

# The Cultural Landscape Formation in Piracicaba Central Sugar Mill

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**Abstract**— *The Piracicaba Central Sugar Mill was founded in 1881, from the acquisition and installation of French machinery from the mechanical industry 'Brissonneau Frères'. The assembly of the infrastructure was carried out by engineers André Paturau and Fernando Dumoulin with the most advanced technology in the period. It went into operation with 50 workers the following year, processing sugar cane from small and large suppliers. After going through two consecutive sales, it was acquired by French businessmen, under the new name 'Sucrerie de Piracicaba'. With French capital, investments were made in infrastructure, expansion of the manufacturing plant and acquisition of agricultural area. In 1907 the 'Société de Sucrierie Brésiliennes' - SSB was founded, which comprised six plants and until the end of the 1920s it was the largest and most important industry in the region. At the end of the 1960s, SSB was nationalized, changing its name to 'Usinas Brasileiras de Açúcar SA', operating until 1973, after two consecutive sales. The industrial plant, in line with industrial growth, received annexes and new constructions, which are constantly changing, but despite not being original, the industrial complex formed until the end of the operation of industrial activities is historically and landscapely representative. In 1989, the Central Sugar Mill remaining, including the forest, was listed as Cultural Heritage by the municipality and also expropriated to be used as a public park for cultural and leisure activities. Based on the identification and analysis of the elements through iconographic sources and remaining buildings, it is possible to see that the cultural landscape formed from a productive system is one of the most striking elements in the urban environment, already consolidated and considered an city icon in tourist and cultural character, because it combines the natural landscape formed by the Piracicaba river waterfall and the built landscape of a factory remnant.*

**Keywords**— *Piracicaba; Central Sugar Mill; Cultural Heritage; Cultural Landscape.*

## I. INTRODUCTION

From the disciplinary field of Cultural Landscape, the present postdoctoral research at CPq-FAUUSP, analyzes the remaining buildings of the old Engenho Central de Piracicaba, opened in 1882, and a pioneer in São Paulo.

Its manufacturing plant has undergone several productive and economic processes, reflected in the factory arrangements and in its industrial buildings.

The original factory was built with a French prefabricated iron structure inspired by the Baltard Halls in Paris, which consisted of an unusual dome for its manufacturing function, justifying further studies on the buildings that have already disappeared from the old mill complex and its remaining remains, including the professional performance of its authors.

To better understand how the factory projects were carried out, a broader investigation was carried out, in which the origins of the Central Mills and Sugar and Alcohol Mills were studied in France, a pioneer in the process of mechanization of sugar production and its repercussions and in Brazil, in states like São Paulo, Rio de Janeiro, Minas Gerais and Pernambuco, in addition to other central devices that operated in the city of Piracicaba, such as the counterpart and contemporary of Monte Alegre.

The interest in the Piracicaba Central Sugar Mill lies in the urban, social and cultural impact that the central sugar and alcohol mills have produced in industrialized cities and in society since the Industrial Revolution. Despite his contribution to the formation of Brazilian industrialization, due to his identification with a less erudite architecture, he

was on the sidelines of the study of the history of Architecture and Urbanism.

Since the appreciation of industrial heritage and archeology, a significant number of researchers have sought to identify the importance of industrial architecture in historiography, highlighting its contribution to the formation of urban contexts and cultural landscapes in cities.

In addition to the buildings of the Piracicaba Central Sugar Mill, which were constituted as objects of study, a large number of counterparts in the capital and interior of São Paulo illustrates in a significant way the São Paulo industrialization process of the 20th century, whose participation was fundamental for the formation of the cultural landscape of cities and neighborhoods.

Analyze and understand the projects and typological arrangements of the buildings that made up the Piracicaba Central Sugar Mill, in the State of São Paulo, between the end of the 19th century and the middle of the 20th, a period that constitutes the first Brazilian industrial cycle.

Analyze the origins of the functional and architectural program of central sugar mills and sugar and alcohol mills in Europe, especially in France, and their insertion in Brazil, to understand how and under what influences their projects were constituted in Piracicaba.

