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EDITORIAL

Uta Pottgiesser & Wido Quist

Editors-in-Chief

FROM NEWSLETTER TO OPEN ISSUE

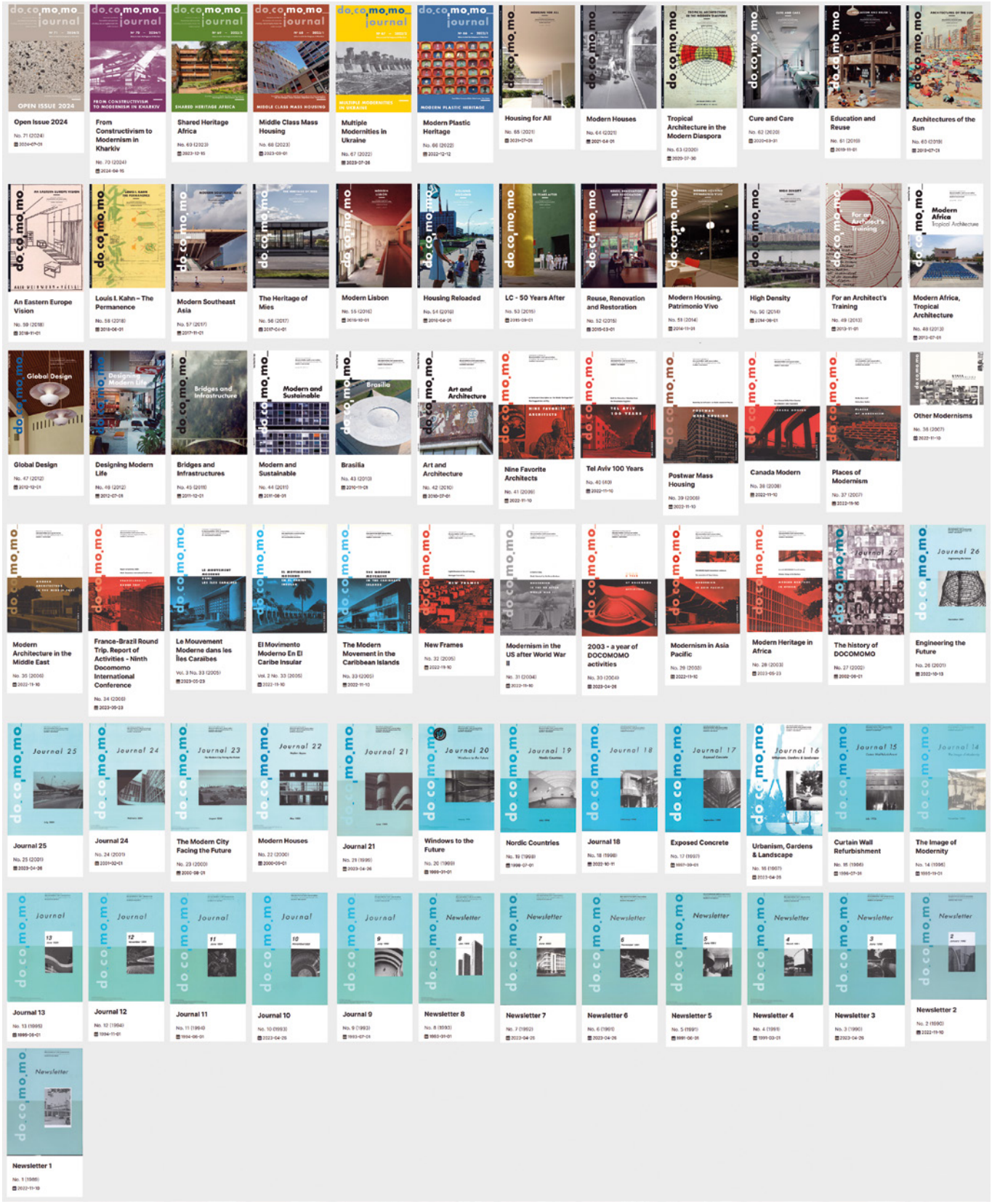
Docomomo International is proud to present the first Open Issue of the Docomomo Journal. Creating the opportunity for scholars, practitioners, policy makers, activists or any other group of authors to publish in our journal without having to wait for a thematic Special Issue on a theme that would fit their topic felt like the logical next step in (the continued) continuing professionalization of the Docomomo Journal.

In the plan of action for the candidacy of Delft University of Technology as the new headquarters for Docomomo International – presented in 2021 – open access to the journal and expansion of its reach was advocated:

"In addition, Docomomo International aims to involve the Docomomo network more actively into the production of content – in particular linked with the new biannual conferences, seminars and workshops related to digitization, education and sustainability. This will strengthen the role of the Docomomo Journal as a link between Docomomo members, the Docomomo chapters to serve the Docomomo network, and its impacts on professional practices and the general public."

The Open Issue aims for contributions that do not fit within the topic of the thematic Special Issues but fit the overall scope of the Docomomo Journal. All contributions to this open issue have had the same peer reviewing process, but instead of organized by guest editors, now under the wings of the editors-in-chief. The 2024 Open Issue features articles on the Lagoa Rowing Stadium in Rio de Janeiro, industrial heritage in Egypt and Iran, on Erik Gunnar Asplund's Stockholm public library, the transformation of a former hospital to a criminal justice complex in São Paulo, and the House of Manoel Coelho in Curitiba.

The creation of a yearly Open Issue in addition to the two regular thematic Special Issues is the next step in the evolution of the Docomomo Journal, that once started as a simple Newsletter and evolved into an academic peer-reviewed and indexed journal (figure 1). The first Newsletter was published in 1989 and changed into a Journal in 1993 (no. 9). Starting with no. 28 in 2003 the lay-out and graphics of the Docomomo Journal changed tremendously, marking the transition into a more academic oriented journal. Another change in graphics took place in 2010, starting with no. 42 and Ana Tostões and Ivan Blasi as editors, also marking the move towards online publication of the individual articles in the Docomomo Journal. In 2022, with the special issue



01 Overview of the 73 front covers of the Docomomo Newsletter (no. 1) until no. 71 of Docomomo Journal, including the French and Spanish edition of Docomomo Journal no. 33.

on Modern Plastic Heritage (no. 66) a new lay-out and publication scheme was adopted to accommodate fast online and open access publication of new issues of the journal and its individual articles.

The 2024 Open Issue (no. 71) marks the newest development and we call upon the Docomomo Community to continue using, referencing and contributing to the Docomomo Journal, not only to the thematic Special Issues, but also to the Open Issues.

SITES OF MODERN INDUSTRIAL HERITAGE IN EGYPT AND IRAN

Local, National, and International Relevance for Conservation and Reuse

Mirhan Damir, Heike Oevermann, Martin Meyer, Mohammadjavad Mahdavinejad, Hassan Elmouelhi

ABSTRACT: The countries of the Middle East and North Africa (MENA) have only recently discovered their modern industrial heritage as an object of conservation and future development. Through an in-depth analysis of four industrial sites in Egypt and Iran, testifying to a designated modern era, this article documents the complex historical process of industrialization and its political and economic background. Building on fieldwork, archive studies, workshops, and interviews, the article explores how built structures of modern industrial sites signify the multi-facetted, symbiotic, and exploitative international exchange behind the modernization of economies in the region. In the face of many obstacles to the conservation of this heritage, ranging from incomplete listings and ineffectual policies to high development pressures on urban land, this article aims to transcend the current Eurocentrism in industrial heritage research and practice, and encourage regional claims on this significant heritage.

KEYWORDS: Industrial heritage, international exchange, modern era, Iran, Egypt

INTRODUCTION: In 2001, the UNESCO World Heritage Centre, ICOMOS (International Council on Monuments and Sites), and DOCOMOMO launched a joint program to document and promote the built heritage of the 19th and 20th century (van Oers & Haraguchi, 2003). During this period, most countries in the Middle East and North Africa (MENA) experienced major growth, often under prolonged periods of foreign rule (Owen, 1993). As a consequence, their industrial structures bear witness to the productive intertwining of the flow of resources and ideas: Linking nascent national economies to global markets and signifying a shift in relations toward their de jure or de facto colonial powers. In this process, industrialization reshaped whole townscapes and regions.

Par excellence, industrial heritage is part of a global heritage and necessitates research that pays attention to the global interchange in trade, production, and politics (Meier & Steiner, 2018). Far from acknowledging those transboundary aspects (Leung and Soyez, 2009), the Middle East has only recently begun to view its modern industrial heritage as an object of conservation and future development. Iran and Egypt are a case in point. In both countries, modern industrial sites are rarely recognized as national heritage (Damir, 2022). The cultural dominance of a rich, pre-modern, built heritage, a lack of documentation, and little public debate on modernization, but also a dissociation of European countries with regards to their colonial projects, have hindered a broader debate on conservation and re-use of often dissonant local industrial heritage. Important sites are left vulnerable to decay and destruction. Consequently, there is an urgent need to challenge the predominantly European perspective on the history of industrialization across the diverse national and regional contexts of the MENA region by way of documenting and decoding its artifacts. In this paper, we try to answer the following research question: What is the relevance of the modern industrial heritage in Egypt and Iran that still remains? The research initiative 'Modern Heritage to Future Legacy'(MHFL) applies this approach in comprehensive listings and in-depth analyses of case studies, aiming to provide solid base of research and recognition for assessing the contextual impacts. Initial research in Egypt and Iran suggests an abundance of potential industrial heritage sites of local and national importance, and international relations represented by this heritage.

INDUSTRIALIZATION IN EGYPT

During the early 19th century industrialization commenced in Egypt—referred to as 'Égypte Moderne' even at the time (Bodenstein, 2010; Vatikiotis, 1991). Agro-industries were established under a state monopoly system with administrative and operational assistance from Ottoman artisans and European machinery, especially from Britain, France, and Italy. This system fell into obsolescence by the 1840s due to a lack of know-how, high operational costs, and defective imported machinery (Clot-Bey, 1840). However, Egypt's strategic location between the European colonies in the Far East and the Mediterranean expedited the construction of transportation infrastructures to support the global commercial route. Against the background of the 1860s American cotton blockade, Egypt boomed as the main cotton provider to Europe (Yousef, 2000). Further agro-industries, such as sugarcane in Upper Egypt and grain in the Delta region were developed (Bodenstein, 2014). By the end of the 19th century, with the demise of the Ottoman Empire, the European powers competed to expand their colonial hold on and her ressources. Oil and mineral extraction, especially in the Red Sea region, pushed Egypt into an 'era of engineering' Egypt, characterized by it (Alsayyad 2019, maṣlaḥit at-tijārah wal-ṣinā'ah, 1936). Foreign compradors brought their managerial and technical expertise, capital, and global networks. Egyptians connected to industrial operations were either agrarian bourgeoisie or laborers (Gerholm, 1987; Shamir, 2019). The labor movement in Egypt, with its anti-foreign sentiments, later played a catalyzing role in the Free Officers coup of 1952. Consequently, the newly founded Egyptian republic under Nasser nationalized private and foreign-owned industries. From the 1960s onwards, they were integrated into a propagated 'ambitious program […] of state-sponsored rapid industrialization', especially for heavy industries and consumer goods (Beinin and Lockman, 1998). These policies, although founded on pan-Arabist and national sentiment, forced Egypt into an uneasy alliance with the Eastern Bloc. This lasted until 1971, when Nasser's successor Sadat facilitated private-sector industrial development under the so-called Open-Door Policy (Harris, 2016).

INDUSTRIALIZATION IN IRAN

Compared to Egypt, industrialization in Iran had a late start. Ruler Naser al-Din Shah (reign 1848-1896) offered concessions and licenses to foreign entities and contracted out the construction of the telegraph network, railroads, trams, mining, and irrigation (Floor, 1984). Yet only after the 1921 coup d'état, industrialization accelerated under the heavily enforced modernization program of Reza Shah Pahlavi (Samadzadehyazdi et al., 2020). The Pahlavi dynasty's (1925–1978) desire to create a modern nation-state, combined with the growing interest of the British in Iranian oil resources after 1908, led to a first boost in modern production. A net importer itself, Iran sought to foster import-substituting industries, especially for consumer goods such as sugar, cotton, and other textiles and for construction materials such as cement (Hakimian, 2012). State control was assumed over virtually all foreign trade to accumulate foreign capital and to import required machinery (Floor, 1984; Jenkins, 2016). Central to the Iranian national project, industry and transportation sectors comprised around 40% of the state budget throughout the 1930s (Floor, 1984, Hakimian, 2012, p. 26). Despite the efforts of Reza Shah Pahlavi to align himself with Germany during the interwar period and an influx of German experts and technologies, the modern Iranian economy remained dominated by the Anglo-Iranian Oil company and British interests (Abrahamian, 1989; Khatib-Shahidi, 2013). After World War II, prime minister Mossadegh, who had pushed for the nationalization of the oil industries, was removed following a CIA-instigated putsch (Hakimian, 2012). As British rule in the Middle East weakened, the USA sought an economic and political alliance with the Reza Shah's son and successor Mohammad Reza Shah, as part of its 'containment' strategy (Harris, 2016; Hein & Sedighi, 2016). Conglomerates such as Exxon invested in new oil refineries, a civil nuclear energy program was launched, and flourishing oil revenues paid for industrial development and military expenditure (Hein & Sedighi 2016; Malus, 2018). Eventually, the unsuccessful White Revolution, popular discontent, and the lingering anti-American and British sentiments led to the Islamic Revolutionof 1979 and the end of the Pahlavi dynasty (Hetherington, 1982).

MARGINALIZED HERITAGE

Since the 1970s, both Iran and Egypt experienced phases of political upheaval during which their built cultural heritage suffered severe neglect as old political entities were disbanded and new institutions were assembled. With time, both countries introduced new political agendas concerning national heritage (Barakat, 2021; Mozaffari, 2015).

Iran today has several institutions concerned with protecting heritage sites of national importance, such as the Ministry of Cultural Heritage, Handicrafts and Tourism (MCHHT), parastatal organizations and NGOs engaged in the preservation of chiefly pre-modern historical sites and raising awareness to conservation issues (Mozaffari, 2015). In 2012 in which the country officially became a member of DOCOMOMO and which signified a paradigm shift concerning modern heritage in Iran (Ghahroodii

& Mahdavinejad, 2019). DOCOMOMO Iran pursues the documentation and protection of modern and contemporary buildings and sites of Iran, in line with the goals of DOCOMOMO International. The most important activities involve documenting sites of the modern period, holding events related to the dissemination and protection of the modern heritage and organizing awareness-building tours. However, the documentation of modern industrial sites is still at an early stage. After joining TICCIH (The International Committee for Industrial Heritage) in 2016, selected industrial sites have attracted the interest of local government and private initiatives and conversion of urban industrial sites has attracted public attention. Still, discourse is limited to special interest groups, such as the Modern Heritage and Future Legacy Research Hub, established in 2012 at Tarbiat Modares University.

In Egypt, heritage listing adopted a centralized state ideology that is reflected in the present conservation laws (Elsorady, 2011, p. 502). Despite emerging publications on modern heritage and private initiatives calling for the safeguarding of Egypt's diverse tangible and intangible legacy, the official listing of (modern) heritage is underpinned by a dominant top-down mechanism involving the Ministry of Tourism and Antiquities and the National Organization of Urban Harmony, the latter affiliated to the Ministry of Culture (Alsadaty, 2020). In practice, legislation is only applied where it does not conflict with the state's real estate-oriented vision for economic development. This is not only limited to modern heritage. However, due to their marginalized role in the public sphere and little interest from the dominant tourism industry, the listing and conservation of modern industries face more critical challenges than of Egypt's world-famous ancient sites. International heritage organisations such as ICOMOS, DOCOMOMO, and other NGOs have been officially suspended in Egypt through to political reforms that curbed their capacities and curtailed international funds (Herrold, 2016).

RESEARCH APPROACH AND CASE STUDIES IN IRAN AND EGYPT

One of the aims of the Modern Heritage to Future Legacy project is to advocate for the national and global recognition of modern industrial heritage in both countries through systematic research, documentation, and support of official listing. Firstly, the lack of a nationwide, structured overview of modern industrial heritage sites necessitated compiling a representative but not necessarily exhaustive inventory list of heritage sites for each country. These lists were developed primarily by reviewing the available literature, desktop research, local researchers' knowledge, university research programs, and archive work. As the availability of secondary data was limited, information on the current condition and history of the case studies was consolidated by primary data obtained through field research. Data was supplemented by several expert interviews conducted between 2020 and 2021, together with archival research between the years 2018 and 2020, which included the BnF in France (Bibliothèque nationale de France), the CEAlex (Centre d'Études Alexandrines), DWQ (Dār al-Wathā'iq al-Qaūmiyiah), and Bibliothèque Municipale d'Alexandrie (BMA) in Egypt, and the National Library of Iran. Additionally, three online workshop sessions were used for exchange, further contribution, and discussion with scholars and stakeholders from Egypt, Germany, Iran, and other countries. These workshops discussed the relevance of the site lists and case studies to historical industrial development.

