

Scuola di Architettura e Società
Sustainable Architecture in Multi-Scale Project

New Ferry Terminal and Tree Tower
New Directions for Sustainability

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1. Introduction

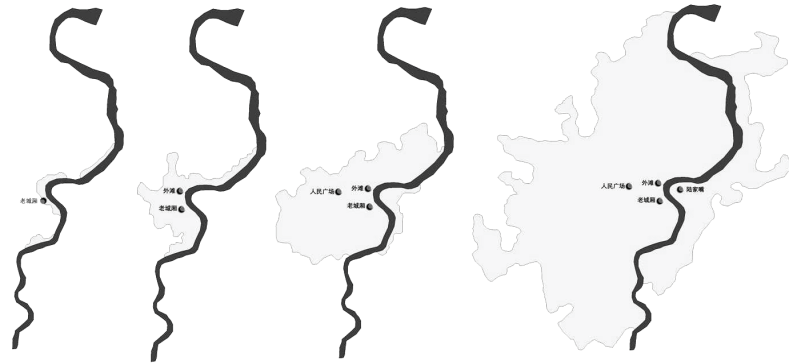
1.1 General informations of Shanghai

Shanghai is the most populous city in China and one of the most populous cities in the world. A global city, Shanghai exerts influence over global commerce, finance, culture, art, fashion, research and entertainment. The city is located at the middle portion of the Chinese coast, and sits at the mouth of the Yangtze. Once a fishing and textiles town, Shanghai grew to importance in the 19th century due to its favourable port location and as one of the cities opened to foreign trade by the 1842 Treaty of Nanking. The city flourished as a centre of commerce between east and west, and became a multinational hub of finance and business by the 1930s. After 1990, the economic reforms introduced by Deng Xiaoping resulted in intense re-development and financing in Shanghai, and in 2005 Shanghai became the world's largest cargo port.

The city is a tourist destination renowned for its historical landmarks such as the Bund and City God Temple, and its modern and everexpanding Pudong skyline including the Oriental Pearl Tower. Today, Shanghai is the largest centre of commerce and finance in mainland China, and has been described as the "showpiece" of the world's fastest-growing major economy.



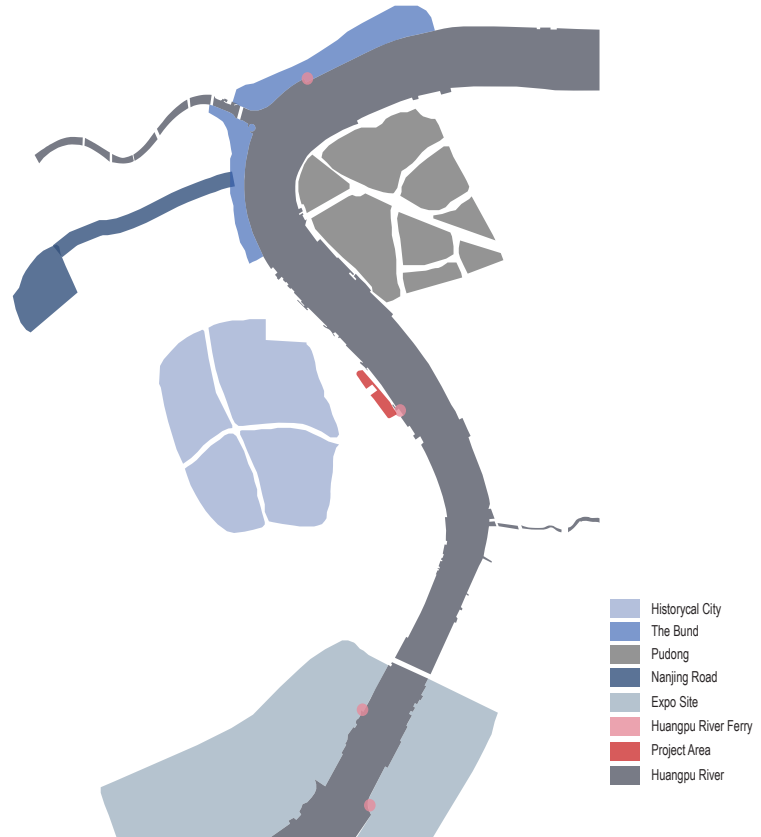
Historical evolution of Shanghai's territory. During the Song Dynasty (AD 960–1279) Shanghai was upgraded in status from a village to a market town in 1074, and in 1172 a second sea wall was built to stabilize the ocean coastline, supplementing an earlier dyke. From the Yuan Dynasty in 1292 until Shanghai officially became a city in 1927 under the Republic of China, the area was designated merely as a county seat administered by the Songjiang prefecture. Although the territory of the foreign concessions was excluded from their control, this new Chinese municipality including the modern-day districts of Baoshan, Yangpu, Zhabei, Nanshi, and Pudong. Headed by a Chinese mayor and municipal council, the new city governments first task was to create a new city-center in Jiangwan town of Yangpu district, outside the boundaries of the foreign concessions.