Understand the constitution of the spaces determined by the needs program in the factory, verifying the intentionality of the project and the influence of projects carried out by equipment supply companies in the construction of buildings, mainly the companies 'Brissonneau Frères' and 'Fives-Lille', in addition to from the pioneer 'Derosne & Cail'.

Contribute to the maturing of the understanding about the origins of the manufacturing units in Brazil, related to the import of prefabricated structures in iron and also the development of the 'manchesterian' typology to replace the traditional Portuguese-Brazilian one, with characteristics of architectural eclecticism.

Identify and understand the buildings of Piracicaba Central Sugar Mill: construction system; masonry mooring; other architectural characteristics, related to the beginning of Brazilian industrialization, through the sugarcane production chain, from bibliographical research, surveys and systematization of information on: Industrial Architecture, Iron Architecture, Industrial Archeology, Industrial Heritage, and Cultural Landscape.

At least, based on the identification and analysis of the elements through iconographic sources and remaining buildings, it is possible to see that the cultural landscape

formed from a productive system is one of the most striking elements in the urban environment, already consolidated and considered an city icon in tourist and cultural character, because it combines the natural landscape formed by the Piracicaba river waterfall and the built landscape of a factory remnant.

## II. MATERIAL AND METHODS

After conducting bibliographic research, surveys and systematizing the information obtained through primary, secondary and iconographic sources on the topic, in works that have already addressed related themes - mainly on industrial architecture of central sugar mills and plants - the thesis has its development in two parts: history of the origin of the Central Mills in Europe and Brazil with an emphasis on spatial arrangements and constructive characteristics of the sugar central mills and plants in order to establish comparative analyzes between the Piracicaba Central Sugar Mill and its French and Brazilian counterparts; and studies on Industrial Architecture, Iron Architecture, Industrial Archeology, Industrial Heritage and Cultural Landscape, with an in-depth study of the Piracicaba Central Sugar Mill.

## III. RESULTS AND DISCUSSION

### 3.1 The Piracicaba Central Sugar Mill

From the 1870s, the São Paulo productive complexes began to be constituted according to the incentives from imperial policy of modernization to the sugar production in Brazil, among them the Piracicaba Central Sugar Mill, the third industrial establishment in the city. On January 19, 1881, the lawyer and businessman Estevam Ribeiro de Souza Rezende (future Baron Rezende), associated with the farmers Antonio Corrêa Pacheco and Joaquim Eugenio do Amaral Pinto, opened the Central Sugar Mill Company with an estimated operating time of 20 years. The machinery was commissioned from the mechanical industry Brissonneau Frères located in the French city of Nantes in Pays de la Loire. On May 3 of that year, the chairman of the shareholder council, Estevam de Rezende, donated part of his land at São Pedro Farm for the installation of the Sugar Mill. Four days later, on May 7, 1881, Emperor D. Pedro II signed Imperial Decree No. 8,089, granting authorization for its operation (Camargo, 1899; Guerrini, 2009).

Still in 1881, on November 18, the first shipment of machinery arrived from France, starting its assembly under the direction of industrial engineer André Paturau and engineer Fernando Dumoulin. Meira (2007) states that,

perhaps due to the concern with setting up the engine with the most advanced technology in the period, the works took a long time to be completed, and the company spent more than the guaranteed capital on the assembly. Only in October 1882 were the Central Sugar Mill machines started, starting the agro-industrial complex (Camargo, 1899; Guerrini, 2009; Meira, 2007).

The plant operated with automatic reed inlets and bagasse exiting the furnaces, with three 100-horsepower generators and three copper tanks for saturating the cane juice, in a building served by a brick chimney (Mialhe, 2012). As for the original Central Sugar Mill machinery, it consisted of an eight-cylinder Brissonneau Sugar Mill, powered by a waterfall-driven hydraulic turbine, with a regular supply capacity of 120 to 150 tons of production, with 67% extraction (Picard, 1903).

For Meira (2007), the performance of foreign companies was decisive in the assembly of the Sugar Mills, since Brazil had neither capital nor technology for the installation of factories, creating a link with foreign capital, which acted as much in the supply of new machinery, as well as the assembly of sugar central Sugar Mills by foreign companies. Among them, French companies benefited greatly from the policy of the sugar central Sugar Mills, especially selling machinery. The author stresses that in São Paulo, practically all the central Sugar Mills were assembled with French machinery.