Despite the limited availability of both primary and secondary data and the difficulty of obtaining security permits for site visits, the extensive research in this project resulted in an inventory of 102 industrial sites, buildings, and structures in Egypt and 58 sites in Iran. Detailed case studies were conducted on a total of eleven sites out of which two Egyptian and two Iranian examples of modern industrial architecture are presented here. The selection of the four case studies provides an insight into their national and global linkages and the incremental integration of modern architectural structures at the time.

SGPD (LA SOCIÉTÉ GÉNÉRALE DE PRESSAGE & DE DEPÔTS), ALEXANDRIA

Industrialization in Egypt was geared towards the international export of agro-industrial products. Besides several irrigation projects maintaining Egypt's status as a global cotton producer, ginning and pressing mills were key technologies in processing harvested cotton for successful commercial export. Generally, cotton ginning was the first processing step towards exporting cotton. Ginning plants were constructed in the Delta provinces, where about 65% of Egypt's cotton was harvested (La Societé d'Entreprises Commerciales en Egypte, 1950; Bodenstein, 2010). For export, the cotton was transported to Alexandria, where Egypt's cotton presses and warehouses were located due to the port's geographic proximity to Europe.

By the turn of the 20th century, the visual manifestation of warehouses and cotton presses predominantly comprised plastered, functionally spacious, and scarcely ornamented structures. It was after WWI that the cotton press and warehouse owners first began to invest in the visual representation of their corporate images, coincidentally at a time when the industry also introduced highly mechanized industrial structures. This is evidenced in the SGPD company buildings located in al-Qabbārī district. SGPD was Egypt's most dominant cotton press and warehouse,

SGPD company in terms of capital, operations, and scale. The company had been founded in 1889 by Alexandrian Greek merchant Constantinos Zervoudachi; however, managerial and financial matters were controlled by a group of British financiers (see Glavanis, 1989, p. 322).

In the early 1920s, the SGPD held a competition to redesign three of its several cotton press and warehouse buildings in Alexandria. The realized project represents what Bodenstein (2010) refers to as the turn from "historicism to modernism" [FIGURE 01]. The modernist ideology of this project did not involve introducing an aesthetic character but rather pushing "functionalism to its bare essence" (Bodenstein, 2010). The design motive of the buildings was presumably part of the strategy proposed by Egypt's *Commission du Commerce et de l'Industrie*, which promoted the operational security of the country's industries by modernizing their manufacturing structures (Damir, 2022). British architect Noel Dawson contributed to the design of the three-story blocks with their visible concrete structural skeleton and brick façade overlooking the banks of the former Mahmoudiyah Canal. This design was distinguished from the other surrounding single-story plastered blocks by its conspicuous display of corporate dominance. Following the nationalization of SGPD in the mid-20th century, the buildings were renamed the Miṣr (Egypt), an-Nīl (Nile), and at-Tarīkh (History) presses.

Presently, only a few buildings associated with the cotton industry are listed and acknowledged by the Ministry of Tourism and Antiquities and the Ministry of Culture. Owned by an Egyptian shareholding company, the cotton presses and the other listed cotton industrial sites ceased operation and are left in a deteriorating state. However, they are strictly guarded and are only accessible after exhaustive applications for security permits. In 2013, both buildings were incorporated within a rehabilitation partnership involving the BA (Bibliotheca Alexandrina) and AFD (Agence française de développement); despite years of study and planning, the project was abruptly suspended by the Egyptian authorities (Khalil & Elgohary, 2020).

NASCO (EL NASR AUTOMOTIVE MANUFACTURING COMPANY), HELWAN

In Egypt, the pursuit of industrial development, and especially mass production, intensified during the 20th century. This was led, among others, by the automobile industry. Until the nationalization of the private sector, which started in 1956, the automobile industry in Egypt was monopolized by the Italian-backed Fiat Oriente and the American companies Ford and General Motors (Zoides, 1935). During Nasser's regime, a re-industrialization agenda was propagated with several state-sponsored industries including the establishment of a national automobile industry (Bodenstein, 2010).

In 1959, the Egyptian Government signed a contract with the West German company Klöckner-Humboldt-Deutz AG to supply trucks and buses (Kaiser & Steinbach, 1981). This resulted in the foundation of NASCO (El Nasr Automotive Manufacturing Company) in 1961 in

01 Alexandria - The former SGPD (far right) and its adjoining warehouse block with their bare functionalist architectural expression. The building was renamed to Miṣr Cotton Press post-nationalization. View north. © Damir, 2019.

Helwan, south of Cairo. According to Bodenstein (2010) industries constructed during this period represent the "high Modernism in Egypt's industrial architecture" and planning. Like most state-sponsored constructions during Nasser's socialist regime, the NASCO modernist design was symbolically national despite being internationally inspired in terms of design style [FIGURE 02] (Elshahed, 2022). The company site of more than 46 hectares consisted of single-story factory halls involving four operational sectors: a passenger car factory, a pressing factory, a parts factory for gears and thermal treatments, and finally a plant for engineering tools. Additionally, the factory plant comprised administrative, residential, and recreational facilities for the company's employees.

To maintain its national lead in industrial manufacturing despite a lack of operational know-how, NASCO negotiated agreements with European companies to supply vehicles and train employees. These included renewed contracts for passenger car supply by Fiat of Italy. Other agreements included the Yugoslavian IMR (Industrija Motora Rakovica) to produce agricultural tractors and Germany's Blumhardt for the production of trucks (LYNX, 2019). The aim of producing local, affordable cars was fulfilled within the first decade of its foundation, which saw worker numbers increase from 290 to 12,000. According to the 2019 Industry Note: 'NASCO was the first and, at that time, the only production company for components in Egypt, and the monopoly position it enjoyed enabled it to profit substantially' (LYNX, 2019). Following the company's state-sponsored operational heyday during the 1980s, government support was abruptly suspended during the 1990s in favor of adopting private-sector approaches to industrial development under President Mubarak. Presently, the complex stands abandoned, still containing its machinery, potentially awaiting operational re-activation. This is endorsed by the former company workers, who are still calling for their re-hiring to support the revival of one of the first-established and governmentally supported Egyptian companies, at that time, involved in national industrial operations.

02 Helwan, probably 1960s. Former Egyptian President Nasser views the NASCO site complex model during its inauguration. The model depicts the large-scale complex with its ingle-story factory halls © Collection Bibliotheca Alexandrina.

MASHHAD TEXTILE FACTORY, MASHHAD

The Mashhad Textile Factory is an important example from Iran's first period of industrialization. The factory was financed and owned by the Persian Government and is a pioneering example of modern industry in eastern Iran. The design process started in 1927 under the supervision of German engineer Max Otto Schünemann (IRNA, 2017). Siavash Teimouri (interview, 2021) mentions that Schünemann supposedly brought sketches by German architects, such as Walter Gropius, Hans G. Meyer, and Martin Hoffmann to Iran as inspiration for the design of the factory buildings. Mohammad Fateh (2021) states that the first section was built in 1934 and the factory started partial production until its completion and formal opening in 1937. Architectural elements such as the flat roof of the central hall, the gable roof of the production halls, and unadorned walls lacking conventional ornamentation show a clear resemblance to German blueprints of the time [FIGURE 03]. The stylistic influence of Peter Behrens is visible in architectural and structural details, such as the stair-shaped form, the entrance, limited ornamentation, and monochrome color. The architectural style of the Mashhad Textile Factory quickly became a source of inspiration for the city. In 2006, the factory was closed because of changing market characteristics and cheap textile imports from East Asia. In June 2020, following protracted efforts by the MHFL Research Hub at Tarbiat Modares University, DOCOMOMO Iran, and TICCIH Iran, Mashhad Textile Factory was inscribed on the national heritage list.

REY CEMENT FACTORY, TEHRAN PROVINCE

The historical background of the Rey Cement Factory dates to the beginning of the 20th century and the industrial development plans of the first Pahlavi era. A key argument for establishing the Rey Cement Factory was independence from Russia and the expensive Russian cement imports financed by the state. However, due to an agreement between Britain and Russia, the progress of the project stalled. Eventually, it was a German consortium including Sika, Siemens, and others that helped Iran build its own cement factory in the 1920s, in line with Germany's foreign policy which identified Iran as a supplier of key raw materials (Jenkins, 2016). From 1925 to 1941 a German project coordinator oversaw construction work done by the Danish company FLSmidth, which

03 Mashhad - The Mashad Textile Factory with its gable roofs of the production halls and unadorned walls. © Sheikholeslami, 2021.

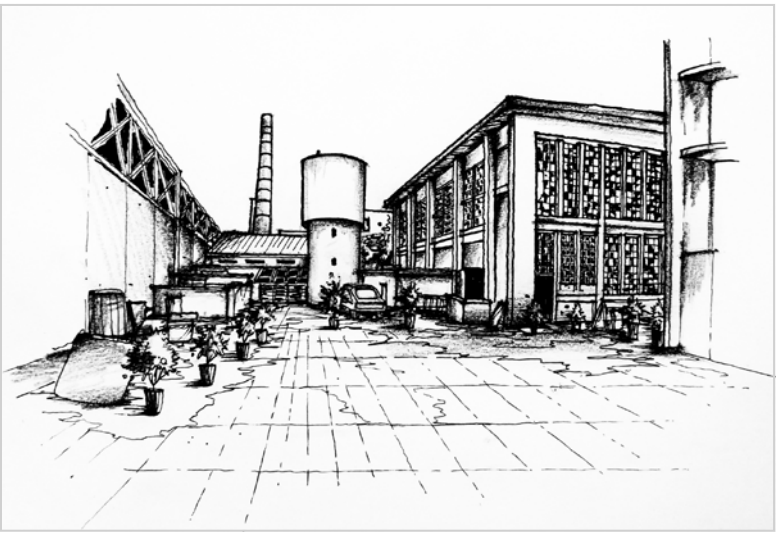
in turn employed Italian workers [FIGURE 04] (Fateh 2021). Schünemann was responsible for later extensions and redesigned the older parts based around new equipment supplied by Siemens. One of the buildings was named after Walter Gropius. It is noted as being designed by him in the style of Neue Sachlichkeit and, as such, differs architecturally from the other buildings. The building remained operational until 1984, when production was halted. Due to the pollution crisis in Tehran, the plant's poor environmental performance was deemed unsustainable. In 2019, the municipality of Tehran decided to preserve the site. This was a direct result of the campaign by TICCIH Iran, DOCOMOMO Iran, and the MHFL Research Hub. The visit to the factory by the German ambassador and the mayor of Tehran in May 2019 might be seen as a turning point for a joint future and adaptive reuse is being discussed for this significant monument.

DISCUSSION AND CONCLUSION

Modern industries in Egypt and Iran started in different periods. Yet, in both countries the early stages of industrialization were implemented through a state-led, top-down process linked to progressive national agendas.Despite the growing national sentiment, the considerable impact of foreign interference cannot be denied for Egypt and Iran. Relations with foreign powers could be described as simultaneously symbiotic and exploitative, depending on which period is in focus. In both countries, geostrategic interests played (and still play) a key role in the sustained efforts of international powers to maintain a foothold in the region.

The four cases from Egypt and Iran outline in exploratory form pathways for a contextualized understanding of their local, national, and international relevance, both at the time of their establishment as well as their current potentials for acknowledgment and development. At the level of artifacts and structures, the case studies highlight the different Modernist concepts in both countries and local appropriations imposed on them. The turn to Modernism also reveals the hold of the International Style over both countries which can partly be explained by the needs to house larger and larger machinery, but is also testament to the productive exchange of engineers and architects.

Although the sites are of immense historical significance, this is not reflected in the level of conservation efforts. At the local level, responses to the industrial heritage vary and reflect different prioritizations of heritage value over use value and economic impact In Egypt, industrial sites



04 Tehran - The Rey Cement Factory. © Ensaf, 2021.

are mainly reclaimed for the profit of the land use without integration of the local community. The Miṣr and an-Nīl cotton presses are officially listed yet continue to deteriorate due to a lack of capacity and feasible reuse options. The an-Nasr site demonstrates the close linkages and persistent identification between the local population and former workforce and the industrial sites, as hopes for their revitalization still abound. The local relevance of the Iranian case studies shed a somewhat more positive light. They are showcases for successful lobbying and proactive local government efforts towards reuse, as exemplified by the Rey Cement Factory and Mashhad Textile Factory. However, also in Iran new real-estate developments and lack of funds pose severe threats to modern heritage.

Partial recognition is apparent at the national level. Sites of industrial heritage are being listed, although industrial heritage does not exist as its own category in either country. In the discussion conducted during online workshop sessions, most academics and scholars agreed that heritage listing in Egypt provides no guarantee of conservation. Although heritage is usually considered within strategic urban plans as a land use, it lacks clear implementation mechanisms (Shalaby, interview, 2021). The situation is similar in Iran, although the more independent position of the NGOs such as DOCOMOMO and TICCIH seems to foster a more conducive environment for reuse scenarios.

Until now, the international relations of modern industrial heritage sites in the MENA region remain within the academic domain in most cases. Historically, Iran attempted to strategically leverage partnerships with Germany, Austria, and Switzerland on the eve of World War II for economic gain, as evidenced by the Mashhad Textile and Rey Cement Factory case studies. In Egypt, modern industrial development was incentivized by global interchange with various European powers, especially Britain, France, Italy, Germany, and later the former Soviet Union, among others. For the resulting industrial heritage, practical strategies that would acknowledge its international relations remain underdeveloped, as evidenced in the project involving the Bibliotheca Alexandrina and the Agence Française de Développement.

While an abundance of research has been produced on the history of economic development and colonial and post-colonial dependencies between Egypt, Iran, and Western powers, especially by academics in the Global North, further work is needed to link these back to the actual sites of production. This includes studies on Modernism in Egypt and Iran which are still predominantly focused on residential and public buildings. We argue that there is an urgent need to tackle the "industrial gap", especially given the dire condition of many industrial heritage sites. It is thus a necessary first step to revise, contextualize and redefine local, national meaning in an international and intercultural dialogue. The imminent threat to important sites of industrial development in Iran and Egypt, some of which are explored through the case studies presented here, is a call for researchers to provide a solid basis for the conservation and future use of such sites.

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ENDNOTES

1 The First Booklet on Industrial Heritage in Egypt and Iran, https://ticcih.org/the-first-booklet-on-industrial-heritage-in-egypt-and-iran/.

RECOVERING THE HISTORICAL CONSTRUCTION AND MATERIALS OF ERIK GUNNAR ASPLUND'S STOCKHOLM PUBLIC LIBRARY

Patrick Fleming, Petronella Mill, Marcelo Rovira Torres, Anders Bergström

ABSTRACT: This work presents the first detailed study of the construction and materials of the Stockholm Public Library. As the building undergoes a rare period of maintenance and renovation, the floors and walls of the library are examined from three perspectives. First, using available but limited archival documents and plans; second, with non-destructive ground-penetrating radar measurements; and finally, through on-site surveys during local interventions for the maintenance and renovation process. The ensuing results emphasize the complementary nature of this combined research approach in recovering lost or forgotten construction details and further reveal several important findings. In the case of the unique wall finishing of the library's rotunda, multiple layers of lime mortar, each varying in thickness and coarseness, were used to build up and craft the relief-like interior wall surface. With the use of in-situ aerated concrete and prefabricated Solomite panels in the library's 1931–32 floor construction, a material connection between Asplund and the broader modern movement in architecture is further highlighted. At first glance, these construction-related findings seem to reinforce the common architectural narrative of the library as a transitional project between neoclassicism and modernism. At the same time, however, the library's separate periods of construction of 1925–28 and 1931–32 and their distinct materials can be seen as a continuity of construction culture, with the innovative use of local raw materials related to the Swedish landscape.

KEYWORDS: Asplund, architecture, heritage, renovation, ground-penetrating radar

INTRODUCTION: The Stockholm Public Library [FIGURE 01, FIGURE 02] is one of Erik Gunnar Asplund's most well-known works and holds a prominent place in twentieth-century architecture. Yet despite being frequently discussed in general architectural literature, the library's original construction and building materials have not yet been closely considered, especially in international publications (Adams, 2011, pp. 24–26; Blundell Jones, 2006, pp. 111–128; Knight, 1982; Ortelli, 2019, pp. 42–51; Wrede, 1980, pp. 100–125). Construction was nonetheless an important aspect of architecture for Asplund, as the library's construction contractor, Oscar Hegert, wrote how Asplund often visited the library's construction site early in the morning to meet with the site foreman and discuss the construction and design of the library as work progressed (Hegert & Westholm, 1956, p. 46). While working on the library, Hegert came to see Asplund as an imaginative man who still respected practical things and technical details (Hegert & Westholm, 1956, p. 46). This description echoes similar claims from Asplund's students, who described in interviews how Asplund's teaching emphasized a holistic approach, with technical issues as an important aspect of architecture (Engfors, 1990, pp.71–75). Now, as the library undergoes a rare period of maintenance (2020–24) and renovation (2025–27), there is a significant opportunity to complete timely research and for the first time, bring to light the library's historical construction and materials for a broad international audience of researchers and practitioners.