Some of the main issues and points of interest that led to reflection and study for a new ferry terminal are for example the **Historical City**, situated near Huangpu river. Two historical phases generated the development of the city: first period during Ming dynasty (1554) in which saw the rise of first wall to defense from Japanese. Second period during Qing dynasty (1723), when Shanghai became the most important port of region. For this reason, Shanghai became a strong attraction for European country during XIX century.

The Bund is an avenue that borders the right bank of the Huangpu River and is one of the most important architectural symbols of Shanghai. Economic development in the nineteenth and twentieth centuries transformed this place that became the commercial and financial center of Shanghai. It hosted many foreign banks. Between the '70s and '80s, most of the buildings of the Bund were restored to become hotels, banks or financial institutions. **Pudong** is a district of Shanghai, located along the east side of the Huangpu River, across from the historic city center of Shanghai in Puxi. It is administered as the Pudong New Area, a state-level new area. Pudong is home to the Lujiazui Finance and Trade Zone and the Shanghai Stock Exchange and many of Shanghai's best known buildings, such as the Oriental Pearl Tower, the Jin Mao Building, the Shanghai World Financial Center and new Shanghai Tower. **Nanjing Road** is the main shopping street of Shanghai and is one of the world's busiest shopping streets. Today's Nanjing Road comprises two sections, Nanjing Road East and Nanjing Road West. Nanjing Road is located in the city center, running in a west-east direction. Its eastern section is in Huangpu District and extends from The Bund west to **People's Square**.

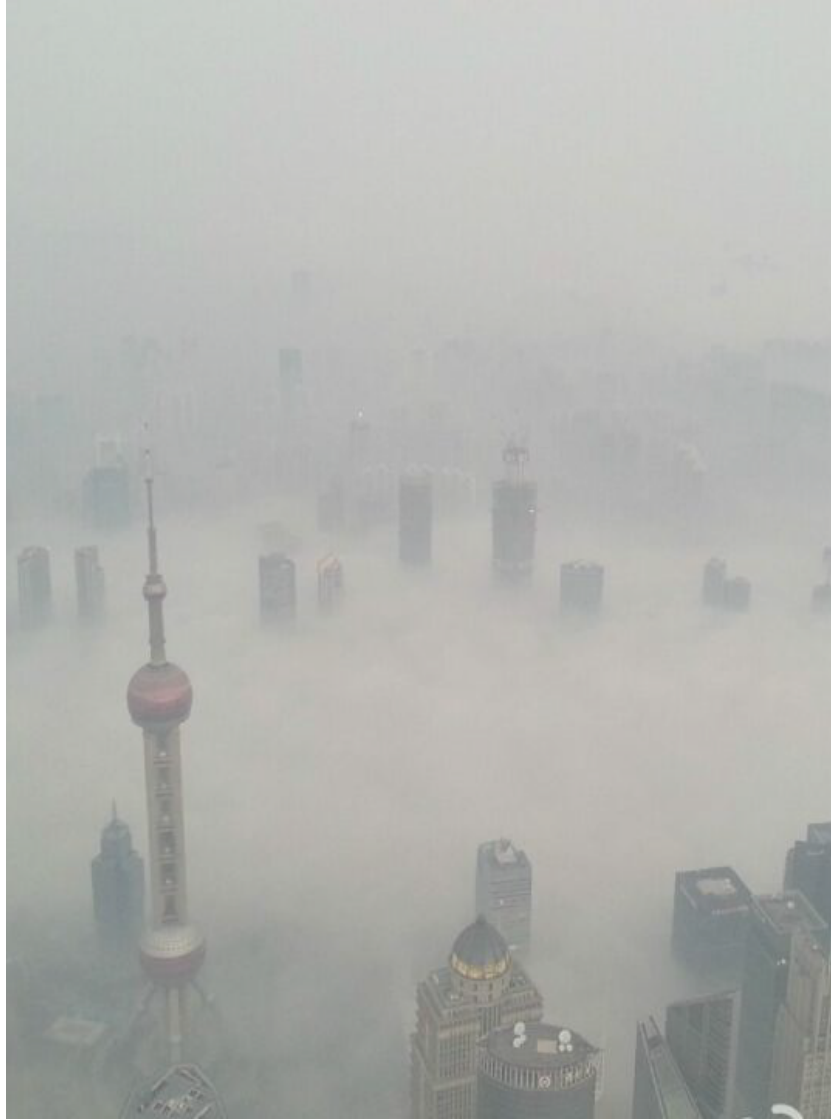
Expo 2010 officially Expo 2010 Shanghai China was held on both banks of the Huangpu River from 1 May to 31 October 2010. It was a major World Expo in the tradition of international fairs and expositions, the first since 1992. The theme of the exposition was "Better City – Better Life" and signifies Shanghai's new status in the 21st century as the "next great world city". **Huangpu River Ferry** as many bridges, tunnels, and subways are built, people have much more choices when traveling across the Huangpu River. However, ferryboats with 100-year's history are still popular choices for pedestrians and cyclists because of their convenience and low price. **Huangpu River cruise**. The three hour trips leave at 2PM. At the Bund's southern ferry port with the following: One hour, two hour and three hour cruises on the Huangpu.