The São Paulo pioneer experience in the Porto Feliz Sugar Central Sugar Mill, inaugurated in 1878, encouraged the opening of the central Sugar Mills in 1881 in cities like Lorena and Capivari, as well as the Piracicaba Sugar Central Sugar Mill. According to Melo (2006), the new factories enabled São Paulo a new fully mechanized technical standard, producing on a large scale and providing greater production compared to traditional Sugar Mills. The sugar produced was superior in quality and ready for direct consumption. In addition, “the municipalities where they were located became the largest provincial producers and their factories were national examples of sector modernization in the Empire” (Melo, 2006).

São Paulo, from the economic and demographic growth of the second half of the nineteenth century, with the installation of the railways and immigration policy, assumed the economic role in the country, becoming the main Brazilian consumer market of sugarcane derivatives. The central sugar Mills are responsible for the founding of the big sugar industry in São Paulo, as well as being part of the formation of the modern sugarcane agribusiness in

the country, 'which would so strongly mark our nineteenth century history' (Melo, 2006).

The São Paulo sugar Mills were created to compete with other producing provinces for the supply of the São Paulo market, and its entry into operation has already caused a decrease in the amount of sugar imported. In this case, São Paulo producers were at an advantage due to the proximity with the market, ensuring lower expenses with the transportation of goods (Melo, 2006).

Despite the increase in state production volume, in the early years of the 1880s, the Piracicaba Central Sugar Mill faced financial difficulties, aggravated by decree no. 9,253, of August 2, 1884, which declared the concession expired by the government, thus losing the right to guarantee interest (Meira, 2007). According to Terci and Peres (2010): The decree 8,089 of May 7, 1881 of the imperial government authorizing the operation of the Central Sugar Mill of Piracicaba Co. guaranteed loan for 20 years, for a daily capacity of 240 tons with a minimum production of 16,000 60 pounds bags. However, it was difficult to meet this minimum yield, considering that the viability of the central Sugar Mills lay in ensuring sufficient supply of sugarcane by the farmers, if not a huge factory structure was organized to current standards, with huge permanent capital and unsustainable idle capacity (Terci and Peres, 2010).

According to Perruci (1978), since at least 1885, the first and major problems appeared in the central Sugar Mills, whose negative results would be a consequence of technical reasons to a greater extent than structural ones. Among the main causes were: poorly chosen railroad tracks and poorly executed layout; poorly selected areas; and the fact that many concessions were given to speculators, with an interest in ensuring the high profits that the laws allowed, in addition to the numerous small central devices created indiscriminately, due to government subsidies.

Despite the promising São Paulo market, the Piracicaba Central Sugar Mill stagnated, among other reasons, due to insufficient raw materials, entering into bankruptcy on April 29, 1887, under the responsibility of the partners: Estevam Ribeiro de Souza Rezende and João Tobias de Aguiar e Castro. The significant number of sugarcane suppliers, who appeared as creditors, did not guarantee, finally, the quantity and the quality of the volume of cane necessary for production. Due to the impossibility of paying off the company's commitments regarding the payment of interest on the debt acquired from the government, with the profit from that year's harvest, the owners and creditors decided to announce the company

sale. In the following month, on March 17, 1888, Baron Rezende bought the shares of its partners and became its exclusive owner, in a period of sugar deficit in the promising São Paulo market (Guerrini, 2009; Terci and Peres, 2010).

Even in a fast expansion, the São Paulo sugar production was unable to supply the market, which complemented the demand by buying large quantities from the Sugar Mills in the Brazilian Northeast and Rio de Janeiro (Melo, 2006). This decisive moment in Brazilian history, who concerns the transition from the imperial to the republican regime, according to Terci and Peres (2010), was marked by great transformations with the end of slavery and the institution of the Republic, in addition to the virtuous cycle of coffee agro-export production. There was, therefore, a dynamism in the São Paulo internal market, with new perspectives for sugarcane production, and the local landowners did not let the opportunity pass, including the small ones that dedicated themselves to the subsistence genres and to the spirit in rudimentary contraptions, which would return faster than with coffee, with a minimum maturation time of four years (Terci and Peres, 2010).