As part of an ongoing research project based at ETH Zurich, running in parallel with the library's maintenance work, this article examines the building's historical construction in three ways. First, the library's limited and incomplete construction plans and historical archived documents are presented as relevant background information. Such materials represent the typical historical

01 The exterior rotunda of the Stockholm Public Library (Stadsbiblioteket) by Erik Gunnar Asplund. © G. Löwendahl, 1938 (PDM 1.0 DEED, ArkDes Archive, Asplund Collection, ARKM.1962-101-0843).

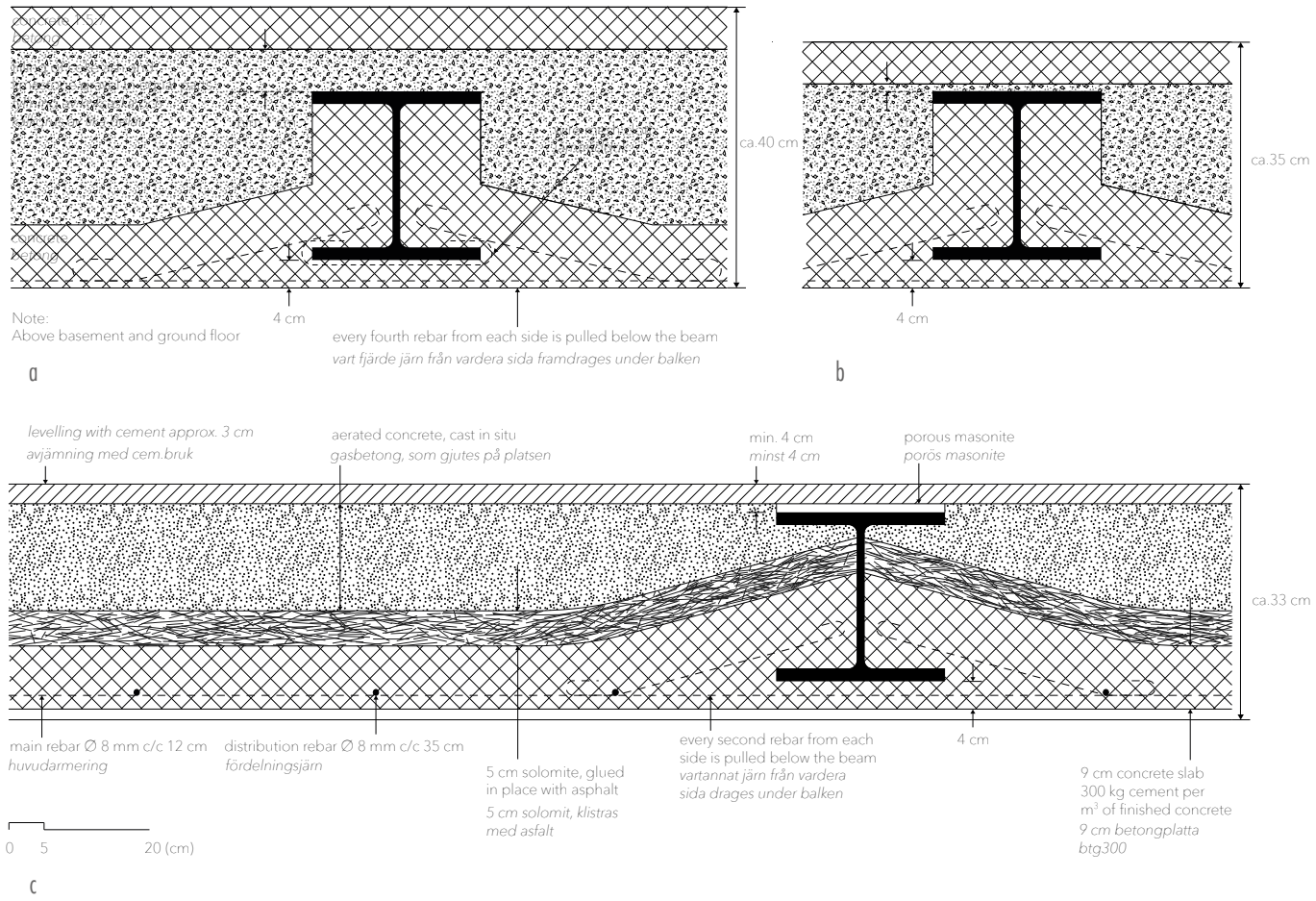
02 The interior rotunda of the Stockholm Public Library (Stadsbiblioteket) by Erik Gunnar Asplund. © P. Fleming, 2014.

materials available to both researchers and practitioners before renovation work begins. Secondly, non-destructive and non-invasive ground-penetrating radar (GPR) measurements are used to detect steel elements and estimate the thickness of various construction layers in the library's floors. These types of measurements are often helpful in gathering more specific construction details in the planning stages immediately preceding renovation work. Thirdly, on-site surveys and direct measurements of historical construction materials, performed during interventions, are used to document and finally clarify details from missing archival plans and uncertainties from GPR measurements. A subsequent discussion of the library's construction in relation to its architecture and context concludes this contribution, together with a brief summary of our main findings.

1924 BUILDING SPECIFICATIONS AND CONSTRUCTION PLANS

Archival plans and documents related to the library's original construction are significantly limited, which in part has encouraged previous studies to focus more so on the library's design rather than its construction. A recent publication by Fleming and Bergström, however, has reviewed all of the digitized and readily available archival plans for the library's design and initial construction phases (Fleming & Bergström, 2023). Their review begins with Asplund's earliest dated design from 1919, and includes a brief discussion of basic architectural construction plans for the library from September 1924, and also later updated construction plans from February and April, 1925. Complementing Asplund's straightforward architectural plans, Library Committee meeting minutes held in the Stockholm City Archives offer some insights mainly into the library's surface materials and finishes (Schönbäck, 2003).

In addition to archival plans and Library Committee meeting minutes, the KTH Library holds a special archived book simply titled, *Building Specifications* (*Arbetsbeskrivning*), describing the library's original 1920s construction process (*Arbetsbeskrivning*, 1924). This *Building Specifications* book, which was printed in 1924, does not include plans or diagrams, but rather offers 85 pages of detailed, textual descriptions of the library's planned construction details and materials.[1] For example, this historical text describes the building's main walls in masonry with a basic English cross bond, and notes how the library's floor slabs and stairs were planned to be built using a combination of steel beams and reinforced concrete (*Arbetsbeskrivning,* 1924, pp.18–22). In the chapter on concrete work, typical steel floor beams were specified with a minimum 4 cm cover of concrete underneath their lower flanges, with wire mesh folded around the beam flanges (*Arbetsbeskrivning*, 1924, p.19). Based



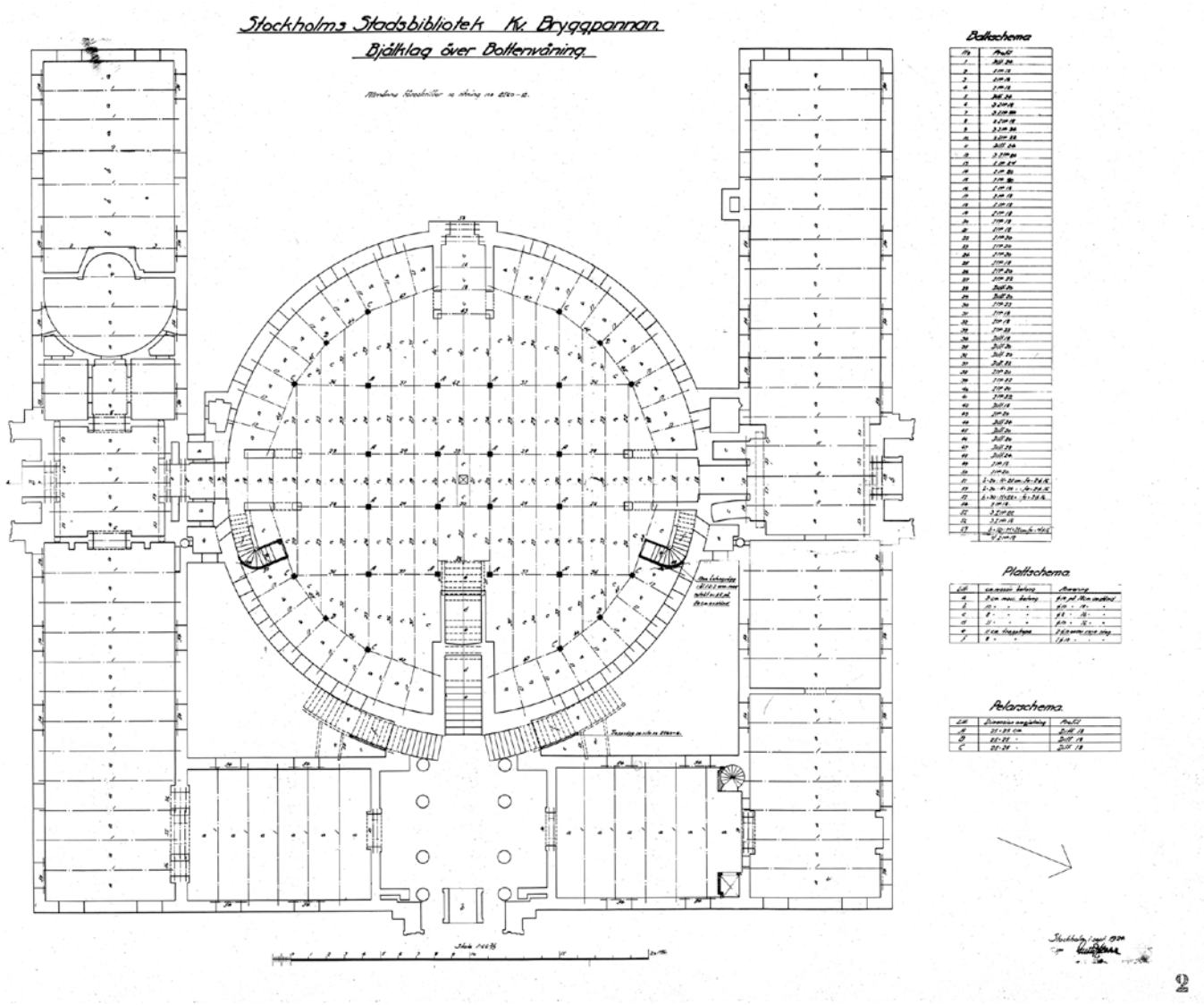
03 Floor sections of the library's original 1928 construction: (a, above left) reading room and (b, above right) upper office level, both drawn from the library's 1924 construction plans and Building Specifications text; (c, below) floor section for the western reading room, drawn from the library's 1931 construction plans. © Petronella Mill.

on subsequent text, [FIGURE 03] illustrates additional layers of the library's specified floor slab construction, including a filling of coke ash and limestone gravel, in equal parts, followed by a 6 cm subfloor poured with a relatively low-grade mixture of 1:5:7 concrete.[2] While these text-based descriptions of the library's construction can offer some important insights beyond basic construction plans, they still omit key information such as floor beam dimensions and positions, and more specific details concerning reinforcement that could have been decided spontaneously on the construction site.

As additional supplementary materials to the previous *Building Specifications* book, rare copies of six historical construction plans from September 1924 were recently discovered in the course of collaborating with planners involved in the library's ongoing maintenance work.[3] These plans were most likely created in the tendering phase of the library's construction, and have not been previously considered by architectural historians. They were also most likely revised to become a set of definitive construction plans for the library, and offer further information regarding several relevant construction details. For instance, each of the six individual plans from this set defines the positions and standard profiles of the steel beams planned throughout each floor of the library [FIGURE 04]. A normal-grade concrete mixture of 1:3:3 is further noted for reinforced concrete columns and also for the floor slabs between steel beams. Additionally, these plans illustrate a schematic section of a typical floor beam, with the beam's web poured and encased in concrete [FIGURE 03 a-b]. This section also notes a minimum concrete cover of 4 cm underneath beam flanges, with folded wire mesh around the lower flanges, closely matching the descriptions offered in the *Building Specifications* book *(Arbetsbeskrivning*, 1924, p. 19). These plans, however, provide additional construction details regarding concrete thicknesses, and reinforcement diameters and spacing; they include a table specifying 9 cm thick reinforced concrete slabs between most floor beams [FIGURE 04], where every fourth reinforcement bar in a floor slab should be pulled underneath the adjacent steel beam. Although these plans belong to the historical tendering process, and do not necessarily correspond to the actual revised construction plans that were used to build the library, they still give rare and valuable insight into a preliminary version of the library's planned construction details.

1931 DETAILED CONSTRUCTION PLANS FOR THE LIBRARY'S WESTERN WING

A set of eight detailed construction plans for the library's fourth western wing, completed slightly later in 1932, are briefly mentioned in Fleming and Bergström's recent work.[4] Their study did not closely examine the construction details of these 1931 plans and left that task for the

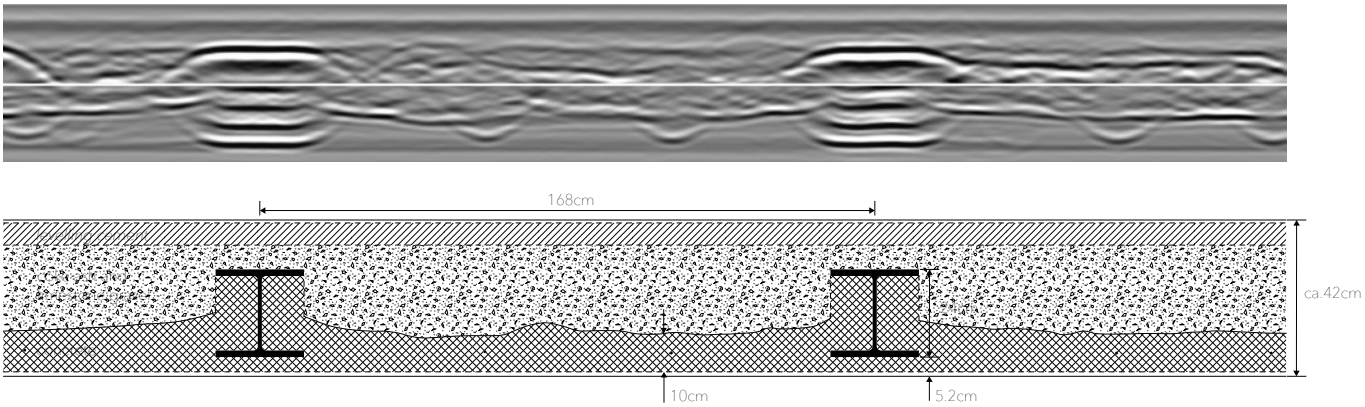


04 Digital copy of a construction plan of the Stockholm Public Library, signed by Gustaf Jilcke and dated September 1924. The plan shows floor construction details for the library's main entrance level, including floor beam locations and tables of specified beam profiles, concrete slab thicknesses, and reinforcement details. © Stockholm City Archives and courtesy of Sweco Sverige AB.

current authors to address within the more construction-focused contribution presented here. In comparison to the library's 1924 plans and written specifications, notable differences can be seen in these later 1931 construction plans. The previous coke ash and limestone gravel fill in floors are substituted with separate layers of Solomite and *gasbetong* [FIGURE 03 c]. This Solomite name refers to a specific type of construction panel made from compressed straw, whereas the latter *gasbetong* term indicates a lightweight and porous aerated concrete. Both of these construction materials were only patented and began to be produced industrially in the 1920s (Neuberger & Kic, 2021; Schramm, 2008). The replacement of more conventional, heavier construction materials with newer, lighter alternatives like Solomite and aerated concrete was most likely driven by various issues related to structure, economics, and acoustics as discussed in more detail later on. For now, however, it is important to acknowledge both the helpful insights and limitations that typical archival materials can offer renovation practitioners and researchers alike. These historical documents, although incomplete and often lacking specific construction details, can still serve as a valuable guide for identifying key issues and areas for more detailed investigations. Such documents further establish a basic expectation and reference when measuring a building's historical construction in a non-destructive manner or later during definite interventions performed in the course of renovation and maintenance efforts.

