructure with historical maps (Sarah Brasil: 1933 and Gegran: 1974), and maps of present situations (MDC - 2004: 2015) in the scale 1:10.000. An analysis of urban morphology is proposed - from the production and modification of the urban form over time to understand the logic of the formation and transformation of urban elements on the intermediate scale. There are two subcategories for morphological analysis: **structural elements of urban space** [P1] and **occupation and typologies** [P2].

It encompasses in the analysis of the structural elements of the urban space [P1] the conditioning factors, urban layout and the design of the blocks. The conditions refer to the elements that conditioned the urban structuring and the implementation of a transport infrastructure such as subway or train. The original geological structure is a significant natural constraint for urban structuring, such as water, flood, relief and climate systems. This will identify both natural elements pre-existent to the urbanization of the studied area such as rivers, streams, tree mass (ciliary forest, parks) and topography, as well as designed conditions, such as the presence of large pre-existing infrastructures such as railways, express, etc. That said, it is investigated:

What were the existing constraints prior to the implementation of the transport infrastructure and / or urbanization of the area? Have they been suppressed or adapted in the structuring of urban space? The objective is to identify the constraints existing before the urbanization and / or the implementation of the transport infrastructure that can reverberate in the local spatial transformation.

The urban analysis of the structuring elements of the territory within the scope of the urban layout and of the blocks takes place through its evolution, transformations, interrelations and formation of the urban fabric.

It will be investigated, the plotting and splitting of the blocks developed over the years; the modes, intensities, and ordering directions of space; relationships, connectivity, integrations, and accessibility of the 'neighborhood' with the station area. It is sought to visualize if it was possible to create a new urban border that allows to maintain / create the open structures that penetrate the local fabric promoting connections with the surrounding networks. In this way, it will be analyzed:

What were the lines and forms of growth, the modes, the intensities and directions; elements, limits, modifications of structures in the station area?

Have the structuring elements of urban space created an urban border that allows the structures to remain open in themselves, promoting connections with nets that penetrate the fabric?

Finally, for the analysis of **occupation** [P2] we will identify the predominant ediculous typology (uses and models), the main urban references and nodal points that could contribute to the strengthening of an urban hub in the station area

Considering that a network is also structured according to spatial criteria articulated with urban structure and to the different lines and modalities in the urban space to obtain better spatial performance and efficiency, it is proposed to category **transport node** [N] data analysis gives the urban mobility of the area. That is, the result of the congruence of sub-center dislocations in the metropolitan context is analyzed through the Plans, information provided by the official city hall website¹⁰ as well as it is underlining the deployment of the **train lines** [N1], **subway lines** [N2], **bus system** [N3], **urban roads** [N4] and **cycle paths** [N5] in the territory to understand the mobility framework in the region.

For the category **urban instrument** [I] in the intermediate scale will initially be analyzed the evolution of the main urban instrument of the city: all **zoning** [I2] developed for the case study areas, ie in the years 1972/98¹¹; 2004; 2015 It will then be discussed on the **regional plan** [I3] of 2004, the only intermediate scale plan produced and published until 2017 in the city of São Paulo, as well as the presentation of the studies prepared by the Municipality for possible regional plans in 2016.

¹⁰ Available at:< http://geosampa.prefeitura.sp.gov.br/PaginasPublicas/_SBC.aspx>.

¹¹ It is explained that in the case of the first zoning of São Paulo, in 1972, there was no map to view the guidelines provided by law, so an elaborate diagram of a physical zoning framework in force in 1998 will be presented. This table is the sum of several laws that complemented the 1972 Zoning and here described as zoning 1972/1998.

However, if the station area belongs to a **Consortium Urban Operation - OUC** [14], the municipal zoning and regional plans will not be applied in the perimeter of the OU, since it intends to act urbanistically in the territory in a differentiated way in relation to the rest of the that is, the OUC annuls existing instruments to create new ones in its perimeter and will be then one more variable to be studied.


There will also be an analysis of **urban projects / 'local masterplan'** [15] in the areas of the case study stations developed in the 21st century within the framework of the discussion of the categories developed for local scale, which may or may not be the fruits of the Urban Operation. Finally, some **other relevant urban instrument** [16] that can be applied in the station area can be presented.

As the area of operation of the intermediate scale is the radius of walk of 500 meters that occurs around **10 minutes** of the core of a **station will be signaled in the diagrams produced a radius of 500 meters**, represented that scale reference throughout the diagrams. Finally, a synthesis analysis will be performed on the intermediate scale visualized in **Table 2**.

Table 2 (next page)
Synthesis of graphic analysis in the intermediate scale.

		Categories	Question	Objective					
Intermediary scale – Neighborhood scale/Station area	Place in the neighborhood	Regional history context [Po]	Brief contextualization	Understanding your image in the city.	Purpose: Development of a cohesive and integrated urban space.	Challenge: Cohesive spatial transformations.			
		Socioeconomic data [Po]	Brief contextualization	Understand regional economic vocation and challenges.					
		Structuring elements of the path [Pi]	Conditioning; and street layout	<ul style="list-style-type: none"> • What were the constraints of urban structuring? • Were they suppressed or adapted? 			Identify the constraints that exist prior to the subway station deployment.		
				<ul style="list-style-type: none"> • What were the lines, limits and forms of growth? • Are integrations, open structures with existing borders created? 			Identify the predominant typology / form of the blocks; major flows and connections.		
	Node on the line	Urban mobility in the region	How is the region's macromobility?	Understand the displacements in the region.					
		Transportation systems [N1 + N2 + N3 + N4+ N5]	What are the existing transportation systems that serve the region?	Identify and systematize.					
	Urban instruments	Executive Plans (2002 and 2014) [I1]	What were the existing urban instruments that reverberated in the space of the stations from its conception until 2016?	Identify and analyze such instruments.					
		Zoning [I2]							
		Regional Plans [I3]							
		Urban Operation [I4]							
		Local Masterplan [I5]							
	Other [I6]	Is there any other existing instrument to be applied or that existed and that interfered in the materialization of the design of the station area?							
	How did the spatial transformations occur in the areas of the Pinheiros/Faria Lima and Corinthians-Itaquera subway stations?								

4.3 Local Station Scale



At the local scale of the station area, the objective is to analyze the **results** of the **urban strategies** and the **spatial transformations of the region**, especially if all the work and projects among all the urban scales used in the station areas overcame **spatial dilemmas** between node and place or, conversely, they reinforced spatial ambivalences.

For the first block of analysis, in the category **transport node** [N], the station is considered as an **access node**. It will then be identified how **microaccessibility** and spatial dilemmas occur with the territory.

In microaccessibility the different ways of physical access that can aid in direct access to the station are identified. According to the methodology developed by Baiardi¹², the analysis of pedestrian access will be based on the size of the sidewalk (narrow or wide), as well as the design of squares. For access by bicycle, will be observed the intermodality with bicycle, its location and number of places. For buses, the presence of stalls, stopping points and articulation with the subway station will be observed. As the subway is normally integrated in the same building with the train (including one of the premises for the choice of stations), the microaccessibility analysis for the train and only for intermodality will not be applied. For the motorized individual (private cars and motorcycles) checked embarkation and disembarkation points, and integrated parking to the subway or train.

The modal analysis sequence for the **pedestrian** access [N6], the intermodality with the **subway** [N7], the **train** [N8], followed for access by the **bus** [N9], access by the **bicycle** [N10], by the **motorized individual** (car or motorcycle) [N11] and the **rental** (taxi) [N12]. The tram/VLT [N13] is not analyzed because there is no longer this modal in the urban fabric of the city of São Paulo.

In the scope of the **Place** [P], it aims to analyze if the area of the station, fruit of spatial transformations, constitutes as **place in the territory** or its antithesis, a space, non-place. Thus, it will be sought to visualize if the station area as a unique physical-spatial layer that agglutinates multiple activities, that articulates with the people through possible experiences, perceptions and

¹² BAIARDI, Y. C. L. **The role of microaccessibility in urban mobility**: the case of the Santo Amaro train station in the city of São Paulo. Dissertation (Master degree) - Faculty of Architecture and Urbanism, Universidade Presbiteriana Mackenzie, São Paulo, 2012..

daily actions, and not only as an access space to the transport node as its old vocation throughout the twentieth century. Therefore, four main points of urban design will be investigated in the immediate surroundings of the station area:

[P3] Buildings and [I7] Architecture Projects as an urban instrument

[P4] Local territory + [I7] Urban Design

[P5] Environmental perception

[P6] Urban intensification

[P3] Buildings and [I7] Architecture Projects as an urban instrument

The local survey aims to discuss whether there are program diversity in the architecture of buildings, active facades in the areas adjacent to the access area to the station as well as the interrelations between public and private domains.

[P4] Local territory + [I7] Urban Design

The spatial analysis of the local territory seeks to raise the urban spaces that are characterized as **1.** Linear and open spaces; **2.** Uses of these spaces (circulation ways, squares, parking lots or urban leftovers); and **3.** Urban barriers (fences, walls, expressways, guard rail, rivers, slopes) in both public and private areas. By analyzing diagrams, aims to identify the use and shape of urban space and spatial integrations of the station as the whole based on the concepts discussed in chapter 1.

[P5] Environmental perception

Already in the subjective scope of analysis in which the instrument of the observer's vision is necessary, the structuring of the nodal point of the station area, as well as the readability of the urban space based on some aspects of environmental perception discussed in chapter one.

To emphasize the importance of urban reading by milestones, nodal points, and the readability of the composition of the ensemble, it should be noted that the Nobel Prize winners in medicine in 2014¹³ identified the brain structures that allow people to locate: the human brain absorbs references and creates a **mental grid** when it moves around the cities, as exposed by Lynch's urban experiences in 1961. Scientists sought to answer an ancient philosophical and scientific question that until then had been unanswered: "How does the brain create a map of the space around us and how can we navigate our way through a complex environment?"¹⁴

That said, in this category of analysis, it is questioned:

- Was a nodal point structured in the station area?
- Is there spatial readability between multiple images in the territory?
- What is the possible meaning for an observer? Is there a sense of security or insecurity in the station area?

In this way, the objective is to verify if the architecture of the buildings stimulates attraction, interaction, permanence or repulsion, negation, exchange, rapid passage. If there is a **coherent spatial form** such as a defined boundary, design of visual perspectives, patterns, movement, rhythm, transparency, overlap between urban elements. This analysis will occur through photographs and videos that can be accessed by reading the *QR codes*¹⁵ in the figures produced.

13 John O'Keefe in 1971 he discovered the **cells of place** – a type of nerve cell in the hippocampus that always activates when a rodent is in a particular location in an environment. The May-Britt couple and Edvard Moser in 2005 identified another type of nerve cell that forms a **network that reacts** in a standardized way according to the **movement in a space**, registering a **coordinate system** in our brain, which allows us to find ways and know our positioning accurately. Available at: <<http://g1.globo.com/ciencia-e-saude/noticia/2014/10/nobel-de-medicina-de-2014-vai-para-pesquisa-sobre-sistema-de-posicionamento-do-cerebro.html>>. Access in 20 jun. 2017.

14 Available at: <<http://veja.abril.com.br/saude/pesquisadores-levam-nobel-de-medicina-por-descobertas-sobre-sistema-de-gps-do-cerebro/>>. Access in 20 jun. 2017.

15 *QR code* is a two-dimensional barcode that can be easily scanned using a camera-equipped mobile phone and with a reading apps. This code is converted to a URI address where there are videos produced in the study area.

[P6] Urban intensification

Finally, the last category at the local level aims to analyze the articulation between public and private domains, forms, densities, relations between full and empty; internal and external, transportation systems and environmental perception of the citizen, which result in the diversity, vitality, urbanity, (or monotony) of urban dynamics, in the sum of all analyzes hitherto elaborated in light of the researcher's interpretation of **usage more intense place and between-place**, that is, in urban intensification. It will then be observed whether it is a dynamic, flexible, open, plastic, adaptable, sensitive changes that overcome spatial dilemmas or simply a space, not place that reinforces its ambivalence.

Table 3 (next page)

Synthesis of graphic analysis in the local scale.

Local scale – Station scale		Categories		Question	Objective
		Access node	Microaccessibility [N6 + N7 + N8 + N9 + N10 + N11 + N12]		How does the intermodality of modes available with the station occur?
Place in the station		Buildings [P3] + [I7]	<ul style="list-style-type: none"> • Architectural program of buildings in the station area; • Transition between public and private domain; 	What are their uses, relationship of architectural form between public and private domains?	<ul style="list-style-type: none"> • Raise if there is diversity of program and mode of transition between public and private domain; • Examine whether buildings stimulate attraction, interaction, permanence or repulsion, denial of exchange, rapid passage.
		Local territory (urban space) [P4] + Urban Design [I7]	<ul style="list-style-type: none"> • Open and linear spaces; • Use (roads, squares, parking, urban leftovers); • Barriers urban. 	What are their full and empty, barriers, uses, and connectivities of urban space?	<ul style="list-style-type: none"> • Identify the use and shape of the space, and whether there is spatial integration of the station in the territory.
		Environmental Perception [P5]	<ul style="list-style-type: none"> • Structure of the nodal point; • Urban readability. 	<ul style="list-style-type: none"> • How is the orchestration of the urban elements in the nodal point? • Is there spatial readability between multiple images in the territory? • What is the possible meaning for an observer? 	<ul style="list-style-type: none"> • Check if there is a coherent spatial form for aid in urban legibility • Sensitivity security x insecurity
		Urbanintensification [P6]	<ul style="list-style-type: none"> • Articulation of open spaces with buildings; use of the soil; Transportation system; Environmental perception. 	<ul style="list-style-type: none"> • How is the interaction of pairs of disparate elements? • Is there a sense of the parts with the whole? 	<ul style="list-style-type: none"> • Observe whether it is a place (dynamic, flexible, plastic, open adaptive, sensitive changes) or simply a space, not place. • Identify urban diversity x monotony; vitality x monotony; • Have the spatial dilemmas between node and place been overcome or reinforced?
What are the spatial ambivalences, challenges and potentialities in the areas of the seasons?					
Purpose: Development of an articulated mobility hub to the urban hub.					
Challenges: Overcoming spatial dilemmas.					

Thus, the results aim to recognize the spatial dilemmas of the multiple urban elements that worked in the urban transformation in the areas of the stations in order to understand them and turn them into constructive forces for the elements considered negative, as well as to recognize the development of design practices that had a positive spatial performance.

The mapping of spatial transformations identifies the virtues and shortcomings of their current spatial configurations, capturing a variety of approaches in the search for an adequate urban form in the station areas that should be valued to enhance not only urban diversity and vitality, but also development from the core of a station.

The methodological aspects of **figure 1** summarize in a global way all the categories and variables proposed in the analysis of the case studies. Thus, after the investigation to occur in the next chapters in the three scales in the urban dynamics of the metropolis of São Paulo, it is possible to understand the spatial dilemmas, but also the power of the performance of a station area as a mobility hub in the development of an urban hub.

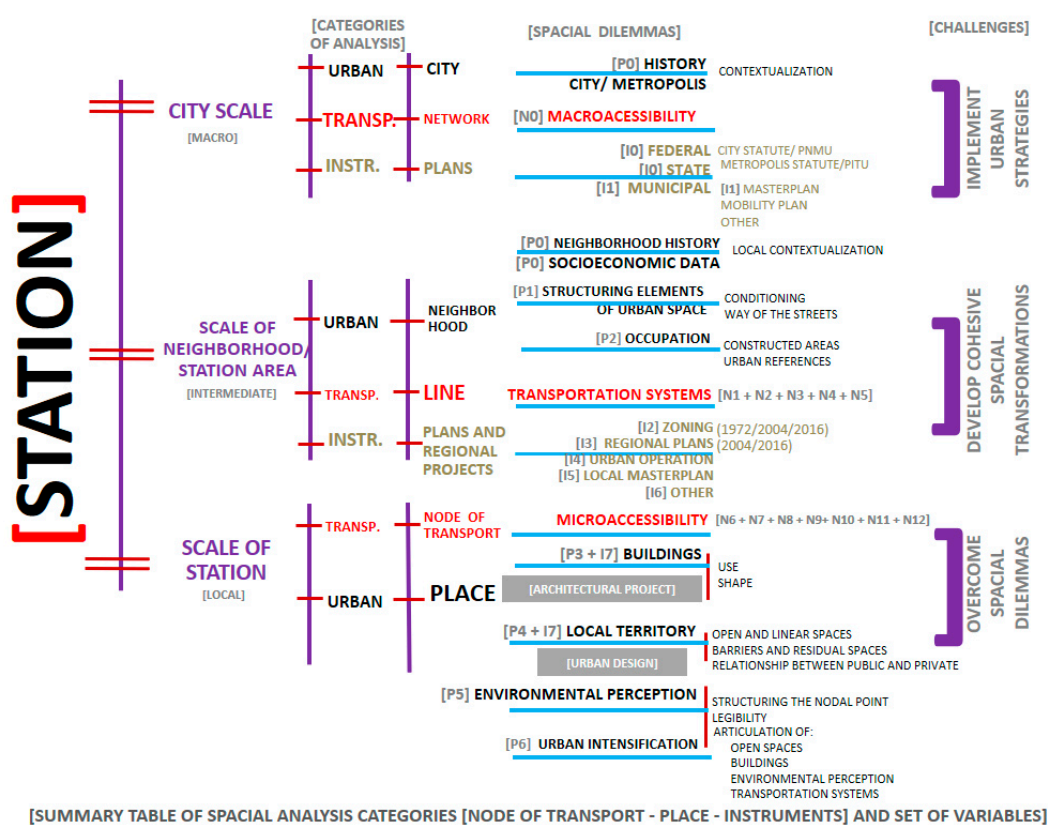


Figure 1
Detail of the way of analysis of the case studies in the urban scales.
Fonte: autora, 2017.

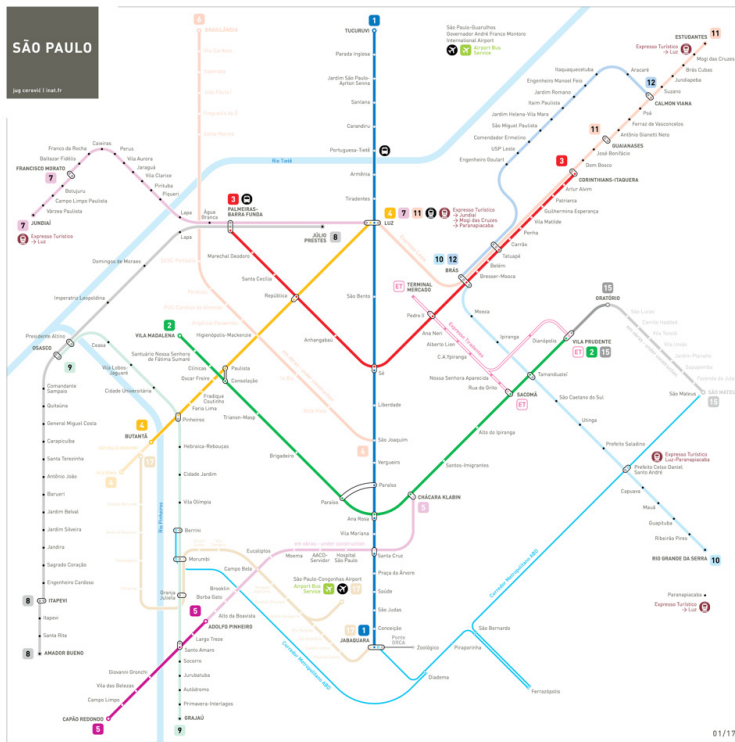


Figure 2
Map of the public transport network of São Paulo, current and under construction.
Source: Jug Cerovic, 2017. Available at: < <http://www.inat.fr/metro/sao-paulo/>>. Access in 19 jun. 2017.

4.4 The choice of stations as case studies

The choice of stations as case studies occurred so that each station represented the sum of the major categories: 1. **The transport node** 2. The place, added by the presence of a possible 3. **Project** that has been deployed in the 21st century.

After this, the case studies were selected within the context of the **subway/train network** (figure 2), more specifically of the subway lines which were previously a **transport node** (union of one or two more lines).

It was decided to select only the lines designed and built by the Subway, since in addition to initially being born as a municipal organ, the Subway Company was a significant urbanizing agent, especially the blue and red lines, the first two lines implanted in the city. This scenario is contrary to the implementation of CPTM train lines, which had as their main purpose the transportation of cargos¹⁶. Therefore, the previously selected stations that constitute a transport node were:

Line 1 - Blue	Line 2 - Green	Line 3 - Red	Line 4 - Yellow	Line 5 - Lilac
Luz	Vila Prudente	Palmeiras- -Barra Funda	Paulista- -Consolação	Santo Amaro
Sé		República	Pinheiros	
Ana Rosa		Brás		
		Tatuapé		
		Corinthians- -Itaquera		

Table 4
Stations with subway connections
Source: Our treatment, 2017.

16 CPTM were born in an economic context of exporting coffee in the early twentieth century by private companies to be detailed in chapter five. Finally, the CPTM lines, especially the stations in current operation, were overwhelmingly renovated and adapted to the demand of existing passengers, not representing a significant agent in the spatial transformation of the 21st century.

Within the universe of these 12 stations, only two have undergone spatial transformations in their surroundings when analyzed in the scope of some kind of contemporary intervention: **Pinheiros / Faria Lima and Corinthians-Itaquera Stations.**

The area of the Pinheiros station, together with the **Faria Lima Station**, was the venue for a national public contest called the **Urban Reconversion of Largo da Batata**, promoted by the Municipality in 2002 and implemented in the following years. It should be noted in this area that the union of the Line-4 subway line, through the Pinheiros station and the 9-line Esmeralda train, significantly altered all the dynamics of both the line and the Pinheiros node itself.

The **Corinthians-Itaquera** station is the station **with the highest demand** located outside the expanded center, and an important node with the CPTM train line. Also, its choice is reinforced by having been the target of a project called Polo **Institucional Itaquera** implemented between 2010 and 2014 in connection with the FIFA Soccer Games in 2014.

In the scope of the **urban instrument**, in PITU 2025, both Itaquera and Pinheiros are suggested as polar centrality and key integration terminals. Both stations also have bus terminals in their areas. In the 2014 PDE, both stations are not included in the perimeters of the urban structuring axes because they do or have been part of an urban operation as detailed below.

Finally, in the **Place (P)** category, these stations fit into two distinct urban approaches which enriches the discussion of spatial dilemmas: the moment of the arrival of transport infrastructure in the territory. In the case of the Corinthians-Itaquera station (Line – 3), it was inserted in a **large urban void**; in the case of the Pinheiros / Faria Lima station (Line – 4), the infrastructure was inserted in a **consolidated urban fabric**. It is also remembered that the stations chosen as European reference, in the Place category (L), also fit these approaches. **Stratford Regional** was embedded in a **large urban void**, just like **Central Utrecht**, in a **consolidated urban fabric**, which enhances the relevance of all the studies placed for their respective analyzes.

In view of the above arguments, it is understood that the Itaquera and Pinheiros / Faria Lima stations are justified to be the target of a case study, both for their strategic locations in the metropolitan region, for their “contemporary” interventions, and for their characteristics in the transport node and importance as places in their respective neighborhoods.

Therefore, the research in drawing analysis by the Pinheiros / Faria Lima station will be started by presenting both an urban design and an urban fabric older than the Corinthians-Itaquera station, whose analysis will be followed later, being completed this with the presentation and design discussion of a new urban scenario in view of the large urban voids present in the present time and of its projectual potentiality. However, before that, the macro-scale approach of the city of São Paulo will take place, where both stations are located.

chapter 5

**The city of São Paulo:
an approach on the
macro scale**

A city is made of stones and people¹.

¹ Sócrates (469-399 A.C.)

In order to identify the necessary conditions for the subway stations to overcome the spatial dilemmas in their surroundings, the metropolitan context in which the Pinheiros/Faria Lima and Corinthians-Itaquera stations will be located (**figure 1**): the **city of São Paulo**.

The macro approach will pass through the discussion of categories 1. **place** - presentation of the historical context of the city; 2. **transport node** - the network and the macroaccessibility design; 3. most relevant **urban instruments** in the materialization of urban relations in the areas of the stations.

It should be noted that this is a macro-scale approach, presenting the city especially to those who are unaware of the urban complexity of São Paulo. Thus, it is not part of the proposal to describe each plan or law in its entirety, but rather to elucidate ambivalences between the transport node and place within the **macro scale** and to discuss the main points that directly involve the themes dealt with in the materialization of the areas of the stations in the city of São Paulo.

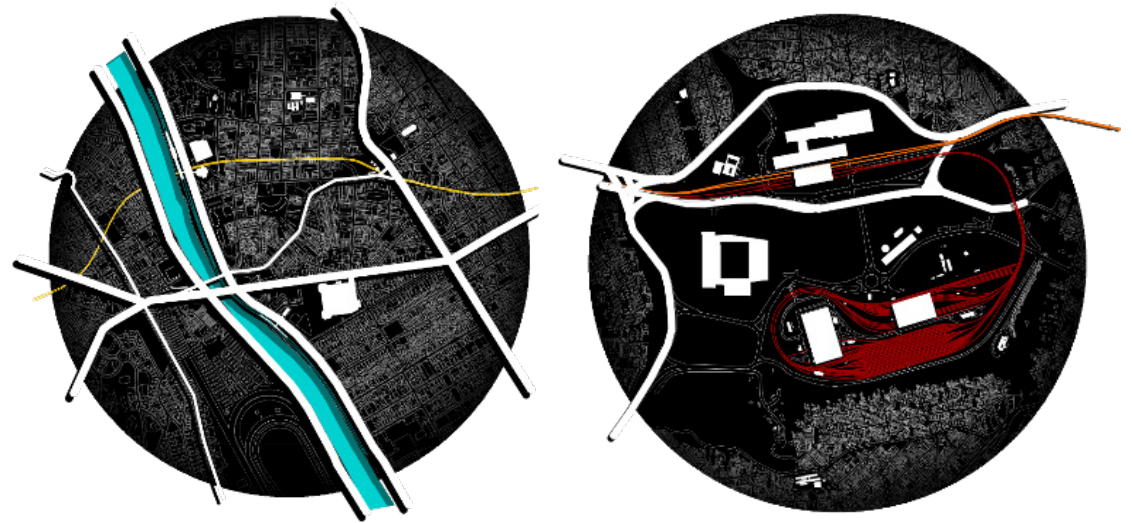
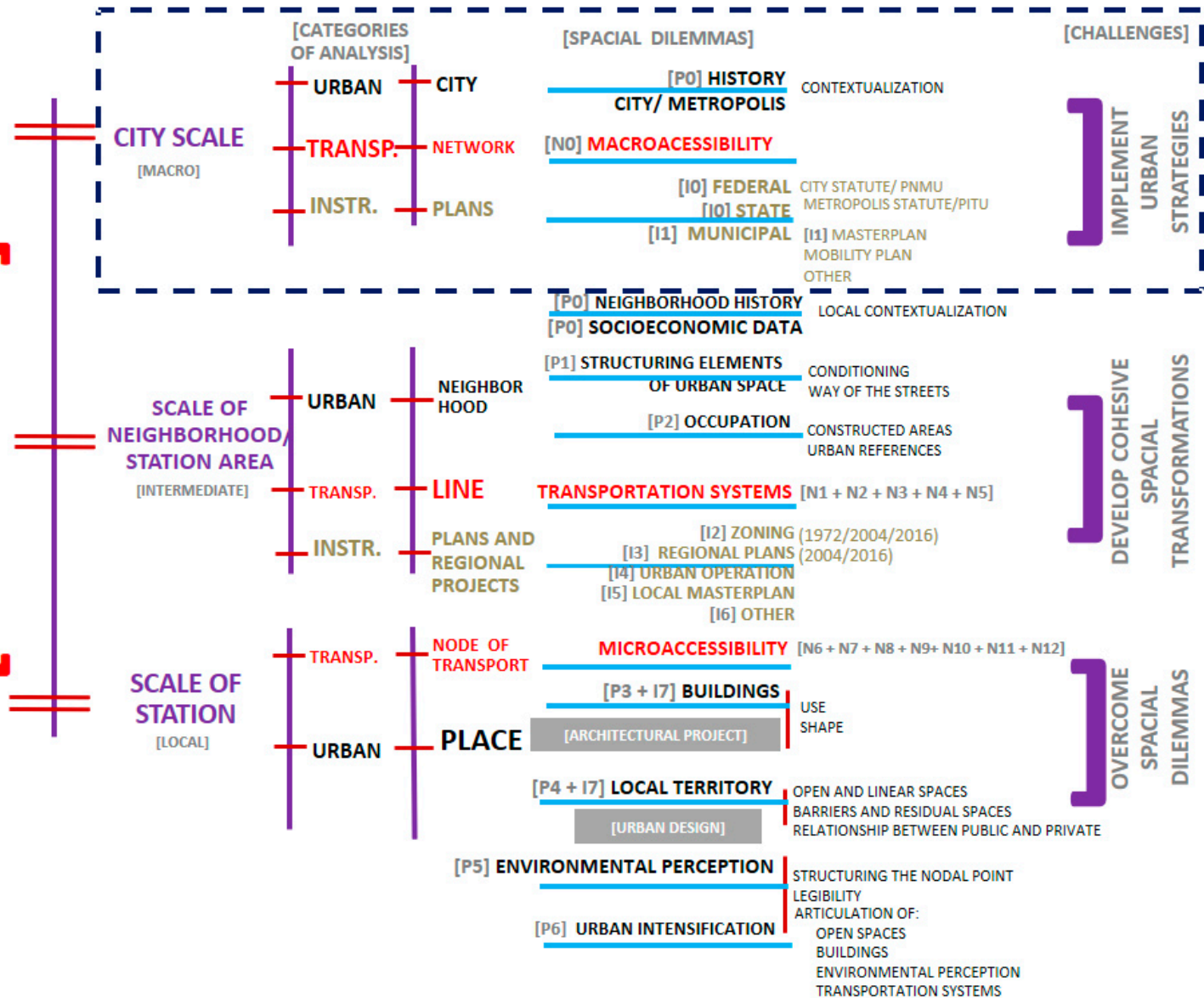


Figure 1
Areas of Pinheiros / Faria Lima and
Corinthians-Itaquera stations.
Source: PMSP. MDC, 2015, our
treatment.

To aid in understanding the **structure of the chapter**, a diagram is presented with the set of analyzes to be performed highlighted in the rectangle (**figure 2**). It should be noted that in the appendix there are summary tables of the analyzes described in this chapter.

[STATION]



[SUMMARY TABLE OF SPACIAL ANALYSIS CATEGORIES [NODE OF TRANSPORT - PLACE - INSTRUMENTS] AND SET OF VARIABLES]

Figure 2
 Synthesis table between node-place and instrument categories and set of variables highlighted for macro analysis.
 Source: author, 2017.

5.1 Place in the city: urban context of São Paulo

Until the mid-nineteenth century¹ the city of São Paulo had no economic or political relevance to the country. It was only a stopping point for the expeditions that followed to the interior of the country. The Northeast region played a leading role until the 18th century, later transferred to the axis of the states of Minas Gerais – Rio de Janeiro in southeastern Brazil.

In 1870, the city of São Paulo had only 32 thousand inhabitants. The inflection point was the arrival of **coffee growing** in the then São Paulo province and the implantation of the *São Paulo Railway* in 1867 that connected it from the **port of Santos** to the interior of São Paulo.

The highest point of the city – rafter of Av. Paulista (815 meters above sea level) inaugurated in 1891, was the place chosen by the coffee barons and the new industries to implant their dwelling². It was at this time that São Paulo, with an intense migratory flow, had its first **industrial outbreak**, which occupied the **floodplains through which the railroads passed**, constituting great working regions. This moment also corresponded to the first outbreak of “urbanity”, especially in the central area, with the implementation of piped water services, electric tramway transport, etc. In 1900, the population of the city was already of 250 thousand inhabitants, of which 150 thousand immigrants³.

With 1 million inhabitants in 1928 and due to the limits imposed by the urban infrastructure of the tramway network, the central region of the city was configured in a dense and concentrated way⁴, potentializing a pattern of urban development called centripetal⁵.

On the other hand, in **1924**, for the first time, **clandestine buses** began to operate, which reached portions of the territory where the train and tram lines did not reach. Gradually the buses became a large and significant competitor for the trams⁶.

1 In 1554, in a territory irrigated by an abundance of water, the forest of the Atlantic Forest and occupied by Indians, the town of São Paulo is founded 54 years after the “discovery” of Brazil by the Portuguese. The Jesuits founded a college where today is the “Courtyard of the College”, overlooking the floodplain of the Tamanduateí River, an important tributary of the Tietê river, a river that structures the city from east to west to the present day.

2 ROLNIK, R. **São Paulo**. São Paulo: Publifolha, 2001. (Folha explains).

3 ROLNIK, R., op. cit., loc. cit.

4 In 1914 the density was 110hab/ha. Cf. ROLNIK, R., op. cit., loc. cit.

5 MEYER, R.; GROSTEIN, M.; BIDERMAN, C. **São Paulo Metrôpole**. São Paulo: Edusp, 2004. p. 35.

6 ROLNIK, R., op. cit., loc. cit.

The region of São Paulo that concentrated the economic and political power of the country in force at the time was very dependent on coffee exports. In 1929, along with the stock market crash in New York and with the end of the Old Republic⁷ (1889 up to 1930) ended the first major economic and urban cycle of the city.

However, it was in this short period of time that the main **communication axes** were implemented (in this case by 5 railway lines). Meyer, Grostein and Biderman⁸ identify a **centrifugal structure**, which reinforces the claim that São Paulo was born **metropolitan**. Under this centrifugal structure, there were also **centripetal** urban forces, in which the city was organized from the central urban nucleus articulated to the axes of communication, which simultaneously reinforced its **centralizing** role. The authors state that it is fundamental to understand the dialogue of these two forces in order to establish an interpretation of the metropolitan structure in its current phase.

Polarized by the city of São Paulo, the rail system organized the centrifugal forces of metropolitan expansion and simultaneously reinforced the capital's hegemony as a centralizing hub⁹.

From the management of Pires do Rio (1926-1930) will be laid the premises for the installation of a **new radioconcentric road organization breaking with logic under the rails and sustaining the logic of an urban expansion**. The Avenues Plan, urban design proposed by Prestes Maia, will be the core of the communication axis of the metropolis of São Paulo (to be detailed below). The radial avenues will provide the support for flexible penetration in the metropolitan territory and the inter-districts structuring, complemented by punctual actions to adapt to the urban traffic, implanted over the following decades that will gradually be flooded by cars, buses and recently by motorcycles.

The 1925's Light project¹⁰, which proposed the construction of a subway network linked to other means (buses and trams) to extend the collective transportation system to the new urban dimensions, is discarded to the detriment of the Avenues Plan. The Avenues Plan therefore ex-

7 The Old Republic, also known as First Republic, extended from 1889 – with the proclamation of the Republic until 1930, when Getúlio Vargas, through a Coup d'état, began a new political period in Brazil.

8 MEYER, R.; GROSTEIN, M.; BIDERMAN, C., op. cit., p. 34.

9 MEYER, R.; GROSTEIN, M.; BIDERMAN, C. **São Paulo Metr pole**. S o Paulo: EDUSP, 2004.

10 From 1901 until the end of its concessions, public transportation, energy and telephone services were monopolized by the Anglo-Canadian company named *The S o Paulo Tramway Light and Power Co.*, better known as *Light*.

pressed an urban design more suited to **rapidly expanding horizontal cities**¹¹.

The **railway system**, without modernization investments, will be abandoned by the private sector and transferred to the public power and will lose its protagonism in the cargo and people displacements throughout the years of the XX century in the city of São Paulo.

Between the 1940s and 1960s, motivated by the consolidation of the São Paulo **industrial park**, no longer linked to the railways, but now to a new **road system** of great territorial scope, a wave of migration occurred. At that time a new urban cycle began, in which the expansion and constitution of a **peripheral territory**, of a disjointed and slightly dense urban spot.

On the other hand, there was the transfer of economic activities, especially in the scope of services, from the old center to av. Paulista (1960s), then av. Luiz Carlos Berrini (mid 80's) and recently to av. of the United Nations (marginal Pinheiros), which consolidated the **southwestern vector** as São Paulo's *most economically important region*. Thus, the Southwest quadrant is favored by the supply of jobs, the concentration of infrastructure investments¹², and the real estate market throughout the 20th century in the continuous process of creating new linear "centralities" as discussed by Frúgoli Júnior¹³ as a counterpoint to the abandonment of the traditional center.

In this sector it is possible to observe the socio-spatial¹⁴ segregation that exists in relation to the Metropolitan Region of São Paulo (RMSP), due to the concentration of economic and political power, concentrating the largest investments in urban infrastructure. According to the authors Villaça and Zioni¹⁵:

There is a clear concentration of the highest income layers in a certain region of the city, a region that consists of dozens of neighborhoods, including low-income neighborhoods. [...] In São Paulo, this region is immersed in the Southwest Quadrant of the Metropolis. [...]. However, most middle classes and all above-average classes live in this region.

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- 11 ANELLI, R. L. S. Redes de Mobilidade e Urbanismo em São Paulo: das radiais/perimetrais do Plano de Avenidas à malha direcional PUB. *Arquitextos*, São Paulo, year 07, n. 082.00, Vitruvius, mar. 2007.
- 12 VILLAÇA, F.; ZIONI, S. *Os transportes sobre trilhos na Região Metropolitana de São Paulo*: the public power accentuating inequality. Rio de Janeiro, 1st CBTU Monograph Competition, 2005.
- 13 FRÚGOLI J., H. *Centralidade em São Paulo*: trajectories, conflicts and negotiations in the metropolis. São Paulo: Edusp, 2000.
- 14 VILLAÇA, F. *Espaço intra-urbano no Brasil*. 2 ed. São Paulo: Studio Nobel:FAPESP: Lincoln Institute, 2001.
- 15 VILLAÇA, F., ZIONI, S., op. cit., p. 4.

The authors reinforce the favoritism of the richer minority to the detriment of the poorest who concentrate the largest investments in transport infrastructure such as road systems, tunnels and other amenities.

In the historical process of structuring the metropolis Meyer, Grostein and Biderman¹⁶ affirm that there are three important elements for their understanding, namely:

1. Dispersion of the peripheral pattern, with socio-spatial characteristics;
2. The displacement of the residential function to disqualified areas and with little urban infrastructure;
3. Dissociation of the public transport system and the main intra-metropolitan displacement flows - main characteristic of the constitution of the metropolitan space.

Generally speaking, the formation of an **expanded center**¹⁷, a **hypertrophy** of the area dedicated to **tertiary functions**, expansion of the main center and verticalization¹⁸ took place in the metropolis, relegating the periphery to orbit in this great center associated with the absence of urban incentives in the creation of sub-centers in the territory.

The intra-urban scale was conceived in its majority a disqualified urban environment when compared to the expanded center of the city, guided by the dynamism of the private sector; by the concentric radio functional articulation of the urban spot on a metropolitan scale that maintains the center-periphery dichotomy¹⁹ In the words of the authors,

The metropolitan pattern of expansion is associated with the characteristics assumed by the residential settlement of the low income population and the directions **imposed by vectors of regional accessibility**, independent of the guidelines established by municipal or metropolitan planning. Its characteristics reveal the predominance of regional axes as **vectors of urban expansion**. These routes acquire a determining role in the intra-urban configuration of the metropolis,

16 MEYER, R.; GROSTEIN, M.; BIDERMAN, C. **São Paulo Metr pole**. S o Paulo: Edusp, 2004. p. 37.

17 The "expanded center" of the city is an area located around the historic center and delimited by a mini ring, formed by the Tiet  and Pinheiros Avenues, plus Salim Farah Maluf avenues, Lu s In cio de Anhaia Melo, Provisional Boards, Tancredo Neves President, Maria Maluf Road Complex, Afonso d'Escragnolle Taunay and Bandeirantes, which receives the majority of investments in urban infrastructure. Cf. MASSARA, V.M. **A Implanta o de Infraestrutura na Cidade de S o Paulo**: O centro expandido no per odo 1890-1999. Other times, Dossier History and City. V. 9, n. 13, p. 228-251, 2012.

18 Villa a, F. **Espa o intraurbano no Brasil**. S o Paulo: Studio Nobel: FAPESP: Lincoln Institute, 2001. p. 265.

19 MEYER, R.; GROSTEIN, M.; BIDERMAN, C., op. cit., loc. cit.

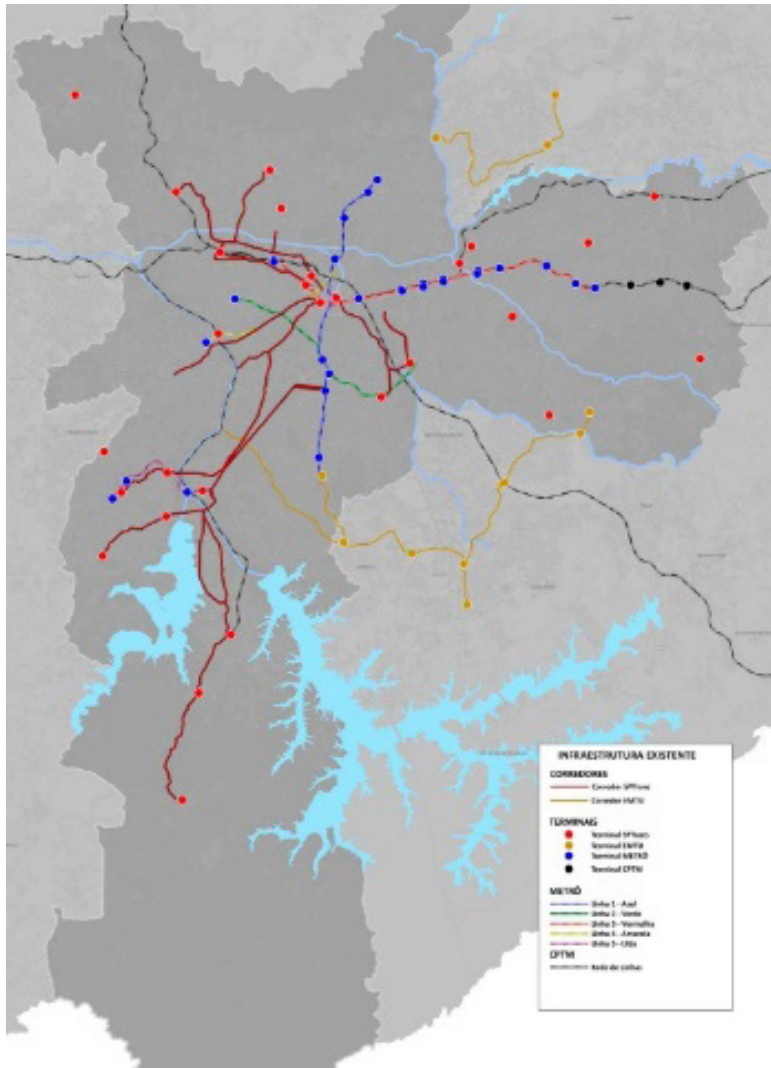


Figure 3
Public transport network in the city of São Paulo. Bus corridors (red); intermunicipal line (yellow); black dashed lines (train); other lines (subway). Bus terminal (responsibility of the municipality) - SPTrans (red circle). Other bus terminals (state responsibility) - Subway, CPTM, EMTU (blue color circle, black color circle, blue color circle).
Source: PMSP. PlanMob/SP, 2015, map 01.

assuming a dual function: they make possible regional connections that sustain the productive system and respond by intra-urban traffic. They often also assume the role of neighborhood center, forming urban corridors with heavy traffic. However, they were not designed for any of these functions, but resulted from the functional transformation of old intercity roads into urban roads. The punctual and gradual action of the public power guaranteed the necessary road works for the adaptation to the urban traffic²⁰.

The fragmented and dispersed urban slick of the metropolis resents **urban polarities** as an alternative to face urban and mobility challenges. Next, we try to synthesize the main elements of the configuration of the macro scale of the city that are fundamental to the development of this research.

5.2 The macroaccessibility of the metropolis and its challenges

The design of the macroaccessibility network that has been configured, both in the municipality and in the metropolis, has the same physical, spatial and functional constraints: they are basically **concentric radius** and the spine of fish around the Pinheiros and Tietê rivers²¹.

The actual result of the transport plans and projects for São Paulo materialized until 2017, configured a metropolitan transport network (**figures 3, 4, 5**) composed of the following systems and numbers:

²⁰ MEYER, R.; GROSTEIN, M.; BIDERMAN, C. **São Paulo Metrôpole**. São Paulo: Edusp, 2004. p. 48. Our griffin.

²¹ ZMITROWICZ, W.; BORGHETTI, G. **Avenues 1950-2000. 50 Years of Planning in the City of São Paulo**. São Paulo: Edusp, 2009.

- A **train** network of 260.8 kilometers, carrying **2.7 million** passengers per working day, operated by CPTM²²;
- Five **subway lines** (Line-1, Line-2, Line-3, Line-5 and Line-15) operated by Subway, computing 68.5 km (excluding Yellow Line 4) carrying **4.7 million** people daily, 25% from the east and 27% from the south (Subway, 2017);
- A line of 12.8 km - **Line-4** operated by the ViaQuatro Consortium, carrying **700 thousand** passengers on an average working day (MDU)²³;
- 130 km of **bus lanes** (segregated lanes) and 500 km of bus lanes (lanes marked for bus use at certain times of the day). The average number of passengers carried per working day on the entire bus network in the city of is: **9.9 million** distributed over 1342 lines²⁴;
- 468 Km²⁵, of bike paths²⁶.

The main systems [N1-N4] and plans [I1-I4, 16] that based this structure, especially in the territory of São Paulo with 1521.11 km² and 12.038.175 inhabitants²⁷ are briefly discussed below for a better understanding of how consolidated the structure of mobility in São Paulo today and the context that will reverberate, directly or indirectly, in the space of the stations to be analyzed in the following chapters.

- 22 Available at: <<http://www.cptm.sp.gov.br/a-companhia/BalancosDemonstrativos/RA%202016.pdf>>. Access in: Jun 3rd 2017.
- 23 ViaQuatro is the concessionaire responsible for the operation and maintenance of the São Paulo subway Line 4-Yellow for 30 years, the first public-private partnership agreement in the country. The beginning of full commercial operation occurred in October 2011.
- 24 Information passed on in service to the SIC opened by the researcher. Answered June 14, 2017, protocol number 22443, by Ulrich Hoffmann - Head of Cabinet of SPTrans.
- 25 Traffic Engineering Company – CET, 2016.
- 26 The *bicycle path* is understood to be the exclusive space for bicycle circulation. In São Paulo there is timidly the option for cycle paths, paths without the physical separation for circulation of the bicycles with the rest of the existing traffic in the way, stimulating a greater security. However, cycle paths are only efficient when the maximum speed limit is between 30 and 40 km/h, that is, the possibility of sharing safely between all the vehicles involved.
- 27 Brazilian Institute of Geography and Statistics – IBGE, 2016.

Mapa do Transporte Metropolitano Metropolitan Transport Network



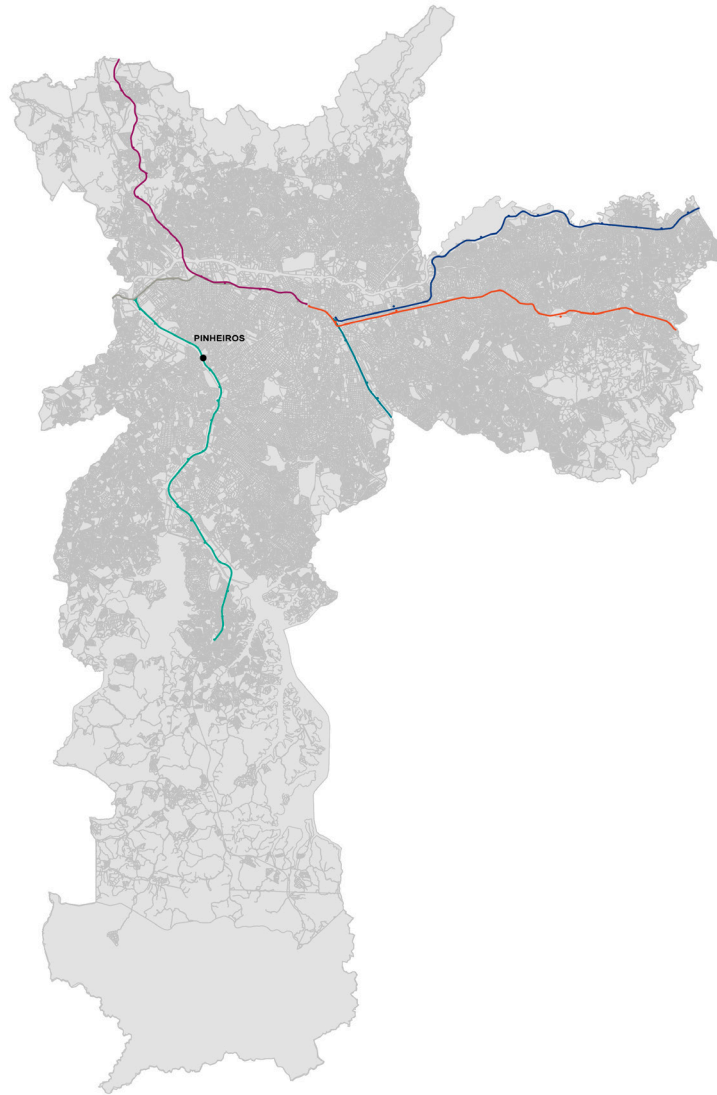
Consultado em 03 de Jun. Disponível em: <http://www.cptm.sp.gov.br/a-companhia/BalancosDemonstrativos/RA%202016.pdf>. Acesso em: 03 de Jun. 2017.

Legenda Legend

	Line 1 - Azul	METRÔ		Terminal Metropolitano de Ônibus	
	Line 2 - Verde	METRÔ		Estação	
	Line 3 - Vermelha	METRÔ		Integração - gratuita	Estação com conexão
	Line 4 - Amarela	VIAQUATRO		Integração - tarifada	Estação com conexão
	Line 5 - Laranja	METRÔ		Integração - gratuita	Estação com conexão
	Line 15 - Roxa	CPTM		Terminal Rodoviário	
	Line 8 - Caramuru	CPTM		Bicicleta	
	Line 9 - Esmeralda	CPTM		Parapente	
	Line 10 - Turquesa	CPTM		Estacionamento de Ônibus Integrado	
	Line 13 - Dourado	CPTM		Estacionamento de Ônibus Integrado	
	Line 14 - Verde	CPTM		Estacionamento de Ônibus Integrado	
	Line 16 - Azul	CPTM		Estacionamento de Ônibus Integrado	
	Line 17 - Verde	METRÔ		Estacionamento de Ônibus Integrado	
	Line 18 - Verde	METRÔ		Estacionamento de Ônibus Integrado	
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	Line 99 - Verde	METRÔ		Estacionamento de Ônibus Integrado	
	Line 100 - Verde	METRÔ		Estacionamento de Ônibus Integrado	



Figure 4
Map of public transport operated by the state government (subway, train and EMTU).
Source: Metrô, 2017.



[N1] Railway system

In 1867 the first railroad in the city was implanted by the *São Paulo Railway* (SPR). The city of São Paulo became strategic because it connected the **port of Santos** to the interior of São Paulo (coffee production site), becoming an important **rail junction**. It was also an important urbanization tool of the city since several industries and residences were established along its route, located in lands near the lowlands, with little slope.

In 1929, with the crisis of the New York Stock Exchange and the loss of the value of coffee, the various railway lines deployed by private agents began to have no more investments, which came largely from the ranchers.

During the government of Juscelino Kubitschek, in 1957 the Federal Railroad Network S/A (RFSa), was created, with the meeting of 18 railroads whose control happened to be of the federal government²⁸. It was at this time that an **abandonment of the rail system** began as a public policy for public passenger transport, not because it was an old means of transport, but because of the lack of a proper public transport policy that modernized it and integrated it into a multimodal system. Concomitant to this movement, there was the unbridled incentive to the automobile industry, which began to be installed in the country²⁹.

In 1984, Fepasa transferred the management of the rail network to CBTU and in **1992**, CBTU transferred to the **São Paulo Metropolitan Trains Company - CPTM** the management of the São Paulo Metropolitan Region's railway lines, which is managed by the state government.

CPTM is a mixed economy company subordinated to the Metropolitan Transportation Department of the State of São Paulo. It is responsible for the maintenance and operation of the São Paulo Metropolitan Region (RMSP) railway lines. Since 1992, the RMSP railway lines have gradually improved in metropolitan passenger transport and have an important **inter-municipal link**. Thus, a great part of the current railway design in the metropolitan territory (**figure 6**) comes from the first decades of the twentieth century at the peak of coffee production.

In relation to the **tramway** system, they reached 353 km in length and 22 lines in São Paulo. Based on the justification that they increasingly competed for urban space, the lines were deac-

Figure 5

Rail network inserted in the metropolitan fabric.
Source: PMSP, MDC (2015). Our treatment, 2017.

²⁸ The crisis of 1929 weakened the economic power of the farmers, the greatest entrepreneurs in the execution and maintenance of the **railway lines**, which gradually became obsolete.

²⁹ BAIARDI, Y. C. L. **O papel da microacessibilidade na mobilidade urbana: o caso da estação de trem Santo Amaro na cidade de São Paulo**. Dissertation (Master degree) - Faculty of Architecture and Urbanism, Universidade Presbiteriana Mackenzie, São Paulo, 2012..

tivated (from 1957) from the justification of replacing it with a more modern system – subway. In 1968, therefore, all existing lines were deactivated so far, there is no single line in the urban space of the metropolis.

[N2] Underground system

The **subway system** was the result of several studies for the design of a subway network in São Paulo, for example: the proposal developed by Light in 1925; of the plans elaborated in secrecy by the German company *Gruen Bilfiger* (1937), and even of the Plan of Avenues itself, that foreseen the implantation of underground lines aligned with the system of road of the radial avenues as in av. May 23 and Radial Leste; there was still in 1945 a proposal for a subway network proposed by Eng. Mário Lopes Leão in the case of an irradiated subway ring; or in 1947 when there was also a proposed metro network by the French, among many others³⁰.

In 1966 it was the year of both the creation of **Companhia do Metropolitano**, better known as **Subway**, and the contracting of the HMD consortium. In 1968 was presented a basic subway network³¹ based on the research Origin and Destination³². The study of the HDM was therefore the **radioconcentric road** structure of the city in the design of the subway network.

In 1974, the first subway stretch of the city (Line-1 Blue, north-south) was inaugurated, between Vila Mariana and Jabaquara stations. Throughout the 1970s, new stations of Line 1 were inaugurated. Throughout the 1980s, red line stations were delivered. Between 1991 and 1992, the first stations of the green line were inaugurated, which had an expansion in the following decade. At the beginning of the 21st century, a small stretch of the Lilac Line 5 was part of the metro network. In 2010, the first stretch of the Yellow Line was inaugurated, the first one to be operated under concession by the ViaQuatro Consortium, but designed and built by the Subway, whose lines in the urban fabric are summarized in **figure 6**. And finally, in 2015, the small stretch of the Monorail Line 15-Silver is inaugurated.

30 ZIONI, S. Metrô e Sistran: o transporte urbano volta para os trilhos e cai na rede. In: SOMEKH, N., CAMPOS, M. (Org.). **A cidade que não pode parar**: planos urbanísticos de São Paulo no século XX. São Paulo: Mackpesquisa, 2002.

31 HMD international consortium formed by the German companies Hochtief and DeConsult and by the Brazilian Montreal began geological and social studies to design a basic network of seventy kilometers to São Paulo.

32 The Origin and Destination Survey, or OD, is an instrument for transportation planning that provides data on population movements in the São Paulo Metropolitan Region, pointing out the origins and destinations, motives and modes of transportation of these trips. OD research occurs every 10 years and the first one occurs in 1967.

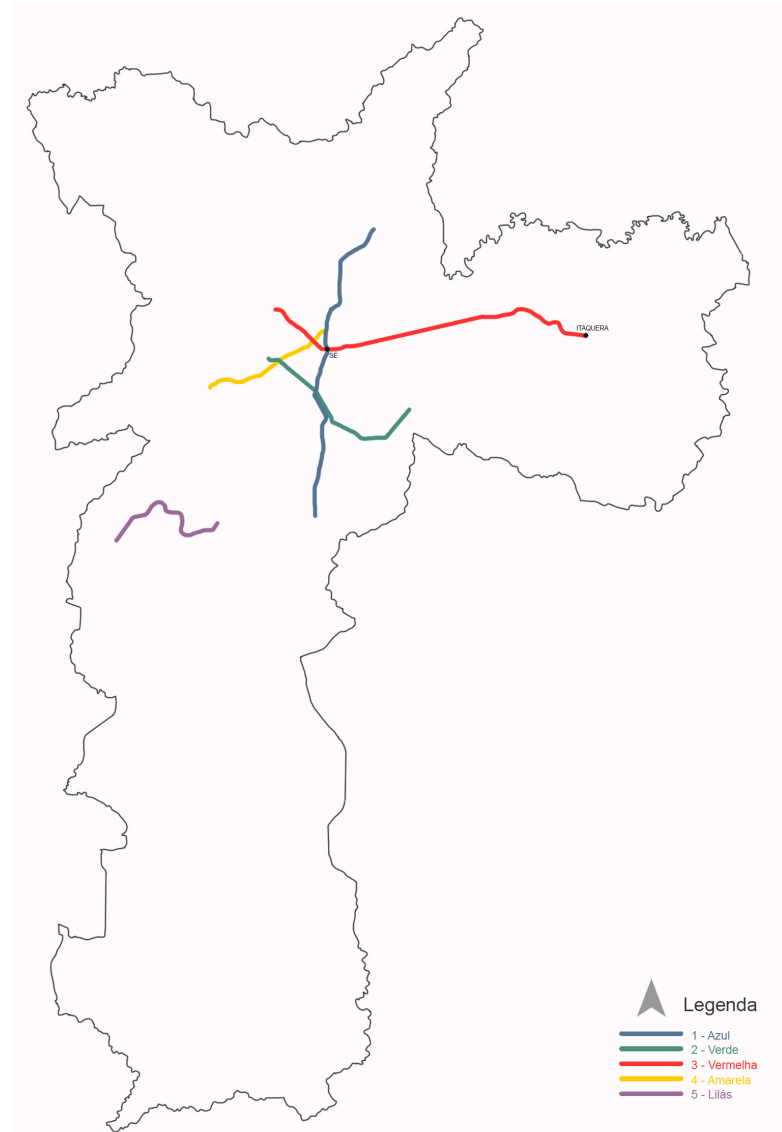


Figure 6
Metro lines in the city of São Paulo.
Source: PMSP, MDC (2015), Our treatment, 2017.

It is important to point out that in 1978, the control of the Companhia do Metropolitano, conceived as a **municipal** company, is passed on to the **State** Government. For some, this change in the subordination of the Subway to the state sphere a priori would bring economic advantages, since the State has a greater force than the Municipality. The State could also play an articulating role among the various municipalities of the Metropolitan Region of São Paulo. However, Moura³³ states that from 1983 onwards, it was the beginning of the departure of the Metro in the relations of the territory associated with economic problems: “Secondly, what has been experienced since the early 1980s has conditioned a practice that would be commonplace in the following decades: **the imposition of the economic situation as protagonist of the subway dynamics.**”

A first consequence of this imposition was evidenced in the yearbook of 1983, where the Subway informed that, from that moment and to guarantee the expansion of the network, **suppressed actions of urban improvements in the surroundings of the actions.** By itself, this action represented **a distancing from urban interests caused by economic constraints.**

According to Santos³⁴, there were two distinct moments in network planning: **before and after the creation of the Subway** in 1966. The first, not concretized, presents a network design with great similarity of layout, with radial lines, varying only its relation with the center where the **technical aspect** was decisive for the support of decision making. The **second moment** varied significantly in its shape and extent; and the technical aspect gradually gave rise to the **politicization** of the discussions among several agents about the planning of the network until proposing lines independently. The author reinforces that there seems to be some “**difficulty**” in **defining a metro network** that effectively supports the movement of people in São Paulo.

Moura³⁵ corroborates Santos’ studies by confirming in his thesis that even though there is a rhetoric for the expansion of the subway lines, practice shows that the **financial question** was more preponderant than **urban issues and displacements.** And that such ambivalence was aggravated successively in the implantation of each new generation of the subway lines³⁶ (**figure 7**).

33 MOURA, G. J. C. **Diferenças entre a retórica e a prática na implantação do metrô de São Paulo.** 2016 (Doctoral thesis). Faculty of Architecture and Urbanism, University of São Paulo. P. 256.

34 SANTOS, L. C. L. **Crescimento da região metropolitana de São Paulo e das redes estruturais de transporte: a case of mismatch.** São Paulo: 22nd Week of Railway subway Technology, 2016.

35 MOURA, G. J. C. op. cit., loc. cit.

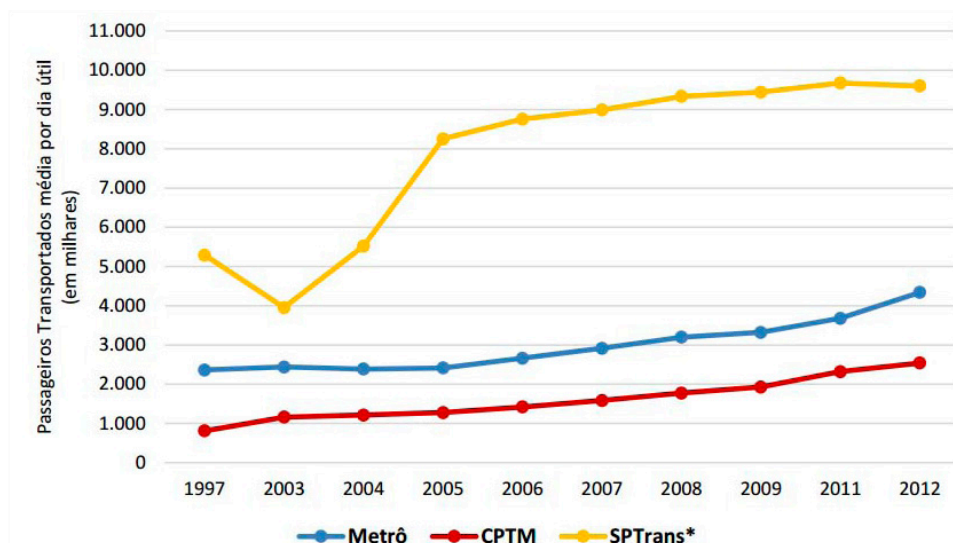
36 Line-1 (initially implemented in 1974); Row-2 (1991); Row-3 (1979); Line 5 (2002); Line-15 (2015).

[N3] Tire system: bus

Historically³⁷, the first bus corridors were designed to meet a pendular and radial demand, since the supply of jobs always concentrated predominantly in the expanded center, while the residences multiplied in more distant and peripheral districts.

Bus traffic is the most important mode of public transportation in São Paulo (chart 1) according to the Mobility Plan - PlanMob of 2015. More recent research also demonstrates that the bus system showed a growth in demand for intrazone trips and connections with other regions of the city, not the central area. The new configuration of uses has increased the need to connect perimeter areas more directly. Almost half of the bus passengers heading to the city center now make the transfer in the central area to reach their final destination outside of that region³⁸. There is no map that guides the movement of passengers of this important modal to the present day.

Finally, it is important to point out that the bidding model that will give new general guidelines for the operation of bus transportation in the city is currently being discussed (2017).



37 In order to organize the various existing bus lines in the city since the rise of the underground buses in 1924, CMTCC - Companhia Municipal de Transportes Coletivos was created in 1945, the company responsible for the operation and inspection of bus transportation in the city of São Paulo until the year 1995. In that year, it is extinguished and **SPTrans** is conceived, the management company and no longer the operator of collective bus transportation nowadays.

38 City Hall of São Paulo (PMSP). PlanMob/SP, 2015.

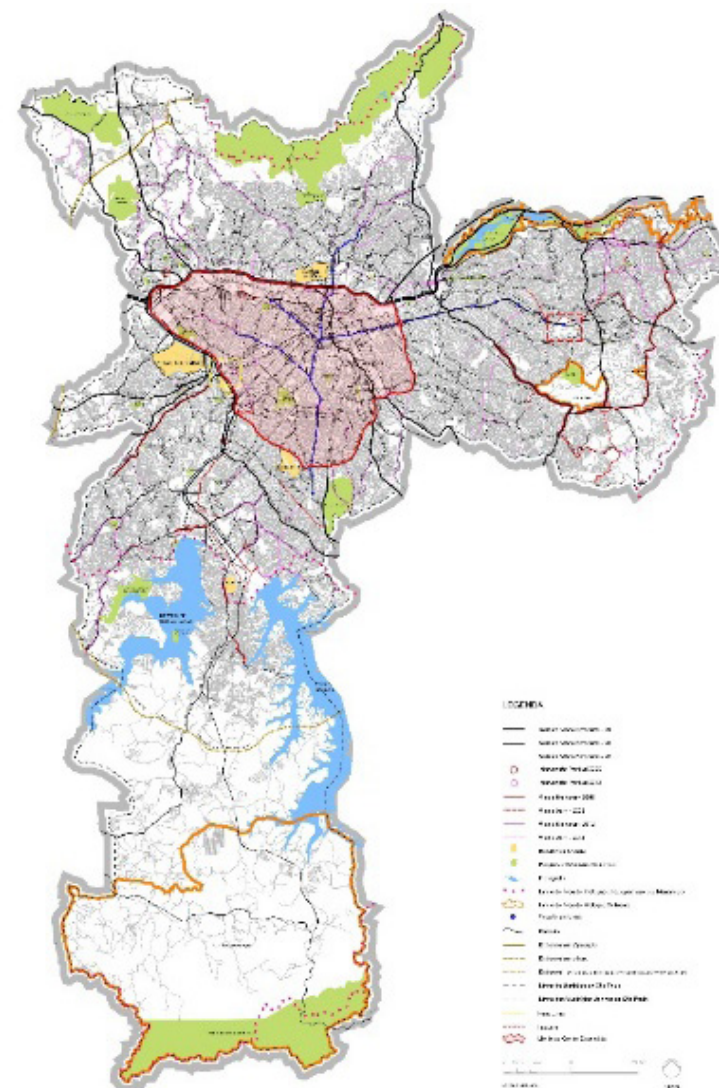


Chart 1 (left)
Annual demand for passengers transported by SPTrans (buses), Subway, and CPTM (train).
Source: PMSP. PlanMob/SP, 2015, p.19.

Figure 7 (above)
Structural road network of the city of São Paulo radioconcentric, with emphasis on the expanded center.
Source: PMSP, PDE 2002, Map 02, our treatment.

[N4] Circulation in the road system - Avenues Plan

In the historical context of the city of São Paulo it was possible to observe the rapid urban growth in a short period of time.

The 1930 **Avenues Plan** is the multimodal plan whose **guidelines defined a basic roadway scheme**. This scheme, conceived in a simple diagram (**figures 8 and 9**), will have a significant influence on the planning of the metropolis³⁹.

The author of the Plan, Prestes Maia⁴⁰, argued that the “old center” in which it occupied the historic hills presented problems due to physical limits of expansion and its role within the context of a large city in full urban development, as well as difficulties of access, lack of areas and connections to neighboring districts. What once was a strategic situation for four centuries, has become an obstacle to the development of the center of a large capital.

The Avenues Plan proposed a concentric radio scheme that would structure the unlimited expansion of urban territory. The diagram combined the Stübben radial and perimeter system model with the Eugene Hénard⁴¹ irradiation perimeter concept, which should have been complemented by the expansion of tram lines, a radial system of articulated subway lines to the proposed

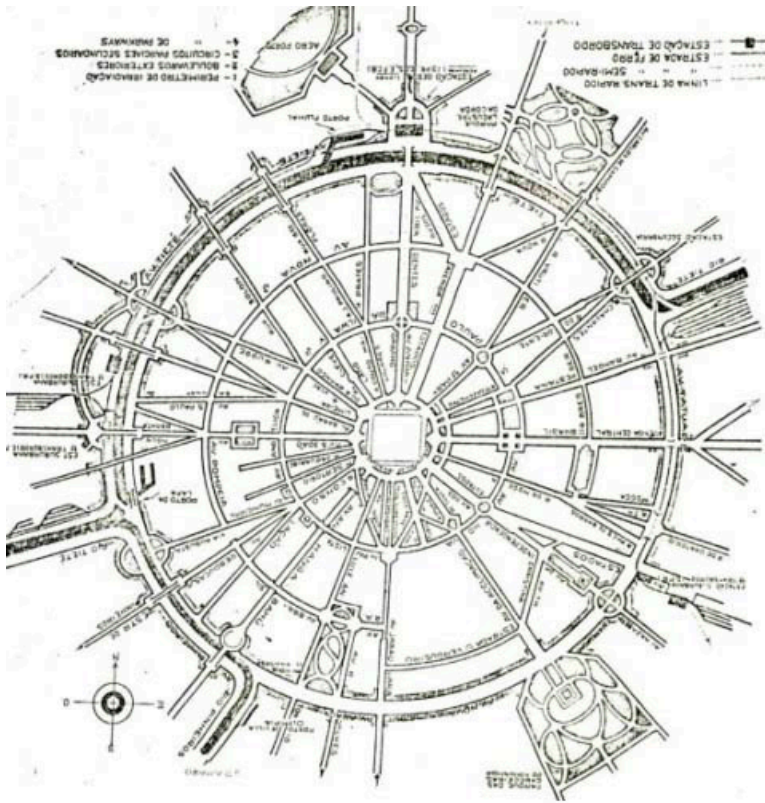


Figure 8
Concentric radio diagram of the avenues proposed in the Avenues Plan.

Source: MAIA, F. P., 1930, p. 52.

39 Cf. the following works: DINIZ, H. **O sistema viário de São Paulo: evolution and repercussions on the production of the city. 2002** (Master Thesis). Faculty of Architecture and Urbanism, Universidade Presbiteriana Mackenzie, São Paulo. MEYER, R.; GROSTEIN, M.; BIDERMAN, C., op. cit., loc. cit. ANELLI, R. L. S. *Redes de Mobilidade e Urbanismo em São Paulo: das radiais/perimetrais do Plano de Avenidas à malha direcional* PUB. **Arquitextos**, São Paulo, year 07, n. 082.00, Vitruvius, mar. 2007. ZMITROWICZ, W.; BORGHETTI, G, op. cit., loc. cit.

40 MAIA, F. P., **Plano de Avenidas**. São Paulo: São Paulo City Hall, 1930.

41 Cf. the following works: LEME, Maria Cristina Silva. **Revisão do Plano de Avenidas: um estudo sobre planejamento urbano, 1930**. Doctorate Thesis. São Paulo:FAU-USP, 1990. ANELLI, R. L. S. *Redes de Mobilidade e Urbanismo em São Paulo: das radiais/perimetrais do Plano de Avenidas à malha direcional* PUB. **Arquitextos**, São Paulo, year 07, n. 082.00, Vitruvius, mar. 2007.

rings⁴². Thus, as the center of the city was congested⁴³, the proposed idea of the Plan was the creation of **three road rings**⁴⁴.

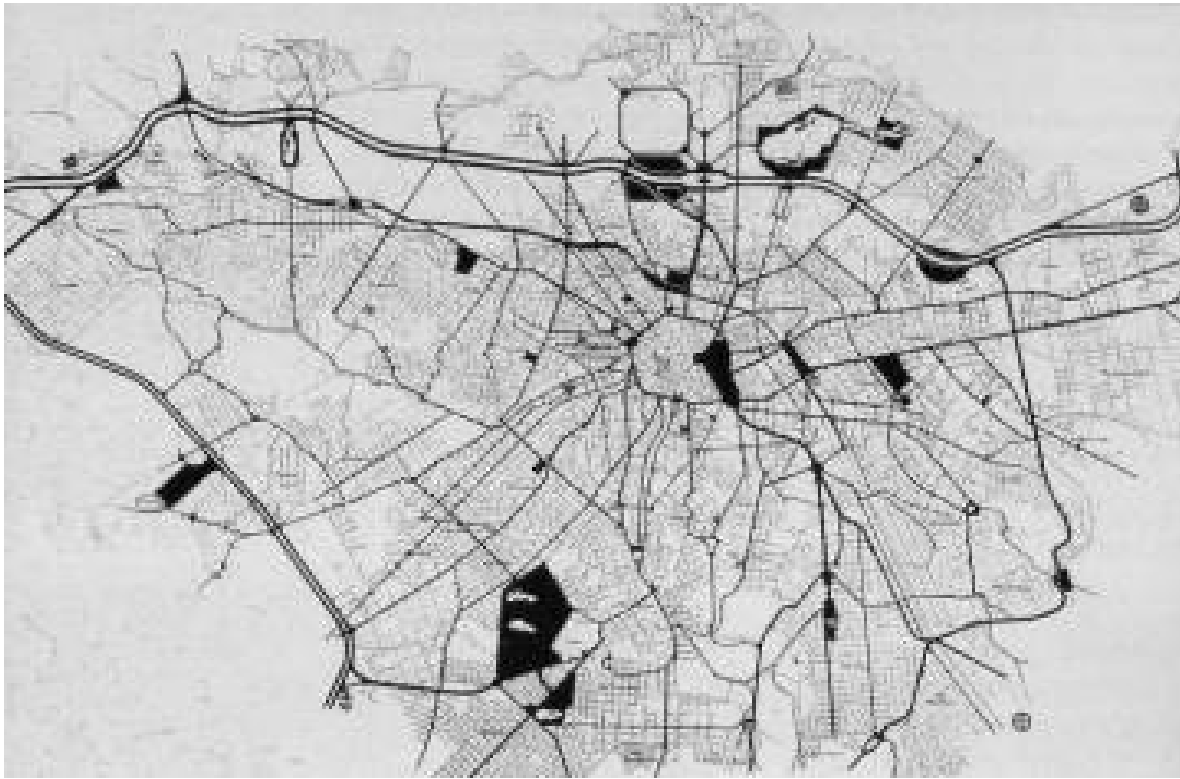


Figure 9

Application of the Avenues Plan in the territory of the city. Radial-perimeter system.

Source: CAMPOS, C. M.; SOMEKH, N., 2002, p. 62. CAMPOS, C. M.; SOMEKH, N. Avenue Plan: the diagram that was imposed.

In: Idem. **A cidade que não pode parar**: planos urbanísticos de São Paulo no século XX. São Paulo: Mackpesquisa, 2002. p. 55-72.

42 The Avenues Plan also proposed the collective transportation route. It indicated its construction in the alignment of the proposed road system of the wide avenues, facilitating its execution. It also suggested relocating the railroads on the opposite bank of the Tietê River, as this would facilitate access to the industries on the left bank of the previously undeveloped river.

43 The first one called the Ring of Irradiation was conceived around the center, integrating it to the radial avenues of “Y”. Crossing diametrically the central area, the “Y” system was composed to the north by av. Tiradentes and to the south by the avenues 9 of July and 23 of May. The second ring would run near the center with the *boulevards* typology (av. Duque de Caxias, Amaral Gurgel, etc.); and the third, called the *parkway* circuit, was due to the improvement of river channels, such as the Tietê and Pinheiros rivers. In the East-West link, the Avenues Plan proposes the implementation of a radial avenue in the train track that belonged to the São Paulo Railway.

44 ZMITROWICZ, W.; BORGHETTI, G. **Avenidas 1950-2000. 50 Years of Planning in the City of São Paulo**. São Paulo: Edusp, 2009.

Maia advocated in favor of the concentric radio concept of his plan in function of the urban advantages that would lead over the years in the structuring of the city. For example, it was explained that the expansion project proposed by *Light* (Plan of Remodeling of the Public Transport System) through the subway, efficient in congested areas, **reinforced the urban centrality**, the opposite intended with the implementation of the **Irradiation Perimeter**⁴⁵.

It's right as a transport. It's not like town planning. (...) and we have **accepted** the Irradiation Perimeter, which will give the center its characteristic **structure**. Any transport plan that does not take this into account **will be incoherent**. (...) **The first necessity of the new transport plan is to conveniently serve the "new center"** (sic)⁴⁶.

The effective implantation of the **radial avenues** proposed in the Plan of Avenues occurred only when he became mayor between 1938 and 1945, when he implanted the ring of irradiation - the first ring around the historic center, and completed between 1961-65.

In 1949 **Robert Moses** was hired by the "International Basic Economic Corporation" - IBEC to prepare the "Public Improvement Plan for São Paulo". Thus, he imported to São Paulo the model of the Highway Research Board, which sought to adapt the urban territory to implant the horizontal peripheral expansion under tires⁴⁷.

Moses' program complemented the Avenues Plan and adapted it to the new **metropolitan reality**⁴⁸, **altering the road typology of the avenues proposed by Maia**, as Anelli explains⁴⁹.

Their "express urban roads" would be better suited to high traffic volumes, consistent with the policy of increasing road transport. Without intersections in level and without interferences of entrance and

45 The plan's guidelines were to avoid concentrating the old center (Triangle), expanding the central distribution network and extending it over the 'new center' and assisting in particular the **decentralization trend**, a guideline of modern urbanism, and the creation of centers supporting urban development. Defines the secondary centers as old agglomerations, such as **Pinheiros** or Penha; or the result of topography or the convergence of streets and roads, whose advantage was to relieve the center and the need for displacements would be reduced.

46 MAIA, F. P., **Plano de Avenidas**. São Paulo: São Paulo City Hall, 1930, p. 231.

47 ANELLI, R. L. S. *Redes de Mobilidade e Urbanismo em São Paulo: das radiais/perimetrais do Plano de Avenidas à malha direcional PUB*. **Arquitextos**, São Paulo, year 07, n. 082.00, Vitruvius, mar. 2007.

48 NOBRE, E. A. C. **A influência do rodoviário no urbanismo paulistano. A atuação do Poder Público na construção da cidade de São Paulo**: In: SEMINAR of History of the City and Urbanism, 11, 2010, Vitória. *Annals of the XI Seminar on History of the City and Urbanism*. Vitória: UFES, 2010. Our griffin.

49 ANELLI, R. L. S., op. cit., p. 4. Our griffin.

exits of vehicles in the buildings, the express ways of Moses configure a **city diverse of the boulevards of Prestes Maia**. For its full efficiency, the network of expressways must **have independence in relation to the urban fabric it crosses**, regardless of whether it destroys it or not.

In 1956, Maia elaborates the “Draft of a Metropolitan Rapid Transit System” for the municipality. It reinforces the continuity of the implementation of the Avenues Plan and the **second perimetral ring**, since the functionality of the former was overcome by the time and intensity of use, which ended in the following decade⁵⁰.

Soon, in the second phase of the Plan, besides the construction of the main avenues of São Paulo (such as the avenues of May 23 and July 9), the **confinement of the small rivers** in galleries and canals, **the rectification of the Tietê rivers and Pinheiros**, and the implementation of avenues of valley bottom. In this way, the urbanization of the floodplain area would provide an adequate use for an immense area within the urban perimeter, so that motorized vehicles could operate in the urban territory more and more extensive and ended up **defining, to this day, the basic urban structure of the city**⁵¹.