1.2 Environmental Data

Factors such as wind, sun path were also considered for the design of the project. The sun path was used in aiding as to where to put the green areas. Most of the green buffer zones are located in areas where shading is needed the most. Location: latitude 31.1N, 121.3E

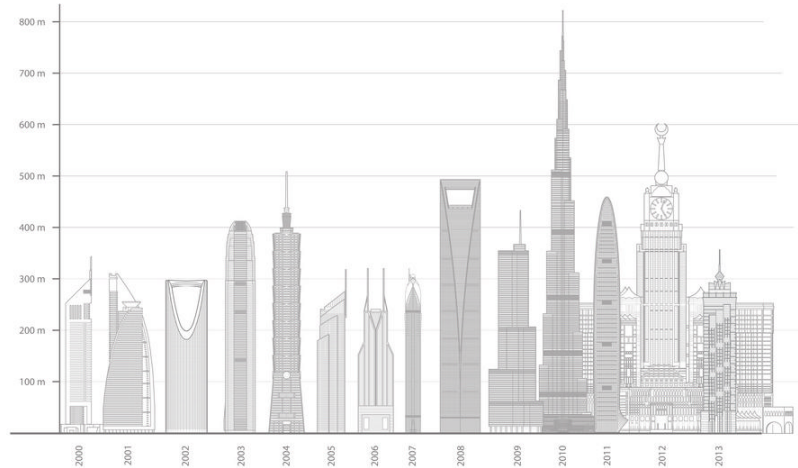
The prevailing winds in summer is from southeast, while in winter is from northwest. It was used to locate the best area to harness the energy from windmills. It was also used to design the massing of the site, for example which are a would be the best to have higher buildings and where to locate lower ones. Recently, a new question has arisen concerning environmental pollutant emissions, in fact, a thick wave of smog covers the city and was measured a record of air's pollution in 2013. But public awareness of the environment is growing, and the city is investing in a number of environmental protection projects. The government has moved in recent decades to enforce the numerous factories surrounding the anti-pollution regulations. In addition, several parks have replaced factories in the city center. As a result, Shanghai's air quality has been steadily improving since 1990.