GROUND-PENETRATING RADAR (GPR) SCANNING

Ground-penetrating radar (GPR) is a well-established technique for investigating not only geological features, but also existing concrete and masonry structures (Lai, Dérobert, & Annan, 2018). Due to the ability of radar waves to propagate through concrete, yet reflect off of steel reinforcements or pipes, the GPR technique is well suited for identifying internal construction details in a simple and non-invasive manner. Furthermore, if the relative dielectric permittivity constant of a material is approximately known, GPR can also be used to estimate construction layer thicknesses based on simple calculations using the radar's wave speed (Bigman, 2018). While contemporary hand-held GPR devices have become more portable



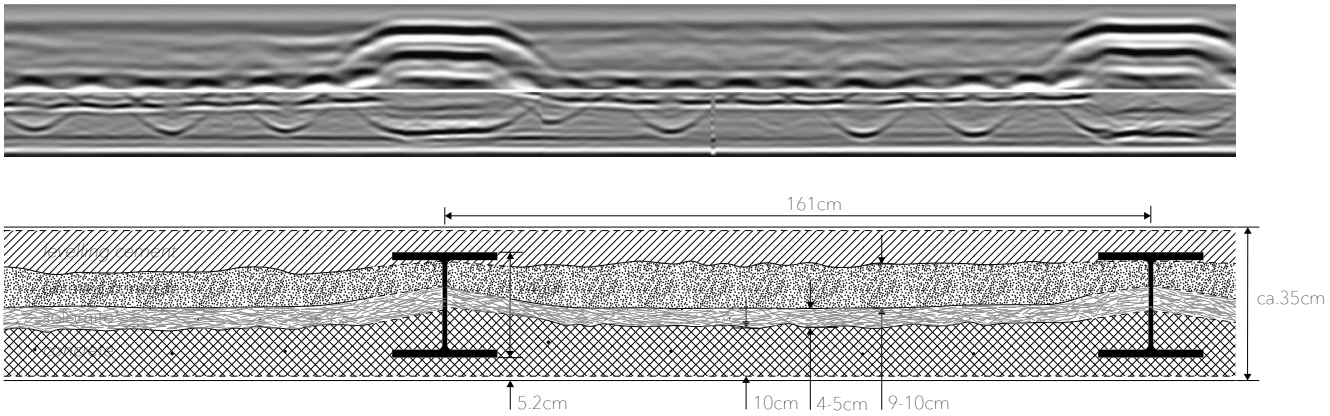
05 Representative GPR measurement examples (above) of the 1928 southern reading room floor and children's library ceiling on the library's main entrance level, and the corresponding floor section (below) interpreted directly from the GPR measurements. The total floor section depth of 42cm was measured directly from the authors' 3D point cloud model of the entire library. © Patrick Fleming.

and easier to use, the interpretation of measurement data remains as a key issue, especially when considering relatively complex cases of historical construction.

READING ROOM FLOORS AND CEILING

GPR scanning was coordinated at the Stockholm Public Library in November 2021 and June 2022 with Northscan AB.[5] The floors of all the library's reading rooms were scanned first to determine the location of steel beams. In each reading room, two parallel lines of scans were performed along the entire length of the room. [FIGURE 05] shows an illustrative measurement example where the beam locations and spacing can be estimated directly from the measured GPR data. To better understand the library's original 1925–1928 floor construction, the ceiling directly underneath the southern reading room was additionally scanned. These scans from below could be used to estimate the thickness of the lower layer of reinforced concrete in the reading room's floor slab, thereby complementing the previous scans on the floor above. From the representative measurement shown in [FIGURE 05], the lower concrete slab thickness is estimated to be about 10 cm from the GPR measurements, when a typical value of 5 is taken for the relative dielectric permittivity constant of concrete (Bigman, 2018, p. 28). Furthermore, the measurements yield a distance of about 5.2 cm from the underside of the lower beam flanges to the underside of the finished ceiling. Assuming a thickness of roughly 1 cm of render for the finished ceiling, the resultant concrete cover thickness estimate of about 4.2 cm from GPR measurements agrees fairly well with the 4 cm cover thickness noted in the library's 1924 construction plans and *Building Specifications* (*Arbetsbeskrivning*, 1924, p. 19). Similar agreement can be seen between GPR measurements and the 1924 construction plans for the typical center-to-center beam spacing of approximately 165 cm in the southern reading room's floor. These results indicate that the overall structural concepts and construction principles seen in early construction plans were not significantly altered or updated before or during the library's construction process. These initial measurements further demonstrate the overall usefulness of the GPR technique for determining the basic locations of steel elements and estimating concrete thicknesses. While the slightly sloping upper concrete surface directly next to the beams can be discerned from the GPR data [FIGURE 05], the measurements do not offer a sufficient resolution or a level of detail to determine if the webs of the floor beams have been encased in concrete. Here, we find both the usefulness of such GPR measurements and their limitations in terms of accuracy and detail.

Similar to the previous case with the 1928 southern reading room, additional GPR measurements were performed on the ceiling of the library's western reading room built in 1932 [FIGURE 06]. These measurements confirmed a more complex and layered form of construction when compared to the library's earlier areas from 1928. To check the accuracy of the 1931 construction plans for the library's western wing, the reading room ceiling was again scanned first from above, or on the floor in the office directly above the reading room, and then later from below using a ladder positioned on the reading room's upper gallery level. Both of these GPR measurements, from above and below the western reading room ceiling, showed the expected multilayered floor slab, as indicated in the 1931 construction plans [FIGURE 03 c]. Assuming a finished ceiling thickness of roughly 1 cm, and taking an overall value of 5 for the relative dielectric permittivity constant for the entire floor slab, the thickness of each layer in the floor construction could be roughly estimated: approximately 10 cm for the lower reinforced concrete slab, 4–5 cm for the Solomite layer of compressed straw, and about 9–10 cm for the aerated concrete layer. This estimated thickness for the aerated concrete is noticeably lower than the 14 cm expected from the relevant construction plan [FIGURE 03 c] and may be strongly influenced by the assumed relative dielectric permittivity constant. Furthermore, these GPR measurement data also suggest that additional steel reinforcement is located directly in the floor's Solomite layer, as shown in [FIGURE 06]. This result was unexpected when compared to the relevant construction plan [FIGURE 03 c]; steel reinforcement was only expected to be present in the floor's lower layer of reinforced concrete.



06 Representative GPR measurement example (above) of the 1932 western reading room floor and corresponding ceiling located directly underneath the reading room on the library's main entrance level, and the corresponding floor section (below) interpreted directly from the GPR measurement. The total floor section depth of 35cm was measured directly from the authors' 3D point cloud model of the entire library. © Patrick Fleming.

With a planned intervention directly in the floor above this reading room ceiling area, such uncertainties need to be clarified through later on-site surveys and manual measurements.

ON-SITE SURVEYS FROM CURRENT MAINTENANCE PROJECT

To clarify the noted uncertainties from archival plans and documents and the previous GPR measurements, direct measurements of the library's historical construction and structures were coordinated alongside ongoing maintenance and renovation work. Between February and May 2022, two specific areas of the library building were measured and documented as they were subjected to major, yet rather localized interventions: first, an area of the floor from the building's uppermost office storey (Level 600), located directly above the western reading room from 1932; and second, the original wall of the main rotunda [FIGURE 02], where two existing shafts running up the entire height of the space were opened and exposed in the process of replacing various lengths of piping. Although the rotunda walls were not originally planned to be examined within the scope of this study, the unique and crafted texturing of their interior surfaces [FIGURE 02], overall architectural importance, and the unavoidable destructive nature of the corresponding interventions merited special attention and documentation efforts. All on-site measurements were made using a basic ruler or callipers with accuracies of 1 mm and 0.1 mm, respectively. Compared to these relatively low error estimates, more significant uncertainty in on-site measurements was also expected due to the uneven surfaces of the historical construction materials involved. Where possible, measurements were made from an average, representative location of the overall surface in question.

LEVEL 600 FLOORS

While replacing the original piping embedded in the Level 600 floor of the library's 1932 western wing, the stratification of the floor construction and materials was immediately revealed. As suggested in the previous 1931 construction plans and derived from non-destructive GPR measurements, the floor displayed steel beams with a multi-layered construction, including layers of reinforced concrete, Solomite, and aerated concrete [FIGURE 07]. Starting with the floor's exposed steel beam, the top flange had an overall width of 240 mm and a thickness of 18 mm. As the beam's lower flange was embedded in the floor's lower-most layer of reinforced concrete, the overall height of the beam profile could not be determined. Nonetheless, the beam's measured flange width and thickness correspond precisely to the historical standard 'Dip24' profile noted in the 1931 construction plans [FIGURE 03 c] (Swedish Institute of Steel Construction, 2020).

Solomite and aerated concrete layers were laid and poured, respectively, on top of the lower slab of reinforced

07 The local intervention and exposed layers of Solomite and aerated concrete materials in the library's uppermost floor in the 1932 western wing. © Marcelo Rovira Torres, 2022.

concrete [FIGURE 07]. The layer of Solomite measured approximately 50-60 mm thick, and being made of compressed straw, had a rather dry and brittle quality. The intervention process further revealed how the Solomite layer was originally manufactured with wire mesh to bundle and restrain the cross-section of compressed straw. It was precisely this steel mesh that was detected and noted as an unexpected result in the previous GPR measurements [FIGURE 06]. A more thorough review of the original French patents related to Solomite and its production further confirmed how such steel mesh was originally specified in the product's first 1922 patent by its inventor, Serge Tchayeff (Tchayeff, 1922). While Solomite has been discussed in previous literature more so as a thermal insulation material, it is important to note that Tchayeff also received a subsequent French patent in 1925 for using Solomite to construct 'sound-proof' floors (*Construction de planchers insonores*) (Raytchine, Boumier, & Tchayeff, 1925). As this ceiling above the western reading room is an internal structure, with a storey of offices directly above, the use of Solomite here was certainly for acoustical reasons rather than thermal issues. The actual acoustic insulation performance of this historical construction remains an open issue to address in future work and a forthcoming publication.

Directly above the Solomite, the layer of aerated concrete measured approximately 9–10 cm thick. This thickness is notably less than the expected 14 cm of aerated concrete indicated in the 1931 construction plans [FIGURE 03 c]. With less aerated concrete poured on site, the actual floor construction displayed a much thicker layer of levelling cement directly above the aerated concrete. Compared to the ideally smooth surfaces of the aerated concrete drawn in the section of the construction plans [FIGURE 03 c], the actual historic material on-site featured a rather rough, uneven upper surface [FIGURE 07]. Upon closer inspection, the cross-section of this aerated concrete layer also had a porous, almost volcanic stone-like quality, and appeared to be slightly denser at the bottom than at the top of the section. Shrinkage and variations in the surface and materiality of historical aerated concrete were expected when considering the cast-in-situ process and extended curing time of the material. As noted in Axel Eriksson's 1923 American patent for producing aerated concrete, warm water could be used to speed up the chemical reactions during on-site curing of the aerated concrete, and workers on the library site in 1931–32 most likely followed this process (Eriksson, 1931). With Eriksson's subsequent patented development of autoclaved aerated concrete only a few years later in Stockholm, which has been well documented in both German and English literature (Hellers & Schmidt, 2011; Rychner, 1952; Schramm, 2008), far more uniform and smooth prefabricated panels could be produced.[6] This study, however, brings to light for the first time how the library's 1931-32 construction was a relatively early and notable example of construction with an in-situ type of aerated concrete.

After collecting a small physical sample of the library's aerated concrete during the intervention process, straightforward mass and volume estimates reveal its density to be approximately 800–900 kg/m^3. This estimate is slightly higher than the typical density of 700 kg/m^3 that is quoted in Swedish literature on the early production of cast-in-situ and air-cured aerated concrete in the 1920s and early 1930s (*Skövde Gasbetong Aktiebolag*, 1948, p.20). Yet in comparison to the more conventional 50/50 fill mixture of coke ash and lime gravel described for the library's original 1925–28 floor construction, with typical densities of 700 kg/m^3 and 1200 kg/m^3, respectively, only a marginal reduction in self-weight would have been achieved with the use of Solomite and aerated concrete in the later 1931–32 construction period. The steel floor beam profiles and spacing from both construction periods similarly remained unchanged, suggesting that the switch from conventional coke ash and lime gravel to Solomite and aerated concrete was not motivated by structural reasons, such as reducing the self-weight of the floor section. Economic and acoustic factors cannot be ruled out, however, and remain as topics for future studies.

ROTUNDA WALLS

During another intervention in the summer of 2022, the perimeter wall in the northwest area of the rotunda was cut partially through, which provided access to existing mechanical shafts while also exposing the construction of the wall in detail. With the shafts open, the original 1928 construction and unique texturing of the rotunda wall were revealed. As the rotunda's finished wall texture was never described or illustrated in any available literature or construction drawings or even mentioned in the archived meeting minutes between Asplund and the Library Committee, its construction has never been documented or well understood. The wall's interior texturing, however, may have been intended to influence the natural lighting and acoustics of the main rotunda. As commonly seen in contemporary photographs of the library, this uniquely crafted and relief-like texturing of the rotunda wall [FIGURE 02] plays an important role in emphasizing the materiality of the library's interior architecture and construction.

The intervention process revealed how the rotunda wall's finish texture was rendered with multiple layers of lime-mortar with significant variations in thicknesses [FIGURE 08]. The rendered layers were applied directly on to the masonry of the curved rotunda wall, without any

08 The rotunda wall intervention provided access to existing pipes for renovation purposes, while also revealing the wall construction and multiple layers of the wall's unique rendered texturing for research purposes. © Marcelo Rovira Torres, 2022.

additional protruding substrate. The first layer, acting as a parge coat, consists of a coarser render supported by a thin metal mesh with a grid of 20x20 mm. Because the parge coat was primarily used to even out the irregularities of the main brick wall, its thickness varies from several centimetres to being practically omitted in some places. The second layer is of a finer grain than the parge coat and again varies in thickness [FIGURE 08], from a few millimetres to approximately 30 mm. Before finishing with a basic layer of paint or lime wash, this second layer was effectively built up or thickened in localized areas to give a subtle depth to the wall's finish and texturing. Hence, by varying the thickness of the individual layers of the rotunda wall's rendering, the irregular and crafted texture of the rotunda wall was achieved.

In addition to the interior wall finishing, the shaft intervention process further revealed that the rotunda's upper clerestory section of masonry walls rests on a reinforced concrete ring beam [FIGURE 08]. Historic meeting minutes between Asplund and the Library Committee note how the overall thickness of the rotunda's upper masonry walls was reduced for economic purposes. The presence of an in-situ reinforced concrete beam, however, was not expected from previous literature or archival documents. The extended width of this ring beam projects inwards over the lower part of the rotunda wall, creating a narrow walkway used for maintenance purposes, such as cleaning the upper rotunda windows and accessing the roof space above the ceiling. At the same time, this reinforced concrete ring beam most likely serves a structural role in redistributing the self-weight of the upper walls, thereby reducing any eccentric loading on the lower supporting walls. As Asplund opted for a smooth transition between the lower rotunda wall surface and the inclined edge of the protruding concrete beam [FIGURE 08], the lime-mortar layers gently curve inwards, away from the masonry. The layers then meet and follow the inclined edge of the ring beam, creating a cavity in the wall. To support this suspended area away from the masonry, a steel mesh, bound to a 12 mm rebar grid structure, was used in the first parge coat layer of lime mortar [FIGURE 08]. The 12 mm rebar grid was attached with nails to the masonry wall below and to the inner inclined edge of the concrete beam above. In this suspended area, the lime mortar layers were generally thicker than in the rest of the wall, most likely to accommodate larger tolerances.

DISCUSSION AND CONCLUSIONS

Since the time of its opening, the library has been the subject of significant architectural debate, involving a broader transition from 1920s Swedish neoclassicism to mainstream functionalist design after the Stockholm Exhibition of 1930 (Åhrén, 1928; Asplund, 1928;

Caldenby, Lindvall, & Wang, 1998, pp. 72–74). In terms of construction, the markedly different materials observed in the library's 1925–28 and 1931–32 construction periods at first glance seem to reinforce such a transition narrative surrounding the library's architecture. The use of Solomite and aerated concrete from the latter period similarly reflects the commonly noted architectural differences between the original 1928 library reading rooms and the later 1932 reading room of the library's western wing (Ortelli, 2019, p. 49; Schönbäck, 2003, pp. 62–65). Solomite, in particular, is described in architectural literature as a modern thermal insulation material, used most notably by Le Corbusier in the influential l'Esprit Nouveau pavilion built for the Paris International Exhibition of 1925 (Neuberger & Kic, 2021; Rüegg, 2016, pp. 36–37). While Asplund's inaugural KTH lecture in 1931 acknowledged Le Corbusier's theoretical influence (Asplund, 2001), we can now see a practical material connection between Le Corbusier and Asplund with the use of Solomite in the floors of the library's 1932 western wing. This material connection was undoubtedly made via Uno Åhrén and his use of Solomite in a 1930 Stockholm Exhibition demonstration house (Rudberg, 1999, p. 156). Likewise, the use of aerated concrete in the library's later western wing contrasts with the more conventional coke ash and lime gravel from the building's original 1920s construction. Asplund apparently used 'modern' and recently developed, patented materials in the library's western wing to realize a modern, 'functionalist' architecture.

But upon closer consideration of both Solomite and aerated concrete, we can see two construction materials that are not simply 'modern' per se, but quite strongly connected to the Swedish landscape and a longer tradition of construction. For instance, the Stockholm-based company Lyrholm & Videgård were most likely responsible for supplying the library's Solomite panels, based on their previous supply of Solomite panels in the 1930 Stockholm Exhibition (Rudberg, 1999, p. 156). They also registered the term 'Solomite' as a protected trademark in July 1930 for panels produced near Norrköping using straw harvested from seven local farms around 160 km southwest of Stockholm (Jordbruksdepartementet, 1939, p. 29). Similarly, the raw materials needed to develop and produce aerated concrete come directly from the geology and stratigraphy of layers in the ground around the area of Skövde, located about 300km southwest of Stockholm (Rychner, 1952; *Skövde Gasbetong Aktiebolag*, 1948). It is no coincidence that this region was also home to the earliest commercial production of aerated concrete in Sweden. While the development of aerated concrete is often traced back to the mid-1920s with Axel Eriksson's patents, the material's key raw ingredients of Ordovician limestone (*Ortocerkalk*) and alum shale (*alunskiffer*) were strongly related to the landscape and geology of Sweden (*Skövde Gasbetong Aktiebolag*, 1948). The distinct use of these construction materials in the library's 1932 western wing was therefore not necessarily a modernist break with neoclassicism and architectural tradition but more so a continuation of construction culture in the form of recent innovations using regional raw materials.