During the First Republic, the banking network expanded in Brazil, with intense penetration of foreign capital, mainly used to finance works for the partial modernization of infrastructure, such as: railways construction, upgrading or construction of ports and urban reforms, among others. Banks, mainly foreigners, financed production and controlled all Brazilian foreign trade, acting as the true arbiter of national development, in an exporting country par excellence. This political period encouraged the sugar sector in a much more correct way from the economic point of view than the imperial regime, when the principle of division between industry and farming was exhausted, representing the end of the cycle of the central Sugar Mills and the origin of the plants (Perruci, 1978; Meira, 2007).

For Perruci (1978), from the failure of the sugar central Sugar Mills of the policy, after the short duration of approximately 15 years, the producers intended to evolve, without re-establishing the old production system based on banguês. On the contrary, the high investments and the contradiction of a possible “technological revolution” led to a new stage of the sugar “technological revolution”, represented by the plantation system. The author notes that with the Sugar Mills, the production system has returned to being similar to that of the old Sugar Mills, with the agricultural and industrial sectors of sugar production, reunited in a single company.

In view of the difficulties of solving the problems of lack of raw material, in addition to the new conditions imposed by the new political regime, coupled with the constant oscillations of the market and the need to adapt to the new plant regime, on June 22, 1891, the Piracicaba Central Sugar Mill company was sold by Baron Rezende to the newly created 'Companhia de Cultura de Cana, Manufacture and Refining of Assucar, Alcool, Cal, etc. - Niágara Paulista ', whose board was made up of the cel. João Carlos Leite Penteadó (President), Victor Nothmann and com. Cícero Bastos, with a new capital injection. Under the new administration of the Niágara Paulista Co., according to the edition of *Gazeta de Piracicaba* in April 16, 1893, Central Sugar Mill manufactured 88 thousand arrobas of sugar, or 22 thousand bags, in the previous year, and expected to produce 80 thousand arrobas in that year (*Gazeta de Piracicaba*, 08/10/1893).

The improved machines introduction in sugar Mills has already led to progressive indebtedness since the second half of the 19th century. In this sense, the Porto Feliz, Rafard, Lorena and Piracicaba sugar central Sugar Mills, installed between 1878 and 1884, suffered several financial crises and ended up being sold to French investors at the 19th century end, who started to control the largest production units of sugar, brandy and alcohol from São Paulo. According to Melo (2006), even before the reorganization developed by the French, these units had already evolved into the plant structure, 'integrating agricultural and factory production, while maintaining, at least in part, the supply of third parties' cane' (Perruci, 1978; Melo, 2006).

On March 31, 1899, the Deed of Purchase of Piracicaba Central Sugar Mill was drawn up in a Parisian registry office, containing the statutes of the 'Société de la Sucrerie de Piracicaba', of which industrialist Fernand Doré was founded. Two days later, on April 2, at the general shareholders' meeting, the definitive organization of the said company was decided, as recorded in the Minutes. In turn, the general shareholders' meeting of Niágara Paulista Co., held on April 17, 1899, decided to dissolve the company (Guerrini, 2009).

On April 29, 1899, the 'Société de la Sucrerie de Piracicaba' acquired Niágara Paulista Co., then chaired by com. Cícero Bastos. The new company was represented by industrialist Fernand Doré, arts and manufacturing engineer Paul Henry Durocher and businessman Maurice Allain (*Gazeta de Piracicaba*, 11/05/1899).

In the new phase, with French capital injection, investments in infrastructure, expansion of the manufacturing plant and acquisition of agricultural

production area are still taking place in 1899. On October 4, 1899, a pressure and repression Sugar Mill and two multitubular boilers were opened, fed by sugarcane bagasse, capable of producing, in the incoming harvest, two thousand arrobas of sugar per day, in the harvest (Guerrini, 2009).