Thus, **road mobility** definitively configured the city’s displacement pattern, now in an irreversible way, **with monofunctional and disjointed expressways of the urban fabric**. However, they were interventions that meant an important infra-structural element which endured urban dispersal and a second wave of industrialization⁵².

Effectively, “Cities are transformed when ideas are implanted that modify their structures”⁵³. The Avenues Plan, through its ideas, transformed the road circulation in the city of São Paulo, especially in the expanded center.

50 ANELLI, R. L. S., op. cit., loc. cit.

51 Example of the model is the construction of the State Avenue (next to and on the Tamanduateí river), Aricanduva Avenue (next to the stream of the same name), the adjacent Pinheiros and Tietê along the rivers, among others. Only in the latter, 25 kilometers were shortened. Cf. DINIZ, H. **O sistema viário de São Paulo: evolution and repercussions on the production of the city. 2002** (Master Thesis). Faculty of Architecture and Urbanism, Universidade Presbiteriana Mackenzie, São Paulo.

52 BARBOSA, E. R. Q. **Da norma à forma: urbanismo contemporâneo e a materialização da cidade. 2016** (Doctoral thesis). Faculty of Architecture and Urbanism, Universidade Presbiteriana Mackenzie, São Paulo. P. 156.

53 ZMITROWICZ, W.; BORGHETTI, G. **Avenues 1950-2000. 50 Years of Planning in the City of São Paulo**. São Paulo: Edusp, 2009. p. 171.

[NX] The evidence of an unsustainable model in urban detachments in São Paulo

The emphasis placed on the configuration of a mass system on tires, plus a **simplification of the road projects**, created an excessive dependence between the **transport system and the urban space**. “The immediacy that led to the accomplishment of this task destroyed public spaces such as squares, wide, garden rotations, beds and sidewalks to meet the demands generated by the need for vehicular traffic”⁵⁴.

One of the biggest dilemmas of urban transportation is its need for space. In São Paulo, recent research shows that practically a third of the trips happened either by bus (along with charter and school = 26.28%) or motorized individual (30.65%), or one third on foot and bicycle (30.06 %) ⁵⁵. That is, **there is significant competition in the contest for public space**. The mobility crisis can be established primarily by dependence on this infrastructure used by 86.99% of the population daily⁵⁶.

Zmitrowicz and Borghetti⁵⁷ also say that urban areas were formed by an **overlapping of several projects, a lack of integration between the various works** and coordination in the deployment.

Faced with decades of incentive to the materiality of the **concentric radio scheme** of the Avenues Plan, as well as the **fish-shaped road** structure structured in the ways built in the bottom of the valley (column) and its tributaries (ribs), it is possible to affirm that , while on the one hand the spine structure provided an alternative in vehicle circulation, on the other hand it significantly altered macrodrainage issues⁵⁸.

There is also a number of data that corroborate to the present day the real non-incentive in the search for balanced urban mobility among all modes, such as the growth rate of subway construction in the city: a small growth of 1.89 km of subway per year⁵⁹, where 70% of this network

54 MEYER, R.; GROSTEIN, M.; BIDERMAN, C. **São Paulo Metr pole**. S o Paulo: Edusp, 2004. p. 79.

55 City Hall of S o Paulo - PMSP, PlanMob / SP, 2015. They are 10.57% for subway and 2.11 for the train.

56 City Hall of S o Paulo - PMSP, PlanMob / SP, 2015.

57 ZMITROWICZ, W.; BORGHETTI, G. **Avenidas 1950-2000. 50 Years of Planning in the City of S o Paulo**. S o Paulo: Edusp, 2009.

58 ZMITROWICZ, W.; BORGHETTI, G., op. cit., loc. cit.

59 The subway network at: 2017 - 78.2 km; 1994 - 43.5km; 1974 (Inauguration of the Blue Line-1 stretch between Jabaquara and Vila Mariana stations) - 6.4 km. By 2017, it was 81.3 km of subway lines. Growth rate of 1.89 km per year.

is concentrated in the Expanded Center⁶⁰ (figure 10).

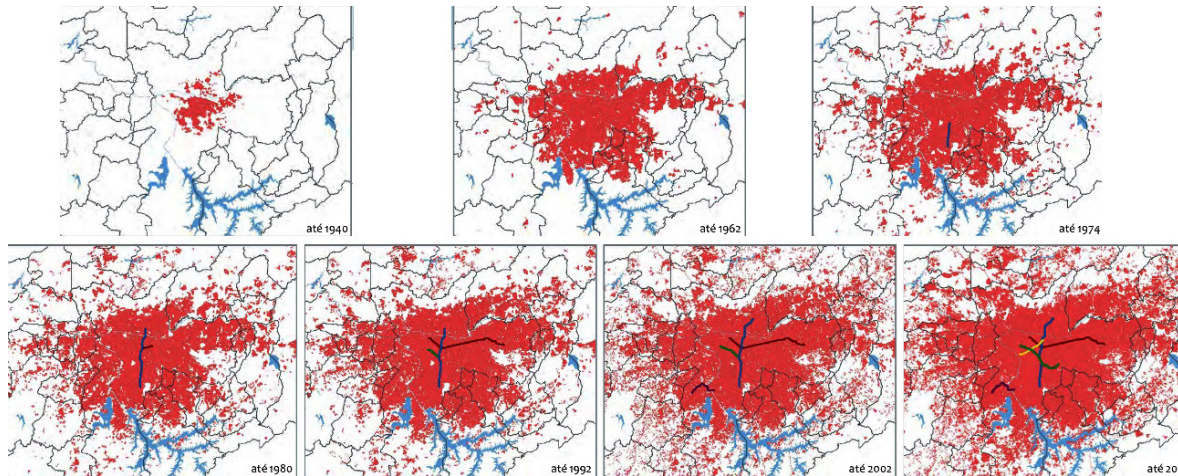


Figure 10

Evolution of the urban spot in the RMSP and the implementation of the subway lines.

Source: Emplasa, 2014.

Baiardi⁶¹ also shows that there are no incentives and space facilities for microaccessibility to train stations, as there are several challenges to improving the intermodality of the stations.

The modal walk is considered the most important in the city according to the 2007 Origin and Destination survey⁶². In this sense, there is no effective public policy that addresses the issue. The sidewalks in Brazil are public spaces, but whose responsibility in its construction and maintenance is the owner of the lot where the sidewalk is located.

In general the reality of the sidewalks is narrow, without continuity of the same pavement

60 Comparatively it is possible to mention Shanghai, China, whose subway was inaugurated in 1995, has the highest average expansion rate in the world, with 24.3 kilometers inaugurated each year. The Seoul subway (South Korea), inaugurated in the same year as São Paulo - 1974, has 14.33 kilometers open each year, representing the largest network in the world, with 558.9 kilometers in length. However, compared to developing countries, India's subway capital, New Delhi, has the second highest average of worldwide expansion, with an average of 17.6 km open per year, which it started only in 2002. Mexico City, inaugurated in 1969, with 226 kilometers of lines in 2013, had an average 5.14 kilometers per year. Available at: <http://www.bbc.com/portuguese/noticias/2013/01/130111_metro_comparacao_sp_londres_rw.shtml>. Access in: 11 oct. 2017.

61 BAIARDI, Y. C. L. **O papel da microaccessibilidade na mobilidade urbana: o caso da estação de trem Santo Amaro na cidade de São Paulo**. Dissertation (Master degree) - Faculty of Architecture and Urbanism, Universidade Presbiteriana Mackenzie, São Paulo, 2012..

62 Origin and Destination (DO) research has been in place since the year 1967

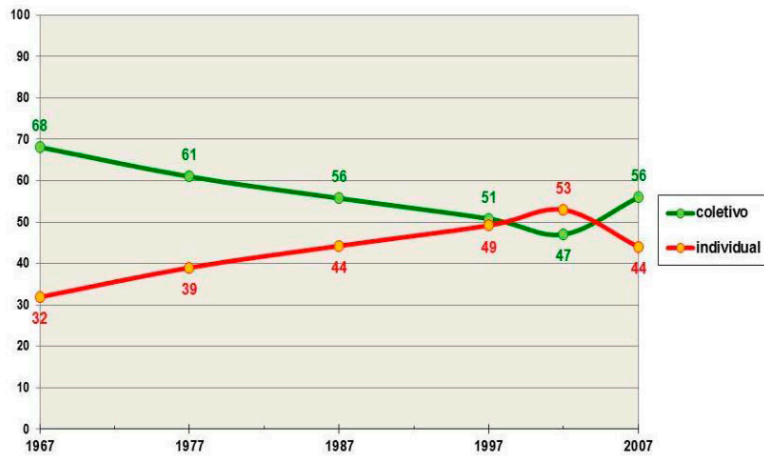


Chart 2
 Modal division in SP between collective and individual transport between 1967 and 2007.
 Source: PMSP. PlanMob/SP, 2015, p. 14.

and with the presence of many obstacles (urban furniture)⁶³, holes, etc. It was only in June 2017 that the Pedestrian Statute was created (Law 16,673 / 2017), a small step in the attempt to change this scenario, since it aims to develop actions aimed at improving the infrastructure that supports foot mobility, ensuring their approach as a network similar to and articulated to other transport networks.

By associating information and data on high-capacity public transport and urban sprawl, there is an imbalance in accessibility, especially in the reach of the metropolitan peripheries, an ambivalence reinforced by a road structure that is also poorly distributed and disjointed with the urban fabric.

The People Near Transit (PNT) indicator expresses the percentage of people living within a radius of up to 1 km from metro, train, BRT, monorail stations and 500 meters of bus corridors divided by the total population of the municipality. According to this methodology, the city of **São Paulo has only a quarter of its inhabitants (25%) living near a public transport station of quality**, that is, within a radius of 1 km, distance that can be easily walked on foot⁶⁴.

In view of the various actions to support individual transport, the low efficiency and quality of public transport on tires, combined with the slow expansion of the high-capacity rail network, **have stimulated the increasing use of private vehicles**. Between 1997 and 2007, for the first time, the predominance of individual transport over collective transport from the beginning of the DO (Origin and Destination) survey (**chart 2**), showed a serious alert for urban sustainability and the efficiency of the entire network. **Graph 3** shows the reduction of the Urban mobility index (trip / inhabitant / day) between 2007 and 2012.

In five years (2007-2012), there was an increase in the mean travel time in all motorized modes of transport and reduction in the active modes (including pedestrian). It is worth noting the significant increase in the transportation time of the collective transport, which goes from 58 minutes to 67 minutes, representing an increase of 15.5%. This fact is worrisome, since the displacement time is a determining factor of attractiveness of a mode of transport. Travel by individual transport takes, on average, half the time of travel in collective modes. Even when we consider similar distances, travel time in collective modes remains much higher than in individual modes (**charts 4 and 5**).

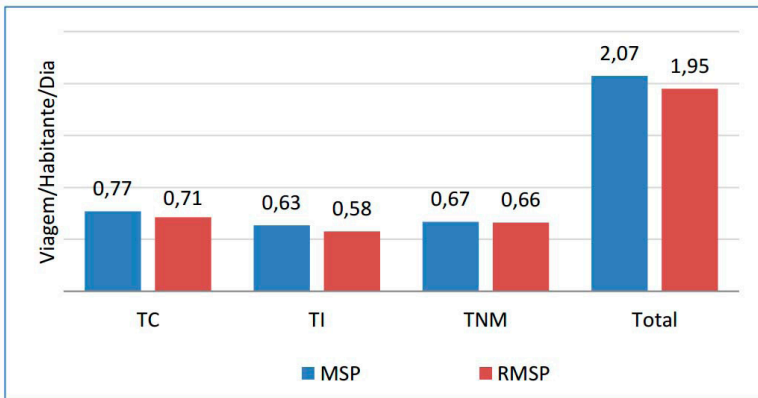


Chart 3
 Index of urban mobility in São Paulo and RMSP in 2012.
 Source: PMSP. PlanMob/SP, 2015, p. 23.

63 View more in MALATESTA, M. R. B. **Andar a pé**: Um modo de transporte para a Cidade de São Paulo. 2007 (Master Thesis). Faculty of Architecture and Urbanism, Universidade Presbiteriana Mackenzie, São Paulo.

64 ITDP Brasil, WRI Brasil Cidades Sustentáveis. **Infographic PNT**. Available at: <<http://wricidades.org/research/publication/infogr%C3%A1fico-pnt>>. Access in: 27 sep. 2017.

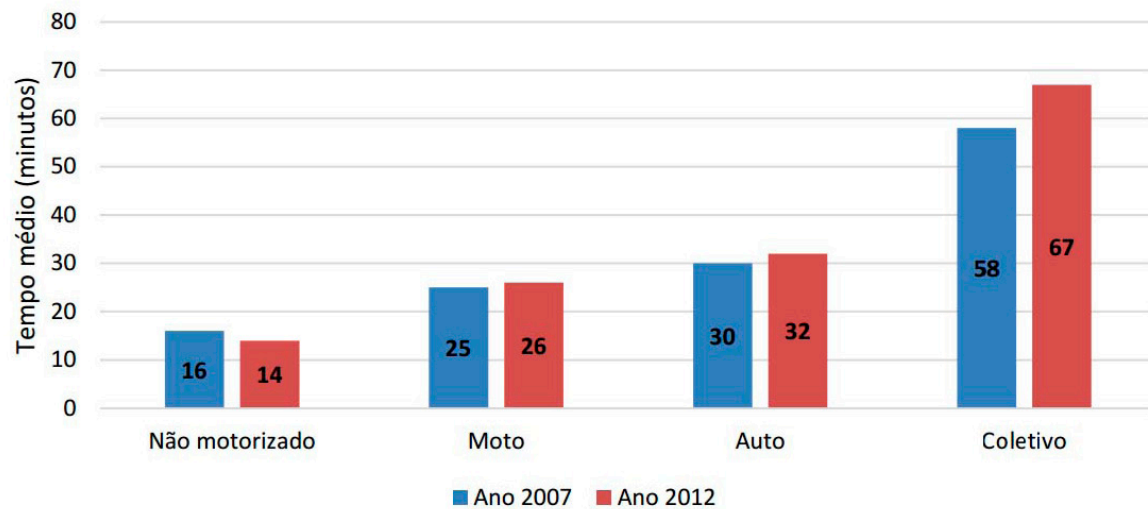


Chart 4

Average travel time per way in SP in years 2007 and 2012.

Source: PMSP. PlanMob/SP, 2015, p.20.

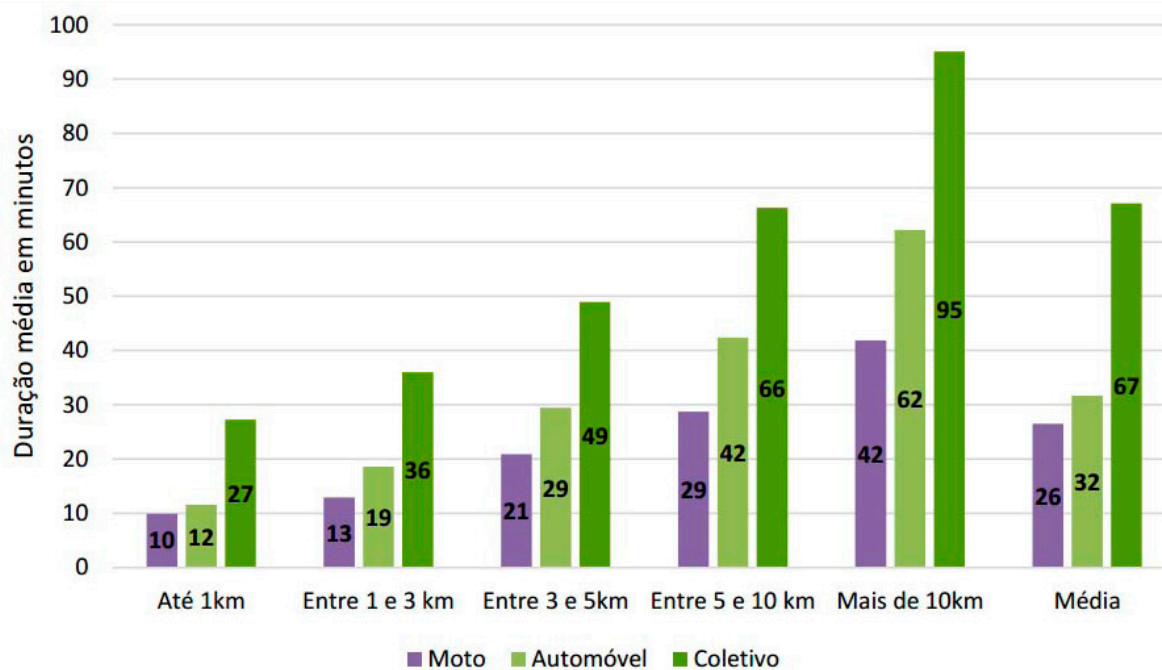


Chart 5

Average travel time by mode and distance in São Paulo in 2012.

Source: PMSP. PlanMob/SP, 2015, p.20.

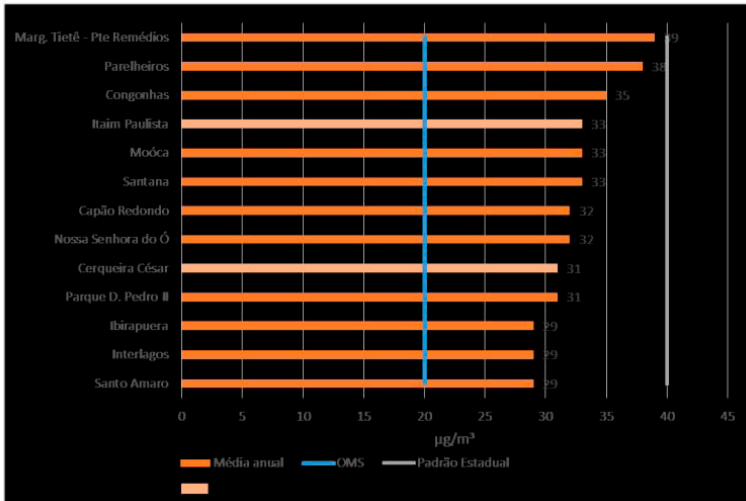


Chart 6
Annual averages of MPro (inhalable particles) in São Paulo in 2013.
Source: PMSP. PlanMob/SP, 2015, p. 37.

In the **social sense**, it is possible to highlight another index of unsustainability: high death rates from traffic accidents as well as from diseases caused by pollution. Research by the Health and Sustainability Institute in 2017⁶⁵ reports that air pollution accounted for a total of 11,200 early deaths in 2015 - more than double the number of road traffic fatalities (7867), five times more than cancer of breast (3620) and almost 6.5 times more than AIDS (2922)⁶⁶.

Finally, the **environmental data** are highlighted: environmental pollution from the dependence on the motorized mode, since the main responsible for CO emissions are cars (74%) and motorcycles (18%), which are the categories associated with the highest rates of fleet growth.

PlanMob / SP 2015, to better illustrate the air quality situation in the municipality, obtained data on the concentration of the main air pollutants obtained in the CETESB reports, which were compared with the national and state air quality standards, and with the concentrations recommended by the World Health Organization (WHO).

It points out that two of the most critical pollutants from combustion processes in the industry, and especially motor vehicles, are the inhalable particles in the smaller diameter bands of 10micra (MP10) and the finer particles with smaller diameter 2,5micra (MP2,5) . In recent years, especially for MP10, concentrations have been stable at levels above WHO recommendations (**chart 6**).

There are many other problems, dilemmas, negative externalities and challenges that reinforce the urban unsustainability of the existing model in the city of São Paulo, some of which have been listed here to demonstrate the urgency of changing this paradigm.

65 VORMITTAG E. M. P. A. A, and SALDIVA P.H.N., Air Quality in the State of São Paulo (report) 2017, p. 14. Available at <<http://www.saudeesustentabilidade.org.br/publicacao/pesquisa-qualidade-do-ar-no-estado-de-sao-paulo-sob-a-visao-da-saude/>> Access in 13 oct. 2017.

66 VORMITTAG E. M. P. A. A, and SALDIVA P.H.N., Op. cit.

5.3 Urban instruments

The planning process must seek urban strategies that guide the materialization of public policies in the following instances. In this sense, Brazil of continental dimensions, the fourth country in the world in territorial extension in continuous lands, has a gigantic challenge in the governance of 208 million people⁶⁷ distributed in 8,515,759,090 Km² ⁶⁸.

The instruments of urban planning in Brazil and especially in São Paulo are diverse and complex. The areas of the stations are not isolated from the institutional complexity existing in the three scales of government existing in Brazil: Federal, State and Municipal. Therefore, to aid in the understanding of spatial transformations in the areas of the stations is summarized below the main urban instruments of these scales.

[10] Federal instruments

With the opening and democratization of Brazil, in 1988 a new Federal Constitution of 1988 was instituted. In this context, the autonomy of the **26 States** and the Federal District (where the capital of the country is located) and the Brazilian political-administrative division of **5,570 municipalities** were established, which now have new administrative competencies and planning responsibilities.

Within the main urban instruments of federal scope, stands out the **Statute of the City**, Law n. 10,257, which regulated articles 182 and 183 of the Federal Constitution of 1988, but that was approved only in the year of 2001. It establishes general guidelines for urban policy and establishes tools for urban planning and management for municipalities in Brazil, such as the Mandatory Master Plan for cities with more than 20 thousand inhabitants.

In the area of **transportation**, with the new **Brazilian Traffic Code** in 1997, **municipalities** became part of the National Transit System, and thus mayors to be legitimate authorities in the planning, operation and supervision of **traffic**.

67 Brazilian Institute of Geography and Statistics- IBGE, 2017.

68 Published in the DOU n° 124 of 06/30/2017, according to Resolution N° 02, of June 29, 2017.

Federal Law No. 12,587 of 2012 establishes the **National Urban Mobility Policy** (PNMU), which requires every city with more than 20,000 inhabitants to draw up an **Urban Mobility Plan** to guide investments in infrastructure, transportation and urban development in plans until 2018. Otherwise, they will be prevented from receiving federal budgetary resources destined to urban mobility in their respective municipalities.

It is also important to highlight that the creation of the **Ministry of Cities in 2003** is a relevant landmark in the federal public administration, since it began to gather all activities related to public transport, transit, housing and urban development in a single ministry at the federal level.

[10] Urban instruments at the State level

The Metropolitan Region of São Paulo (RMSP) currently concentrates 39 municipalities and is the largest wealth center in Brazil⁶⁹. Created in 1973 by Complementary Law No. 14/1973, which establishes the Metropolitan Region of São Paulo⁷⁰, among others. Nearly 50% of the population live in the state of São Paulo, reaching **21.2 million inhabitants** in 7,946.96 km²⁷¹, 18% of the Brazilian Gross Domestic Product (GDP) and more than half of the State of São Paulo (55%)⁷² and representing the sixth largest metropolis in the world according to the United Nations (UN).

Despite the numerous attempts of metropolitan planning in the 1970s, Alvim⁷³ emphasizes that in the metropolis of São Paulo it was never possible to make feasible the common planning of state functions. Several reasons led to the bankruptcy of the metropolitan structure of the 1970s, among them, the fear of losing the political autonomy of municipalities in the institutional design of the system, which would give greater power to State agencies.

69 In 1970 the Metropolitan Integrated Development Plan - PMDI was concluded, a plan with a metropolitan character conceived and coordinated by Gegran. The Grande São Paulo Executive Group - Gegran, was linked to the then CAR - Regional Action Coordination - of the Secretariat of Economy and Planning, kind of a regional planning office of special character of the metropolitan area, whose objective was to respond by the planning of the region and management system. At that time the Greater São Paulo, former denomination of the RMSP, was defined by a group of 33 municipalities.

70 However, the metropolitan “instance” does not exist constitutionally as a municipality or state. It is recalled that in 1971, the Constitutional Amendment no. 1, Article 164, conferred exclusive competence on the Union for the creation of metropolitan areas at the time.

71 Available at: <<https://www.emplasa.sp.gov.br/RMSP>>. Access in: 2017.

72 Available at: <<https://www.emplasa.sp.gov.br/RMSP>>. Access in: Oct 5th. 2017.

73 ALVIM, A.A.T.B. **A contribuição do Comitê do Alto Tietê à gestão da Bacia Metropolitana**, 1994 – 2001. Thesis (Doctorate) - Faculty of Architecture and Urbanism, University of São Paulo, São Paulo, 2003.

Faced with several institutional dilemmas, only in 2011 the Government of the State of São Paulo reorganized the Metropolitan Region of São Paulo in light of the provisions of the Federal Constitution of 1988 through State Law no. 1.139. It should be noted that if, on the one hand, the Federal Constitution and the City Statute emphasize that **municipal planning** and urban development are on the other hand, the Constitution itself determines that intermunicipal policies and conflicts, especially those related to land use, sanitation, transportation, housing, environment, water resources in metropolitan areas, should be managed by the **state government**, through a process of coordination and negotiation of urban and municipal urban policies, whose effectiveness in terms of performance, depends on the capacity for political articulation and on the participatory disposition of the various agents involved⁷⁴.

Thus, some intercommunal governance imbalances in a metropolis are evident. It is mentioned, for example, the transport policies that only a few years ago unified in *some cities* the use of the same ticket for public transport for RMSB – the BOM Ticket⁷⁵. Even so, the BOM can only be used in intercity lines, in the metroferroviário system and only in 13 municipal bus⁷⁶ lines that do not include the city of São Paulo.

In an attempt to make metropolitan planning effective in 2015, the Federal Government introduced the Metropolis Statute in 2015, through Federal Law 13.089. The Metropolis Statute is an important law that innovated as it proposed the interdepartmental governance between municipalities that make up metropolitan regions; sharing of responsibilities and actions among entities of the Federation; and the need to draw up an Integrated Urban Development Plan (PDUI), among others⁷⁷.

In the scope of the São Paulo Metropolitan Region, by the end of 2017 the PDUI prepared by Emplasa was in public audience for discussion with municipalities and civil society, later sent to the state legislature and future approval by the state executive.

In the scope of the **instruments of transport** in the state sphere it is important to emphasize the PITUs 2020 and 2015 elaborated by the state government of São Paulo. In 1999, the **Integrated Urban Transport Plan (PITU) 2020** was published. For the first time an investment program with targets and a defined implementation horizon for 2020 is prepared.

74 ALVIM, A.A.T.B. **A contribuição do Comitê do Alto Tietê à gestão da Bacia Metropolitana**, 1994 – 2001. 2003. Thesis (Doctorate) - Faculty of Architecture and Urbanism, University of São Paulo, São Paulo, 2003.

75 Available at: <<https://www.cartaobom.net/index.aspx>>. Access in: Oct 5th. 2017.

76 BOM ticket can be used on the bus lines of the cities of Arujá, Carapicuíba, Cotia, Ferraz de Vasconcelos, Ibiúna, Mairiporã, Poá, Ribeirão Pires, Rio Grande da Serra, São Caetano do Sul, São Roque, Suzano and Taboão da Serra.

77 As the limit for the preparation of the PDUI fruits of the Metropolis Statute is predicted for January 2018, under penalty of administrative impropriety, it is early to assess whether it will be a fundamental landmark in the regional management of the common interests of large urban agglomerations, mobility.

With an updated information base (Source and Destination survey of 1997) and a strategic planning methodology, a diagnosis of the situation of the metropolis was made, such as the 240 kms of daily congestion, the decrease in the mobility rate and the aggravation of pendularity⁷⁸.

The PITU 2020 has made progress in integrating public agents (several city halls, operating companies, transport consultants, etc.) into the practice of the formulation of the vision of a desired city, the objectives and strategies resulting therefrom for investment in metropolitan transportation.

The performance of three grid alternatives was then evaluated: open (overcoming the imbalances of the metropolis), central (to strengthen its attraction force of its center) and dense (to concentrate the high capacity system within the limits of the expanded center itself).

Due to better performance than the other options considered, the network selected for PITU 2020 was from an **open** network (figure 11). This network was characterized by its presence in **several municipalities** of RMSP and the development of structural accessibility to the selected **regional poles** (Sé, Santo Amaro, Osasco, Santana, Guarulhos, Tatuapé, São Mateus and ABC).

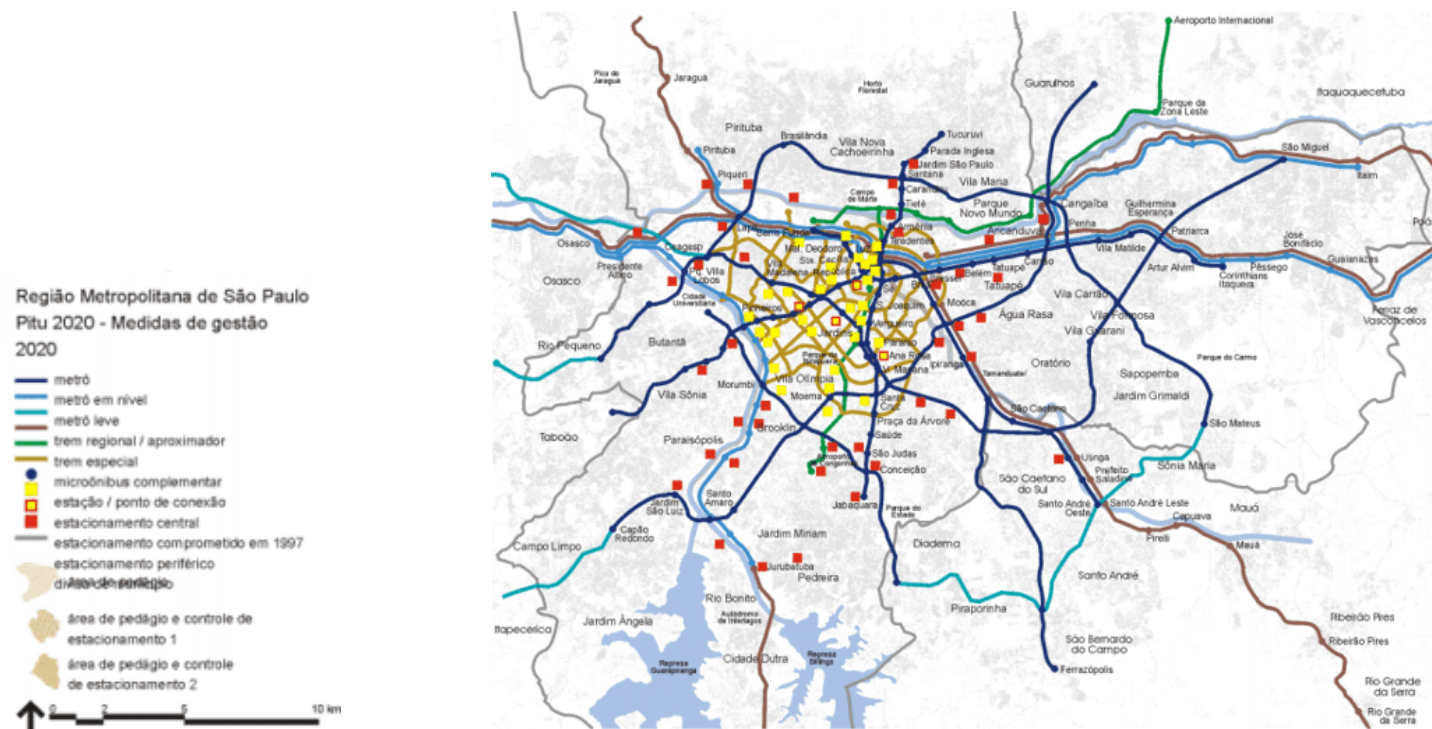


Figure 11
 PITU 2020 – Rail system, complementary micro bus (beige) and connection points.
 Source: STM – Secretariat of Metropolitan Transportation. Available at: <<http://www.stm.sp.gov.br/Pitu2020/OPitu2020>>. Access in: 12 oct. 2017.

⁷⁸ SÃO PAULO, State; STM (Secretariat of Metropolitan Transport). PITU 2020: Integrated Urban Transport Plan for 2020. São Paulo: STM, 1999.

Thus, macroaccessibility and integration capacity among various modalities through the **network nodes** – “connection points” – were key elements of PITU 2020.

In 2006 a new version of PITU was prepared with a proposal horizon for 2025. PITU 2025 was revised due to the approval of the federal regulatory framework - City Statute in 2001 and the São Paulo Strategic Plan of 2002. However, this incorporation of instruments did not represent the deepening of the studies of the network previously suggested, despite the conceptual advance in the attempt to unite urbanistic instruments with those of transport planning.

One of the diagnoses of PITU 2025 was the interpretation that the high capacity transport network **did not induce** the process of expansion of the **urbanized area**, but it followed the **existing demand**⁷⁹.

As a result of this, and based on the new urban instruments available for urban development, the strategy of **selective densification** is proposed: incentive to increase population and construction along the transport axes⁸⁰, especially in the concentration in the expanded center, resembling the proposal of the PITU 2020 dense network.

This strategy of densification along the axes was opposite to that suggested by the PITU 2020 of metropolitan scope articulated to the “connection points”. The alteration of the “route” was based on the aggravation of the urban problems from the data of the Demographic Census of the IBGE of 2000, that already they were already evidenced in the PITU 2020.

The **PITU 2025** then designed three network strategies: *Expanded strategy* (greater distribution in the territory, but in a different way from the Open Network of the PITU 2020), *Concentrated* (subway lines would be restricted to the expanded center) and *Combined*.

The strategy chosen was the *Combined*, that is, it combined *Concentrated's* plan, with the concept of **urban corridors** and **key terminals**, where it disregarded the expansion of reaching the most populous areas of the city (**figure 12**).

Urban corridors would be designed as Light Rail Vehicles (VLTs) or Light Vehicle Vehicles (VLPs) to deliver performance that is closer to that provided by the Subway than the bus. They would have the desired transformation function in the vicinity of the urban corridors by means of the **urbanistic concessions** and preferably articulated with the key terminals. These would play the role in the articulation between the municipal, intermunicipal and long-distance systems, as well as large equipment of mixed use.

79 SÃO PAULO, State; STM (Secretariat of Metropolitan Transport). **PITU 2025: Integrated Urban Transport Plan for 2025**. São Paulo: STM, 2006. p. 29.

80 SÃO PAULO, State; STM (Secretariat of Metropolitan Transport), op. cit., p. 36.

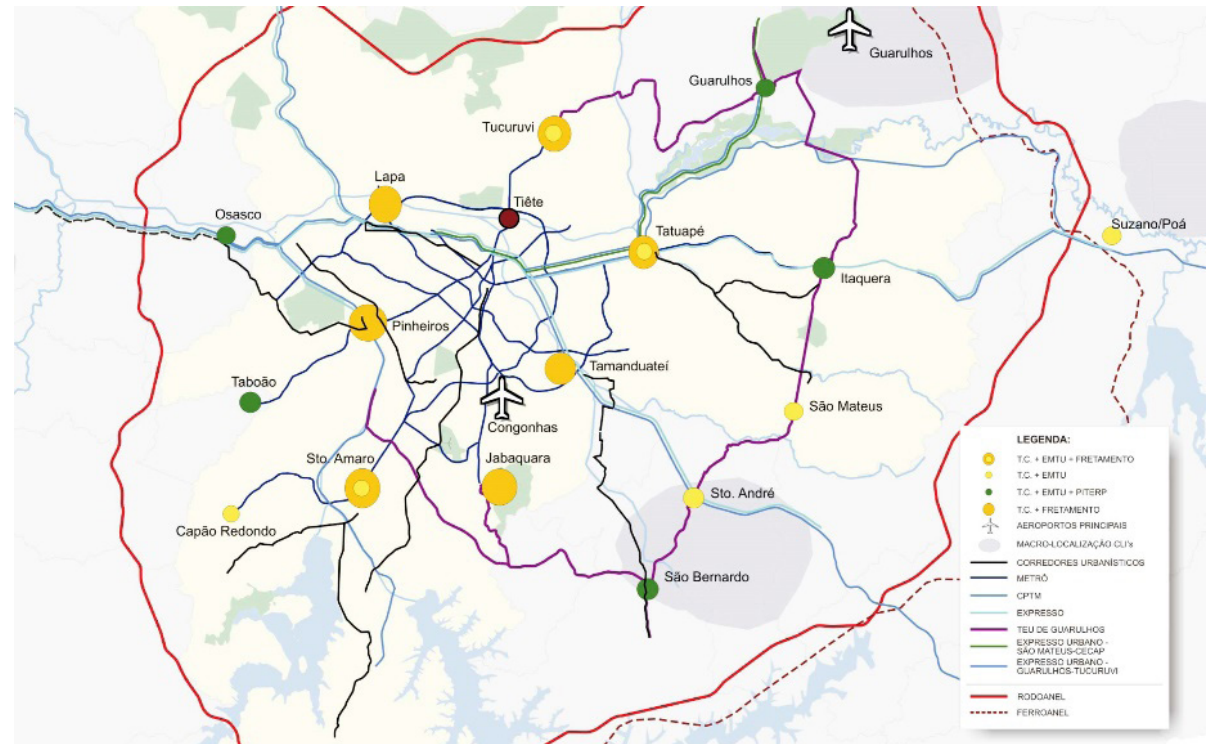


Figure 12
Systems on rails (blue color), urbanistic corridors (black color) and key terminals.
Source: STM. PITU 2025, 2006, p. 18.

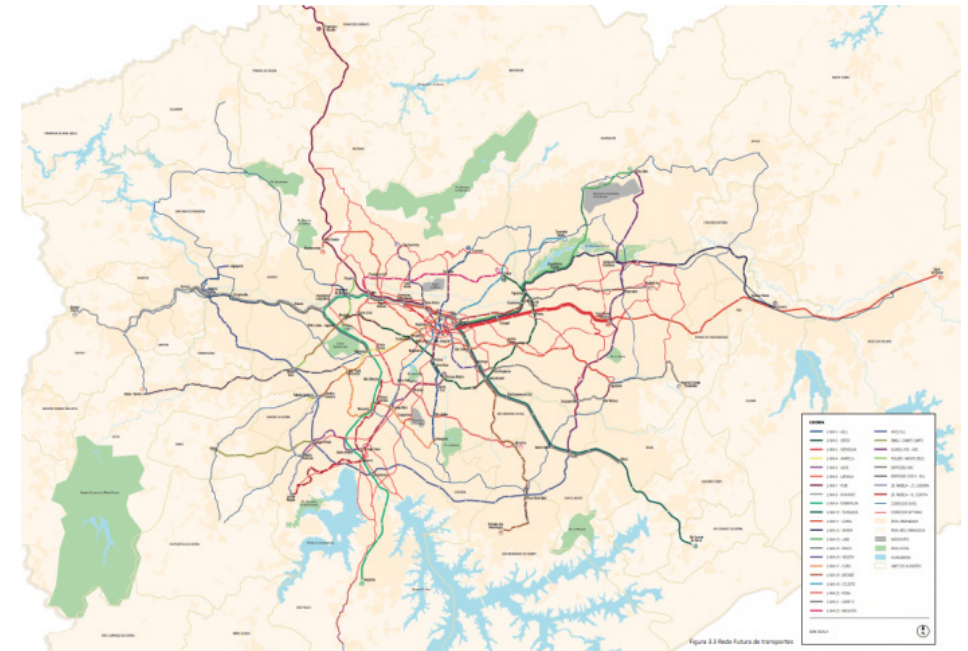
Despite PITU 2025's "innovation in transportation strategies" by incorporating new concepts and including significant landmarks, such as those used in urban corridors and key terminals, such concepts have not been further developed or applied.

In 2007, the Metropolitan Transportation Expansion Plan was launched with the aim of increasing the number of passengers transported by 55% and reducing the time by 25% the average time of travel in the system focusing only on transportation.

This fact, it is observed that research Origin and Destination, the basis of the PITU studies, technically demonstrates the **radioconcentric city** and that if the public policies in the field of transport look only at these data, it will reinforce the pendularity created by this radiocentricity of the displacements, thus being an urbanistic perversion that accentuates the present spatial inequalities 81.

81 MOURA, G. J. C. *Diferenças entre a retórica e a prática na implantação do metrô de São Paulo*. 2016 (Doctoral thesis). Faculty of Architecture and Urbanism, University of São Paulo.

It is difficult to say which is the design under study of the official macroaccessibility network of the metropolis after the PITU 2025⁸² discussions. The São Paulo Mobility Plan, published in 2015, considers **figure 13 the high capacity network under study**. However, the expansion plans for the subway have changed in 2015, reducing the network in deployment and still are not being met.



- | | |
|---|--|
| METRÔ CONVENCIONAL | CPTM - TREM METROPOLITANO |
| █ LINHA 1-AZUL | █ LINHA 7-RUBI |
| █ LINHA 2-VERDE | █ LINHA 8-DIAMANTE |
| █ LINHA 3-VERMELHA | █ EXPRESSO OESTE-SUL |
| █ LINHA 4-AMARELA | █ LINHA 9-ESMERALDA |
| █ LINHA 5-LILÁS | █ LINHA 10-TURQUESA |
| █ LINHA 6-LARANJA | █ LINHA 11-CORAL |
| █ LINHA 19-CELESTE | █ LINHA 12-SAFIRA |
| █ LINHA 20-ROSA | █ LINHA 13-JADE |
| METRÔ LEVE | █ LINHA 14-ÔNIX |
| █ LINHA 15-PRATA | █ LINHA ARCO OESTE |
| █ LINHA 17-OURO | █ EMTU - CORREDOR DE ÔNIBUS |
| █ LINHA 18-BRONZE | █ SPTRANS - CORREDOR DE ÔNIBUS |
| | ● ESTAÇÃO DE TRANSFERÊNCIA |
| | ■ ÁREA URBANIZADA |

Figure 13
High capacity network under study for 2025 by PlanMob / SP and future projects of the metropolitan transportation network for horizon of 2030 by STM
Source: PMSP, PlanMob/SP, 2015, p. 161 and STM respectively

82 In 2012 there is a “pact” between the Metrô / CPTM / EMTU companies that, in order to articulate the Plans between them, redefined the future transport network according to studies developed by STM.

[11] Municipal Instruments

The urban planning of the city of São Paulo, due to its complexity and context, is unique in the Brazilian context. There were several urban plans, of which the PDDI-1971 stands out; and the Executive Plans of 1985, 1988⁸³, as well as the recent plans for 2002 and current, 2014.

The first Municipal Works Code was promulgated in Law 3,427 of 1929⁸⁴. Act No. 663 of 1934 consolidated the Zoning Law of the city. This legislation, with many other regulations remained for almost 40 years, and disciplined land use and feedback only for **some streets** of the Municipality.

Anelli⁸⁵ states that until the end of World War II, **no urbanistic proposal substantially different from the Avenues Plan was elaborated**. “On the contrary, its public manifestations of these architects reveal enthusiasm with the rapid transformation of the city, defending new forms of production of the architecture compatible with the stage of modernity that was reached”. The exception of alternatives would belong to the opposition of Anhaia Mello, who proposed a city of limited expansion and of poly nuclear structure.

In 1947, the Department of Urbanism was created in the City Hall of São Paulo, and influenced by the North American, the **zoning** began to be treated as a **reference tool in urban planning** as a means to order the development of the city⁸⁶. And in 1957, the Municipality established for the first time the limit to the use of the lot, with utilization coefficients of six for commercial buildings and four for residential buildings (Law 5,261 of 1957)⁸⁷.

This was the basis of the urban planning process in the city of São Paulo that would **institutionalize zoning**⁸⁸. For a better understanding of this process, the following is the main urban instruments considered relevant in the **institutional logic** in the spatial materialization of the station areas.

83 The urban plans of the city of São Paulo until the end of the 20th century can be better understood in the book SOMEKH, N., CAMPOS, M. (Org.). **A cidade que não pode parar**: planos urbanísticos de São Paulo no século XX. São Paulo: Mackpesquisa, 2002.

84 NOBRE, E. A. C. **Novos instrumentos urbanísticos em São Paulo**: limites e possibilidades, 2001. Available at: <http://www.fau.usp.br/docentes/deprojeto/e_nobre/instrumentos_urbanisticos_sao_paulo.pdf>. Access in: 08 nov. 2015.

85 ANELLI, R. L. S. Redes de Mobilidade e Urbanismo em São Paulo: das radiais/perimetrais do Plano de Avenidas à malha direcional PUB. **Arquitextos**, São Paulo, year 07, n. 082.00, Vitruvius, mar. 2007. p. 3.

86 FELDMAN, S. **Planejamento e Zoneamento. São Paulo: 1947-1972**. São Paulo: Edusp/Fapesp, 2005.

87 NOBRE, E. A. C., op. cit., loc. cit.

88 FELDMAN, S., op. cit., loc. cit.

[I1] Master Plan for Integrated Development PDDI 1971 and its main complement: zoning 1972

The Integrated Development Master Plan - PDDI (Law no. 7,688 / 71) was the first Master Plan of São Paulo approved by law. This plan aimed to **control and regulate urban sprawl**. It was preceded by the unapproved plan, the PUB - Basic Urban Plan completed in 1969⁸⁹.

The PDDI defined a division of urban areas into three-tier “territorial units” (UT). UT 1 would be delimited by *arterial roads* and local public facilities. UT 2 would be the union of two or more UT 1. The UT 3 would comprise two or more UT 2 delimited by express routes and would correspond to the regional administrations. It then establishes **guidelines for a road hierarchy**: expressways, arterial roads, main roads (collectors) and local roads. It thus devised a whole network of road directives necessary for both new road and subdivision projects.

Feldman notes that the logic of the plan was based on the tripod: **circulation, zone specification, and land use**, ie definition of the road hierarchy, functional definition through urban zones and control of activities:

The scheme was constituted by three elements to provide a **decentralized and hierarchical city**: the circulation, the land use plan and the functional organization, that should materialize by means of **express ways, the zoning** and the use of **neighborhood units** like minimum unit of organization of urban life⁹⁰.

89 The “PUB” proposed the densification of the central region, the interconnection and densification of 5 *regional centers*, without the isolation between them (...) For the subway network, PUB developed HMD’s radial proposal in deployment, while an orthogonal directional mesh of 5 km spaced expressways would be superimposed on the existing structural road network, serving the entire metropolitan territory. Mass transport and individual transport dissociated into two networks of distinct patterns: one radial and one orthogonal. “Cf. ANELLI, op. Cit. 2007, p.6 It is important to highlight some concepts that have been aired in PUB and that will reverberate in PDDI and PDE in 2014. The PUB identified the potential inducer of urban development of high-capacity networks and the tendency to create linear concentrations, in the form of “corridor” or succession of nuclei in correspondence with the stations. (PMSP, 1969, V.2, p.218). The recommended urban structure of the PUB was based on the articulation of centralities through the mobility infrastructure (PMSP, 1969, V.2, p.335). It then identifies seven subregional centers, among them Itaquera.

90 FELDMAN, S. *Planejamento e Zoneamento. São Paulo: 1947-1972*. São Paulo: Edusp/Fapesp, 2005. p. 248. Our griffin.

After the approval of the PDDI was proposed in 1972 **The general law of zoning**⁹¹. A law that initially divided the municipality into **eight numbered zones and delimited perimeters**, with the aim of establishing a balance between the different urban functions - housing, work, leisure and circulation in a harmonious way.

The logic established for the detailing of the zones was that when establishing the road guidelines of the express and arterial routes, was then organized the relations with the Territorial Units (UT). Therefore, it has drastically reduced the utilization coefficients⁹² in relation to the prevailing indices. It was then sought to distribute the zones in each of these UTs so **that the lowest densities were in the peripheral areas, generating few activities and less flows of vehicles in the arterial ways**. In contrast, high densities would be induced in the expanded center, generally irrigated by high capacity collective transportation and collecting ways⁹³.

The result of this strategy was then to respect existing situations of use and feedback until the enactment of the law since the zoning of 1972. It proposed a variation of coefficients, where most of the urban area would be subject to indexes to one or two times the land area, with only Z4 (mixed use) a CA (Utilization coefficient) of 3 and Z5 (use mixed) of 4 times.

In general, the already densified center was defined as Z5; neighborhood nuclei of important subcentres were defined as (Z4). However, the greatest detachment was with the periphery by defining them as Z2, that is, an immense predominantly low-density residential territory, which will discourage real estate investments, which at the time accounted for four-fifths of the urban area⁹⁴. After one year of the Law's approval, special use corridors were created, allowing certain areas adjacent to the roads to admit different uses in relation to the crossed areas.

For PDDI, "zoning would be the *most important* control mechanism of urban development"⁹⁵. Thus, the Zoning Law of 1972 was proposed as the **main regulating instrument of the city**.

Another important factor to note is that the Zoning Law (article 55) did not count as built area the areas destined to the garage, parking exclusively for vehicles used by the owners, provided

91 Law no. 7.805 of 01/11/1972 that provides for the parceling, use and occupation of the soil of the Municipality of São Paulo.

92 Coefficient of Utilization - CA is the index obtained by the division between the computable constructed area of a building and the area of the land where it is located.

93 ZMITROWICZ, W.; BORGHETTI, G. **Avenidas 1950-2000. 50 Years of Planning in the City of São Paulo**. São Paulo: Edusp, 2009.

94 CAMPOS, C. M.; SOMEKH, N. Plano de Avenidas: o diagrama que se impôs. In: Idem. **A cidade que não pode parar: planos urbanísticos de São Paulo no século XX**. São Paulo: Mackpesquisa, 2002. p. 129.

95 CAMPOS, C. M.; SOMEKH, N., op. cit., p. 125.

that it did not exceed twice the area of the respective lot. This represented a stimulus to the use of the private car and its insertion in the design in residential and service buildings. This incentive and even the obligation to meet a minimum number of parking spaces per project⁹⁶ lasted until the elaboration of the Strategic Master Plan for 2014.

There were also ambitions of the PDDI, the protection of springs, revitalization of deteriorated areas and the valorization of the soil in the areas of the stations of the east line⁹⁷.

The 1972 zoning imposed an **architectural typology**, the activity to be developed on the ground, the coefficient of utilization, the institution of minimum setbacks, that is, a density of land use away from the alignment between the public and private⁹⁸ domains as well as the stimulus the verticalization since occupying a smaller area of the land. Thus, the result was the **non**-conception of a development of a coherent urban form in the city landscape.

Thus, over the years, based on a complex and abstract legislation of the zoning law of 1972 and its various complements (approximately 32 revisions⁹⁹), it has resulted in a fragmented urban design with no aesthetic-formal coherence; a plan that **accentuated the spatial dichotomy between center and periphery** and the swelling of the expanded center, both in density and in the supply of jobs¹⁰⁰. For Feldman¹⁰¹ the only coherence of the PDDI was the fact that it turned to questions strictly of the use of the ground.

It should be noted that the zoning law of 1972 preceded the oil crisis, which triggered a series of fiscal and economic adjustments undermining urban investment. It was also the result of PDDI the conception of the **Regional Administrations**, which evolved to the Sub prefectures,

96 The law in force prior to the approval of the 2014 PDE required a parking space for housing units (UH) of up to 200m²; 2 vacancies between 200 and 500m² and at least 3 vacancies for UH larger than 500m². For non-residential uses demanded a vacancy for each built 35m² (use nR2). For the 2014 PDE see article 80, which changes the amount of housing units and parking spaces that can be built in the axes of urban structuring.

97 CAMPOS, C. M.; SOMEKH, N. Plano de Avenidas: o diagrama que se impôs. In: Idem. **A cidade que não pode parar**: planos urbanísticos de São Paulo no século XX. São Paulo: Mackpesquisa, 2002. p. 132.

98 Cf. the following works: FELDMAN, S. **Planejamento e Zoneamento. São Paulo: 1947-1972**. São Paulo: Edusp/Fapesp, 2005. NOBRE, E. A. C. **Novos instrumentos urbanísticos em São Paulo**: limites e possibilidades, 2001. Available at: <http://www.fau.usp.br/docentes/deprojeto/e_nobre/instrumentos_urbanisticos_sao_paulo.pdf>. Access in: Nov 8th. 2015.

99 CAMPOS FILHO, C. M. **Reinvente seu bairro**: caminhos para você participar do planejamento de sua cidade. São Paulo: Editora 34, 2003.

100 CAMPOS, C. M.; SOMEKH, N., op. cit., loc. cit.

101 FELDMAN, S. **Planejamento e Zoneamento. São Paulo: 1947-1972**. São Paulo: Edusp/Fapesp, 2005.

term used until 2016¹⁰².

Another important fact of the planning process in the city of São Paulo of this time to highlight was the **conception of EMURB** – Empresa Municipal de Urbanização de São Paulo in 1971. EMURB, together with the newly incorporated municipal company in 1968 – the **Metropolitan Company of São Paulo** – established a division of duties in the administrative territory of the city. While the Subway was responsible for the planning of the lines and the station design, EMURB was engaged in plans to redevelop the areas directly served by the network.

On the other hand, even with deficiencies, it was the only and last moment that there was a convergence between urban policies when an institutional articulation took place in the projects of urbanism (by EMURB¹⁰³), transport (by subway) and housing (by COHAB in 1965) according to Moura¹⁰⁴:

The set of mechanisms described - creation of a company responsible for the urbanization of the border areas to the subway, application of a program of the BNH adapted to the reality of São Paulo by the local power to act in these areas, and the legal changes to not prevent the costs of expropriation re-design projects - generated an environment conducive to the requalification of joint actions between urban and metro-urban policies in the late 1970s, which were never again observed.

It dates from the 1970s another singular urban instrument, called Project **Cura** (Urban Communities of Accelerated Recovery) linked to the National Housing Bank - BNH, which the São Paulo City Hall joined in 1973.

For application of this program, initially four areas were indicated:

Santana (northern zone), and Itaquera (eastern zone); Jabaquara and Vila das Mercês (south zone). Santana (northern zone), and Itaquera (eastern zone); Jabaquara and Vila das Mercês (south

102 It is important to note that, despite the regional name, this term does not refer to the *region* of São Paulo, but to small local administrations within the city. The administrators of these “regions” are indicated by the Mayor, who yes, voted by the population every four years. Also, it is the prefecture that owns the municipal budget coming from taxes. With the change of municipal management, in 2017 the name of the subprefectures for Regional Municipalities was changed.

103 The Emurb - Municipal Company of Urbanization was created in 1971. Initially, it had as objective to take care of the requalification of the border areas to the implantation of the subway lines. Subsequently, its main objective was replanning and intervention in the urban space and it was split in 2010 in the companies São Paulo Urbanismo - SP-Urbanismo and São Paulo Obras - SPObras.

104 MOURA, G. J. C. **Diferenças entre a retórica e a prática na implantação do metrô de São Paulo**. 2016 (Doctoral thesis). Faculty of Architecture and Urbanism, University of São Paulo. P. 166.

zone). EMURB was defined as coordinator of the program in São Paulo and elaborated guidelines for the four areas. However, in 1975 the new mayor, Olavo Setúbal (1975-79) redefined the priorities, choosing the area along the subway between the Brás and Bresser stations to concentrate BNH's 105 investments and with it the CURA Project.

In 1975, along the eastern section of the Red Line-3 subway, the transformation of Zones 8 (Z8 - special uses) into **East Subway Zones (ZML)**¹⁰⁶ between Bras and Itaquera station takes place.

Some concepts of the 1968 PUB are partly taken up in 1971 in the PDDI - Integrated Development Master Plan, such as the retaking of the concept of "Multiple Activity Corridors" associated with the subway lines, where it was proposed

A 600-m wide belt with high housing density (300 inhabitants per hectare), the scheme provided for the concentration of offices and commerce in the vicinity of the stations, while public service plazas would be between two stations. This concept was the basis of the creation of the PDDI Z8 in the regions near the subway stations and was the subject of several plans developed by EMURB and COGEP throughout the 1970¹⁰⁷.

Nigriello¹⁰⁸ argues, however, that the main objective of ZML's conception was to freeze land prices after expropriations and to somehow avoid ZML's real estate speculation.

Finally, it should be noted that the 1970s played an important role in urban planning in the city of São Paulo. It was the moment of conception of the main Master Plan of the XX Century (PDDI), above all of the Zoning Law that will institutionalize a logic of dispersed action in the territory and will undermine the design of high density Urban Poles outside the expanded center, as well as the conception of public companies (such as the Metrô and EMURB) and several relevant projects.

105 ANELLI, R. **Urbanização em rede**: os Corredores de Atividades Múltiplas do PUB e os projetos de reurbanização da EMURB 1972-82. Available at: <<http://www.vitruvius.com.br/revistas/read/arquitextos/08.088/204>>. Access in: Oct 5th. 2016.

106 ZML was conceived through the amendment of the Building Code, Municipal Law n ° 8.328 / 1975.

107 ANELLI, R. L. S. Redes de Mobilidade e Urbanismo em São Paulo: das radiais/perimetrais do Plano de Avenidas à malha direcional PUB. **Arquitextos**, São Paulo, year 07, n. 082.00, Vitruvius, mar. 2007. p. 6.

108 NIGRIELLO, A. **Notas de aula: disciplina O planejamento de transporte como instrumento de ordenação/expansão do espaço urbano**. Faculty of Architecture and Urbanism, University of São Paulo, 2015.

[11] Strategic Master Plan (PDE) 2002 and its add-ons

The Strategic Master Plan (PDE) of 2002 was an important institutional framework in the city, since there were several conceptual advances achieved. For the scope of this thesis, it is important to highlight the adoption of the term **strategic** in its name, demonstrating the punctual and short-term vision of the application of this instrument in the urban development of the city, moving away in some way from the abstraction of its objectives in relation previous plans. According to Wilhelm,

Strategic Planning is an expression used in the elaboration of the Strategic Master Plan of São Paulo (2002), with the purpose of recovering the concept of strategy, previously used to indicate merely a mercantile pragmatism. In the new strategy concept it meant a first, short-term step, useful for reaching the goals set by the long-term guidelines; in other words: a greater emphasis on transformation processes¹⁰⁹.

The second point is that the 2002 PDE was able, after 32 years, to revoke the **1972 zoning** and its complementary laws with the approval of a new legislation: Law no. 13.885/2004 - Law of Land, Use and Occupancy of Land (LPUOS). This law, better known as the **Zoning Law** of 2004, established the complementary norms to the Strategic Master Plan, instituted the **Strategic Regional Plans** of the Sub prefectures, and regulated the land use plan, land use and land use in the city of São Paulo.

Macro zoning provided two areas: 1. **Macrozone of Urban Structuring and Qualification** (where urban activities will be subject to the requirements related to the Structuring Elements and Regional Plans of the Sub prefectures); 2. **Macrozone of Environmental Protection** (where any activity will be subordinated to the need to maintain or restore the natural environment).

The Macrozone for Urban Structuring and Qualification had a coefficient of utilization 1, and in some cases could reach 2,5¹¹⁰. It also had four Structuring elements: 1. Structural Water Network Parks and Green Areas 2. Structural Road Network 3. **Structural Network of Public Collective Transport** 4. Structural Network of Axes and Poles of Centralities.

¹⁰⁹ WILHEIM, J. (a) Mobilidade urbana: um desafio paulistano. *Revista Estudos Avançados*. São Paulo, v. 27, n. 79, p. 7-26, sep 2013.

¹¹⁰ As for example, constructive potential generated by fallen assets or areas of environmental interest.

In this way, the third point to highlight was the **Structural Network of Axes and Poles of Centralities**, considered as elements with greater adherence to the urban fabric, promoting cohesion, fluidity and balance of the built area. As these centralities would have a relationship with the public transport network of high and medium capacity, population densification, diversification of land use and the formation of tertiary poles should be encouraged (article 121 of the 2002 PDE).

It is in this context that the concept of “**Areas of Urban Intervention**” (AIU) was developed, a PDE instrument responsible for catalyzing strategies related to transport and land use. According to article 122 of the PDE was defined as:

They are defined as Areas of Urban Intervention, areas along the axes of collective public transport lines, with the objective of qualifying these areas and their surroundings and obtaining resources for application in the implementation and improvement of the public transport lines through onerous granting of the additional constructive potential, delimited by: I - bands of up to 300 (three hundred) meters on each side of the alignments of the public mass transit system; II - circles with radius of up to 600 (six hundred) meters with the center of the stations of the subway or rail transport.

In order to carry out such strategies and to achieve the required densification, the IUA would have the capacity to **increase its constructive potential**, with the maximum utilization coefficient limited to 4.0 and achieved through an onerous grant (article 221 and 226). According to the PDE, the UAI should be detailed in the Regional Strategic Plans (PRE) and in the revision of the LPUOS, where the location of its perimeters, the density conditions and the accuracy of its urban parameters would be disciplined.

However, both the PRE and LPUOS did not advance the detail of the legislation and the AIUs were not regulated, making it impossible to use the incentives to approve new projects. On the other hand, the advancement of design by the AIU in the 2002 PDE was an urban strategy that helped in the sedimentation of the new PDE revision proposals in 2014.

[13] Regional Plans 2004

The Subprefectures Regional Plans were designed only from the 2002 PDE. To date, it is possible to consider the preparation of two Regional Plans, complementary to the Strategic Master Plans of 2002 and 2014, with different methodologies.

Campos Filho¹¹¹ states that the Regional Plans should correct the imbalances imposed by the Macro Plan - master plan, such as zoning adjustments especially the constructive potential of the buildings and their relationship with the infrastructure support capacity of the roads.

Although they are still abstract (because they indicate intentions to intervene), and with little political force in the materialization of the guidelines, they are in fact a **spatial approximation with the local territory**, quite distinct from the Master Plan itself, standing on an intermediate scale of detailed below.

The Strategic Regional Plans of the Subprefectures constitute complementary parts of the 2002 PDE, as provided in article 6 of the 2002 PDE, and should be instrumental in the actions of public and private agents in the territory of each Subprefecture.

The Strategic Regional Plans covered the entire territory of each subprefecture, contemplated proposals related to their specific characteristics, defined the urban-environmental plan the physical, territorial and social aspects, **including the minimum and maximum urban parameters**, so that if the social function was fulfilled of the property.

Each sub-district, according to its specific characteristics, delimited the **Urban Intervention Areas (IUA)**, **Strategic Urban Intervention Projects (PEIU)** and **Urban Consortium Operations (OUC)**, with their respective programs, objectives and guidelines, in order to meet the needs of regional development, consistent with the PDE guidelines (Article 54).

[14] Consortium Urban Operation

The Urban Operation urban instrument has existed in the city of São Paulo since the 1980s, an alternative within a context of economic recession and fiscal crisis that collapsed in that period. With the City Statute of 2001, **it is reviewed in the 2002 PDE**.

The **Consortium Urban Operations** are defined as the set of measures coordinated by the Municipality with the participation of owners, residents, permanent users and private investors, with the objective of **achieving structural urban transformations**, social improvements and environmental enhancement, **notably by expanding public spaces, organizing collective transportation**, implementing housing programs of social interest and improvements to infrastructure and road system in a specific perimeter¹¹² to be created by specific law.

111 CAMPOS FILHO, C. M. **Reinvente seu bairro**: caminhos para você participar do planejamento de sua cidade. São Paulo: Editora 34, 2003.

112 City Hall of São Paulo (PMSP), PDE 2002, Art. 225.

The main instrument of an Urban Operation is **the training of financial resources** through the **collection of onerous concession** based on the possibility of a higher construction coefficient than in the rest of the city. The financial contribution in turn must be applied in the same area of the operation, but **without making explicit the formal result** of this constructive increase, of the proposed interventions due to the absence of the need to design an urban plan.

The Urban Operations were born, therefore, with the objective of being the instrument that **materialized urban projects** in the Brazilian context. However, it is not possible to observe the scope of this goal due to several formal impasses “because they are not based on urban design strategies, but rather **on the restructuring of the urban fabric, lot by lot**, where market logic prevails, as do other urbanistic tools”¹¹³. Furthermore, Castro argues that even if Urban Operations were originally conceived as instruments that would make urban projects feasible, its effective application resulted basically in an urban financing instrument.

Another criticism put by Barbosa¹¹⁴ and Fernandes¹¹⁵ for urban operations refers to the creation of “urbanisms of exception”, where “punctual and arbitrary solutions are formulated to the detriment of the law and the norm”. The formal result, especially in the edilic typology of the Operations, is summarized in vertical closed condominiums and corporate towers¹¹⁶, which “have little or no relation to the preexistence in the surroundings, fragmenting urban fabrics, promoting barriers, presenting isolated buildings in large lots, whose perimeters are walled, denying their context and increasing processes of segregation, representing “obstacles, frontiers and fractures”¹¹⁷ in the urban fabric.

113 BARBOSA, E. R. Q. **Da norma à forma: urbanismo contemporâneo e a materialização da cidade**. 2016 (Doctoral thesis). Faculty of Architecture and Urbanism, Universidade Presbiteriana Mackenzie, São Paulo. P. 350. Our griffin.

114 BARBOSA, E. R. Q., op. cit., p. 359.

115 FERNANDES, A. Decifra-me ou te Devoro: Corporate Urbanism, Fragment City and Dilemmas of Urbanism Practice in Brazil. In: GONZALES, S. F. N.; FRANCISCONI, J. G., et al (Ed.). **Planejamento & Urbanismo na atualidade brasileira - objeto teoria e prática**. Rio de Janeiro: Livre Expressão, 2013. p. 92.

116 Cf. the following works: CASTRO, L. G. R. D., op. cit., loc. cit. MONTANDON, D. T. **Operações Urbanas em São Paulo: da negociação financeira ao compartilhamento equitativo de custos e benefícios**. 2009 (Master Thesis). Faculty of Architecture and Urbanism, Universidade Presbiteriana Mackenzie, São Paulo. SANTORO, P. F. **O redesenho dos instrumentos urbanísticos e a equação (im)possível das garantias de rentabilidade da terra e do direito à cidade nos projetos urbanos**. XVI Enampur. Belo Horizonte: Universidade Federal de Minas Gerais, 2015. BARBOSA, E. R. Q., op. cit., loc. cit.

117 FERNANDES, A. Decifra-me ou te Devoro: Corporate Urbanism, Fragment City and Dilemmas of Urbanism Practice in Brazil. In: GONZALES, S. F. N.; FRANCISCONI, J. G., et al (Ed.). **Planejamento & Urbanismo na atualidade brasileira - objeto teoria e prática**. Rio de Janeiro: Livre Expressão, 2013. p. 101.

Another characteristic feature of São Paulo's "successful" urban operations refers to areas where the real estate market already had some interest and not the opposite, where investors should adhere to the transformation intentions initiated by the public¹¹⁸.

Therefore, urban operations can not be considered as an Urban Project, but as an element that juxtaposes new rules with existing regulations.

Being so ineffective to spatially articulate the private sphere to public benefits, as well as to traditional urban regulation, represented by the law of land use and occupation (zoning). The instruments and initiatives that should implement urban projects in the city remained applicable only on paper, depending on political will. While conceived as regulations, not projects, urban operations only **juxtapose new rules to existing regulations**, increasing their non-compulsory, or conditional character. Adherence only happens if and when it is advantageous enough, that is, in areas where the market would spontaneously attract, following only the market logic, not also contemplating strategies that devise significant transformations according to other logics, to materialize public benefits¹¹⁹.

As the Urban Operations guarantee, therefore, **the increase of the constructive density and the realization of punctual road works**, do not design an urban project, do not guarantee the definition of computer elements of the public space, and do not trigger an effective process in the transformation of the urban landscape.

[11] Strategic Master Plan (PDE) for 2014

The Strategic Master Plan (PDE) in force in the city of São Paulo was approved and sanctioned on July 31, 2014 by Law n° 16,050.

As the main urban instrument, it proposes the division of the city into two macrozones (Macrozonas of structuring and urban qualification and Macrozona of environmental protection) and macro areas. In order to achieve the PDE objectives and guidelines in a balanced manner,

118 Cf. the following works: CASTRO, L. G. R. D. **Operações Urbanas em São Paulo**: public interest or construction speculation of the place. 2006 (Doctoral thesis). Faculty of Architecture and Urbanism, Universidade Presbiteriana Mackenzie, São Paulo. MONTANDON, D. T. **Operações Urbanas em São Paulo**: da negociação financeira ao compartilhamento equitativo de custos e benefícios. 2009 (Master Thesis). Faculty of Architecture and Urbanism, Universidade Presbiteriana Mackenzie, São Paulo. BARBOSA, E. R. Q., op. cit., loc. cit.

119 BARBOSA, E. R. Q., op. cit., p. 366.

the macro-zone of urban structuring and qualification, defined as a **Urban Structuring and Transformation Network**, is composed of the following elements: 1. Macro Area of Metropolitan Structuring; 2. Macro Area of Consolidated Urbanization ; 3. Macro Area of Urbanization Qualification; 4. Macro Area of Reduction of urban vulnerability (**figure 14**).

Within these four zones stands out the Structural Network of collective transport. This zone defines where the **Axes of Structuring Urban Transformation** will be, portions of the territory that should concentrate the process of housing and **construction densification**.

With the objective of orienting the urban transformations in the **proximities of the transport axes, areas of influence** were defined that are determined as a function of the structural system of collective transport of average and adjacent high capacity. Thus, train, subway, mono-rail, Light Rail Vehicle (VLT), Light Vehicle OverPneus (VLP) in highways has a **400 meter area of influence centered on the station** and 600 meters by the blocks reached by the circumference of 400 meters. Bus lanes on non-raised lanes contain the inner blocks of lines parallel to the axis of the distances 150 meters from the axis, and the blocks reached by these lines are entirely contained between lines parallel to the axis of the distances 300 meters from the axis (**figure 15**).

It is important to note that the Axes for the Structuring of Urban Transformation were specified and demarcated in the PDE maps, forming part of a series of immediately applicable instruments. This results in no need for another law for its regulation, which was the case of the UAE of the 2002 PDE (and which could not be implemented). This change reveals the focus on **joining mobility and urban development** in a central position of the 2014 Master Plan, but on the other, demonstrates a centralization of formal decision making at the macro scale.

Another important factor in the demarcation of the Axes coincides with its role of raising funds for the municipality, since the **higher coefficients are now located in these territories** (and in Urban Operation areas), which transformed the onerous grant into a fundamental instrument of collection. Therefore, the collection in the areas of the axes is boosted by the determination of the coefficient of basic utilization equal to 1 for the whole city, as well as for the great part of the inventory of onerous concession in area of operation to be exhausted.

The 2014 PDE also advanced by stimulating the design of new ventures through the elements of the **active facade** (stimulating the deployment of commercial and service areas on the ground floor); of **public fruition** (public areas, contiguous to the street or drawn inside the court); the **minimum width of sidewalks** along the lines of transport, among others.

On the other hand, by conditioning the constructive density to the axes of mobility, it assigns great responsibility to the latter. This link, when optimizing transport systems, reinforces inequalities in areas where this network is precarious. Therefore, conditions that this instrument

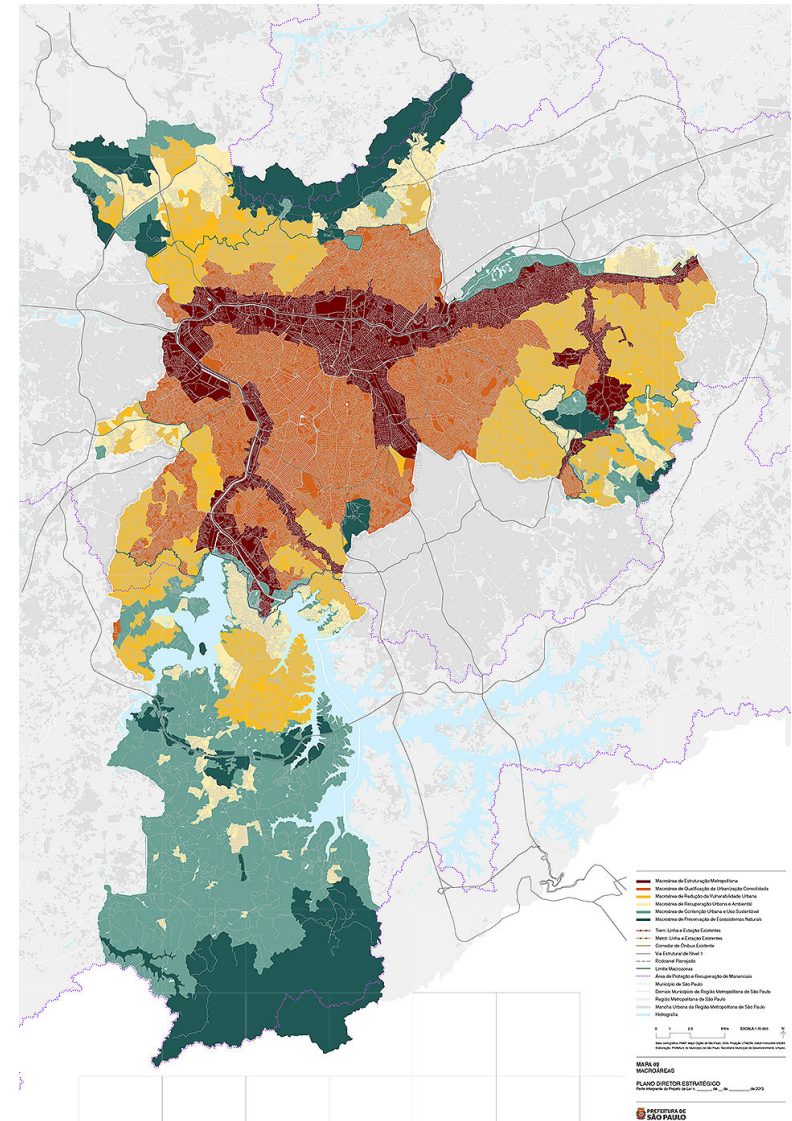


Figure 14
Macrozones and macroareas of PDE 2014.
Source: PMSP, PDE 2014.

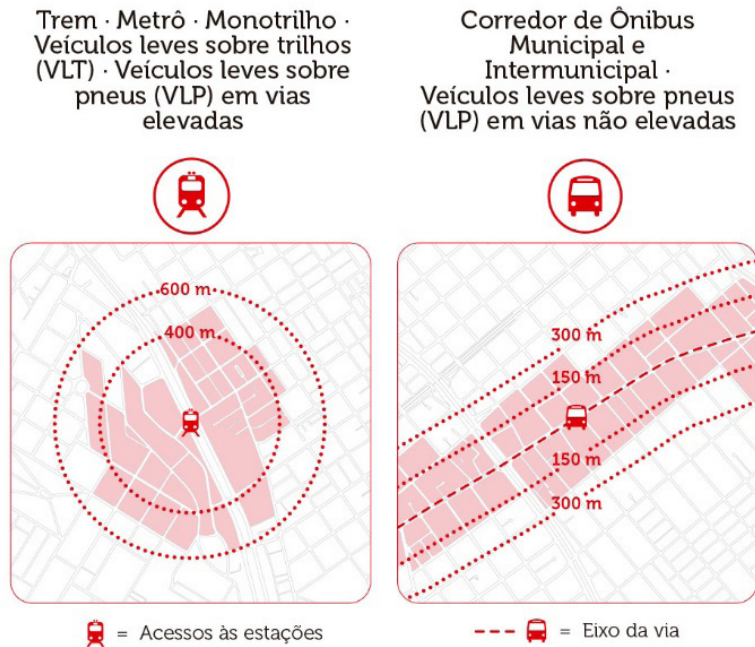


Figure 15
Area of influence of the Structuring Axis of the Urban transformation according to the means of transport
Source: PMSP, PDE, 2014.

can be implemented when there is only one order of service to perform the works, such as a bus corridor or subway line.

As experience to the present day shows an isolated agenda in each company and government agency in the field of transport, it will therefore be an **institutional challenge** to articulate these possible new mobility networks to the new axes of urban densification. Also, the axes could be compromised with the evolution of this network in the urban fabric, which as previously demonstrated, had a faint evolution, both of metro lines and bus corridors.

Finally, the 2014 PDE gave rise to the following complementary plans:

- Law of Parceling, Use and Land Use (LPUOS);
- Regional Plans of the Sub prefectures;
- Municipal Urban Mobility Plan of São Paulo - PlanMob/SP.

The law of Land Use and Land Occupation (LPUOS), better known as the Zoning Law in force, was sanctioned on March 23, 2016. It is a complement to the 2014 PDE (current urban plan). Since zoning has a leading role in urban planning in the 1970s, it is important to emphasize its conception at the current level.

In order to **rebalance the gains related** to constructive production in the city, the 2014 PDE established the **coefficient of basic utilization equal to one** for the whole city, a goal that was tried in previous master plans, but which had never been successful until then. In this way, the whole territory has the same “importance” in relation to the constructive density. On the other hand, this is also a strategy to valorise constructive parameters in specific areas such as the Consortium Urban Operations or the Structural Transformation Axes. In the financial sense, it is also a mode of collection through the payment of onerous grant (created soil) when the basic coefficient (one) is exceeded.

Finally, other current instruments should be highlighted: Terminal Concession Law (Law nº 16.211 / 2015) and the **Urban Intervention Project** – PIU.

In the case of the former, it provides the possibility of granting the private initiative the operation of municipal bus terminals. For this, a plan was not discussed for locating these terminals in the urban territory or articulated with the new ways of people’s circulation and then to study the possibility of private concession.

The **Urban Intervention Project** - PIU is stipulated in Article 134 et seq. Of the PDE, as well as that of Decree No. 56,901 of 2016. In article 1 of the decree, it is stated that the purpose of the PIU is to gather and articulate the technical studies necessary to promote urban planning and restructuring in underutilized areas and with potential for transformation in the Municipality.

After the diagnosis of the area of intervention, authorizing the elaboration of the PIU, it is up to São Paulo Urbanismo - SP- Urbanismo to define the **perimeter of intervention**; of the basic characteristics of the proposal; and stages of project design. The final content of the PIU should include, among others, a proposal for **urban planning or restructuring** for the delimited perimeter, with the definition of an intervention program, implementation phases, urban planning parameters and necessary environmental management instruments. There is, therefore, no possibility of drawing discussion through a local masterplan.

[13] Regional Plans of 2016

With the approval of the new zoning law by the PDE of 2014, the Regional Plans of 2002 were revoked. The IUA, an important urban instrument, had no territorial impact, since it was not regulated and remained throughout the 2002 PDE in a legal and political vacuum that made it impossible to use its incentives to approve new projects.

Thus, with the new PDE in force is established the **Regional Plans of the Subprefectures** (article 344). **The Regional Plans should detail** the guidelines of the PDE within the **territorial scope** of each Sub-Prefecture, **articulate the sectoral policies** and complement the proposals related to urban-environmental issues in their physical and territorial aspects, as well as demarcate the urban and environmental instruments foreseen in the PDE.

The Regional Plans of the Subprefectures in the Urban Planning System - instituted by Decree No. 57,537/2016¹²⁰ are complementary planning elements that aim to **emphasize the spaces and public areas and the articulation of sectoral policies in the territory** that need interventions.