Many of the original findings presented in this article are a direct consequence of being able to follow the library's current maintenance process and interventions as non-biased observers. The results of this work illustrate how researching buildings during a renovation period leads to meaningful insights and new knowledge. Although many serendipitous findings can also arise, such novel discoveries often remain undocumented and rarely disseminated to future generations of researchers and practitioners. In this regard, general policies from cities or institutions to encourage research activities during the renovation of important heritage buildings would be a positive step forward in the future. However, renovation projects are usually limited in their time and funds and unable to finance research work related to broader matters of architectural history and historical construction. Government-supported research councils and foundations can play a crucial supportive role here, but it is first up to researchers to develop innovative and useful bottom-up proposals to allow studies to be carried out in parallel and in collaboration with practitioners and planners.

Based on archival documents, non-destructive GPR measurements, and surveys during the library's current ongoing maintenance and renovation, the present study has recovered original construction details and materials of the Stockholm Public Library. This work highlights the library's steel and reinforced concrete floor construction from 1925–28, in contrast to the second construction period of 1931–32, with the library's fourth western wing with floors of steel and reinforced concrete, Solomite, and aerated concrete. The construction of the rotunda walls was further investigated and documented in parallel with interventions, showing for the first time how the wall's unique and crafted texturing was built up using varying layers of lime mortar. These discoveries emphasize the library's construction in terms of both conventional and innovative materials and establish links and material connections between the library and other well-known works of architecture and design. This work further underscores the benefits of conducting academic research in parallel with practical renovation efforts, leading to more in-depth research questions for future studies involving the library's historical acoustics and interiors.

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ENDNOTES

1 A printed book version of a project's building specifications was standard practice in Sweden during Asplund's time.

2 Following historical construction standards, a 1:5:7 concrete mixture would denote a concrete mixture of 1 part cement, 5 parts sand, and 7 parts coarse material. See (*Arbetsbeskrivning*, 1924, p. 20).

3 GUNNARSSON, E., Sweco Sverige AB, personal communication, 17 March, 2022.

4 There are two sets of the library's 1931 construction plans available in the online ArkDes archive. Both sets are dated May, 1931 and drawn by Stig Ödeen, an engineer associated with Asplund's later projects. Like the 1924 construction plans, one set of the 1931 construction plans are signed by Gustaf Jilcke, who was Henrik Kreüger's business partner. The other set of 1931 plans are simply stamped by Henrik Kreüger's Consulting Engineers Office. See (Fleming & Bergström, 2023).

5 Northscan AB is a company located near Stockholm and offers a range of non-destructive testing services.

6 For an overview of Johan Axel Eriksson's development of aerated concrete, from an initial mixture of ingredients, to a detailed manufacturing process involving air curing, and finally, to an improved process with pressurized steam curing, see the following original Swedish patents, respectively: ERIKSSON, J.A. (1922). *Sätt att framställa cement.* (Swedish Patent No. 51193). Kungl. Patent- och registreringsverket.; ERIKSSON, J.A. (1926). *Förfaringssätt för framställning av gasbetong.* (Swedish Patent No. 60995). Kungl. Patent- och registreringsverket.; ERIKSSON, J.A. (1926). *Förfaringssätt för framställning av gasbetong* (Swedish Patent No. 60091). Kungl. Patent- och registreringsverket.

FROM HOSPITAL TO CRIMINAL JUSTICE COMPLEX

Notes on architectural flexibility through the Santa Casa de Misericórdia de São Paulo

Ivo Renato Giroto

ABSTRACT: This article analyses the conversion of a big hospital and teaching complex, designed between 1968 and 1978 and commissioned by Santa Casa de Misericórdia de São Paulo to a team of architects led by Fábio Moura Penteado, into the biggest criminal justice complex in Latin America, since it was acquired by the State of São Paulo in the mid-1990s and opened in 1999. The architectural characteristics and the superlative scale of the complex constitute a privileged object to analyze the potentialities and limits of architectural flexibility, as well as how this concept is related to the modern project culture, specifically with the general strategies developed by the so-called Escola Paulista.

KEYWORDS: modern hospitals, healthcare architecture, brazilian brutalist architecture, architectural flexibility, adaptable design

INTRODUCTION: Terms like flexibility and related concepts such as multipurposeness, adaptability, and multifunctionality are concepts introduced and popularized by architectural modernity and, as such, have already been broadly discussed and criticized. However, it is worth revisiting them since the conservation of buildings from the past depends, to a large extent, on their ability to adapt to social transformations, changes in use, and new technological requirements.

As a central part of the functional corollary, was the search for flexible buildings developed in close relationship with the mass demands that characterized the last century. For Pevsner (1980) what distinguished modern architecture from its predecessors was not the invention itself but precisely the need for quantitative exploration. Throughout the 20th century, accelerated technological development also required and stimulated specialization movements, which resulted in new programmatic responses based on the search for efficiency.

In this context, the degree of complexity reached by certain programs, such as a hospital, induced certain morphological solutions and functional strategies in response to highly specialized medical, sanitary, and technological requirements, which at the same time need to accommodate the need for flexibility, adaptability, and standardization to meet the constant demands for reorganization and expansion.

The project of the teaching hospital Júlio de Mesquita Filho of the Santa Casa de Misericórdia de São Paulo, later converted into a criminal justice complex constitutes a privileged object to analyze the potentialities and limits of flexibility in architecture and how this concept relates to the modern design culture, more specifically to the strategies developed by the so-called Escola Paulista. It is also possible to question the place and type of expected flexibility in structures of gigantic scale, in which the technical demands aggregate onto others, related to the efficiency and capacity to support a high flow of users and the need to adapt to the Brazilian socio-cultural conditions.

The design of the hospital complex, developed by a team of architects led by Fábio Moura Penteado (1929-2011), started in 1968 and had its final version presented in 1978. After the beginning of the construction of the concrete superstructure in 1976, a rectangle measuring approximately 240 m by 180 m, the project was paralyzed in 1978 due to a lack of resources. More than a decade later, it was acquired in the mid-1990s by the State of São Paulo government to instate the *Fórum Criminal Ministro Mário Guimarães*, inaugurated in 1999, with the adaptation project by Borelli & Merigo Architects [FIGURE 01].

01 Santa Casa Teaching Hospital: The gigantic structure under construction, early 1970s. © Fábio Penteado's Archive, 2022.

The initial project intended to build a complex of approximately 100,000 m² on a large plot of 240,000 m² on the banks of the Tietê River, a region close to the north side of the city center of São Paulo and a strategic point of access to the city. In addition to having almost 800 beds and clinics capable of serving 4,500 daily consultations, it would have a medical school with 600 places and a training course for 3,000 health technicians, which would total an approximate flow of 15,000 people per day–between doctors, patients, students, staff, and visitors (Penteado, 1978).

At that moment, the debates on health management and hospital planning in Brazil deepened with the consolidation of entities founded in the 1940s, which in the following decades boosted the offering of specialized courses at the undergraduate and graduate levels and publications about hospitals. It is important to emphasize that the concept of a modern hospital in the country was forged in strong dialogue with engineering and architecture by institutions such as the Hospital Organization Division DOH (1941), led by medical doctor and engineer Ernesto de Souza Campos, and the Hospital Research Institute IPH (1954), whose founder and first president was the architect-engineer Jarbas Karman. Both helped to stimulate the debate about the design and construction of hospitals, in close relationship with experiences developed in the United States.[1]

In the context of the work's conception, the rapid population growth of the São Paulo metropolis cannot be disregarded, whose cities went from 8,139,730 inhabitants in 1970 to 12,588,725 inhabitants in 1980[2], driven by strong internal migration, mainly of people from the northeast region of Brazil, in search of better living and working conditions in the most industrialized city in the country.

No less superlative than the teaching hospital, the criminal justice complex that took its place decades later houses almost all the criminal justice facilities of the São Paulo metropolis and constitutes the largest of its kind in Latin America. Its facilities house 31 criminal courts, a prison for 400 inmates, and several other courts, departments, and sectors of the city's judiciary system. With an average daily flow of 5,000 people, around 1,400 employees and more than 100 magistrates work at the justice complex (AM, 2012).

By analyzing the specific and peculiar case of an ambitious hospital project that ended up housing a criminal justice complex, this paper intends to raise broader questions about aspects of flexibility in architecture, its relations with architectural culture and Brazil's socioeconomic and cultural characteristics at the time.

WHAT IT SHOULD BE: A HOSPITAL

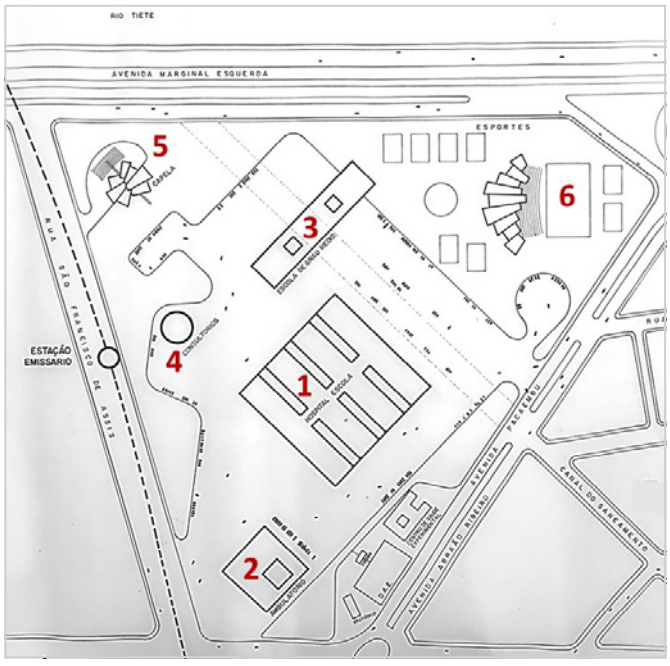
In the late 1970s, the charitable institution Santa Casa de Misericórdia de São Paulo began to implement a project that had been put on hold since 1963 to create a modern teaching hospital, destined to serve a contingent of about 1 million people in a situation of "absolute poverty", in the words of Penteado (1998).

02 Santa Casa Teaching Hospital, São Paulo by Penteado. The two first conceptual designs, 1968-1971. © Fábio Penteado's Archive, 2022.

The proposal presupposed a profound institutional renovation, joining the concept of a teaching hospital with that of a general hospital, according to Teófilo de Almeida (1965), "one that receives all or several types of patients with different diseases" and, therefore, required high levels of training of the technical staff, treatment techniques, equipment and care with safety and contagion that also resulted in specific requirements for spatial organization.

In this sense, the concept of a general hospital, whose characteristics have been the subject of research by the DOH since the 1940s, integrated the theses of economy, functionality, and efficiency that came to dominate the modern hospital vocabulary into the charity character of the secular entity.

The land, provided by the city hall in the industrial origin district of Barra Funda, touches the left bank of the Tietê River, being large enough to house a complex that, in addition to the enormous main building, also provided for the later installation of a high school, institutes of research, and a chapel, which were never executed.



03 Project dated March 1971, which includes buildings foreseen in the complete proposal: 1 - Teaching hospital; 2 - outpatient clinic; 3 - technical school; 4 - exam rooms; 5 - chapel; 6 - sports zone. Only the teaching hospital building was built. © Fábio Penteado's Archive, 2022 (adjusted by author).

The existing documentation in the architect's collection records four different preliminary designs of the project, developed since 1968. In a first implementation study—according to Penteado (1998), made in a hurry to guarantee the donation of the land—, the team suggested a set of parallel and transversally connected laminar bars, forming a dynamic design marked by the difference in length between the blocks, interspersed with patios. In the second version of the project, still only indicating a location solution on the ground, six parallel linear blocks of equal size are crossed by a connecting axis in the north-south direction, delimiting a regular and symmetrical occupation [FIGURE 02].

In the third proposal, the first to include more detailed plans, functional sectors and the number of floors, the architects chose to enclose the functional wings in a single elongated volume with a rectangular plan. The fourth version of the project, from 1971[3], is a synthesis of the previously tested architectural designs; the option of a horizontal building with a rectangular plan, organized in wings interspersed with landscaped courtyards and connected by a central strip, surrounded by a continuous lateral surface of exposed concrete that demarcates a single volume [FIGURE 03].

In the definitive proposal, an offshoot of the latter from 1978[4], Penteado and his team presented a solution that offered the identity that previous generic solutions lacked [FIGURE 04]. The building's program would be distributed on three main floors—a basement, the ground floor, and the upper floor, in addition to a technical floor—and in three functional strips in the plane—two sides, cut by open patios on the roof, and a central section with the main function of distributing the flows. It is a tripartite organization that reflects on the facades, characterized by three

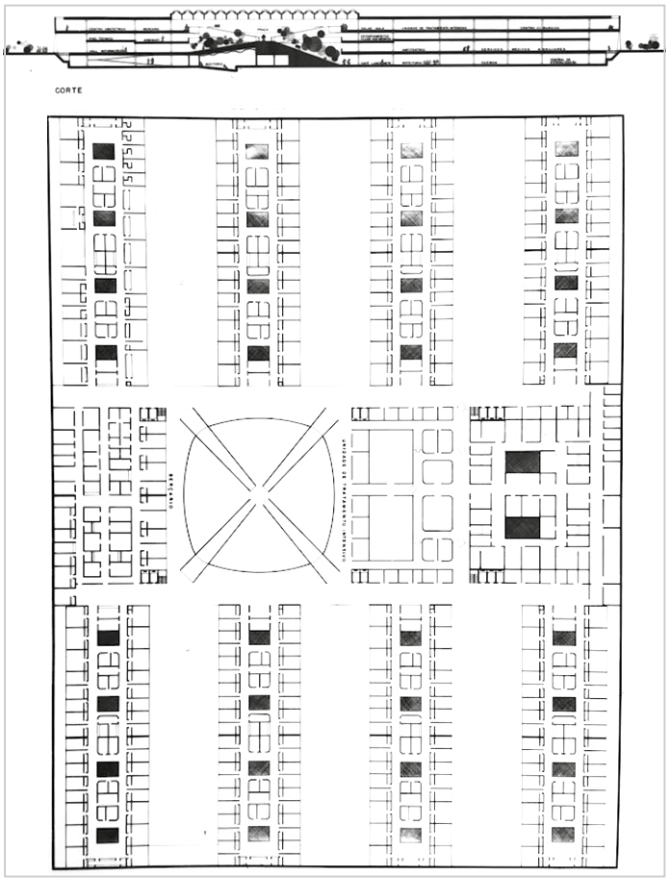
large lowered arches that, on two sides, coincide with the functional strips and, on the other two, with the centers of the garden patios.

The crucial difference of this last proposal lies in the idealization of a square-gardened central square, arranged in the central strip close to the main access to the building. On the ground floor, from the corners of the square, four ramps start at an intermediate level, from where four others go up to the upper floor.

The option for a large horizontal building was opposed by the "podium on a platform" typology, vertical and hermetic; a centralized model generally considered more efficient because it better separates functions and optimizes the routes through the building. For Pevsner (1997), once the belief in the contagious power of miasmas was overcome and after the discovery of penicillin in 1928, the pavilion "can no longer be used as a base for hospital construction" and must be replaced by the advantages of the "compact multi-storey building", namely, segregated circulations of services and patients, and better efficiency of heating, lighting, cleaning, etc.

According to Renato Gama-Rosa Costa (2011), the monoblock system, created in the USA in the first decades of the 20th century, attracted the attention of more and more Brazilian hospital planners and would achieve hegemony in the country after the 1950s, in part due to the great dedication from architects to projects that would increasingly employ high technology. Also, the demand for large plots of land for implantation, increasingly scarce and peripheral, seemed to indicate the vertical solution as the most appropriate.