The sugar industry in São Paulo was, in this period, so economically advantageous that it attracted more foreign capital. On October 24, 1907, through decree no. 6,699, the limited liability company 'Société de Sucrerie Brésiliennes - SSB' was founded in Paris with the Maurice Allain presidency, bringing together the partners Fernand Doré, Lucien Mellier, Edmond Steinheil (Porto Feliz) and Count Léon de Bertier de Sauvigny (Cupim). According to Phillippe Allain (2014), the company was created to operate for 30 years, with the contribution of the plants: Rafard and Porto Feliz, inherited by Maurice Allain's wife, Ida Wagner, from her father, Alexandre Wagner; with the acquisition of the Lorena plant, by his brother-in-law Théodore Duvivier (later closed due to a mosaic epidemic); and the Cupim and Paraíso-Tocos plants, located in Campos, Rio de Janeiro; in addition to the Piracicaba plant, of which he was already a partner, and acquired its share control. "In addition to these assets, there was an alcoholic drinks plant in Piracicaba and two offices (the headquarters in São Paulo and a branch in Rio de Janeiro)" (Allain, 2014). Thus, with the French ones, the Piracicaba plant became the largest company in the state in production and the most important in the country, with annual production of 100 thousand sugar bags and three Sugar Million liters of alcohol.

According to Meira (2007), in the subsequent period, the foreign plants that most developed in Brazil were exactly the old central devices acquired by the French capital, and in 1909, the net profit of these plants grew, with production prior to the mosaic crisis, in about 60% of the Sugar Mill volume in São Paulo. The author argues that SSB's plants mirrored the assembly of a factory structure inspired by technological innovations imposed by the consequences of the Industrial Revolution on the sugar production in Brazil, considering that the central sugar Mills created in the imperial period were the precursors of the modern sugar and ethanol park in São Paulo (Meira, 2007, p. 51).

The Piracicaba Central Sugar Mill was, until the end of the 1920s, the largest and most important industry in the region. Until the end of the Old Republic period, a pest known as Mosaico seriously devastated the sugar cane fields in São Paulo, however, it ended up motivating the subsequent increase in sugar production in the State (MEIRA, 2007).

To solve the serious problem of the spread of the pest, the Piracicaba Experimental Station developed several fundamental studies for its eradication, defending the renovation of the cane fields, using Javanese canes resistant to the mosaic. The combating the plague success in São Paulo led to a rapid recovery in sugar production, serving as an example for other states, such as Rio de Janeiro and Minas Gerais (Szmrecsányi, 1998, p. 287 in Meira, 2007).

Thus, SSB achieved increasing profits from its foundation in 1907, until the period of the Mosaic crisis in the 1920s. This process was accentuated after the market crisis in 1929/30, as it reinforced the tendency for government intervention in the market sugar, justifying the creation of the Sugar and Alcohol Institute - IAA in 1933, in the Vargas government with the primary objective of balancing domestic production and consumption, leaving the government with responsibility for excesses. Due to the crisis resulting from the crash of the New York Stock Exchange, this period was characterized by price fluctuations and falls in the market due to the large stocks of agricultural and industrial products, coupled with lower wages and a consequent retraction in consumption. Thus, sugar production was affected by the incidence of sugar large stocks, because the product obtained only negligible prices, making its commercialization unfeasible (Ramos, 1999; 2007; Meira, 2007; Guimarães, 2012).

The Second World War years were characterized by a shortage of sugar in São Paulo, as goods from Pernambuco (most of the volume) stopped arriving at the port of Santos. After a long dispute against the IAA planners, represented mainly by its president, Barbosa Lima Sobrinho, the production of sugarcane, sugar, alcohol and brandy was partially released in the State of São Paulo. With the new policy, after a century apart from being a sugar exporter, the State of São Paulo resumed its former position, becoming the largest sugar producer in Brazil, partially due to the evolution promoted in the industrial area of production. São Paulo producers had definitely exceeded Pernambuco's in terms of the cane crushing and sugar production, since the 1953/54 harvest (Sampaio, 2011).

In the 1950s and in the first half of the 1960s, plant owners achieved prosperity, with few and occasional failures and failures. During this period, in 1959 Coopersucar was created, bringing together 32 cooperative plants and, in 1963, the IAA organized the 'Directive Program for the Sugar and Alcohol Policy', later converted into the 'National Sugar Industry Expansion Plan', with the objective of doubling the country's sugar production, in an eight-year interval, between 1963 and 1971. The policy

brought an increase of 98.9% in the São Paulo quota, accompanied by the authorization for the new Sugar Mill units installation, which started in 1964 (Andrade Neto, 1990; Sampaio, 2011).