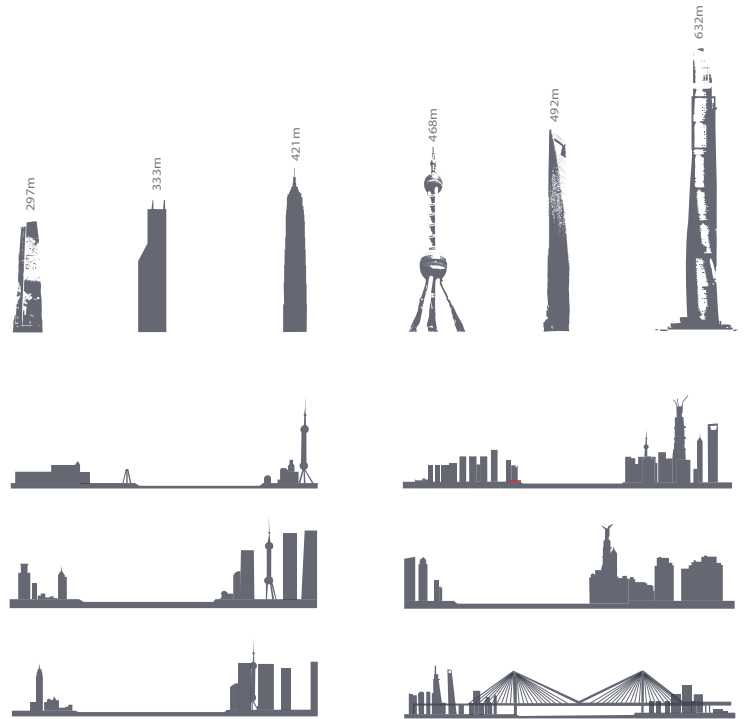
1.3 Architectural Design

Since the beginning of the last century there seems to have been a nearly inseparable correlation between economic growth rates and the heights of the towers. When the economy grows, so do the high rises. The first high-rise buildings were erected between 1870-80 in the contribution of New York and Chicago in the United States. They arose in urban areas where increased land prices and great population densities created a demand for buildings that rose vertically rather than spread horizontally, thus occupying less precious land area. High-rise buildings were made practicable by the use of concrete and steel structural frames and glass exterior sheathing. By the mid-20th century, such buildings had become a standard feature of the architectural landscape in most countries in the world. By the beginning of 20th century, boom in the economy and on the stock market resulted in a competition for building height, for which there seemed to be no limit. Deng Xiaoping led to the establishment of Special Economic Zones which permit capitalist investment in specified areas. Through these experimental zones, China, its communist system notwithstanding, is opening up to the world economy, giving its stagnating economy a powerful boost.

Shanghai is the center of economic activity in china. In the last 19th century, during the colonial era, the colonial powers forced Shanghai to open its economy to foreign trade. The growth of trade and industry made Shanghai the fifth largest city in the world by 1911. When red army entered the city after the Second World War, all companies there were taken over by the state and economic ties to the outside world were severed. It was only with the economic reforms of the 1980s and gradual introduction of market forces that Shanghai again became an attractive investment location for foreign corporations.



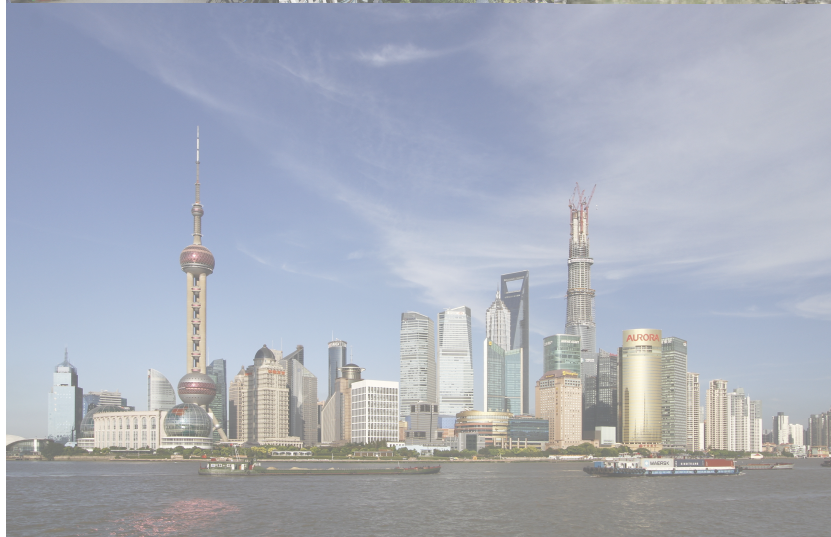
The city of Shanghai, China is one of the fastest growing cities in the world in terms of skyscraper construction, with the City of Shanghai reporting at the end of 2004 that there had been 6,704 buildings of 11 stories or more completed since 1990. In 2011 there are over 20,000 buildings 11 stories or higher and more than 1,000 buildings exceeding 30 stories in Shanghai. Shanghai's first building boom occurred in the 1920s and 30s, during the city's heyday as a multinational center of business and finance. The city's international concessions permitted foreign investment, and with it came architectural styles from the West, as seen today in areas such as the French Concession and the Bund. After the Communist takeover in 1949 the city's development was stifled, punished for its earlier capitalist excesses. After economic reforms beginning in the 1980s, the city is undergoing its second construction boom to fulfill its desire to regain its status as an important global financial center.