While the zoning deals with the urban parameters (occupancy rate and building model) to be worked in the private plots, the Regional Plans of 2016 place the possibilities of intervention in the public spaces through a significant survey of local data, which resulted in the **perimeters of action** constituent of the Local Structuring Network (implementation of its proposals) in all Sub prefectures of the city published through the Proposal Book¹²¹.

120 Decree 57.537 / 20161 regulates articles 344 to 346 of Law No. 16,050, dated July 31, 2014 - Strategic Master Plan, establishing the Regional Plans of the Sub prefectures, based on the principles and directives established therein, articulated to the review of the new discipline of land use planning, land use and occupation, as well as the preparation and implementation of the Action Plans of the Sub prefectures.

121 PMSP, SMDU, The Regional Plans of the Sub prefectures in the Planning System, 2016.

Art. 2º The Regional Plans are composed of guidelines and proposals for each Sub-Municipality of the Municipality, defined based on analyzes of social, economic, territorial and environmental data and indicators, as well as **territorial sectoral plans and actions**, guided by the purposes and objectives described in the Law 16,050, of July 31, 2014 - Strategic Master Plan, especially in its Articles 344 to 346.

The perimeters of action are defined in the decree as portions of the territory destined to local urban development, through the integration of policies and public investments, characterized by the articulation of the local elements of the Urban and Environmental Systems, in terms of the Strategic Master Plan, which count with the description of the location of the area and its mapping of the portion of the territory of analysis; the characterization of the problems and questions of the Perimeter of Action and the objectives and guidelines for intervention. In addition, the Action Plans of each Sub-Prefecture aim to prioritize and detail the proposals of the respective Regional Plans, making the Program of Goals compatible with the territorialisation of the planned sector actions.

Since the Plans of Action of the Sub prefectures are prepared for a period of four (4) years, and must be completed within 180 (one hundred and eighty) days after the publication of the Program of Targets, it is an extremely incipient instrument, and it is not possible to analyze the challenges and advances of this instrument in the territory.

However, it is possible to affirm that even if it is an advance in the sectoral interrelation between the City Hall and subprefectures, as well as in data collection of portions of the territory, the **perimeters of action only propose guidelines** and there is no conception of a design that articulates all involved. In regional plans there is a limitation of territorial intervention - public spaces - and there is still a gap in the articulation between public and private domains in the local planning process.

[16] Urban Mobility Plan of São Paulo

Decree No. 56,834 of 2015 establishes the Municipal Urban Mobility Plan of São Paulo - **PlanMob / SP**. Its conception was motivated to comply with Federal Law No. 12,587 of 2012 - PNMU. It was an important regulatory framework for the city in establishing the planning and management of the Municipal Urban Mobility System for the next 15 years.

Firstly, it is aligned with article 229 of the PDE 2014. The three (3) fundamental axes that guided the definition of the actions and instruments of PlanMob were: 1. Urban mobility as a

result of public policies; 2. The organization of the Urban Mobility System as access to universal services; 3. Recognition of urban mobility as a fundamental policy for the improvement of urban environmental quality.

The guidelines for the democratization of road space, integration with urban development policy, pedestrians and non-motorized modes of transport; priority for collective public transport and promotion of sustainable development (Article 5).

5.4 Synthesis and considerations between transport and urban in São Paulo

The city of São Paulo, which in the year of the railroad's implantation in 1867 had 32 thousand inhabitants, reached in 2016 12 million inhabitants¹²² after 149 years of intense urban transformations. It is the epicenter of a metropolis that encompasses 39 municipalities in the Metropolitan Region of São Paulo (RMSP) composed of 21 million people. From the old industrial character of the early twentieth century, it behaves as a service capital and headquarters of the main multinationals in Latin America.

Although the railway system was an urbanizing and structuring element of the territory, especially up to the 1930s, it was the implementation of the **Avenues Plan** with the imposition of the **flexibility of the road system** under tires as well as the decoupling of the public transport system from the main flows of intrametropolitan displacement that configured the **metropolitan structure** of São Paulo until the present day¹²³.

The Integrated Development Master Plan (IDP) of 1971 in turn was the master plan that most influenced for decades the city planning process until the design of the Strategic Master Plans (PDEs) of 2002 and 2014.

The General Law of **Zoning** of 1972, complement of the PDDI, by the approval of urban parameters that stimulate the isolation of the building in the lot imposed an architectural typology. It also established a articulation of the road guidelines with the use of the ground described by specific zones, rooting therefore, the culture of the zoning in the territory structured under the modal of wheels, were the bus or private vehicle.

This strategy resulted in a strong **dependence** on **motorized mobility** in a sparsely populated, low-density city without a coherent urban form in the landscape that represents an unsustainable model of urban development.

Several economic crises have arisen, the scarcity of investments and significant political changes. Thus, the plans that succeeded the PDDI were not relevant until the adoption of the **Strategic Master Plan** of 2002, which, with the introduction of various elements of the City Stat-

122 IBGE, 2016.

123 Villaça, F. **Espaço intraurbano no Brasil**. São Paulo: Studio Nobel: FAPESP: Lincoln Institute, 2001.

ute (2001), finally succeeded in repealing the Zoning Law of 1972 with the approval of the Law Land Use and Land Occupation (LPUOS), ie, the 2004 zoning.

The **Strategic Master Plan** of 2002 conceived the Structural Network of Axes and Poles of Centralities, the IUA and instituted the Strategic Regional Plans that did not reverberate in the transformation of the areas of the stations by legal limitations in the applicability of the urban instruments. But on the other hand, it started the Consorciated Urban Operations, an important urban instrument in the city.

The current Plan, the **Strategic Master Plan** (PDE) of 2014 establishes the **Axes for the Structuring of Urban Transformation**, portions of the territory that should concentrate the process of housing densification and guide the urban transformations in the vicinity of the transport axes. This link, by optimizing transport systems to constructive potential, also strengthens the inequalities in areas where this network is precarious since the macroaccessibility network of public transport in São Paulo is not distributed homogeneously in urban space¹²⁴.

PITU 2025 is the last transport plan (2006) officially launched in the Metropolitan Region of São Paulo, but it was abandoned politically as a strategic instrument as well as not articulated to the 2014 PDE, nor to the Urban Mobility Plan of São Paulo (PlanMob2015).

On the one hand, the metro-rail system has slowly advanced in the expansion of a high-capacity network. On the other hand, the **system of corridors and bus terminals has been exhausted** by the need to meet new regional poles and travel desires in reasons for changes in land use and redistribution of economic activities. For this reason, the Mobility Plan - PlanMob suggests changing the **network model**, with more **connections and perimeters** and more freedom to the center.¹²⁵ However, four years ago, the bidding model for buses has been discussed, with deadlocks on the duration of the new concession as well as the city's Climate Change Law, putting the uncertainty of new directions on the **logic of bus traffic**, the means and the political relevance of the preparation of the Mobility Plan.

Within the scope of the municipal urban instruments, despite the presence of the Regional Plans and their recent studies as well as of some Urban Operations, the **gap in the urban planning process** is evident between the macro strategies of the Plans that cross intermediate scales and effectively develop cohesive spatial transformations.

Vasconcellos emphasizes that public transport is a special and essential service for the

¹²⁴ It should be noted that the management of the subway and train network plans is the responsibility of the State Government and the bus network to the Municipality.

¹²⁵ City Hall of São Paulo - PMSP, PlanMob / SP, 2015.

functioning of the city. For this reason, public transport needs to be planned and controlled, and can not be left to the “market” and for specific decisions.

It is a mistake to consider public transport as a bakery, which should be run exclusively by its owner, who will set the opening time for morning and evening closing, how to bake bread, the ingredients to be used and the price to be charged. When this is done with public transportation the result is always lousy¹²⁶.

The current evidence, due to delays in works and the development of **future subway network** projects, fundamental for the balance of the network, result in an uncertain design and low implementation perspectives. Therefore, discussing transport planning scenarios, whether in the State or Municipal sphere, especially in the areas of the stations studied in this research, is a great strategic and institutional challenge.

The data evidenced throughout the chapter demonstrate the public transport system does not function as a system nor was it designed as a mesh¹²⁷, which results from having its implantation unequally in the macro territory of the metropolis, the **absence of a macroaccessibility network** of public transport to the metropolis. It is added to the picture, high rates of congestion and in the time of displacements that reverberate in economic losses and in the quality of life as well as in the environmental, noise pollution and the high rates of accidents and deaths.

It is not possible to know what will be the fruits and materializations that will result from the 2014 Master Plan and its complements as well as the Plans from the state government but according to Villaça¹²⁸, one of the aspects that approached urbanism in São Paulo after the 1940s is the **non-effectiveness of the plans**.

As a result, the plans reflected the ambitions of the São Paulo elite, which materialized in performing works of their interest in the parts of the city that interested them, as well as to serve work fronts for real estate interests and not necessarily urban strategies that directed a sustainable growth¹²⁹. Only time will demonstrate the results of the 2014 PDE proposals.

There are, therefore, great dilemmas and challenges of planning and urban mobility in

126 VASCONSCELLOS, E.A. **Mobilidade urbana e cidadania**. Rio de Janeiro: Senac, 2012. P. 166.

127 WILHEIN, J. **São Paulo**: uma interpretação. São Paulo: Senac, 2011. p. 157.

128 VILLAÇA, F. Uma contribuição para a história do planejamento urbano do Brasil. 1999. In: DEDK, C., SCHIFFER, S. R. (Org.) **O processo de urbanização no Brasil**. São Paulo: Fupan/Edusp. p. 169-244.

129 FELDMAN, S. **Planejamento e Zoneamento. São Paulo: 1947-1972**. São Paulo: Edusp/Fapesp, 2005. p. 23.

São Paulo represented in a complexity of instruments in the macro scale. The selected case study stations - **Pinheiros/Faria Lima**, located in the western zone and **Corinthians-Itaquera**, in the eastern zone of the city (**figure 16**) indicate how they reverberated the set of plans and projects in the local territory, show the ambivalences, but also the potential of the areas of the stations so that they contribute to reverse the picture of spatial decomposition in the city of São Paulo.

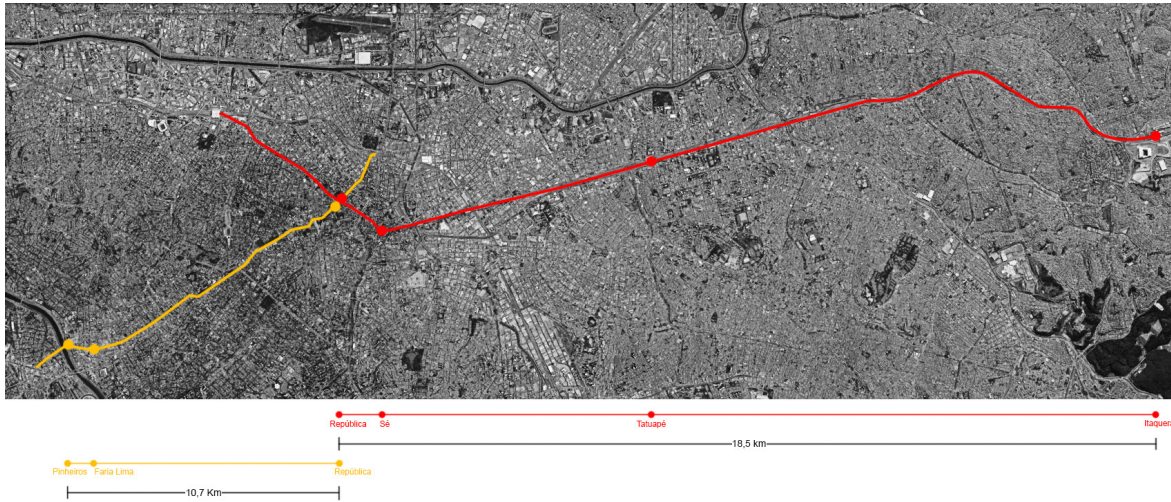


Figure 16
Pinheiros/Faria Lima (Yellow Line) stations located in the western zone and Itaquera Station (Red Line) inserted in the urban fabric of the city of São Paulo and its subway connections (station República and Sé) in the center.
Source: Google Earth, 2017, our treatment.

How can urban transportation be provided without destroying the correlate use, complex and concentrated? – that is the question. Or, on the other hand, how to provide a complex and concentrated soil use without destroying the correlate transport?'

1 JACOBS, J. **Morte e vida de grandes cidades**. 3ª ed. Translation: C.S.M. Rosa. São Paulo: WMF Martins Fontes, 2011, p. 379.

This chapter intends to apply the method of analysis proposed in chapter four in the study area of the **Pinheiros and Faria Lima stations** at the intermediate and local scales. After the approach in the macro scale of the city of São Paulo, where the stations that constitute the case study objects are inserted, the **intermediate and local scales** will be analyzed in the scope of the node-place-urban-instrument categories. To assist in understanding the structuring of the chapter, the set of analyzes to be performed is presented in **figure 1**. At the end of the chapter there will be a summary of the analyzes described and the partial considerations of this case study. It should be noted that in the appendix there are summary tables of the analyzes described in this chapter.

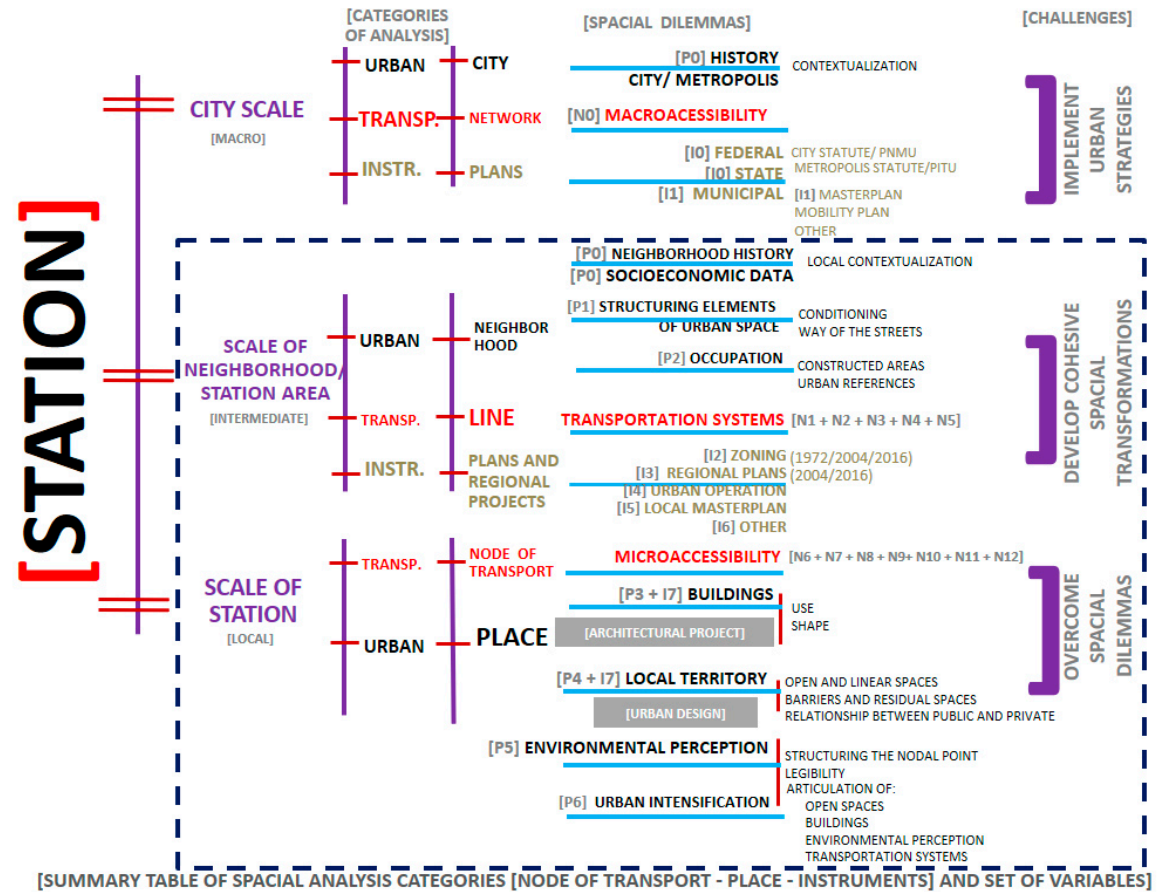


Figure 1
 Diagram of the analysis categories of the case studies highlighting the intermediate and local scales.
 Source: author, 2017.

The study area to be analyzed is the same as the perimeter used for the Largo da Batata reconversion project (to be detailed below). This perimeter (**figure 2**) meets the methodology proposed by Bertolini and Spit², as it is consistent with the urban context in the articulation of urban references, such as the transformations in Largo da Batata, an important nodal point in the neighborhood. This perimeter also ties the main circulation flows, especially in the connection between subway and train, besides not representing great scales of action or areas defined by generic and abstract rays.

That said, the area is bordered by av. of the United Nations (marginal Pinheiros), Butantã street, Teodoro Sampaio street, Cunha Cago street, Baltazar Carrasco and Sumidouro street.

6.1 Neighborhood's / station area scale

The area surrounding the Pinheiros and Faria Lima stations is located in the western part of the city of São Paulo (**figure 3**), 10.7 kilometers from the Sé station, located in the city center (**figure 4**). It is part of the **subprefecture of Pinheiros**³, has **289,743 inhabitants**⁴ and about 3,170 ha. The subprefecture of Pinheiros is composed of the districts Alto de Pinheiros, Pinheiros (where the stations are located), Jardim Paulista and Itaim Bibi (**figura 5**). Considering the 32 Regional Prefectures, it is the **22nd in number of inhabitants** and the 17th in size⁵.



Figure 2
Perimeter of study and name of main routes.
Source: PMSP, MDC. Our treatment.

2 BERTOLINI, L. & SPIT, T. **Cities on Rails: The Redevelopment of Railway Stations Areas**. London: E & FN Spon, 1998, p.12.

3 The city of São Paulo created in 2002, 32 Sub prefectures. With the new management of 2017 was changed the denomination subprefecture to Regional City Hall. A Regional City Hall briefly represents a local administrative and janitorial division. There is no prefect elected in the Regional City Hall despite the name, and no financial autonomy. It was decided to use the term sub prefecture in this thesis since all the sources used come from that phase.

4 CENSO 2010.

5 City Hall of São Paulo (PMSP), 2010.

6.1.1[P] Neighborhood Place: the Pinheiros region in the context of São Paulo city

[P0] Historical aspects of occupation: local contextualization

Pinheiros is one of the oldest districts of São Paulo. According to Ponciano⁶, in 1562 there was a strong attack by enemy Indians in the town of Piratininga, which caused an indigenous group to settle on the banks of the Rio Grande – later known as Rio Pinheiros –, probably in the place today occupied by Largo da Batata, a place protected from the usual floods of the banks of the river. For the catechesis of the Indians was erected a church with the name of Our Lady of the Conception. The indigenous village, which became known as **Aldeia dos Pinheiros**, was always important because of the narrowing of the banks of the Pinheiros River, which facilitated its crossing, and in this way became an obligatory stretch for several paths that crossed the region.

The **tram line** arrived in Largo de Pinheiros in 1909, after drainage and landfill throughout the area (**figure 6**). The **Pinheiros Market** was inaugurated in 1910 and was only an area surrounded by barbed wire with a small shed in the center, where local farmers sold their wares.



Figure 6
Tram line in the Faria Lima station area.
Source: Paulista Memory, undated.

6 PONCIANO, L. *São Paulo: 450 bairros, 450 anos*. 2ª ed. São Paulo: SENAC, 2004.



Figure 7
Cotia Agricultural Cooperative.
Source: Available at: <<https://www.jornalcotiaagora.com.br/wp-content/uploads/2017/04/Cotia-cac.jpg>>. Access on Dec 05, 2015.



Figure 8
Ancient Largo da Batata.
Source: Unknown. Available at: <<https://io.wp.com/diariodotransporte.com.br/wp-content/uploads/2012/11/batata.jpg>>. Access on Dec 08, 2015.

Progress has come to the region with the development from coffee export money. In 1865 there was a metal bridge over the Pinheiros River that was replaced and widened by Light⁷. Subsequently, one of the largest cooperatives in Brazil was established, the **Cotia Agricultural Cooperative**, founded by Japanese in 1927, due to the need to build a warehouse with a community regime, initially destined for potatoes (which gave rise to the name of the place : Largo da Batata) (**figure 7**). The activities of the Cooperative were closed in 1994.

The neighborhood underwent several urban transformations in the second half of the 20th century, such as the expansion of av. Brig. Faria Lima, in 1968. Thus, Largo da Batata consolidated itself as a place with intense individual and collective transportation traffic and popular commerce (**figure 8**).

In 1990 another bridge is built on the Pinheiros River. In 2001, Largo da Batata was incorporated into Operation Faria Lima, and then the Largo da Batata Urban Reconversion Project was created (2001), which removed several properties, including the bus terminal, relocating it to Marginal Pinheiros. In 2010, Faria Lima subway station was opened, which in 2013 was the scene of social demonstrations due to the increase in the transportation tariff. There is a strong presence of the real estate market in the region, accentuated after the arrival of the subway in the region and by Operation Urbana Faria Lima.

[P0] Socioeconomic data

The Proposal Documents of the Regional Plans of the subprefectures⁸, designed to be the support of the discussions of the Regional Plans, provide the synthesis of several data of the subprefecture of Pinheiros presented here.

The subprefecture of Pinheiros concentrates 2,6% of the population of São Paulo, approximately 290 thousand inhabitants (**chart 1**). The region generates 27.7% of the jobs offered in the municipality and has the best HDI in the city. In the Pinheiros district, 11.8% of the population receives more than 10 minimum wages and 54.5% between 1 and 3 Minimum Wages (SM)⁹ (**chart 2**).

7 ZMITROWICZ, W.; BORGHETTI, G. *Avenidas 1950-2000. 50 Years of Planning in the City of São Paulo*. São Paulo: EDUSP, 2009.

8 PMSF, 2016. Available at: <<http://gestaourbana.prefeitura.sp.gov.br/marco-regulatorio/planos-regionais/arquivos/>>. Access on 28 Sep 2016.

9 The average in the city of São Paulo of those who receive more than 10 minimum wages is 7.3%

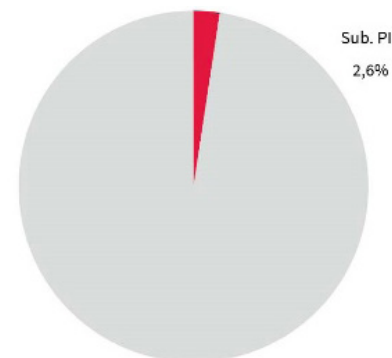
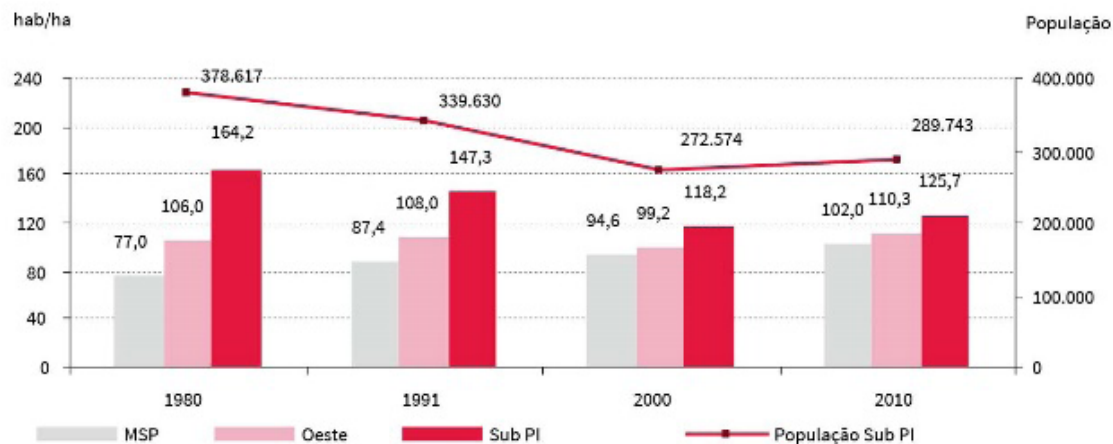


Chart 1
Population of sub Pinheiros in relation to the municipality and total population and population density, 1980-2010.
Source: PMSP, Datasub: Notebook of the CO Subprefecture, 2016, p.20.

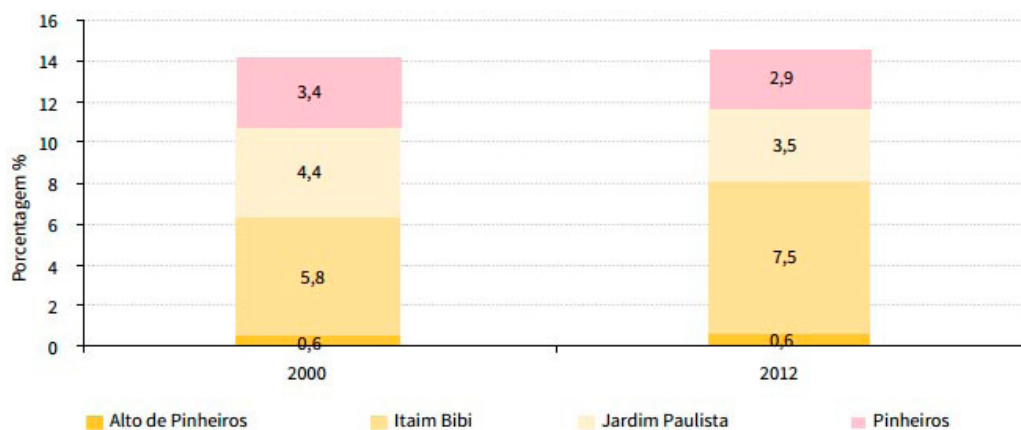
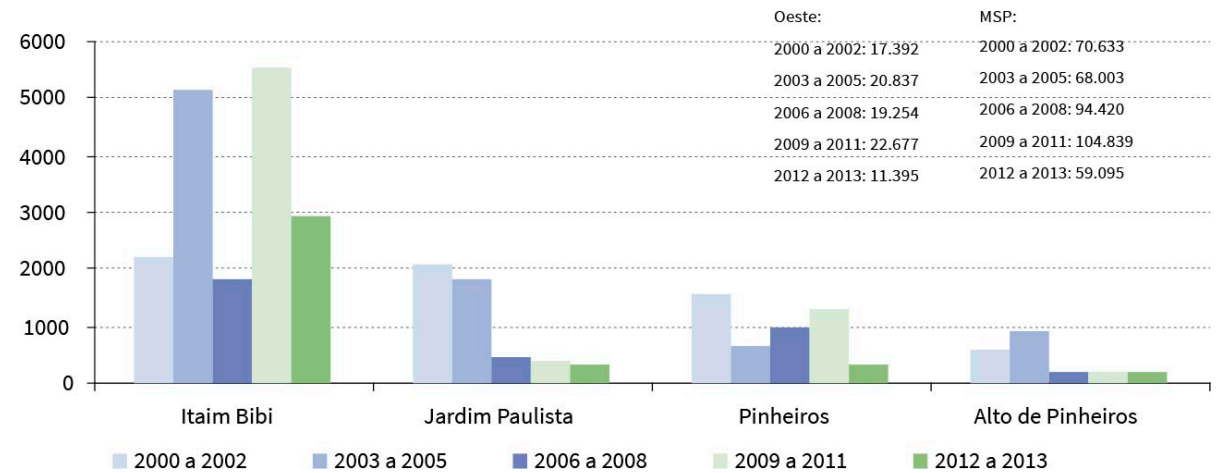


Chart 2
Participation of formal jobs in the Pinheiros Subprefecture in relation to the municipality.
Source: PMSP, Datasub: Notebook of the CO Subprefecture, 2016, p.24.

Data from 2014 indicate a decrease in residential use to 61%; and a significant number of vertical residential and service launches (chart 3). A major challenge is the search for socioeconomic diversity and activities in the region, which in some places concentrates few uses, such as exclusively residential areas.

Chart 3
Vertical Residential Units launched, 2000 to 2013.
Source: PMSP, Datasub: Notebook of the subprefecture CO, 2016, p. 33.



[P1] Layout structuring elements: Conditioning, infrastructures and street layout

In order to visualize the spatial transformations, the natural elements pre-existent to the intervention of the occupation process, such as topography, green areas and the presence of rivers/streams, are initially analyzed. It is intended to identify the relationship of natural elements, as well as areas that could not be built and / or that were barriers to urbanization and transformation of the territory.

The Largo do Pinheiros is in the 731 meters height. The **main natural condition** for urbanization in the area of the Pinheiros station was the Rio Pinheiros itself (**figure 9**), located at the 725 meter elevation. The natural landscape of the region is characterized by being originally a flood plain of the Pinheiros River¹¹. As a result, the edges of the rivers and streams were empty for long periods, without urbanization. In the 1920s the Pinheiros River began to be rectified (with works completed in 1944), aiming to stop the floods and reverse the flow of the river to the Billings dam to the south¹².

11 RODRIGUEZ, S. K. **Geologia Urbana da Região Metropolitana de São Paulo**. 1998. (Tese de Doutorado). Institute of Geosciences, University of São Paulo: São Paulo, 1998.

12 With the reversal of the natural stream from the Pinheiros River to the Billings dam, conditions were created for the installation of the Henry Borden Hydroelectric Power Plant in Cubatão. Billings was also built for this purpose, since water storage would take place in the dam and then be directed to the city of Cubatão through a large gap of Serra do Mar, of more than seven hundred meters, to generate electricity in the City.

Infrastructures that conditioned growth in the station area were the railroad and the expressway, both located adjacent to the Pinheiros River. In 1957, on the eastern bank of the river, the Jurubatuba branch of the Sorocabana Railroad was inaugurated, which is now Line 9 of CPTM. And in 1970 began the construction of the expressway.

In the analysis of the urban form (**figure 10**), from the first figure, from 1930, the importance of the route of Butantã Street - the only moment in which the river is crossed - is identified and its mouth to the Largo da Batata / Pinheiros is branched between the streets Cardeal Arcoverde, Teodoro Sampaio and dos Pinheiros. In the figure of 2004, the insertion of a new structuring element is observed: the widening of av. Brig. Faria Lima, changing the hierarchy of the urban form and its relations, especially in the junction of these three routes. In 2015, there is a rupture of the continuity of Cardeal Arcoverde Street, the conception of a large square at the intersection of Butantã Street and the new design of the area of the Pinheiros station area. There is also the opening of a road between the streets Amaro Cavalheiro and Butantã, in this case breaking up a large farm.

Thus, initially the morphological formation of the area is of a route in the north-south dominant direction - Padre de Carvalho Street and Fernão Dias, etc., closing in the street Paes Leme -, with a texture well cut out by private lots that will configure a typology of aggregated houses. The second guideline shows the rectangular, orthogonal pattern of east-west expansion, structured by the axes of Teodoro Sampaio and Cardinal Arcoverde. In both historical moments the Largo da Batata intermediated the two patterns of tracing, functioning as a polarizing center of the region.

In the part that follows to the south of Paes Leme the formation is clearly cut by three paths in the east-west direction (Paes Leme street, Butantã street, and av. Eusebio Matoso) and internal streets of various forms, many of which are interrupted inside the large block occupied in a heterogeneous way.

Thus, at the edge of the river and the expressway are observed the permanence of the largest areas in the old flooded areas. In the second quota above the river, the incipient soil, in the 30's, is subdivided into smaller blocks.

The current structural design of Av. Brig. Faria Lima and Eusébio Matoso, added to the expressway, created a small “neighborhood” between them, with a design of trace permeable to each other. The growth lines of this “neighborhood” were towards the east, towards the center of the city, so that open structures of the urban fabric were created in the adjacent areas, even with the structure of the high flow paths in the north-south direction that crosses it by the edges.

Therefore, it is observed that over the years the relationship with the Pinheiros River, the circulation and permanence for pedestrians in this area was suppressed. The train line, with

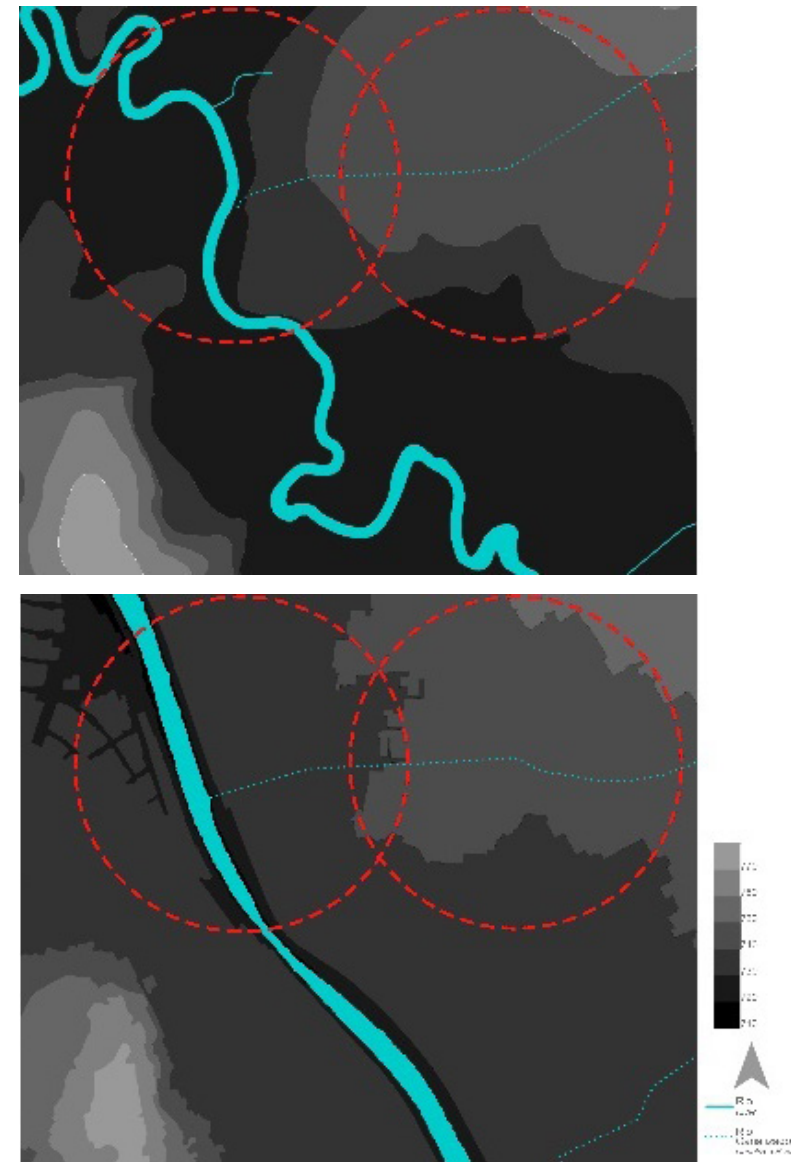


Figure 9
Existing natural conditions in the area of the station PI and FL.
Source: Sarah Brasil maps (1933) and MDC (2015), respectively. Our treatment.

the construction of the modal connection with the subway, reinforced the role of this condition, especially for the location of the Pinheiros station. The expressway and the Pinheiros River are conditions that limit to the present day the connection with the other side of the river, which only occurs in the Eusébio Matoso bridge or the Bernardo Goldfarb bridge, located next to each other, approximately 800 meters south of station Pinheiros.

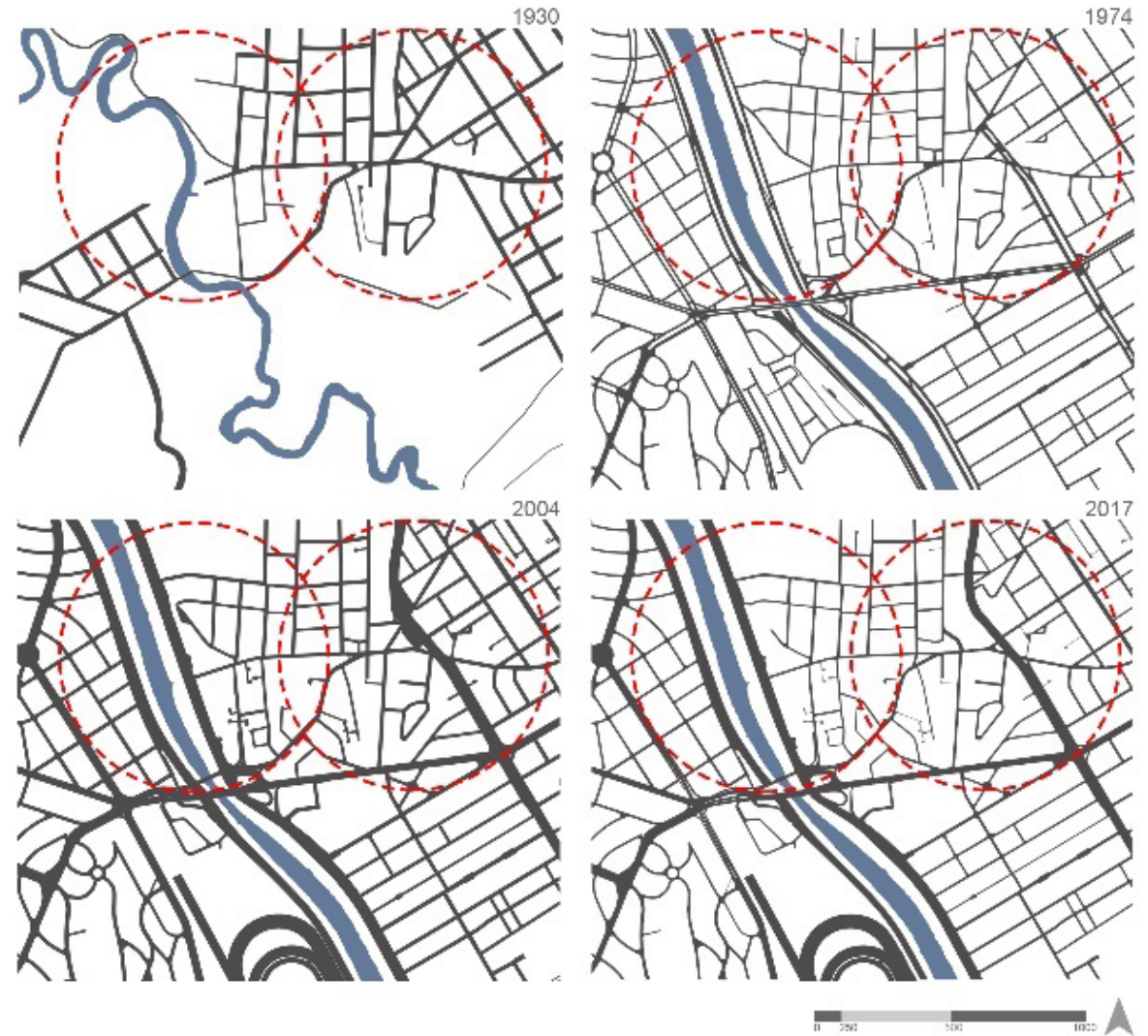


Figure 10
Urban layout in the area of the Pinheiros and Faria Lima stations between 1930 and 2015. Source: Maps Sarah Brazil (1933), Gegrán (1974), MDC (2005) and MDC (2015), respectively. Our treatment.

[P2] Occupation and typologies

By the analysis **figure II** it is observed that the evolution of the occupation already occurred in the decade of 1930, especially in the street Butantã. The 1974 Gegrans map shows that the clipping area was completely occupied, largely by houses and houses, with the exception of the plot to be occupied in the future by the Eldorado mall to the south.

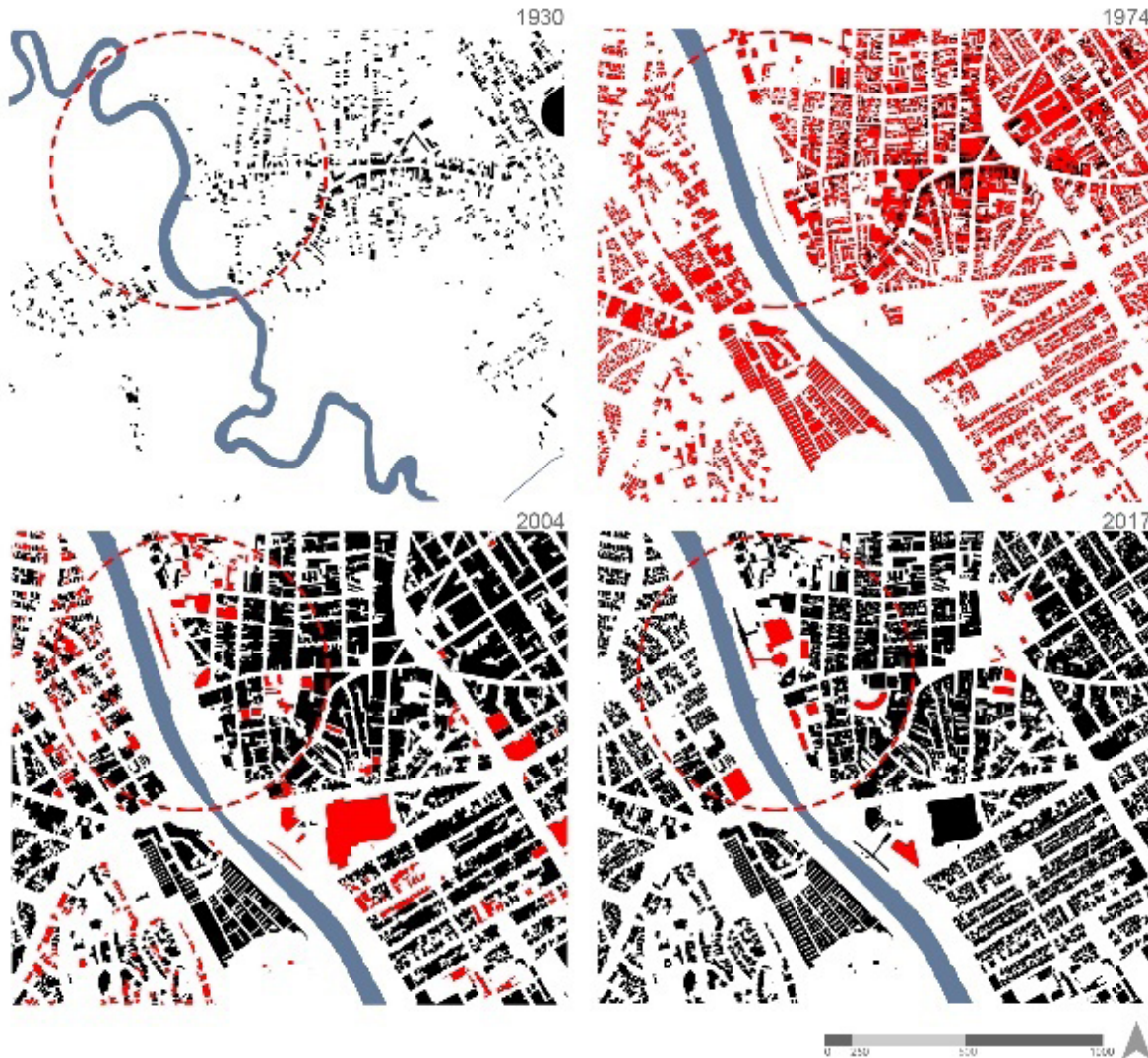
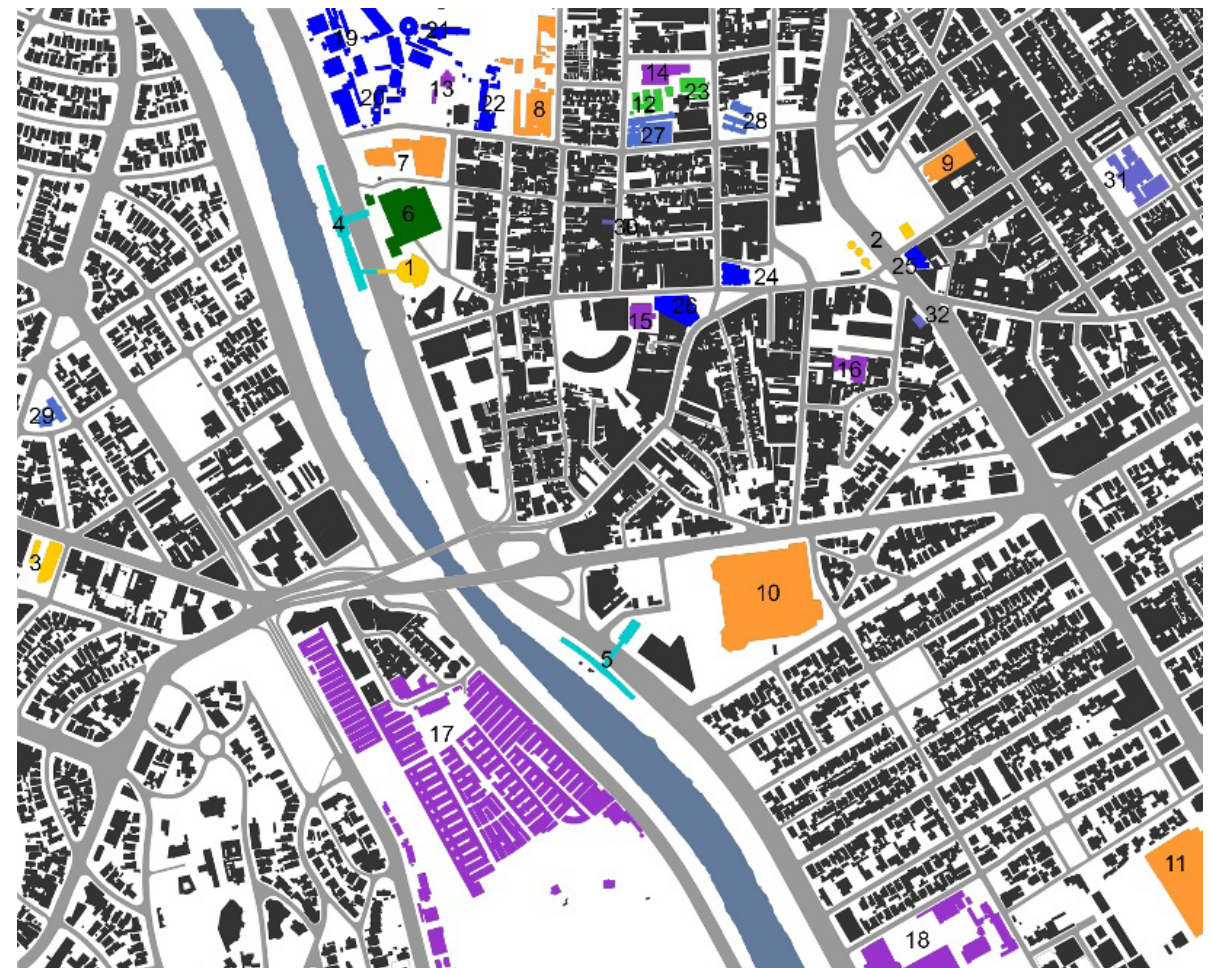


Figure II

Evolution of occupation in the area of the Pinheiros and Faria Lima stations between 1930 and 2015. Source: Maps Sarah Brazil (1933), Gegrans (1974), MDC (2005) and MDC (2015), respectively. Our treatment.

The main current references of the region are (**figure 12**): Pinheiros and Faria Lima subway stations, bus terminal, SESC Pinheiros, Pinheiros Market, Nossa Senhora de Monte Serrat Church (in Largo de Pinheiros) and Eldorado shopping mall.



Legenda
Legend

Metrô *subway*

- 1- Estação Pinheiros
- 2- Estação Faria Lima
- 3- Estação Butantã

Trem *Train*

- 4- Estação Pinheiros
- 5- Estação Hebraica - Rebouças

Ônibus *Bus*

- 6- Terminal Pinheiros

Serviços *Services*

- 7- Edifício Birman (Antigo Ed. Abril)
- 8- Associação Profissionais Universitários Sabesp
- 9- Mercado Municipal de Pinheiros
- 10- Shopping Eldorado
- 11- Shopping Iguatemi

Saúde *Health*

- 12- Posto de Saúde de Pinheiros

Lazer *Leisure*

- 13- Praça Victor Civita
- 14- Centro de Música Brasileira
- 15- SESC Pinheiros
- 16- Associação Cultural Esportiva Piratininga
- 17- Jockey Clube de São Paulo
- 18- Clube Hebraica

Institucional *Institutional*

- 19- Prefeitura Regional de Pinheiros
- 20- CET
- 21- CETESB Pinheiros
- 22- Corpo de Bombeiros de Pinheiros
- 23- Centro de distribuição Logística da Secretaria de Saúde
- 24- Igreja de Nossa Senhora de Monte Serrat

25- CREA

26- INSS

Educação *educator*

- 27- UNIP
- 28- E.E. Alfredo Bresser
- 29- E.M.E.I. Monte Castelo
- 30- C.E.I. Izabel Mendes de Castro
- 31- E.E. Fernão Dias Paes
- 32- Colégio 24 de Maio

Figure 12
Main references in the Pinheiros and Faria Lima station area.
Source: PMSP, MDC 2015. Our treatment.

At present, it is also evident that the area of the Pinheiros and Faria Lima stations is a territory in deep transformation in the landscape, in which a significant number of old houses have been replaced by towers of high standard or services, shaping the change of the middle class by the upper middle class, and the consequent real estate valuation of the area¹³.

Thus, an evident process of verticalization, changes in the land pattern and substitution of social classes is under way; process that occurred from Operation Faria Lima Urban (to be analyzed under the category of instruments below). This is corroborated by the survey at the site where a significant concentration of abandoned buildings and / or for sale in the area of Faria Lima (figure 13) or new towers and / or sales stands is shown (figure 14)¹⁴.



Figure 13
Buildings deteriorated and/or for sale in the Faria Lima station area.
Source: author, 2017.



Figure 14
Land where a new building will be built - with a sales stand on the street in Sumidouro Street.
Source: author, 2017.

13 PESSOA, Laura C. R.; BÓGUS, Lúcia. “Valorização imobiliária e renovação urbana: o caso das Operações Urbanas Consorciadas Faria Lima e Água Espraiada”. In: Arquitextos, São Paulo, year 08, n. 091.06, Vitruvius, dec. 2007.

14 Survey conducted on site in 2017. It is understood as potential for investment by the market those who are empty, or in an advanced state of deterioration.

6.1.2 [N] Node on the line: the insertion of the Pinheiros region into the macroaccessibility network

This section will detail the systems that make up the transportation network in the Pinheiros region (**figure 15**). It will be started by the railway system, followed for the implementation of the subway line, the lines and the bus terminal; and of the structural routes, of the lines of buses, finalizing by the most recent system in the city: bicycle path. To close the analysis of the lines, the OD (Origin and Destination) search data for the region will be presented, as well as their synthesis for global understanding of the displacements.

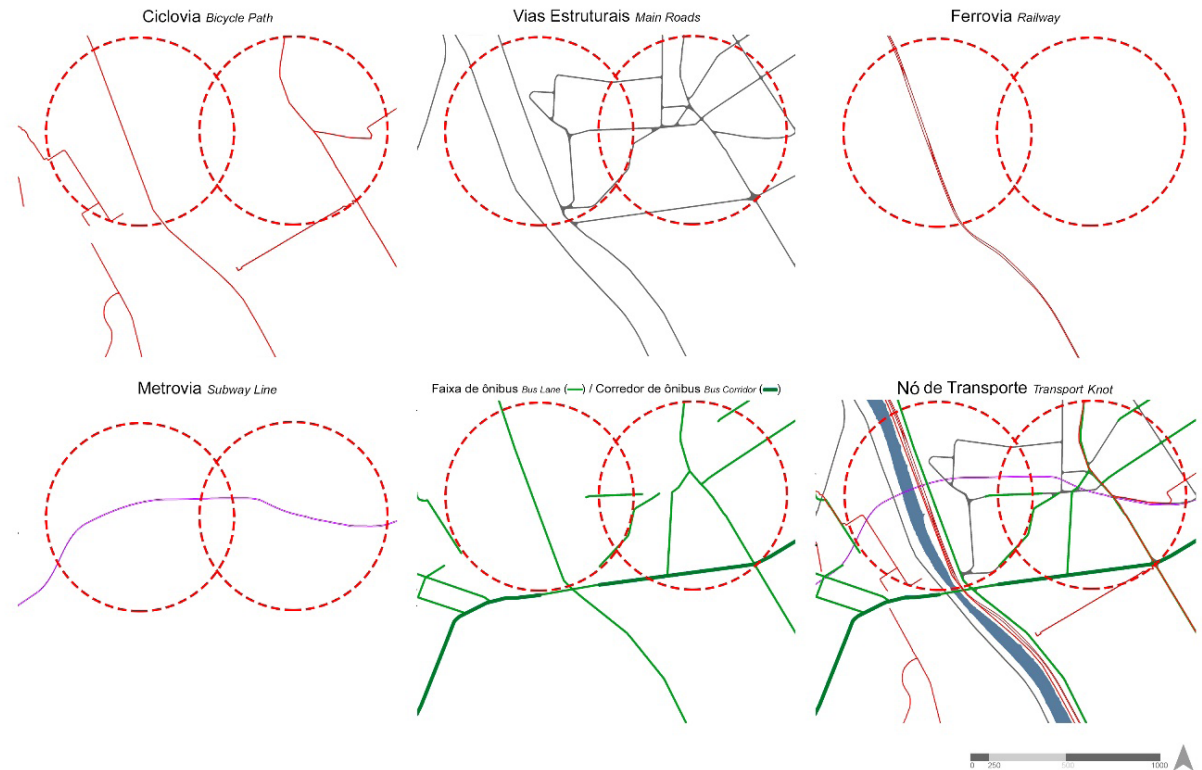


Figure 15
The transportation systems in the area of the Pinheiros and Faria Lima stations.
Source: PMSP, MDC 2015. Our treatment, 2016.

[N1] Train line: CPTM Emerald Line - 9



Figure 16
CPTM Emerald Line 9.
Source: CPTM, 2012.

The study area is cut by the Line-9 Emerald train belonged to the Jurubatuba branch of the *Sorocabana Railroad* (current Line 8 – Diamond)¹⁵. Since 1992 it belongs to the scope of CPTM (Companhia Paulista de Trens Metropolitanos), a state-owned public company that is currently responsible for its operation and maintenance.

As previously reported, the railway lines were implanted in São Paulo with the purpose of transporting goods at the end of the 19th century. It was not initially intended as an integrated line to a metropolitan passenger transport network, nor did it have a daily demand of 515.13 passengers¹⁶.

By the current configuration (**figure 16**) the Emerald Line begins in the connection with the station in the municipality of Osasco, which connects with Line-8. It goes southwards, parallel to the Pinheiros River, with connections at the Pinheiros subway station (Linha-4 Amarela connection held in 2010), Santo Amaro (Line 5 - Lilac, in year 2002). And it will be closed at the southern end of the city at Grajaú station, totaling 18 stations and 31, 8 kilometers in length.

In June 2011 there is a milestone on Line 9: integration with Line 4 - Yellow of the subway at Pinheiros Station. As Baiardi demonstrates¹⁷, with this new connection the Pinheiros¹⁸ station

¹⁵ The current Line 9 - Esmeralda, was built between 1952 and 1957 as an extension of the Sorocabana Railroad (currently the Line-8 Diamond). With the abandonment in the investments in the railroads she was transferred to Fepasa in 1957. Decades later it was transferred to CBTU and since 1992 belongs to the scope of CPTM (Companhia Paulista de Trens Metropolitanos).

¹⁶ CPTM, Demand summary, March 2017.

¹⁷ BAIARDI, Y. C. L. **O papel da microacessibilidade na mobilidade urbana: o caso da estação de trem Santo Amaro na cidade de São Paulo**. Dissertation (Master degree) - Faculty of Architecture and Urbanism, Universidade Presbiteriana Mackenzie, São Paulo, 2012.

¹⁸ Prior to the connection to the Pinheiros train station with the subway network, it was 14 ° in relation to the other stations of Line 9 - Esmeralda, representing 2.98% of demand in April 2011 (carrying 9,000 daily average passengers). Until then the Santo Amaro Station of Line-9 was the station that carried more users (until the third quarter of 2011).

became a significant point of connection between the railway system and the subway system, becoming the most relevant station of Line 9.

[N2] Subway Line: Line - 4 Yellow of Via Quatro



Figure 17
Line-4 Yellow of ViaQuatro.
Source: Subway. Our treatment.

The Yellow Line of the subway system is operated by the concessionaire ViaQuatro, which is responsible for the operation and maintenance of the Yellow Line of the São Paulo subway, and was the first public-private partnership agreement signed on November 29, 2006 .

It should be noted that this subway line was designed and built by the Government of the State of São Paulo. The yellow line (**figure 17**) will connect the Luz region, in the city center, to the Vila Sônia neighborhood, on the west side, thus contemplating 11 stations.

The Line began operations in May 2010, with the inauguration of the Paulista and Faria Lima stations. In 2017, only 7 of the 11 stations were open (Butantã, Pinheiros, Faria Lima, Fradique Coutinho, Paulista, República and Luz). Finally, **figure 18** shows the location of the yellow line in the **metro-rail network** and the strategic importance of this line in connecting four other lines of the network (Line -9; Line-2; Line-3, Line-1).



Figure 18
 Metro-rail system in the region of
 São Paulo.
 Source: MDC, 2015. Our treatment,
 2016.



Figure 19
Bus lane at Teodoro Sampaio street.
Source: author, 2017.



Figure 20
Bicycle path of Av. Brig. Faria Lima.
Source: author, 2017.

[N3] Bus lines and Terminal Pinheiros

The station area is currently served 40 municipal bus lines in Terminal Pinheiros (Terminal Journalista Victor Civita), where 6 municipal lines operate. The terminal was implanted in a land of 33,900 square meters, with 10, 2 thousand square meters of built area. There are intermunicipal lines, which operate around Largo da Batata, because there is no room for accommodation of the end points of the lines inside the terminal. There is also a private parking located in the basement of the terminal, open to the public.

The **bus corridor** is located on the axis of the Consolação – Rebouças - Francisco Morato avenues. The **bus lanes** are located on Av. Brig. Faria Lima, Teodoro Sampaio Street and Cardeal Arcoverde Street, with some small sections in the station area (**figure 19**).

[N4] Road system

The Pinheiros station area acts as an important subregional center within the metropolitan system: it polarizes a large area that extends beyond the barrier of the Pinheiros River, covering the neighborhood of Butantã and extending through the av. Francisco Morato and Raposo Tavares highway. It also embraces the north-south axes of the expressway (av. Das Nações Unidas, informally called the marginal of the Pinheiros River) and av. Brig. Faria Lima (arterial route).

In the articulation of the neighborhood there are the binaries of the streets Teodoro Sampaio and Cardeal Arcoverde. Within the study area, there is the binary of Sumidouro street and Paes Leme street.

[N5] Cycle routes

There is a bicycle lane at the Av. Brig. Faria Lima (**figure 20**) and a bicycle lane adjacent to the Pinheiros River, but not accessible by the station area¹⁹. There is also a small stretch of bike path on Pinheiros Street connected with Arthur de Azevedo Street. On the other side of the river there are also some fragments of bicycle paths.

¹⁹ The 21.5 km long Pinheiros River bike path has only 6 accesses: 1. Between the Jurubatuba and Racetrack stations; 2. Jurubatuba Station; 3. Vila Olímpia Station; 4. Santo Amaro Station; 5. Parque do Povo Footbridge; 6. University City Bridge (CPTM, 2017).

[MX] The urban mobility of Pinheiros in numbers

It is estimated that each day 700 thousand people use the Yellow Line-4 *subway*; 120 thousand passengers per day at the Pinheiros station and 40 thousand at the Faria Lima station²⁰. Meanwhile, the Pinheiros *train* station carried 3,672,524 passengers/month and 139,016 passengers per business day²¹.

The Pinheiros region encompasses a broad structural road, well above the averages in the city of São Paulo. The main access road is Av. the United Nations with av. Brig. Faria Lima²². With the implementation of the Urban Reconversion Project of Largo da Batata, completed in 2013, there were occasional road interventions. The regional importance of the North-South connection in terms of express and arterial avenues is observed, but there are also high flows east-west in a context of rich and consolidated urban fabric. The exception to good accessibility will be the non-connection to the other river bank in the station area, especially for pedestrians and cyclists.

As a node within the network, there is therefore a **broad accessibility offered, both in public transportation and in the structural road (chart 4)** of the region of Pinheiros, which is much above the city of São Paulo.

According to data from the 2007 DO survey, the most commonly used travel mode is individual transport, followed by foot mode, and finally collective mode (**chart 5**). The percentage of workers who spend more than one hour on the home / work shift in the western region is significantly below the city average (**chart 6**).

20 Ver FRANCINO, T. L.; WAISMAN, J.; FERIANCIC, G. “**Renovação urbana e mobilidade: o projeto do Largo da Batata**”. Brasília, 19th Brazilian Congress of transportation and transit, 2013. Available at: <http://files-server.antp.org.br/_5dotSystem/download/dcmDocument/2013/10/06/87D2B872-oCoA-4A1B-A276-C5oA4A19A5DD.pdf>. Access in Oct 28th. 2014.

21 CPTM, March 2017.

22 Av. Brig. Faria Lima was expanded in the 90's in the administration of the mayor Paulo Maluf (1993-1996).

Chart 4
 Proportion of corridor, bicycle lane and structural road on the total road in Pinheiros, 2014.
 Source: Datasub: Notebook of the CO Subprefecture, 2016, p.39.

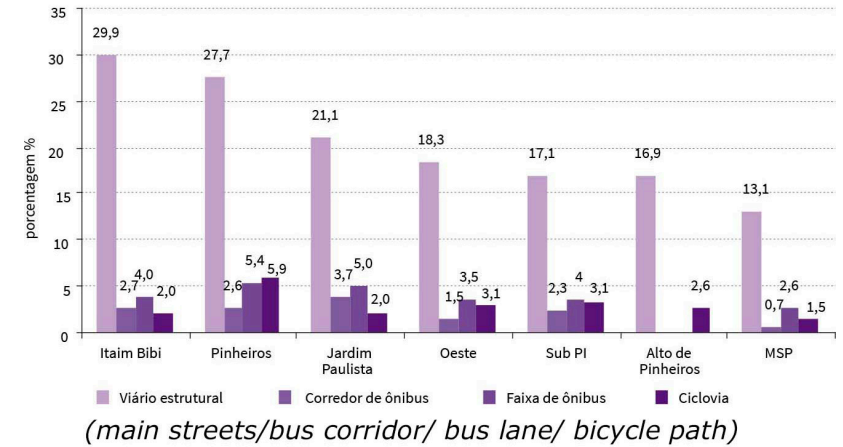


Chart 5
 Participation in the number of daily trips of residents by main modes of transportation in Pinheiros, 2007.
 Source: Datasub: Notebook of the CO Subprefecture, 2016, p.38.

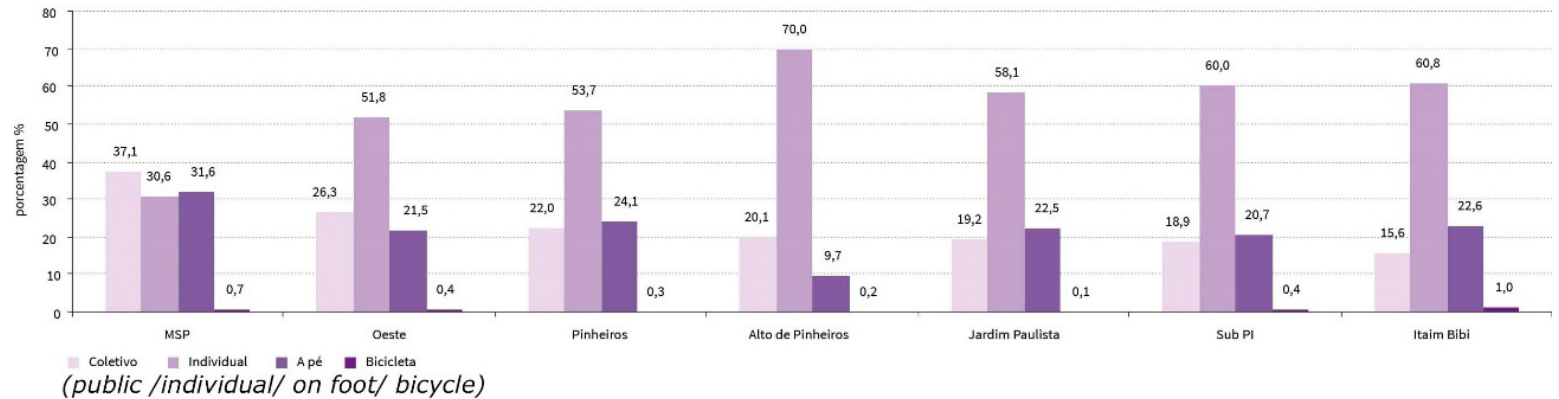
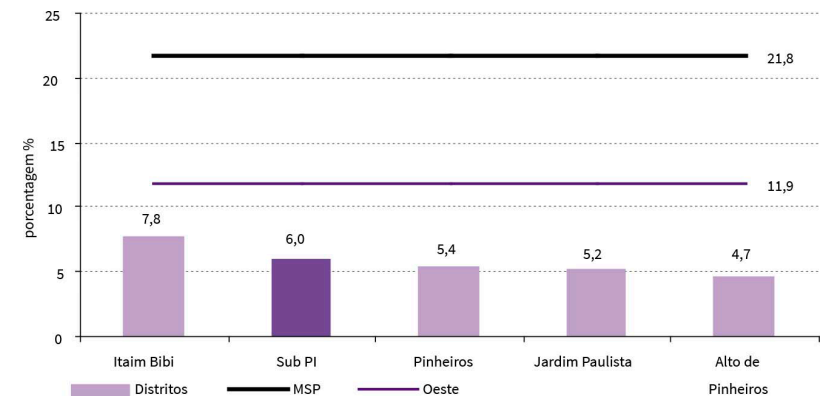


Chart 6
 Percentage of workers who spend more than one hour in the home / work displacement, in Pinheiros, 2010.
 Source: Datasub: Notebook of the CO Subprefecture, 2016, p. 38.



6.1.3 [I] Urban instruments

In this item, we synthesize the main chronologically proposed instruments that were/are responsible for the regulation of land use and occupation, and urban interventions in the Pinheiros region. The Executive Plans (2002 and 2014), the zoning (1972, 2004, 2016 – **figure 21**) will be demonstrated; the Regional Plans (2004, 2016 – **figure 22**). Finally, we present the Faria Lima Consortium Urban Operation, and especially the project elaborated in the Largo da Batata Urban Reconversion Contest.



Figure 21
Zones designed in the Pinheiros region.
Source: Geomapas 1998; Regional plan 2004; Geomapas, 2016, respectively. Our treatment.

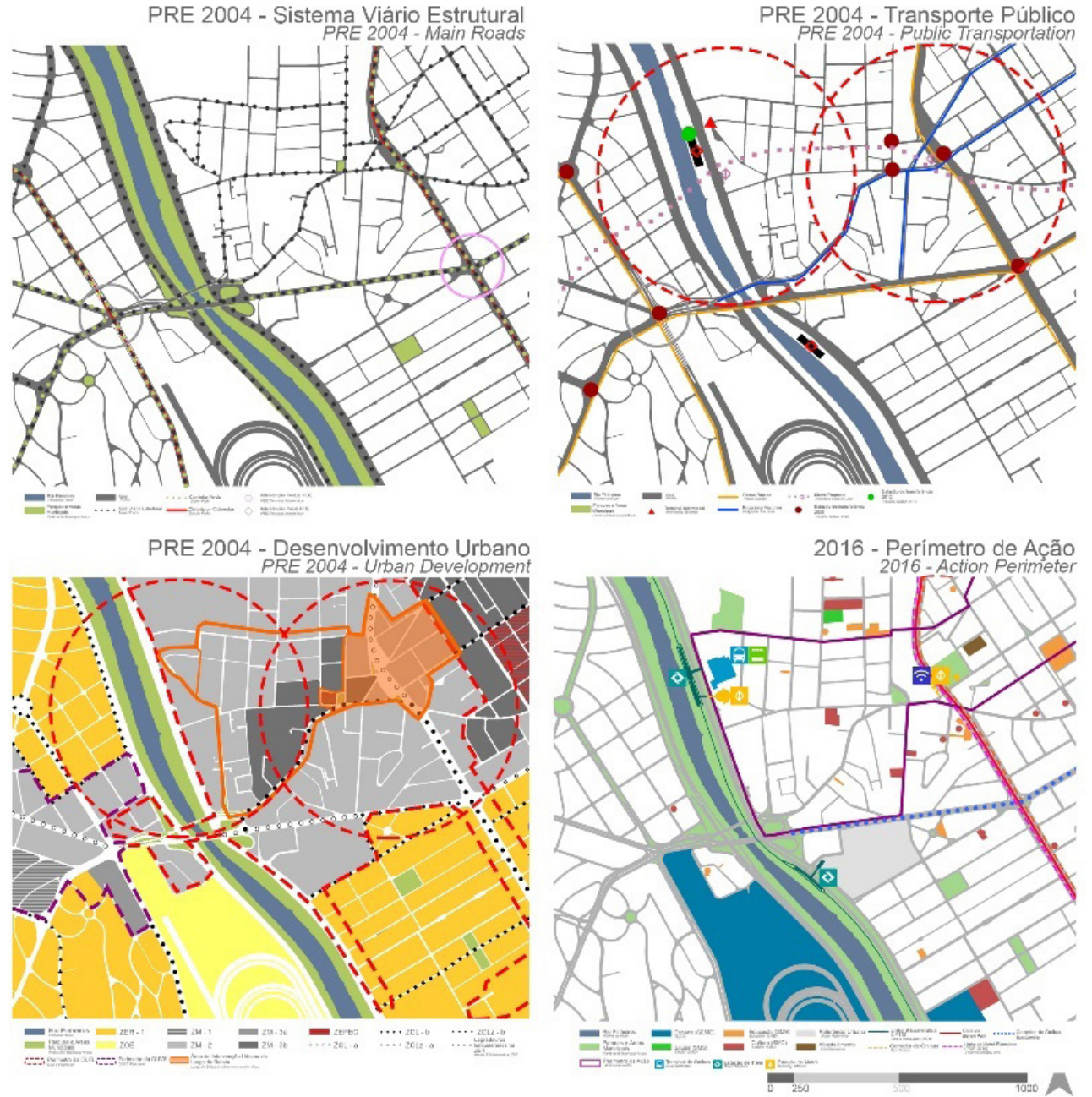


Figure 22
 Regional plans for 2004 and 2016
 for the Pinheiros and Faria Lima
 station area.
 Source: PMSP. Our treatment.

[I2] Zoning 1972/1998

The first zoning of the city of 1972 was part of the scope of the Integrated Development Master Plan (PDDI) discussed in chapter five. In the case of the 1972 zoning, it was the instrument that consolidated the pattern of occupation (picture in **figure 21**). It was then anticipated that the station area:

1a – Pinheiros station area

Z₂ – Predominantly residential use zone with low population density.

Z₄ – Zone of mixed use, of medium-high population density, in the portion of Butantã Street.

1b – Faria Lima station area

Z₃ – Zone of predominantly residential use, of average population density and Z₂.

ZCL – Linear Centrality Zone - in Butantã street, av. Faria Lima (excerpt) and av. Eusebio Matoso.

[I1] Strategic Master Plan (PDE) for 2002

According to the 2002 PDE, the station area was part of the Macro-Area of Restructuring and Requalification. It was placed as a Polar Centrality located in Largo da Batata.

It should be noted that a metro station was planned in Largo da Batata and a station on the other side of the river in the Butantã area, that is, the Pinheiros subway station was not planned at the 2002 PDE. It was in this proposed plan the adaptation of the existing Urban Operation Faria Lima to be debated next.

[I2] Zoning 2004

The Land-Use and Occupancy Law of the Solo - LPUOS, better known as the Zoning Law, proposed in 2004 for the station area (picture in **figure 21**):

Pinheiros Station Area

ZM 2 – Mixed zone of medium density (predominance).

Area of the Faria Lima station

ZM 3b – Mixed zone of high density (predominance).

ZEPEC – Special area of cultural preservation (Largo Pinheiros).

ZCL – Central Linear Zone - Butantã streets, Teodoro Sampaio, Cardinal Arcoverde, av. Eusebio Matoso.

[I3] Regional Strategic Plan (PRE) 2004

In the PRE of 2004 (picture of **figure 22**), the Urban Intervention Area (AIU) of Largo da Batata was created, which was never implemented. In the plan of the structural road system it was foreseen the implantation of a bicycle lane in Brig Avenue. Faria Lima, which was executed. All major avenues were indicated as ways to improve that due to the Urban Reconversion Project. For public transportation, it was planned to install three intermodal stations (red circle) at Largo da Batata, partially implemented; in Pinheiros an intermodal terminal, a transfer station, two subway stations and bus lanes in Butantã street and av. Cardinal Arcoverde were deployed as planned.

[I1] Strategic Master Plan (PDE) for 2014

The Pinheiros station area is comprised of the Metropolitan Structuring Macro Area (MEM): Arc Pinheiros subsector. This sector is characterized in the PDE as a very populated area, but without jobs, of strategic location in the metropolitan territory, being, therefore, a macroarea in the urban restructuring of the municipality.

In view of this, urban incentive laws (the additional constructive potential for non-residential uses exempt from onerous concession) and tax incentives (granting tax exemptions for specific activities) were approved, which favor higher constructive densities and the generation of employment and income over of the main roads that serve the region. However, specifically the station area is not part of the Axis of Structuring Urban Transformation of the 2014 Strategic Master Plan.

[I2] Zoning 2016

There is predominance of the Mixed Zone in both stations and the presence of square and green areas (only at Largo da Batata, Largo de Pinheiros and Rio Pinheiros).

It is observed that the area changed from predominantly residential in 1972, and in 2004 and 2015 to **mixed zone**. There were changes in the urban planning parameters in front of the church, which in 2004 was considered a ZEPEC and is now considered only as a mixed zone. By 2015 only Largo da Batata and Largo do Pinheiros were considered squares. Between 1972, 1998 and 2015, the evolution of the corridor areas is verified. The street Butantã and av. Eusébio Matoso always remained a centrality and av. Brig. Faria Lima was incorporated as a linear centrality throughout the planning process.

[I3] Regional Plan for the Sub-Municipality of Pinheiros, 2016

Among the various perimeters of action for the region of the sub-municipality of Pinheiros, the perimeter of action number 150, called Centrality Arcoverde Teodoro Sampaio (picture in **figure 22**). is foreseen. Proposes as a guideline: elaborate a maintenance plan and shared management of Largo da Batata; qualify the Largo da Batata, ensuring suitability for different uses and flows, urban furniture placement and shading of the environment (including waste and underutilized areas).

[I4] Urban Operation Faria Lima Consortium (OUCFL)

The Urban Operation Faria Lima was created by OUCFL.Law No. 11,732 of March 14, 1995, in the management of the mayor Paulo Maluf, covering 450 hectares where the extension of Faria Lima avenue was planned (**figure 23**).

With Law No. 13,769, dated January 26, 2004, on the management of Mayor Marta Suplicy, Law 11,732 was amended²³, adapting it to Federal Law No. 10,257, of July 10, 2001 - City Statute, naming it of **Urban Consortium Operation Faria Lima – OUCFL**.

²³ There are other laws, decrees and ordinances that amend certain points of the main law, such as Law No. 13,871, of July 8, 2004; Law No. 15,519, of December 29, 2011; and Law no. 16,242, of July 31, 2015. Available at: <http://www.prefeitura.sp.gov.br/cidade/secretarias/urbanismo/sp_urbanismo/operacoes_urbanas/faria_lima/index.php?p=19607>. Access in 27 sep. 2017.

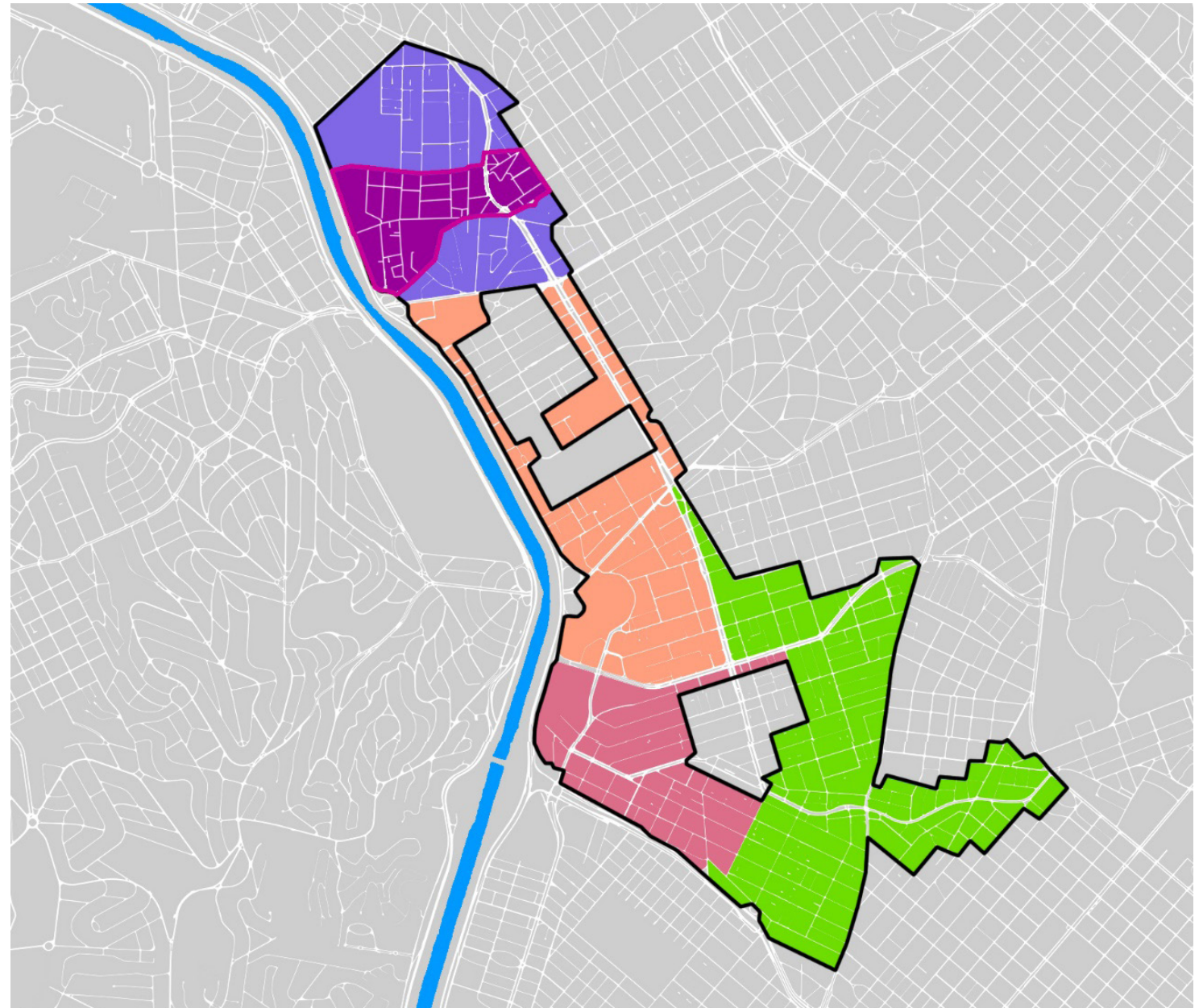


Figure 23
 Perimeter of the Urban Operation Faria Lima, its respective sectors and perimeter of the urban project in the Pinheiros sector.
 Source: PMSP. Our treatment.