Between the years of 1967 and 1968, the top management of SSB determined, through the general representative in Brazil, the nationalization and the respective change in the corporate name of the former 'Société de Sucrerie Brésiliennes', which came to be called 'Usinas Brasileiras de Açúcar SA', better known by the acronym 'Ubasa', covering only the plants and their Brazilian headquarters in São Paulo. In 1968, after the company nationalization, Ubasa sold its shareholding control to the Deltec Group, after 85 years of industrial activities. Stipp Netto (2009) informs that the international group, among its several companies, maintained Swift, which started to manage the Piracicaba, Rafard and Porto Feliz plants (Stipp Netto, 2009).

In 1969 the Silva Gordo Group acquired the share control of Ubasa from Deltec. The business group belonged to Banco Português do Brasil S.A., and was controlled by banker José Adolpho da Silva Gordo, who was São Paulo's finance secretary under the government of Adhemar de Barros. At the time, José Adolpho had also acquired Refinadora Paulista SA, which, in addition to the Usina and the Monte Alegre Paper and Pulp Plant in Piracicaba, maintained the Tamoio Plant in Araraquara, and the Guatapar Farm, in Amrico Brasiliense - SP, where a large pulp Sugar Mill was being built (Stipp Netto, 2009).

From 1969 to the first half of 1970, the new administration promoted structural and organizational changes in all its companies and industrial units. Months later, on January 1, 1971, the company's board of directors gathered all the employees who became part of the new team of companies and their units, participants in the new organization chart, to receive a diploma with the new titles and respective positions, in the Noble Salon on the headquarters of Banco Português do Brasil SA, then located at Paulista Avenue, in São Paulo (Stipp Netto, 2009).

Despite the administrative reorganization, the Silva Gordo Group, motivated by urban growth and the real estate appreciation of the region around the plant and the sugarcane cultivation farms, decided to close the plant's activities in 1972. According to Stipp Netto (2009), as a result from the sale of the controlling interest in the Silva Gordo Group Companies, possibly completed in November 1972, the plants from the former Ubasa were

transferred to a new real estate business group (Stipp Netto, 2009).

Piracicaba Central Sugar Mill carried out its last harvest between the years 1972 and 1973, with its sugar production setting a record, having been the most voluminous of its almost centennial existence, with 742,186 bags of sugar of 60 kilos. According to Stipp Netto (2009): "Precisely in the last few years, when the industrial part was no longer provided for investments, maintenance and necessary reforms, scrapped and diseased, the Central Sugar Mill showed its bravery, leaving a great legacy for everyone us, reaching this historic mark" (Stipp Netto, 2009).

From the definitive end of the industrial company character, the 'Terras do Engenho' real estate development started by 'Companhia City' was started with the subdivision of old cane production farms, which were configured in the current neighborhoods of Nova Piracicaba, Santa Rosa, among others. Thus, all the plant's machinery was sold as scrap, leaving only the buildings partially ruined by the dismantling process.

After years of abandoning the industrial site, in 1989, Piracicaba prefecture expropriated the area that currently forms the Central Sugar Mill Park, which had already been highlighted in the subdivisions promoted in the previous decade. In the same year, on August 11, the Piracicaba Cultural Heritage Defense Council - Codepac toppled the remaining set, including all buildings and also the native forest. On August 26, 2014, Condephaat also decided to list the entire extension of the park.

### 3.2 The manufacturing facilities of the Piracicaba Central Sugar Mill

The Piracicaba Central Sugar Mill industrial yard was set up during its years of operation, according to the needs of the production system, and in addition to the construction of various industrial equipment, it also promoted landscape changes in the old São Pedro farm area, including landfill and construction of retaining walls on the Piracicaba River and the deforestation of the site, whose wood was used in the buildings and also served as firewood for the furnaces.