1.4 Design Concept

Centrally located on the Chinese coastline, the city of Shanghai used to be the “gateway to the world” at the Yangtze delta. Shanghai is now continuing where it left off. Of all Chinese cities, it has the most considerable potential for establishing links with the world economy. In 1990, the Special Economic Zone of Shanghai Pudong was created on a hitherto undeveloped site. Shanghai’s old city districts are also undergoing a phase of total reconstruction. Shanghai is the largest city in China with a history of more than 700 years and more than 20 million people. Shanghai was once the financial center in China. Since the reforms that began in the 1990s, great changes have taken place in the city. The municipal government is working towards building Shanghai into a modern metropolis and into a world economic, financial, trading and shipping center by 2020. Shanghai is a metropolis with diversity and unique charm that you can hardly find in other cities, therefore, it’s always a hot destination for most tourists.

Shanghai is such a strange city that whoever you are and wherever you are from, you will be attracted at your first sight of it. If you come from a small village or town, Shanghai means quite a lot to you. Getting lost among high buildings and heavy traffic, you may want to leave your hometown ever since. If you come from cities like Beijing, Guangzhou, Hongkong and Taipei, you could taste the special landscape of Shanghai style. Perhaps you decide to settle down in Shanghai thence. If you are from abroad, you will realize the real aspect of the biggest city in China. Shanghai is not only a metropolis similar to the international style of New York, but also an elegance of the Orient. High-rises row limelight on both sides of the Huangpu River. Standing out among the skyscraper in Ljiazui, the Oriental Pearl Tower and Jinmao Tower lordly look down on all the living things in the blaze of the sun. Besides, huge vessels of full loads are seen sail in the billows, which add a characteristic touch of the city. Between 1992 and the end of 1997, 2437 highrises were built in Shanghai alone, of which 966 rise to a height of over 20 floors. According to observers, it seems as, a new skyscraper is completed every day.



2. Architectural Ideas

2.1 Theory by Steven Holl

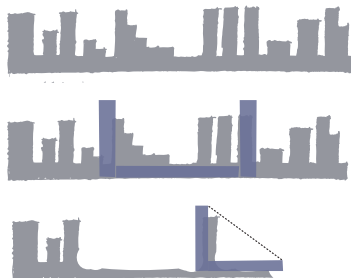
The 220,000 square meter pedestrian-oriented Linked Hybrid complex, sited adjacent to the site of old city wall of Beijing, aims to counter the current privatized urban developments in China by creating a new twentyfirst century porous urban space, inviting and open to the public from every side. Filmic urban public space around, over and through multifaceted spatial layers, as well as the many passages through the project, make the Linked Hybrid an "open city within a city". The project promotes interactive relations and encourages encounters in the public spaces that vary from commercial, residential, and educational to recreational. The entire complex is a three-dimensional urban space in which buildings on the ground, under the ground and over the ground are fused together.



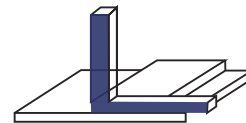
2.2 Concept

During the study of the project area was noted the prevalence of vertical elements, in line with urban development of last twenty years. In contrast we find immediately the roots of historical city's traditionalism, with its horizontality and the use of the form "jian" to make buildings. Thus was born the idea of returning to offer the usability of horizontal spaces, come back to a public space that provides continuity with the surroundings and projected itself vertically at the same time. For the tradition is important figure of the "gate," which opens on the courtyard, giving rise to a path that winds between interior and exterior spaces. So the location of the building is spread between solids and voids, can be reached from the two main "gates" that indicate bi-directional axes. So in contrast to the theory of Steven Holl, public activities are returned to zero level and at the same time, projected vertically in skyscrapers.