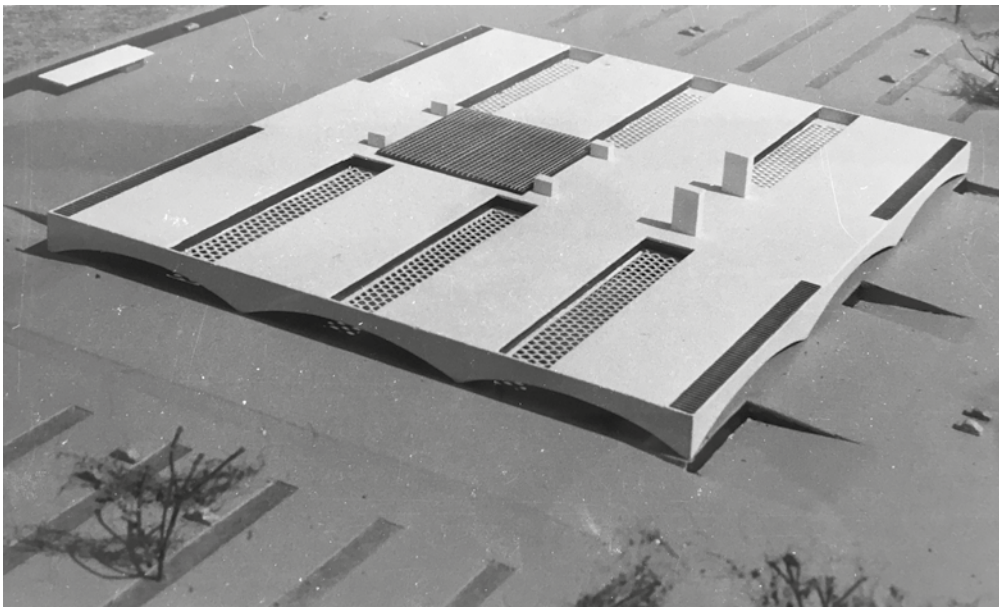
However, Penteado's project combined the typology in a single but horizontal block with the logic of pavilion spatial structuring, with the wings interspersed with open patios [FIGURE 05]. Thus, it establishes a historical



04 Penteado, Santa Casa Teaching Hospital, São Paulo. Section and upper floor with the central square, 1978. © Fábio Penteado's Archive, 2022.

dialogue with several paradigmatic hospitals such as the Renaissance Cá Granda (1546) by Filarete in Milan or the 19th-century Hôpital Lariboisière (1832), designed by Martin Pierre Gauthier in Paris, also structured around large central courtyards with smaller secondary courtyards delineated by the wards.

But if medical and surgical processes came to be considered virtually deterministic as regards building form, putting typology in strict relation to the functionality and flexibility of the building, why, then, would Penteado opt for an immense horizontal hospital with paths that could reach 200 meters of extension?



05 Model Santa Casa Teaching Hospital by Penteado, São Paulo, undated. © Fábio Penteado's Archive, 2022.

An answer may lie at the crossroads of several questions and conditions. First, and the most obvious, is that there were no space restrictions for its implementation; on the contrary, the land was so wide that the architect foresaw a series of buildings and additional programs, including the opening of a "Health Park" around the building, open to the public.

Second is in the design tradition of the so-called Escola Paulista de Arquitetura Moderna, of which Penteado was an important part, alongside such greats as João Batista Vilanova Artigas (1915-1985) and Paulo Mendes da Rocha (1928-2021). In the architectural repertoire of many members of this generation, buildings of marked horizontality prevailed, functionally and plastically resolved by the definition of generic grid roofs, under which the program of needs was freely articulated, surrounded by relatively continuous and blind facades in exposed concrete. In Penteado's work, many projects are defined by the same strategy, but with the notable recurrence of a central point that hierarchically organizes the space, as in the cases of Sociedade Harmonia de Tênis (1964) or the proposals not carried out for the Hotel in Praia do Peró (1958) and to the Catedral Presbiteriana de Brasília (1965).

A third possible reason is directly related to the second. The idealization of the internal space as an infrastructural prototype and urbanity metaphor, a thought common to the "brutalist" architects of São Paulo, which, in Penteado's work, took on meanings that went beyond public suggestion to reach the individual dimension of the most disadvantaged inhabitants of the metropolis. In this way, the idealization of interiors that emulate a system of streets and a central square sought to configure the familiar spatiality of a small town with an open and spontaneous character to facilitate internal orientation [FIGURE 06].

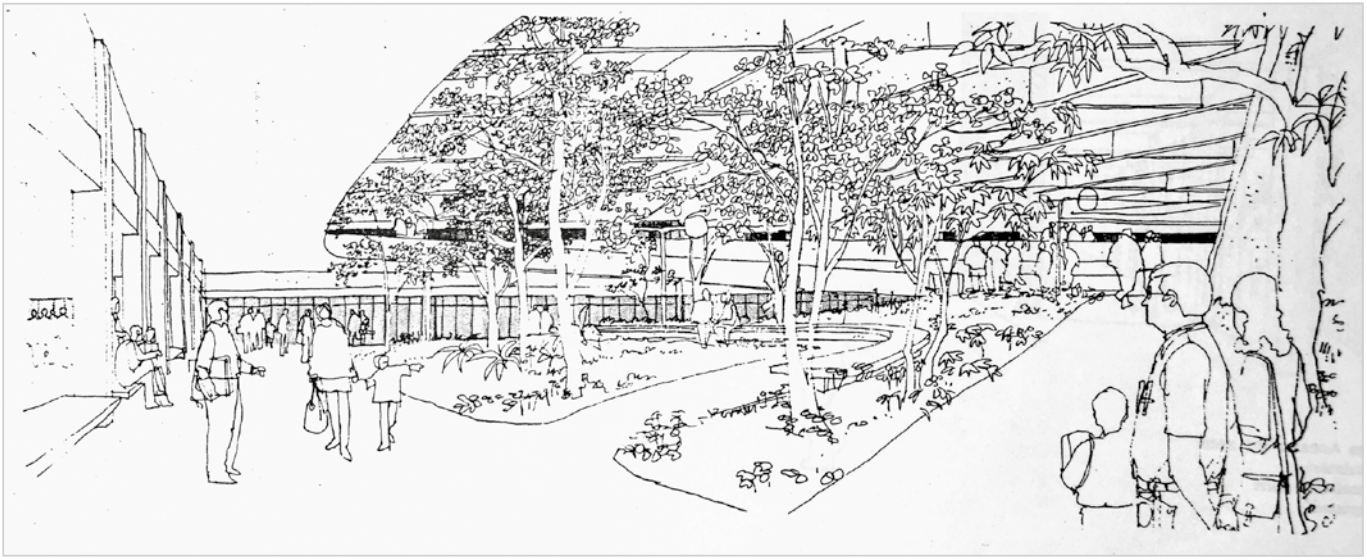
The predominance of the single vertical block model, however, was not free of questioning. A decade before the beginning of the Penteado project, Jarbas Karman (2014) observed that:

There was a time when the development of a hospital, according to horizontal or vertical lines, was more a matter of fashion. (...) Planning now has scientific and rational, economic and functional bases. It can even be emphasized that only a hospital with a decisive horizontal development is well planned. The "pavilion" and "adapted residential" systems are already outdated; the time has come to jettison the "apartment building type hospitals"

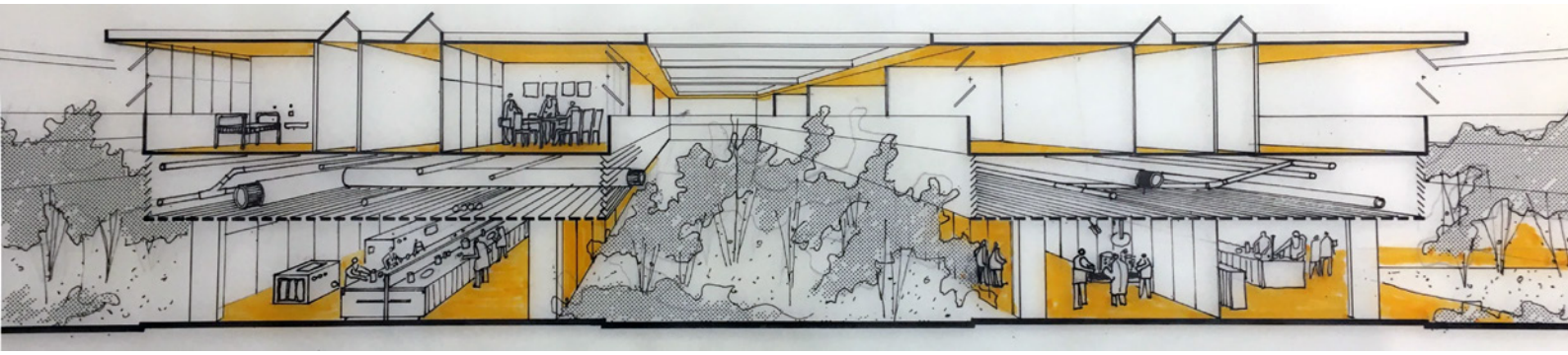
Regardless of the typology adopted, the founder of the IPH highlighted the importance of an efficient scheme concerning the optimization of the routes by nursing professionals, whose lengthening would result in greater physical wear and tear and financial burden, as "each step weighs and costs".

In addition to efficiency issues, Penteado considered the vertical solution wrong for the Brazilian conditions because if, on the one hand, the circulation system efficiently met the technical demands of doctors and staff, on the other hand, it was complex and not very intuitive to patients and visitors, resulting in an intimidating spatiality to users, mostly poor and poorly educated. As a "crowd hospital", he defends the dilution of traffic flows through the ramps and internal streets, loaded by the presence of a large number of visitors, a problem that he did not consider relevant in European and American hospitals (Penteado, 1978).

As for the questions about the efficiency of the circulation and distribution of hospital services, Penteado (1998) mentions the carrying out of "research to rationalize the movements, carried out in conjunction with the Santa Casa de Misericórdia hospital consultancy", whose tests were carried out "by pushing carts with a stopwatch



06 Santa Casa Teaching Hospital: Drawing of the central square by Vallandro Keating, undated. © Fábio Penteado's Archive, 2022.



07 Santa Casa Teaching Hospital: Drawing of the wings interspersed with landscaped courtyards, undated. © Fábio Penteado's Archive, 2022.

on the hand", demonstrating that only 4 minutes separated the most distant points of the building. The diagonal arrangement of the four ramps that are in the center of the square would avoid peripheral routes through the wings, shortening them.

In fact, research shows estimates that, at the peak of the "podium on a platform" typology, nurses spent 40% of their time in patient transport logistics mostly because circulation patterns were confusing, without any external cues of directionality, setting or hierarchy, which indicates that not only the distances should be taken into account for the optimization of the routes (James & Tatton-Brown, 1986).

In the design of circulation and internal spatiality, in addition to the fundamental requirement of flexibility, the logic of connection between the parts reveals a deep affinity with the concepts of modern urbanism. As Jonathan Hughes (1997) notes, obsessive attention to the physical separation of functions and traffic flows in hospital environments, in addition to satisfying specific needs, reveals a recurring association between clinical and civic design during the last century, when hygiene started to support discourses defined by health, efficiency and speed criteria, with an emphasis on the circulatory system. Thus, the hospital was not only the place of medical interventions but also linked to the city as a way of testing planning techniques similar to those of modern urbanism.

As for the city, faithful to its principle of obtaining the greatest "social profitability" of each project opportunity, Penteado (1998) defended the creation of a Health Park as a way of integrating the building into the urban fabric of the old industrial district, offering green space and public leisure to the city. In this way, the teaching hospital sought to establish a powerful civic presence and to display a desirable continuity with the urban public realm, ideally giving and receiving life to the urban environment where it would be inserted [FIGURE 07].

WHAT IT ENDED UP BEING: A CRIMINAL JUSTICE COMPLEX

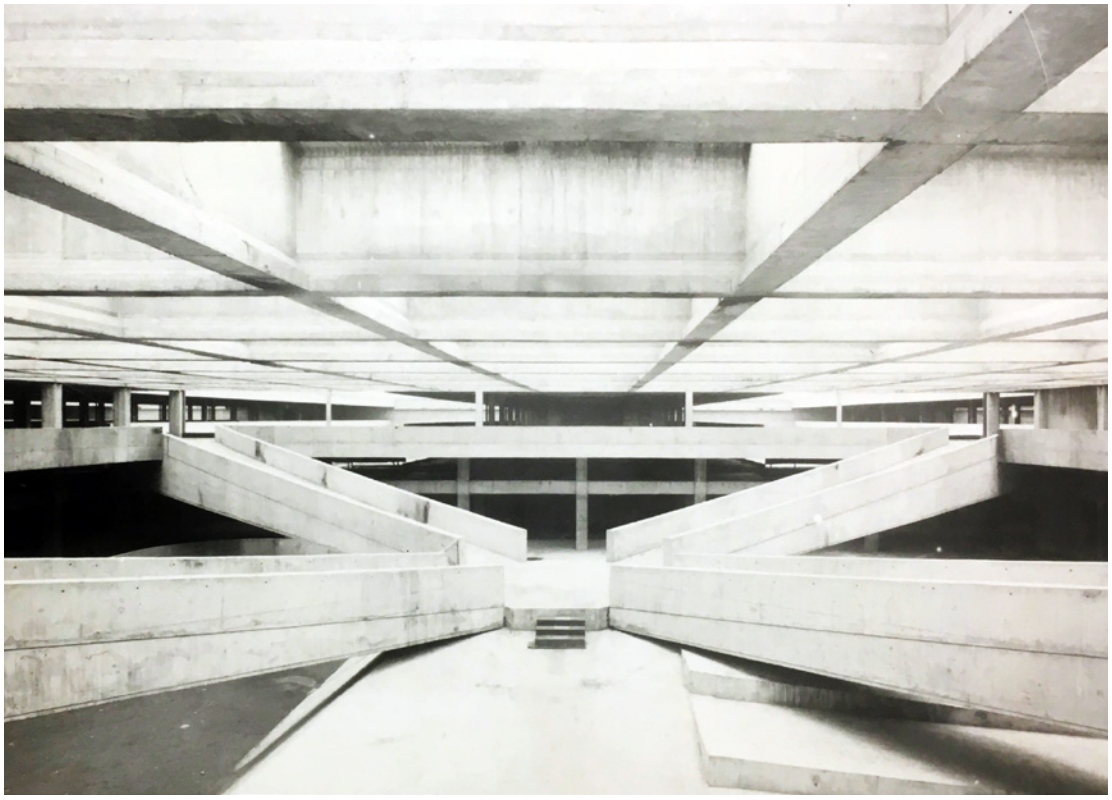
In the mid-1990s, with the large concrete structure, whose construction took more than a decade in the 1970s, in a state of disrepair, the government of the State of São Paulo acquired the area and resumed the project [FIGURE 08]. The project to convert the hospital into a criminal justice complex was carried out by architects José Borelli Neto and Hércules Merigo on the recommendation of Fábio Penteado himself, with whom recent graduates had worked on the detailing of the teaching hospital project. The adaptation also had the collaboration of Teru Tamaki, who participated beginning with the first studies of the original project and is listed as a co-author of its definitive version.

In summary, the hospital project intended for the ground floor to be the main entrance for users and for various administrative sectors, in addition to reserving one of the three functional lanes for outpatient clinics. The first floor houses similar functions, with the difference that this floor contains several public service rooms and institutional headquarters. On the upper floor would be the hospital's "critical area", intended for hospitalizations and surgeries, pediatrics and nursery, in addition to the Intensive Care Unit. In the justice building, the courtrooms (up to 52) were concentrated in this floor, designed in modules that adapt to the original structure and circulation.

The hospital's complementary services—changing rooms, storage, warehouses, and other technical support spaces—would be located at the basement level, which would also house the emergency unit, food sectors, and an auditorium for 250 people. In the justice complex, the support and food structures were kept, the auditorium is used for the plenary sessions of the jury, and the emergency sector was converted into a maximum-security prison for up to 400 prisoners.

Although, obviously, the new use required design adjustments, there were no major changes in the spatial or formal structure of the building. Certainly, the close

08 Aerial image of the Fórum Criminal Ministro Mário Guimarães by Penteado, former Santa Casa Teaching Hospital, São Paulo. Brasil, undated. © Unknown, author's archive.



09 Santa Casa Teaching Hospital:The central square with its ramps under construction, undated. © Fábio Penteado's Archive, 2022.

relationship between the architects contributed to maintaining its main characteristics. However, the conservation of its original architecture seems to be mainly due to two factors. The first one being the multipurpose structuring scheme of functions and circulations. Borelli and Merigo reiterate the validity of the internal organization from an urbanistic view, where the different scales of "avenues and streets" create a spatial hierarchy that facilitates orientation.[5]

The second is due to Penteado's intention to create a building that could be completed and occupied in stages within an intact structural shell that would avoid the appearance of indefinite "under construction" work. The idea was that once the large concrete structure was completed, the building would appear finished, although its interior could be occupied over time, according to the institution's financial possibilities.

If, on the one hand, the strategy of occupation in stages proved to be intelligent and the objective of guaranteeing the architectural integrity of the work was achieved, it did not, on the other hand, represent an economic constructive option, given that it was a large-scale structure and could not be executed following an incremental logic.

Returning to the functional analysis, the hospital memorial describes (Penteado, 1978) that the development of an open-ended project would provide sufficient flexibility for installations or relocation of sectors in the hospital and in the school. Even with a different use, it can be stated that the structure meets the new functional demands well, even though the imagined spontaneous and familiar atmosphere has succumbed to the formality and excess of controls that usually characterize justice buildings—there is no reason to imagine that it would be very different in a hospital, where the feeling of concern inevitably predominates, and the aseptic character prevails.

The established São Paulo strategy of idealizing large covered spaces, whose inclusive public character would be reflected in the ability to support the unpredictability of life certainly helps. In this sense, a modern architect like Paulo Mendes da Rocha (2012) relativized functionality in architecture, considering that the functional dimension in architecture was more linked to modern technical means than to the architectural form itself. Effectively, it is not difficult to imagine the conversion of the former hospital space, without great difficulties, to several large projects beyond a justice complex, such as a shopping center or a university.