Among the first buildings constructed, the sugar factory, installed in 1882, stands out, which was structured by an internal frame of prefabricated iron, imported from France and covered by a metal dome in four waters with a lantern, finished off by a spire with a lightning rod. The main factory entrance was marked by a door similar to the typical fortifications of Portuguese origin, composed of

pilasters, entablature and a pediment in a low arch that sported a clock, consisting of volutes crowning the ensemble. The windows of this building were exposed glazed arches and their doors were also executed with the same arch model, with glass flags. The only documentary record on this factory site is a filigree stamped on the company's stock papers, which, although illustrative, allows the analysis and understanding of its original configuration, free from other buildings attached later. In 1905, already in possession of SSB, the building (fig. 1) had undergone extensions on the left side, with attachments connected to the Sugar Mill block, as shown in figure 3, which also shows the distillery, the two original chimneys, a large warehouse, former office and other small, unidentified facilities.



Fig.1: Piracicaba Central Sugar Mill in the early 20th century. Source: DPH Ippalap Archive. Photo: José Bidschovsky.

Starting the need to expand the plant's manufacturing plant, the sugar factory was expanded, with the insertion of two side blocks with lantern cover (fig. 3), and a consequent new main frontage in apparent masonry, however, preserving the original interior assembled with the prefabricated iron structure, including the original dome. With the new configuration, the Sugar Mill building was also expanded and fully attached to the sugar factory.

After several expansion reforms to adapt manufacturing activities, the old sugar factory was demolished to make way for a larger building in the 1940s. Divided into two parts to serve as a factory and refinery, the new building was named as 7A and 7B (also known as 'twin' buildings) and has Art-déco style features on the platbands (fig. 4), combined with traditional elements from the eclectic repertoire, usually used in the apparent masonry factory buildings such as the knocked down arches, the cycles, friezes and moldings.



Fig.2: SSB Plant (Central Sugar Mill) at the beginning of the 20th century. Source: Archive staff.

Another highlight for the primitive set of Central Sugar Mill was the industrial block for storing sugar sacks, divided into four gables, with an oval oculus on each 'pediment' (fig. 3). In addition to buildings of an industrial character, buildings with traditional residential characteristics were also built, such as the administrative headquarters dated 1898, the only remaining part of the Cia. Niágara phase, currently occupied by the Ippalap's Department of Historical Heritage. The house was built following the Luso-Brazilian tradition, with an eave roof and guillotine windows with dark leaves, however, it already has characteristic elements from the late 20th century. In the 1920s, it underwent a renovation that modified its frontage, with the insertion of decorative elements from the Eclectic repertoire. Due to the decorative elements characteristics in the front window frames, it is possible that the work was carried out by the Danish engineer Dr. Holger Jensen Kok, who used the same repertoire in other works.

In addition to Dr. Kok, who ran the company between 1911 and 1920, many professionals worked on different constructions in the factory complex, like the (probably) German Daniel Rinn, who built the distillery building (Building 6) in 1916, and the building the offices in 1937 (Building 4); the French chemical engineer Jean Balbaud, who replaced the engineer Rinn in the 1930s, built the Sugar Mill building (Building 5) and chimneys; and the Frenchman Marc Mourras, designed the entrance portal. There is also a record of the participation of engineer Garcez, from São Paulo, in the construction of one of the chimneys, which may also have contributed to the construction of other works on the site. Despite the registration of engineers as authors of the building projects, no references have yet been identified about the presence of architects as authors of the works, and it is possible that they were actually designed by engineers,

related to the industrial character of their functions, since several of these buildings were built around the machinery already assembled on site.

SSB replaced over time and depending on the manufacturing needs, the old buildings with others of apparent masonry (interior and exterior), from the 1920s. However, the apparent masonry pattern was always followed in all constructions, some more elaborate than others, as well as the prefabricated metallic system, which was also used in the other buildings, both in structural systems and in the roof shears. From the time of 'Central Sugar Mill', apparently no other buildings remained, although some of which are still remaining have been built using existing frameworks, as in the case of Building 5, former Sugar Mill. This building was enlarged with a new frontage and it was probably engineer Baulboud's project, the extension, and not the original construction that was already part of the original complex block.



Fig. 3: Piracicaba Central Sugar Mill in 1939. Source: IHGP Archive.