One of the objectives of the OUCFL of 2004 is the expansion and articulation of spaces for public use, in particular the wooded ones and destined for the circulation and well-being of pedestrians, whose urban planning guidelines are:

- I** – Complementation and integration of the existing road system in the region with the macro circulation system of the South Zone, in order to allow adequate distribution of the traffic flows generated by the Bernardo Goldfarb Bridge, the tunnel under the Pinheiros River, the bus and , also for the implementation of the mass transportation projects, prepared by the Metro and the Companhia Paulista de Trens Metropolitanos - CPTM, to serve the users of the region;
- II** – Opening of spaces for public use, compatible with the development dynamics of the region, dimensioned so as to enable the creation of leisure areas and safe circulation for pedestrians and roads that allow the prioritization of collective transportation over the individual;
- III** – Creation of differentiated environmental conditions for the new public spaces obtained, by means of the implantation of appropriate afforestation, urban furniture and visual communication;
- IV** – Land use of public or private properties compatible with the conformation of the new blocks created by the implantation of road improvements and infrastructure.

It will be noted that such guidelines will be used for the Largo da Batata Urban Reconversion Project to be discussed below. It should be noted that OUCFL defines the collection of additional potential for construction, alteration of uses and urban parameters established in the legislation of use, and the land occupation in force on the date of enactment of the law, in the lots contained in the perimeter defined in the article 1 of the law. The payment of an onerous grant can only be made by means of Additional Building Potential Certificates – CEPAC.

In the Investment Program of the 2004 law was planned for the areas of the stations:

- a) New Bus Terminal, for the relocation or transfer of the existing one in the vicinity of Largo da Batata, with facilities for shops and collective parking and other improvements destined to collective transport;
- b) Execution of urban renewal intervention in Largo da Batata.

This Law establishes a Maximum Coefficient of Utilization of four times the area of the lot, among other incentives and counterparts.

[I5] The Largo da Batata Urban Reconversion Project

Promoted by the Municipal Secretariat of Urban Planning - SEMPLA, by the Municipal Urbanization Company - EMURB, by the Regional Administration of Pinheiros, together with the Institute of Architects of Brazil - São Paulo - IAB-SP, the National Contest of Urban Reconversion of Largo da Batata aimed at finding adequate and innovative solutions in urban planning and architecture for the region, object of Urban Operation Law 11.732 / 1995.

Initially, the areas of action of both the urban project and the urban operation are compatible. It is shown that the perimeter is within the area, but is smaller than the sector of Pinheiros (figure 24).

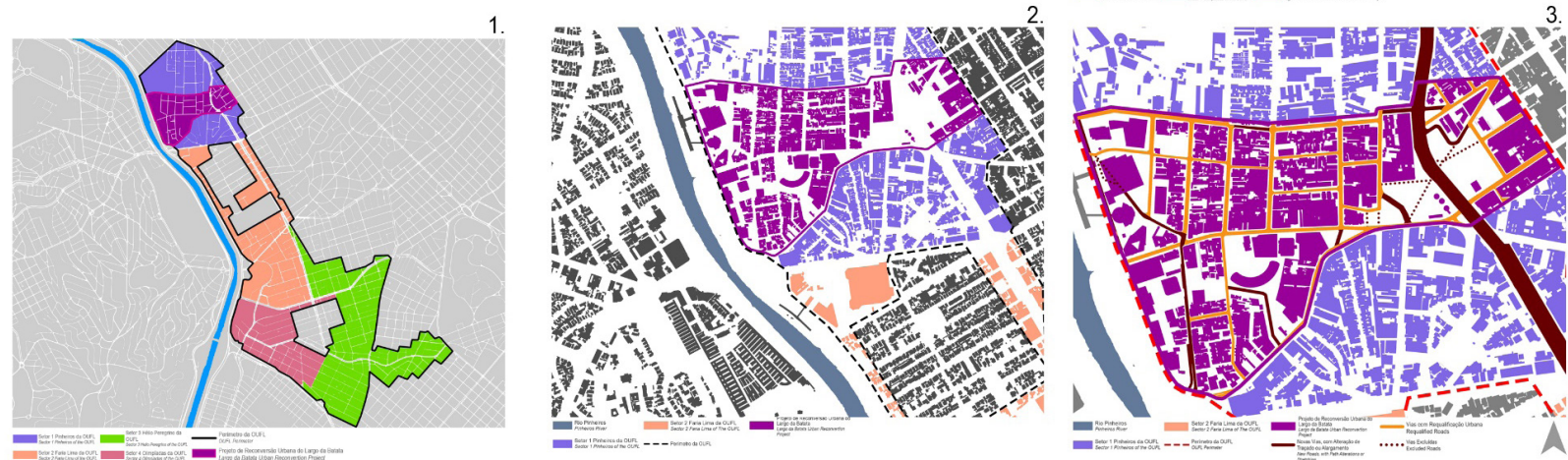


Figure 24
Perimeters of actuation of the urban operation, sector Pinheiros and urban project respectively.
Source: PMSP. Our treatment.

The object of the competition was the selection of proposals for the reconversion of the Focus Area (object of urban project²⁴), considering the aspects of valorization of public spaces; the reformulation of the road system; and the proposition of outstanding architectural and / or sculptural elements. In order to promote the constitution of an urban set of reference in scale of the metropolis; the physical and formal articulation of elements and infrastructure, land subdivision, grid layout, open spaces, etc. The main premises are the implementation of the Faria Lima subway station and the relocation of municipal and intermunicipal bus terminals²⁵.

²⁴ An area called "Area of reference" was foreseen, subject of inductions for the possible transformation.

²⁵ PMSP, Notice of National Contest of Urban Reconversion of Largo da Batata, 2001.

The prolongation of av. Brig. Faria Lima in the 1990s undid the original spatial configuration and did not propose a new territorial arrangement at its edges, which contributed to the aggravation of space conflicts, especially with the bus terminal that remained there, as well as in the reduction of the area of the Largo da Batata²⁶. It identifies a “process of urban disorganization” of an important nucleus of the southwest region of the city and the importance in the “redesign of the public areas, in order to gather solutions that adapt to the new infrastructures foreseen for the place and to potentiate the new urban functions that should, based on the remodeling of public spaces, be established in the region of study”.

Therefore, due to the inadequacy, chaotic use and degradation of public spaces, as well as the forecast of the implementation of the Faria Lima station, the competition is launched to have an overview of the urban project (Termo de referencia, 2002²⁷).

Initially, it is worth emphasizing the term **urban reconversion**. According to the reference term of the public notice, reconversion was understood as

[...] a certain set of interventions and actions in urban space that, referenced in the fundamental characteristics of this space, aim to make them compatible, associating the technical requirements of equipment (or modernization) of the territory with the imperatives of improvement of the environmental condition and of valuing social practices.

To reconvert means to change again something that had previously been transformed. It implies an adaptation to a new historical period, that is, the techniques that were used until then are no longer valid or useful, which leads to the development of new processes that are favorable according to the current context²⁸. It is not a matter of revitalization, regeneration or requalification. Although these terms could also be discussed as to their meaning, they conveyed the real purpose of the contest: to legitimize the alteration of the appropriation of the Largo da Batata, denominating it “degraded”.

In this sense,

The public, the financial and the real estate considered it unproductive, for there capital could not find the means to reproduce itself. Conse-

26 When comparing the TPCL - Territorial Cadastre, Property, Conservation and Cleaning between the years 1995 and 2000.

27 PMSF, Term of reference of the National Contest of Urban Reconversion of the Largo da Batata, 2001

28 Available at: <<https://conceito.de/reconversao>> Access in 23 Sep. 2017.

quently, it was designed the reconversion of that space by the public power, which intended to make feasible the expansion of the businesses of the Avenida Faria Lima to the Largo, considered until then degraded, dirty, an obstacle amid the business axis of the southwest vector.²⁹

In 2002 the result was announced, the architect Tito Livio Frascino and his associates won the national project competition with the proposal of reordering and expansion of the public spaces of Largo and its surroundings. The proposal of the actions and interventions of the project comprised three distinct areas: Esplanade (Area 1); Bus Terminal (Area 2); and Road connection system between the two areas (Area 3) – (figure 25).

In area 1, with axis offset of av. Brig. Faria Lima, a new square was created where the commercial building of multipurpose “icon” was inserted. This new square would be unified to the church square (Padre Séptímio Ramos Arante square) and Largo da Batata, that is, **public spaces would be significantly expanded**, with a high volume of expropriations. If on the one hand the public space and the relationship with the church were privileged, the relation with Municipal Market was not privileged.

Figure 25

Implementation of the winning project of the contest.

Source: Frascino; Waisman; Feriancic, 2013. FRANCINO, T. L; WAISMAN, J.; FERIANCIC, G. “Renovação urbana e mobilidade: o projeto do Largo da Batata”. Brasília, 19th Brazilian Congress of transportation and transit, 2013. Available at: <http://files-server.antp.org.br/_5dotSystem/download/dcmDocument/2013/10/06/87D2B872-oCoA-4A1B-A276-C5oA4A19A5DD.pdf>. Access in Oct 28th. 2014.



29 MASCARENHAS, L. P. **Reconversão Urbana do Largo da Batata: Revalorização e novos conteúdos da Centralidade de Pinheiros**. University of Sao Paulo. Faculty of Philosophy, Letters and Human Sciences. Department of geography. Postgraduate program in human geography (master's thesis). 2014, p. 149.

In 2002, the winning team was contracted by the City Hall to elaborate the basic project of the enterprise. In 2003, the contractor was hired, but the works would start only in 2008 and were completed in 2013.

Frascano, Waisman and Feriancic (2013) justify the delay in the execution of the work due to the change of the municipal government in 2004: a challenge of coordination between different organs of the municipal and state administration involved. They also say that it is planned to build a new retail shopping center to be erected and operated by the private sector in the area for the iconic building on the terrace.

It should be noted that in the bidding process the implementation of the Pinheiros station was not discussed. On the other hand, in the implantation of the project presented here it is observed the implantation of the Pinheiros station and the absence of the volumetry of the Faria Lima station in Largo da Batata³⁰.

It is a challenge to understand how the decision-making process was and what the relationships among all involved, not just the three main ones listed here. It is not the purpose of this thesis to analyze such processes among all the parties involved, but it is evident the importance and complexity of these relations, which somehow materialize in the conception of the new Largo da Batata.

[16] Other instruments - Terminal concession

Although the temporal cut-off of spatial analyzes is limited to the year 2014, it is important to note that in August 2017, the city of São Paulo launched the Notice of Public Call for the **Proceedings of Manifestation of Interest**³¹ (PMI) for the presentation of studies³² of the concession of 24 Urban Bus Terminals³³. The Pinheiros bus terminal is part of this call.

30 This is a widespread deployment. Unfortunately, both the Metro and the designer did not provide any kind of access to projects based on the argument of secrecy of the information.

31 The Priority of Expression of Interest (PMI) is an instrument through which the public power can request, receive and use specific preliminary subsidies of the private initiative on a particular project or enterprise. The realization of the PMI does not oblige the Municipal Public Administration to carry out the bidding process or selection process nor does it imply costs to the public treasury, and any reimbursement to interested parties that do not require studies is prohibited. Available at: <http://www.prefeitura.sp.gov.br/cidade/secretarias/desestatizacao/projetos/servicos_funerarios/index.php?p=241749>. Access in Oct 07th. 2017.

32 Studies, by the public notice, are understood as the projects, surveys, investigations and studies, carried out by a private or legal person, with the purpose of subsidizing the Municipal Public Administration in the structuring of initiatives, involving administration, maintenance, commercial exploitation and re-qualification of terminals, their associated enterprises and their scope of coverage.

33 Available at: <<http://www.capital.sp.gov.br/noticia/prefeitura-lanca-pmi-para-concessao-de-24-terminais-de-onibus>>. Access n Oct 06, 2017.

6.2 Station scale

At that moment the approximation of the local scale, terrain where the spatial dilemmas between node and place actually occur, will finally take place.

In view of the size of the territory under study, it was decided to subdivide it into three sectors (north, transition and south): 1. **West (Pinheiros)**; 2. **Transition**; 3. **East (Faria Lima)**, as shown in **figure 26**.

Firstly, the microaccessibility (N) to the subway station will be analyzed by the existing modalities, through the main urban projects (I) developed that resulted in the realization of the station area in the present day (L).

6.2.1 [N] Access node: microaccessibility in station areas

Here we start the exploratory and qualitative analysis of the microaccessibility of the Pinheiros station, as well as its articulation with the other transport systems. Next, the microaccessibility analysis of the Faria Lima station will be performed.

In order to aid visualization, **figure 27** summarizes the location of all modalities at the Pinheiros and Faria Lima station.

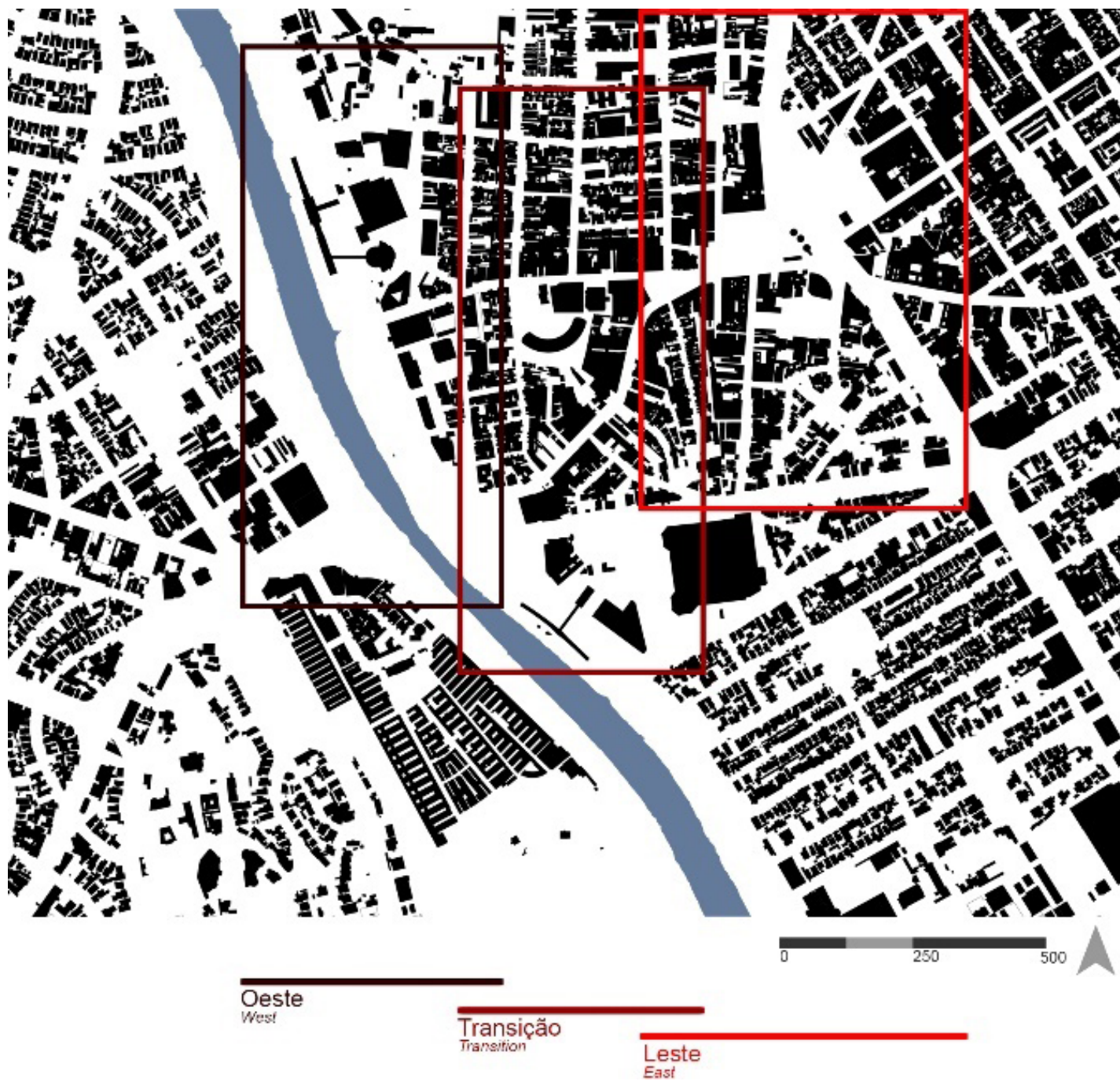


Figure 26
 Location of the northern, transition and southern sectors in the area of the Pinheiros and Faria Lima stations.
 Source: PMSP, MDC, 2015. Our treatment.

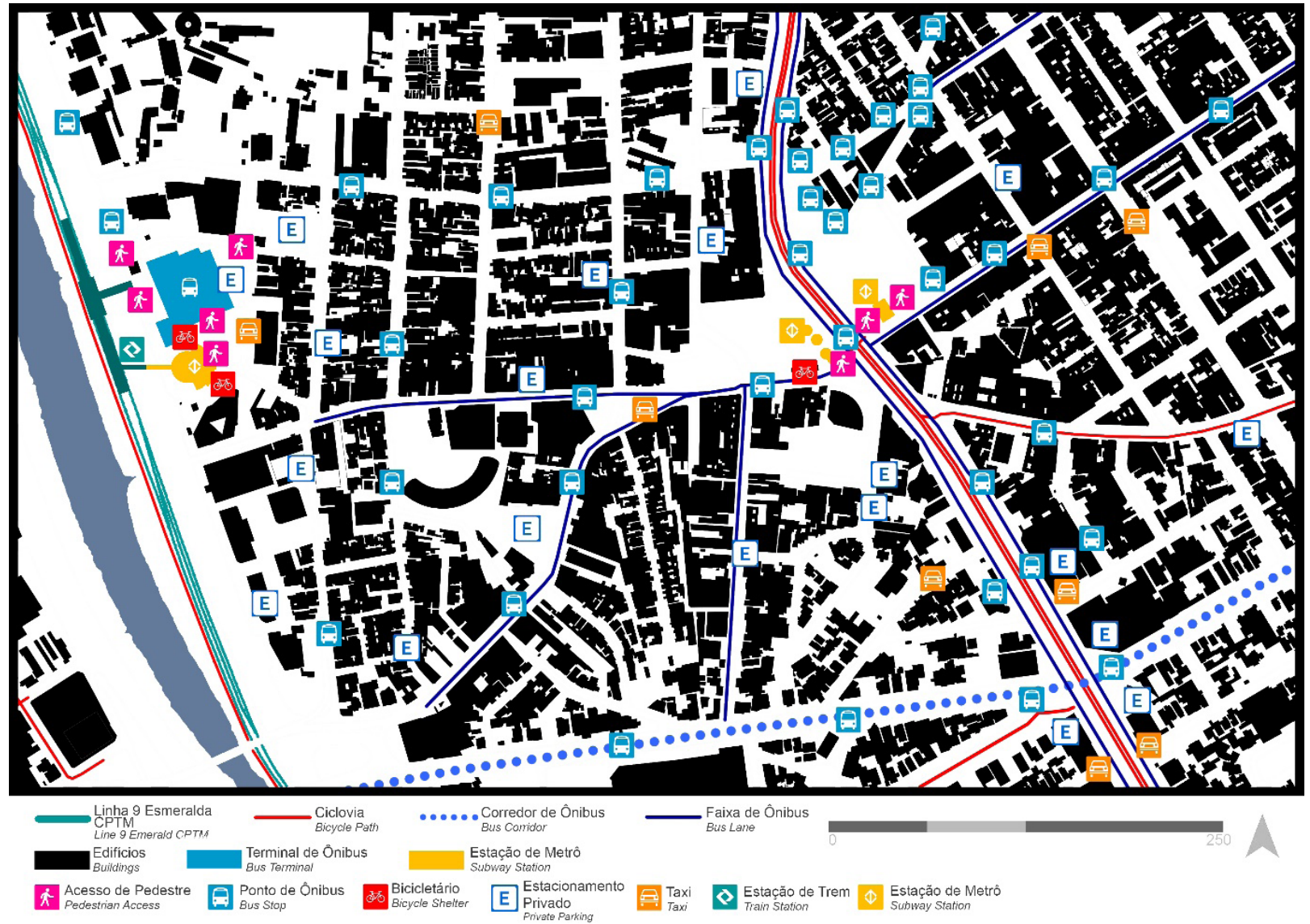


Figure 27
 Location of modalities for micro-accessibility to Pinheiros and Faria Lima station.
 Source: PMSP, MDC 2015. Our treatment.

Microaccessibility to the Pinheiros station - [N6] Pedestrian

The access east to the station occurs by one by a small “opening” in the street Capri, that joins to the existing sidewalks of small width of the surroundings.

There is no direct connection of the entrance of the station with the sidewalks of the expressway, much less with the other margin of the Pinheiros River. Users who are in the marginal are forced to cross the bus terminal through a single access. The sidewalk sidewalk to Gilberto Sabino street (terminal) is hampered by the access ramps to the underground parking.

To the north of the bus terminal there is the possibility of its permeability through a small fenced sidewalk. This road is the continuation of the Rua Conselheiro Pereira Pinto which connects up to the expressway.



Figure 28
Access to Capri street: small sidewalks and small access square.
Source: author, 2017.



Figure 29
Sidewalk immediately in front of the bus terminal (Gilberto Sabino street).
Source: author, 2017.

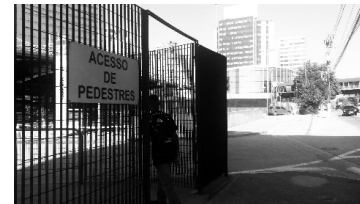


Figure 30
Access by the expressway, passing through a gate and the terminal; Segregated connection between expressway and Gilberto Sabino street. There is no connection to the other side of the river.
Source: author, 2017.

Microaccessibility to the Pinheiros station - [N6] Pedestrian

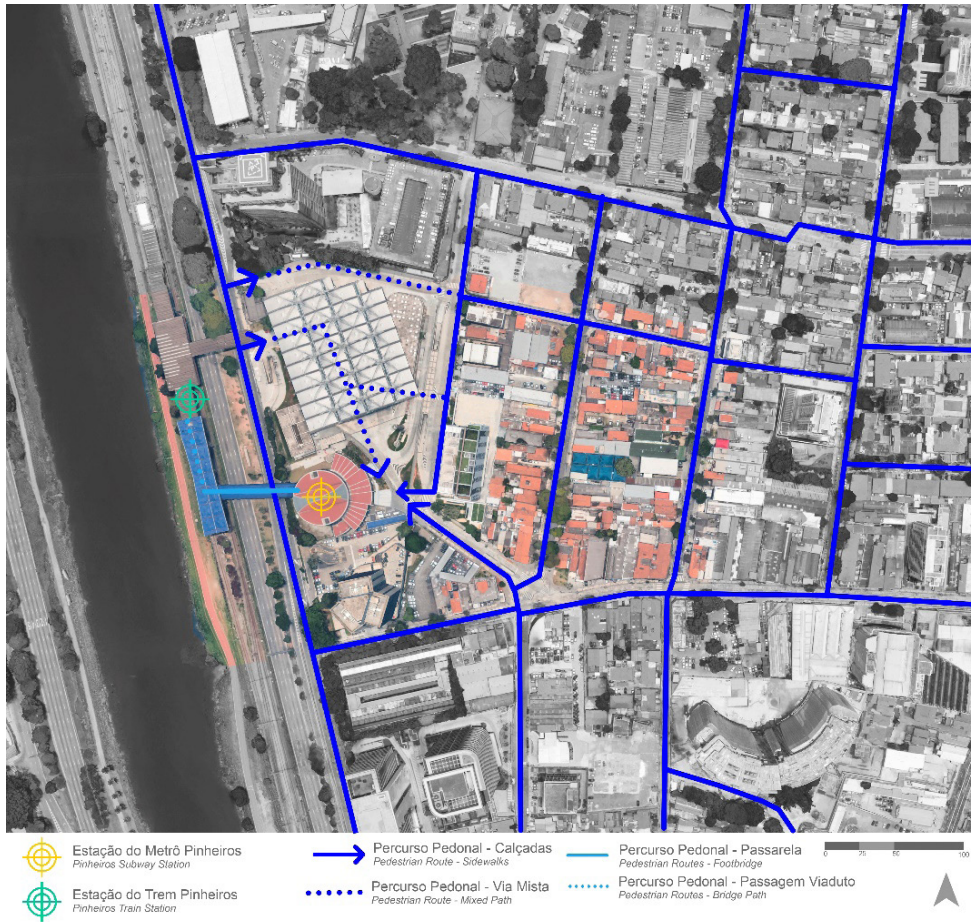


Figure 31
 Diagram of the pedestrian microaccessibility to the Pinheiros station.
 Source: Google maps, author treatment, 2017.



Figure 32
 Diagram of the pedestrian microaccessibility to the Pinheiros station.
 Source: author, 2017.

Microaccessibility to the Pinheiros station - [N7] Subway

After passing through the small square of Capri street, immediately there are the blockades. It is necessary to go through several stairs to access the boarding platforms of the Pinheiros Subway, which are located about 30 meters below the bed of the Pinheiros River. Users coming from the train station have to climb a ladder to cross the expressway on the footbridge, return the quota from the train station to descend a few flights of stairs and access the subway boarding platform. There are elevators in the body of the subway building.



Figure 33
Access to the Pinheiros subway station.
Source: author, 2017.

Microaccessibility to the Pinheiros station - [N7] Subway



Figure 34
Diagram of location of the Pinheiros subway station.
Source: Google maps, author treatment, 2017.

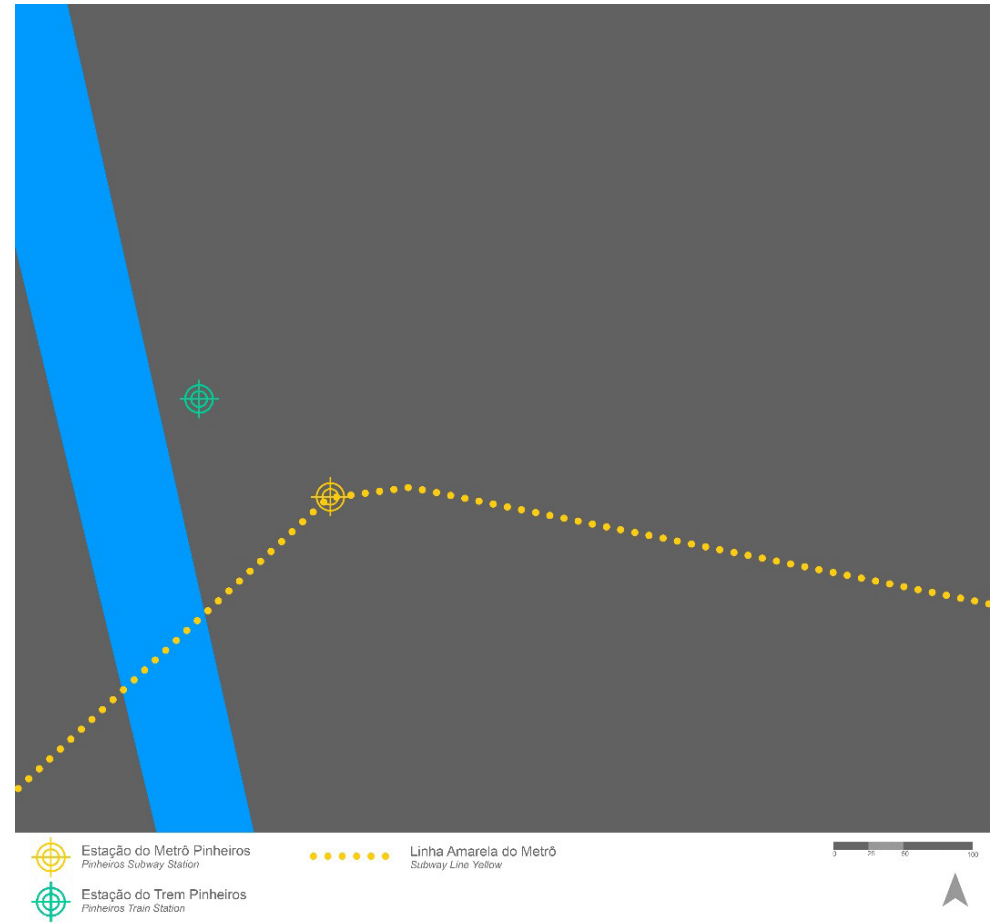


Figure 35
Diagram of location of the Pinheiros subway station.
Source: author, 2017.

Microaccessibility to the Pinheiros station - [N8] Train

Access to the platform for boarding and disembarking at the train station, which is adjacent to the bed of the Pinheiros River, occurs after passing a new catwalk that passes over the expressway. The old train runway still remains close to the bus terminal, however it can not be used as there is no direct access to it. There is also a high flow of passengers on the route between the train and subway platforms, which impairs the internal “fluidity” of the station and the intermodality between train / subway.



Figure 36
Footbridge access to the train platform after passing through the subway building.
Source: author, 2017.

Microaccessibility to the Pinheiros station - [N8] Train

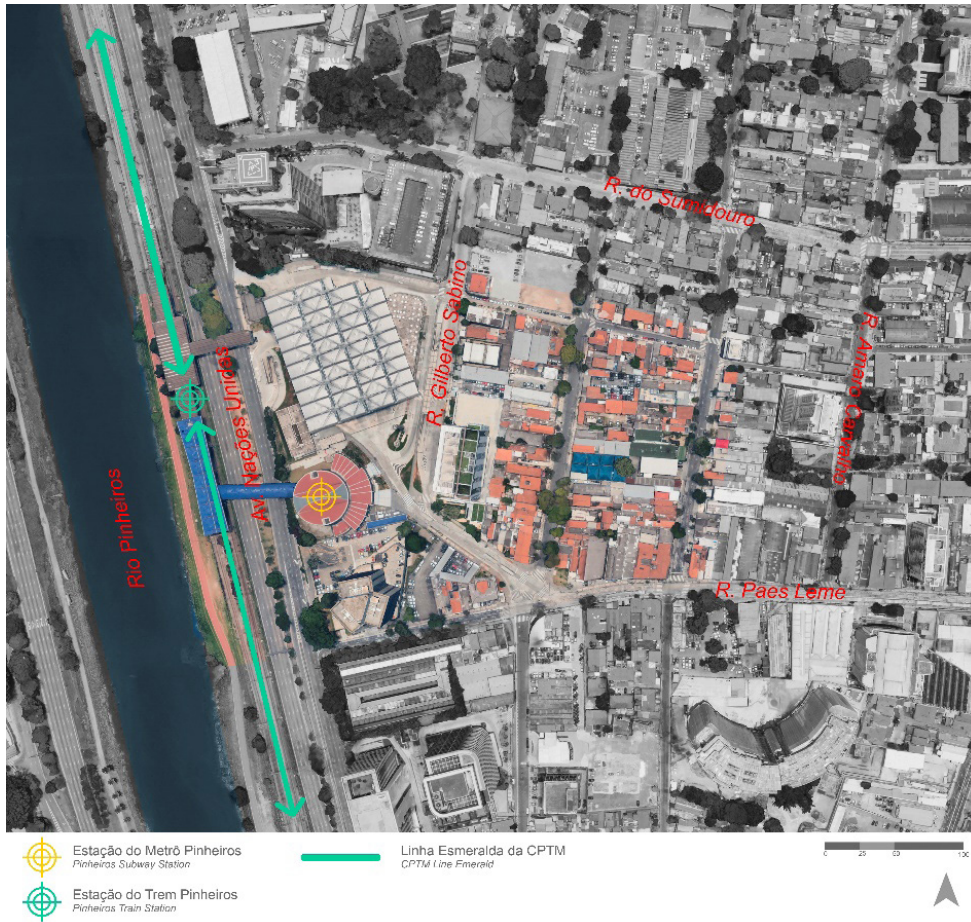


Figure 37
Map of the micro accessibility to the Pinheiros train station.
Source: Google maps, author treatment, 2017.

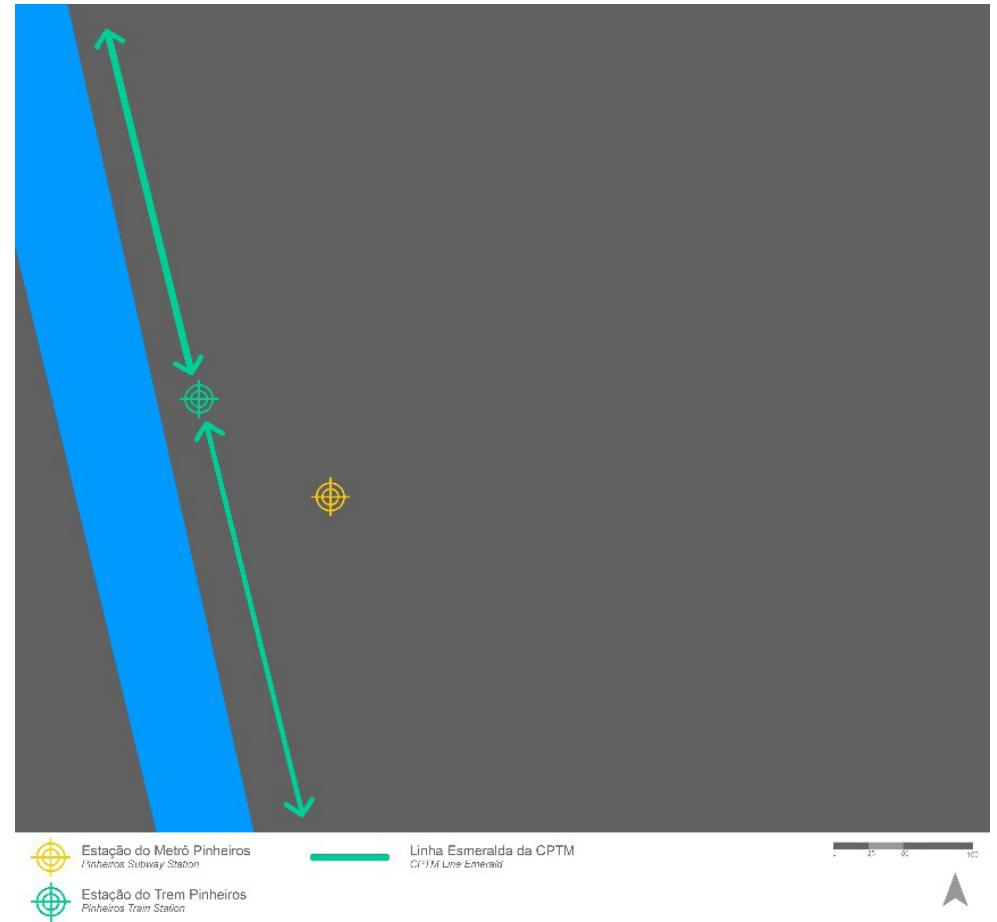


Figure 38
Diagram of microaccessibility to the Pinheiros train station.
Source: author, 2017.

Microaccessibility to the Pinheiros station - [N9] Bus

The intermodality between the passengers of the subway station and terminal occurs exclusively by the surface. Users coming from the terminal after passing through locks, are required to pass a small sidewalk bounded between bower with half-height wall and small fences, walk down a ladder (shortest path), then access the subway building .

By the expressway, there is only one access through a small gate to the terminal. The user necessarily has to cross the edges of the terminal to finally access the station by the path described above.



Figure 39
Terminal access locks and boarding platforms.
Source: author, 2017.



Figure 40 (left)
Connection between terminal and station.
Source: author, 2017.

Figure 41 (above)
Departure / terminal entrance directly on Gilberto Sabino street.
Source: author, 2017.

Microaccessibility to the Pinheiros station - [N9] Bus

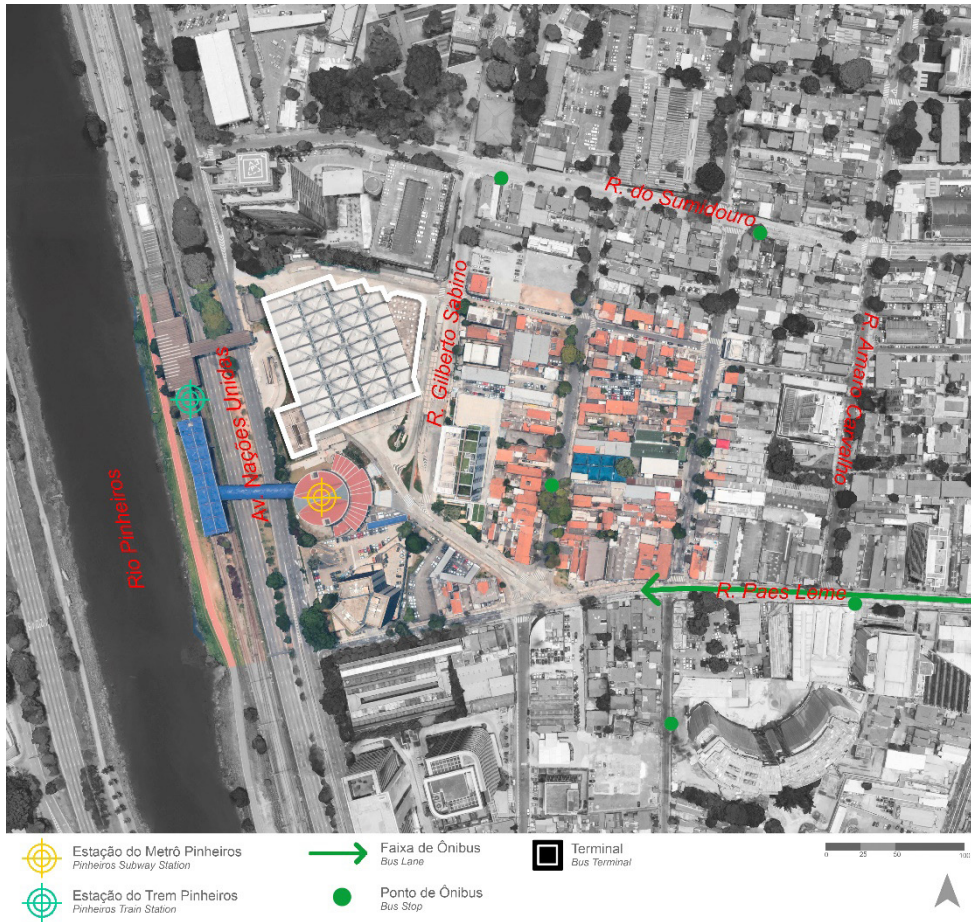


Figure 42
Diagram of microaccessibility by bus to Pinheiros station.
Source: Google maps, author treatment, 2017.

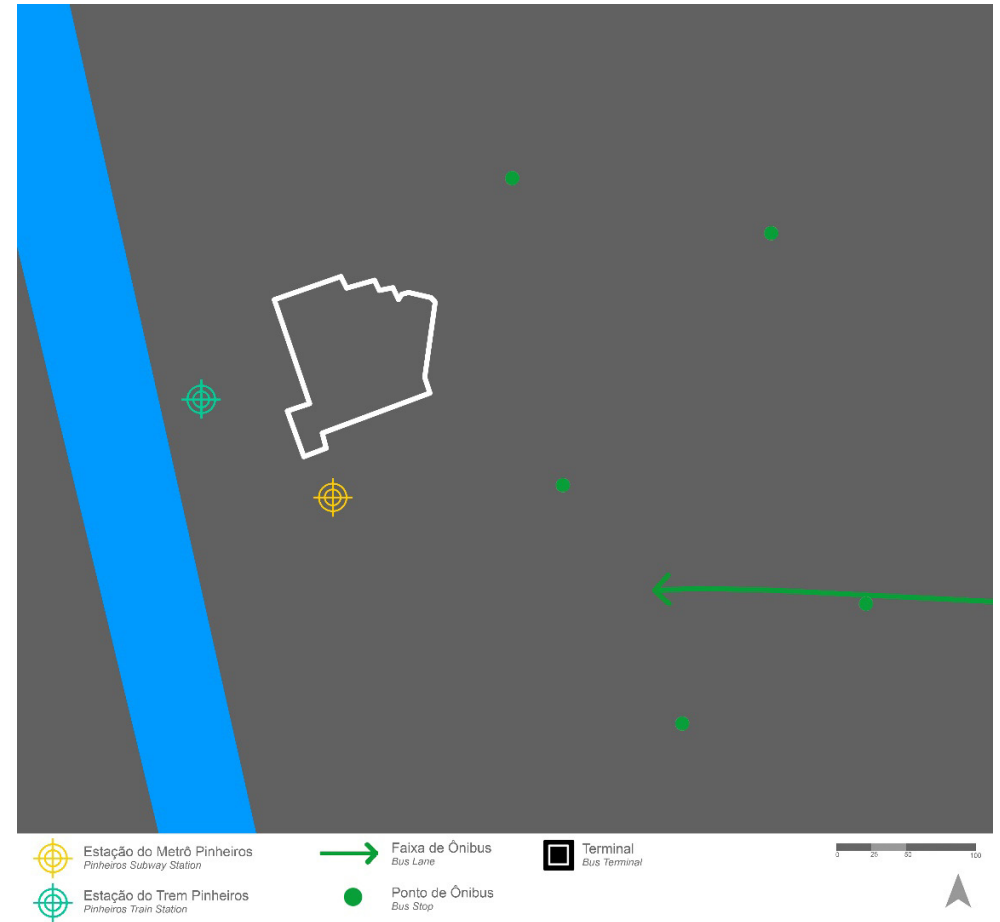


Figure 43
Diagram of microaccessibility by bus to Pinheiros station.
Source: author, 2017.

Microaccessibility to the Pinheiros station - [N10] Bicycle Rack

Located immediately in front of the station there is the bicycle of Via Quatro (123 vacancies) with need of previous biometric registration for use.

The SPTrans Bicycles (30 parking spaces) is located between the station building and the bus terminal, free to use.



Figure 44
Via Quatro Bicycle Racks located to the left of the station entrance.
Source: author, 2017.



Figure 45
SPTrans Bicycle Racks - between station and terminal.
Source: author, 2017.

Microaccessibility to the Pinheiros station - [N10] Bicycle Rack

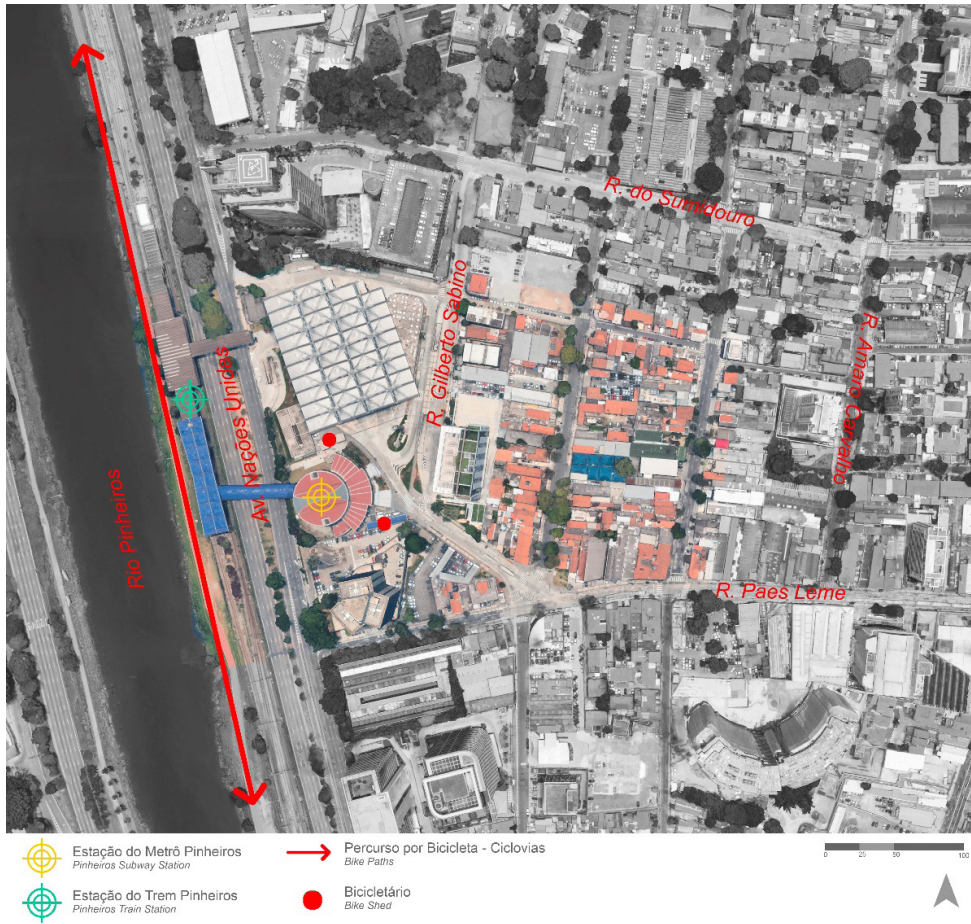


Figure 46
Diagram of microaccessibility by bicycle to Pinheiros station.
Source: Google maps, author treatment, 2017.

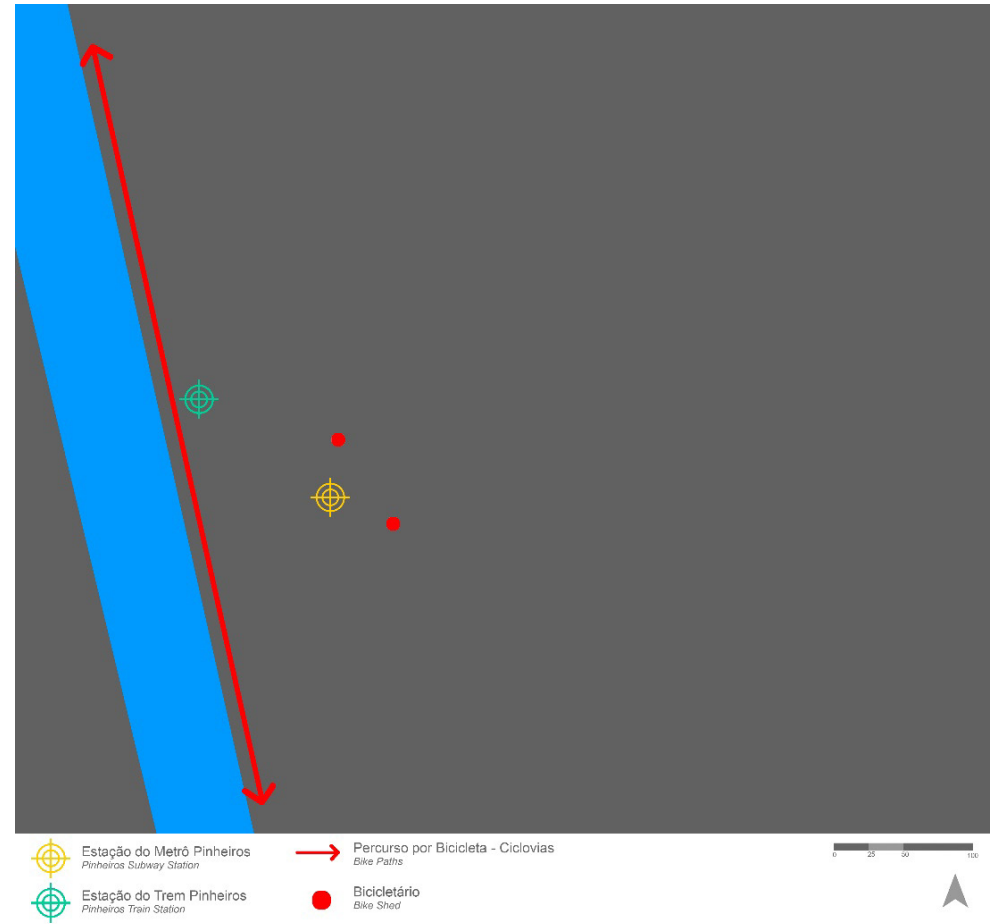


Figure 47
Diagram of microaccessibility by bicycle to Pinheiros station.
Source: author, 2017.

Microaccessibility to the Pinheiros station - [N11] Parking - Motorized individual

There is no point for specific boarding and disembarkation, especially on the expressway. There is a private parking under the terminal (450 seats - 12 hours for R\$ 18.00 in October 2017). It is possible to park in a large part of the surrounding roads, some with charge for each hour parked (rotating parking paid denominated Zona Azul).



Figure 48
Private parking under the bus terminal and on Gilberto Sabino street.
Source: author, 2017.

Microaccessibility to the Pinheiros station - [N11] Parking - Motorized individual

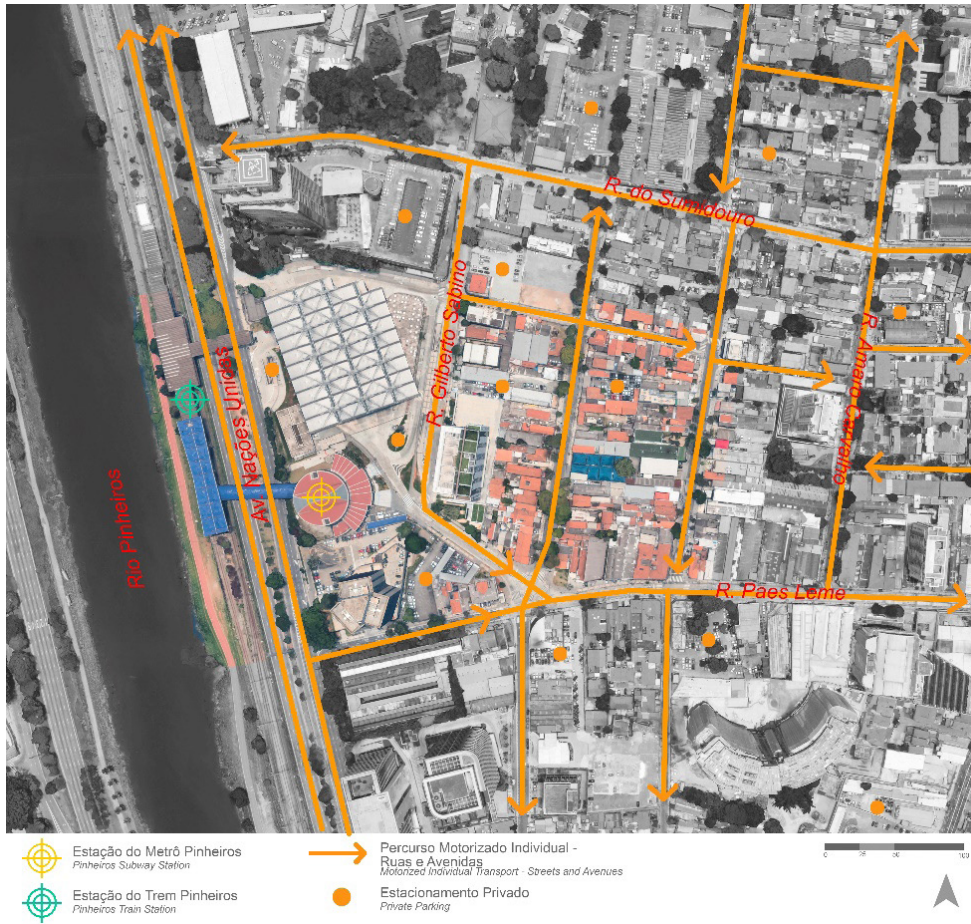


Figure 49
 Diagram of microaccessibility by private car to Pinheiros station.
 Source: Google maps, author treatment, 2017.

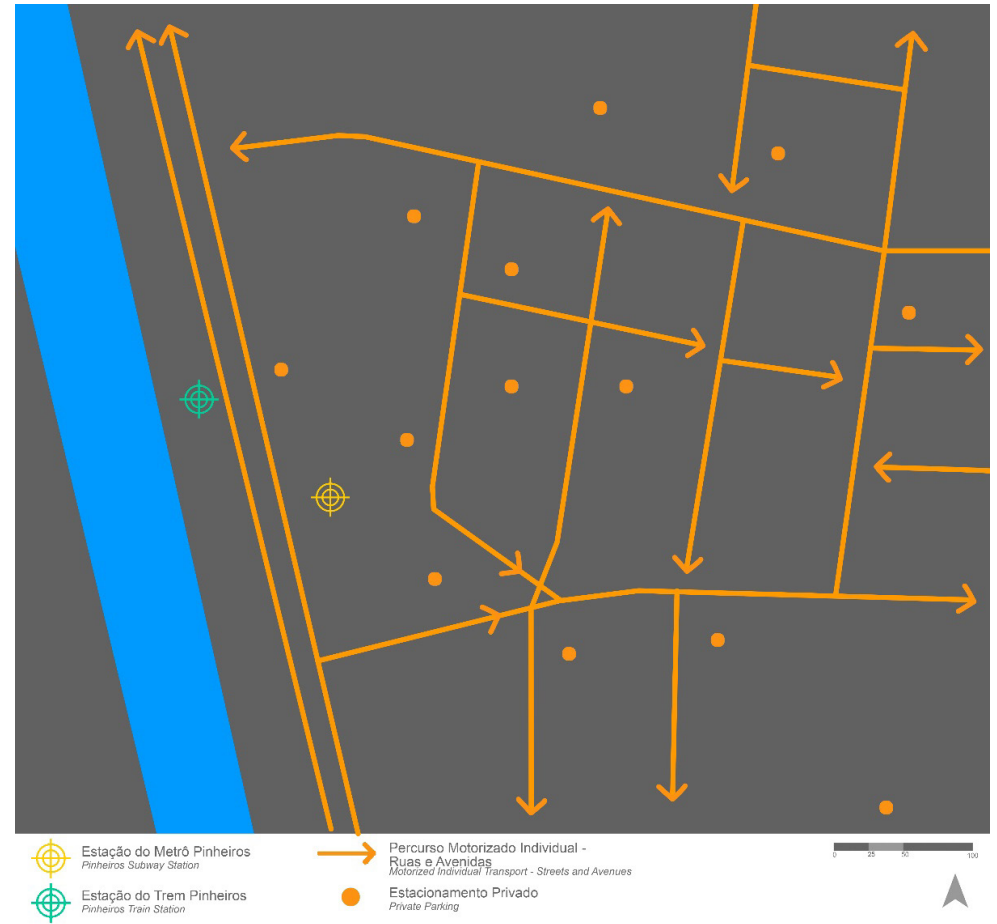


Figure 50
 Diagram of microaccessibility by private car to Pinheiros station.
 Source: author, 2017.

Microaccessibility to the Pinheiros station - [N12] Taxi rank

There are two stops immediately outside the station on Gilberto Sabino street. However, the point closest to the station is located in front of the underground parking entrance, which conditions the narrowing of the sidewalk and access by the pedestrian to the taxi stand.



Figure 51
Taxi rank in Gilberto Sabino street
and absence of sidewalk to access
the taxi rank immediately in front
of the station.
Source: author, 2017.

Microaccessibility to the Pinheiros station - [N12] Taxi rank

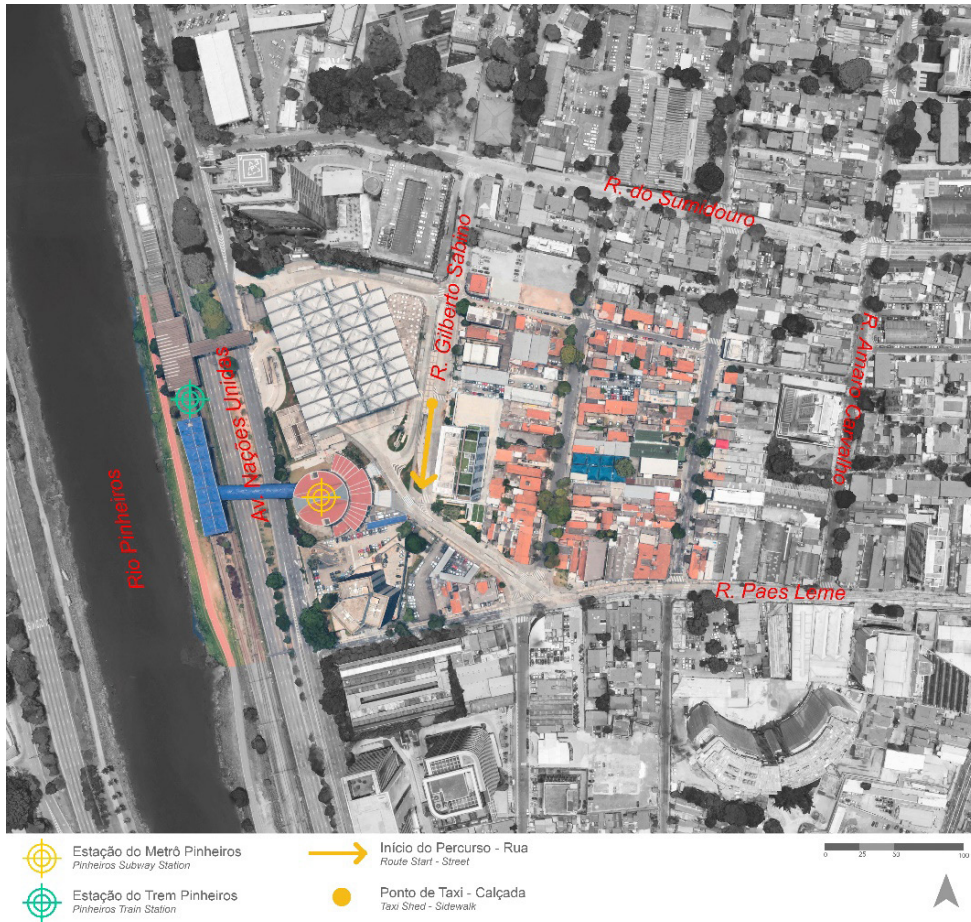


Figure 52
Diagram of microaccessibility by rental car to Pinheiros station.
Source: Google maps. Author treatment, 2017.



Figure 53
Diagram of microaccessibility by rental car to Pinheiros station.
Source: author, 2017.

Microaccessibility to Faria Lima station - [N6] Pedestrian

There are two entrances located on opposite sides of Av. Brig. Faria Lima to access the station. The entrance on the west side is located at the corner of Largo da Batata and Rua Teodoro Sampaio. Despite the amplitude of the Largo, there is the design of small urban remains between the support blocks constructed in circular form located immediately next to the access building.

The entrance to the east of Faria Lima Avenue is timidly located at the corner of Largo do Mercado with Teodoro Sampaio Street, in which case it is possible to enter through two parallel access doors. The station was built very close to the flow of pedestrians passing on the curb of Teodoro Sampaio Street, with conflicts with those remaining on the sidewalk (which is not narrow but is not large enough to meet existing demand, which is easily observable). There are small urban leftovers because of the enclosure of the vacant lot immediately next to one of the entrances of the station. On the other hand, the facade facing Market Square is broad but lacks shading due to the sunshine, if the permanence is desired.



Figure 54
Entrance of the station through Largo da Batata. Despite the large square, the circular support blocks create residual spaces between them, disqualifying the public access space to the station.
Source: author, 2017.



Figure 55
Entrance of the station by the Market Square and sidewalks.
Source: author, 2017.

Microaccessibility to Faria Lima station - [N6] Pedestrian

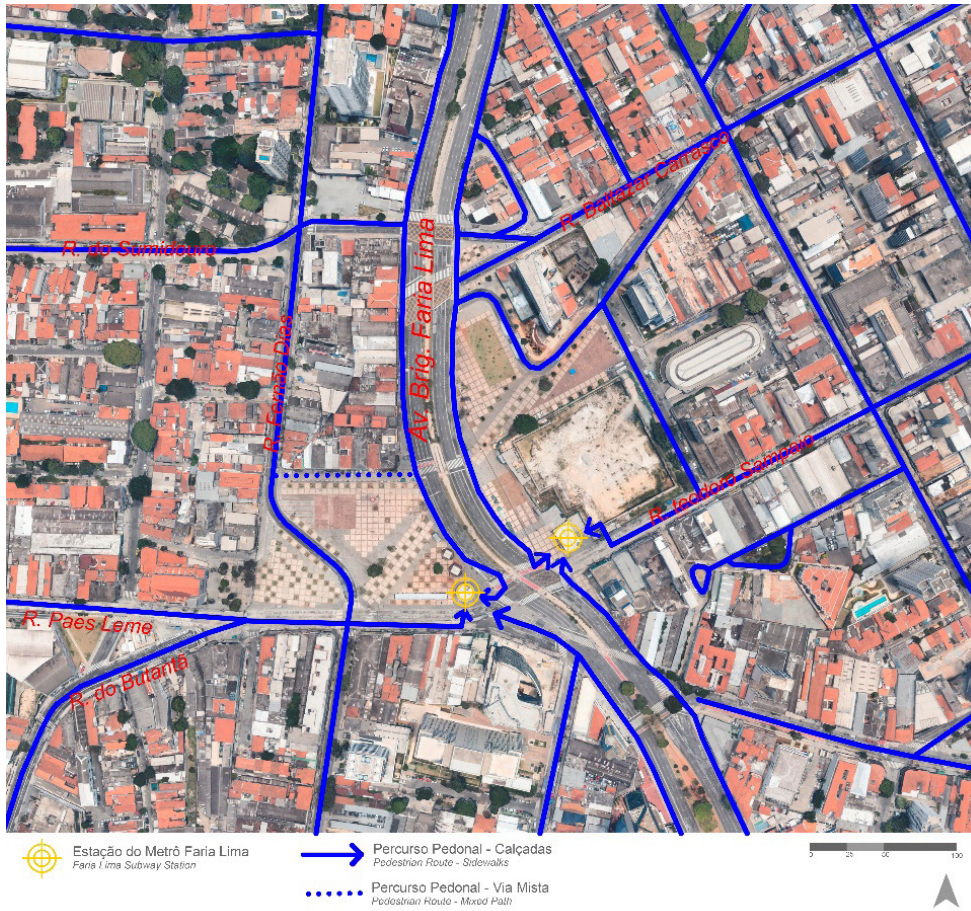


Figure 56
Diagram of the pedestrian micro accessibility in the Faria Lima station.
Source: Google Maps, author treatment, 2017.



Figure 57
Diagram of the pedestrian micro accessibility in the Faria Lima station.
Source: author, 2017.

Microaccessibility to Faria Lima station - [N7] Subway

Pedestrian access through Largo da Batata to the subway station takes place exclusively by a single entrance facing Av. Brig. Faria Lima, and there is therefore no access from the users coming from Largo da Batata, who are forced to turn around in the access building of the station. Immediately, escalators will be displayed that will give access to the subsoil and the locks.

Access through the Market Square takes place through the access door facing Av. Brig. Faria Lima or by a parallel port facing the flow of Teodoro Sampaio. After descending to the subsoil by escalators, it is necessary to walk through a tunnel to access the access locks located underground.

In case of rain, the space allocated to the ground floor of these buildings may be insufficient for the permanence of some users who want to wait for a few moments, motivating conflicts between those who enter or leave and those who wait.



Figure 58
Access to the metro by Largo da Batata - only entrance.
Source: author, 2017.



Figure 59
Access to the metro - Largo do Mercado - two parallel entrances. One focused on the flow of Faria Lima and another on the flow of Teodoro Sampaio Street, where there may be conflicts over the passage and stay.
Source: author, 2017.

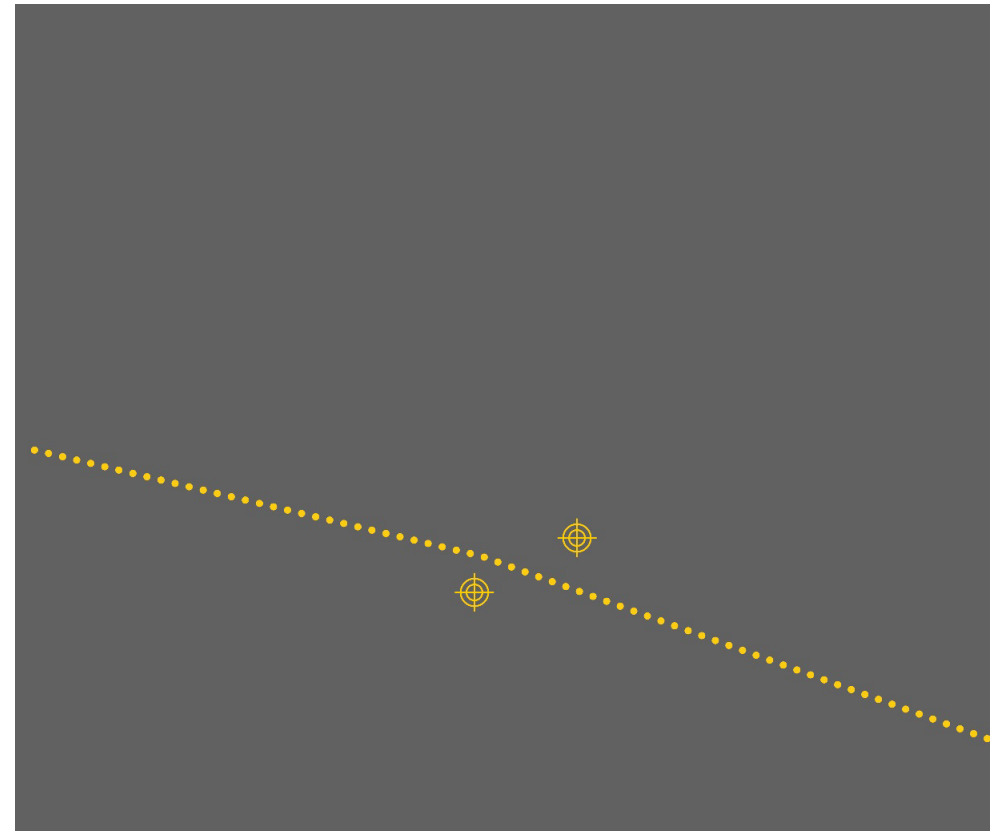
Microaccessibility to Faria Lima station - [N7] Subway



Estação do Metrô Faria Lima
Faria Lima Subway Station

●●●●● Linha Amarela do Metrô
Subway Line Yellow

Figure 6o
Diagram of location of the subway station Faria Lima.
Source: Google maps, author treatment, 2017.



Estação do Metrô Faria Lima
Faria Lima Subway Station

●●●●● Linha Amarela do Metrô
Subway Line Yellow

Figure 6i
Diagram of location of the subway station Faria Lima.
Source: author, 2017.

Microaccessibility to Faria Lima station - [N9] Bus

There are bus stop points in both directions of Av. Brig. Faria Lima, immediately after the exit of the subway station. There are also bus stops in various surrounding roads. There are no stalls for embarking and disembarking in the arterial route (av. Brig. Faria Lima).

Despite the intention of the urban redevelopment project to remove the bus terminal from Largo da Batata, there is still a small improvised intermunicipal terminal next to the Market.



Figure 62
Bus lanes at av. Brig. Faria Lima
in front of the station in Largo da
Batata.
Source: author, 2017.



Figure 63
Intermunicipal bus terminal im-
provised in Largo do Mercado.
Source: author, 2017.

Microaccessibility to Faria Lima station - [N9] Bus



Figure 64
Diagram of the microaccessibility by bus to the Faria Lima station.
Source: Google maps, author treatment, 2017.



Figure 65
Diagram of the microaccessibility by bus to the Faria Lima station.
Source: author, 2017.

Microaccessibility to Faria Lima station - [N10] Bicycle Rack

At the exit of Largo da Batata there is a bike rack with 100 places and 24 hour operation, located parallel to Via Teodoro Sampaio.

At the exit of Largo do Mercado there is the possibility of renting bicycles operated by a private company. Access to bicycles is parallel to the structure of the building.



Figure 66 (above)
Bicycle rental station at Largo do Mercado.
Source: author, 2017.



Figure 67 (left)
Bicicletário in Largo da Batata (100 places). Operated 24 hours by private company. Use allowed by registration.
Source: author, 2017.

Microaccessibility to Faria Lima station - [N10] Bicycle Rack



Figure 68
Diagram of the microaccessibility by bicycle to the Faria Lima station.
Source: Google maps, author treatment, 2017.



Figure 69
Diagram of the microaccessibility by bicycle to the Faria Lima station.
Source: author, 2017.

Microaccessibility to Faria Lima station - [N11] Parking - Motorized individual

There is no point for specific embarkation and disembarkation, especially in av. Brig. Faria Lima. There are several private parking lots in the vicinity, many of which relate to the activity of multifunctional buildings, but open to the public or on empty grounds. It is possible to park in most of the surrounding roads, some with a charge for each hour parked (Blue Zone).



Figure 70
Private parking (street Cardinal Arcoverde) and in the surrounding roads (Paes Leme street, in front of the INSS).
Source: author, 2017.

Microaccessibility to Faria Lima station - [N11] Parking - Motorized individual



Figure 71
Diagram of microaccessibility by private car to Faria Lima station.
Source: Google maps, author treatment, 2017.



Figure 72
Diagram of microaccessibility by private car to Faria Lima station.
Source: author, 2017.

Microaccessibility to Faria Lima station - [N12] Taxi stand

The closest taxi stand in the study area is located on Teodoro Sampaio Street, next to the church square.



Figure 73
Taxi stand on Teodoro Sampaio street, next to the church square.
Source: author, 2017.

Microaccessibility to Faria Lima station - [N12] Taxi stand



Figure 74
Diagram of the microaccessibility by rental car to the Faria Lima station.
Source: Google maps, author treatment, 2017.

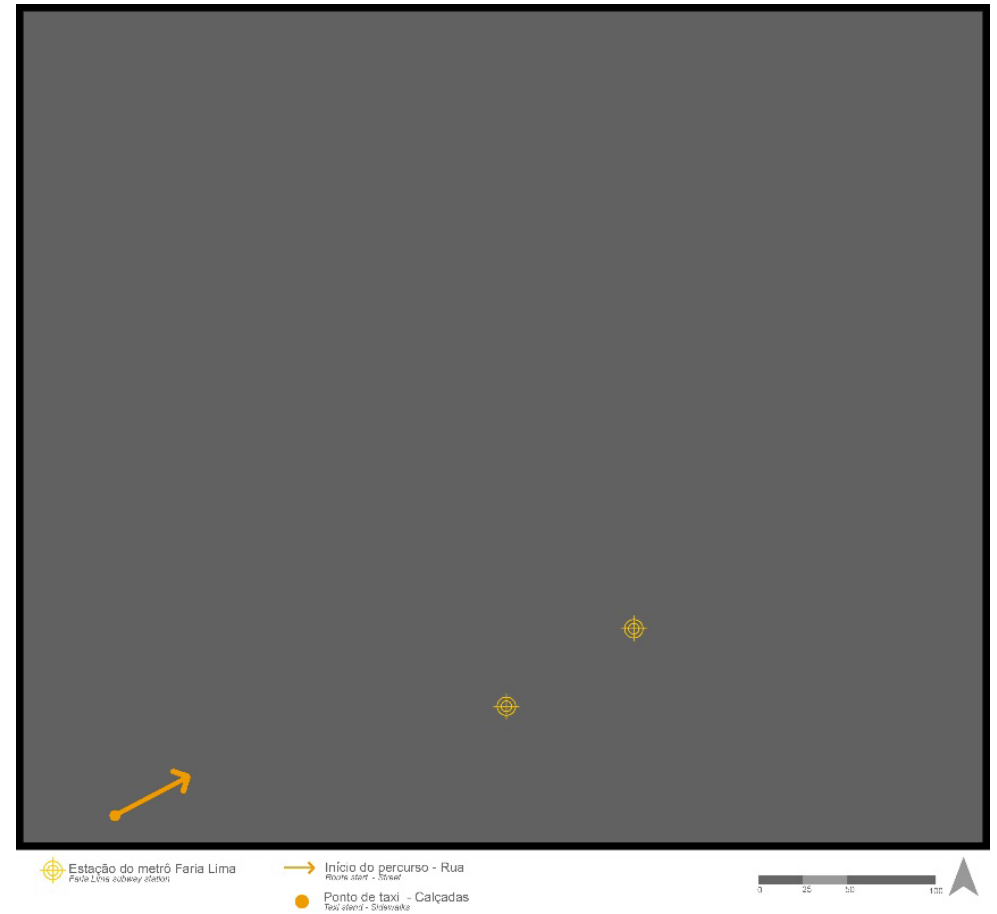


Figure 75
Diagram of the microaccessibility by rental car to the Faria Lima station.
Source: author, 2017.

6.2.2 [P] Place in the territory of the station areas

The aim here is to identify the use of urban space, spatial integrations of the station with the local territory, the relation of the main buildings with this space, the environmental perception of this urban set. The aim is to analyze whether the area of the station constitutes a place in the territory with intensification, vitality, urbanity, and urban diversity that overcomes the spatial ambivalences between the node and the place or, on the contrary, reinforces them.

Therefore, the variables analyzed in the station scale are:

[P3] Buildings;

[P4] Local Territory;

[P5] Environmental perception;

[P6] Urban intensification.

[P3+ I7] Buildings: the architectural design as an instrument of planning

This variable evaluates the diversity of the architectural program of the main buildings in the study area (**figure 12**) as well as the possible relations between the public and private domains.

It is observed that the architecture **in the west and east sector** is quite diversified. Predominate several old two-story house that maintains a popular commerce in the ground floor, most aligned in the lot. It is also verified that in some lots there was the replacement of the houses by small/medium residential buildings, with the presence of commerce in the ground floor (**figure 76**).

The larger buildings, whether corporate or residential, have largely been deployed recently and their built area is inserted in the middle of the lot. In these, there are the presence of walls and gradis, but also in some cases, the presence of gardens, usually in the boundaries between public and private.

In the area of the station in the **transitional sector** there are still predominant houses, almost aligned with the lot but also some new residential buildings surrounded.

It is noteworthy that only the bus terminal allows the permeability of its territory to access the subway station. The following figures indicate the main buildings and their respective facades facing the public space.



Figure 76

Set of houses in Largo da Batata.

Source: author, 2017

Faria Lima and Pinheiros subway station

The Pinheiros train station was originally built in 1957 and renovated in 1981. The Pinheiros subway station was built between 2004 and 2011 (**figure 77**).

Both access to the subway and train station takes place only on Capri street, through a small access square with a timid transition between the urban space and the station. There is tall facades in this facade that limit the space between this open space and the small sidewalk that connects it with the bus terminal. It is not possible to access it by the expressway, since there will be fence in the other areas of its perimeter.

Also projected by the Subway, and delivered in 2010, the Faria Lima subway station (**figure 78**) has two opposing accesses on Av.. Brig. Faria Lima. While the access to the western volume is located in Largo da Batata - in a small building with a rounded form -, the small east volume, next to Teodoro Sampaio Street, has a rectangular shape.

Both volumes are limited to being station access coverage. It is not proposed the tool of the facade active in the architecture of the buildings of the stations. The western volume, despite the wide space of the square, has only a single access, facing the avenue, that is, it turns its back to Largo da Batata. This volume of west access still competes with the volumetry of two more closely closed circular elements, creating small residual spaces between them. Already the east volume is squeezed between the empty lot of the Market Square and the sidewalk of the street Teodoro Sampaio, that has great movement of pedestrians. The removal of the volume with the avenue creates a transition in that direction that is destined for the passage of the people.



Figure 77
East facade of the subway station
and train Pinheiros.
Source: author, 2017



Figure 78
West facade Faria Lima Station
(exit Largo Batata) and exit Teodoro respectively.
Source: author, 2017.

Intermodal Terminal Pinheiros/Victor Civita Journalist

The Victor Civita Journalist Terminal, better known as the Pinheiros Intermodal Terminal (**figure 79**), was designed by the office Tito Lívio Frascino Arquitetos Associados within the scope of the Urban Reconversion Contest of Largo da Batata. It was opened in 2013. It is installed in a land of 33.9 thousand m² with a built area of 10.2 thousand m².

Except for the entrances of buses and the small entrances destined to the pedestrians, its area is all surrounded.



Figure 79
South facade and east of the terminal respectively in the street Capri.
Source: author, 2017.

Building Birmann 21 (former Ed of the Abril Publishing House of Marginal Pinheiros)

Birmann 21 (**figure 80**), also known as the headquarters of Editora Abril, is a corporate building with 35,339m² of leasable area, inaugurated in 1997, located next to the bus terminal. Designed by the American office Skidmore, Owings & Merrill, it is considered one of the tallest buildings in the city (149 meters – 26 floors), making it an architectural landmark in the Pinheiros

River landscape. It is owned by PREVI – Banco do Brasil Employees’ Pension Fund. It also has a garage building and 1184 parking spaces, helipad and LEED certification – *Existing Buildings – Operation and Maintenance* (since 2012)³⁴.

In spite of being surrounded and walled in large of its perimeter, it offers in its main façade a transition between the public and private domain through gardens and fences, as well as the design of a retreat in the Pinheiros marginal, allowing the embarkation and disembarkation with security in this way, which also widens the distance between pedestrians and the expressway.

Sesc Pinheiros

Sesc (Social Service of Commerce) is a private Brazilian institution that offers predominantly cultural, sports and leisure services. Sesc Pinheiros was inaugurated in 2004 (**figure 81**). It has seven floors distributed in 35.259 m² of built area, and was designed by the architect Miguel Juliano.

There are no fences on its facade and there is a small square (of several levels in relation to the level of the sidewalk) to the entrance of the building.



Figure 80
Building Birmann 21, former ed.
Editora Abril.
Source: author, 2017.



Figure 81
Sesc Pinheiros
Source: author, 2017.

Church of Our Lady of Monte Serrat

Known as “the church of Largo de Pinheiros” (**figure 82**), it stands out for its historical role in the formation of the urban nucleus of the region, since it refers to the times of the foundation

³⁴ Available at: <<http://birmann21.com.br/>>. Access in 09 sep. 2017.

of the Pinheiros village. In the 16th century, the Tupi Indians abandoned the central core of the city and founded the villages of São Miguel, Itaquaquecetuba (near Itaquera) and Nossa Senhora dos Pinheiros³⁵.

Prior to the redevelopment project at Largo da Batata, there was no direct access to the church, which now occupies only the portion of this new square. There are small fences in the access doors or in small recesses of the closed volume of the church.

CREA – Regional Council of Engineering and Agronomy

The building of CREA (**figure 83**) stands out in the landscape because it is situated at the confluence of Teodoro Sampaio, Pinheiros and av. Brig. Faria Lima for almost 40 years. With 3,500sqm of area, there are no fences on its facade.



Figure 83
Ed. CREA (right), and FL station
(left).
Source: author, 2017.