The drawings of the definitive version reveal that the project did not start from forms strictly defined by functions; on the contrary, it previously defined a flexible and virtually expandable formal-functional scheme. However, it is not a merely generic building, especially due to the conception of a network of circulations that transcends its functional destination by defining the central square as a symbolic and hierarchical anchor of its interior [FIGURE 09].

In this sense, it manages to avoid the side effects that Herman Hertzberger (1999) identified in the obsessive search for eminently functionalist flexibility, which, when trying to adapt to all kinds of changes, ends up not meeting any in an ideal manner. In his well-known analyses, the Dutch structuralist defended the adoption of multipurpose forms, which lend themselves to different uses without the need to undergo major changes or lose their identity; of archetypal forms that, because they are associated with

10 View of the central square garden from the first floor. © author, 2024.

multiple meanings, are capable not only of absorbing, but also of generating a program.

Penteado and his team did not design a building that could serve a function other than that of a teaching hospital, but they did not submit the design of its architecture to the formal result of applying medical and technological requirements. For Young-Ju Kim (2013), it is common for architects in the design process to base multifunctionality on the prediction of possible future uses, which, contradictorily, limits the flexibility of a building in a deterministic way.

In their definition of adaptable design, Andrew Rabeneck, David Sheppard, and Peter Town (1974) defended the idealization of environments with generous dimensions and similar proportions, adaptable to a change of furniture and light partitions, avoiding the need for large infrastructural works. Based on research on historic residential buildings, they found that, as in the Penteado project, the possibilities of adaptation are facilitated by the presence of a central coordinating courtyard or hall, without fixed functions, surrounded by environments without major hierarchical differences or fixed furniture.

CONCLUSION

As described, a comparison between the hospital project and the justice complex into which it was converted reveals the maintenance of its main formal, structural, and aesthetic characteristics, which reveals great resilience to withstand such a radical change in use. The complex's quality and value for the architectural culture of São Paulo were recognized on February 12, 2018, when

11 Criminal Forum by Penteado, Borelli & Merigo: Image of the central square, 2012. © Unknown, author's archive.

it was listed by resolution 29 of CONPRESP (*Conselho Municipal de Preservação do Patrimônio Histórico, Cultural e Ambiental da Cidade de São Paulo* - Municipal Council for the Preservation of Historical, Cultural and Environmental Heritage of the City of São Paulo).

It is worth noting that the conception of a flexible architecture, when guided by a narrow functionalist view, often mistakenly equates uses to users, functions to people, which ends up frustrating—in Lefebvre's (1991) words, "the very possibility of multi-functionality".

In the Santa Casa de Misericórdia hospital project, Fábio Penteado reaffirms one of the main values of his

architecture: the principle of contemplating human diversity and, based on it, idealizing multipurpose buildings. More than the ability to change physically, his projects tried to foresee the possibility of sheltering different people with different interests and living conditions in spaces marked by a suggestion of spontaneity and democratic openness.

After all, like every work of architecture, "Hospitals are not intended to be only the product of an excellent work of space rational organization; they have to be also habitable places, places reflecting the plurality and dynamism of the society, places for the people and designed around the people" (Lacanna, 2014).[6]

ACKNOWLEDGMENTS

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ENDNOTES

1 Ernesto de Souza Campos (1882-1970) was an interlocutor of the Rockefeller Foundation in Brazil and one of the founders of the University of São Paulo Medicine School and Minister of Education and Health in 1946. Jarbas Karman (1917-2008) worked at the Special Public Health Service – SESP, established in 1942 and which marked the beginning of cooperation between Brazil and the United States in the field of health.

2 Information available on SECRETARIA Municipal de Desenvolvimento Urbano/SMDU - Departamento de Estatística e Produção de informação/Dipro. São Paulo: SMDU. [Accessed 02 Mar. 2022]. Available at https://www.prefeitura.sp.gov.br/cidade/secretarias/upload/urbanismo/infocidade/htmls/7_populacao_recenseada_1950_10552.html.

3 The first versions of the project were developed by Fábio Penteado and Eduardo de Almeida, with collaboration from Alfredo Paesani and Teru Tamaki.

4 In the definitive version of the project, Fábio Penteado and Teru Tamaki are listed as authors, with collaboration from Tito Lívio Frascino, Eduardo de Almeida and Giselda Visconti.

5 Information available on Borelli & Merigo's website: "Fórum criminal de São Paulo", [Accessed Jan. 28 2022], Available at http://www.borellimerigo.com.br/intitucional/forum-criminal-de-sao-paulo.

6

AN ARCHITECT'S HOUSE IN CURITIBA

A manifesto project by Manoel Coelho

Felipe Taroh Inoue Sanquetta

ABSTRACT: The study object of this paper is architect Manoel Coelho's (1940-2021) house in Curitiba, Brazil. The main objective is the historiographical documentation and descriptive analysis of the residence's architectural design. Projected by the architect and built in 1980-81, it is located on an urban plot in a residential neighborhood in Curitiba. It is characterized by the use of fair-face concrete and utilizing color as the main design element. This article begins with a description of the architect's biography and then of the project itself, firstly through an analysis of the existing bibliographic references and then through a descriptive analysis of the house. The result of the documentation is a reproduction of the original project through plans, sections, and elevations. In parallel, current photographs taken during a survey illustrate the description. Through all these materials, we can better understand the effectiveness of the project documentation methodology and the contribution of this survey to new research on related subjects and, of course, on the production of this architect and others, whose work is still little researched and published.

KEYWORDS: Manoel Coelho, architect's house, architecture in Curitiba, color in architecture

INTRODUCTION: This paper aims to historically document and develop a descriptive analysis of the architectural design of architect Manoel Coelho's residence in the city of Curitiba, Brazil. For the theoretical framework, the research is based mainly on three bibliographies written by two authors: the book *Arquitetura Moderna em Curitiba* by Alberto Xavier (1986) and *Espirais de Madeira* and also a volume that documents the 45 years of Coelho's production: *Manoel Coelho, Arquitetura & Design*, both by Irã Dudeque (2001 and 2013).

The first author presents in his publication the most representative works of architecture carried out in the 20th century in Curitiba, quoting Coelho's house. However, this catalog is limited to a brief description of the project and the presentation of simplified plans and two exterior photographs. The second author's 2001 book, resulting from his master's dissertation, presents some projects already mentioned in Xavier's 1986 publication, inserting Coelho's production in a clearer context of his contemporary peers and also stressing the importance of an "architect's house," complemented by a more comprehensive textual description of the project, but featuring few new graphic pieces. In 2013, Dudeque resumed his investigation, writing the text of a book that documents the architect's complete production over 45 years. One of the outstanding projects is the architect's home. This publication gains importance for its pioneering role in documenting the work of an architect from Paraná and for its extensive cataloging of works. Featuring photographs and brief texts of each project, it fulfills the objective of presenting a synthesis of Manoel Coelho's work.

This paper sets out to complement the information already available about the project with a different perspective in relation to previous publications, presenting information about its conception, construction, and spatiality, which can further enhance the study of this architect and his architectural production.

ARCHITECT MANOEL COELHO (1940-2021)

Manoel Izidro Coelho was born in Florianópolis, Santa Catarina, in 1940. Early on, he moved to Curitiba and graduated as an architect in 1967, attending the first regular class of the Architecture and Urbanism Course at the UFPR, Federal University of Paraná, where he went on to become a professor and course coordinator. He also took part in coordinating the implementation of the Design School at UFPR in 1975.

During his period as a student, and more specifically in the Architecture Course, he established a direct relationship with the first professors who came from other states

(São Paulo, Rio de Janeiro, and Minas Gerais) to comprise the faculty, working with figures such as Luiz Forte Netto and José Maria Gandolfi, both from Mackenzie University in São Paulo. Not only did he play a fundamental educational role in helping form new generations of architects, but he also later designed the buildings in which the students were taught.

Coelho played an important role in the process of urban transformation of Curitiba, starting with his internship at IPPUC, the Institute for Research and Urban Planning of Curitiba, as a student, then as an architect on the technical team and later as a technical consultant, developing a series of projects for the city, such as urban furniture, urban equipment, and visual communication.

He was president of the IAB/PR, Institute of Architects of Brazil, Department of Paraná, in 1972-1973 and held the Municipal Secretariat of Urban Planning of Curitiba. Honored at the 5th São Paulo International Architecture Biennial with a Special Room, he received several awards, notably for his projects at the 3rd São Paulo International Architecture Biennial, Seal of Excellence at the 2nd Brazilian Design Biennial, and the Grand Prize for the Ensemble of Work at the XV Congress of Oscar Niemeyer Architects, in 1997.

Coelho worked with Jaime Lerner, both as a collaborator in his office and as Secretary of Urbanism in Lerner's second term as mayor of Curitiba (1979-1983). Also, since his student days, he participated and won prizes in a series of competitions, including 2nd place in the Euro-kursaal International Competition in San Sebastian (1965); 1st place in the Contest of the Department of Public Security, Brasilia (1967), 5th place in the Banco do Brasil Contest in Caxias do Sul (1970), and 4th place in the competition for the headquarters of the BNDE in Brasília (1973).

Within his studio, he met public and private demands at different scales, from visual communication and buildings to urban projects. He developed some notable projects, such as the masterplan and the main buildings of the Pontifical Catholic University of Paraná in Curitiba (1973) and the Positivo University (1999). From 1975-1980, he coordinated the urban project of the city of Criciúma in Santa Catarina, developing a complete design of the civic center, public buildings, and urban visual communication.

Manoel Coelho passed away on March 4, 2021, a victim of cancer. He left a huge legacy in the field of architecture and design. Until his last days, he lived in the residence he had designed; this house was sold in 2021 and no longer belongs to his family.

HISTORIOGRAPHICAL ANALYSIS

MANOEL COELHO, ARQUITETURA & DESIGN BY IRÃ JOSÉ TABORDA DUDEQUE, 2013

This publication, which documents the 45-year career of Manoel Coelho, covers his professional activity, from his very first designs to a series of key urban projects by the architect.

One of the projects presented in the book is the *Casa do Arquiteto*, his Architect's House. Dudeque highlights the difference between this project and Coelho's public and institutional works. On an urban site with limited dimensions, the insertion of a building, in this case, a residence, can be conditioned to generate distinctions between front and back or the visible face and the hidden face. This is the opposite of what usually happens in public buildings, which are generally located on large plots of land and where there may be no distinction or hierarchy between facades.

Another contrast Coelho created is the relationship with traditional bourgeois architecture, in which the residences generally had a greater connection with the facade facing the street, in addition to the entire social and convivial area being located at the "front". In his residence, the architect makes a more neutral facade facing the street and opens it up to the back, where there is a beautiful private garden and the presence of two *araucárias,* pine trees from Paraná, that also helped shape the architecture.

The author adds that, for this project, Coelho carefully interrelated the architecture and the house's geographical location, from the moment that the house touches the property lines with both side walls, the front set-back, and the vegetation at the back, delimited the drawing itself.

ESPIRAIS DE MADEIRA BY IRÃ JOSÉ TABORDA DUDEQUE, 2001

Dudeque also investigates Manoel Coelho in his publication *Espirais de Madeira*, in which he documents a series of notable projects in Curitiba. Besides organizing the projects and events into periods, the book provides an opening for new discussions of themes that had not yet been evaluated. In the chapter *Visto, Revisto, Imprevisto* ("Seen, Revised, Unforeseen"), Dudeque cites two architects' houses as the residences that took the most effort to design in the architectural production in Curitiba. These are the house of architect Maria Nadir de Carvalho (1975) and the house of architect Manoel Coelho (1981). Relating to Coelho's project, the author argued that the architect shows total mastery in interrelating the levels and half-levels of the house, which are well distributed on the sloping land. Other than the bedrooms, bathrooms, and kitchen, the spaces in the house were all integrated without the need for confinement or separation. Another notable aspect of the house is the use of coloring[1]:

The construction details of this residence were painted in primary colors. In the dining room, the concrete plane that blocked the view of the stairs was painted yellow. In a unique reference to the architecture of Curitiba, this plane derived from the experiences of the plastic artist Hélio Oiticica, who translated, into space, the language of Piet Mondrian's painting. (Dudeque, 2001)

Dudeque also underscores the house's relationship with the street; the concrete plane framed by the site's vegetation, cut by a glass strip that features yellow fiberglass brise-soleils to control solar incidence and privacy. The back portion was the greatest attraction of the project, in which the residence opens on two levels, one private and the other social or more public.

The residence fits into the obligatory front set-back, with sloping walls on the boundaries and at the back reflecting the existing vegetation. About this relationship between the architecture and the terrain, Dudeque notes the following considerations[2]:

The pine trees also determined the total built area, as the main volume respected the regulatory set-back in the front and, at the back, advanced to the pines. The internal space was also defined by the vegetation. On the side of the lot, there were philodendron trees. In the design, this resulted in a zenithal opening that integrated this vegetation into the dining room. (Dudeque, 2001)

For the author, these design solutions, which he calls "projectual gymnastics" and which he claims ensured the preservation of both the internal and external vegetation, would have related the architect to the research of the *Paranista* Movement–making evident the architect's ecological interest.

ARQUITETURA MODERNA EM CURITIBA BY ALBERTO XAVIER, 1986

In his book *Arquitetura Moderna em Curitiba*, published in 1986, Alberto Xavier documents more than a hundred iconic projects built in the city during the 20th century, ranging from public, institutional, housing, and also some private residences. The author includes architect Manoel Coelho's house in this group of architectural projects with modern lines, even though it dates to 1981.

The text presents the solution adopted by the architect, in which he exploits the land slope, creating four half-levels for the house, two of which touch the ground and two others that comprise the upper floors. These areas receive different parts of the program, integrated through an internal void and connected by a set of stairs. The roof slab is slanted, following the land slope, with a lateral cutout for the internal courtyard. On the other side is a *pergola* to generate a service circulation route, opening for ventilation and lighting of the bedroom toilet. In addition, Xavier mentions the design for the slab of the external terrace that opens to the back of the lot: it is generated by the circumference of the tree canopy of the *araucarias*[3] that already existed there, a design that is also reflected in the pool shape that respects the tree's root zone.

DECOMPOSITIONAL ARCHITECTURAL ANALYSIS

Architect Manoel Coelho's residence is located on an urban and wooded site, with an approximate area of 700 m², on Gregorio de Matos Street, São Lourenço, Curitiba [FIGURE 01].

The neighborhood is characterized by individual residences and abundant vegetation. The site chosen by the architect features a natural tree pattern that determined the design of the 400 m² building. From the street, the majority of the trees on the lot may go unnoticed. The residence occupies the front part of the land, respecting the

01 Manoel Coelho's house, front facade. © Author, 2022.

established front set-back, and occupying the total width of the land of approximately 14 meters, touching the two side boundaries. At the back, the building is limited due to the existence of two *araucarias*, which, owing to their protection radius, preserve a good part of the 50 meters of depth of the land.

The site slopes approximately 6 meters downward from the street towards the back, so the architect established two levels where the house touches the ground. The first plateau comprises access to the house for pedestrians and vehicles in the form of a covered shelter that is used as a garage, as well as the dining room and the entire service program (comprising kitchen, laundry, and service area). From this level, the user can establish an understanding of the spatiality of the house by being able to look down to the second level area, which is half a level below and contains a social living room. Through this lower level, there is direct access to the back of the land, featuring space for the external dining area, a swimming pool, and a private garden [FIGURE 02].