From the constructions promoted by the French, the old Distillery building (Building 6) and the Office building (Building 4) also stand out, attributed to engineer Daniel Rinn, who reveal extreme constructive skill. The original date of construction of the distillery is 1916, whose inscription is forged on the main entrance transom, however the building was expanded in 1934, when the central building gained two more blocks. It was built with exposed masonry walls, structured by beams, pillars and crossed interlocking pieces, all metallic. This structural system, which is modulated, even made it possible to expand the pavements, since the structural parts could be reproduced and fitted. The building brings together several types of fillings, from full arched spans to glazed guillotine windows, with all four frontages differing.



Fig.4: Ubasá's Piracicaba Plant (Central Sugar Mill) in the late 1960s. Fonte: Piracicaba City Council Archives.

The Office building was built following a pattern very close to the residential building, with a stone masonry frame, guillotine and shutter windows and a balcony with access to the administrator's office and also to the other work rooms. The highlight of this building is the ornamentation built capriciously with raised bricks.

Of the Frenchmen presence, the French garden stands out between the old residence of the administrator (also built in apparent masonry, with details and ornamentation in bricks), and the old administrative house. From the residence, a fountain surrounded by a bower, in front of the building, connects via a staircase, with the office area, which can be accessed by a fan staircase.

Other buildings (fig. 4) were added or eliminated according to the need for production or storage, especially the buildings that are located after the old railway yard, on the left, in the complex. The warehouses (buildings 14, 14A, 14B and 14C) followed similar programs modulated according to the required size and distinguish themselves with clearly lower power consumption.

### 3.3 The Cultural Landscape constituted

Based on the iconography produced by postcards and photographs from the company's archive, as well as from former employees, it is possible to perceive the primitive constitution and the transformations of the Central Sugar Mill complex in the cultural landscape of Piracicaba, formed by the presence of the Piracicaba River and his waterfall, exuberant elements of nature, which are made up of the built set that added or eliminated elements over the years, until its current version.

Upon appropriating the territory, the entrepreneurs who built the Piracicaba Central Sugar Mill created a movement that involved economic, social and cultural activities along its historical path, as well as having to



resolve the physical limitations of crossing the river and occupation of its margins, bringing urban transformations that distributed all these elements in a peculiar and peculiar logic. The Central Sugar Mill spatial organization process is unique and contributed to this area becoming a historical and cultural complex with considerable patrimonial value, registered at the municipal and state levels.

As understood by Mascaró (2008), the cultural landscape of this region can be defined as “an ecological reality, materialized physically in a space that could be called natural (if considered before any human intervention), in which the elements and structures are inscribed built by men, with a certain culture [...]”. Thus, the landscape starts to be understood as a product of the humanization process that modified the river's natural intricacies, incorporating urban-industrial, agrarian, economic, social and cultural activities, which formed the different visual perceptions that today are materialized in the scenario of the city.

According to Weissheimer (2009) “the concept of cultural landscape is already used in other parts of the world - such as in Spain, France and Mexico, for example - and enables the quality of life of the population and the motivation responsible for the preservation of this heritage”. These innumerable socioeconomic and cultural activities layers must be preserved for the revaluation of the city's spaces, with special emphasis on the Central Sugar Mill Park.

The territory formation through its history makes us understand the importance of maintaining spaces and the continuous conformation and development of the city. In the Piracicaba Central Sugar Mill case, since its original formation, there have been numerous changes in the manufacturing plant, with the insertion or suppression of buildings and industrial assemblies, which modified the landscape constituted there. However, the impact caused by the changes varied according to the scale of the interventions, the largest of which was the demolition of the original factory and its replacement by the new building that comprised the factory and the refinery. Some of the substitutions were punctual and did not bring a greater visual impact on the landscape, and thus, did not significantly change the perception of the historical ensemble.

#### IV. CONCLUSION

The cultural landscape of the region consisting of the Rua do Porto and the Piracicaba Central Sugar Mill riverside complex constitutes a natural space in which built

elements and structures were inscribed. Thus, the appropriation of that territory is configured based on the humanization process that formed the different visual perceptions that are currently materialized in the city scenario.

Although changed over the years, as a cultural landscape, the remaining and definitive industrial version, combined with the nature constituted by the Piracicaba river waterfall and the native forest, is inseparable from the Piracicaba imaginary, with a strong identity appeal, being considered one of the main signs of the city and recognized by all its population.

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