Pinheiros Municipal Market

The Municipal Market Engineer João Pedro de Carvalho Neto (**figure 84**), better known as Mercado Municipal de Pinheiros, was inaugurated in 1910. Initially, it worked where av. Brig. Faria Lima, having been removed when the avenue was built. In 1971, the market was reopened at the current address. The new building, which is all fenced, was built on two floors to house the 4,196 m² of shops and a 1,742 m² (60 vacant) parking lot³⁶.

35 Available at: <<http://www.arquisp.org.br/regiao/se/parouquias/parouquia-nossa-senhora-do-monte-serrate/matriz-parouquial-nossa-senhora-do-monte-serrate>> Access in Sep 9th. 2017

36 Available at: <http://www.prefeitura.sp.gov.br/cidade/secretarias/trabalho/abastecimento/mercados_municipais_e_sacoles/unidades/mercados/index.php?p=11641>. Access in 09 sep. 2017.



Figure 82
Church of Our Lady of Monte
Serrat, Largo da Batata.
Source: author, 2017.



Figure 84
Municipal Market of Pinheiros.
Source: author, 2017.

[P4] Local territory

The purpose of this paper is to demonstrate, through this variable, the spatial relations of the station with the local territory, the use of urban space (circulation ways, squares, parking lots, urban leftovers)) and urban barriers (relief and rivers, fences, walls and guard rail).

Figure 85 for example, shows visually the proportion of built-up areas, open spaces, green areas, residuals, significant urban barriers and private parking lots (highlighted in gray) observed within an overall view.

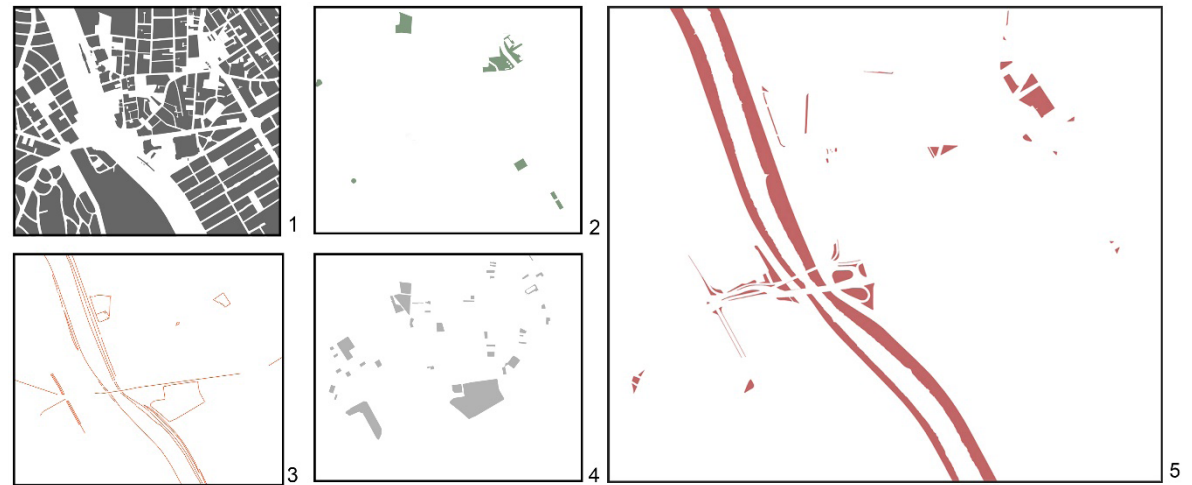


Figure 85
Local territory of the Pinheiros and Faria Lima station area.
Source: PMSP, MDC, 2015. Our treatment.

Evaluating in more detail the three sectors (**figure 26**) that compose the territory of the station area, it is observed that:

In the **west sector** - Pinheiros, the largest of the three sectors predominates, with the largest urban barrier - Rio **Pinheiros**, which stands out as an important open space. The binary of the streets Sumidouro and Paes Leme are the **linear spaces** that cut this area, ending on the expressway. With the construction of the expressway the urban barrier of the river was reinforced as opposed to the spatial integration of the open space with adjacent urban fabric - called here transition.

In the **transition sector**, there is a predominance of linear spaces, where the consolidated urban fabric is well adapted to the local topography, with the absence of open spaces and urban barriers. Between Paes Leme and Butantã streets, there is a large open plot with a new road, specified in the reconversion project, but with the presence of urban remains in its perimeter.

In spite of the fact that there is a discourse on the quality of public spaces in the urban reconversion project, the spatial deterioration of the quality of the sidewalks and their narrowing, for example, due to the extension of automobiles. The Eugênio de Medeiros street is further evidence of this practice associated with the conception of urban remains (confluence of the streets Paes Leme, Capri and Eugenio de Medeiros) spatial ambivalences visualized in the sequences of the images of figures 86, 87 and 88.



Figure 86
Narrow sidewalks at the expense of wide streets for car traffic. Eugênio de Medeiros Street.
Source: author, 2017.



Figure 87
Urban waste resulting from the expansion of the road in the convergence of the Capri, Eugenio de Medeiros and Paes Leme routes.
Source: author, 2017.

In the eastern sector, where the focus of the Largo da Batata reconversion project is located, the predominance of open spaces by the design of three squares / wide:

1. Largo do Pinheiros or Praça da Igreja;
2. Largo da Batata;
3. Largo do Mercado (Theodore).

Largo do Pinheiros is a small tree-lined square in front of Nossa Senhora de Monte Serrat Church, which was slightly extended in the reconversion project. It has an urban scale that fits the fabric of the surroundings with strong spatial connection with the streets that surround it. It becomes the “gateway” to Largo da Batata for those coming from the Pinheiros station.

Largo da Batata is the largest **open space** in the designed study area, where there used to be a bus terminal adjacent to Av. Brig. Faria Lima (which was transferred to stay next to the



Figure 88
Excerpt from the street Sumidouro where specifically the sidewalk was narrowed, to the detriment of the widening of the road, for circulation of automobiles.
Source: author, 2017.

Pinheiros station) and a set of two blocks that were totally demolished. After years in works, it was delivered without trees and urban furniture. Since its delivery, Largo da Batata has become a territory of dispute in the way in which to appropriate the area between several segments of society and the Municipality.

The **Largo do Mercado** is characterized by an open territory after the demolitions of small stretches of blocks adjacent to the av. Brig. Faria Lima. It was the space destined to the implantation of the building Esplanada icon predicted in the Project of Reconversion of the Square of the Batata, but that was canceled by the City hall after the contest. Today it is a territory of urban waste destined especially for the passage of pedestrians and some fairs. It is located in this block only one of the entrances to the station Faria Lima (exit Teodoro) and in the opposite side a small improvised bus terminal (Cardeal Arcoverde street). In the back of this square, in Manuel Carlos Ferraz de Almeida Street, the Pinheiros Municipal Market is located, an important landmark in the history of Largo, not valued in the reconversion project and which is “isolated” in its lot. It is in the Market Square that tangents the most important circulation binary of the neighborhood - Teodoro Sampaio and Arcoverde streets. Thus, the market square is transition of entrance and exit to the neighborhood, as well as the between these ways. The urban barrier is the empty and fenced lot in this block, which for various reasons was not disapproved as suggested in the Urban Reconversion project, remaining empty for years.

It should be noted that the three sectors have had some open or broad path. In the widened car tracks, the disqualification of the sidewalks is evident, for example, Sumidouro Street (**figure 88**). In all cases, the absence of design in the articulation between expropriation, road design and land use (corners of Capri Street with Eugênio de Medeiros Street, a new connection between Butantã Street and Padre de Carvalho, and Baltazar Carrasco road complementation) , which resulted in the construction of small urban waste from these expropriations to improve the circulation of automobiles.

It is evident, however, that the set of squares of Largo da Batata, even with its spatial dilemmas, constitutes an open space, an important meeting point and transition in the urban territory that surrounds it.

[P5] Environmental perception

Environmental perception is an instrument of the observer's vision. It is sought to examine with this variable the structuring of the space in the area of the station, understanding it as a **nodal point** as well as the **urban readability**.

The aim is to verify if there are patterns, movement, rhythm, transparency and overlap between urban elements. To assist in the analyzes of the area of Pinheiros and Faria Lima, a **photographic mapping (figures 89 to 91)** and videos made available by reading QrCodes made available in these images were elaborated. In order to observe environmental perception, the logic of subdivision of the local territory in the east, transition and west sectors was also used.

Notoriously, Largo da Batata is a nodal point of Pinheiros. It is a strategic place that stands out in the urban structure: the concentration and physical convergence of the urban fabric and activities linked to leisure or permanence. The squares (Pinheiros, Batata and Mercado) are clearly limited by the facades of the buildings. In the urban landscape around the squares there is overlapping of the volumetry of buildings of various ages, heights, aesthetics and uses. There is movement of people in all directions and senses. It observes long visual perspectives for urban landscape, both of av. Brig. Faria Lima and Teodoro Sampaio Street. The Faria Lima station is not a landmark given the volume of information and the emptiness of the square. Despite this, the feeling of insecurity in the Faria Lima station area is low.

In the surroundings of the Pinheiros station, the volumetry of the bus terminal assists in the urban readability of the area that competes with few elements of its set. However, the possibility of structuring a nodal point facing the Pinheiros River was lost. The new spatial form established, destined only to the access to the node, maintained the limits of design of the existing block of very clear way. There is neither coherence in the permeability of the urban fabric, nor urban vitality like that existing inside the neighborhood. As a result, the area of the Pinheiros station isolates itself from the neighborhood and expressway, and does not create spatial rhythm, transparency or overlap with the surroundings. It does not absorb the identity of the area, on the contrary, it denies it. Helped by all the buildings on Gilberto Sabino Street, the feeling of insecurity in the area of the station is also low. However, the feeling of insecurity is high on the face facing the expressway.

The mapping of the figures below subdivided by the west, transition, and east sectors represent this perception of the environment.

1 - TERRITÓRIO OESTE
West Territory

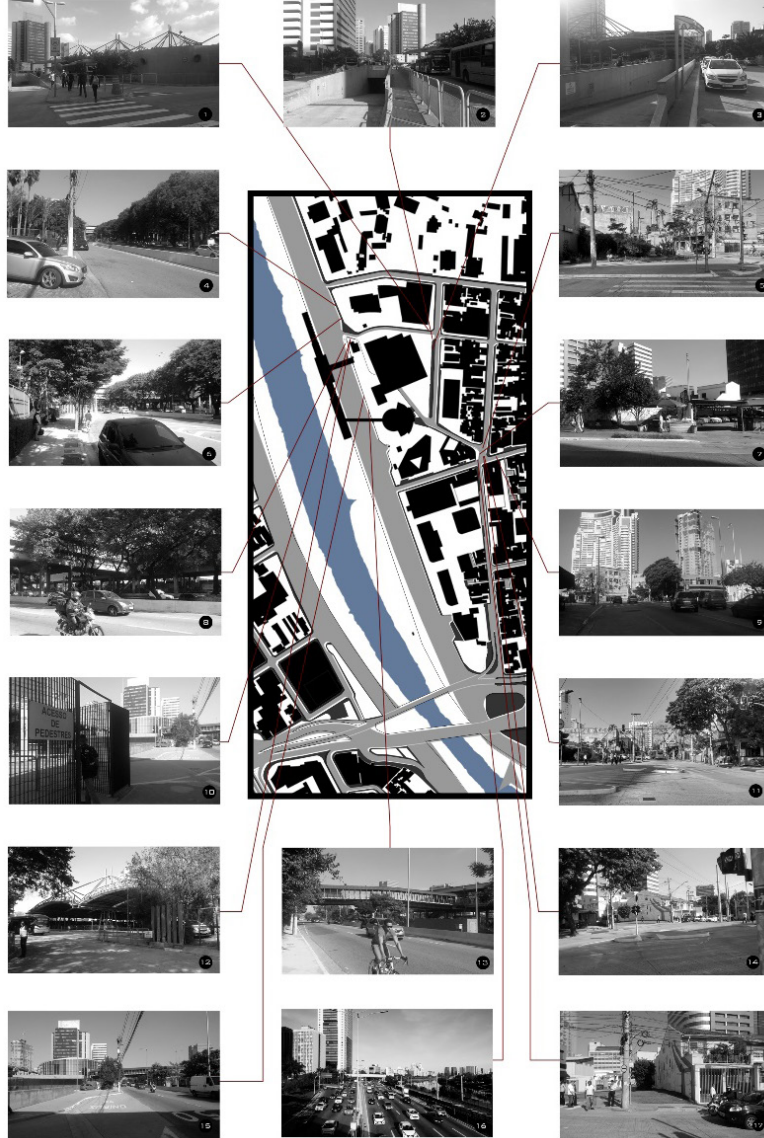


Figure 89
West territory of station FL and PI.
Source: author, 2017.

2 - TERRITÓRIO DE TRANSIÇÃO
Transition Territory



Figure 90
West territory of station FL and PI.
Source: author, 2017.

3 - TERRITÓRIO LESTE

East Territory



Figure 91
West territory of station
FL and PI.
Source: author, 2017.

[P6] Urban intensification

After the long path of the analysis of the area of the Pinheiros and Faria Lima station, we intend to verify if all the existing layers in the station area (**figure 92**) stimulate a more intense use of the urban space by people: the search for connectivity, diversity and appropriation of the place in the territory of the area of the stations Pinheiros and Faria Lima, that is, the **urban intensification of the place**.

It was observed that the territory of the area of the station Pinheiros and Faria Lima is a place inserted in a consolidated urban fabric, historical, with a significant regional identity.

The area of the Pinheiros station has a high modal intensification that reverberates to the pedestrian flows and overrides the immediate surroundings, but with contradictions in the use of it, since in many cases the space is confined to the passage, without the intensity of the Batata Square.

The area of the Faria Lima station undergoes an intense spatial transformation. It has in Praça da Igreja a spatial link with the dynamics of the adjacent streets. The market square, is isolated from the main flows and dynamics of the area, limiting itself to being a small terminal in a sector of the square. The Largo da Batata, which is located between these squares and with arterial pathways on one of its borders, remains vibrant and appropriately spontaneous and intense, since it has been used for several purposes, including leisure. It is a space in deep transformation, with plurality in the appropriation by all those who go there; a place where the station is not the protagonist of the space but the local territory where the station is inserted.

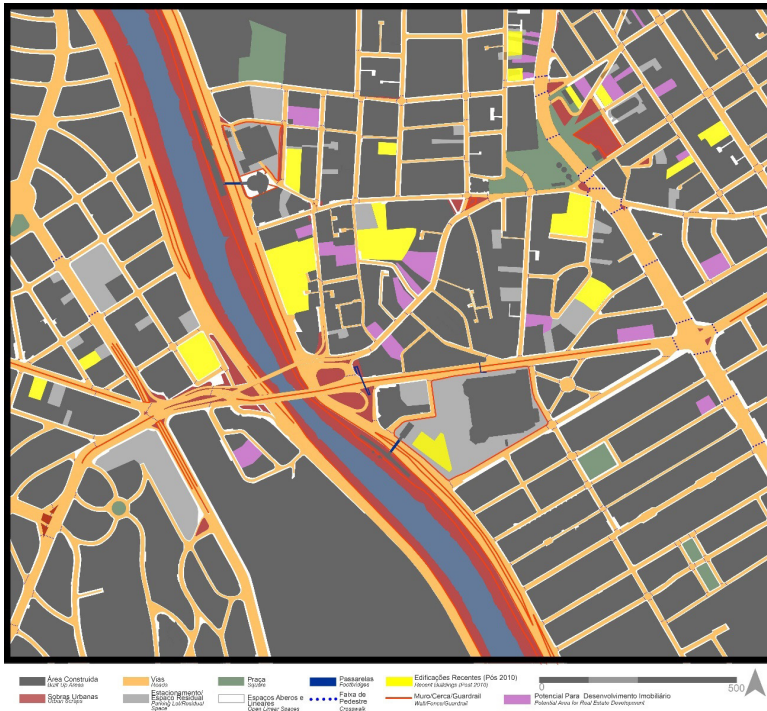


Figure 92
Articulation of spaces and uses in
the area of the Pinheiros and Faria
Lima stations.
Source: PMSP, MDC. Our treat-
ment.

6.3 Synthesis and considerations of the Pinheiros and Faria Lima stations

After analyzing the macro, intermediate and local scales it was possible to **understand the spatial transformations** that occurred in the area of the Pinheiros and Faria Lima stations³⁷, as well as to **identify the spatial ambivalences** within the categories between node and place.

Chronologically, the main interventions were in: **1957**, inauguration of the Pinheiros train station; **2001**, selection of the architecture office by the urban reconversion contest of Largo da Batata by the municipality; **2002**, elaboration of the urban project; **2003**, hiring of the construction company, but the works would start only in **2008**; **2007**, serious accident in the works of the subway station Pinheiros; **2010**, inauguration of the Faria Lima subway station; **2011**, completion of the works of the Pinheiros subway station; **2012**, completion of the works at Largo da Batata.

The morphological understanding of the station area initially had a plot in the north-south dominant direction (Padre de Carvalho and Fernão Dias streets). The second guideline is evidenced in the rectangular, orthogonal, pattern of east-west expansion, structured by the axes of Teodoro Sampaio and Cardeal Arcoverde streets. At both historic times the Largo da Batata intermediated two tracing patterns, functioning as a polarizing center of the region. However, it is evident that Largo da Batata, where the Faria Lima station, which since the origins of the neighborhood, has always been constituted as a privileged place in the articulation of spaces, flows and exchanges, nodal point in the neighborhood, as well as a centrality at the regional level.

The area of the Pinheiros station in turn had the possibility to become a nodal point in the transition with the other river bank or even the long axis of the expressway. It has become only an access space that has a subway station and a train station, connected only by a catwalk and a bus terminal, segregated largely by walls, without the concern of articulation with the urban fabric. Thus, it denies the territory where it is inserted, conceiving a non-place.

Throughout the exposition of the variable [P3], which deals with the architectural conception of buildings and the relations between the public and private domains of their surroundings,

37 Synthesized in the tables located in the appendix.

it is observed that they are strictly functional, isolated in themselves. However, faced with the wealth of active façades and the diversity of uses existing in the urban context in which they are inserted, the perversity of the environment built by the buildings of the stations is mitigated.

The Church square, Largo da Batata and the Market Square in big events become a unique place for social, cultural and political manifestations. However, it is observed that there is a movement of dispute in the daily use and appropriation of these territories.

Largo da Batata, for example, with the intervention for its urban “reconversion” lost part of its representativeness in the neighborhood. Before the works, it was a place of intense popular market and of social exchanges, but that no longer represented the urban environment the one wanted by the market of high income that pressed for its reconversion.

Mascarenhas³⁸ affirms that the Largo da Batata was a center of popular commerce, but considered degraded by the public power, whose current memory of the place of the popular market did not interest to the public power and to the real estate market, since it could not be incorporated like value of exchange in the spaces “Corporate”. The researcher says: “The small commerce, the street vendors, the northeastern culture that survived there through the migrants did not interest, because they could not be incorporated into the exchange value, into the commodity space that was intended to be formed after the reconversion project”³⁹.

After the intervention in Largo da Batata (approximately 29 thousand m²) a set of social movements were born as a challenge to what the public authorities expected that space would become: “A neutral and empty place so people would not use it”⁴⁰.

That is to say, there is a tension for the form of appropriation of the space between some sectors of society, especially activists, of the population of the neighborhood, of the population of passage, even by the emptiness imposed by the sidings that for years exist in the surrounded lot of the Market Square, undermining the power of the use of that space. It is understood then in the subjective scope, that even with an existing urban intensification, on the one hand, it seeks to “reconvert” it into something that it is not yet.

Another example of disputes over this space is the promotion of the “The City Needs You” contest promoted by “BatataLab” and of Institute of Research and Innovation in Urbanism (IPIU),

38 MASCARENHAS, L. P. **Reconversão Urbana do Largo da Batata: Revalorização e novos conteúdos da Centralidade de Pinheiros**. University of Sao Paulo. Faculty of Philosophy, Letters and Human Sciences. Department of geography. Postgraduate program in human geography (master's thesis). 2014.

39 *Idem ibidem*.

40 *Idem ibidem*.

who elected the urban furniture for Largo implemented in 2015. However, in 2017 this furniture was withdrawn by the City Hall⁴¹, which alleged lack of maintenance. It was this same group that in 2015, in front of the dry square delivered and after requests denied by the City Hall, decided to plant 32 leaves of trees in the place⁴² and to install a small garden in Largo. However, again in 2017, the City Hall, through a private partnership, announces the planting of new trees on the site⁴³.

It is also worth noting that Largo da Batata was one of the main meeting places for the social demonstrations of June 2013 (**figure 85**)⁴⁴, which initially protested against the increase in public transportation. It is also one of the places available for the street carnival festivities in the city of São Paulo (**figure 86**) and local parties that normally occur on weekends, but which may even generate conflict with the residents and workers of the region.



Figure 93
Largo da Batata during the social demonstrations of June 2013.
Source: ALMEIDA, L. Available at: < <http://www1.folha.uol.com.br/colunas/pablo-ortellado/2017/06/1892297-a-negacao-de-junho-quatro-anos-depois.shtml>>. Access in 11 sep. 2017.



Figure 94
Largo da Batata during the street Carnival of São Paulo 2017.
Source: BILO, G., Available at: < <https://vejasp.abril.com.br/cidades/prefeitura-enfrenta-problemas-para-limpar-largo-da-batata/>>. Access in Feb 26th. 2017.

41 Available at: <[Http://portal.aprendiz.uol.com.br/2017/09/06/em-sao-paulo-ocupacao-largo-da-batata-vive-novo-impasse/](http://portal.aprendiz.uol.com.br/2017/09/06/em-sao-paulo-ocupacao-largo-da-batata-vive-novo-impasse/)><http://portal.aprendiz.uol.com.br/2017/09/06/em-sao-paulo-ocupacao-largo-da-batata-vive-novo-impasse/>> Access in Sep 15th. 2017.

42 Available at: <<http://portal.aprendiz.uol.com.br/2017/09/06/em-sao-paulo-ocupacao-largo-da-batata-vive-novo-impasse/>> Access in Sep 15th. 2017. no-largo-da-batata-em-sp.shtml>. Access on 15 Sep 2017.

43 Available at:<<http://sao-paulo.estadao.com.br/noticias/geral,largo-da-batata-vai-ganhar-70-arvores,70001881652.>> Access on 15 Sep. 2017.

44 Available at: <<http://noticias.band.uol.com.br/cidades/noticias/?id=100000607164>> Access on Sep 11. 2017.

It is understood, therefore, that the project of urban reconversion has potentiated the open spaces of the Largo, although it does not qualify it. The pressure for changing the identity of this urban space is clear. Once a place of exchanges between several areas of São Paulo, characterized by the vibrant and popular presence of the Market and the old bus terminal, the transformation of this space considered “deteriorated” for the elitisation of its borders is desired, and the continuity of the characteristics already existing in the other stretches of av. Brig. Faria Lima, in the Pinheiros neighborhood, diluting the local identity of a secular nodal point in the city of São Paulo.

In the context of the **transport node**, it is verified that the area of study is delimited by two important routes (av. Of the United Nations and Brig. Faria Lima), cut internally by a high permeability of the urban fabric.

In the Largo da Batata, since the 1970s, the function of the road junction, the bus terminal and the high pedestrian circulation prevailed. The prolongation of av. Brig. Faria Lima in the 1990s undid the original spatial configuration and did not propose a new territorial arrangement at its edges, which contributed to the aggravation of space conflicts, especially with the bus terminal that remained there, as well as in the reduction of the area of the Largo da Batata⁴⁵.

On the **local scale**, the territorial integration of the **Pinheiros station** with the bus terminal and the expressway, as well as the sidewalks, is timid. In the Pinheiros station, where all spaces were designed due to the implantation of the subway station and the terminal, it is evident the sacrificial of the design of the sidewalks in detriment of the access of the bus to the terminal and of the private automobiles to the subsoil, scenario that was repeated in the roads that were part of the urban reconversion project.

There is also the number of bicycles that compete for urban space; the permanence of the old train runway that still remains in front of the terminal (and without any current function); as well as non-connectivity with the other margin. It neglects any continuity in the spatial connections and intermodalities at the Pinheiros station, which clearly demonstrates the fragmentation of the functional projects.

The **Faria Lima station** in Largo da Batata has its direct accesses hampered by the timidity of its implementation, a probable result of the absence of more effective articulation during the planning process among the three main elements involved in the elaboration of projects: City Hall, Subway and contest winning office.

45 When comparing the TPCL - Territorial Cadastre, Property, Conservation and Cleaning between the years 1995 and 2000.

In the scope of the **urban instrument**, even with the presence of an important project resulting from a national competition that had the potential to articulate all the existing demands, ambivalences and challenges between node-place as well as the financial resources coming from an Urban Operation, the spatial dilemmas in the territory of the stations.

For example, urban leftovers, isolated buildings, mediocre transitions between the inside and outside, public and private, and the non-stimulation of intermodality with efficiency between station modalities were conceived. However, the objective of the contest **to expand the public space** of Largo da Batata (**figure 95**) was somehow achieved.



Figure 95

Aerial photo Faria Lima station, and proposed project for the urban reconversion contest.

Source: Google maps and Frascino; Waisman; Feriencic, 2013. FRANCINO, T. L.; WAISMAN, J.; FERIANCIC, G. “**Renovação urbana e mobilidade: o projeto do Largo da Batata**”. Brasília, 19th Brazilian Congress of transportation and transit, 2013. Available at: <http://files-server.antp.org.br/_5dotSystem/download/dcm-Document/2013/10/06/87D2B-872-0CoA-4A1B-A276-C50A4A19A-5DD.pdf>. Access in Oct 28th. 2014. Our treatment.

It was not clear when the Pinheiros station began to be part of the process, because it was a contradiction not to insert it both in the object of the contest and in the Strategic Master Plan of 2002.

Since the beginning of the Urban Operation in the 1990s there has been a transformation in the typology of the buildings in the area, from old houses to residential and corporate towers, which may result in the redefinition of the centrality of the region, integrating the business axis constituted in the vector southwest, more precisely by the av. Brig. Faria Lima and av. of the

United Nations⁴⁶, spatial transformation that is driven more by the real estate market than by an effective urban planning.

It is observed, then, that the spatial transformations of the stations Pinheiros and Faria Lima were timidly cohesive. Largo da Batata was radically transformed, but this did not signal improvements in intermodality and quality of space with the insertion of the new station next to the new square. In the Pinheiros station, the transformation of the block where the new transport node was inserted was not considered, since a closed block in itself was materialized.

Although the discourse on the quality of public spaces was present in the urban reconversion project, which was aimed only at the area of focus with the expansion of public spaces in Largo da Batata, institutional and project blindness are observed in the surrounding areas. Further avenues were widened in the name of improving the fluidity of automobiles and the most important mode of the city was disregarded: on foot, as narrowing of sidewalks.

However, the area of these stations is inserted in a consolidated urban fabric, with the presence of several buildings of low mixed use with intense relation with the sidewalks and pedestrians, which - in spite of the strong process of alteration of the urban form by the residential towers and corporate, or the closure of the stations itself - preserves a high urban intensification even today.

46 MASCARENHAS, L. P. **Reconversão Urbana do Largo da Batata: Revalorização e novos conteúdos da Centralidade de Pinheiros**. University of Sao Paulo. Faculty of Philosophy, Letters and Human Sciences. Department of geography. Postgraduate program in human geography (master's thesis). 2014.

chapter 7

**Corinthians-Itaquera
Station**

*The structures of mobility, with dimensions and scales usually imposing,
became part of the contemporary urban landscape: this has to be faced!*

1 SECCHI, B. **Primeira lição de urbanismo**. Translation: M. Barda; P.M.R. Sales. São Paulo: Perspectiva, 2006, p. 113..

This chapter aims to comprehensively analyze and evaluate the **study area of the Corinthians-Itaquera station**, according to the methodology proposed in chapter four. After the approach in the macro scale of the city of São Paulo, where the case study object is inserted, the **intermediate and local scales** will be analyzed in the scope of the node-place-urban instrument categories in this case study: Corinthians-Itaquera station area. For help in understanding the structuring of the chapter it is highlighted in the rectangle of the **figure 1** the set of analyzes to be carried out. At the end of the chapter there will be a synthesis of the analyzes described. It should be noted that in the appendix there are summary tables of the analyzes described in this chapter.

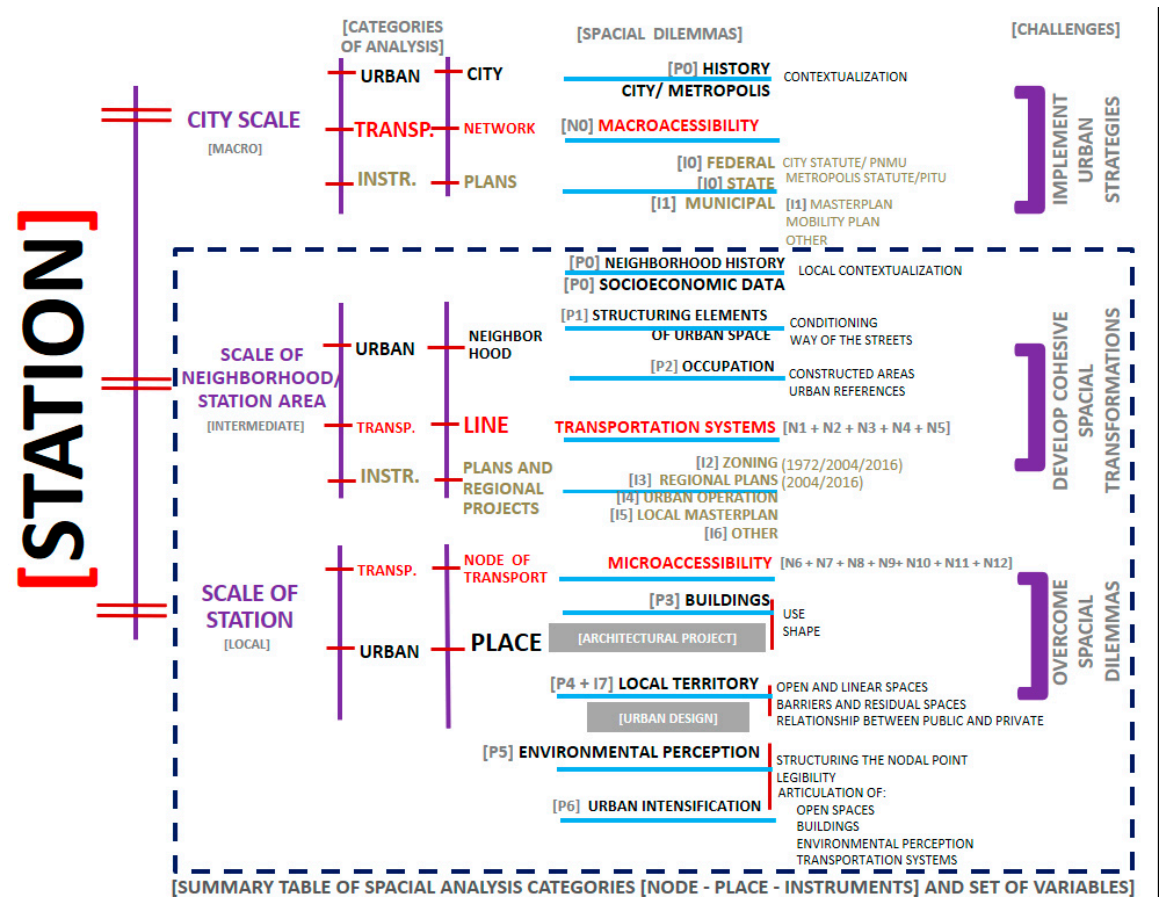


Figure 1
 Diagram of the analysis categories of the case studies highlighting the intermediate and local scales.
 Source: author, 2017.

The **definition of the perimeter** of study of the Itaquera station presents a significant urban complexity due to the conditioners of the area. Using the proposal by Bertolini and Spiti¹ and adapting it to the wide extension of the area (approximately 1.5 km, east-west direction, by 1.3 km, that is, equivalent to 212 ha), the proposed perimeter for joint analysis of the large transport node, includes: **South** of the station area: a maneuvering yard encompassing the main avenue in this sector, penetrating the existing urban fabric; **East**: Linear Park of Rio Verde and the favela adjacent to the park (Paz favela under subway viaduct, as this is an important penetration to the east in the station area); **North**: limited in the encounter with the main access routes; **West**: it is limited with a road that touches a large housing complex, also encompassing the Soccer Stadium. Thus, the perimeter is delimited by the (main) roads: Contorno avenue (north) and Itaquera avenue (west, south and east), detailed in **figure 2**.

7.1 Neighborhood's / station area scale



The area of the **Corinthians-Itaquera station**, here called only Itaquera, is located at the far end of the city's eastern zone (**figure 3**), approximately 18.5 kilometers from the center (Sé station) and 12.5 kilometers from Tatuapé station, where the boundary of the expanded center ends in the eastern portion of the city (**figure 4**). The district is part of the sub-municipality of Itaquera, with 523,848 inhabitants², distributed in four administrative districts: Itaquera, Cidade Líder, Parque do Carmo and José Bonifácio, in a territory of approximately 5,430 ha (3.6% of the total area of the municipality) (**figure 5**). Of the 32 Regional Prefectures, Itaquera has the fourth largest population and is the eighth in territorial extension (54.3km²).

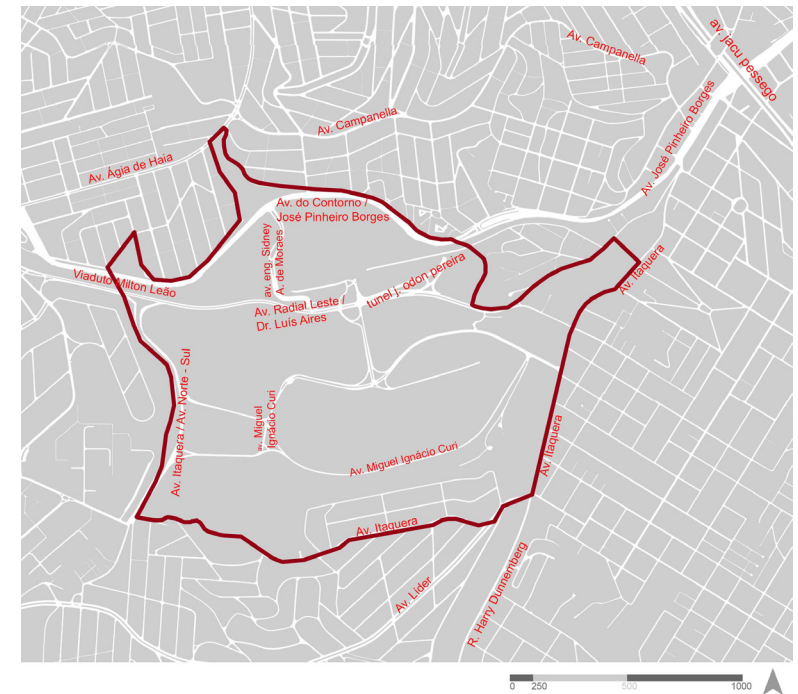


Figure 2
Perimeter of study in the Itaquera station area and name of the main routes.
Source: PMSP (Prefeitura Municipal de São Paulo - City Hall of São Paulo), MDC (2015). Our treatment, 2017.

¹ BERTOLINI, L. & SPIT, T. **Cities on Rails: The Redevelopment of Railway Stations Areas**. London: E & FN Spon, 1998, p.12.

² CENSUS [CENSO], 2010.

7.1.1 [P] Place in the Neighborhood: The region of Itaquera in the context of the city

[P0] Historical aspects of occupation: local contextualization

Itaquera means, in Tupi-Guarani, “sleeping stone”. According to Pociano³, the history of the region of Itaquera begins in 1556, when the Jesuits José de Anchieta and Manuel da Nóbrega follow in the east direction of the city in order to find a place to install another nucleus of catechesis, which happened in the place that is now known as Itaquaquecetuba, located near the lowland of the Tietê river.

Over time, the region became a place for bandeirante landing towards the Minas Gerais in search of gold and, also, territory of the farm of Caaguaçu for agricultural production. At the end of century XVII, the region happened to be cited like population of São Miguel. With the arrival of several settlers in the area, owners Francisco Gentil de Assis Moura and Rodrigo Pereira Barreto were able to implement a railway station in the neighborhood (**figure 6**). Itaquera Train Station was inaugurated in 1875, with the Northern Railroad, further inducing the population growth of the area. Originally it was called São Miguel Station, name of the nearest village. In 1890 the North Railroad changed its name to the Central Iron Road of Brazil, and in 1909 it changed its name to Itaquera Station, an area where Itaquera’s traditional neighborhood was consolidated.

In the 1920s, with the decline of land productivity, this will be parceled out. At that time also, the beginning of the extraction of stones in the region (**figure 7**). In 1945 is presented the proposal for the construction of Radial East Avenue by the then mayor of the city Prestes Maia. In 1957, construction of the first stretch of the avenue near the center of the city began, stimulating the occupation of the eastern vector of São Paulo, which would become the most populous city in a few decades later.

The physical obstacles represented by topography in some areas, the presence of flooded regions in others, distance to the center, large empty and fragmented areas, among others, encouraged the low public investments in the outskirts of the city of São Paulo. Because of this situation, these lands were very cheap and, consequently, an ideal scenario for acquisition by the low-income population in the city that self-built their homes, while at the center investments were concentrated and their urban centrality was reinforced. On the other hand, because of the



Figure 6
Old railway station of Itaquera.
Source: Gimenes, W. Available at:
<http://www.estacoesferroviarias.com.br/i/itaquera.htm>. Access in 31
january 2017.



Figure 7
Quarry workers.
Source: Itaquera Quarry. Quarry
(undated). Available at: <http://www.pedreiraitaquera.com.br/>.
Access in: 23 aug. 2015.

3 PONCIANO, L. *São Paulo: 450 bairros, 450 anos*. 2nd ed. São Paulo: SENAC, 2004.



Figure 8

First Cohabs in Itaquera.

Source: Unknown. Available at:

<https://www.facebook.com/memoriasdacohabitaquera1/>. Access in 31 january 2017.

low price and socio-spatial segregation itself, this region was also a land bank owned by the public power, when, for example, it was bought by COHAB (Metropolitan Housing Company of São Paulo) between 1967 and 1968, lands for construction of the Itaquera I housing complex⁴.

In 1968 the PUB - Basic Urban Plan aimed to make Itaquera a development pole for job creation⁵. It was at this time that the idea of the construction of a football stadium was aired, which resulted in the concession of the land in the 70's for a football team. Also planned were the design of shopping and business centers, shopping centers and retail stores in the regions of Itaquera (east) Santo Amaro and Parelheiros (south)⁶.

In 1978, the first housing units of Itaquera I were delivered: Father José de Anchieta, Father Manuel da Nóbrega (Cohab I) and Conjunto José Bonifácio (Cohab II), rooting the urban structure of a **dormitory neighborhood (figure 8)**. The PUB, an unapproved plan, did not take the other infrastructures necessary for the consolidation of a sub-center in Itaquera. Thus, the dormitory district, together with many other areas of the extensive eastern zone, is characterized by the absence of job creation, generating strong demand in the urban mobility network directed to the expanded Center of São Paulo and the industrial parks of Guarulhos (north) and ABC (south).

Thus, the eastern zone of São Paulo began to concentrate a large low-income population, lacking basic sanitation, access to health, education and jobs, with high levels of social and urban vulnerability in certain portions of the Itaquera region. A relationship of **dependence between the center and the periphery** was created in a highly dynamic and disorganized process, in which the Public Power presented a timid and outdated performance⁷: “The periphery demands jobs and access to all sorts of services and commerce on offer in the most central neighborhoods and these demand employees and the market for the services and products they concentrate”⁸.

In view of the population volume created and the existing demand in the entire eastern region, Subway Line 3 (the busiest of the network currently) was implemented in 1988. The implantation of the line motivated the urbanization of the area of the station and the extension of

4 RAMALHOSO, W. *Destino Itaquera: o metrô rumo aos conjuntos habitacionais da COHAB-SP*. Master. Instituto de Arquitetura e Urbanismo da USP: São Carlos, 2013.

5 SÃO PAULO (CITY). *Basic Urban Development Plan of São Paulo*. São Paulo: City Hall of São Paulo, 1968. Vol.1, p.143

6 RAMALHOSO, W. *Destino Itaquera: o metrô rumo aos conjuntos habitacionais da COHAB-SP*. Masters dissertation. Institute of Architecture and Urbanism of USP. São Carlos, 2013, p, 69.

7 KOWARICK, L. A lógica da desordem e Autoconstrução de moradias e espoliação urbana. In: *A espoliação urbana*. Rio de Janeiro: Paz e terra, 1979.

8 METRÔ. *Leste oeste: em busca de uma solução integrada*. No publisher, 1979, p. 10.

the Radial East⁹ avenue until the door of the station Itaquera. The Poupatempo building, which includes several administrative activities, was inaugurated in 2000 by the state government - it is the largest of the 72 in the State of São Paulo -, the same year that new train stations were opened in the region, especially Don Bosco train station, near the traditional center of Itaquera. Recently, the Football Stadium of the Corinthians team was built to be the opening stage of the FIFA 2014 games, which economically moved the real estate market of the region.

Tangencia to the north of the Itaquera station is the favela AE Carvalho (also known as Zorrilho - with approximately 31,646.19 m²) close to the underground oil pipelines (Transpetro), and the Paz favela (under subway-east viaduct with approximately 12,583, 66 m²). Farther from the station, to the south, there is the Environmental Protection Area (APA) State Park and Carmo Farm (867ha) and agricultural activities.

Current urban challenges are the land and urban regularization of the number of favelas and irregular subdivisions, as well as the total coverage of the water and sewage supply system, urban macro and microdrainage systems.

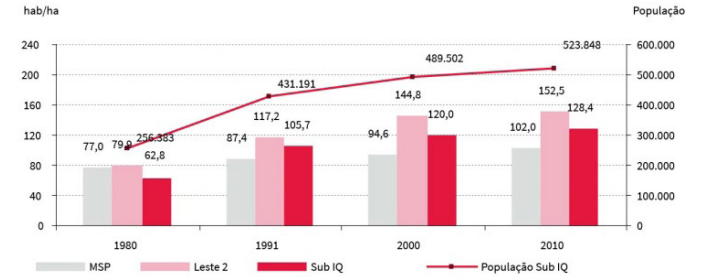
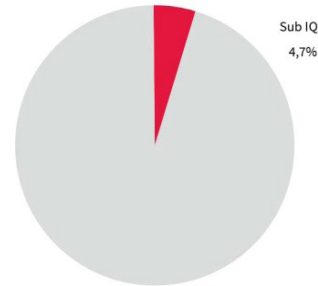
[P0] Socioeconomic data

The Proposal Book of the Regional Plans of the Subprefecture of 2016, designed to support the discussions of the Regional Plans, provide the synthesis of various data from the Itaquera subprefecture.

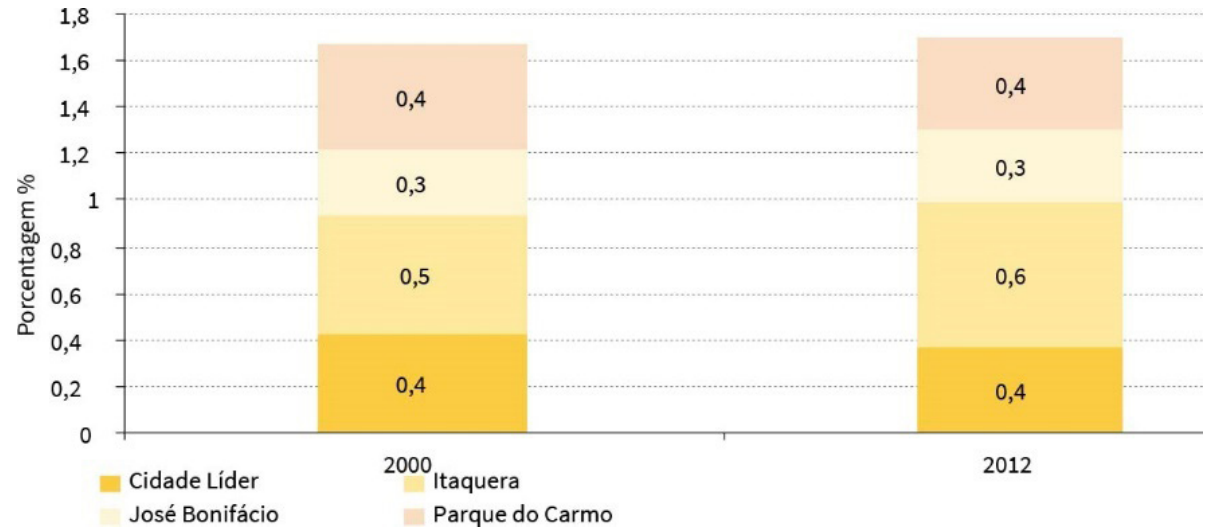
The highlights of this research are: with only 4.7% of the population of São Paulo, approximately 524 thousand inhabitants (**graphic 1**), its representativeness in the **generation of jobs is 0.6% of the jobs offered** in the municipality (**graphic 2**).

9 East Radial Avenue is an unofficial term. The correct name of the avenue that located in front of the station is called Dr. Luís Ayres. However, as the Radial Leste is an extension that comes from the center, crossing the station, fruit of the plan of avenues of Prestes Maia, that changes several times of name, was chosen to use the expression that many of the inhabitants use. This same situation will happen with the old name of Contorno Avenue, whose current name is José Pinheiro Borges Avenue. It was called the Contour, because the old train line *skirted* the existing obstacle that the topography imposed. As the natural conditioners is an element to be considered in this region, it is understood that the term “contour” signals more information to the place than another name to decorate for a reader not accustomed to the space studied.

Graphic 1
Population of Itaquera subprefecture in relation to the municipality and total population and population density, 1980-2010.
Source: Datasub: Notebook of the Subprefecture CO, 2016, p.20.



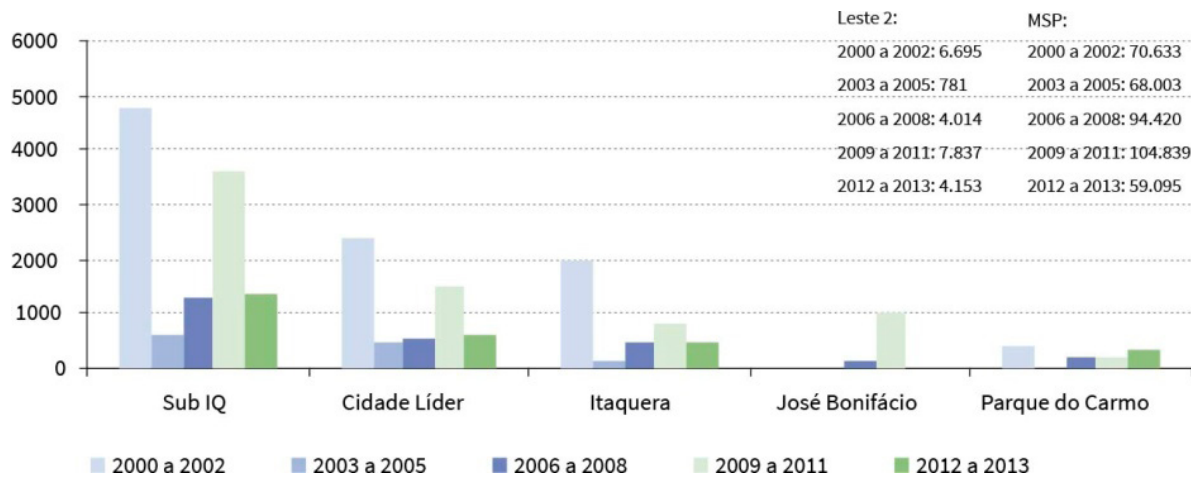
Graphic 2
Participation of formal jobs in Itaquera in relation to the municipality.
Source: Datasub: Notebook of the Subprefecture CO, 2016, p.24



In the suburb of Itaquera, residential use predominates, with more than 65% of the total construction area, with 7% of all households in slums. This area concentrates 50% of the vertical residential units launched in the eastern region between 2000 and 2013, with the highest launch rates in the periods 2000 to 2002 and 2009 to 2011¹⁰ (**graphic 3**).

The challenges provided by the survey are the high levels of social and urban vulnerability due to the population explosion between the years 1980 and 2010. With 73% of the population earning between 1 and 3 minimum wages (MW), and only 2.5% above 10 MW.

¹⁰ PMSP, Embaesp.



Graphic 3
Vertical Residential Units launched, 2000 to 2013. Source: Data-sub: Notebook of the Subprefecture IT, 2016, p. 33.

[P1] Structural elements of the route: conditioning, infrastructures and street layout

In order to visualize the spatial transformations in the scope of the intermediate scale, the natural elements pre-existent to the intervention of the subway station are initially analyzed: topography, green areas and presence of rivers / streams. In order to identify the relationship of the natural elements, as well as areas that could not be built and / or that were barriers to the urbanization and transformation of the territory.

The analysis of the available maps shows that the main condition for urbanization in the area of the Itaquera station is a **complex and accentuated topography**, irrigated by small streams and rivers (**figure 9**), such as **Água da Pedreira**¹¹ (or Itapeva stream in the East-West direction), which is located within the 500-meter radius identified in the table below, and which went to the 'Rio Verde' (north-south direction of the figure), the main one in the water network of the study area. **Radial Leste Avenue and the station were implanted under the stream Itapeva, suppressing it of the landscape.** The Football Stadium will also be deployed under a small tributary stream of Itapeva.

¹¹ Title given by map Sarah, 1933.

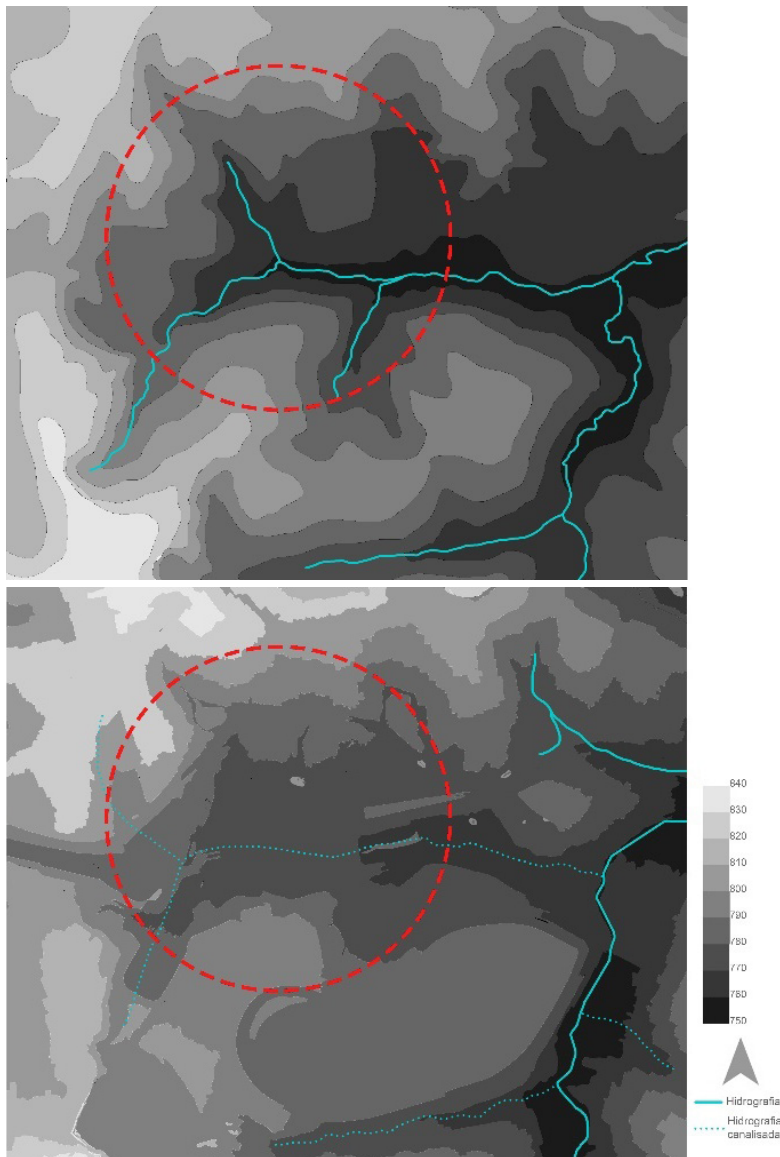


Figure 9
Natural conditions (rivers / streams and relief) in the Itaquera station area.

Source: Sarah Brasil maps (1933) and MDC (2015), respectively. Our treatment, 2017.

The Sarah map of 1933 indicates that the quota of the Itapeva stream base was 750 meters and that in the surroundings there were two small “hills” to the south of the stream Itapeva, with dimensions of 806 and 795 meters and a “hill” to the north of 780 meters. This relief configuration created a small “closed valley” exactly within the study area.

The train line, implanted in 1875, skirted to the north this little “valley”, making a significant curve, returning to the original direction soon after and giving rise to the initial name of that street that circumvents the “valley”: Contorno street¹². This valley could have been an infrastructure conditioner for the installation of the subway station in 1988 (but opted to suppress this condition and create a new intervention strategy in the deployment, as will be visualized below). In **figure 10**, in the picture of 1974, the small valley still stands, but there is an implantation of the subway’s maneuvering yard with an extensive land movement that built the yard’s elevation in 780 meters, joining the two hills that once existed in the area south of the territory. In 2014, large earthworks again occurred to implement a stadium creating extensive slopes to the south, adjacent to the base of this small valley.

By analyzing the structuring elements of the territory of the **urban plan** (Table 2) up to 1933, one observes an occupation in the border areas of the train line, which was the frontier of expansion of the parceling to the north. To the south and east the frontier of expansion of the subdivision of the “barrio” was the Rio Verde stream. To the west, there was no urban layout. The region between the railway line and the tributary of the Green River persisted until then as a large empty area.

The evolution of the construction of the urban fabric indicates that the area was completely parceled out until the 1970s with the presence of “informal” roads that cut the western portion, the consolidation of the then road called Itaquera to the south and Campanella to the north as important east-west links in the region. In the mid-1980s, the main axis of east-west linkage was implanted today: East Radial Avenue, exactly at the base of the valley and under the Itapeva stream.

In the map of 2004, it is possible to evidence in the urban trace the changes that took place after the inauguration of the subway station in 1988, and the withdrawal of the train line in the territory. In 2015, there are more changes in the route for the insertion of tunnels and widening of the Avenida Radial Leste, again in the east-west direction and openings of new roads motivated by the construction of the football stadium for the opening of the matches of the 2014 World Cup, exactly in the “closed valley” area.

¹² The official name of the Contorno avenue is José Pinheiro Borges avenue.

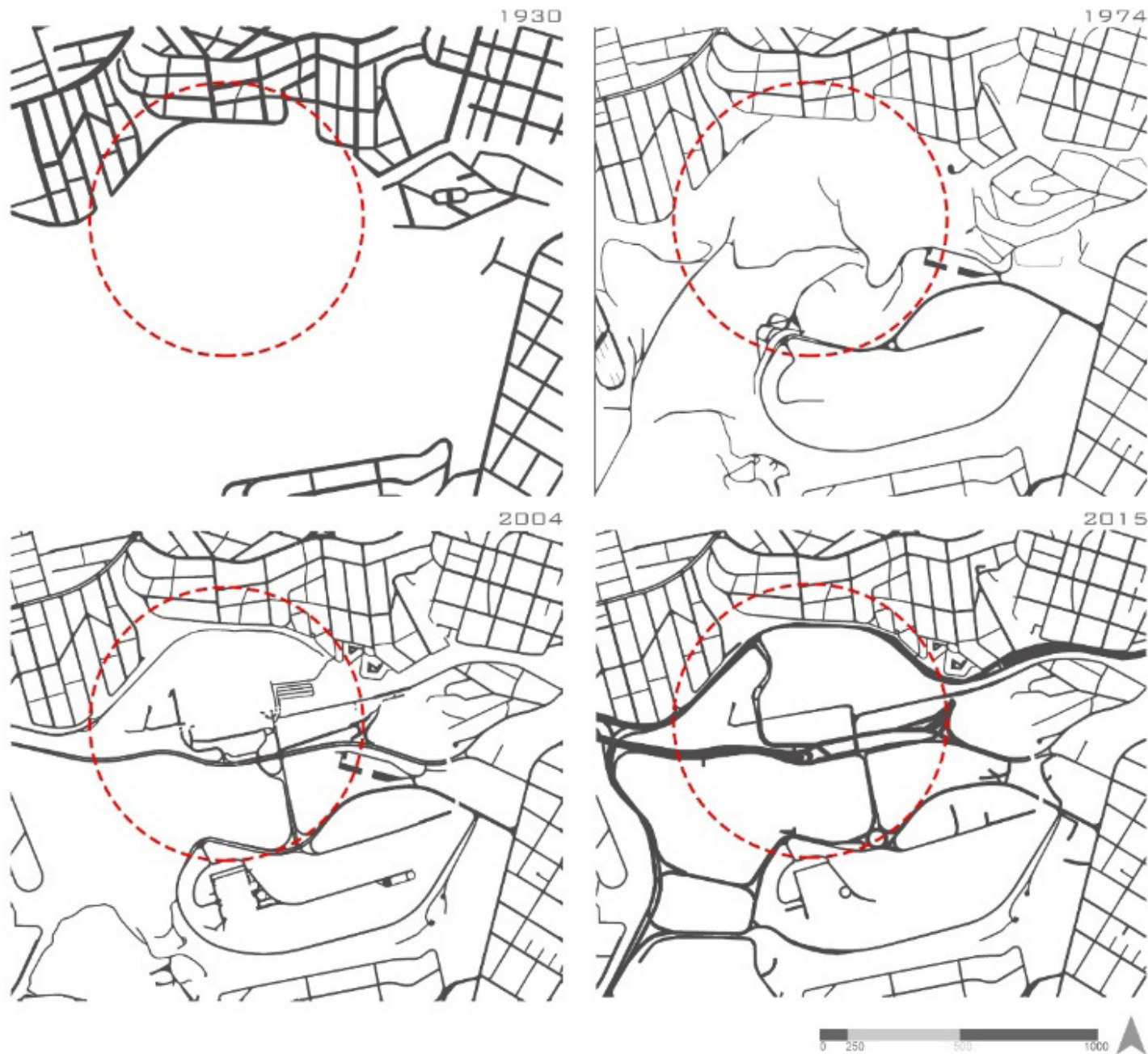


Figure 10
 Urban layout in the area of the
 Pinheiros and Faria Lima stations
 between 1930 and 2015.
 Source: Sarah Brasil maps (1933),
 Gegrán (1974), MDC (2005) and
 MDC (2015), respectively. Our
 treatment, 2107.

The current scenario indicates that the area of study is located at the base of this small valley whose **urban plan reinforces this great emptiness**. The surrounding area of the station is characterized by a fragmented territory, with a **fine mesh and no clear hierarchies**. Radial Leste Avenue cuts this void under the old suppressed stream of the landscape, further reinforcing the void and segregating the northern and southern portions of the territory. This expressway will find Contorno avenue, a new road in the neighborhood, just after passing through the station, being also a route that stands out in the region, but more spatially articulated with the topography and adjacent land use.

The insulation of this area is added to the aggressive imposition of the Maneuvering Yard at the southern top, without the concern of spatial integration with its edges. There is also no connectivity, territorial permeability in the north-south direction of this region, especially for pedestrians. Retaining walls and a new road (continuation of Avenida Itaquera) were built only for cars west of the stadium, which completely segregated the Cohab housing complex from the Itaquera station area.

Thus, after the implementation of road and metro infrastructure, there is **an absence of a typology of blocks** at the borders and the extensive area of the station and the prevalence of east-west flows and connections for cars in the urban route.

[P2] Occupation and typologies

Through the picture of the evolution of the occupation in the Itaquera station area (**figure 11**), it can be seen that in 1933 the streets were sparsely occupied. These meshes are only filled on the map of 1974 by an intense low-density residential occupation. The contemporary survey (2004 and 2015) shows the arrival of intermodal centrality and an incipient occupation of the great land by institutional buildings linked to leisure and the absence of vertical integration.

The survey of the area stands out as the main urban references in the region of the station: institutional activities in the big gleba (FATEC and ETEC), Football Stadium - Corinthians Arena, Poupatempo, Shopping Mall¹³, the last two connected directly to the subway station building, located parallel to Radial Leste Avenue, as well as the predominance of residential land use, including two small slums (**figure 12**).

¹³ Buildings to be detailed below in P3 - Buildings: the architectural design as a planning tool

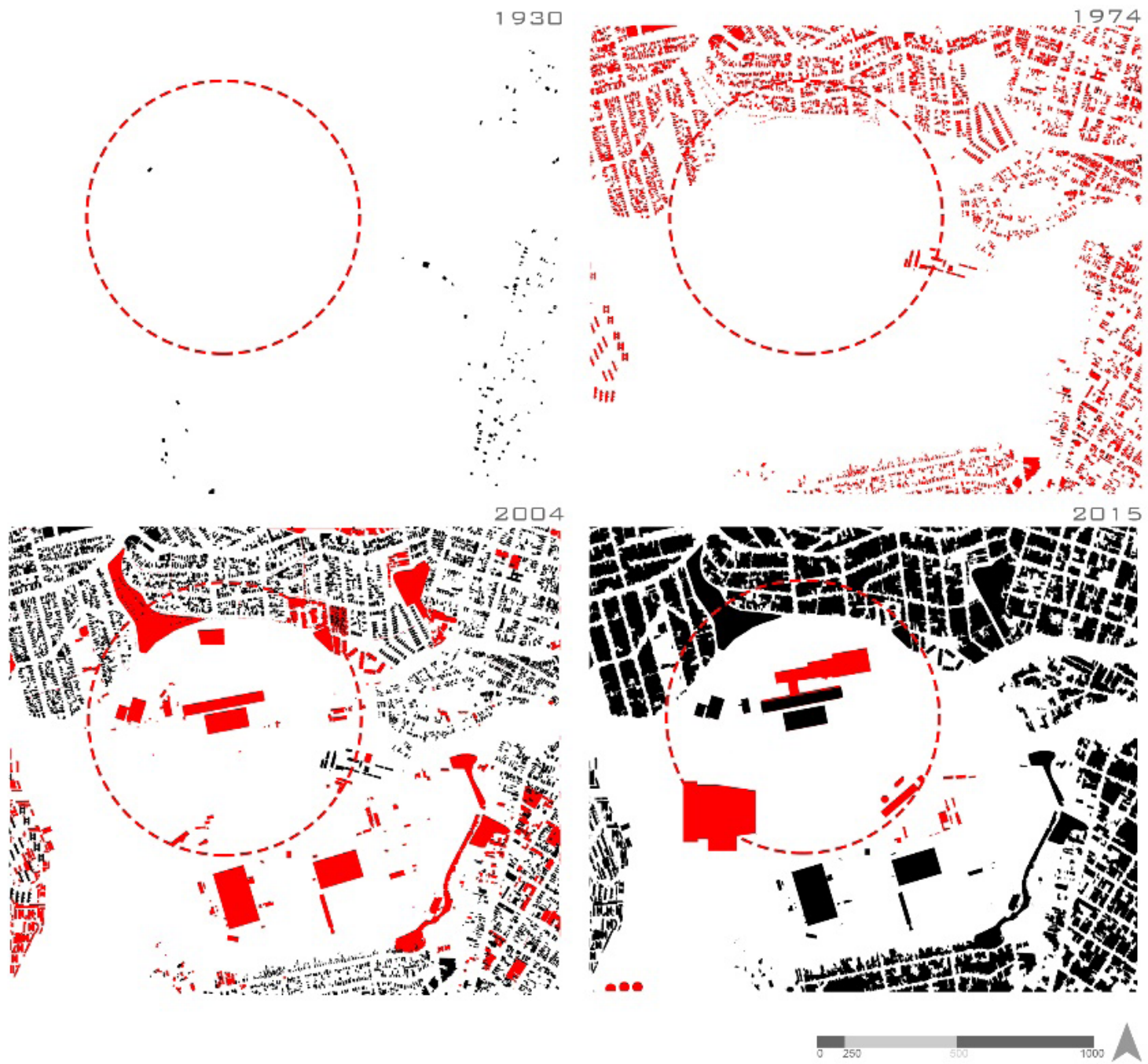


Figure II
 Evolution of occupation in the Itaquera station area between 1930 and 2015.
 Source: Sarah Brasil maps (1933), Gegran (1974), MDC (2005) and MDC (2015), respectively. Our treatment, 2017.

- Legenda
- Metrô**
 - 1 - Estação Itaquera
 - 2 - Pátio de Manobras
 - Serviços**
 - 3 - Reservatório d'água
 - 4 - Poupatempo Itaquera
 - 5 - Shopping Metrô Itaquera
 - Lazer**
 - 6 - Arena Corinthians
 - 7 - Clube metroviário
 - Saúde**
 - 8 - UBS A.E. Carvalho
 - 9 - U.P.A. 26 de Agosto
 - Educação**
 - 10 - Centro social marista
 - 11 - Colégio Integrado
 - 12 - Etec Itaquera
 - 13 - Fatec Itaquera
 - 14 - Colégio Cultura
 - 15 - E.M.E.I. CoHab Goiti
 - 16 - C.E.I. Irma Mariana Sala
 - 17 - Colégio Domus Vivendi

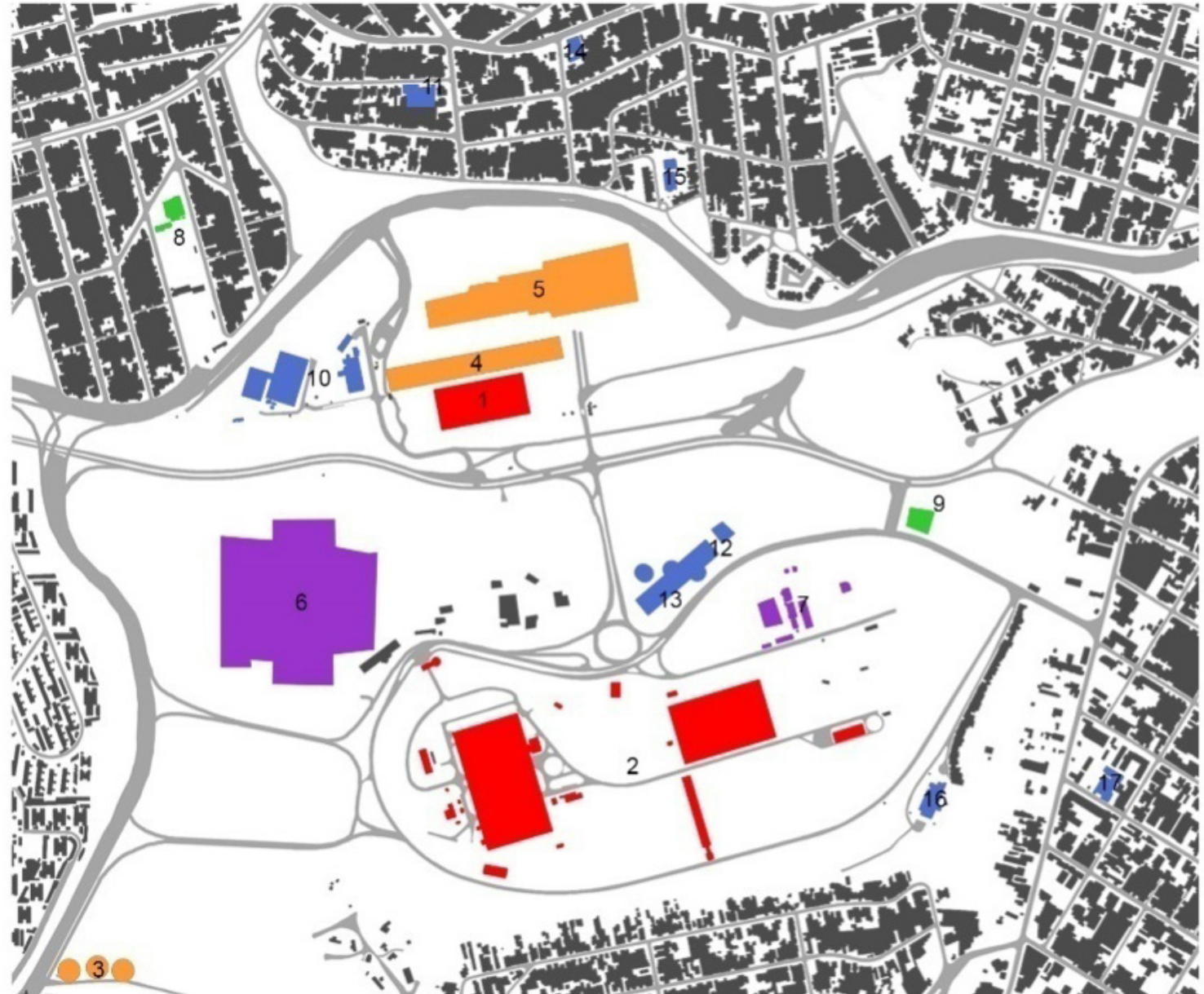


Figure 12
 Main references in the Itaquera station area.
 Source: PMSP, MDC (2015). Our treatment, 2017.



It is also noted that southeast of the study area, next to the maneuvering yard, occurred the activity of a quarry between 1923 and 1999, where a crater of 120 meters of depth by 320 meters of width was created, later grounded with material inert (1999-2006)¹⁴ to sediment an urban allotment.

7.1.2 [N] Node on the line: the insertion of the Itaquera region into the macroaccessibility network

This section will detail the systems that compose the transportation network in the region of Itaquera (**figure 13**). It will be started by the railway system, following the implementation of the subway line and the bus terminal; and of the structural routes, of the lines of buses, finalizing by the most recent system in the city: bicycle path. In order to close the analysis of the lines, the data of the origin and destination (DO) search for the region will be presented and its synthesis for global understanding of the displacements will be presented.

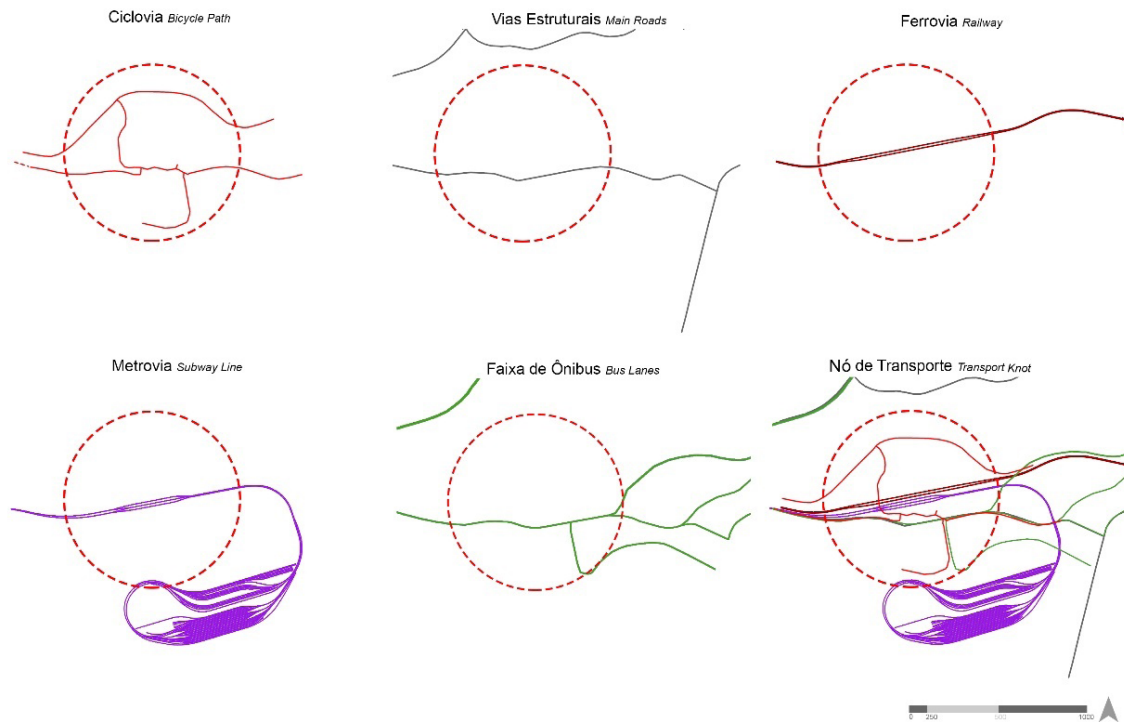


Figure 13
Transportation systems in the station area of Itaquera.
Source: PMSP, MDC(2015). Our treatment, 2017.

¹⁴ Available at: < <http://www.pedreiraitaquera.com.br/>>. Access in 15 sep. 2015.

[N1] Train line: Line - 11 Coral of CPTM



Figure 14
Line - 11 Coral of CPTM

The Itaquera subway station connects to Line 11 - Coral of CPTM- Companhia Paulista de Trens Metropolitanos¹⁵. Without stops, from the Luz station (downtown), it takes about 20 minutes to access the Itaquera station (**figure 14**).

Nowadays, Line 11 - Coral, from Luz station to Itaquera station, is an express line, because for only Bras, Tatuapé and Itaquera stations. In Itaquera the parallelism with the subway line ends. After this season, it stops being expressed, stopping at the stations Don Bosco, José Bonifácio, Guaianases, where the first stretch of Line 11 ends.

The Itaquera train station was reopened in 2000 by CPTM. In March 2017, the Itaquera train station carried an average of 40,347 passengers per day. The record took place on June 26, 2014, with 62,865 passengers transported on that single day¹⁶ (Demand Summary, CPTM, March 2017).

At this station, it is necessary to carry out a transfer to follow to the terminal station of the line (Station Students). The first stretch - Luz and Guaianases has 24,018 kilometers of extension, 3 connections with bus terminals (Tatuapé, Itaquera and Guaianases) and 7 operating stations, serving only the city of São Paulo. In March 2017, this stretch of line carried in the month 13,269,819 passengers, with MDU of 493,724¹⁷.

¹⁵ The route of this line initially belonged to the former Companhia São Paulo and Rio de Janeiro, which connected São Paulo to the Vale do Paraíba region (1870). When it became the Central Railroad of Brazil - EFCB (1890), it connected with the city of Rio de Janeiro. The EFCB was extinguished in 1957, with the creation of RFFSA - Federal Railroad Network. In 1971, Ferrovia Paulista SA (FEPASA) was created, a union of several lines in the majority of São Paulo, reflecting the decline in rail transport in Brazil. In 1984, FEPASA transferred the management of the railway network to CBTU - Companhia Brasileira de Trens Urbanos. In 1992, the São Paulo section of CBTU was transferred to the control of CPTM.

¹⁶ CPTM, Sumário de demanda, março de 2017. [CPTM Demand Summary of March 2017]

¹⁷ CPTM, Sumário de demanda, março de 2017. [CPTM Demand Summary of March 2017]

The second stretch (Guaianases - Students) has 26,623 kilometers of extension, 5 connections with bus terminals (Guaianases, Ferraz de Vasconcelos, Poá, Suzano and Estudantes) in 10 operating stations, serving 5 municipalities. In March 2017, this stretch of line carried in the month 5,944,279 passengers, with MDU of 217,572¹⁸.

[N2] Subway Line: Red Line - 3 Subway

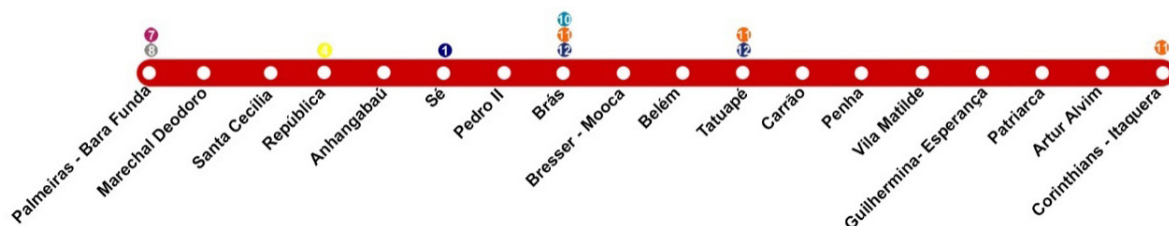


Figure 15
Red Line 3 Subway

The Corinthians-Itaquera subway station is part of Line 3 – Red (**figure 15**) of Companhia de Metrô de São Paulo, better known as Subway. It is the busiest line of the subway network, with 1,176 million passengers entering the line stations by average on weekdays¹⁹. The Red line-3 loaded 37,754,000 passengers in the month of March 2017. Due to the station being the terminal, there is, in its vicinity, a large patio for parking and maintenance of the trains.

The Itaquera Courtyard is intended for parking and maintenance of subway trains, which covers an area of approximately 470,000 square meters²⁰. The Corinthians-Itaquera subway station is a terminal station of Line 3 (Red), as well as **the station of greater demand that is located outside the expanded center**. With loading of 104 thousandsentries of passenger / average on weekdays²¹, was the fifth station with more entrances in the subway network, behind only the stations Palmeiras-Barra Funda (205 thousand), Luz (163 thousand), Republic (148 thousand) and Consolação (133 thousand)²².

¹⁸ CPTM, Sumário de demanda, março de 2017. [CPTM Demand Summary of March 2017]

¹⁹ Available at: <<http://www.metro.sp.gov.br/metro/numeros-pesquisa/demanda.aspx>>. Access on 03 jun. 2017.

²⁰ METRÔ. **Leste-Oeste: em busca de uma solução integrada**. Sem editora, 1979, p. 199.

²¹ Metrô, 2017.

²² Available at: <<http://www.metro.sp.gov.br/metro/numeros-pesquisa/demanda.aspx>>. Access on 03 jun. 2017.

[N3] Bus Lines and Itaquera Subway Terminal

The subway station connects to the Itaquera Subway Terminal (subway management), which is located under the boarding platform at Radial Leste Avenue.

The Itaquera Subway Terminal is serviced by 53 municipal lines and 3 intermunicipal lines²³. In June 2014 SPObras²⁴ (Municipal Services and Works Department) finalized the works of requalification and expansion of the terminal. Work is in progress on the implementation of a new Itaquera Terminal.

There are **no bus corridors**²⁵ in the station area. There are **bus lanes** in the station area on Radial Leste Avenue (**figure 16**) with the predominance of longitudinal flows with rare north-south penetrations in the neighborhood. The sidewalks, in general, are narrow, as those existing in the East Radial Avenue.

[N4] Road system

The main avenue of access is called Dr. Luiz Ayres²⁶. However, informally it is better known as East Radial Avenue, which starts as its name says, east of downtown, and follows approximately 18 kilometers. It is important to point out that this avenue was foreseen in the Plan of Avenues of 1930.