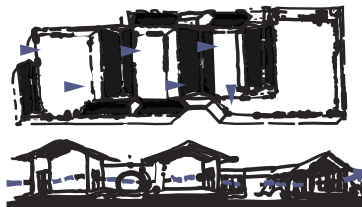
URBAN STRATEGY



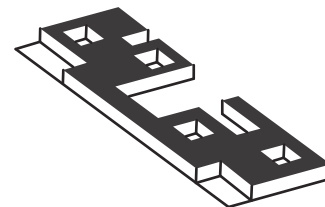
TYPE SECTION



TRADITIONAL COURTYARD



SPACE CONCEPT



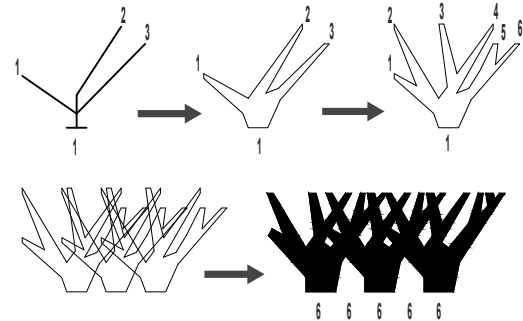
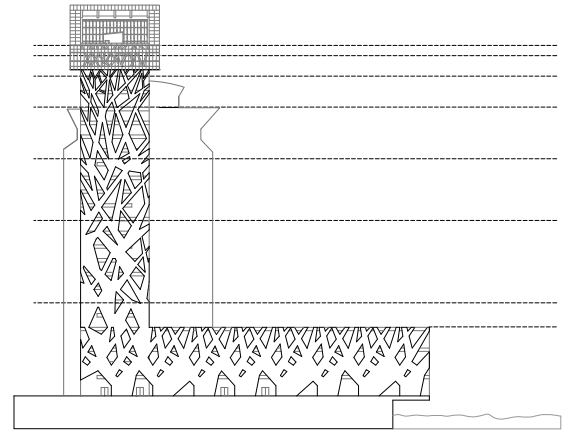
2.3 Project's Abstract

The project aims to rethink the Ferry Terminal over the Huangpu River in the district Shiliupu. The district is located about halfway between the Bund and the South Bund Soft Spinning Material Market, not far from Yuyuan Garden. This project area is in front of the newly developed

Pudong district, home to the heart of the financial center of the city, which is undergoing, in recent years, which includes a major overhaul of its urban masterplan to build tall skyscrapers as an expression of Chinese economic development. Among these we can list: the Jin Mao Tower (420.6 m with 88 floors), the TV tower in Shanghai called "Pearl of the East" (468 meters) and the Shanghai World Financial Center (approximately 492 m) over the 2008 and is currently the third tallest skyscraper in the world. In 2008, the foundations were laid for the foundation of the Shanghai Tower, is scheduled to finish construction in 2014.

For my project, the idea is to create a space open to the public to interact with the urban environment without losing the identity of historical and contemporary. The building develops itself returning to the concept of historic house in China, through a space that alternates between external and internal. The cover is green walkable to ensure continuity with the existing pedestrian path from the Bund and maintain sustainable policy of the city to convert the derelict and industrial in green areas. At the same time the relationship with the verticality of the environment is maintained and made two skyscrapers "mirror" to the ends of the plate, projecting horizontally toward the river, to resume the function of docks and mooring for ferries, as well as in the past.

To keep the idea of rooting and vertical development has been realized a reinforced concrete structure which branches off as a "tree" all along the skyscraper. A skyscraper "tree" which in turn contains plantings up to the top, to conclude with an open public space that gives the idea of vertical forest. The regular structure arises from a branch based on repetition and intersection of two numbers: 3 and 1. One has to combine quality and value to be the source and flow from it equal and opposite energies that form matter. From this stems the three, who has great energy force, just like the rooting culture and history, and at the same time, the strength to grow and establish itself in the heart of Shanghai. As result i get infinity, as well as the tree represents immortality in Chinese culture, as it indicates the connection between life on earth and the sky, like a skyscraper. On height is repeated the form of three, where we see a change of intensification of the branches. This solution to have the idea of roots at the base, the idea of solidity and end with the transparency of the branching.



2.4 Conclusion

This leads to the realization of a complex hybrid, which aims to return a horizontal permeable to the city, which may offer different functional solutions, maintaining the characteristics of residences located in the historic city, and the verticality of the two L-shaped skyscrapers that stretch towards the river. In L there is the intention to develop the spatial vertically as horizontally, to give continuity to the building and keep the idea of projection. A new building that is accessible to the public in all its directions, as well as its structure, may also offer the pleasure of a vertical forest and return to the idea of garden as a private space.

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