The second access road to the station is José Pinheiro Borges avenue. However, this route is also informally known as Contorno **avenue**, north of the station area, where the train skirted the large empty glebe. As the topographical conditioner is relevant and of greater understanding in the analyzes that will follow, the term avenue do Contorno will be used. It is interesting to note that it is in Itaquera that the Avenida Radial Leste no longer has the parallelism with the subway and train tracks.

The road network of Itaquera sub prefecture is marked by diverse geometries imposed by isolated and disconnected subdivisions, without an urban directives unit, resulting in a dis-



Figure 16
Bus range on East Radial Avenue.
Source: author, 2017.

23 Source: SIC and the author. Protocol 23033, 07/23/2017.

24 SPObras is a company of the Municipality of São Paulo linked to the Municipal Secretariat of Services and Works - SMSO that aims to execute programs, projects and works defined by the Municipal Administration.

25 In the year 2013, the Corredores Leste Radial 1, 2 and 3, Itaquera Corridor and future Itaim / São Mateus and Jacu-Pêssego East Perimeter Corridors were located in the station area, but were aborted due to lack of financial resources of the municipality.

26 PMSP, Geosampa, 2017. Available at http://geosampa.prefeitura.sp.gov.br/PaginasPublicas/_SBC.aspx. Access on: 15 feb. 2016.

continuous, discontinuous and low capacity road network. The structural road network in the north-south direction is scarce and precarious, with Jacu Pêssego / Nova Trabalhadores Avenue the main route of articulation of intraurban and metropolitan flows. This avenue is located three kilometers east of the station area. The extension of this route to the Rodoanel Sul inserts this region under privileged conditions in the connection route between the Port of Santos to the south and, to the north, connecting with the Ayrton Senna highway, connects with Guarulhos Airport²⁷.

In the East-West direction, the avenues Aricanduva, Itaquera, Líder, José Pinheiro Borges and Radial Leste²⁸ structure the territory, connecting Itaquera sub prefecture to the most central areas of the city²⁹.

According to Zmitrowicz and Borghetti³⁰, there were few routes north-south planned in the eastern zone despite the strategic importance they could have in facilitating accessibility to three major employment hubs: Guarulhos Airport, the ABC region, as well as Porto of Santos.

Therefore, the road system in the station area is characterized by a network of low-capacity and disjointed collecting roads, which makes accessibility, intra-urban circulation and urban articulation difficult.

[N5] Cycle routes

There is a shared bike path with the existing sidewalk parallel to the subway and CPTM rails. The Green Path, better known as the “Radial bicycle path”, links the Tatuapé and Itaquera stations (**figure 17**). There is a small stretch of bike path between the station and the south entrance of the soccer stadium established during the urban plan of the Institutional Polo of Itaquera and a third cycle path that starts in the avenue of the Contour and go through the neighborhood center sense.

27 In fact, this was the only ‘direct’ connection on this axis, before the inauguration of the eastern loop of the Rodoanel inaugurated in 2015. This section of the Rodoanel, a large roadway around the RMSP, connects the Presidente Dutra and Ayrton Senna highways with Anchieta and Imigrantes (south)

28 Like the Dravenue Luis Ayres is better known as Avenida Radial Leste, this will be the term to be used in this research.

29 Source: Datasub: Notebook of the IT Subprefecture, 2016.

30 ZMITROWICZ, W.; BORGHETTI, G. *Avenidas 1950-2000. 50 Years of Planning in the City of São Paulo*. São Paulo: EDUSP, 2009.



Figure 17
Bike path in front of Itaquera station.
Source: author, 2017.

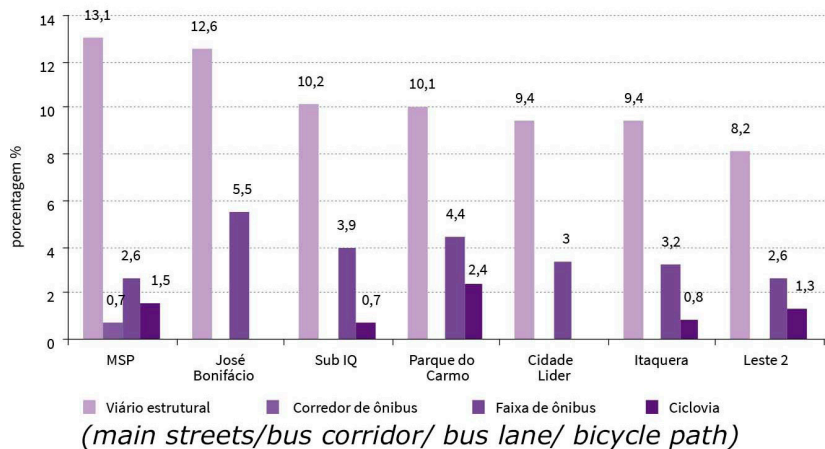
[MX] Urban mobility of the Itaquera region in numbers

Line 3 - Red carried 37,754,000 passengers in the month of March of 2017³¹ being the most loaded line of the system. The Itaquera station, being a terminal station of the subway, has a huge patio for maneuvering and maintenance of the trains. It also has connection to CPTM Line 11 (Coral - Express East), which carried 493,724 passengers / business day³². There is a municipal bus terminal (8,000 m²), but there are no bus corridors around the station. The main access route is the Radial Leste avenue implemented by the Metrô Company, which used the expansion of the subway to redevelop part of the border regions of the stations of Line 3 - Red. With the implementation of the football stadium in 2014, there were major and new road interventions, extensions, tunnel construction and the implementation of a small loop network. There are large areas designed for private car parking, located around the subway station and the football stadium. One observes the force and redundancy that exists in the direction east-west (subway-train-avenues) and the weakness of connections of the lines in the north-south direction.

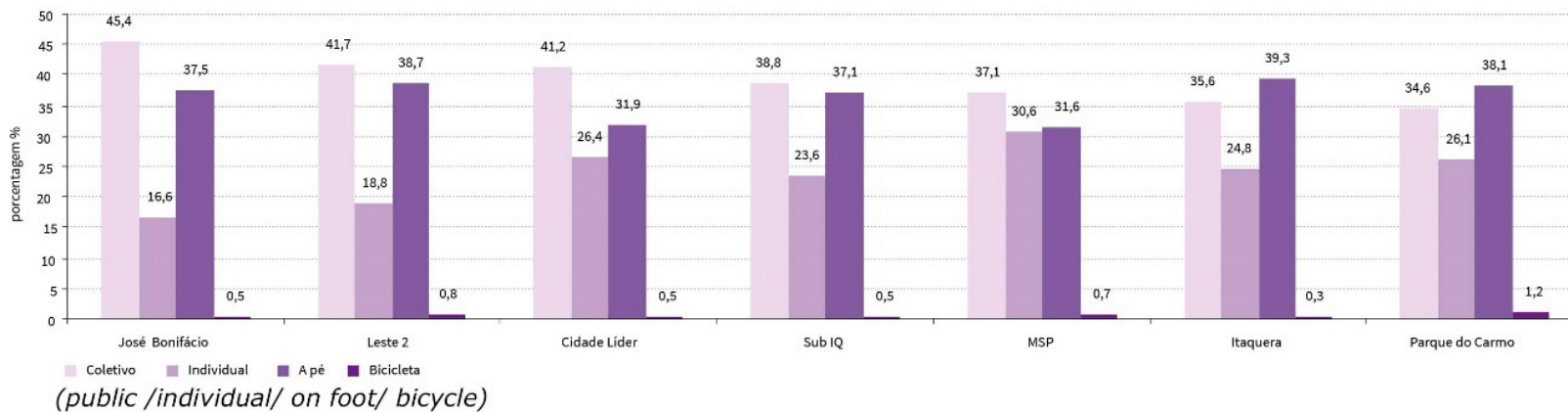
As a node within the network, there is therefore low accessibility offered, both in public transport and in the structural road below the city average (**graphic 4**). According to data from the 2007 OD survey, the mode of travel most used is the mode of travel (38.8%) and foot (37.1%), as shown in **graphic 5**. The percentage of workers who spend more than one hour on the work-home movement in the eastern region (32.7%) is significantly above the city average (21.8%), as observed in **graphic 6**.

³¹ Metrô, 2017.

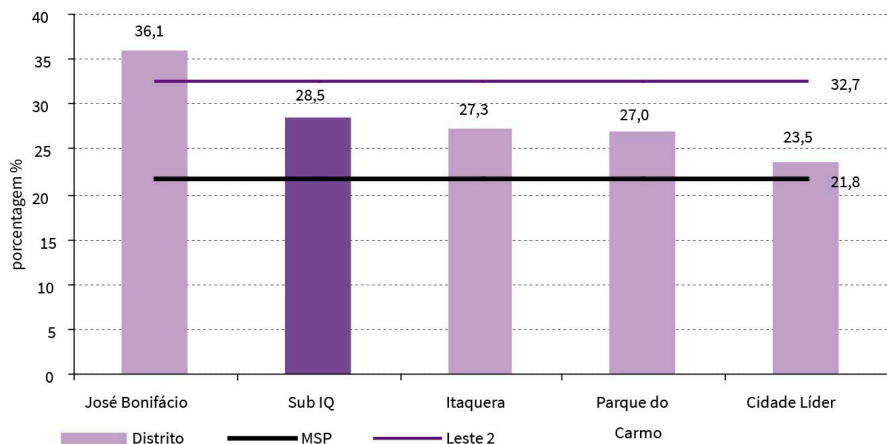
³² CPTM, MDU - Demand Summary of March 2017



Graphic 4
Proportion of corridor, bicycle lane and structural road on the total road in Itaquera, 2014.
Source: Datasub - Notebook of the IT Subprefecture, 2016, p.39.



Graphic 5
Participation in the number of daily trips of residents by main modes of transport in Itaquera, 2007.
Source: Datasub - Notebook of the IT Subprefecture, 2016, p.38.



Graphic 6
Percentage of workers who spend more than one hour on home-work displacement in Itaquera, 2010.
Source: Datasub - Notebook of the IT Subprefecture, 2016, p.38.

7.1.3 [I] Urban instruments

In this section will be synthesized the main urban instruments proposed chronologically for the region of Itaquera. It will be discussed the recent Masterplan (2002 and 2014), the zoning (1972, 2004, 2016 – **figure 18**); the Regional Plans (2004, 2016 – **figure 19**), the Urban Operation and especially the Urban Plan of the Institutional Pole of Itaquera.



Figure 18
The zoning designed for the region of Itaquera.
Source: Geomapas 1998; Regional Plan 2004, Geosampa, 2016, respectively. Our treatment.

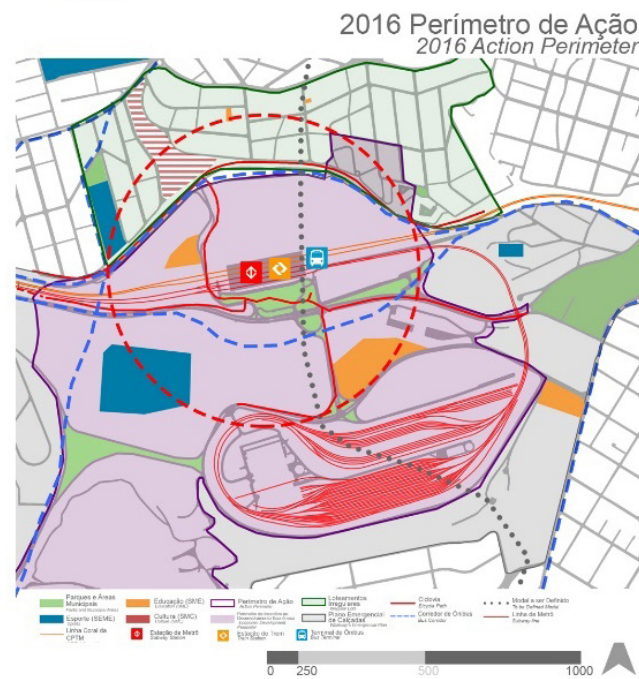
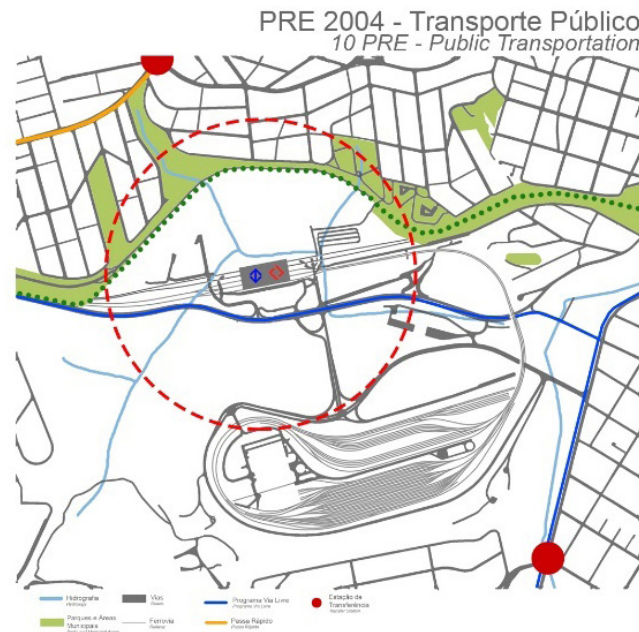
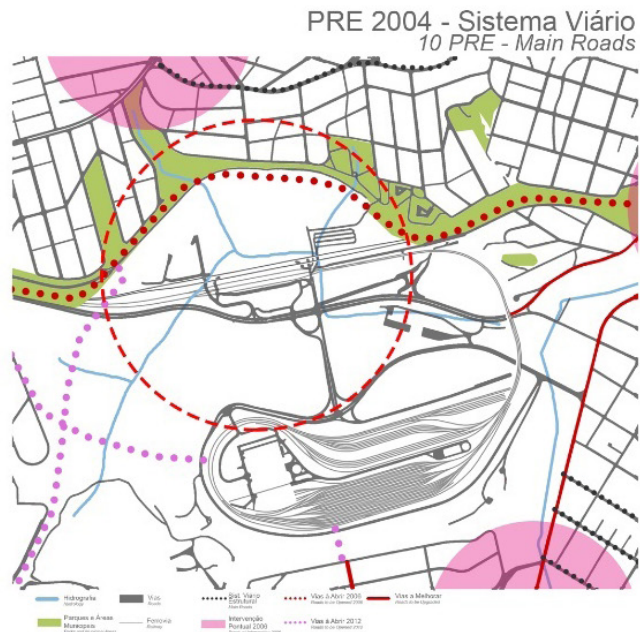


Figure 19
Regional plan of 2004 (3 first figures) and Perimeter of action in the area of the station - 2016.

[12] Zoning 1972/1998

The first zoning of the city of 1972 was part of the scope of the Integrated Development Master Plan discussed in chapter five. In the case of zoning, it was the instrument that induced the pattern of occupation. It was predicted that the station area of Itaquera should be only of **predominantly residential use with low population density (Z2)**. In relation to the ZML, it is not observed in the studied plant this denomination probably by the neighborhood being outside the field of interest of the real estate capital of the time.

However, in view of the context of the time, it is important to emphasize the importance of the role played by the Metro at that time in the urbanization in the Itaquera station area. It was not characterized as a CURA Project, but COGEP (General Planning Office of the Municipality of São Paulo) was responsible for the different actions of the bodies involved, as well as elaborating and reformulating the land use and occupation legislation in the intervention areas³³. The objective was therefore the coherence of an integrated work.

In the 1979 publication, produced by the Metro³⁴, which deals with all the projects of the Linha Vermelha stations, it is presented the set of projects that were part of the scope of urbanization in the Itaquera **station area**. The main projects are mentioned as being those of Maneuvering Yard Complex (470 thousand m²); the complex of social housing promoted by COHAB-SP (Metropolitan Housing Company of São Paulo), the housing complex Father José de Anchieta; the redevelopment in the surroundings of the stations promoted by EMURB (Municipal Company of urbanization); the expansion of the Avenida Radial Leste, promoted by the Public Roads Secretariat; the coordination of train lines and stations, such as RFFSA (Rede Ferroviária Federal S.A) and FEPASA (Ferrovias Paulistas S.A.). Also, in this publication was intended to change the condition of a dormitory city by establishing a diversified commercial center, sub-regional level public services and equipment in the station area³⁵.

After completing this “project,” one can observe the implantation of the COHAB project, the timid pedestrian connections with the station as well as the implantation of a shopping mall without the specificity of an integrating urban design in areas considered to be “urbanized” in the initial proposal.

33 METRÔ. *Leste-Oeste: em busca de uma solução integrada*. Sem editora, 1979, p. 13.

34 METRÔ. *Leste-Oeste: em busca de uma solução integrada*. Sem editora, 1979.

35 METRÔ. *Leste-Oeste: em busca de uma solução integrada*. Sem editora, 1979, p. 199.

[I1] Plano Diretor Estratégico (PDE) – Master Plan of 2002

Due to the 2002 Masterplan (PDE 2002), the station area was inserted in both the Macro Area of Restructuring and Requalification as Macro area of urbanization and qualification. An existing **Polar Centrality** was proposed to qualify in the congruence of two structural avenues (Avenida Jacu Pêssego and Avenida Radial Leste). It was in this plan the proposal to create the Jacu-Pêssego Consortium Urban Operation to be discussed below.

[I2] Zoning of 2004

In 2004, still in a general way, the study area is placed as **an IQ ZCPa / oI (Zone of Centrality Polar of Medium Density) – figure 18**. In its surroundings two small areas are foreseen for ZEIS 1 – LI12 and LI13 and, once again, as **predominantly residential (ZM1 and 2)**. There is no linear centrality zone.

[I3] Strategic Regional Plan (SRP) 2004

In the urban development map of the 2004 **SRP (figure 19)** for the region of Itaquera, the Urban Intervention Area of the Strategic Project of the Eastern Economic Development Program was created: AIU-PRODEL, with the objective of promoting the best distribution of economic activities in the eastern region, which was not implemented.

As regards the structural road system, it was planned to build the avenue of Contorno, which was effectively completed. Other avenues to be opened were planned and will be partially implemented for the COPA project (Itaquera avenue).

For public transport, an intermodal (red circle) station and a “fast-track” avenue on Avenida Líder and a “free-lane program” on Radial Leste Avenue were implanted as “bus lanes.

[I1] Plano Diretor Estratégico (PDE) - Master Plan of 2014

The Itaquera station area is comprised of the Macro metropolitan structuring area (MEM): subsector Jacu-Pêssego Arc. This sector is characterized in the PDE as a very populated area, but without jobs, of strategic location in the metropolitan territory.

In view of this, urban incentive laws (the additional constructive potential for non-residential uses exempt from onerous concession) were approved, which favor greater constructive densities and fiscal incentives (granted tax exemptions for specific activities), to stimulate employment and income generation along the main roads that serve the region.

However, specifically, the station area is not part of the Urban Transformation Structuring Axis.

[I2] Zoning 2016

Regarding the zoning enacted in 2016, the region, for the first time since the creation of this instrument, ceases to be generic and treats the planned activities in the urban area with a greater specificity.

In the area of the station is established a ZEU - Zones Axis of Structuring of Urban Transformation. The ZEU establishes portions of the territory in which it intends to promote residential and non-residential uses with high demographic and constructive densities and promote the landscape and public space qualification in an articulated way to the collective public transport system.

In the stadium area there is ZOE (Special Occupancy Zone), portions of the territory destined to predominantly host activities that, due to their unique characteristics, such as airports, convention centers, large areas of leisure, recreation and sports, require special discipline of use and occupation of the soil.

In the area of the maneuvering yard there is a ZC (Zone of centrality), portions destined to promote activities typical of central areas or regional subcenters, in which it is intended to promote mainly non-residential uses, with average constructive and demographic densities.

An **incentive perimeter** was defined for the installation of non-residential uses, with a **maximum utilization coefficient of 4** and exemption from collection of Onerous Grant. Tangenciam the area of the station Axes of Structuring of the Urban Transformation Expected (3A).

The PDE, on map 9, establishes the priority actions in the collective public transport system, in the case of the bus corridors in the avenue of Contorno, in a parallel avenue to the Radial

East to be created, and in the Líder Avenue (south), as well as others corridors. These corridors were planned for the year 2016, but they were not initiated due to lack of availability of budgetary resources³⁶ and there is no forecast for the resumption of these projects.

[I3] Regional Plan of the Sub prefectures of 2016³⁷

Among several areas of action for the region of the sub-municipality of Itaquera is the perimeter of action number 132, called the **Institutional Pole**. It proposes as guidelines:

- to extend and qualify the accesses to the Corinthians-Itaquera Station, guaranteeing the safety of pedestrians and cyclists;
- to implement the Bus Terminal planned at the Institutional Pole;
- expand and connect the local cycling network;
- expand and qualify the crossing conditions in Radial Leste and José Pinheiros Borges avenues (Contorno avenue) in order to facilitate the integration and local mobility of pedestrians and cyclists with the various urban facilities in the perimeter;
- qualify public spaces through improvements in sidewalks and green areas; implement urban furniture and public lighting, ensuring connections between public transport networks and urban facilities.

It is noteworthy that in this perimeter PlanMob's proposal to run two bus corridors is inserted: one on Radial Leste Avenue, the other on Avenida Itaquera (next to the stadium) connecting to Avenida Águia de The Hague. It is also placed, as proposed by PDE 2014, a modal to be detailed that will cut the area in a north-south direction including the maneuvering yard.

³⁶ Available at: <<http://g1.globo.com/sao-paulo/noticia/2015/01/haddad-cancela-licitacoes-para-63-km-de-corredores-de-onibus.html>>. Access in 28 may. 2017.

³⁷ PMSP. **Draft document of the Regional Plans of the Sub prefectures - Eastern Macroregion 2**. Available at: <<http://gestaourbana.prefeitura.sp.gov.br/marco-regulatorio/planos-regionais/arquivos/>>. Access in 14 aug. 2017.

[I4] Consortium Urban Operation Rio Verde-Jacu

The Rio Verde-Jacu Consortium Urban Operation (RVJCUO) was created by Law 13872 of July 12, 2004, as part of a program aimed at expanding economic activities by creating conditions for attracting employment-generating investments and income and to encourage the installation of industrial activities and services in the region, aiming at improving the general conditions of the region and the resident population.

The size of the Rio Verde-Jacu Consortium Urban Operation is huge (**figure 20**). IM 2012, it was proposed to the station area the implantation of the Institutional Polo (**figure 21**). However, after 12 years of its creation, Law 16,492 of 2016 has repealed the law in full.



Figure 21
Masterplan developed for Institutional Polo provided in OUJP.
Source: PMSP, OUCRV: City of Opportunities, East Side Development, 2012, p.45.

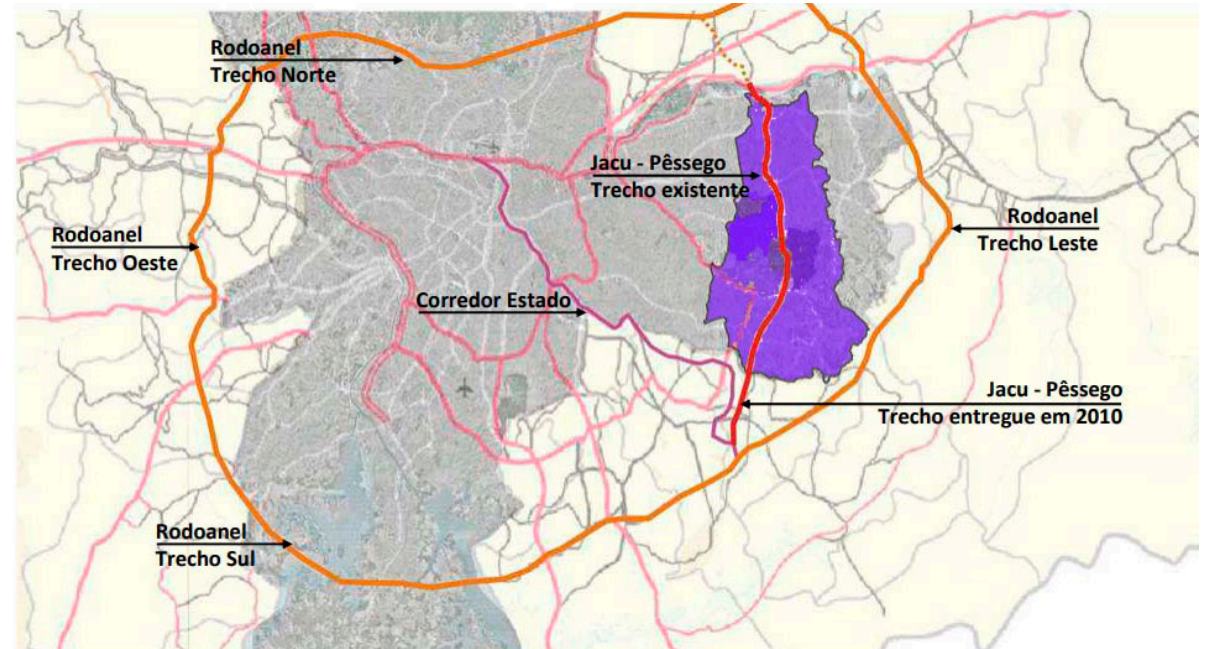


Figure 20
Perimeter of the (RVJCUO) (blue) in the context of the city, with emphasis on Jacu-Pêssego avenue (red) and metropolitan ring road - rodoanel (orange).
Source: PMSP, OUCRV: cidade de oportunidades, desenvolvimento da zona leste, 2012, p.45.

[15] Urbanistic project of the Itaquera Institutional Pole

The criterion used to select the station in the scope of the planning instrument is: the political motivation for the construction of a new soccer stadium in the city of São Paulo for the reception of the 2014 FIFA-CUP matches, is presented in public hearing in November 2011³⁸. The Development Plan for the Eastern Zone consisted of a partnership between the City of São Paulo and the State Government.

The East Zone Development Plan aimed to:

- Generation of jobs associated with the incentive law;
- Improvement of urban mobility and of the collecting road;
- Expansion of green areas incorporating existing ones;
- Improvement in drainage conditions;
- Encouragement to improve housing standards;
- Alteration in urban parameters favoring greater permeability;
- Incentives for the production of social housing and housing in the popular market;
- Integration of the Institutional and Technological Pole to the development of the Economic Pole.

The **Urban Plan of the Institutional Pole of Itaquera - PUPII**, developed by PMSP - SD-MU-ATAOU (Technical Assistance for Urban Operation), identified four areas in the empty area around Itaquera station (**figure 22**).

Gleba 1: (108.501 m²): area of the city hall, but ceded to the soccer team.

Gleba 2: (69.230m²): area of the city hall.

Gleba 3: (116.239m²): public area belonging to COHAB.

Gleba 4: (263.647m²): private area.

³⁸ Available at: <http://www.prefeitura.sp.gov.br/cidade/secretarias/obras/sp_obras/noticias/index.php?p=35386>. Access in 23 sep. 2015.



Figure 22
Glebas of the Itaquera Institutional Pole.
Source: SMDU/ATOU, 2012, p. 21.

A program was proposed for the implementation of public equipment through partnerships with public and private institutions. In addition to job creation, it was hoped to adopt the set of properties as a unit of the urban project, to adapt the road system (matching the regional / metropolitan scale elements with local), to explore the potential of the occupation program as an element of integration and interface with the environment (configuration, scale, uses and border design) and make Itaquera an Investment Attraction Pole.

This was done by the SMDU (2012), the proposal for a **Urban Plan of the Institutional Pole of Itaquera** (figure 23) with a wide intervention in the road, new buildings, squares and green areas. They also delimit within this Urban Plan the nucleus of the Urban Pole (figure 24), identified in the Plan with the numbers 1 (forum), 3 (FATEC / ETEC), 4 (SENAI), 5 (Technology Park), 6 (Convention Center and Events), 7 (Battalion of the Military Police) and 8 (Social Work / Assistance).

During the games, the areas dedicated to the construction of the Forum and Convention Center were intended for hospitality and FIFA.



Figure 23
 Urbanistic project of the Itaquera Institutional Pole.
 Source: SMDU/ATOU, 2012, p. 26.

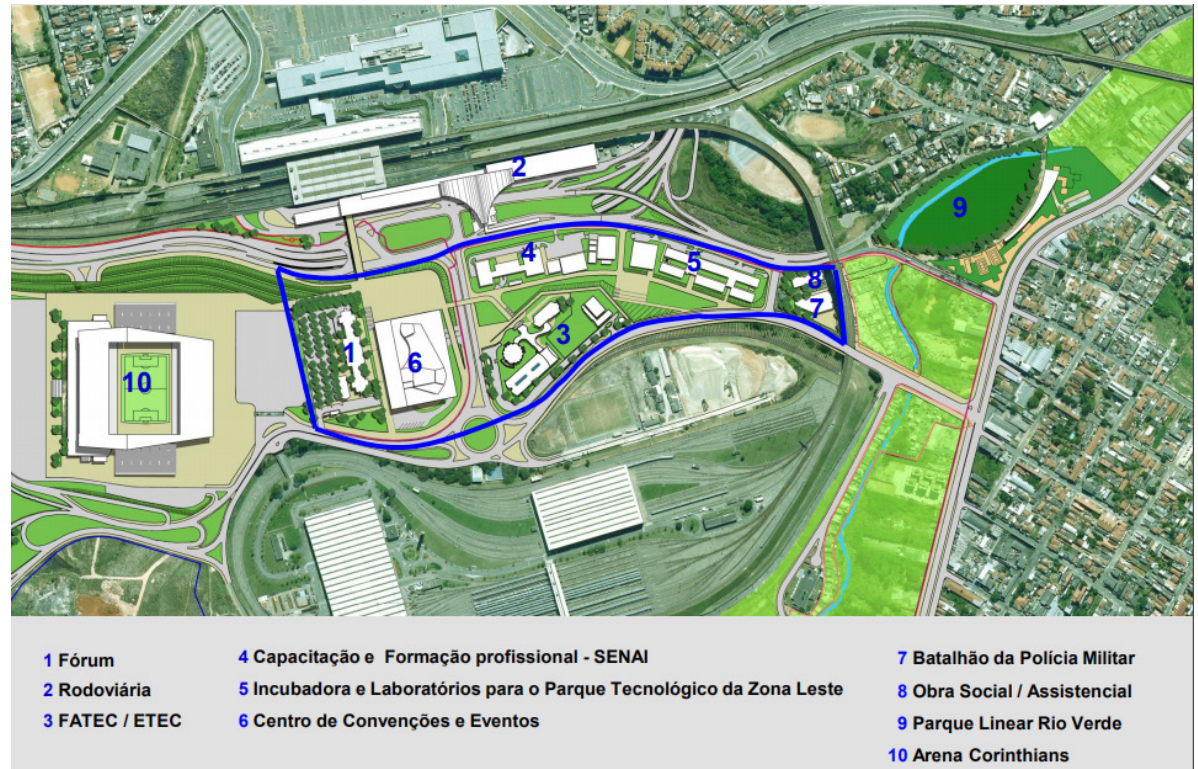
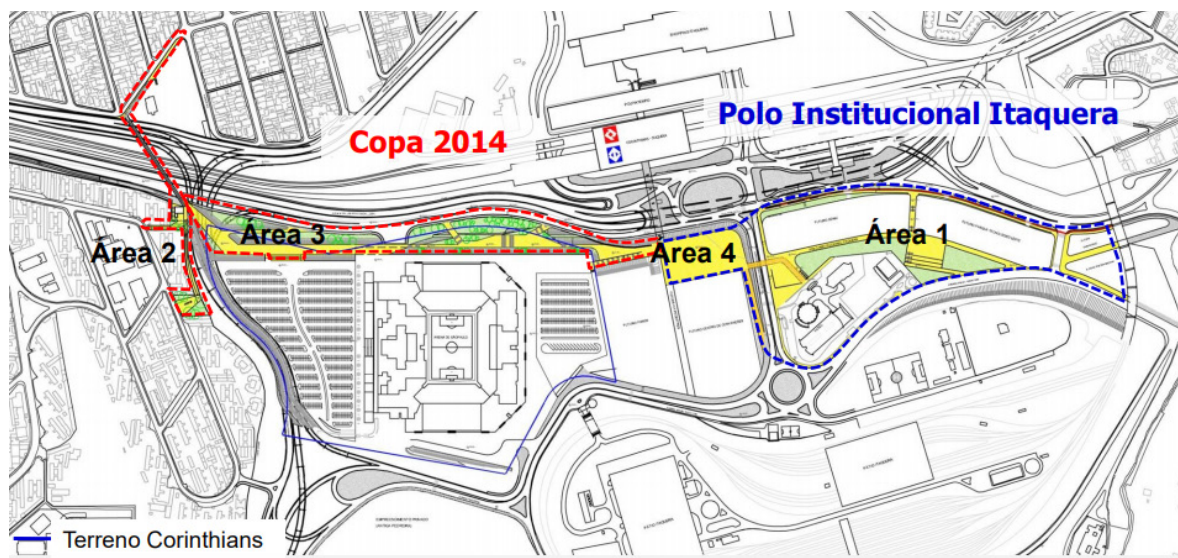


Figure 24
Equipment provided in the core of the Itaquera Institutional Pole.
Source: SMDU/ATOU, 2012, p. 26.

Of the 10 proposals foreseen in the **Institutional Pole of Itaquera**, **only three were executed**: 1. Stadium; 2. Faculty of Technology (FATEC) and Technical School (ETEC); 3. Linear Park of Rio Verde (partially implanted). On an on-site visit, it was observed that a Basic Health Unit – [Unidade Básica de Saúde- UBS] was built at the site of the Military Police Battalion.

The design of the developed public spaces is shown in **figure 25**, which will represent the design of significant urban waste, especially in the areas identified as number 2 and 3 (they will be better visualized in the analysis of the P4- local territory indicator).



Total = 87.380 m ² de ESPAÇOS PÚBLICOS projetados	
Área 1: 30.110 m² Bulevar Central e Bulevar Inferior	Área 3: 37.380 m² Talude e passeio em frente à Arena Corinthians
Área 2: 4.720 m² Espaços públicos complementares à passarela sobre a Radial Leste	Área 4: 15.180 m² Praça junto a passarela de acesso a estação Itaquera

Figure 25
 PUPH projected public / residual areas.
 Source: SMDU/ATOU, 2012, p. 50.

On the other hand, interventions in the road system were largely implemented when comparing the proposed road in 2008 (figure 26) with the one executed (figure 27).



1. Ligação Av. Águia de Haia – Av. Itaquera (projeto SIURB)
2. Ligação Av. Itaquera – Av. Miguel Inácio Curi (empreendimento privado)
3. Nova via de conexão Norte-Sul (diretriz do PRE Itaquera)
4. Adequações na Av. Radial Leste e transposição em desnível da Av. Adervan Machado
5. Acessibilidade geral e fluxo viário interno da Rodoviária
6. Alargamento da Av. Radial Leste
7. Binário da Av. Itaquera

Figure 26
 Road system planned for 2008.
 Source: SMDU/ATOU, 2012, p. 29.

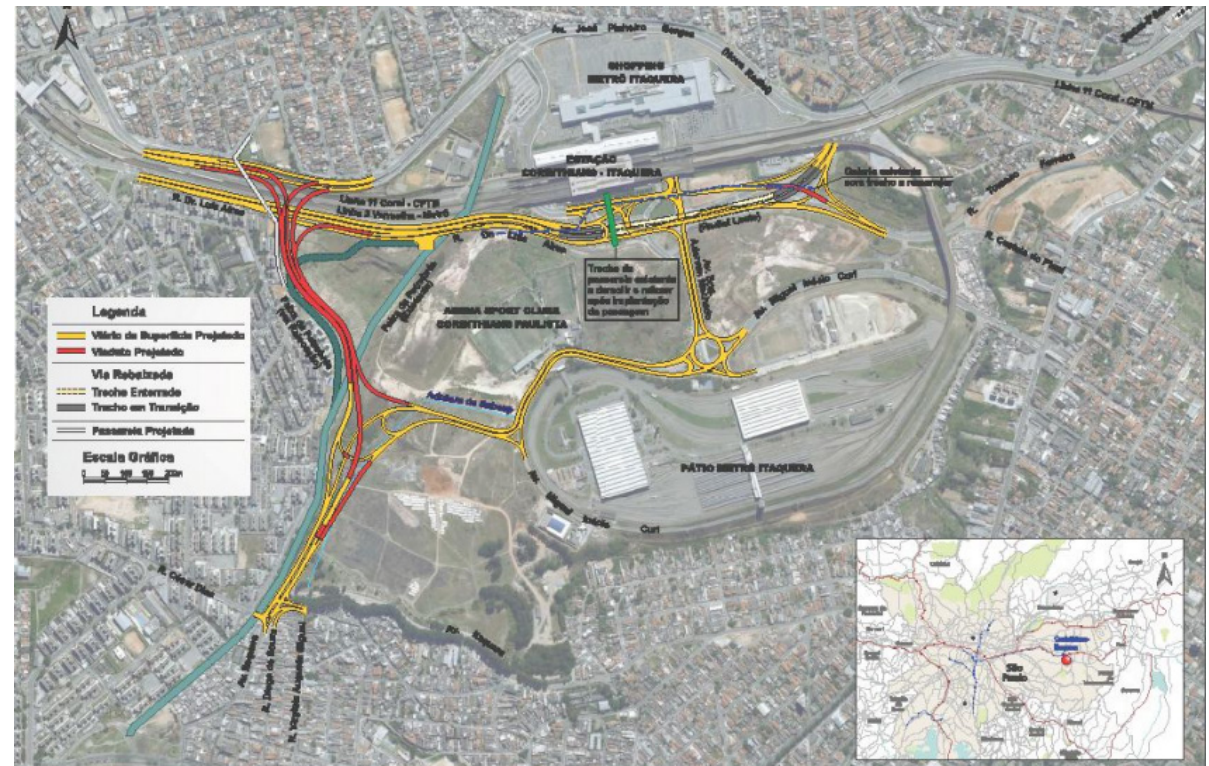


Figure 27
Road system implanted.
Source: SMDU/ATOU, 2012, p. 31.

It is important to point out some data referring to the Itaquera Bus Terminal, whose projects and works were under the management of SP Obras and which were also subject to expansion and reform.

The terminal interventions were divided into two phases. The first phase was aimed at expanding and upgrading the existing Itaquera Terminal³⁹, which was completed in June 2014, just days before the official opening of the FIFA Games. The second phase is for the construc-

³⁹ Expansion of the existing Terminal in 8,000 m², including two new terminal platforms, part of the remodeling of the surrounding area, through the duplication of the side road that is next to Shopping Itaquera, the new access to one of the internal ways of the place next to Platform 1, construction of a new administrative building with 960 m², and implementation of stairs and elevators to access the Terminal. PAC (Growth Acceleration Program) resources were used: R\$ 24 million; Start: 10/30/2013; End: 06/06/2014. Source SP Obras, 2017. Available at: <http://www.prefeitura.sp.gov.br/cidade/secretarias/obras/sp_obras/mobilidade_urbana/index.php?p=157514>. Access in 28 jun. 2017.

tion of the new Itaquera Terminal⁴⁰, approximately 40 thousand square meters (figure 28), and that it should support to the Eastern Corridors Radial 1, 2 and 3, Itaquera Corridor and future Eastern Perimeter Corridors Itaim / São Mateus and Jacu-Pêssego (figure 29), but aborted in 2014 for lack of financial resources. Regarding the construction of the Itaquera Terminal, in 2017, there is no progress in this work, which is still considered to be in progress.

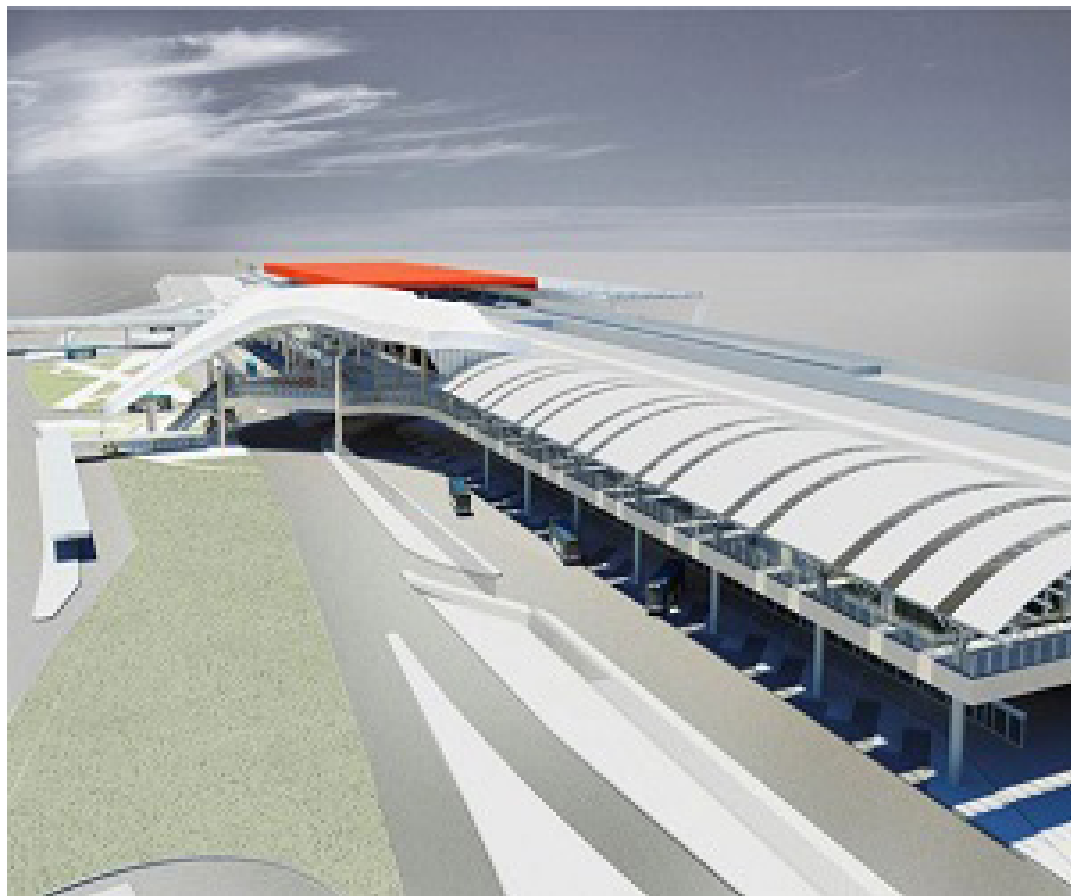


Figure 28

Perspective of the new urban and road terminal of Itaquera.

Source: City Hall, 2017. Available at: <http://www.prefeitura.sp.gov.br/cidade/secretarias/obras/sp_obras/mobilidade_urbana/index.php?p=157514>. Acesso em 28 jun. 2017.

⁴⁰ Construction of a new Terminal, of approximately 40 thousand m², complementary and neighbor to the existing Terminal that was expanded. This new Terminal will be interconnected to the old one through the construction of a great catwalk, which will connect the stations of the Metro and CPTM and Arena Corinthians. It should meet the demand for the Itaquera Institutional Pole and the transfers to the high capacity lines of the Subway - Line 3 Red (Corinthians - Itaquera) and CPTM - line 11 Coral. The resources come from the PAC (Growth Acceleration Program): R\$ 139 million. Source: SP Obras, 2017.



Figure 29
Bus corridors planned in the region
of Itaquera.
Source: City Hall, 2017.

In the light of the materialization of the projects carried out in the station area, especially on the opposite side of the Radial avenue, there are extensive functionalist investments in the road, large projected residual spaces and isolated interventions of buildings such as the Estádio e FATEC / ETEC and of the real estate valuation of the region⁴¹.

⁴¹ Available at: <<http://sao-paulo.estadao.com.br/noticias/geral,legado-da-copa-em-itaquera-fica-no-papel,1704728>>. Access on 28 may 2014.

[16] Others instruments

According to researcher Oliveira⁴², the Selective Incentives Program for the eastern area of the municipality, through Law 13,833 / 04, provided for tax incentives for business investments involving the generation and maintenance of local jobs. After some changes (Law 14,654 of 2007 and Law 14888 of 2009), Law 15,931 of 2011 was elaborated, which provides for the concession of tax incentives (IPTU, ITBI, ISS) to established service providers or that come to to be established in the East Zone of the Municipality of São Paulo, with the purpose of promoting and fostering the adequate development of this area, encouraging the installation of labor-intensive enterprises and providing the generation of motivated jobs to build a stadium in the East Zone of the Municipality.

Finally, Itaquera is not part of the PMI (Procedure for Manifestation of Interest) package for the concession of Terminals⁴³, launched by the city in 2017, since it is operated by the State Government and not by the Municipality.

7.2 Station scale



At that moment the approximation of the local scale will finally take place, where the spatial dilemmas between the node and the place in the Itaquera station area will occur.

Given the complexity and dimensions of the territory under study, especially the existing spatial fragments, the local analysis was chosen to subdivide it into three sectors (north, transition and south), which are separated in different urban scenarios, detailed in the list below and in **figure 30**.

42 OLIVEIRA, I. F. B. **Desenvolvimento Econômico e Socioterritorial na Subprefeitura de Itaquera**: Contradictions and challenges between the place and the metropolitan in XVII Enanpur, São Paulo, 2017.

43 Available at: <http://www.prefeitura.sp.gov.br/cidade/secretarias/desestatizacao/projetos/terminais_de_onibus_urbano/index.php?p=239129>. Access in 10 dec. 2017.



Figure 30
Location of the northern, transition and south sectors in the station area of Itaquera
Source: PMSP, MDC (2015). Our treatment, 2017.

The **northern sector** encompasses the connection of the area of the station by the avenue of the Contorno with the neighborhood; and the existing spaces in the surroundings of the *shopping mall*, Poupatempo and the main access to the station.

The **transition sector** includes the **area between** the northern and southern territories, which is subdivided into: 1. Longitudinal access; 2. Transverse crossings (footbridges and footbridges); and 3. Av. Radial Leste.

The **southern sector** encompasses the south square of access to the station, the spaces around FATEC, stadium and maneuvering yard.

Northern Sector	Transition Sector	South Sector
1. Contorno Avenue and neighborhood	4. Longitudinal accesses	7. Station Square – South
2. Shopping Mall and Poupatempo	5. Cross traverse	8. Fatec Square
3. Station Area	6. East Radial Avenue	9. Stadium Square
		10. Playground

Table 1
Sectors of Itaquera territory.
Fonte: author, 2017.

7.2.1 [N] Access node: microaccessibility in the station area

No âmbito daAs a transport node (N) within an access node, it will be effectively identified how the **microaccessibility** to the station occurs by all the available modes, as well as its articulation with the other transport systems represented by figures and diagrams that follow.

Figure 31 summarizes the location of all modal access to the Corinthians-Itaquera station.

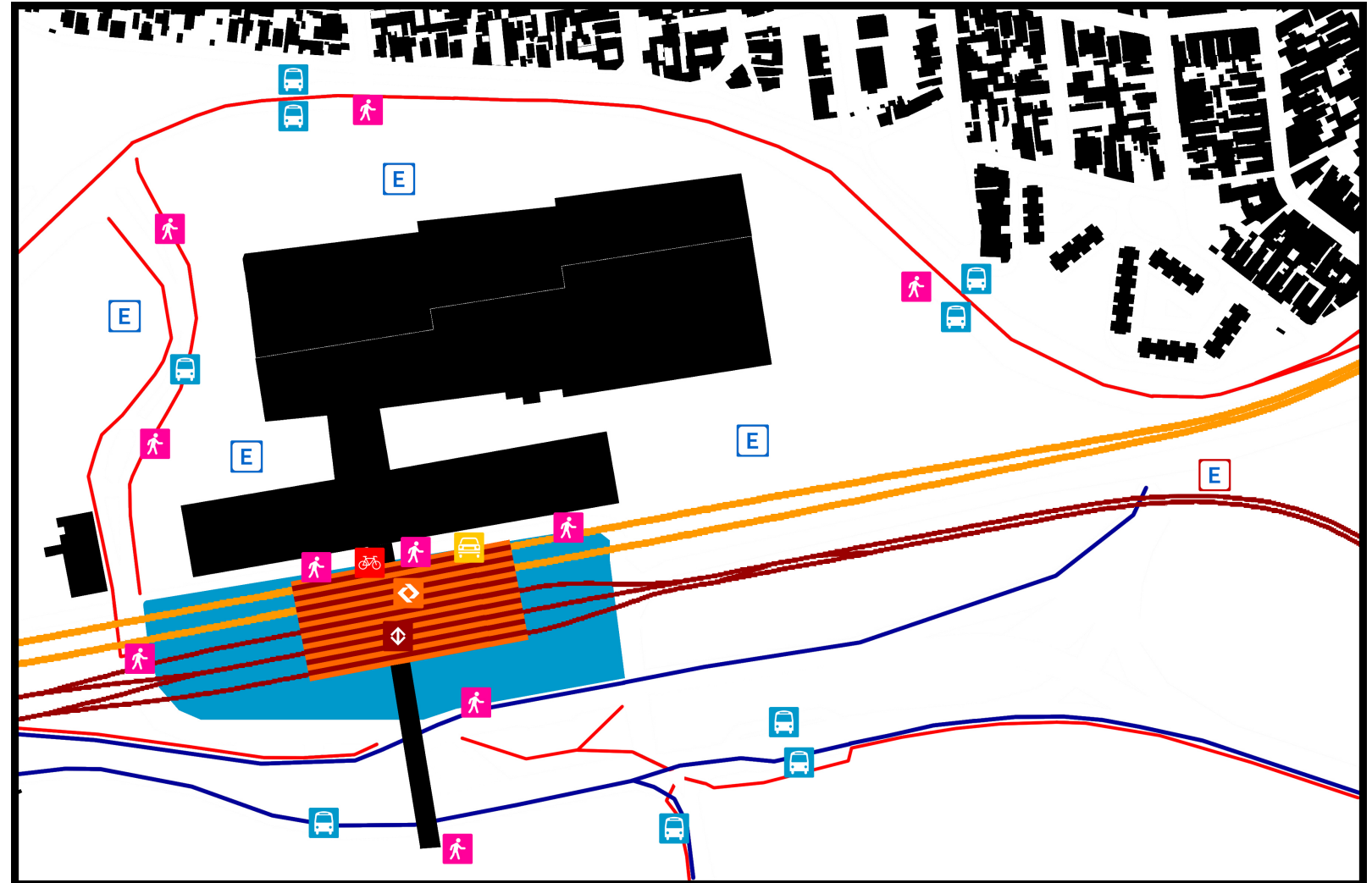
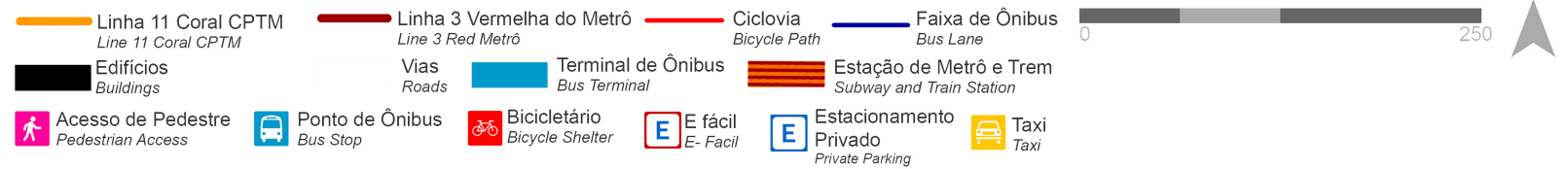


Figure 31
 Microaccessibility to the station
 Itaquera by all modalities.
 Source: PMSP, MDC (2015). Our
 treatment, 2017.



Microaccessibility to Corinthians-Itaquera station - [N6] Pedestrian

The pedestrian route to access the station can occur in the following ways:

Through the **northern sector**, it is necessary to travel a long and extensive way to directly access the station. The sequential route is to cross Contorno avenue¹ or Sidney A. de Moraes avenue and select only one of the four pedestrian gates to cross the existing fence on the perimeter of the station, then go through the car park (or choose passage through the mall), then cross the Poupatempo building to finally access the subway and train station.

It is also possible to access the station by a residual street between the Poupatempo building and the station (Salim Jorge street), **transition sector**.

Through the **southern sector** the access takes place exclusively by a small square that will give access by the catwalk that crosses the expressway and dies in the mezzanine of access to the station. You must cross the expressway over the surface, overpass railings that border the terminal, cross the bus terminal (Level 769.81m), climb stairs and access the access mezzanine.



Figure 32
Pedestrian access to the station by the northern sector: obligatory to cross gates and a large open parking.
Source: author, 2017.



¹ Current name is José Pinheiro Borges Avenue, but before the arrival of the subway and the “redevelopment” of the area was called Contorno Avenue. As the name outline itself indicates spatially better its location. The same happens with the Radial East avenue. In the passage under study his name is Dr. Luís Ayres. However, since the axis of Radial Leste is strong up to the area of Itaquera, it was chosen to maintain the name that best translates its reality into the identification of these routes.

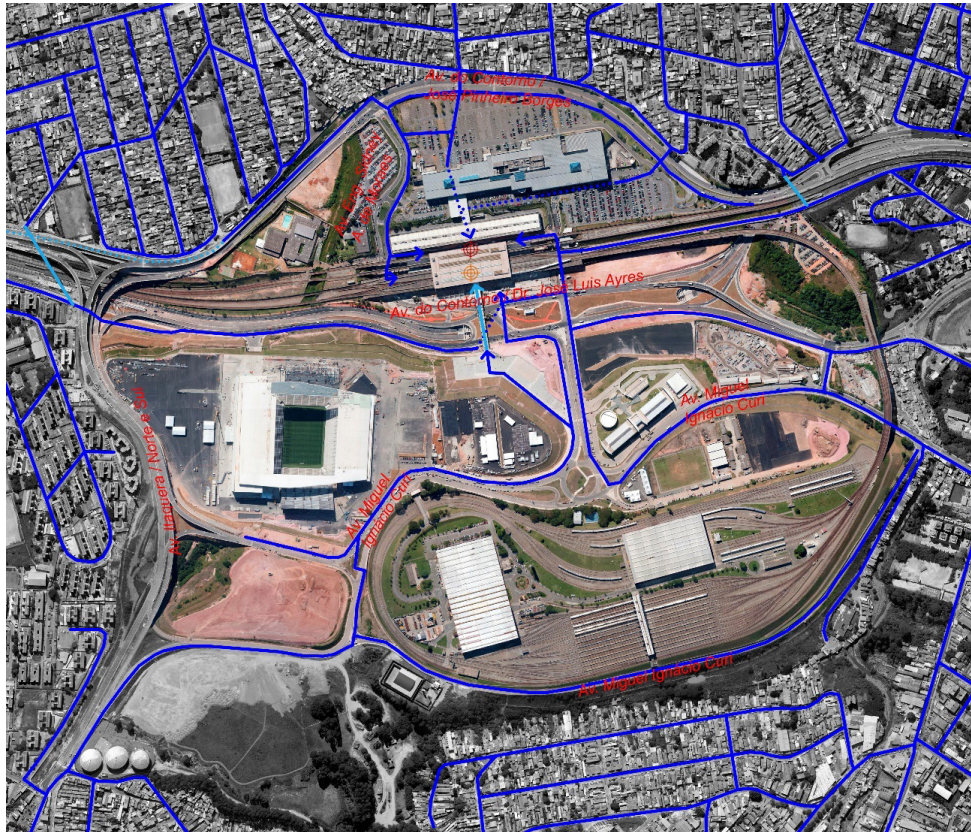


Figure 33
Square and entrance for footbridge access to the subway Itaquera through the southern territory.
Source: author, 2017.



Figure 34
Narrow sidewalks of access to the Itaquera station from those coming from the Arthur Alvim station (west).
Source: author, 2017.

Microaccessibility to Corinthians-Itaquera station - [N6] Pedestrian







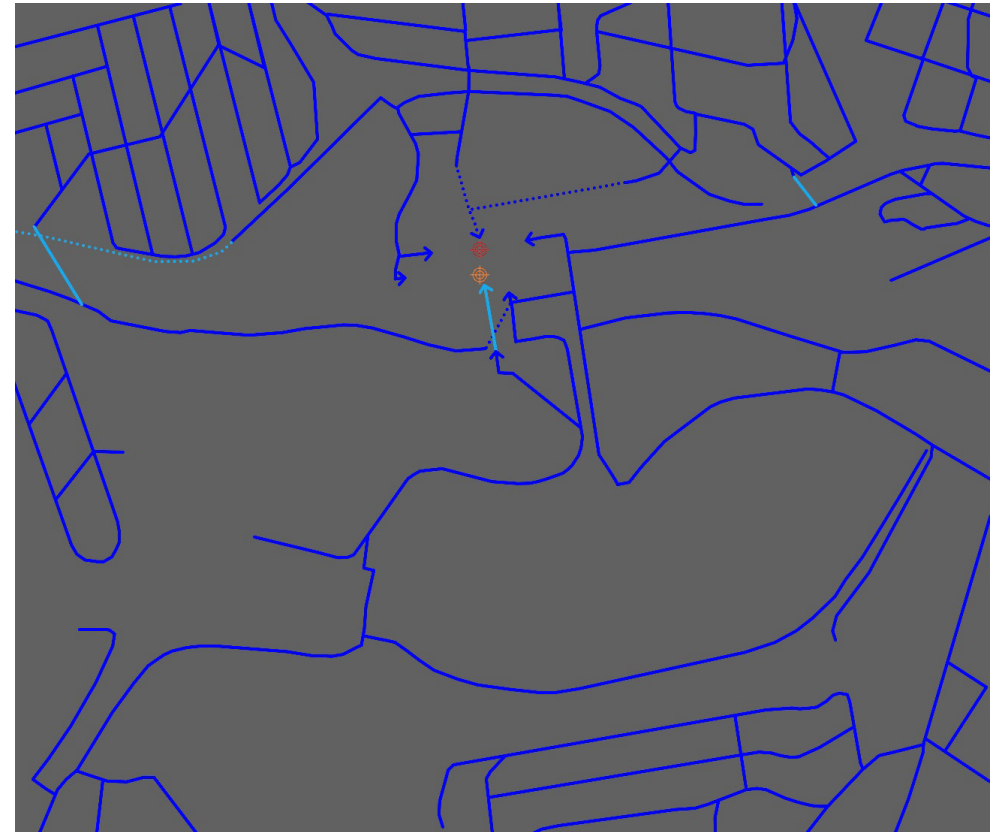
-  Estação do Metrô Corinthians - Itaquera
Corinthians - Itaquera Subway Station
-  Percurso Pedonal - Calçadas
Pedestrian Routes - Sidewalks
-  Percurso Pedonal - Passarela
Pedestrian Routes - Footbridge
-  Percurso Pedonal - Passagem Viaduto
Pedestrian Routes - Bridge Path

Figure 35
Pedestrian microaccessibility map to Itaquera station
Source: Google maps. Our treatment, 2017.





-  Estação do Metrô Corinthians - Itaquera
Corinthians - Itaquera Subway Station
-  Percurso Pedonal - Calçadas
Pedestrian Routes - Sidewalks
-  Percurso Pedonal - Passarela
Pedestrian Routes - Footbridge
-  Percurso Pedonal - Passagem Viaduto
Pedestrian Routes - Bridge Path

Figure 36
Diagram of the pedestrian microaccessibility to Itaquera station
Source: author, 2017.

Microaccessibility to Corinthians-Itaquera station - [N7] Subway

Access to the subway station is via the mezzanine, level 768,17¹. There is a large central corridor of circulation in the station that connects the catwalk (south) to the corridor of the Poupatempo (north). There will be locks on both sides of this corridor. After paying the fare, it will be necessary to climb one more floor to reach the platform of the boarding and disembarking platform at level 775.95 (figure 38).

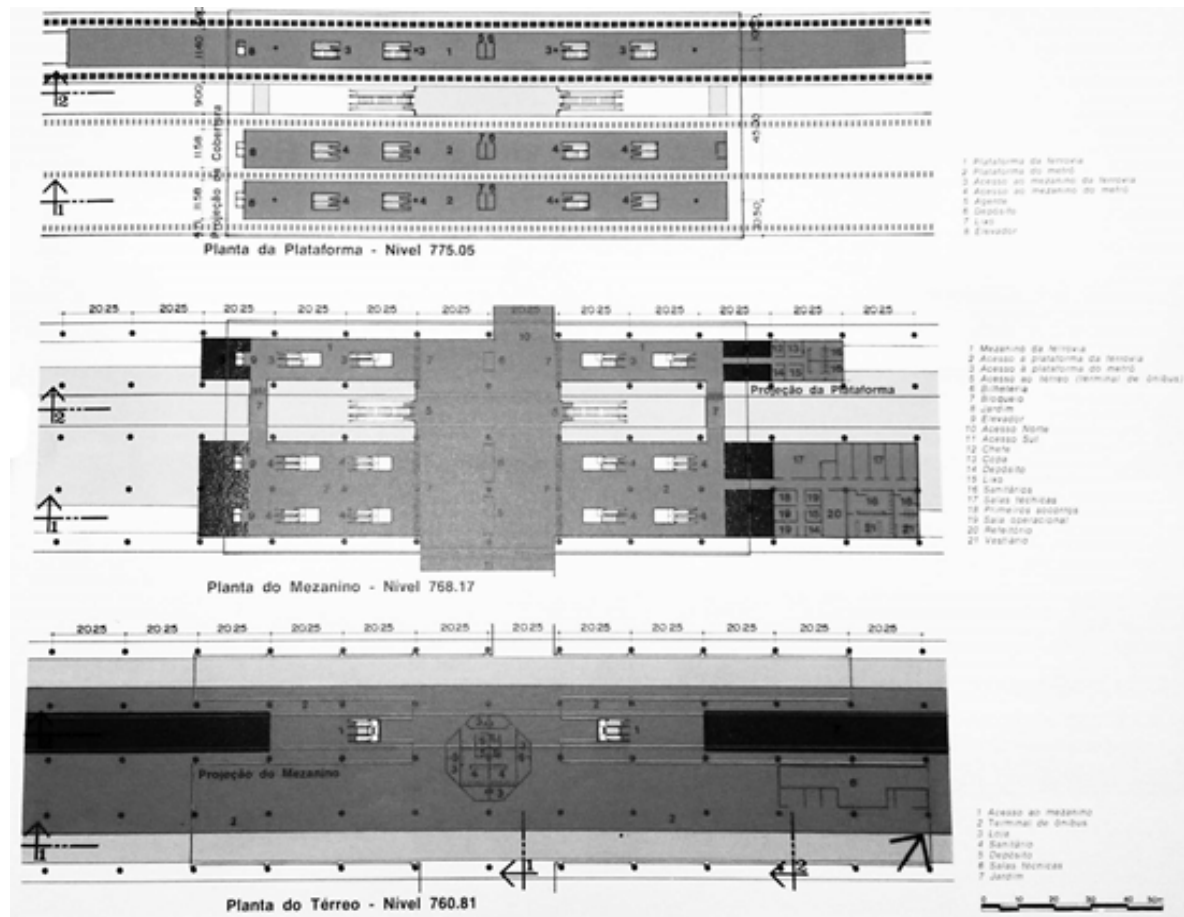


Figure 37
Intermediate floor (mezzanine) of the subway station Itaquera.
Source: author, 2017.

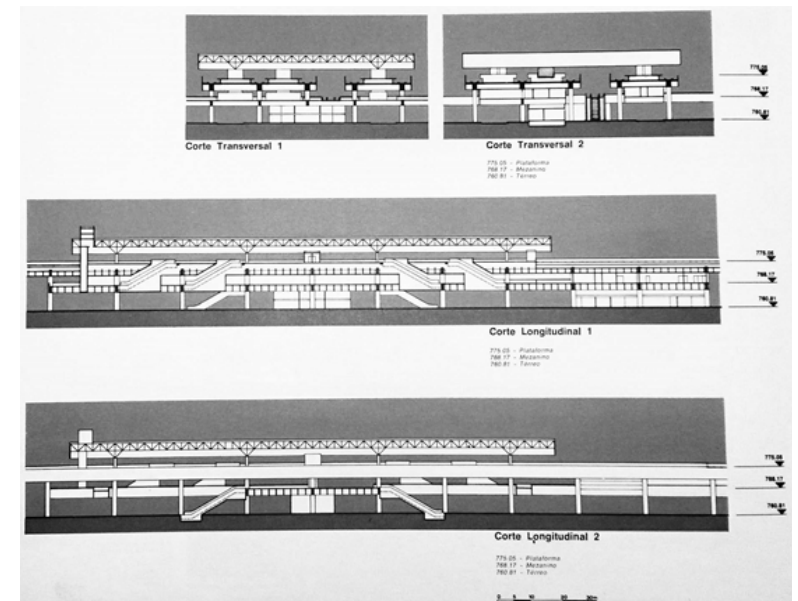


Figure 38 (left)
Plants of Itaquera station.
Source: METRÔ. Leste-Oeste: em busca de uma solução integrada. Sem editora, 1979, p. 187.

Figure 39 (above)
Section of Itaquera station.
Source: METRÔ. Leste-Oeste: em busca de uma solução integrada. Sem editora, 1979, p. 188.

¹ METRÔ. Leste-Oeste: em busca de uma solução integrada. Sem editora, 1979.

Microaccessibility to Corinthians-Itaquera station - [N7] Subway

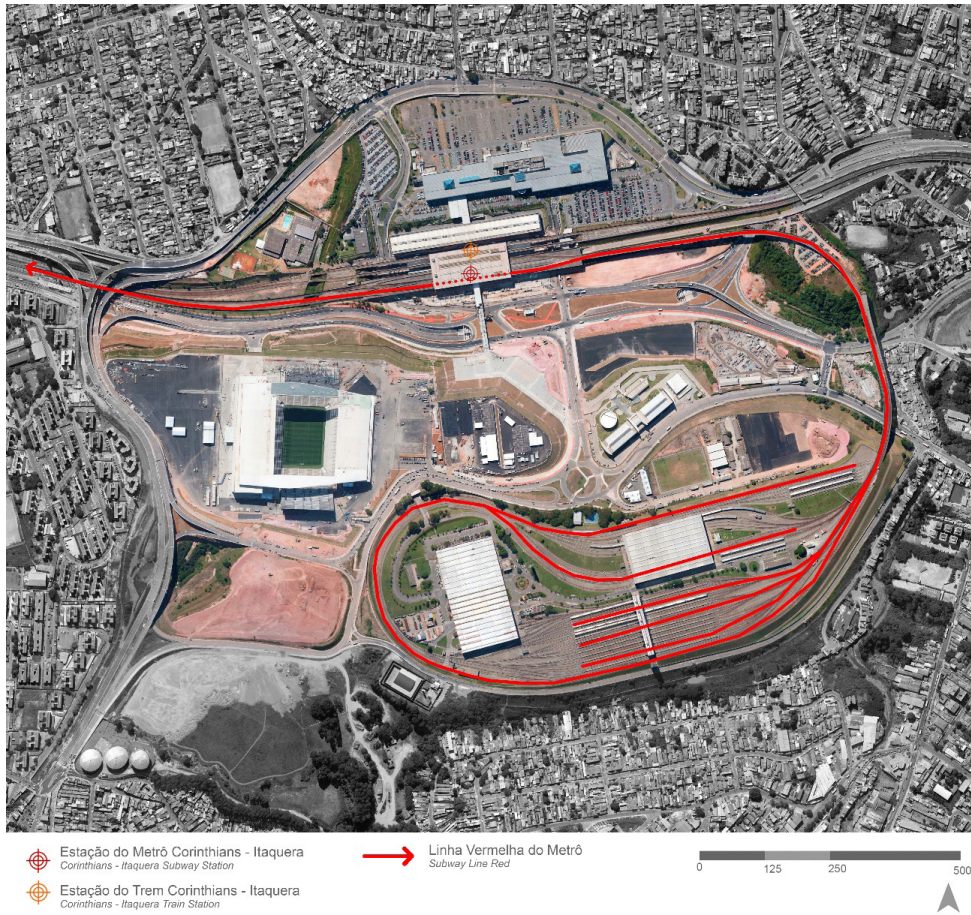


Figure 40
Location map of Corinthians-Itaquera metro station
Source: Google maps. Our treatment, 2017.



Figure 41
Location diagram of Corinthians-Itaquera subway station
Source: author, 2017.

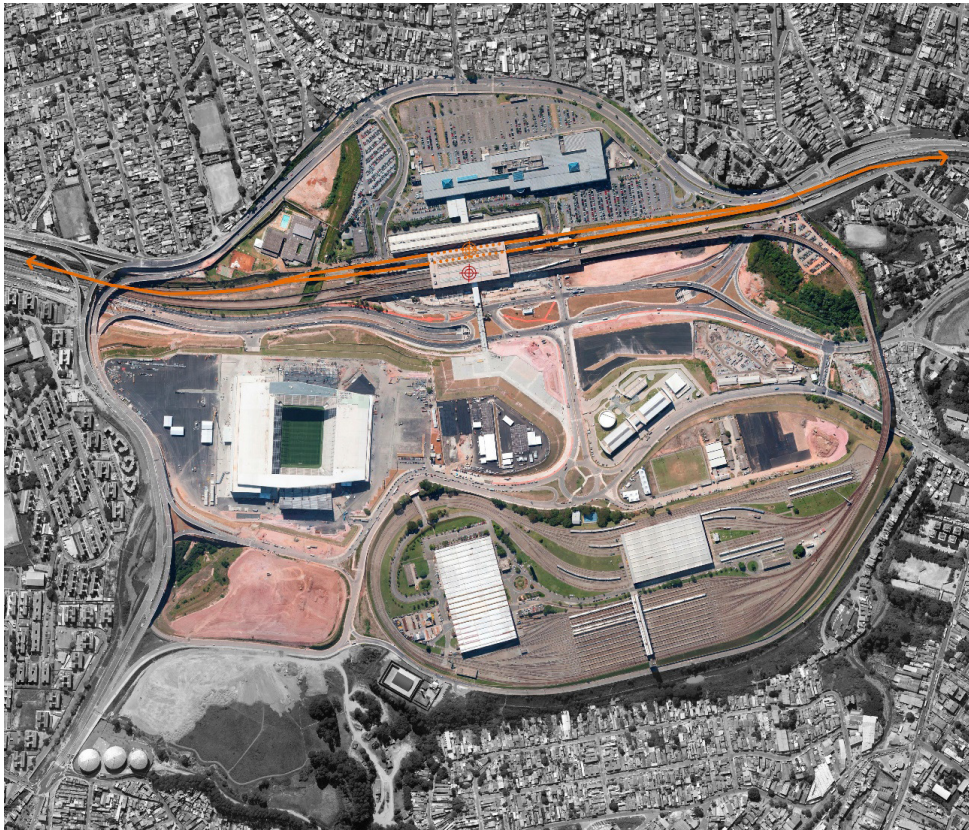
Microaccessibility to Corinthians-Itaquera station - [N8] Train



Access to the platform for boarding and disembarking at the train station is located in the same subway building, on an exclusive boarding and landing platform, parallel to the subway platform.



Figure 42
Access to the turnstiles (blocks)
of access to the train tracks of the
CPTM through the mezzanine of
the subway.
Source: author, 2017.

Microaccessibility to Corinthians-Itaquera station - [N8] Train

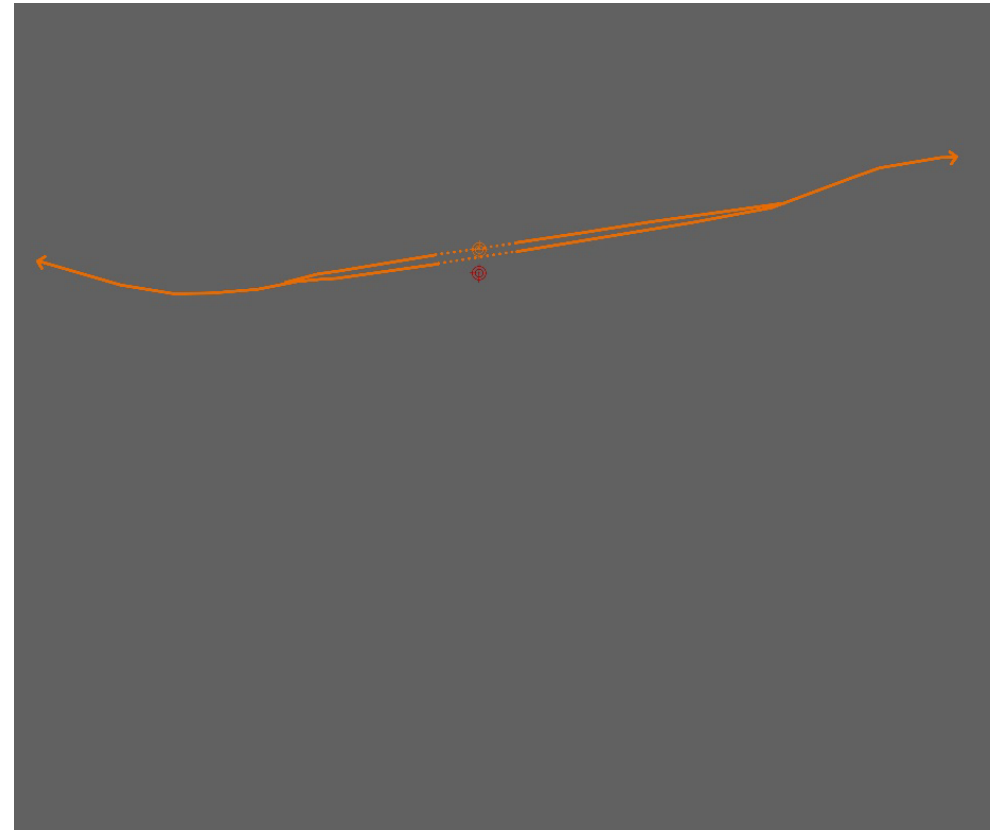




 Estação do Metrô Corinthians - Itaquera
 Corinthians - Itaquera Subway Station
  Linha Coral da CPTM
 CPTM Line Coral

0 125 250 500



Figure 43
 Pedestrian microaccessibility map
 to Itaquera station
 Source: Google maps. Our treat-
 ment, 2017.



 Estação do Metrô Corinthians - Itaquera
 Corinthians - Itaquera Subway Station
  Linha Coral da CPTM
 CPTM Line Coral

0 125 250 500



Figure 44
 Diagram of the microaccessibility
 of the train to Itaquera station
 Source: author, 2017.

Microaccessibility to Corinthians-Itaquera station - [N9] Bus

It is possible to embark / disembark inside the bus terminal (Itaquera Subway Terminal) as well as in existing points along the East Radial Avenue in specific bays.

Those who disembark at the eastbound bus stop under the subway catwalk and head for the terminal make it out of the pedestrian crossing to cross the road. In theory, access the catwalk, but use the most comfortable and fastest route on the surface, and not necessarily safer (catwalk).



Figure 46
Crossing the Radial after disembarking at the bus stop (southern sector).
Source: author, 2017.



Figure 45
Bus stop heading downtown and bay for landing / boarding on the avenue. Radial Leste; gate access to the bus terminal on Avenida Radial Leste.
Source: author, 2017.



Figure 47
Connection ladder between bus terminal and station mezzanine.
Source: author, 2017.

Microaccessibility to Corinthians-Itaquera station - [N9] Bus

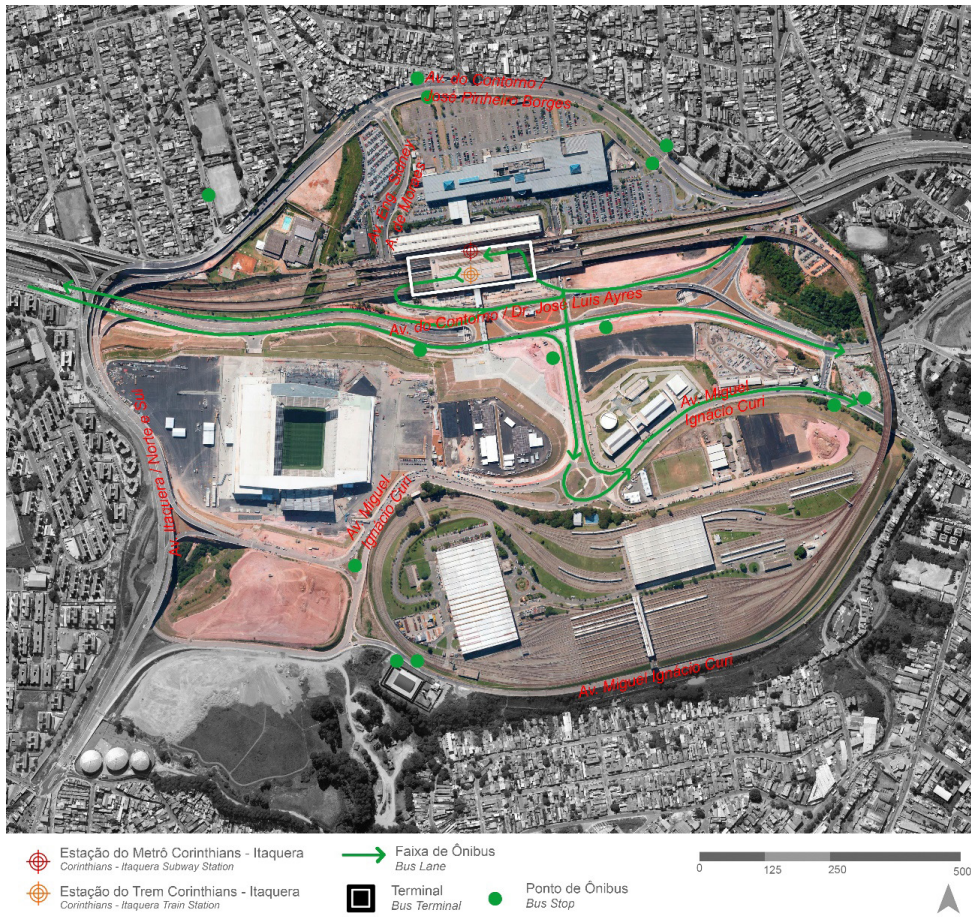


Figure 48
 Microaccessibility map by bus to Itaquera station
 Source: Google maps. Our treatment, 2017.



Figure 49
 Microaccessibility diagram by bus to Itaquera station
 Source: author, 2017.

Microaccessibility to Corinthians-Itaquera station - [N10] Bicycle Rack

There is a bike rack on the ground floor, along with the bus terminal, located next to the Poupatempo. The existing bike rack is small and does not work 24 hours, as it follows the hours of operation of the subway.



Figure 50
Subway bicycles located in the bus terminal.
Source: author, 2017

Microaccessibility to Corinthians-Itaquera station - [N11] Parking - Individual motorized

Access to the individual motorized vehicle can take place along the Avenida Radial Leste, but without the possibility of landing / embarking a safe ride through a specific bay, for example.

In the northern territory, it is possible to access internal tracks of the site and to make the contour in the station. By the avenue of the Contorno is also possible the access for hitchhiking, but without specific bay for landing / boarding.

There is an E-easy east of the station, but at a distance of approximately one kilometer from the station entrance. It is so surprising such a situation that there is a van that transports the passengers between the integrated parking every 15 minutes. Access to this van is under the train tracks, east of the station.

It is possible to park in several private areas such as the one under Poupatempo, private parking of the mall and in empty areas around the station area. Few spaces are available for public parking.



Figure 54
E-easy parking at a distance of approximately 1 kilometer from the station.
Source: author, 2017

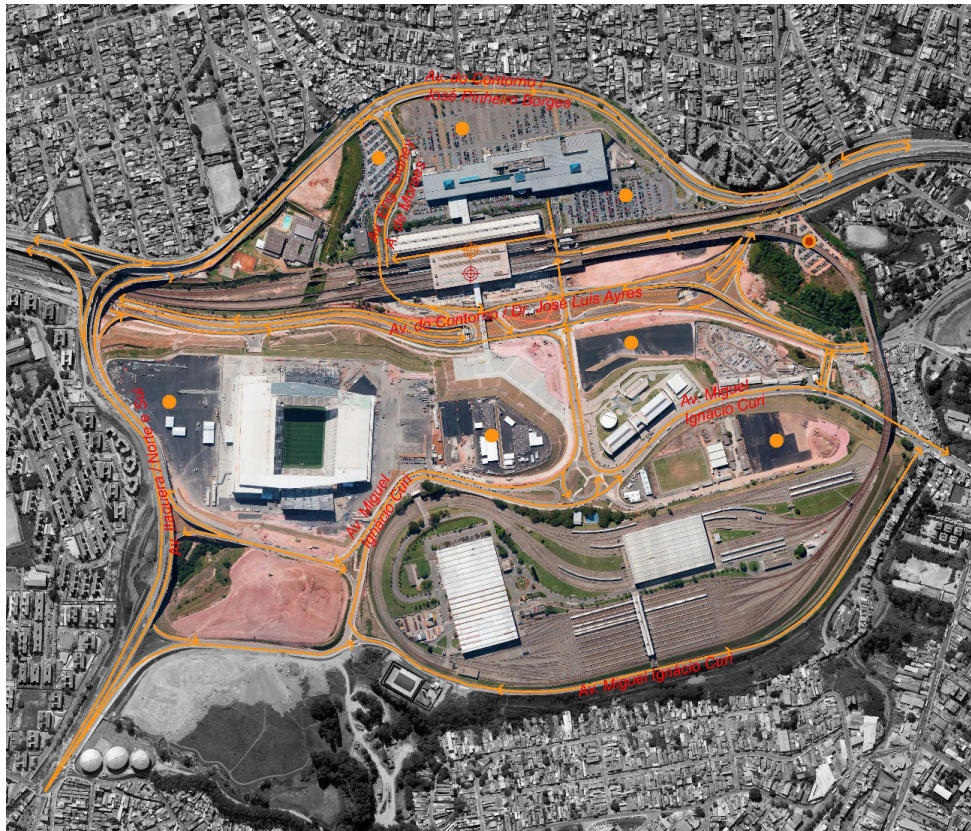


Figure 55
Private parking in the surrounding western sector; under building Poupatempo and shopping.
Source: author, 2017.



Figure 53
Van waiting point to make intermodality between station and E-parking easy (public).
Source: author, 2017

Microaccessibility to Corinthians-Itaquera station - [N11] Parking - Individual motorized



Estação do Metrô Corinthians - Itaquera
 Corinthians - Itaquera Subway Station
 Estação do Trem Corinthians - Itaquera
 Corinthians - Itaquera Train Station
 Percurso motorizado Individual -
 Ruas e Avenidas
 Motorized Individual Transport - Streets and Avenues
 Estacionamento Privado
 Private Parking
 E-Fácil
 E-fácil

Figure 56
 Microaccessibility map by motorized individual to Itaquera station
 Source: Google maps. Our treatment, 2017.



Estação do Metrô Corinthians - Itaquera
 Corinthians - Itaquera Subway Station
 Estação do Trem Corinthians - Itaquera
 Corinthians - Itaquera Train Station
 Percurso motorizado Individual -
 Ruas e Avenidas
 Motorized Individual Transport - Streets and Avenues
 Estacionamento Privado
 Private Parking
 E-Fácil
 E-fácil

Figure 57
 Diagram of microaccessibility by motorized individual to Itaquera station
 Source: author, 2017.

Microaccessibility to Corinthians-Itaquera station - [N12] Taxi rank

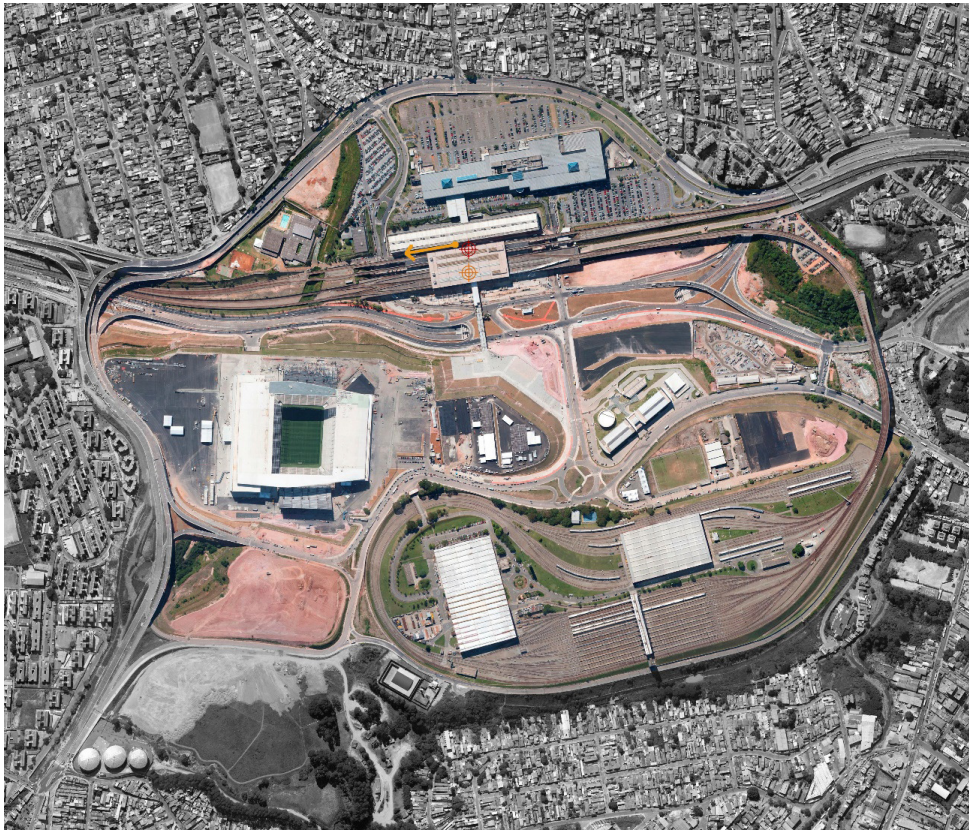
There is only one taxi rank situated between the station building and private parking of the Poupatempo in Salim Jorge Street.



Figure 58

Taxi parking on the street corridor between station and Poupatempo. Source: author, 2017.

Microaccessibility to Corinthians-Itaquera station - [N12] Taxi rank



+
 Estação do Metrô Corinthians - Itaquera
 Corinthians - Itaquera Subway Station

+
 Estação do Trem Corinthians - Itaquera
 Corinthians - Itaquera Train Station

→
 Início do Percurso - Rua
 Route Start - Street

+
 Ponto de Taxi - Calçada
 Taxi Shed - Sidewalk

0 125 250 500

Figure 59
Microaccessibility map by motorized individual to Itaquera station
Source: Google maps. Our treatment, 2017.



+
 Estação do Metrô Corinthians - Itaquera
 Corinthians - Itaquera Subway Station

+
 Estação do Trem Corinthians - Itaquera
 Corinthians - Itaquera Train Station

→
 Início do Percurso - Rua
 Route Start - Street

+
 Ponto de Taxi - Calçada
 Taxi Shed - Sidewalk

0 125 250 500

Figure 60
Diagram of microaccessibility by motorized individual to Itaquera station
Source: author, 2017.

7.2.2 [L] Place in the territory of the station area

The purpose of this study is to identify the use of urban space, spatial integrations of the station with the local territory, the relation of the main buildings with this space, the environmental perception of this urban complex. It aims to analyze if the station area constitutes a place in the territory with intensification, vitality, urbanity, and urban diversity that overcomes the spatial ambivalences between the node and the place or, on the contrary, reinforces them.

The following variables will be analyzed in the station scale: Therefore, the analysis of the place in the territory of the area of the station will pass through the following:

[P3] Buildings;

[P4] Local territory;

[P5] Environmental Perception;

[P6] Urban intensification.

[P3 + I7] Buildings: the architectural design as an instrument of planning

The objective here is to raise the architectural program, the relation of the facades of the main buildings and the mode of transition between public and private domain with the station area.

The architecture of the station area in the **northern territory** is highlighted by the closed volume of the mall, by the visual strangulation of the Poupatempo building, and by the absence of an architecture of the station as an architectural reference and not only functional. The architecture of the station area in the **southern territory** is clearly focused on the architecture of the Corinthians Arena, which prevails in the urban landscape, by the presence of the FATEC / ETEC schools, and by the extensive maneuvering yard area where some sheds are inserted.

In spite of the diversity of the program, the volume of built-up areas and the collective character of its uses, it will be observed that all buildings have access fences in their perimeter, delimiting the limits of their territory and stipulating the absence in the transition between the public and private domain.

It should be noted, however, even the Shopping mall as well Poupatempo allow the permeability through its buildings for pedestrians access to the station.

The following figures indicate the main buildings and their respective facades facing the public space.

Shopping Metrô Itaquera

Shopping Metrô Itaquera (**figure 61**), as a large closed box with a current gross floor area of 60,000 m², was inaugurated in November 2007. An expansion of 68,000 m² is planned, going from 147 stores, for the addition of another 153 stores, to be inaugurated in October 2017.

The author of the architecture project for both phases was Botti & Rubin. The company that built both phases was Racional Engenharia. It is located adjacent to the Poupatempo building, surrounded by open parking lots and fences in its perimeter. There are currently 1,700 parking spaces and there are plans to expand to 3,200 parking spaces⁴⁴. The mall's area of implantation belongs to the Metro, but is granted to third parties for the administration of the private parking and the mall⁴⁵.

Figure 61
Shopping Metrô Itaquera
Source: author, 2017.



North facade of the mall and its expansion in 2017.



Facade south shopping and one of the entrances to cars.

Poupatempo Itaquera

Poupatempo Itaquera (**figure 62**), the highest among the 72 of the program in the State of São Paulo, was designed by renowned architect Paulo Mendes da Rocha in partnership with MMBB Arquitetos Associados. Having been inaugurated in 2000 with 300 meters of extension by

⁴⁴ Data provided by SIC (Citizen Information Services) to the researcher. Protocol 53741179397 of 06/06/2017.

⁴⁵ It should be noted that both the parking areas of Poupatempo and those of Shopping Metrô Itaquera belong to Companhia de Metrô, but are managed by Shopping, through a concession contract, and the Metrô is remunerated by a percentage of the billing.

26 m of width (780m²), there is the capacity to attend up to 12 thousand people daily⁴⁶.

It is located between the volumetry of the station building and the shopping mall. Open access to the public of Poupatempo is obligatory for the station: a preexisting walkway crosses the building, dividing it into two parts. As the building relies on *pilotis* fixed in an area also belonging to the subway, but granted to third parties for the administration of private parking, the same is not related to the urban fabric.

Corinthians-Itaquera Subway Station transportation node complex

The Corinthians-Itaquera subway station, inaugurated in 1988, was designed and built by the **Companhia do Metropolitano** (Metrô).

With the name “Corinthians Paulista”, the justification for the construction of the subway station was due to the need to build a terminal station near the maneuvering yard, which was determined by the location of empty lots. The justifications for the location of the station were the need to surpass the Petrobras pipeline; reach the railroad quota; and have a connection with the courtyard by means of an underground viaduct. Due to this, the station became elevated, allowing shelter: a bus terminal on the ground floor; intermediate floor that receives and distributes the passengers; deck where the boarding and disembarking platforms are located.

The architecture follows the same language as the stations in the East section of Line 3 Red: concrete structure and coating and metallic closure on the roof. The built area of this station is 30,435.00 m², with two central platforms on the mezzanine floor, raised from the ground floor.

In 2000, the CPTM Express East service was started, with few stops between Luz and Guaianases stations, and the new train station was inaugurated next to the subway station.

At ground level, there is an urban bus terminal under the responsibility of the Metro, with approximately 10 thousand square meters, reclassified and expanded in 2014. The expansion of this terminal, with an increase of approximately 40 thousand square meters, is being built, located in front of the station on the avenue Radial Leste, with completion scheduled for 2020, under the responsibility of SP Obras, that is, a municipal company that was not part of the architectural design of the station in 1988. This new terminal will be interconnected to the existing one and the stations of the Subway, the CPTM and the Corinthians Arena through the construction of a footbridge.



Figure 62
North facade of the subway and train station and east side facade of the Poupatempo.
Source: author, 2017.

46 Available at: <https://arcoweb.com.br/projetodesign/arquitetura/paulo-mendes-da-rocha-mmbb-arquitetos-associados-poupatempo-itaquera-31-05-2001>. Access in 26 jun. 2017.

By the south façade it is possible to have a direct access to the station by a catwalk built since the inauguration of the station in 1988. For the games of FIFA-CUP 2014, this footbridge was covered and created an access square with trees punctual, without benches and a huge embankment immediately visualized for those who leave the footbridge and follow sense stadium or FATEC.

Therefore, the strategic option of having a raised ground floor station (under a bus terminal), which resulted in the relationship between the building and the urban space associated with the insertion of fences and access gates throughout the building its perimeter. The tool of the active facade is not proposed in the architecture of the station building. Over the years, the denial of the relationship between buildings and local space has been accentuated by the construction of neighboring buildings (Poupatempo, Shopping Mall and Stadium).



South facade of the subway station adjacent to East Radial Avenue along with the facade of the bus terminal.



South facade of access to the station and small access square.



South facade of access to Itaquerá subway and train station.



Interior of the bus terminal on the ground floor.



Interior of the bus terminal.



Shed for the maintenance of the trains in the Maneuveryard in the northern sector.



South facade of the Patio de Manu-bras in the south sector and walled road on both sides (Avenida Miguel Ignácio Curi).

Arena Corinthians

The Corinthians Arena (**figure 64**), here called Corinthians Stadium, opened in 2014, had been planned since the arrival of the subway in 1988. It is deployed on a piece of land belonging to the Public Administration, but ceded to the club Corinthians in 1988 for 90 years.

On September 1, 2010 it was announced the construction of the stadium of one of the largest soccer teams in Brazil: Sport Club Corinthians Paulista. It was subsequently confirmed as the opening stage of the 2014 FIFA-CUP matches. In 2011, construction began on an area of 197 thousand square meters⁴⁷.



North facade of Corinthians Stadium.



Facade west of the Corinthians Stadium and one of the private parking areas for cars.

Figure 63

Complex transport node of Corinthians-Itaquera Subway Station.
Source: author, 2017.

Figure 64

Corinthians Stadium.
Source: author, 2017.

⁴⁷ Available at: <<http://www.arenacorinthians.com.br/arena/#historia>>. Acesso em 26 jun. 2017.



Figure 65

Show on the outside area of the east parking lot of the stadium. Source: Guia SP24h. Available at: <<http://www.guiasp24h.com.br/criolo-e-emicida-encerram-o-festival-sons-da-rua-na-arena-corinthians/>>. Access in 12 jun. 2017.

The architectural project is from the CDC Arquitetos office, in partnership with DDG Arquitetura, chosen among participants of a private contest. With about 50 thousand square meters of built area, it was planned to be multifunctional. It was built by the Odebrecht construction company, with fiscal incentives from the public power and a wide discussion about the means to have it (whether through BNDES, by the Development Incentive Certificates – CIDs or even by the club’s own autonomy in honoring the loan) .

Rectangular, with 48,000 seats, on the east side of the Corinthians stadium, an LED panel was built, 170 meters wide and 20 meters high. There are fences near this facade that border the open area east of the Stadium. Adjacent to it is a large asphalted space belonging to the public power, territory of which the population nowadays appropriates doing various activities linked to leisure like aeromodelling, listening to music with friends, etc. In November 2016, this open area with no definite use today was⁴⁸, for the first time, a stage for concerts by some artists. It was estimated that 13,000 spectators⁴⁹ (**figure 65**) altering the appropriation of this space. In the west sector, there is a glass panel formed by 1,350 pieces, in an area of 240 meters long by 30 meters in height, where there is also an ample open parking controlled by the owners of the Stadium.

From the north, there are access to the underground parking lots at the Radial Leste avenue. Miguel Ignácio Curi avenue occurs in the east and west sectors of vehicles - for open parking lots. For open parking (west and east), there are 1900 places and 900 covered places (in two basements).

The pedestrians access the station from the Arthur Alvim and Corinthians-Itaquera subway stations, since the stadium is equidistant from both Itaquera and Arthur-Alvim (600 meters).

It is important to emphasize the role that the stadium had within the conception of the architecture of the spectacle, understood as large buildings implanted in the urban fabric that do not dialogue with the environment and only with themselves⁵⁰.

48 Venue was destined for the construction of the projects Forum and Center of Conventions and Events of the Project of the Institutional Polo Itaquera.

49 Available at: <<http://www.guiasp24h.com.br/criolo-e-emicida-encerram-o-festival-sons-da-rua-na-arena-corinthians/>>. Access in 12 jun. 2017.

50 SILVA, L. A.; PELAKAUSKAS, T. V.; ANTUNES, J. C. “Arquiteturas do espetáculo em áreas periféricas: os casos da Arena Corinthians e Arena Pernambuco”. In: Brazil. Anais Enanpur, 2017. Available at: <http://anpur.org.br/xviienanpur/principal/publicacoes/XVII.ENANPUR_Anais/ST_Sessoes_Tematicas/ST%203/ST%203.13/ST%203.13-13.pdf>. Access in 13 jun. 2017.

Technical schools - FATEC and ETEC

When leaving the station, it is possible to see the set of buildings destined to the technical schools FATEC (Faculty of Technology of the State of São Paulo) and ETEC (State Technical school) (**figura 66**). FATEC has 14,832.60 m² and was completed in 2013. The ETEC, with 10,581.0 m², was completed in 2014. Both were built by Leman Construções e Comércio Ltda.⁵¹

Both schools are located in a wide empty area, whose buildings are also surrounded, without the concern of a transition between the public and private domains. Its horizontal volumetry is diluted in a large empty gleba occupied by open parking lots. It was in this large unoccupied area that was destined to the implantation of the projects of the Senai School and of the East Zone Technology Park.

The whole design of the urban space of the station stimulates the rapid walking, without interaction with the facades of the buildings. Space fragmentation predominates, with many urban remains, which stimulates denial, repulsion of space and rapid passage.



FATEC/ETEC Itaquera.



FATEC/ETEC Itaquera.

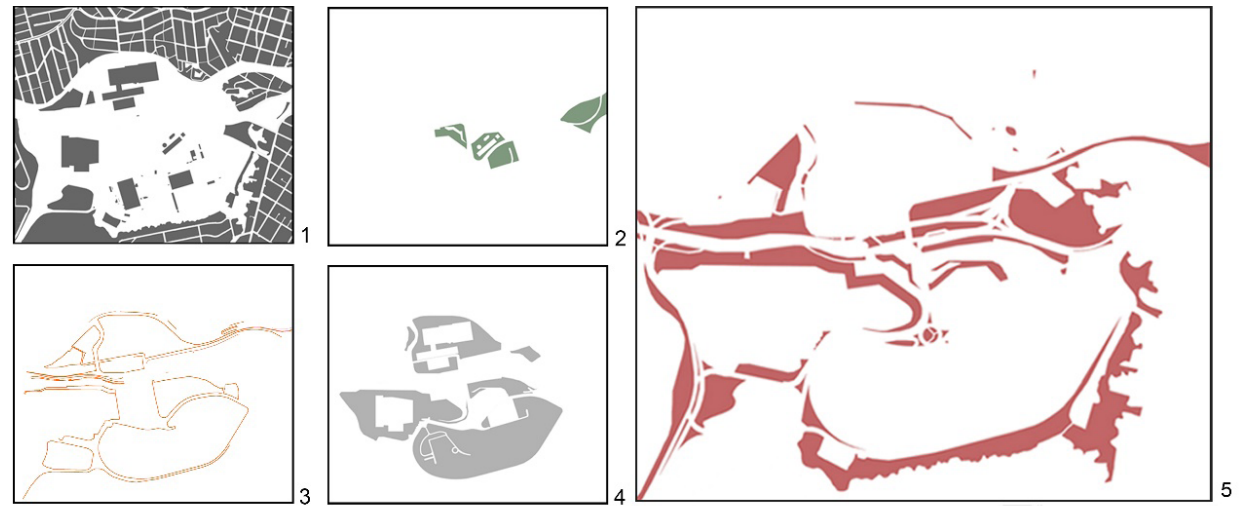
Figure 66
FATEC/ETEC Itaquera
Source: author, 2017.

[P4] Local territory

The objective of this work is to identify the spatial integrations of the station with the whole, the use of urban space (circulation ways, squares, parking lots, urban leftovers) and urban barriers (relief and rivers, fences) by means of diagrams (**figure 67**).

⁵¹ Source: SIC Government of the State of São Paulo. Protocol 586541710113 of 27/06/2017.

Figure 67
Local territory of Itaquera station area.
Source: PMSP, MDC (2015). Our treatment, 2017.



Evaluating in more detail the three sectors that make up the territory of the station area (**figure 30**), it is observed that:

In the northern territory (highlighted in subareas / scenarios denominated 1. Neighborhood and Avenue of Contour; 2. shopping mall and Poupatempo; and 3. station area) open spaces constitute a significant portion of the non-parceled territory occupied exclusively by private parking areas of cars that are surrounded by its perimeter. There remains the design of the great site without a clear form of urban spaces, without spatial permeability with the surrounding urban fabric and even without internal spatial integrations, such as the shopping mall isolated in the area with few internal accesses. In addition to the fences, which limit pedestrian access from the neighborhood to the station, there are also obstacles in the parking lot, which limit the pedestrian path. The linear spaces are limited to the streets and sidewalks existing in the consolidated urban fabric of the neighborhood, bounded by Contorno avenue.

In **Transition Territory** (highlighted in subareas / scenarios called 4. Longitudinal accesses; 5 Crossings; 6. East Radial Avenue), there are linear East-West spaces intended for the rapid passage of automobiles, such as Radial Leste Avenue itself and the access roads to the station. In the transverse connections that occur under the train lines also predominate the rapid passage of cars and of possible pedestrians. In this territory prevails enclosed spaces are by railings, guardrail and walls.

In the **southern territory** (highlighted in subareas / scenarios known as 7. station square; 8. Fatec square; 9. Stadium square; 10. Metro's courtyard), open spaces spread over different plateaus, planted in a wide, rugged, little wooded lot, occupied by significant car parks, a small open square of access to the station, surrounded squares of FATEC, subway club, as well as the extensive area dedicated to the maintenance yard of the subway. There is no clear urban form, much less spatial integrations between squares, which occur only through their perimeters and the few linear spaces of the circulation ways. It looks at the non-integration of urban fabric to the west (COHAB), after the construction of the new road to Cup and retaining walls, which isolated the neighborhood from the station. Also, there is a great urban barrier after the extensive movement of lands that united two existing hills, when of the construction of the area for the patio of maneuvers. Note the presence of extensive parking lots, residual areas and slopes, besides the constant of extensive fences and walls, reinforcing the area of the station in the territory as an isolated urban island in itself.

It stands out as a monotonous territory and without vitality the road conceived north-south, between the housing complex (COHAB) and the stadium. This route, designed only for the passage of cars (**figure 68**), segregated the set of access to the station by its edges. Before this intervention (**figure 69**), even with the presence of walls, the potentiality of the connection that was ventilated in the PUPII (Urban Plan of the Institutional Pole of Itaquera) was maintained.



Figure 68
Avenida Itaquera (north-south) and wall separating it from the housing complex.
Source: author, 2017.



Figure 69
Territory existing before the intervention of the north-south route (Itaquera avenue).
Source: METRÔ. *Leste-Oeste: em busca de uma solução integrada*. Sem editora, 1979, p. 189.

[P5] Environmental perception

Environmental perception is an instrument of the observer's vision. It seeks to examine the structuring of space in the station area, understanding it as a nodal point as well as urban legibility.

The aim is to verify if there are patterns, movement, rhythm, transparency, overlap between urban elements. To assist in the analysis of the territory of the area of Itaquera, a photographic mapping and videos made available by reading the QrCodes (**figures 70 to 79**) were elaborated. It was also used the logic of the sectors (north, transition, south) and the different subareas / scenarios identified when analyzing the area (such as the neighborhood / contour area, station area, longitudinal accesses, squares etc).

The Itaquera station area has the potential to be both a nodal point and a landmark. It is not in any of the two aspects, on the contrary, there is illegibility of that portion of the territory, because there is no spatial coherence. The visual perspective of the station building on the northern territory is suppressed by the volumetry of the mall. The south façade of the station is diluted by the absence of a significant architecture, by the strong east-west movement imposed by the speeds on Radial East Avenue, and by the wide-open spaces. Notably, the façade of the stadium in the southern territory prevails in the landscape at various times, despite the difficulty in understanding how to access it. Without coherence in the urban landscape, there are no spatial rhythms or overlaps. There is a high sense of insecurity about walking in the permanent urban void of a territory without identity.

The mapping of the figures below subdivided by the north, transition, and south (and their respective subareas) represent in detail this perception of the environment.

1 - TERRITÓRIO NORTE - Bairro e Avenida do Contorno
North Territory - Neighborhood and Contorno Avenue

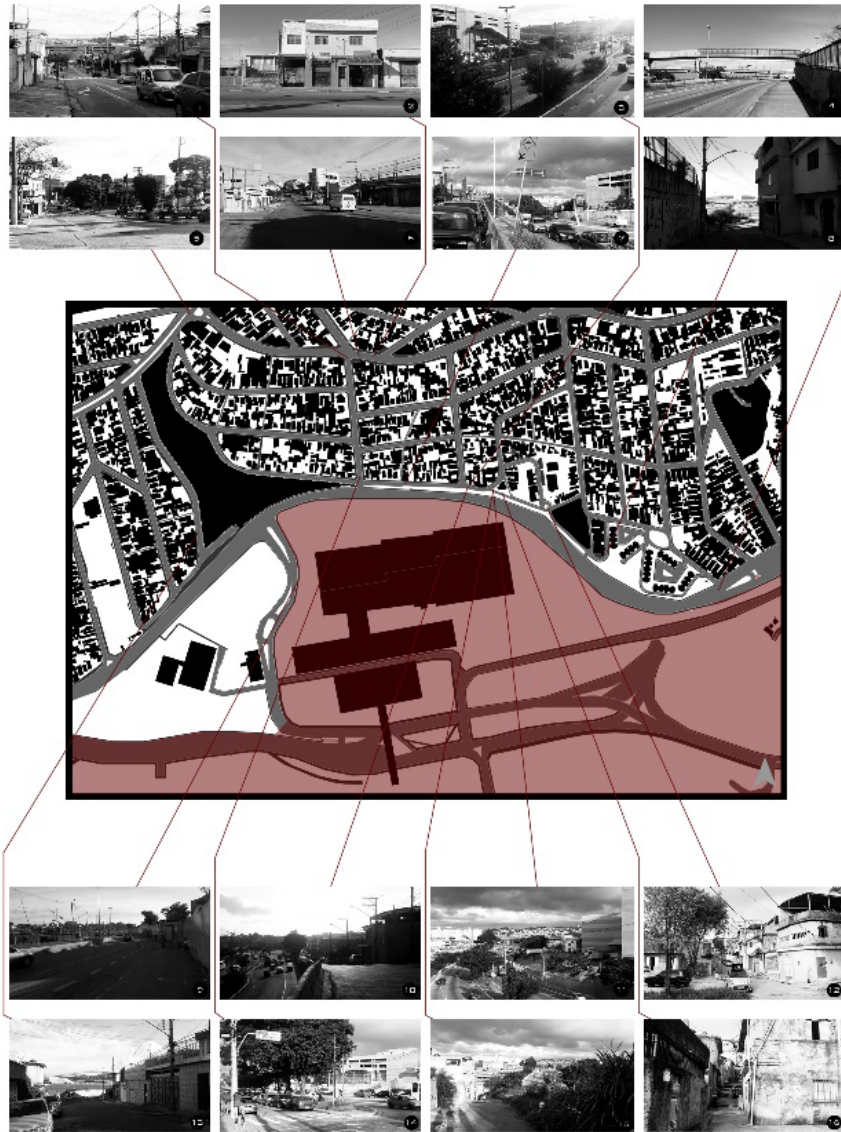


Figure 70
 Territory north of Itaquera station: the neighborhood and avenida do Contorno.
 Source: author, 2017.

2 - TERRITÓRIO NORTE - Shopping e Poupatempo
North Territory - Shopping Mall and Poupatempo

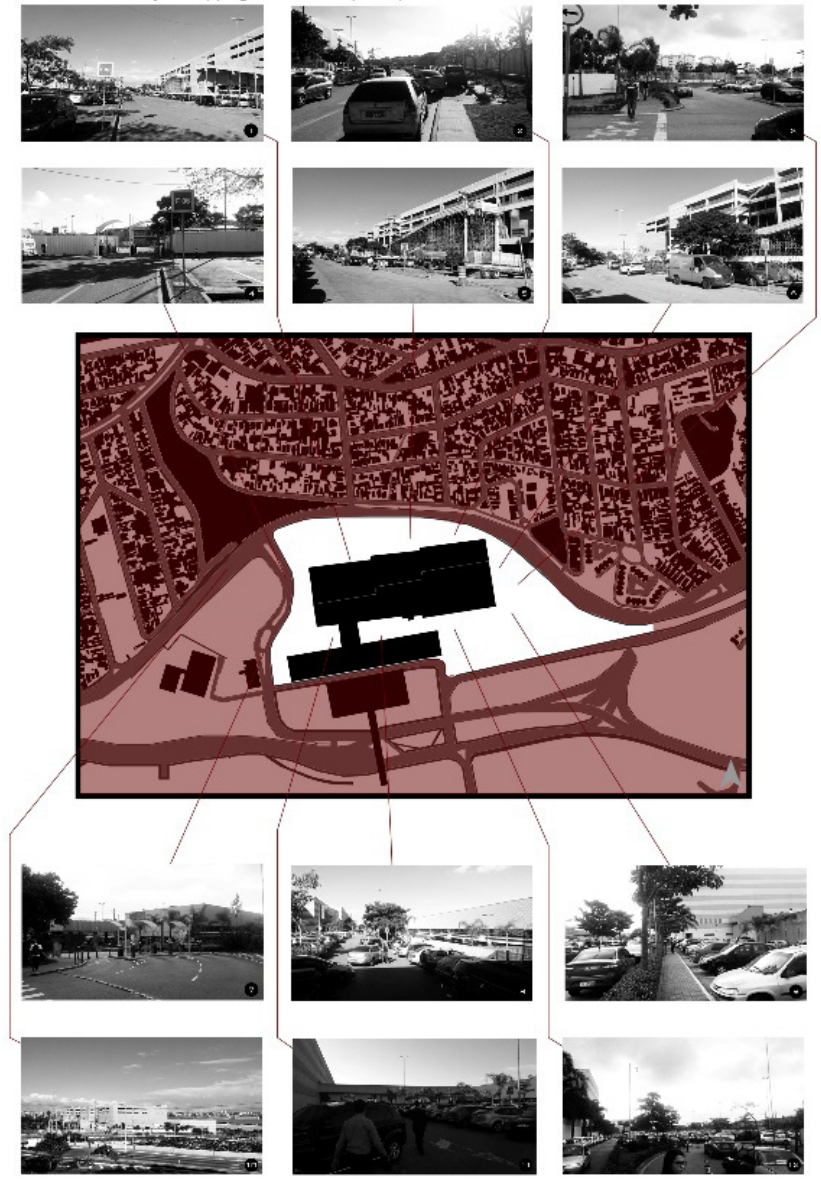


Figure 71
 Territory north of Itaquera station: Shopping and Poupatempo.
 Source: author, 2017.

3 - TERRITÓRIO NORTE - Área da Estação
North Territory - Station Area

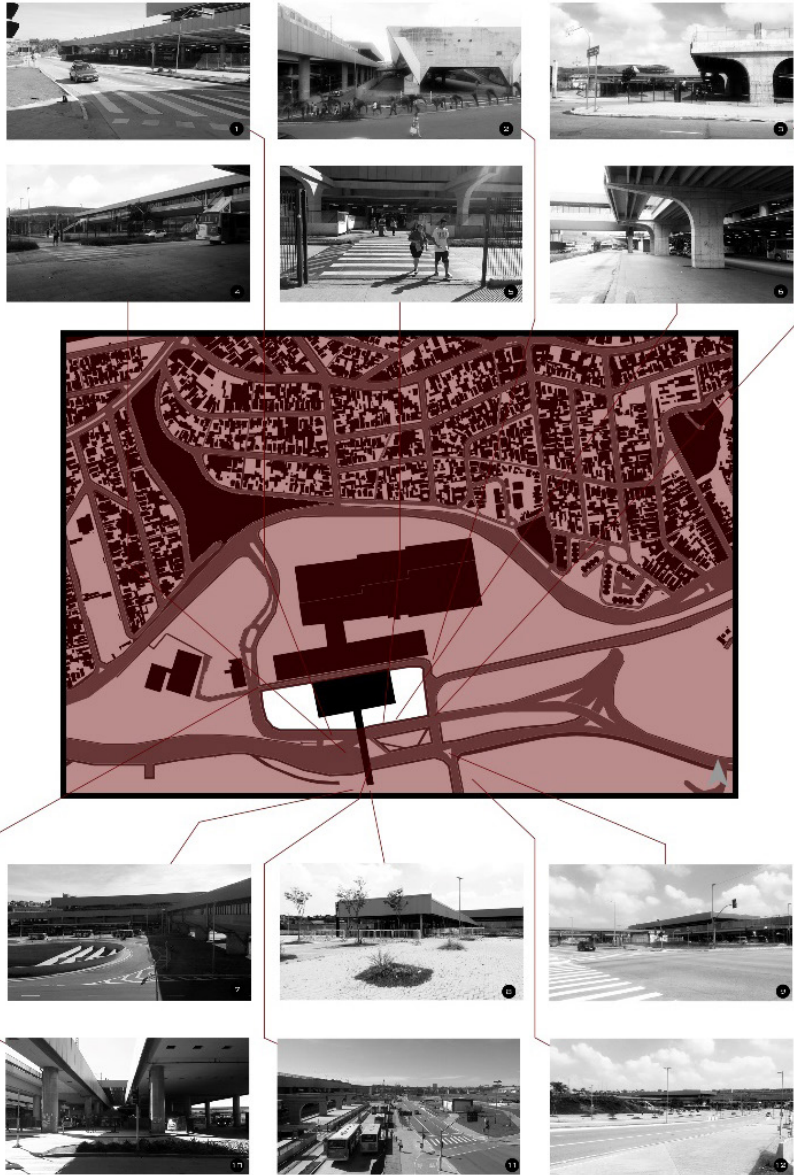


Figure 72
 Territory north of Itaquera station:
 Itaquera station area.
 Source: author, 2017.

4 - TERRITÓRIO DE TRANSIÇÃO - Acessos Longitudinais
Transition Territory - Longitudinal Access

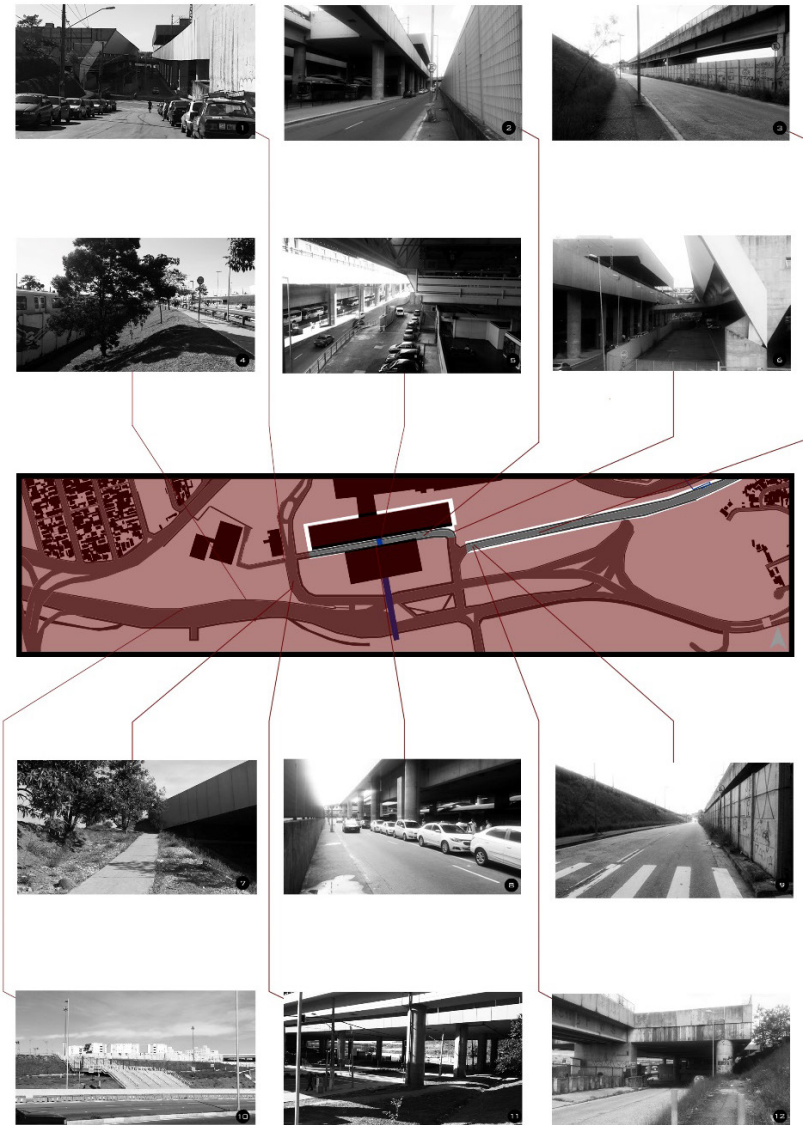


Figure 73
 Territory transition from Itaquera station:
 the forgotten space of longitudinal access.
 Source: author, 2017.

5 - TERRITÓRIO DE TRANSIÇÃO - Travessias

Transition Territory - Crossings

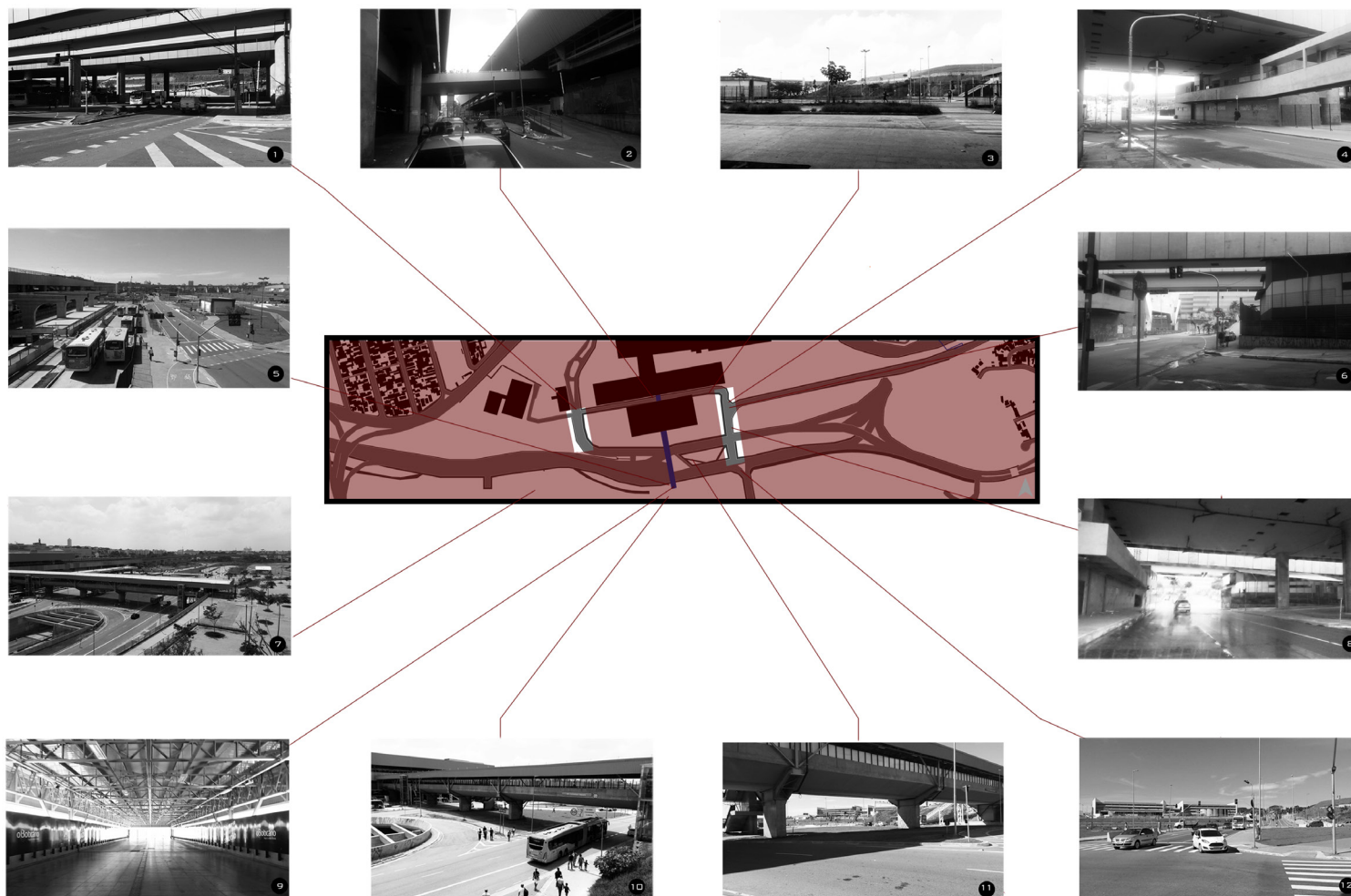


Figure 74
Territory transition from Itaquera
station: the crossings.
Source: author, 2017.

6 - TERRITÓRIO DE TRANSIÇÃO - Avenida Radial Leste
Transition Territory - Radial Leste Avenue

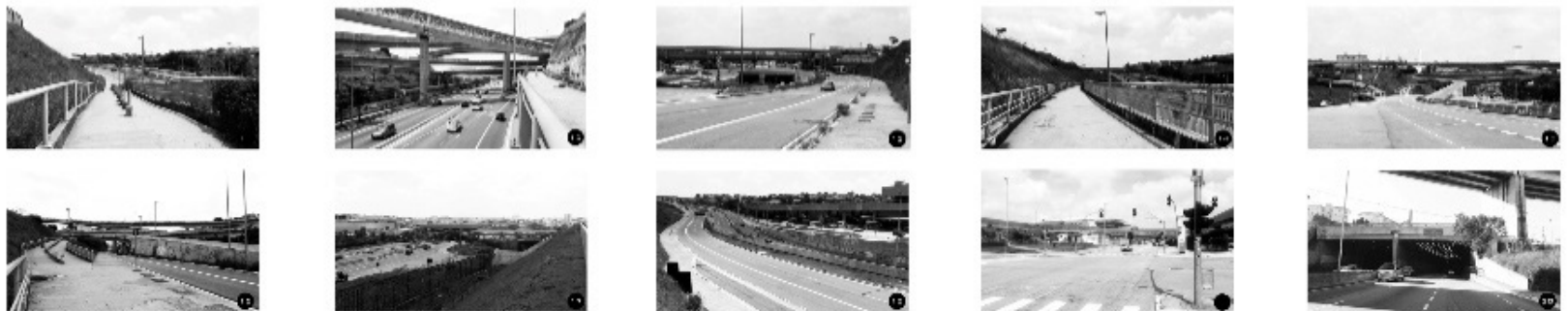
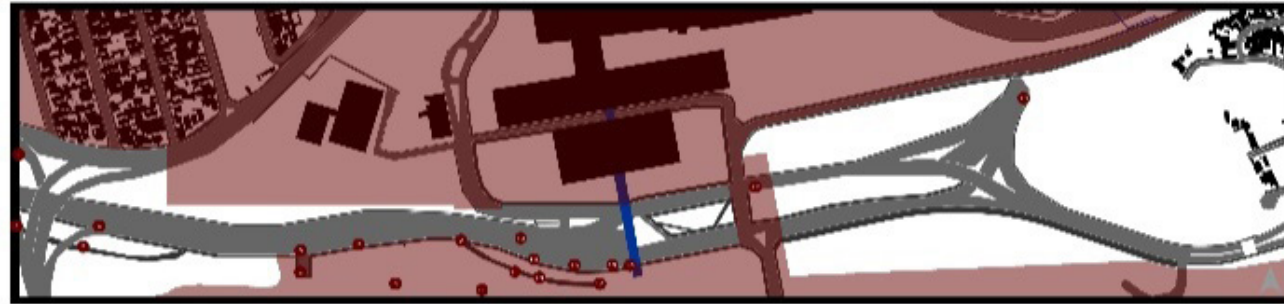


Figure 75
Territory transition from Itaquera
station: Radial Leste avenue.
Source: author, 2017.

7 - TERRITÓRIO SUL - Praça da Estação
 South Territory - Station Square



Figure 76
 Territory south of Itaquera station:
 the station square.
 Source: author, 2017.

8 - TERRITÓRIO SUL - Praça da FATEC
 South Territory - FATEC Square

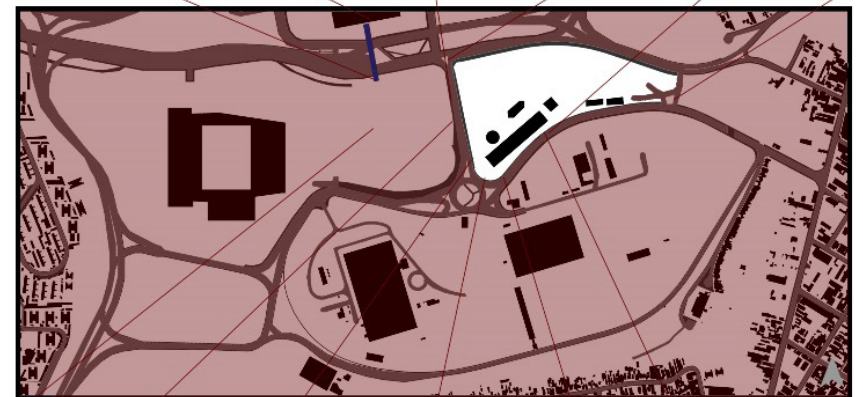


Figure 77
 South territory of Itaquera station:
 FATEC square.
 Source: author, 2017.

9 - TERRITÓRIO SUL - Praça do Estádio
South Territory - Stadium Square

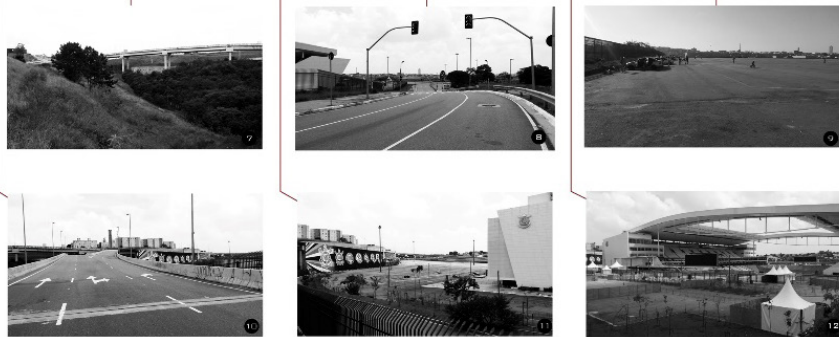
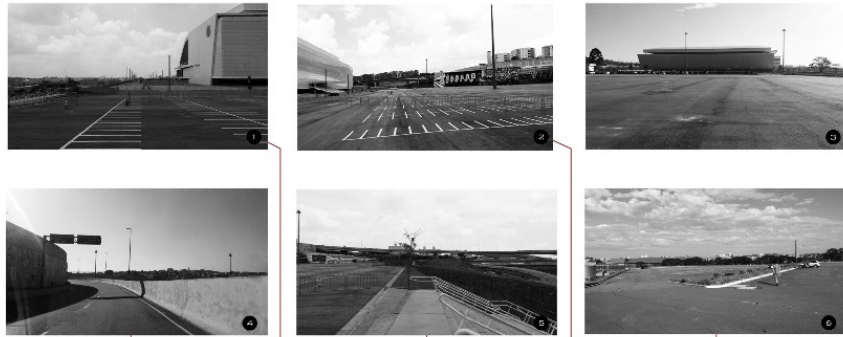


Figure 78
 South territory of Itaquera station:
 the Stadium square.
 Source: author, 2017.

10 - TERRITÓRIO SUL - Pátio do Metrô
South Territory - Subway Maneuver Yard Complex



Figure 79
 South territory of Itaquera station:
 the maneuvering yard.
 Source: author, 2017.

[P6] Urban intensification

After analyzing the Itaquera station area, the objective is to verify if all the existing layers in the station area (**figure 80**) stimulate a more intense use of the urban space by people, that is, urban intensification **of place**, the search for connectivity, diversity and appropriation of the place in the territory of the Itaquera station area.

The territory of the Itaquera station area is a complex place, closed in on itself and therefore considered static. The exception of staticity occurs with the movement of the East Radial Avenue that rips and bleeds the territory east-west, denying the surroundings designed by walls, slopes or grates. In between blocks of the station area, open spaces prevail, conceiving an internal void: the island, which is added to the residual spaces for parking lots (private cars, bus or train), as well as forgotten spaces that contribute to the design of a territory without urbanity, without diversity, monotonous, meaningless and of low urban intensification, which reinforce the spatial dilemmas of the station area.



Figure 80
Articulation of spaces and use in the Itaquera station area.
Source: PMSP, MDC (2015). Our treatment, 2017.

7.3 Synthesis and considerations of Corinthians-Itaquera station

After analyzing the macro, intermediate and local scales, it was possible to understand the spatial transformations that occurred in the area of the Itaquera station⁵², as well as to identify the spatial ambivalences in the scope of the categories between node and place.

Chronologically, the main interventions were: **1875** – inauguration of Itaquera train station; **1978** – inauguration of COHAB; **1988** – inauguration of the subway station; **2000** - deactivation of the old train station and inauguration of a new train station adjacent to the subway station; **2000** - inauguration of Poupatempo; **2004** - approval of Urban Operation Jacu Pêssego; **2007** - inauguration of the first phase of Shopping; **2011** - launch of the Urban Plan of the Institutional and Technological Pole of Itaquera; **2013** - inauguration of FATEC; **2014** - expansion of the Bus Terminal and the inauguration of the Football Stadium; **2016** - Revocation of the OU Jacu-Pêssego.

Initially, the old railway line and the extraction of stones in the region stimulated the occupation of the Itaquera nucleus. Throughout the twentieth century, it quickly became a dormitory district, either through self-construction, regular subdivisions, or through housing developments developed by the public power, or even by the presence of small slums.

On the one hand, it was the sub-prefecture that had the largest number of real estate launches in the city in 2014⁵³, the year of COPA-FIFA matches, in a region where 73% of the population has an income of up to three minimum wages and 1.3% generation of jobs in the city [Po]. On the other hand, it is observed that: in the “urbanization” brought about by the implementation of the subway line, strictly technical issues prevailed, to the detriment of the spatial quality of the territory [P4].

The area of Itaquera station is located in a sharp topography, with complex constraints [P1], which created a large island isolated from the context in which it is inserted. The morphological understanding of the area is marked by the route in the dominant east-west direction ordered by the expressway, by the railroad and subway that limit two territories: north and south

There is even a diversity of uses in the area of the station [P3], however, constructions were inserted that land under urban space either by means of pilotis, sometimes by means of the

⁵² Synthesized in the tables located in the appendix.

⁵³ Annual report of EMBRAESP (Brazilian Company for Heritage Studies) of 2014.

structure of an enclosed bus terminal, sometimes by means of a closed box or by the isolation in large batches that do not articulate with the urban space. The large enclosed and walled facilities avoid any transition between the public and private, as well as the permeability of large blocks.

In the category of **transport node**, even Itaquera subway station attracting 100 thousand people daily [N7], there are no bus corridors that access it and potentiate it as a transport node [N9]. The connection to the train system [N8] is a great help for those who live even more distant. In addition to the fact that the extensive area of the station has been overwhelmingly public property over the years, this has not signaled a coherence of spatial connections since the beginning of the arrival of the urbanization brought by the subway, especially pedestrian [N6], which are largely characterized as The new connections conceived and materialized in 2014 were directed to the connections of the motorized mode [N4], in detriment to the pedestrian and the transformation of a cohesive urban fabric, integrated to the adjacent districts.

In the scope of the urban instruments a variety of plans and laws are observed [I2 + I3 + I4 + I5 + I6], and abstract zoning. Predominant generic strategies developed on the macro scale disjointed with the local territory.

The guideline presented by the Urban Planning Plan of the Institutional Pole of Itaquera [I5] to carry out its urbanistic proposal was to adopt as a unit of urban planning the set of lands (not individual lands). Thus, four lands were identified that were largely public (except the area of the old quarry), but belonging exclusively to the scope of the municipality. The dilemma was that the public areas of the station, which belong to the state government and are located on the other side of the Radial East avenue, were not part of the urbanistic proposals, contradicting each other conceptually. The exception was the execution of the set of road works of the north-south highway (Itaquera avenue), but that in turn segregated the housing complex of the Itaquera station area inserted in the 70's. In the absence of a local masterplan negotiating between the different agents and territories, it was then a plan designed to support the architecture of an event intended for the show and not for local urban development.

On the other hand, on the other side of the radial, in the subway area, punctual actions occur in the transformation of empty space, such as the expansion of the shopping mall through a closed box surrounded by a large parking lot of cars and fences that further away in a territory full of space dilemmas.

It is observed that the design of a soccer stadium was a catalyst for the spatial transformations that occurred in Itaquera in recent years. **There was at no time the conception of articulating and quality urban space**, be driven by the construction of the station or any other equipment. After the COPA games, the repeal of the Urban Operation and the paving of the

Urban Plan, it is evident that there are few instruments that effectively face the spatial transformation in the region

Without considering the morphological pre-existences [P1], further segregating the urban fabric, the “urbanization” of the area was considered a success by the Metro when draining the area and expanding the structural route of the Radial East avenue. For the COPA-FIFA football games project, again the protagonism in the road [N4], to make tunnels, viaducts and openings of new ways to the detriment of the spatial quality for the pedestrian [N6], that will not always have the presence sidewalk or the expansion of north-south connectivity, which is still a significant space challenge for pedestrians.

Thus, after intense spatial transformations over the decades, the place itself stimulates repulsion and rapid passage, resulting in a non-place and monotony [P5]. The area of the station remains in a void of meanings, isolated from the urban fabric of its surroundings, with low urban intensification [P6], reinforcing its contradictions and spatial dilemmas and becoming an isolated territory: **the Island of Itaquera.**

There are several plans at all scales and lack of alignment in many of them. There was no shortage of investments and urban interventions in the Itaquera station area that resulted in a space **filled with contradictions, dilemmas and spatial challenges between the transport node and place.**

As stated earlier, Itaquera means “sleeping stone” in Tupi-Guarani. It is a space that awaits appropriate spatial transformation so that it can be fully appropriated as a place. There are many challenges and ambivalences between the node and the place in the Itaquera station area, but it is precisely in these that the potentialities are found.

In Itaquera, due to the absence of a local identity, the transportation infrastructure reinforces this lack of locality. In the metropolitan context, Itaquera is only a distant point without meanings. On the scale of the neighborhood, the transport node rips a territory into two distinct parts, again weakening the void, potentializing it and turning it into a non-place.

The urban emptiness, absence of leisure spaces, qualified spaces and jobs, densities and urban vitality, lie dormant, awaiting the rupture of paradigms and the transformation of idle potential on the island of Itaquera.

Therefore, in view of the ambivalences between the transport node and the place and the various latent potentialities in the territories of the Itaquera station area, a path (urban scenario) will be demonstrated to overcome the space challenges and to stimulate the visualization of drawing strategies that place the Itaquera station area as a mobility hub, as a catalytic nucleus of urban transformation, integrated into an urban hub.

● **Considerations**

**Urban Scenario for
Corinthians-Itaquera
station area**

[...] the project provokes, it must provoke temptations; like the devil who, with different aspects, caused temptations in Santo Antônio.¹

¹ SECCHI, B. **Primeira lição de urbanismo**. Translation: M. Barda; P.M.R. Sales. São Paulo: Perspectiva, 2006, p. 137.

Facing the urban potentialities of the Corinthians-Itaquera station area, an urban scenario was elaborated through research by design with students of the architecture degree of the *Leibniz Universität Hannover*.

Research by project is understood as an academic research, that is, a project is explored as a research method by the development of a project. Research by design can provide a solution to a class of problems and propose new ways of thinking. In this context the project has great chances of generating new knowledge or alternative skills of urban design.

The study presented for the station Itaquera and its environs manifests the commitment to create a diverse, truly urban scene. More than a design challenge, it is the discussion of the practice of the overall view and the composition of a transport node in place.

The urban design by the core of the station towards its surroundings is a design strategy, an integrating point for the construction of a spatially balanced, sustainable and resilient city.

The discussion of the Itaquera scenario is aimed at the sensible reformulation of an already existing environment; “To discover and preserve their strong figures, to solve their perceptual difficulties and, above all, to extract the latent structure and identity in the confusion”² or even in the creation of a new figure.

It is challenging to analyze the natural features in the area and to decide whether these elements will be a guide for the new urban structuring depending on the intensity and scale of development that will be applied to them. It is still challenging to think beyond the lot (a spatial dilemma), the fragment without urban connections and the landscape. It is challenging to discover the opportunities and problems of space, critical elements of the figure and the interrelations of the parts, their qualities, defects and their possibilities of transformation. It is challenging to find a common language in the design exercise.

However, architectural design is a process of development that simultaneously requires rationality and creativity, relying on a wide range of knowledge and experience as far as technical, practical and cultural aspects are concerned. “An ‘interim’ domain: broad and multidisciplinary: traditional and innovative, extending in areas of Technical Sciences, on the one hand, and those of Arts, on the other”³.

1 BARBOSA, E.; DEMEULDER B.; GUERRITS Y. “**Design Studio as a Process of Inquiry: The case of Studio Sao Paulo**”. In: *Revista Lusófona de Arquitectura e Educação Architecture&EducationJournal*, n. 11, Lisboa, 2014.

2 LYNCH, K. **A imagem da cidade**. 3ª ed. Tradução: J.L. Camargo. São Paulo: Martins Fontes, 2006, p. 129.

3 Jong, T.M. de, Voordt, D.J.M. van der (eds.). **Ways to research and study urban, architectural and technological design**. Delft: Delft University Press, 2002, p. 97.

The urban design studio in Leibniz Universität Hannover

A project workshop was held at the *Leibniz Universität Hannover*, Germany, at the *Fakultät für Architektur und Landschaft, Abteilung für Regionales Bauen und Siedlungsplanung, Institut für Entwerfen und Städtebau* [Faculty of Architecture and Landscape, Department for Regional Building and Settlement Planning, Institute of Design and Construction] during the winter semester 2016/2017. The course offered was called Open Island: transformation in São Paulo, under the guidance of Professor Jörg Schröder and assistant professor Sarah Hartmann. Researcher Yara Baiardi also participated as an assistant professor while conducting exchanges of co-insurance in the city of Hannover, Germany.

The aim of the studio was to enable the student to analyze the surroundings of a subway station - such as islands / poles in the context of the metropolis - and to propose a masterplan, as well as the elaboration of the urban design resulting therefrom.

Initially, the analyzes carried out at the Corinthians-Itaquera station, as well as European reference projects, were presented and debated with the students. Subsequently, the students did their respective research and analysis to then present their own diagnosis of the area.

The conceptual background of the workshop was the vision of the archipelago of the city of São Paulo, of urban plans and projects in an approach based on local scale. The challenge was to understand the station as part of the urban fabric, from the **place** where the station can contribute to the connection of different scales. The objectives were the spatial, social and economic integration in the fragmented island territory through the design of new blocks and an urban mobility hub with intelligent and sustainable interfaces in the flows in the metropolitan network; besides the innovative reformulation of urban typologies of buildings and open spaces.

This shared discussion exercise aimed to connect specific points of departure from a complex area to the analysis of territorial potential, spatial structuring and formulation of design strategies.

The Corinthians-Itaquera station environment is placed as a real emptiness filled with different infrastructures in mobility, sports and education in an urban context with a predominance of low-income housing and density, without urban vitality and mixed uses.

The challenge was the perspective of renewing and valuing public transport with the use of local soil in intelligent and sustainable urban agendas, which can lead to the concept of an urban center linked to urban development for the adjacent neighborhoods.

Thus, the “open island” of infrastructures can become a platform for connecting adjacent districts and provide open public spaces desirable for inclusive urban development. Moving from the metaphor of the island to a pole, the work of the design studio aimed to contribute to a real discussion of the urban future of the city of São Paulo.

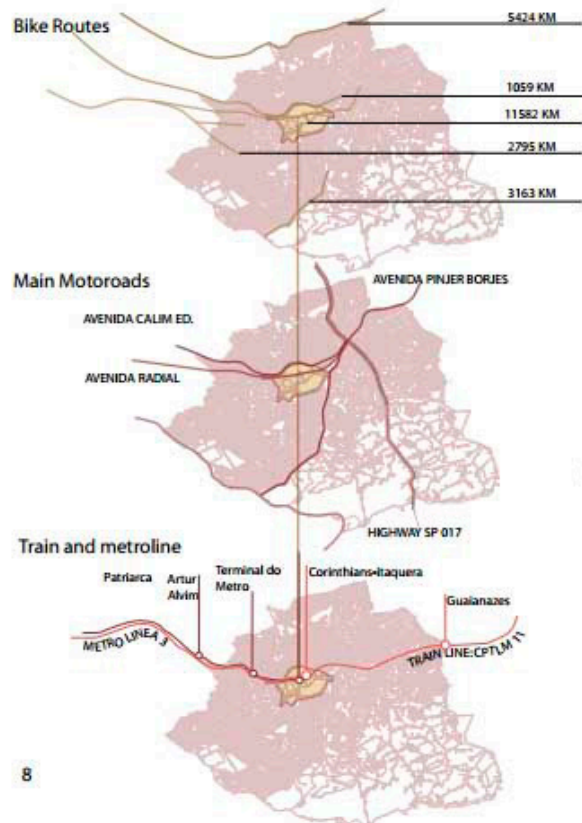
The proposal for a new urban scenario for Itaquera Station

The proposal made by students Beatrice Rezzani and Christian Corral can be used as a test for different interpretations and explorations of the same territory, to oppose the official planning visions that, as proven in the thesis, are still technical and outdated.

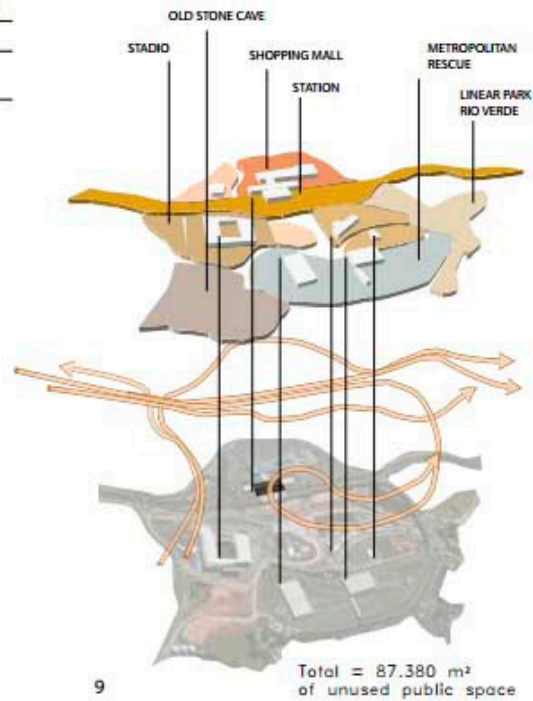
The figures of the project summarize the diagnosis (**figure 81**). The design concept used was the design of a system of connections that covers different needs of the local population. The system of connections encompasses different systems that operate in parallel and with each other, which are fundamental for the operation, as well as the integration of different areas for the process of evolution of Itaquera. The strategy used in the integration was to implement water as a central aspect in an articulated square, located in one of the most important axes of the entire area (north-south), where it plays a fundamental role for the quality of public space (**figure 82**). The whole project, to be structured in several phases, was based on a layer structure (**figure 83 and 84**).

Finally, the masterplan proposal (**figure 85**) aims at a new network of connections, a central square, footpaths to the north-south direction of the area (**figure 86**), a new block of access to the subway, two green areas lateral to the axis three mini-blocks intertwined and integrated by a series of semipublic spaces and new buildings of collective use (**figure 87**).

It is provocative and provocative the proposal to split east-west connections that are, until now, reinforced by the expressway, as well as by the subway and train line and in the absence of north-south connections to the pedestrian. This rupture, which places the axis of the station as the center of interventions associated with the great square, the new uses at its edges and the element of water rescuing some of its local identity, stimulate a new design and a new thinking between node and place.



8



9

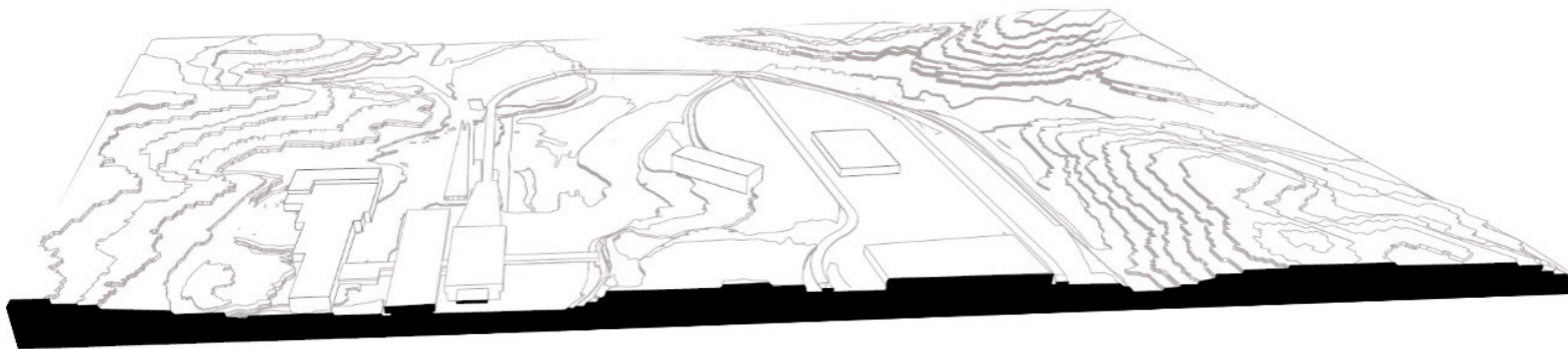
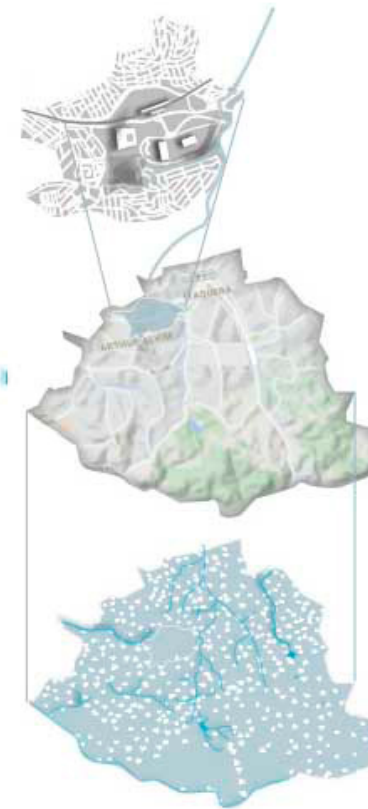


Figure 81
 Diagnosis of the district of Itaquera (mobility, uses, morphology and system of rivers, north-south court of the land).
 Source: Graduation work elaborated by Rezzani e Corral, 2017.

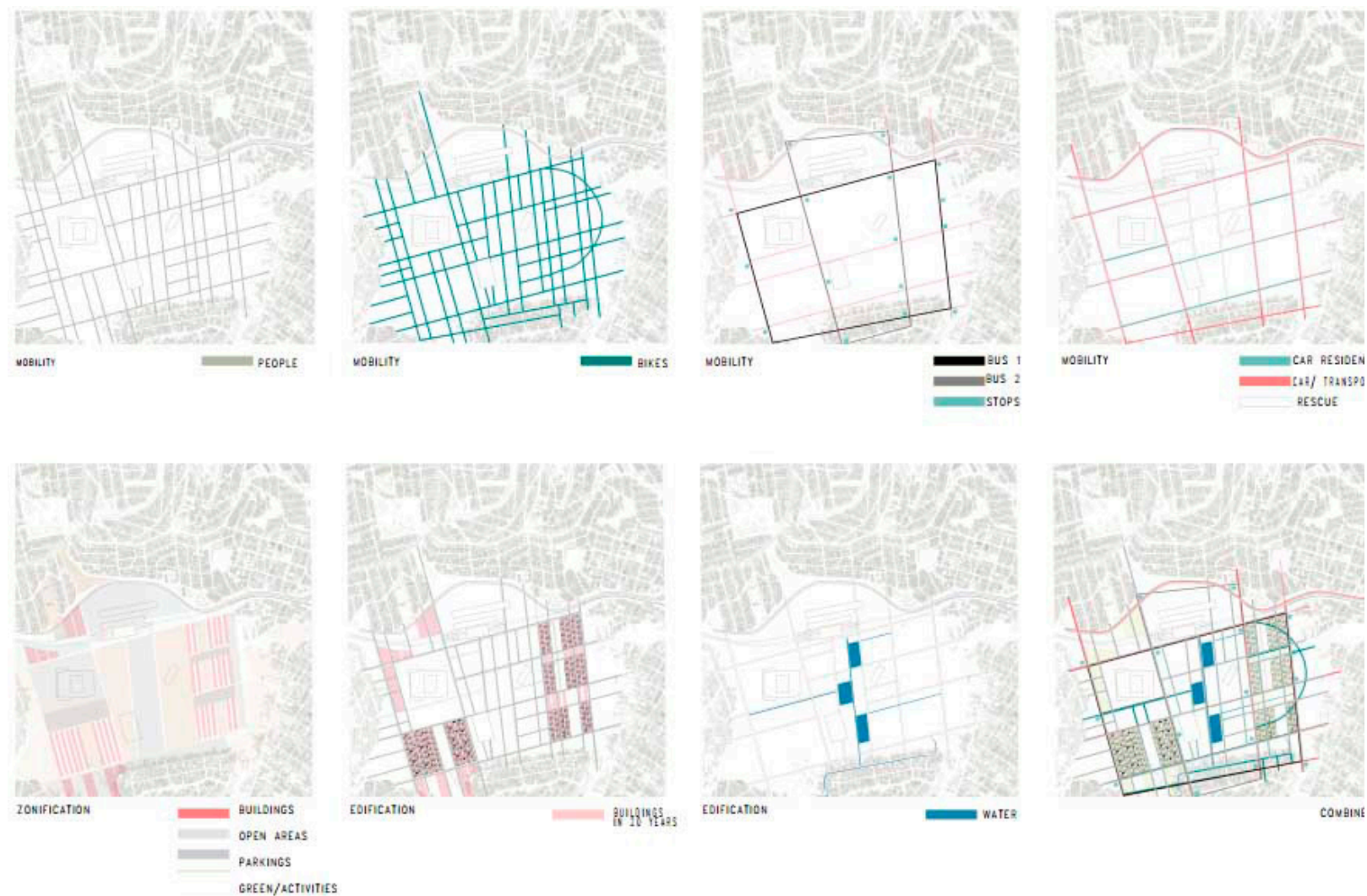


Figure 82
 Projectual concept: system of connections that covers different needs of the local population and water as integrating element and qualifier of the public space.
 Source: Graduation work elaborated by Rezzan and Corral, 2017.

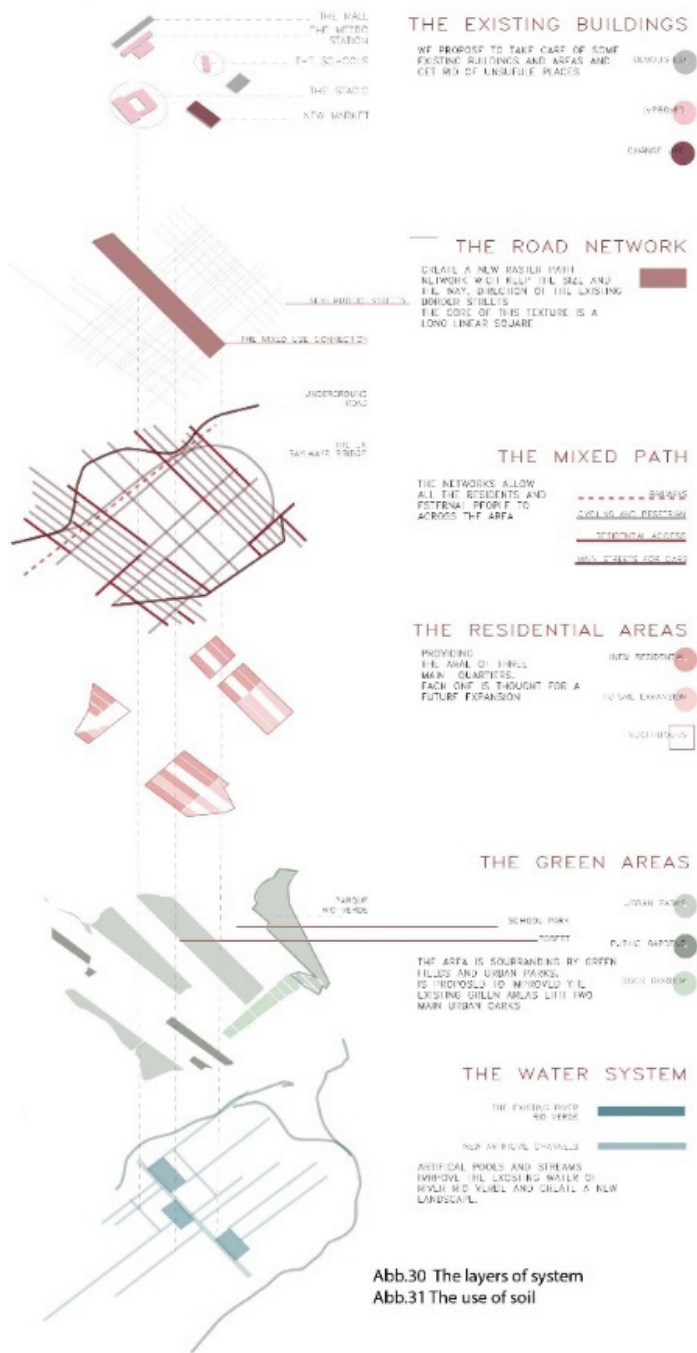


Abb.30 The layers of system

Abb.31 The use of soil

RAILWAYS (TRAIN)
MAIN ROAD
CARS OF RESIDENT AND EMERGENCY
BIKES AND PEDESTRIAN
ONLY PEDESTRIAN PATHS

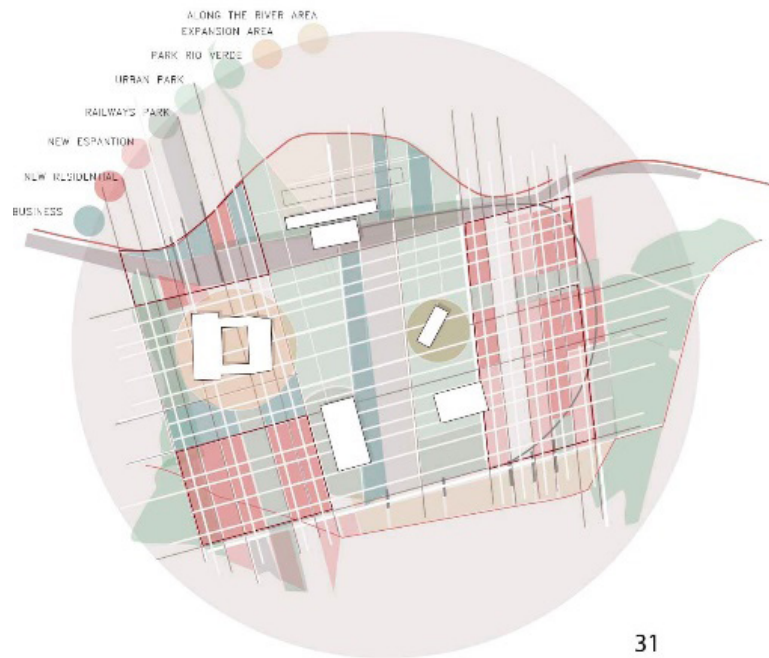


Figure 83
Design concept and the different layers of intervention.
Source: Graduation work elaborated by Rezzani and Corral, 2017.

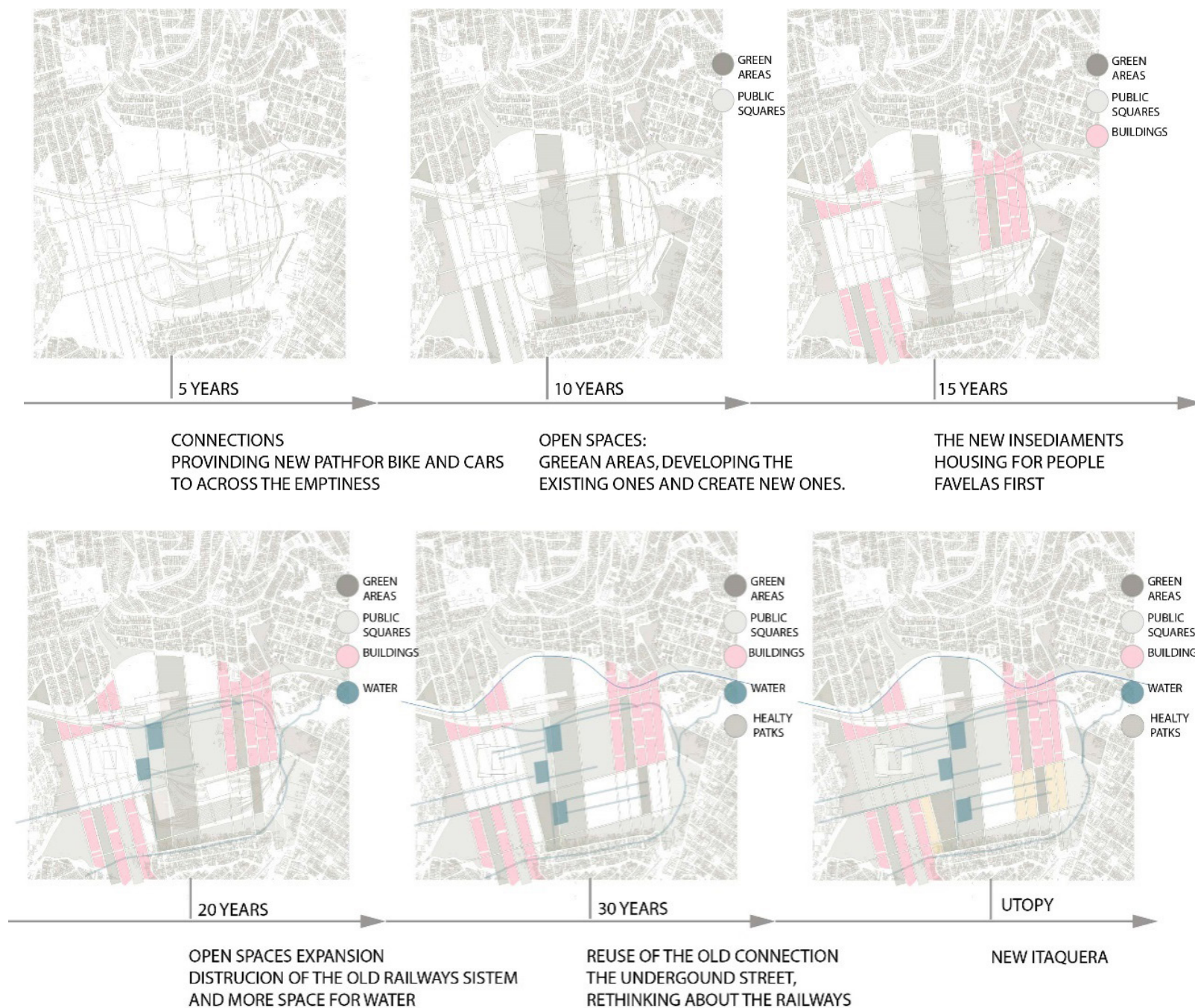


Figure 8.4
The phases of implementation of the masterplan.
Source: Graduation work elaborated by Corral, 2017.

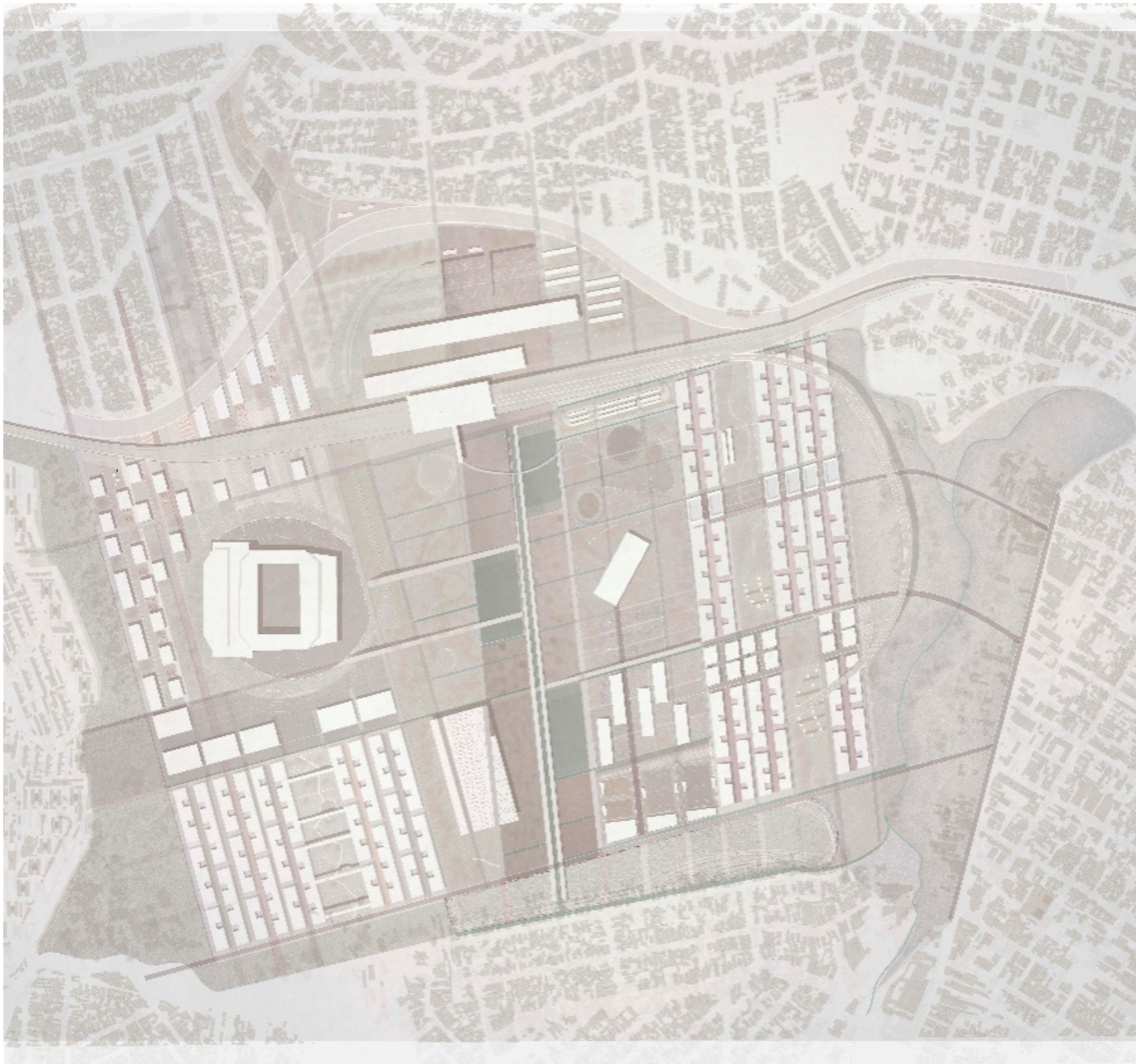
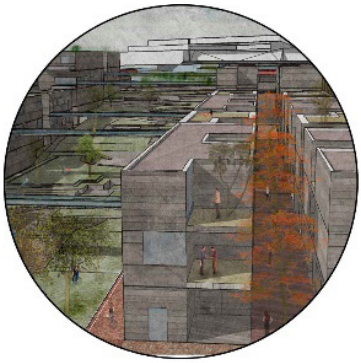


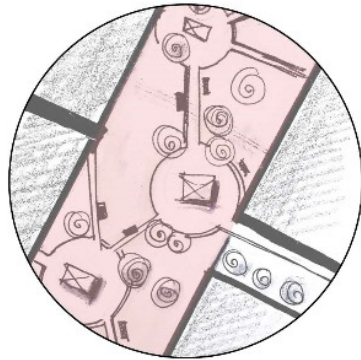
Figure 85
Masterplan for Itaquera, a scenario
for urban development in the
Itaquera station area.
Source: Graduation work elaborated
by Rezzani e Corral, 2017.



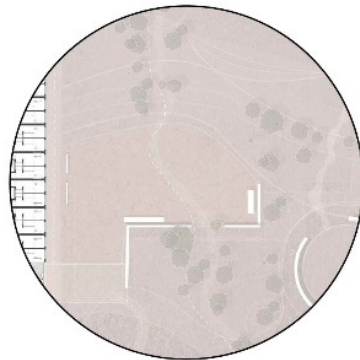
Figure 86
 The central axis of the square where water and public space are articulating elements, above all in the strengthening of north-south connections.
 Source: Graduation work elaborated by Rezzani e Corral, 2017.



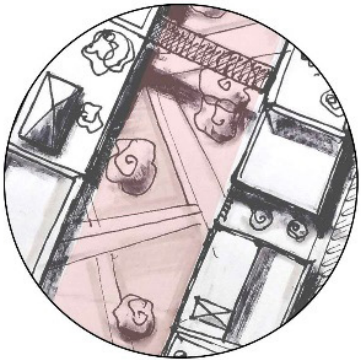
The new insediamenti: semi private streets



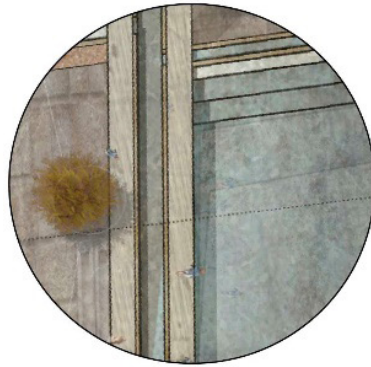
The semiprivate streets: playground fields and kiosk



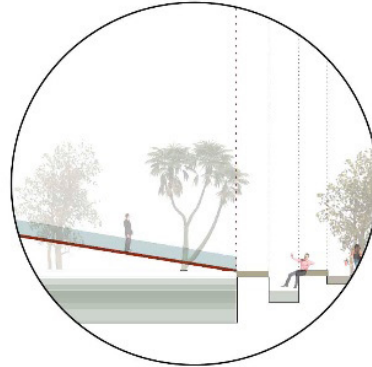
The garden between the insediamenti



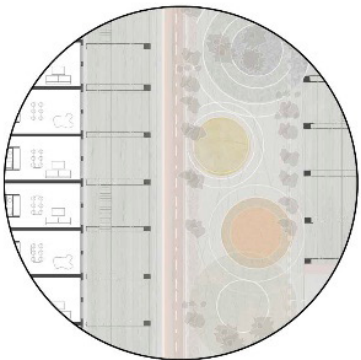
The semiprivate streets: sitting area



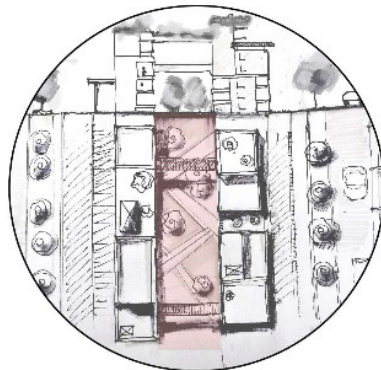
Plan of the main square
the artificial channel and pool



Section: the artificial channel



The semiprivate streets:
playgrounds and pergolas



The semiprivate streets:
plan and section sketch



The semiprivate streets: sport zones

Figure 87

Urban design of the masterplan.
Source: Graduation work elaborated by Rezzani e Corral, 2017.

Conclusion

**Dilemmas, challenges
and potentialities
in the stations areas**

*Mande notícias do mundo de lá / Diz quem fica / Me dê um abraço, venha me apertar / Tô chegando
 Coisa que gosto é poder partir / Sem ter planos / Melhor ainda é poder voltar / Quando quero
 Todos os dias é um vai e vem / A vida se repete na estação / Tem gente que chega pra ficar
 Tem gente que vai pra nunca mais / Tem gente que vem e quer voltar / Tem gente que vai e quer ficar
 Tem gente que veio só olhar / Tem gente a sorrir e a chorar / E assim chegar e partir
 São só dois lados / Da mesma viagem / O trem que chega / É o mesmo trem da partida
 A hora do encontro / É também despedida / A plataforma dessa estação
 É a vida desse meu lugar / É a vida desse meu lugar / É a vida [...]*

*Send word from the other world / Tell who stays / Give me a hug, come and hug me / I'm coming
 I'd like is to leave / Without plans / Even better is to get back without plans / When I want
 Every day people are going around / Life is repetitive at the stations / There are people who come to stay
 There are people who will never go back / There are people who come and want to come back
 There are people who come and want to stay / There are people who came to take a look
 There are people who smile and cry / And so arrive and leave / It's just two sides / From the same trip
 The train that arrives / It is the same that departs / The time of the meeting / She is also fired
 The platform of this station / It's the life of this place / It's the life of this place / Is life [...]*

1 Encontros e despedidas (Song). Songwriters: Milton Nascimento and Fernando Brant. Interpreter: Maria Rita. Own Translation.

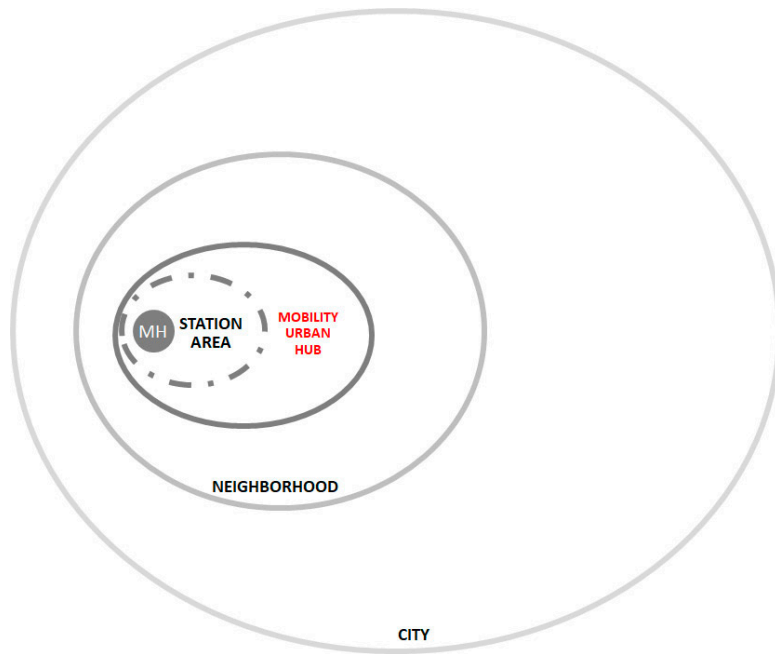


Figure 1:
The challenge of articulation between the urban scales of the City, Neighborhood / Station Area and Mobility Hub (MH).
Source: Own elaboration, 2017.

To complete the thesis, the conclusions present final considerations on their results, contributions to knowledge, as well as proposals for future research.

This thesis has approached the analysis of the **spatial dilemmas between Transport Node and Place** through three urban scales and the main Urban Instruments in two station areas in the city of São Paulo. The **main research hypothesis** is that some high-capacity stations in São Paulo (metro railway), despite being strategic, **did not overcome spatial dilemmas between Transport Node and Place**.

By analyzing the spatial evidence between the Node and Place resulting from projects for urban (re)development and their relationships it was pointed out that the implications of station area projects should be recognized, aligned and articulated to a wide range of urban scales and instruments.

To do so, the thesis was structured in three parts. The **first** approached the understanding of the spatial dilemmas and articulations of the NODE to the PLACE and their potential transformation into a Mobility Urban Hub (MUH).

Some important categories to be considered in the process of urban planning in three **urban scales (figure 1)** - macro (metropolis/city), intermediate (station area / Mobility Urban Hub) and local (station / Mobility Hub) were enlisted.

The **categories** NODE OF TRANSPORT - PLACE - URBAN INSTRUMENTS were codified in variables according to the relation with urban scale and then explained based on the conceptual discussions of Chapter 01, contributing to an important **STUDY METHOD** in the areas of the stations.

These categories were also part of the structuring of the thesis. The attributes enlisted in each scale, reinforcing not only the constructed method but also the idea that Node, Place and Urban Instruments are interdependent.

[N] **Node of transport:** with thirteen variables - N0 through N12;

[P] **Place:** with seven variables - from P0 to P6;

[I] **Urban instrument:** with eight variables - I0 to I7.

As more articulated the transport system and its Nodes (intermodal stations), the Place (local territory), through a set of urban instruments, that **combine and integrate between urban scales**, as high the synergy to be incorporated into development of Mobility Urban Hub (MUH) (**figure 2**).

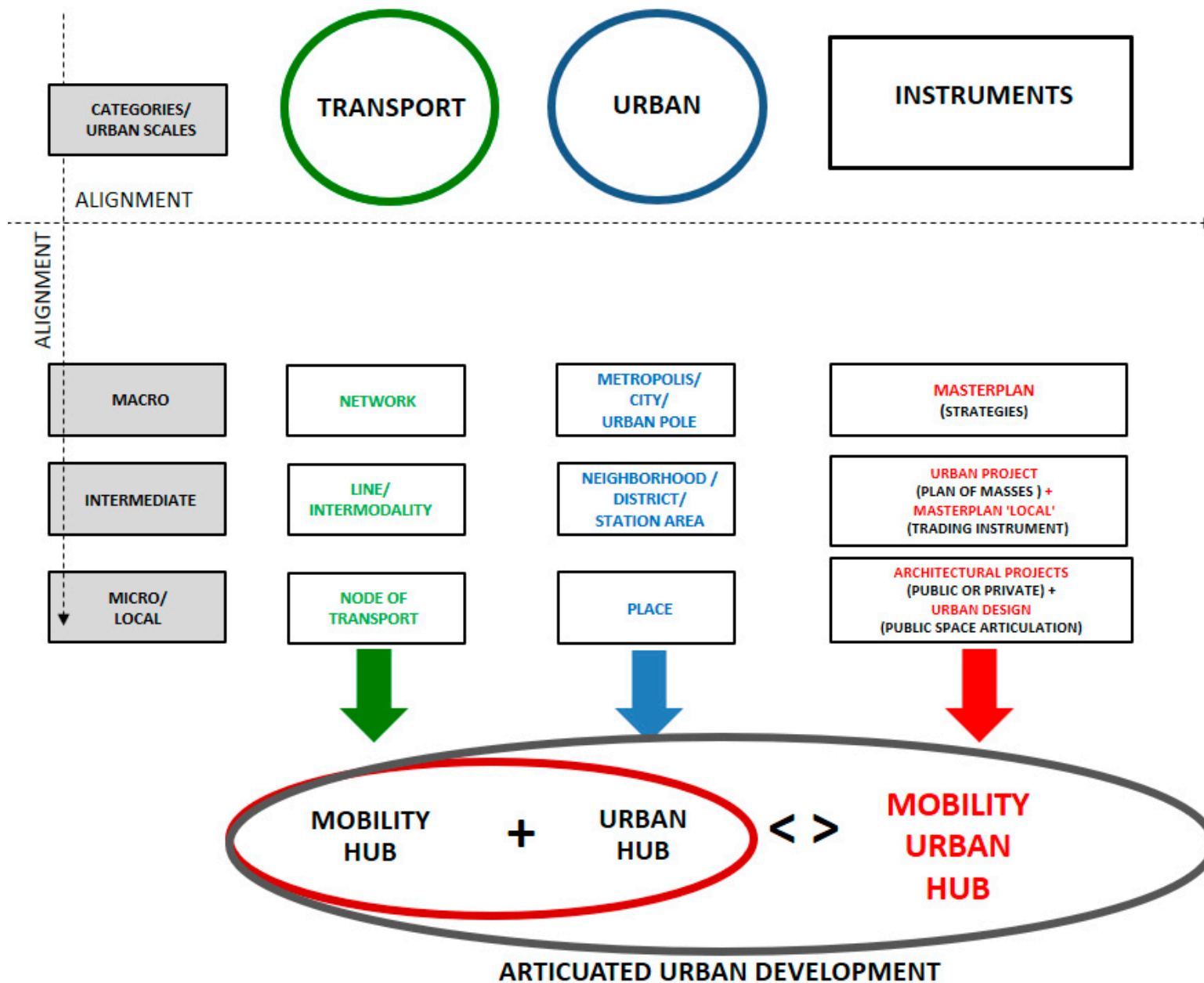


Figure 2
 Alignment of the scales in the scope of Transport, Urban and Instruments for the sustainable development of a Mobility Urban Hub.
 Source: Own elaboration, 2017.

The **second part** of the thesis added chapters two and three which synthesized important European references - Stratford Station, located in London; and the Central Station of Utrecht in the Netherlands. - for the understanding of the Node, Place and Urbanistic Instruments relationships.

The analysis of these references helped the construction of the theoretical assumptions, validating the concepts established in the first chapter, also naming design directives. Both cases, strategic nodes in their territories, are justified by evidence of the changing role of station areas over the years. From the implementation of urban instruments articulated at various scales, such as the **Local Masterplan**, such stations have become examples of what is referred to here as a Mobility Urban Hub (MUH).

The **third part** of the thesis focused on the case studies chosen in the city of São Paulo, the **Pinheiros / Faria Lima stations** (western zone) and **Corinthians - Itaquera** (eastern zone). The path taken to analyze the case studies between chapters five and seven sought to understand the process of spatial transformation of the areas of the Pinheiros / Faria Lima (west) and Corinthians-Itaquera (eastern) subway stations, as well as to **identify the dilemmas and challenges that discourage the constitution of a MUH** based on the triad TRANSPORT NODE - PLACE - URBAN INSTRUMENTS.

The **results** show, therefore, dilemmas and challenges between the NODE and PLACE that result from the mismatch between the various instruments that materialize at different urban scales and reverberate in the station areas.

Thus, through the case studies, the hypothesis put forward in this thesis was confirmed: the station areas did not overcome the spatial dilemmas between the Node and the Place, and even reinforced their spatial tensions. Thus, even with significant recent urban interventions in their respective territories, they still missed an opportunity to design a Mobility Urban Hub (MUH) that is compatible with the urban dynamics of contemporary times.

Contribution of the knowledge of the thesis:

Dilemmas and Challenges between Node and Place among urban scales

The evaluation of the results organized by means of the three urban scales in a combined way among the triad of categories NODE-PLACE-INSTRUMENTS, consolidates the analyzes elaborated.

The following synthesis seeks to extract from this research the main dilemmas that reinforce the tensions between node and place found in the case studies (**Table I**) by means of the three urban scales in a combined way among the triad of categories, and that in a certain way, (with due differences) in other strategic stations in São Paulo, as well as pointing out ways to overcome these challenges and to highlight the inherent potentialities between them.

Macro	[Po]	Dilemmas and urban challenges in dispersed and fragmented territory
	[No]	Dilemmas and Challenges of macroaccessibility network
	[I0 - I2]	Dilemmas and Challenges of strategic decisions and in the articulations between the different sectors
Intermediate	[P1]	Dilemmas and Challenges of the site, urban form and cohesive spatial transformations
	[P2]	Dilemmas and Challenges in the formal articulation between new and old uses and densities
	[N1 - N5]	Dilemmas and Challenges of the predominance of large infrastructures segregated in the territory
	[I3 - I6]	Challenges imposed by the absence of an articulating instrument between scales
Micro	[P3]	Monofunctional Station Dilemmas
	[P4]	Challenges of Barriers and Lost Space materialized in the Local Territory
	[P5 e P6]	Challenges of Environmental Perception and Non-Place Dilemmas
	[N6 - NI2]	Dilemmas and Challenges of Microaccessibility to Transport Node
	[I7]	Challenges in the articulation between Node-Place in different Urban Scales and stakeholders
MUH	Node + Place	Path: 'Local Masterplan' as an articulator instrument between the three urban scales, base of urban design and negotiation between stakeholders in a Mobility Urban Hub

Table I
Synthesis of the spatial dilemmas between Node and Place in the three scales
Source: Own elaboration, 2017.

There is clearly a gap in the articulation for both categories and instruments among urban scales and the need for a renewed approach to the (re) development of station areas.

According to this report, an integrated evaluation is presented on the three scales between the Node and Place. Two additional general reflections on the research results are made, emphasizing the role of the Local Masterplan as an innovative urban instrument and the development of the Mobility Urban Hub in search of spaces of better performance of the station areas.

Macro Scale

Dilemmas and Urban Challenges in a Scattered and Fragmented Territory

Transport systems are the base of cities' sustainability. But what "city"? To define the desired "city model" and how to deal with its territorial "boundaries" is one of the main strategic dilemmas of the planning process [Io] such as urban sprawl (supported by the roadside mode where there are no limits to expansion) against a compact or polynucleate city (supported by a limited network of public transport and its nodes).

In face of the dissolution of the traditional urban model, the imposition of the modern city; of the indefinite, homogeneous indifferent spaces in its places, where events occur that are based on logics that no longer correspond to a unitary design of the whole, the **city-territory**² [Lo] becomes an urban challenge to be faced in the **metropolis**.

On the other hand, the macroaccessibility [No] that represents the ease / difficulty level of wide access in the urban space to the equipment and the desired activities is a variable to be worked together with this territory.

The design of a metro-rail network by means of a station, at the same time as a local "access point", on the other hand, allows the global accessibility to the territory where the network is present. However, it was found the lack of stations in certain areas which are covered by the network makes difficult its access against the macro network, which contributes to spatial inequality and imbalance evidenced against the urban mobility by people products. So, the design imposed by the macroaccessibility to São Paulo is challenging, once the territory is no homogeneous up to this date.

Both case studies have evidenced some impacts caused by this dilemma: While Pinheiros and Faria Lima stations are located to an strategic and consolidated area of the city, which are complemented and articulated to subway and railway and road transportation web, enabling

² CACCIARI, M. **A cidade**. Translation: J.J.C. Serra. Barcelona: GG, 2009, p.33.

people go around among the city regions, the Corinthians Itaquera station, in turn, shows a totally different scenario. The latter is located to an insulated area full of urban gaps and poorly articulated to transport network on macro scale, whose design of the transport and road structure encourage people to move toward downtown- suburb – downtown rather than infra urban displacement. Which is certain is that the city faces severe issues of urban mobility as approached in chapter five. The lack of integration among governmental instances – Federal Government and municipalities and the several departments in charge of urban and transport policies, as well as of the implementation and operation of different mobility systems have brought to light governance issues on lots of scale, which in turn, impacts on the imbalances found in territory.

Portas³ reminds us that the urban can only be trusted with a strategy that places the urban issue in the foreground, “the intensification of urban life, the effective realization of urban society (that is, its morphological, material, practical-sensitive basis).

Have such imbalances reinforced the dilemma between urban development planning and macro accessibility planning processes. The railway/subway network shall serve the current transport demand or to promote new flows and urban development inside the territory? How does the design of the macro accessibility transport shall be made in future? How can the long-term strategies be articulated to urban and transport spheres.?

These are dilemma and challenges imposed severely to the cities and territories where it becomes increasingly urgent the discussion and study on this matter by the interested parties in order an improvement on the decision making that are suitable to a solution that assure an appropriate working of this process.

Intermediate Scale

Dilemmas and Challenges of urban form and cohesive spatial transformations

Urban space can be the object of multiple readings and interpretations according to the methods used. In the Urban context, instruments are needed to organize and structure the elements of the environment and their reciprocal relations⁴.

It is a dilemma arising from the process of urbanization / development to set the limits of spatial articulation between geographical support and technical interventions in space.

³ PORTAS, N. **A cidade como arquitetura**. Lisboa: Livros Horizonte, 2011. p. 23.

⁴ LAMAS, J.M.R.G. **Morfologia urbana e desenho da cidade**. 5th ed. Lisboa: Calouste Gulbenkian Foundation, 2010, p. 63.

The design of a Transport Node that identifies the most appropriate forms of intervention where they promote cohesive spatial transformations articulated to the site and the urban model of its surroundings [L1-L2] is an important procedural challenge that cannot be ignored or faced only by some sectors.

It is challenging to break with the prevailing logic of the road interventions and the deployment of public transport equipment - whether it is a station or bus terminal - where much of the modal interconnections are neither efficient, nor legible and nor evenly distributed in urban space.

Thus, large [NI-N5] infrastructures such as expressways, subway and train lines and maneuvering yards compete for the use of public space and can impose a scale without proportions with the human scale, designing spaces that do neither optimize and nor qualify the urban space.

Also, there is the impact of car traffic on the quality of public space that is not measured in the areas of the stations. This is an important challenge to be overcome in favor of the station's urban connectivity with its surroundings and the permeability of this important infrastructure in the territory.

For example, in Itaquera Station the lack of a spatial structure concept which organize a lot of actions and interventions made by government mainly and that establish a spatial sense between the buildings and their surrounding areas, as well as to reorganize the different flows (especially pedestrian) which is extremely cruel and decrease the conversion potentiality, both on urban and transport sphere. On the other hand, the Pinheiros Station was built as a land closed by itself which, in turn, has blocked the access over the Pinheiros river. For Faria Lima Station, despite of a potentialized urban space upon the expansion of Batata square due to an urban conversion project, it is clear that the buildings are not aligned with its surrounding area and there is an urban gap in public space.

Micro scale

The ambiguous nature between Node and Place

The structuring of identity, meaning, readability in a way that makes easy the reading of the recognized and organized parts in a coherent pattern by the imposition of a strategic station is difficult, as well as the conception of a *place* in function of the new social practices stimulated there.

The Use Program in the Station Area [L3] gives sense to many activities such as living, working, shopping, entertaining and moving around. However, it is more than assigning / grant

functions to a space: by proposing a program and differentiated densities in the station area, its use is actually influenced as well as the perception of the urban landscape.

On the other hand, non-place is the lack of the place in itself. Non-place is a space that does not create identity but rather solitary individuality, spaces traveled, ephemeral and therefore measured in units of time⁵.

It is challenging to face the logic of the rigidity of an outdated program in face of increasing flows, the innumerable possibilities of intermodality, permanence and social exchanges in collective spaces. It is laborious to construct suitable places not only for the access of a point, but also to events, combining space and time, stop and stay, corresponding to the demands and problems of the time itself.

So, to implement large mobility infrastructure equipment in the existing site, to articulate it to the uses and densities of the surroundings, as well as to list the “new” activities and quantify the “new” densities for urban renewal or economic development without unbalancing the environment is a complex and non-linear path.

It is important to highlight the economic dilemma that occurs “naturally” when investing in an area, then the land prices increase. Beyond this point, there is another consequence: the cost to be invested in housing in a land valued because it is no longer less profitable than commercial and service areas. In this way, the insertion of the social housing program becomes a relevant challenge in the projects in the areas of stations.

Thus, it is evident that the areas of the case study stations are conceived as a non-place, spaces designed only for rapid passage governed by the supreme logic of functionalism: only one Transport Node is accessed.

In the monofunctional architectural design of the stations, the technical and functionalist program prevails, and the insulation of the programs inside and outside the buildings, to the detriment of the articulation with other possible urban activities when accessing it.

On the other hand, the microaccessibility [N6-N12] that refers to the more or less easiness of direct access to the people to the desired destination, in this case, to the stations can be measured by readability and time released to the final destination.

Due its own nature, a transport node in which various modes, especially the high capacity ones, converge, one of the major challenges is the non-functional isolation in the territory.

5 AUGÉ, M. *Não lugares: introdução a uma antropologia da supermodernidade*. 9th ed. Campinas: Papirus, 2012, p. 95. Our Griffin.

Equally to this challenge, it is evident the need for overcoming the use of the private car in much of the public space, especially in the area of the station. Following this logic, the micro-accessibility between all modes to the transport station with **fairness and spatial quality** is a task to be achieved.

Finally, there are many spatial dilemmas to be overcome on the “floor that is stepped” [L4] around a station. The projective challenge of the overcoming of the territory segregated as a ghetto in itself, circumscribed by fences and walls reinforcing a low spatial connectivity and the conception of urban leftovers, many of which come from the projects and works of implantation of the transport infrastructure.

It is a paradox that there is no qualitative dialogue between the stations and the local territory: their access and possibilities of intermodality are minimal and in some cases nonexistent. It is hard to overcome fragmented interventions in space, which do not seek a uniqueness or spatial continuities.

It is a great design challenge to measure how spatial transformations can lead to environmental perception and space intensity [L5 - L6]. This dilemma also applies to the proposition of new uses and densities as they will result in a “new” diversity and urban intensification that will be integrated into the “new” area.

Therefore, it must be recognized that (re) development cannot turn stations into completely different places than they were before an intervention, even into non-places.

In the analysis of the stations the **gap** of an instrument in the urban development in the **intermediate scale [I3-I6]** which is reflected in spatial dilemmas at the local scale. The absence of this instrument leaves in a formal limbo the relations between the landscape, the urban web and the various stakeholders.

Therefore, the challenge of designing a project plan between the intermediate and local scales that conceives not only new uses and densities on an integrated manner with the existing constraints but which directs the possibilities of urban space design conferring balance and articulation space between the public and private stakeholders in urban development in the areas of the stations, enabling, especially, the improvement of urban mobility of the pedestrians integrated to transportation means, outdoor areas and surrounding business.

Potentialities between Node and Place



If the results show on the one hand the dilemmas and spatial challenges between NODE-PLACE, on the other, potentialities are evident. Thus, **six paths** are proposed as a way to transfer results and two additional paths in the propositional and reflective scope of the thesis.

1. The Mobility Urban Hub in the polycentric territory articulated to the structure of the macroaccessibility network

Mobility Urban Hubs are like single bodies in the city-territory where they **concentrate urban functions** between the **three urban scales** in strategic points of the metropolis. The transformation of strategic station areas into **central places- Urban Hubs** - translates into polycentrality within the context of city-territory.

Mobility Urban Hubs may also represent the breaking of the dichotomy of the division between center and periphery that still contribute in the construction of fragmented and segregated territories.

Concomitant to the development of Mobility Urban Hubs in order to guide the investments in transportation. Is crucial to structure a macroaccessibility web from the integration between mobility plans and urban development plans based on urban scenarios designed for a homogeneous distribution of metropolitan territory mobility.

2. The appreciation of preexistences and cohesive spatial transformations

Identifying the potentialities and weaknesses of the area of a station is an important way to understand its preexistences, logic and not deny them.

It is possible to follow the path of valuation of environmental constraints, such as rivers and streams, not their suppression as an example; to place them as spatial potentialities that value space, qualify the environment and aid in spatial transformations in a cohesive way and also in the valorization of their own local identity.

3. Mobility Hub and Multipurpose Station

Currently, the stations are today a key point in the field of architecture and urbanism because it is evident the new role that the architecture of the stations has acquired in the space of the flows of the contemporaneity.

Transport nodes can behave as points of articulation between different local manners; a readable space for micro-accessibility around the subway and train stations, as well as a space that promotes intermodality efficiency⁶. This represents space for people, bicycle, terminals, platforms of trains and buses without closing in on itself, without barriers; a single space, which houses in the same space interconnections fluidly and intimately articulated with the territory where it is inserted.

Thus, the way lies in how to share the space between all modes. The issue is not the exclusion of any modal, but in how to include them, distribute them in urban space and in choosing which of the modes will have the preference of access in the immediate space of a station.

A Mobility Hub aims to increase the interconnections and complementarity of the different modes of transport in a single space. The design of a Station as Mobility Hub is a path to be taken to strategic transport nodes, which aggregates different urban scales and multiple modalities. It is also the catalytic nucleus of the development of an Urban Hub, concentrating and radiating different scales, activities, people and flows.

4. The articulating Public Space

Public space is the basis of a good relationship between the traffic, the large infrastructures, the convivial space and the access to the Station.

Public space can be planned and designed as a whole, as a harmonious ensemble, preserving *continuity, connectivity and attractiveness* with comfort and safety for all who go for some reason to a station.

Station areas should, then, be urban centers designed to scale people, geared towards human mobility. The predominance of the *walkability* in the areas of the stations can occur in several ways, but necessarily passes through the *valorization of the public space* and the protagonism of the pedestrian connectivity with the surroundings.

6 BAIARDI, Y. C. L. **The role of microaccessibility in urban mobility: the case of the Santo Amaro train station in the city of São Paulo**. Dissertation (Master degree) - Faculty of Architecture and Urbanism, Universidade Presbiteriana Mackenzie, São Paulo, 2012.

The *human scale* should be a guideline to be used in the implementation of large transport infrastructures and articulation with the public space. In this way, it is necessary to measure the impact of car traffic and infrastructures in order to achieve a pleasant ambience in the public space of the stations.

The *squares of the stations* are open spaces, whether green or not, but they are mainly qualified areas and closely articulated with the buildings and flows of the surroundings and therefore, are a spatial strategy for urban qualification in the access to the station. They also give priority to the pedestrian, to the citizen in the urban space, that is, there are no expressways or fences, bus terminals or urban leftovers that touch the surroundings and direct access to a station.

Soon the challenge of designing new roads, new streets, new squares, new squares, new *pedestrian connections* to improve access to the area by the people, regardless of the modal chosen, must be faced.

There is also a European trend: the separation of the body from the mall station. It is necessary to offer to users freedom so that they can aim for the space he wants to access, the appreciation of the open spaces qualified and not add large infrastructures in the body of the station, further segregating the environment.

5. The diversity of programs and the urban landscape

Inducing the diversity of programs of uses and activities with high densities in the stations and in their surroundings is a strategy in keeping with the current dynamics, especially accessibility.

The Polyvalent station favors active look, several activities that may occur during their passage or stay without impairing access to the various modalities present. It is also possible that it is the basis of many activities that may occur on it.

It is also about establishing a balance between the existing one with new uses and densities and its relation with the other parts of the environment. It is emphasized that proposing activity programs means intervention to achieve certain objectives: it provides both *insight* into future roles in the area and the ambitions to be pursued throughout development.

The use of the local Masterplan instrument becomes a key element both in designing and ordering the possibilities of use, and in articulating among all the agents involved on where and how each piece should stay, its densities as well as to stipulate and balance the gains and spatial losses.

6. The station as Place and Inter-place

The *place* in a station area is understood as the one that creates identity, relation and history, but also conceives an *inter-place* as a catalyst for an affective connection, for the intensification of an indeterminate and changeable event, either during movement or permanence. The *place* in a station area is where it offers the freedom to experience the time when traveling, as part of the mass of travelers. It is a *place* where the dwelling can take place in a wait, or on the other hand, the *place* of the traditional address where dwellings are part of the scope of the multifunctional building of the station.

The surroundings of a station can be a pleasant place, safe and with high readability so that it is possible to reach the access of a station independent of the modal used, facilitating and enhancing the microaccessibility path.

The strategic stations have the potential to be places of connection between different communication systems and urban scales, combining these possibilities, designing multiple spaces of diverse social and functional dimensions, as spaces that receive more and more individuals; have a significant importance in the articulation of the virtual and of the real, suitable both to intimacy and to the most varied sociabilities.

The relation with place occurs on a closely articulated manner to the urban space, that is, this connection does not occur in a strictly functional, abstract, distant and detached way of space as a common practice of the twentieth century. There, the challenges of flows and accesses are overcome and harmonized under the technique required by the innumerable modal interconnections to the place.

It is necessary. Then, to consider not only a technological future, but a sensitive future with a greater protagonist of the senses, such as listening, feeling, observing and speaking.

The understanding of the essence of the places in the areas of the stations, based on their history, the roots that conceive their identity, and the spatial articulation in their local territory is a strategy in search of the non-homogenization of space, but in their qualification.

Metapaths

Taking advantage of the complexity of the projects and processes, the space for reflection, fluidity scenarios in constant change and Metaprojects⁷, two “metapaths” are proposed for the development in the areas of the stations, once concepts must be revisited for questioning and updating⁸, seeking the creation of new strategies: The Local Masterplan and Mobility Urban Hub.

Metapath 1: ‘Local Masterplan’ as an articulating tool between the three urban scales, urban design base and negotiation between the stakeholders

Certainly, the challenge for the construction of stations has ceased to be the preponderant technological technology in the construction of buildings. The challenges for the (re)development of a station environment is not the lack of good projects despite of the need to overcome the transportation efficiency dilemma in relation to the meaning of the urban.

Obviously, finding a common goal among all stakeholders, whether public, private or civil society within the categories set out in the research: TRANSPORTATION NODE - PLACE - URBAN INSTRUMENT on the three urban scales is arduous.

Portas⁹ points out that if one considers the process of producing projects in a vulgar way, one will be faced with a work process characterized by **improvisation**, without being able to respond to the challenges imposed, reducing issues only for circulation or space lost between others.

There is an urgent need for research that seeks to improve “the decision-making processes leading to a solution (...) to achieve a certain degree of control of the objectives, the quality of the response that gives them the design and, to ensure a good income from that process, if they chose the paths most likely to succeed whatever their nature or sequence.”¹⁰.

7 Metaproject understood as a platform for reflection and innovation to contribute to decision making in an innovative way in the processes. A metaproject considered by many authors as an alternative to the project, opposing the limits of conventional methodology acting through complex methods, considered the “Project Project”. For further definitions see doctoral thesis by Caio Adorno Vassão and the book by Dijon de Moraes (Metaproject: the design of the design. Blucher, 2010).

8 ASCHER, F. **Os novos princípios do urbanismo**. São Paulo: Romano Guerra, 2010.

9 PORTAS, N. **A cidade como arquitetura**. Lisboa: Livros Horizonte, 2011. p. 57.

10 *Idem ibidem*, p. 57.

The development of a **Meta-Project** (Project Design - logical analysis of the architecture, looking for generic needs and typological solutions, predicting the maximum combinatorial possibilities); of the **Meta-Program** (conciliation of sectoral programs and their indetermination without taking care of particular characteristics, but proposing priorities and basic interrelations between the factors); and the **Meta-Design**¹¹ (structural representation of the space that solves that meta-program) - for a Mobility Urban Hub (MUH) through what are called a **Local Masterplan** (figure 3) - directly faces the spatial dilemmas between the Node of Transportation and Place - and does not deny them.

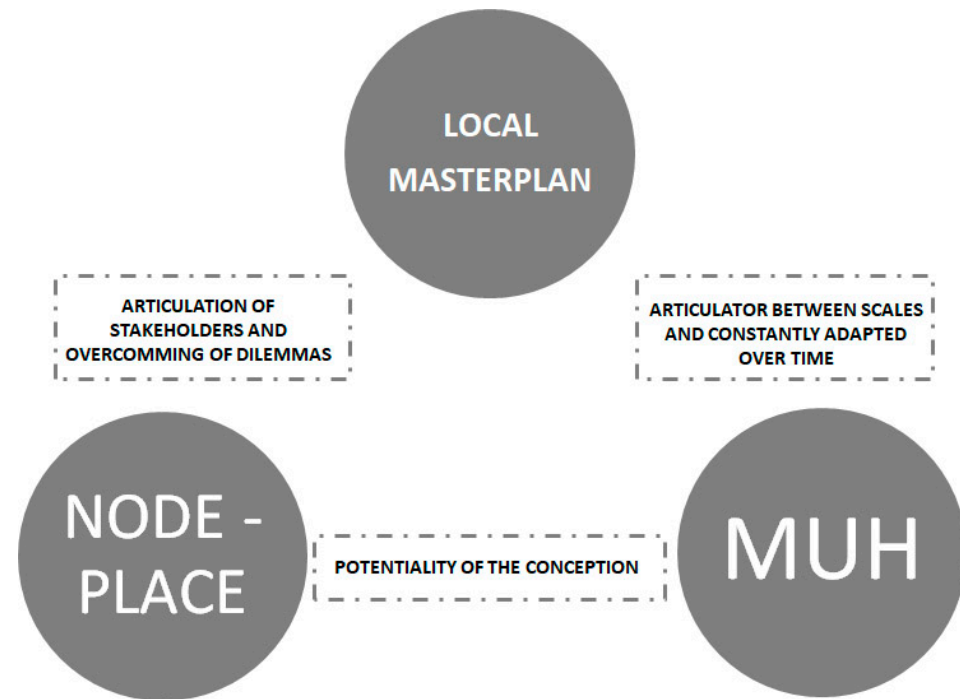


Figure 3
The Local Masterplan as an articulating instrument between scales, between NODE-PLACE and stakeholders to promote MUH.
Source: Own elaboration, 2017.

Therefore, it is necessary to draw and project the art of the relationship of urban space, the relationship between full and empty. Following this logic, through more decentralized, more local and informal tools and processes - such as that of a Local Masterplan - one can define the relationships among the different urban elements, align the different urban scales and be a necessary tool to qualify the proposals and intentions among all involved.

¹¹ PORTAS, N. *A cidade como arquitetura*. Lisboa: Livros Horizonte, 2011.

The Local Masterplan provides an integrated vision among the disciplines involved to materialize the projects. It is an instrument that adapts constantly, eminently flexible without losing its goals, because it itself contains the tactics that allow it to guide experimentation, modifying itself and complementing itself by the process.

This instrument, whose concept is under construction, to be matured, requires a plural team and is committed to the local complexities and to the evaluations necessary to the process, once the viability of a plan is established over time, in stages and through interested parts.

The concept of the Local Masterplan discussed in chapter one and validated in the second part of the thesis, adopts the urban model, the innumerable Meta-Projects, Meta-Programs, Meta-Drawings and the relations between the public and private domains to achieve a common objective between the stakeholders in a continuous way: the commitment to the creation of the social space capable of generating a sense of ownership, connectivity and place.

Metapath 2: Mobility Urban Hub

Due to the intensification of the possibilities of the displacements in the metropolis and the role of the station areas, not only an access space, but as a place in the territory, it is observed that there is a greater complexity in the dilemmas and spatial challenges between them.

The contemporary transport infrastructure must then dialogue with space, integrating with the territory and stimulating new forms of interaction. Therefore, it is necessary to involve multiple public policies and plans that place the urban polarities effectively articulated to the strategic Nodes of a macroaccessibility network.

There are several avenues to follow for the development of a Mobility Urban Hub. One of them is the reverse: the denial of dilemmas and challenges in the face of the ambiguous nature of a station: it is a TRANSPORT NODE, but also a PLACE.

Developing a set of strategies (or guidelines) that can contribute to improve the spatial integration between transport node and place in the areas of stations and the corresponding territorial planning in which they potentiate the development of a **Mobility Urban Hub** is unique in each context. Some paths have been pointed out throughout the research up to here presented which were synthesized above as well as in the partial considerations described in the finalization of the three structural parts of the thesis.

The **Mobility Urban Hub** (MUH), under the context of a polycentric city / region articulated to an urban macroaccessibility framework, despite the term “ MUH”, is not a new strategy. But it is a new concept that reinforces the urban potentialities of the stations as much as the Transport Node as of the Place; of the potentialities of the alignment of the planning process

between the urban scales and the modal interconnections at a station in the face of current urban dynamics.

In this way it is understood that the Mobility Urban Hub is the central place that emphasizes connections that are not evident, concentrates and radiates multiple urban functions. It is an open system that admits interactions in space and time, constantly regenerating itself, opposing itself, therefore, to the closed system that does not allow new exchanges or energy with the context. It is the expression of the combination between NODE (continuous integration of modes of transport); PLACE (vibrant, intense environment, mixed and dense use and a public space attractive and articulating between the parts of the envelope); and URBAN INSTRUMENTS (through flexible instruments to articulate disparate objectives and to accommodate growth and change as well as to enable physical-financial balance).

The major challenge found in the research lies on decision making, institutional fragmentation in managing a process that takes place in different domains of interaction, where actors operate with different interests, goals and means, at different temporal scales. In this way, the discovery of the **Local Masterplan** instrument, developed in the intermediate scale, is considered as a path to be pursued for the feasibility of a Urban Mobility Hub (MUH).

In the city of São Paulo, to identify these challenges and to visualize the potential that a Mobility Urban Hub (MUH) can aggregate and to relate the socially segregated urban zones, dispersed from the functional point of view, mainly spatially discontinuous, is an important step in the long road to building a better city for all who live in it.

Strategic stations to be designed in the 21st century have several dilemmas and challenges to face. Thus, the Mobility Urban Hub is a path to unravel: it can be monument, tangible expression of permanence and duration. The MUH has the power of the different urban scales; of access-dwelling; time-space, building-territory, public-private; fluidity-density; individual-collective; diversity-choice; finally, from arriving-departing at the Node-Place - in a combined, conjugated and articulated way.

Recommendations for future research



The results of this research extended the understanding of the ambivalences, dilemmas and spatial challenges between a NODE and a PLACE in the station areas. It contributes to the discussion on how to improve spatial performance in the vicinity of strategic stations and the consequent transformation into a Mobility Urban Hub (MUH). However, the paper also found limitations and raised other issues, which open new avenues for future research.

The categories of analysis structured in the Thesis were grouped into three distinct urban scales with several implications for spatial performance, whether on the scale of the city, a station area, or the building itself. In this way, a method was developed both at the intermediate scale and at the local scale to identify the spatial dilemmas between NODE and PLACE. However, a research that deepens this method and these scales are pertinent.

Despite the limitations arising from the number of case studies and the references analyzed, the recommendations resulting from this research can serve as a basis for designing new projects. It is also possible to transfer the methodology to other stations and other conceptual issues for any station that has the potential to become a MUH.

It was also observed a complexity of the body of fragmented instruments in diverse scales and administrative sectors. The dilemma of management and *governance* is evident and it is essential to face it. It is suggested that in-depth research be carried out on the urban instruments involved, the maturation of existing ones or even the design of new ones, both in European references and in the context of case studies.

It is also understood that studies in the area of behavior can help in the understanding of Urban Design since they can influence human actions in the physical-spatial environment as well as its performance. In this sense, a gap was found in more current scientific research that dealt directly with subjects in the field of environmental perception, behavior analysis, the geography of interrelated perception in the conception of urban spaces, or rather places in the areas of the stations, new cathedrals of the 21st century.

Finally, this thesis sought to demonstrate that the areas of the stations, the new cathedrals of the 21st century can be planned and designed as *part* of the city, contributing to improve urban life in the contemporary city.



Figure 4
Platform of the train station in
Utrecht.
Source: author, 2016.

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Lei Federal n. 13.089, de 12 de janeiro de 2015. Institui o Estatuto da Metrópole, altera a lei n. 10.257, de 10 de julho de 2001, e dá outras providências.

Lei Municipal n. 7.688, de 30 de dezembro de 1971. Dispõe sobre a instituição do Plano Diretor de Desenvolvimento Integrado do Município de São Paulo – PDDI-SP, e dá outras providências.

Lei Municipal n. 7.805, de 1 de novembro de 1972. Dispõe sobre o parcelamento, uso e ocupação do solo do município e dá outras providências.

Lei Municipal n. 8.328, de 2 de dezembro de 1975. Dispõe sobre o parcelamento, uso e ocupação do solo do Município, nas zonas de uso especiais Z8, cria novas zonas de uso, amplia zonas existentes e dá outras providências.

Lei Municipal n. 11.228, de 25 de junho de 1992. Dispõe sobre as regras gerais e específicas a serem obedecidas no projeto, licenciamento, execução, manutenção e utilização de obras e edificações, dentro dos limites dos imóveis; revoga a Lei n. 8.266, de 20 de junho de 1975, com as alterações adotadas por leis posteriores, e dá outras providências.

Lei Municipal n. 11.732, de 14 de março de 1995. Estabelece programa de melhorias para a área de influência definida em função da interligação da Avenida Brigadeiro Faria Lima com a Avenida Pedroso de Moraes e com as Avenidas Presidente Juscelino Kubitschek, Hélio Pellegrino, dos Bandeirantes, Eng. Luis Carlos Berrini e Cidade Jardim; cria incentivos e instrumento para sua implantação, e dá outras providências.

Lei Municipal n. 13.430, de 13 de setembro de 2002. Plano Diretor Estratégico.

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● **Appendix**

Summary tables of case studies

São Paulo city

Macro Scale – Urban	
Categories	Place in the city
Urban context and Socioeconomic data [Po]	<ul style="list-style-type: none"> • 2016 – City of São Paulo: 1,521.11 km² and 12.038.175 inhabitants • 1554 – Birth of the city • 1867 – Implementation of the Santos-Jundiaí railroad (32 thousand inhabitants) and the beginning of coffee exports • First industrial surge (approx. 1867-1930) that occupied the floodplains through which the railroads passed, constituting great working regions. • 1900, the approximate population of city. 250 thousand inhabitants, of whom 150 thousand are immigrants • 1928 – 1 million inhabitants • 1929 – Stock market crash in New York and end of the coffee cycle • Between the decades of 40 and 60, motivated by the consolidation of the industrial park of São Paulo articulated to a new road system of great territorial scope, a wave of migration occurred. • Transfer of economic activities, especially in the scope of services, from the old center to av. Paulista (decade 60), then av. Luiz Carlos Berrini (mid 80's) and recently to av. of the United Nations (marginal Pinheiros) • Southwest vector as economically most important region of São Paulo • The Petroleum crisis put an end to the “Brazilian Miracle”, not making feasible the construction of the express routes proposed in the PDDI • 1973 designed the Metropolitan Region of São Paulo - RMSP • RMSP – sixth largest metropolis in the world (UN) with 7,946.96 km² and 21,242,939 inhabitants. • GDP of RMSP – 18% of the Brazilian total and more than half of the GDP of the State of São Paulo (55%)¹

¹ Available at: <<https://www.emplasa.sp.gov.br/RMSP>>. Access on Oct 05, 2017.

Macro Scale – Transport

Categories	Node of transport in the network
Macro-Accessibility	<ul style="list-style-type: none"> • 1867 – Implementation of the Santos-Jundiaí Railway • 1924 – Start of the clandestine buses • 1930 – Plan of avenues • 1950 – Report of Robert Moses of IBEC • 1957 – Beginning of the deactivation of tram lines • 1966 – Creation of the Metropolitan Company - Subway (municipal law n ° 6.988) • 1968 – Deactivation of the last tram line in the city. There are no tram ways in the city currently • 1974-1976 – SISTRAN • 1974 – Inauguration of the first subway stretch of the city with 6.5 km on the Blue Line (between Jabaquara and Vila Mariana stations) • 1978 – Subway is now managed by the State • 1991 – Created the Secretary of State for Metropolitan Transports • 1992 – Created the CPTM (suburban train) • 1995 – Extinction of CMTC and outsourcing of transportation services • 1995 – Creation Sptrans (manager of collective bus transportation) • Mobility on foot is the most important mode of the city (OD 2007) • The subway network carries around 4.7 million passengers per day (Metrô, 2017) • There is a train network of 260.8 kilometers, carrying 2.7 million passengers per working day, operated by CPTM • There are 130 km of bus corridors (segregated lanes) • The bus system carries 9.9 million daily • 468 km of cycle routes (CET, 2016) • Increase of 15.5% in the time of commuting of the collective transport, from 58 minutes to 67 minutes (PlanMob) • Main drivers of CO emissions are cars (74%) and motorcycles (18%) are the main causes of environmental and noise pollution • High levels of congestion and deaths due to traffic accidents and pollution

Macro Scale			
Categories	Urban instruments		
Federal (I0)	<ul style="list-style-type: none"> 1979 – Installment of urban land (Law nº 6,766) 1997 – Brazilian Traffic Code (Law nº 9,503) 2003 – Creation of the Ministry of Cities 2001 – Statute of the City (Law nº 10,257) 2012 – National Policy on Urban Mobility (Law nº 12,587) 		
	<ul style="list-style-type: none"> 1973* – Established the Metropolitan Region of São Paulo (RMSP) (Complementary Law nº 14/1973) 1999 – PITU 2020 2006 – PITU 2025 (Pinheiros and Itaquera as Key Terminals) 2015* – Metropolis Statute (Law nº 13,089) 1930 – Plan of Avenues 		
	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">1971 – PDDI (Law nº 7,688)</td> <td style="width: 50%;">1972 – Zoning (Law nº 7,805)</td> </tr> </table>	1971 – PDDI (Law nº 7,688)	1972 – Zoning (Law nº 7,805)
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	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;"> 2002 – PDE [Plano Diretor Estratégico] Strategic Masterplan (Law nº 13,430) </td> <td style="width: 50%;"> <ul style="list-style-type: none"> 2004 – Dispose of zoning and institutes Strategic Regional Plans of the Sub prefectures (Law nº 16,402) Structural Network of Axes and Poles of Centralities UIA (Urban Intervention Area) </td> </tr> </table>	2002 – PDE [Plano Diretor Estratégico] Strategic Masterplan (Law nº 13,430)	<ul style="list-style-type: none"> 2004 – Dispose of zoning and institutes Strategic Regional Plans of the Sub prefectures (Law nº 16,402) Structural Network of Axes and Poles of Centralities UIA (Urban Intervention Area)
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2014 – PDE (Law nº 16.050) Strategic Masterplan	<ul style="list-style-type: none"> 2016 – Zoning (Law nº 16,402) 2016 – Regional Plans of the Sub prefectures (decree nº 57,537/2016) Axes of Structuring Urban Transformation PIU 		
Consortium Urban Operation			
<ul style="list-style-type: none"> 2015 – Mobility Plan - Decree nº 56,834 2015 – Terminal Concession Law (Law nº 16.211) 2016 – PIU – Urban Intervention Project – Decree nº 56.901 2017 – Code of Works and Buildings 2017 – Statute of the Pedestrian (Law nº 16,673) 			
* Although the application of the law is at the state level, its conception occurred at the federal level.			

Stations Pinheiros and Faria Lima

Intermediate scale – Urban	
Categories	Place in the neighborhood
Regional context [Po]	<ul style="list-style-type: none"> • 1562 – Installation of an indigenous group on the banks of the Pinheiros River • 1909 – Arrival of the tram line • 1910 – Opening of the Pinheiros Market • 1927 – Opening of the Cotia Agricultural Cooperative • 1966 – Creation of the Subway Company • 1970 – Inauguration of the expansion of av. Faria Lima • 1978 – Municipality exempts the stock control of the Subway, passed to be State • 1990 – Prolongation of av. Faria Lima, which drove the transformations in the region, establishing itself as one of the main economic centers of the city • 2001 – National Public Tender for Urban Reconversion of Largo da Batata • 2008 – Construction begins at Largo da Batata • 2010 and 2011 - Opening of the Faria Lima and Pinheiros subway stations respectively • 2013 – Initial stage of social demonstrations • Current days – strong presence of the real estate market in urban transformation and dispute in the appropriation of the Largo da Batata space • Pinheiros station integral of the PMI [Procedimento de Manifestação de Interesse] - Concession of the terminals for private initiative
Socioeconomic data of the subprefecture of Pinheiros – PI [Lo]	<ul style="list-style-type: none"> • Best HDI (urban development index) of all subprefectures together with the sub-municipality of Vila Mariana (0.942) • 89,000 people left the PI subprefecture between 1980 and 2000, again growing in 2010 • 67,29% of the population is in the age range of 15 to 59 years • accounts for about 15% of jobs, approximately 635,000 (the second region with the largest number of formal jobs in the city) • Demographic density in 2010 (125.67 inhab/ha), superior to that of the city (102.02 inhab / ha) • Densities of employment per inhabitant and per hectare are 2,3 emp/inhab and 261,7 emp/inha respectively • Technical-administrative services are the main activity • The highest standard of income among the sub-municipalities of São Paulo • 30% of the households have a monthly nominal income of more than 20 minimum wages and 25% of the households have monthly nominal income of more than 10 minimum wages and less than 20 minimum wages • 61% of the built area of its territory is of residential use, with predominance of dwellings of medium-high standard • Only 5,9% of the land still remains vacant in this subprefecture

Intermediate scale – Urban

Categories	Place in the neighborhood	
Structuring elements of the path [P1]	Conditioning	Rio Pinheiros – suppressed in the urbanization of the area after rectification and urban barrier not overcome.
	Street layout	There is infrastructure of the train and expressway that conditioned the implementation of the PI station. The route of Butantã Street, a colonial road – the only moment when crossing the river – and its mouth to the Largo de Batata/Pinheiros is branched between the streets Cardeal Arco Verde, Teodoro and Pinheiros. On the other hand, the structural path – av. Faria Lima and av. Eusébio Matos clearly limit a “small neighborhood”. There is a design of consolidated urban fabric that penetrates the adjacent areas in the neighborhood towards the center of the city, even with a flow of passage through the structural routes that cut it north-south direction.
Occupation [P2]	Constructed areas and urban references	The Decade of 30 already had a significant occupation, with prominence for the constructions in the street Butantã. In the 1970s it was basically all occupied largely by houses and houses. Main References: Sesc Pinheiros, Church Nossa Senhora de Monte Serrat, Eldorado shopping mall.

Intermediate scale – Transport

Categories	Node of transport at the line	
Urban mobility of the suburb of Pinheiros² [No]	<ul style="list-style-type: none"> One of the best roads in the city The sub prefecture has 17% of its road classified as structural; as well as a significant number of its lanes classified as collectors There are two subway lines (2 – Green and 4 – Yellow); a train line (9 – emeralds); and two bus corridors The most commonly used travel mode is individual transport (60%); followed by foot mode (20.5%), and collective mode (19%) 11.9% of workers spend more than 1h on commuting The trips second destination of the residents occur basically within the territory of the own sub and also Sub Sé and Lapa Motor mobility index of Sub = 2,60 1990s – enlargement of the av. Faria Lima 	
Transportation systems	Train Lines [N1]	Line 9 – Emerald
Transportation systems	Subway Lines [N2]	Line 4 – Yellow
Transportation systems	Bus Terminal [N3]	Bus terminal Pinheiros
Transportation systems	Main avenues/ Corridors and bus lanes/ sidewalks [N4]	<ul style="list-style-type: none"> North-South Railway: Av. das nações Unidas e av. Faria Lima; East-West Railway: s. Teodoro Sampaio, s. Cardeal Arco Verde, s. Butantã; s. Paes leme, s. Sumidouro; Corridor in the av. Rebouças; Bus lanes: av. Faria Lima, s. Teodoro Sampaio, s. Cardeal Arco Verde, s. Butantã; part of s. Paes Leme; Predominantly narrow sidewalks especially in the main roads.
Transportation systems	Bicycle paths [N5]	Av. Faria Lima; s. Arthur de Azevedo, av. Rebouças; parallel to the Pinheiros River.

² Source: PMSP; SMDU. Datasub-Sub prefectures Notebook: Sub-Prefecture of Pinheiros, 2016.

³ Mobility index is the ratio between the number of trips and the number of inhabitants of a given area.
 Motor mobility index is the sum of trips by collective and individual modes.

Intermediate scale	
Categories	Urban instruments
PDE 2002 [I1] [Plano Diretor Estratégico] Strategic Masterplan	Macro-area of Restructuring and Requalification
PDE 2014 [I1]	<ul style="list-style-type: none"> Macro-area of urban structuring and urban qualification; Metropolitan structuring macro-area (MEM): subsector Arco Pinheiros; The station Area is not part of the axis of Structuring Urban Transformation.
Zoning [I2]	<p>1972/1998: Pinheiros station area</p> <ul style="list-style-type: none"> Z2: Zone of predominantly residential use of low population density; Z4: Zone of mixed use, of high average demographic density (portion of s. Butantã); <p>1972/1998: area of the station Faria Lima</p> <ul style="list-style-type: none"> Z3: Zone of predominantly residential use of average demographic density and Z2; Linear centrality zone - at St. Butantã, Av. Faria lima (trecho) and av. Eusébio Matoso.
	<p>2004: Pinheiros station area</p> <ul style="list-style-type: none"> ZM 2: mixed zone of medium density (predominance). <p>2004: area of the Faria Lima station</p> <ul style="list-style-type: none"> ZM 3b: Mixed zone of high density (predominance); ZEPEC: Special cultural preservation area (Largo Pinheiros); ZCL: Linear centrality zone – St. Butantã, Teodoro, Cardeal Arco Verde, Eusébio Matoso.
	2016: ZM Mixed Zone prevails in both stations.
Regional Plans [I3]	<p>2004: Strategic Regional Plan</p> <ul style="list-style-type: none"> Previous AIU [Área de Intervenção Urbana]; Urban Intervention Area
	<p>2016: Regional Plans of the Subprefectures</p> <ul style="list-style-type: none"> Perimeter of action number 150 (Centrality Arco Verde Teodoro).
Urban Operation [I4]	<ul style="list-style-type: none"> 1995: Approval of the Urban Operation Faria Lima (Law nº 11.732); 2004: Changes the Law nº 11,732, adapting to the City Statute (Law nº 13,769).
Project [I5]	2001: National Contest of Urban Reconversion of Largo da Batata.
Other [I6]	2017: Part of the PMI for Concession of bus terminals.

Local scale – Transport

Categories	Access node		
Microaccessibility	Pedestrian access to the station [N6]	<p>Pinheiros Station: through a small square bordered by fences and bogs, and a sidewalk narrowed only by Capri St., denying access by the expressway. There will be two accesses, one by a slight ramp or side staircase.</p> <p>Faria Lima Station: through Largo da Batata in the presence of residual spaces; or by the Market Square, being an open entrance to Largo and opening towards the empty lot.</p>	
	Access to the subway [N7]	<p>Pinheiros Station: after passing the existing locks at the entrance to the building, it will be necessary to descend several flights of escalators, usually with a high flow of passengers where the speed of the floor can be impaired and uncomfortable.</p> <p>Faria Lima Station: the entrance to the station is a cover, small stairs and a tunnel of access to the blocks by the underground.</p>	
	Access to Train [N8]	<p>It applies at the Pinheiros station: after entering the subway station, cross the expressway and access the boarding platform. Users from the train station will have to climb stairs to cross the expressway and then descend again to access the subway system.</p>	
	Bus And Bus stops [N9]	<p>The connection of the subway station with the terminal occurs only by the surface after passing through turnstiles (without charge).</p> <ul style="list-style-type: none"> Bus stops: <ul style="list-style-type: none"> Pinheiros Station: opposite the station; Faria Lima Station: Av. Faria Lima in both directions. 	
	Bicycles [N10]	<p>Pinheiros Station: 2 small ones (being one of the management of ViaQuatro opposite the entrance of the station) and one of SPTrans located between station and terminal);</p> <p>Faria Lima Station: a small one in Largo da Batata.</p>	
	Private car [N11]	Boarding/disembarking	There is no specific space for boarding/disembarking.
		Public parking	There is not.
		Private parking	There is one in the basement of the Pinheiros terminal. There are some in the surroundings, mostly underground or in enclosed buildings.
Taxi stand [N12]	<p>Pinheiros Station: opposite the station st. Gilberto Sabino;</p> <p>Faria Lima Station: only next to the church.</p>		

Local scale – Urban	
Categories	Station as a place
Buildings [P3 + I7]	It predominates mixed use with much popular commerce in the ground of the small / medium constructions aligned to the private limit of the lot. A few years ago began the implantation of large corporate towers and residences, away from the alignment, with gardens and fences changing little by little the urban landscape of the region. There is interaction, attraction between public and private domains especially in the typology of the buildings built in the alignment of the lot. The exception will only occur on the façades of the stations that do not stimulate the exchanges and only access.
Local territor [P4 + I7]	<ul style="list-style-type: none"> • Western sector: Linear space limits the expressway and open space of the Pinheiros River. There is no stimulus to the connectivity of the farmland with the neighborhood where the modal node is inserted, which is surrounded by a large part of its perimeter. • Sector Transition: Linear spaces of the consolidated urban fabric prevail. • Eastern sector: Area of focus of the redevelopment project of Largo da Batata where the predominance of the open spaces of the squares occurs: 1. Largo do Pinheiros or Praça da Igreja; 2. Largo da Batata; 3. Largo do Mercado. The squares have strong spatial connectivity with the fabric, but Av. Faria Lima can be an urban barrier between squares.
Environmental perception [P5]	<ul style="list-style-type: none"> • FL Station Area: Largo da Batata is an important nodal point in the neighborhood. There is high urban readability more for the urban set in which they are inserted than for the station itself. A high sense of security prevails. • PI station area: the bus terminal cover assists in urban readability. It was lost the chance to structure it as a nodal point on the face facing the Pinheiros River. As the set is closed in itself, the readability of the accesses decreases. The feeling of security is good, except in the face of the station facing the expressway.
Urban intensification [P6]	<ul style="list-style-type: none"> • FL Station Area: Dynamic, flexible territory with diversity and urban vitality, but in dispute and intense transformation, with plurality in the conception of how to appropriate a place in the territory. It overcomes spatial dilemmas despite some contradictions. • Station area PI: static space, inflexible, monotonous. It reinforces spatial ambivalences.

Corinthians-Itaquera Station

Intermediate scale – Urban	
Categories	Place in the neighborhood
Regional context [Po]	<ul style="list-style-type: none"> • 1556 – Arrival of the Jesuits in Itaquaquetuba (meadow of the Tietê river); • 1875 – Itaquera train station was inaugurated inducing the population growth of the area; • 20 years – Division of farms for agricultural production (green belt); start of quarrying; • Years 50 – 15 thousand people lived in Itaquera (IBGE); • 1957 – Beginning of the works of Radial East Avenue inducing the growth vector for the east zone; • Years 60 – 30 thousand people lived in Itaquera (IBGE); PUB studies to make Itaquera a Subcenter; • 1966 – Resumption of the work extension of Av. Radial Leste; • 1966 – Creation of the Subway Company; • 1967 to 1969 – Purchase of land by COHAB for construction of Itaquera-I; • Years 70 – 63 thousand people lived in Itaquera (IBGE); granting public land to the football team; • 1978 – Inauguration of the 1st Joint of COHAB and continuity of the prolongation of Radial East Avenue; • 1978 – Municipality exempts the stock control of the Subway, passed to be State; • Years 80 – It reaches the number of 126 thousand inhabitants; • 1988 – Inauguration of the Itaquera Subway Station and extension of the Radial Leste avenue of Tatuapé to Itaquera Station; • 1991 – The district of Itaquera reaches the number of 175 thousand inhabitants; • 2000 – The old train station was decommissioned and demolished; • 2000 – Opening of the new Itaquera train station, Don Bosco, José Bonifácio and Guaianazes; direct connection from the train station to the subway station; • 2000 – Inauguration of Poupatempo Itaquera; • 2007 – Inauguration of the shopping mall Metrô Itaquera; • 2010 – The district of Itaquera reaches the number of 205 thousand inhabitants (district of Itaquera)⁴ • 2014 – Opening of the Football Stadium and execution of another extension of the eastern Radial Avenue beyond the station; • 2017 – Expansion of the Itaquera Metro Patio Mall.

⁴ RAMALHOSO W., Destino Itaquera: o metrô rumo aos conjuntos habitacionais da COHAB-SP. Masters dissertation. Institute of Architecture and Urbanism of USP. São Carlos, 2013, p. 109.

Intermediate scale – Urban		
Categories	Place in the neighborhood	
Socioeconomic data of the sub-municipality of Itaquera – IT [Po]	<ul style="list-style-type: none"> • HDI (urban development index) of 0.75 in 2010; • Demographic density in 1980 = 62.8 inhab / ha. In 2010 = 128.4 inhab / ha; • 22.9% of the population is between 0 and 14 years of age; 9.7% greater than 60 years; • Responds to about 1.7% of jobs in relation to the municipality; • Employment densities per hectare = 0.16 emp/ha (sub Itaquera); • District of Itaquera = 0.14 emp/ha [net area]; • 26% work in the paper and graphics sector, 24% in others; 14% textile industry; 10% wholesale trade in sub Itaquera; • Of the district of Itaquera, 26% work in the administrative technical sector; 17% transport and communication; 14% textile industry; 12% others; 11% civil construction; • 19th position in the pattern of income among the sub-municipalities of São Paulo (32 of the total); • 73% of the population earn between 1 and 3 minimum wages; • It presents high levels of social and urban vulnerability; • Non-residential uses are more present in the Itaquera District, representing 40.8% of the constructed area; • The sub-municipality of Itaquera has 40.8 m² / inhab. of vegetation cover; • There remain only 18.1% of the land still vacant in this subprefecture. 	
Structuring elements of the path [p1]	Conditioning	Complex topography irrigated by small streams like Itapeva stream (east-west direction) that follows ‘Green River’. Old railroad track that skirted the small “closed valley” of the station area.
	Street layout	Fragmented territory characterized by a fine mesh, with no clear hierarchies reinforced by the layout of an expressway that cuts the “closed valley” in the east-west direction under the old creek. Conception of an isolated urban island without spatial integration of adjacent urban fabric, especially north, south and west direction, with the station area.
Occupation [P2]	Constructed areas and urban references	Intense residential occupation of low density. Main References: Poupatempo Itaquera, Shopping Itaquera, Corinthians Stadium, Fatec Itaquera.

Intermediate scale – Transport

Categories	Node of transport at the line	
Urban mobility of the sub-municipality of Itaquera⁵ [No]	<ul style="list-style-type: none"> Road network marked by diverse geometries imposed by isolated and disconnected subdivisions, without urban directives unit, resulting in discontinuous, discontinuous road network; The subprefecture offers 10.2%, on average, of structural road; The structural road network of the Sub-Prefecture in the north-south direction is scarce and precarious, with Jacu Pêssego / Nova Trabalhadores Avenue being the main route of articulation of intraurban and metropolitan flows; In the east-west direction, Aricanduva Avenue, Itaquera Avenue, Líder Avenue, José Pinheiro Borges avenue and Radial East Avenue structure the territory, connecting Itaquera Subprefecture to the most central areas of the city; There is a subway line (3 - red subway) which station Corinthians Itaquera is terminal. This is interconnected with the station of the same name of line II coral of the CPTM. There are no bus lanes. Only exclusive bands such as those in Itaquera, Jacú-Pêssego and Aricanduva avenues; Travel by collective mode predominates 38.8% and on foot (37.1%); 29% of the inhabitants of the Subprefecture take more than one hour daily in the home - work displacement; Regarding the destination of the trips, the greater incidence occurs in those that go towards the own district and, in sequence, to other sub prefecture; Motor mobility index of Sub⁶ = 1.28 	
Transport systems	Train Line [N1]	Line II – Coral of CPTM.
	Subway Lines [N2]	Line 3 – Subway
	Bus Terminal [N3]	Itaquera Subway Terminal
	Main avenues/Corridors and bus lanes/sidewalks [N4]	<p>North Station: Avenue Dr José Pinheiro Borges; Avenue Campanella</p> <p>South of the station: Dr. Luís Aires St, better known as Radial Leste Avenue; Itaquera Avenue and Líder Avenue</p> <p>East of the station: Jacu Pessego avenue / New Workers</p> <p>There are no bus lanes. Bus lane on Radial Leste Avenue</p> <p>Bus terminal: Itaquera Subway Terminal</p>
	Bicycle paths [N5]	Bicycle path on the sidewalk of Radial Leste Avenue adjacent to the train line between Artur Alvim and Itaquera stations; Professor Eng. Ardevan Machado St; section of Miguel Ignacio Curi Avenue.

⁵ Source: PMSP; SMDU. Datasub-Sub prefectures Notebook: Sub-Prefecture of Pinheiros, 2016.

⁶ Mobility index is the ratio between the number of trips and the number of inhabitants of a given area.

Motor mobility index is the sum of trips by collective and individual modes

Intermediate scale	
Categories	Urban instruments
PDE (Plano Diretor Estratégico) 2002 [I1]	Macroarea of Restructuring and Requalification and Macroarea of urbanization and qualification. There is a Polo in the congruence of Jacu Pêssego Avenue with Radial East Avenue as existing Polar Centrality to qualify.
PDE 2014 [I1]	<ul style="list-style-type: none"> • Macroarea of Structuring and Urban Qualification (great part of the subprefecture); • Metropolitan structuring macro-area (MEM): subsector Jacu-Pêssego Arc; • Belongs to the Incentive Perimeter; • Station area is not part of the Axis of Structuring Urban Transformation.
Zoning [I2]	1972/1998: <ul style="list-style-type: none"> • Z2 – Predominantly low population density residential
	2004: <ul style="list-style-type: none"> • Station area: ZCPa (centrality pole zone) • Environment: predominantly ZM 2 (mixed zone) with two ZEIS 1 • Avenida Radial Lest demarcated as linear centrality.
	2016: <ul style="list-style-type: none"> • ZEU (Axis of Structuring of Urban Transformation) in the area of the station; • ZOE (Special Occupancy Zone): stadium area; • ZC (Centrality zone) - in the area of the maneuvering yard.
Regional Plans [I3]	2004 – Strategic Regional Plan; Prior Strategic Project of the Eastern Economic Development Program (AIU-PRODEL)
	2016 – Itaquera Regional Plan provides the Perimeter of action number 132 (Institutional Polo).
Urban operation [I4]	<ul style="list-style-type: none"> • 2004: Rio Verde-Jacu Consortium Urban Operation approved – OUJP (Law n° 13,872/2004); • 2016: Revoked the OUJP (Law n° 16,492)
Project [I5]	2011 – Urban Plan of the Institutional Polo Itaquera (PUPII) partially implanted
Other [I6]	2004 – Urbanization project unified by COGEP 2004 – Selective Incentives Program for the eastern area of the Municipality of São Paulo (Law n° 13,833) 2011 – Development Plan for the Eastern Zone, which included the Urban Plan of the Institutional Pole of Itaquera – PUPII 2013 – It is part of the “Jacu-Pêssego Economic Development Incentive Perimeter” (Law n° 15,931), which focuses on the “Tax Incentives Program for service providers in the Eastern Zone of São Paulo 2017 – Not part of the PMI [Procedimento de Manifestação de Interesse] for Concession of bus terminals

Local scale – Transport

Categories	Access node		
Microaccessibility	Pedestrian access to the subway [N6]	<p>Northern Territory: through small gates to access and cross the parking lot of the mall and then access to the station building.</p> <p>Territory transition: through small gates to access the bus terminal and then the stairs to access the station.</p> <p>South Territory: access through a footbridge.</p>	
	Access to subway [N7]	There is a mezzanine under the ground floor that distributes the accesses by locks located in the east and west sector. After locks, there will be escalators to the upper deck.	
	Access to Train [N8]	Through the subway station	
	Bus And Bus stops [N9]	There are bus stops in front of the station in both directions and a terminal under the subway station	
	Bicycles [N10]	1 small inside the bus terminal	
	Private car [N11]	Boarding/disembarking	There is no specific space for boarding/disembarking
		Public parking	Distant 1 km from the station (E-easy)
		Private parking	Shopping, Poupatempo and various and extensive options in the surroundings (discovered).
Taxi [N12]	A single point on the track located between the station and the Poupatempo.		

Local scale – Urban	
Categories	Place in the station area
Buildings [P3 + I7]	There is a diversity of program of collective uses in the area of the station (transport), like shopping (consumption), Poupatempo (administrative services), FATEC / ETEC (educational) and stadium (leisure). The point in common among all is the isolated implantation in the lot, surrounded by fences, without the search for spatial solutions in the transition between the public and private domain. Buildings that stimulate revulsion, rapid passage, non-exchange, negation, are observed.
Local territory [P4 + I7]	<ul style="list-style-type: none"> • Northern sector: The linear space is located in the whole of the neighborhood where there is spatial ordering of the roads, which is interrupted at Avenida do Contorno. In the open spaces, there is a large plot with no clear design for car parking. There are many fences (barriers). • Sector transition: Prevailing linear spaces east-west intended for the rapid passage of automobiles. It is observed the significant presence of residual areas. The open spaces designed between walls are intended for parking. Many fences and walls (barriers). • South sector: Open spaces prevail and these are characterized by small squares that do not connect with each other. There is no connection to COHAB (west) and river (south). There are extensive areas of outdoor parking lots (cars and trains) and waste areas. Presence of significant slopes, walls and fences (barriers).
Environmental perception [L5]	A nodal point was not structured despite latent potentiality. Without coherence of the architectural form in the urban landscape; predominance of the car/train movement east-west. Fragmented urban space, low urban readability. There is a high sense of emptiness and insecurity.
Urban intensification [L6]	Static, closed in on itself, hardened by the imposed infrastructures. Stimulates low urban intensification. The projects deployed in the station area reinforce their spatial ambivalences between the node and place.