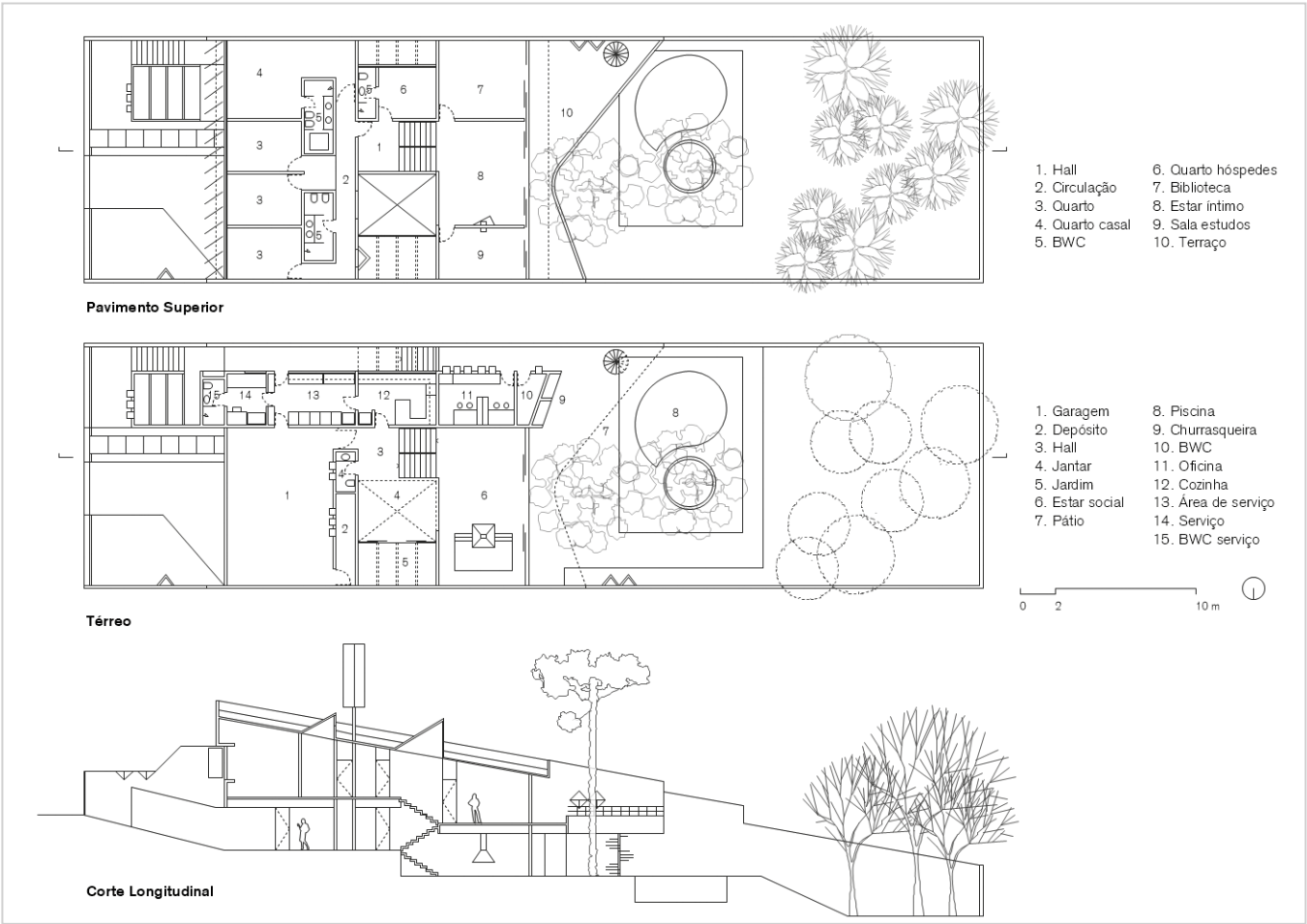
Above the access floor of the house, there is a second, more intimate, social area, located between the architect's studio and a library. This level also offers access to the terrace that opens with a view of the massive vegetation at the back. On the highest level are the bedrooms, with windows facing the street, but with a series of privacy filters and solar incidence control, either through *brise- soleil* or

02 Back façade with terrace. © Author, 2022.

climbing vegetation. This is the best insulation for this type of environment in a city with low temperatures like Curitiba, which features the lowest temperatures among Brazil's large cities [FIGURE 03].

Regarding the spatial arrangement of the house, the longitudinal section offers an understanding of some of the relationships. Firstly, with the sloping roof slab following the slope of the land, there is a height difference that generates a unique spatial complexity, in addition to helping the building's greater height conform to the street. This slab, despite touching both side wall, has some cutouts that generate both a *pergola* space for service circulation to the south and an uncovered patio to the north, which, in addition to illuminating the interior of the house, preserves

03 Interior showing the central staircase. © Author, 2022.



04 Upper floor plan, ground floor plan, and longitudinal section. © Author, redrawn based on the original plans and section from the architect´s collection, 2022.

a set of *philodendrons* that predated the house. This slab has some cutouts for the ventilation and lighting of the toilets and the vertical and horizontal circulation of the house [FIGURE 04].

Another spatially exploited resource is the internal void, through the slab between the upper and lower floors, generating a space with double height above the dining room [FIGURE 05]. The project, conceived in concrete, features distinctive aesthetics with its fair-faced surfaces on the front façade and in the structural elements such as slabs, beams, and internal stairs [FIGURE 06].

Another aspect is the use of this same materiality in fixed furniture, such as sofas and sideboards in the communal and public areas. A prominent element is the water tank on the roof, whose square volume is turned at a 45° angle to the main volume of the architecture.

Complementing the aesthetics of concrete, the architect made experimental use of chromaticity in this project by employing the basic colors red, blue, and yellow, whether in masonry, furniture, or metallic elements, and identifying and differentiating elements through the use of these colors. The house features a very direct and simple strategy in identifying the application of color; yellow appears in the painted walls in the social spaces of the house, in the barbecue pit volume, in the stairs connecting the external area with the private terrace, or in the kitchen and service area furniture. The circulation space of the bedrooms is painted red, which differentiates it from the rest of the house, identifying that it is a different, more discreet, and private accommodation space. Blue appears more as a complement to the details of these elements, as in the painted steel fireplaces of the house: in the social living room, the fireplace has a pyramidal design, and in the intimate living room, a triangular prism shape [FIGURE 07]. The *brise-soleil* in fiberglass on the front facade is painted yellow. The wooden doors throughout the residence differ from the other color applications, as they are finished in green lacquer paint.

The residence belonged to the family until a few months after the architect's death in March 2021; they had lived there for 40 years. Maintaining its original characteristics, it received some minor interventions, such as glass guardrails on the stairs, mainly for the safety of the couple's grandchildren. The exuberant vegetation generates a very pleasant private garden that received sculptures by artists from Paraná, as well as in the treatment for the street, where it established a relationship of urban complementarity, both by the permeability of its boundary element and by the landscaped spaces on the public sidewalk.

The presence of the two *araucárias* on the site, the symbol tree of the State of Paraná, shaped both the rear extent of the site occupied by the residence as well as helping to shape the architecture: the shape of the pool, which refers to a water drop, is also the result of the

05 Interior view toward red-painted upper circulation space. © Author, 2022.

06 Interior void with double height space. © Author, 2022.

protection of the root zone of one of the trees [FIGURE 08]. And on the upper floor, on the terrace accessed from the intimate living room, its organic design also accompanies the space established by the protection radius of this species' tree canopy.

CONCLUSION

The project of Manoel Coelho's residence is not framed in any conjecture of a defined architectural language, such as that of Brutalism, for example. As it is an 'architect's house', where the architect was both author and client, it could incorporate a range of experiments that would hardly be accepted by a conventional client.

It is a unique project, conceived by an architect who, alongside his vast academic and institutional experience, here was able to achieve an explicitly practical work that could very clearly materialize his ideas. Moreover, an influence can be noted from the various references that the architect may have gathered in his work. The use of fair-faced concrete not only as a structural element but as a key aesthetic feature of the space stems partly from his direct relationship as a collaborator of

07 Living room with a geometrical fireplace. © Author, 2022.

08 Garden with drop-shaped pool and one of the araucárias trees. © Author, 2022.

his architectural professors from São Paulo, formed in the *Escola Paulista* movement (Camargo, 2019), who used it as a recurring aesthetic characteristic. Through the use of color, not only in this project for his residence but also in his office project, the educational buildings mark the identity of the architect, who embarked on projects of design, visual communication, and the arts.

The interventions carried out by the architect himself demonstrated how architecture needs a person to exist and vice versa, as it also needs to be constantly revised. After the architect's death, the residence was sold and subsequently received some highly disruptive alterations to its original design. The original colors were changed to a neutral color palette, and thus, in addition to the fact that there are no criteria for the new application of colors, it is currently not possible to identify the triangular color design on the water tank, and on the side of the stairs. In addition, changes were made to the original window frames in the living rooms, bedrooms were changed, and a roof was installed where the house's patio is located.

This p has set out to document the project more extensively than previous sources, presenting a developed set of drawings of the original project and a photographic survey of the residence. To complement the study of Coelho's diverse work, future lines of investigation might extrapolate from the most recognized projects to include even private projects. It would probably also be fruitful to study other examples of the building type of the *Casa do arquiteto*, and not only in Brazil: this type seems to offer a great field of design freedom for its authors, being a propitious space for experimentation.

Finally, because the house served as the architect's residence, and even though it received some adaptations at his discretion, the essence of the original project did not completely disappear. The original features were partially maintained, although it was an elaborate project built more than 40 years ago. The residence still surprises us today with its spatial quality and construction system, making it one of Curitiba's most outstanding examples of 1980s residential architecture.

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ENDNOTES

1 Dudeque 2013, p. 272. The authors of this article translated the quotations.

2 Idem, p. 273. The authors of this article translated the quotations.

3 Typical pine tree from the state of Paraná.

LISTED PUBLIC HERITAGE OR SHOPPING MALL?

Latent conflicts at the Lagoa Rowing Stadium

Renato Alves e Silva

ABSTRACT: The recognition of 20th-century architecture in Brazil is still a field restricted to specialists, which makes the remaining assets of this collection susceptible to defacement or even destruction. The designation of the Lagoa Rowing Stadium as a historic landmark by the city of Rio de Janeiro gives us the possibility of reflecting on the existing dispute between the public interest, protected by the listing in 2005, versus the financial voracity of private groups toward the asset in question. Grotesque defacement was undertaken starting in 2003 with the approval of the State and city administrations, including the intent to turn the sports complex into a business complex, thereby distorting the original proposal from the 1950s.

KEYWORDS: Modern Movement, Built heritage, Listed buildings, Preservation, Adaptive re-use

THE CONCEPT OF THE LAGOA ROWING STADIUM

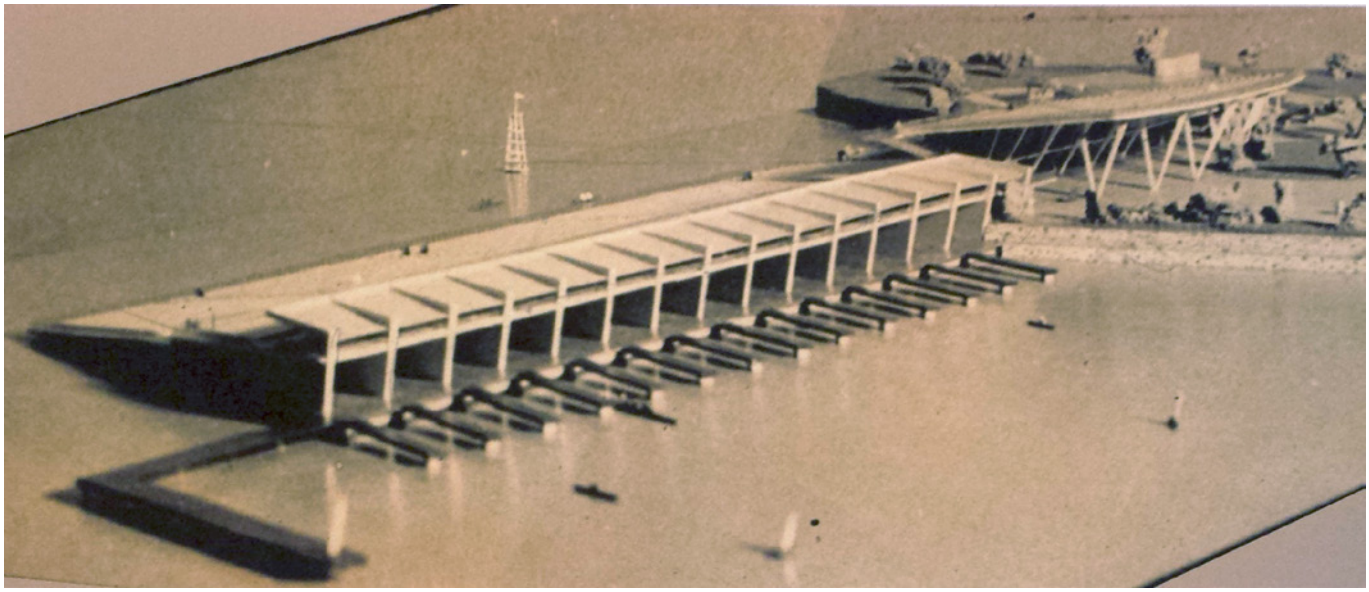
The Lagoa Rowing Stadium was a project by architect and rowing athlete Benedicto de Barros in partnership with structural analysis engineer Antonio Arlindo Laviola–another athlete in the same sport–, made possible through the political influence of attorney at law Carlos Osório de Almeida, another rowing enthusiast. It was designed at a time when the city had a high number of rowers. Construction began in 1950, and the stadium was inaugurated in 1954.

The zoning of the stadium divided the facility into two blocks. Block 1 housed the social and administrative wing under a fan-shaped grandstand supported by monumental "V-shaped pillars," which dominated the whole architectural ensemble when seen from Borges de Medeiros Avenue. The relationship with the lagoon and the concern with visual permeability guided Benedicto de Barros's project (IRPH, 2003, p. 8), which included glass cladding on the pavements above an open ground level, located under the grandstand. Block 2 would complement the first, lending itself to multiple uses, combining another grandstand–this time extensive in length–with a boat parking area stretching at the bottom.

In the original proposal, both blocks had extensions of their grandstands masterfully "leaning" over the lagoon to bring the public closer to the rowing lanes. However, these were never realized since only approximately half the space initially allocated for spectators was actually built–and at a distance of about thirty meters from the water's edge. In the scale model built for the original project (IRPH, 2003, p. 7), access to the boathouses–the parking spots–was provided from the waterside; thus eliminating the need to move the boats across land. Unfortunately, this plan was never implemented either, and the area destined for this access by the water was later grounded and used for other purposes. Of the fourteen projected boat bays, only eight were built, and even those were largely improvised. To this end, a building adjacent to Block 2 was inaugurated in 1975, fulfilling this function.

01 Benedicto de Barros and Antonio Arlindo Laviola, Lagoa Rowing Stadium Project, Rio de Janeiro, Brazil, date unknown. Scale model of the original project with graphic analysis performed on image. © Listing Process 12/000.343/03, IRPH, p.7.

The construction of the rowing stadium consolidated the Rodrigo de Freitas Lagoon as the rowing hub in the city of Rio de Janeiro. Before it was built, the sport was practiced in scattered locations and was subject to constant intervention at various points of the city's shore. With the new stadium, a suitable ambiance for rowing was built to last.



02 View of the building complex, with the boathouses connected to the lake's water surface, date unknown. Scale model of the original project. © Listing Process 12/000.343/03, IRPH, p. 7.

CONFLICT OF INTEREST

The Rodrigo de Freitas Lagoon was listed by the City Hall through the *Departamento Geral de Patrimônio Cultural–DGPC* (General Department of Cultural Heritage) in 1986 and by the federal government through the *Instituto do Patrimônio Histórico e Artístico Nacional–Iphan* (National Institute of Historic and Artistic Heritage) in 2000. As early as the first half of the 1970s,

> *"Bill 130 of 1975 begins to impose conditions aimed at defending the landscape and the ambiance of the lagoon, especially the panoramic views of its shores, and establishes that occupation of the shore–a free area classed as non aedificandi–was to be managed by the city administration."*
> *(IRPH, 2003, p. 29)*

The desire to protect the lagoon was made official with the opening of case 07/014.748/85[1] in the DGPC, as petitioned by the *Associação de Moradores e Amigos de Ipanema–AMAI* (Association of Residents and Friends of Ipanema) and other associations in the vicinity, who demanded that the lagoon be listed as a heritage site. Only the water surface was granted by provisional decree 5921 of July 3, 1986, and subsequently by the definitive decree 9396 of June 13, 1990. The petition was made by a letter dated May 28, 1985, "in view of the need to protect it from landfills that were gradually increasing; with the construction of extensions to the clubs; and leisure facilities that generated intense water pollution" (Ibid., p. 29).

It should be noted that in this process of listing, there is a study called "*Projeto Lagoa 1989*" (Lagoa Project 1989), in which modern buildings were already being considered for listing: Vasco Nautical Headquarters, Monte Líbano Club, and Lagoa Hospital, in addition to a peculiar residential building authored by architect Simeon Fisher in the vicinity of Fonte da Saudade Street. This shows that there was already concern for the preservation of works connected to the Modern Architectural Movement. The study was prepared by the *Departamento de Inventário e Planejamento–DIP* (Inventory and Planning Department) and the *Divisão de Cadastro e Pesquisa* (Registration and Research Division), both linked to the DGPC. The mentioned assets would be designated in 2002 by case 12/000.748/02.[2]

The request for listing the Lagoa Rowing Stadium was made in 2003 by engineer Luiz José da Silva Barros, son of architect Benedicto de Barros, a former rowing athlete and, at the time, a counselor for Flamengo Regatta Club–the official name of the soccer club with the largest number of fans in the word, which started as a rowing club. The reasons for the petition included, most notably, the son's effort to save his father's iconic work and the preservation of the collective memory of a group connected to sports, which gained the support of well-known rowers and architects in championing the cause. A third reason was to keep the space open for public use, as it had been since the stadium was built on the edge of the lagoon, preventing it from being converted into a private enterprise with restricted access and posing an obstacle to the full contemplation and experience of the lagoon scenery, whose water surface was already part of city and federal landscape heritage, as described earlier.

What triggered the preservation action were the repairs made under the pretext of upgrading the space for hosting the 2007 Pan American Games, which disregarded the conceptual guidelines and the consolidated structure conceived in Benedicto de Barros' project.

The drama of the stadium reflects the systematic abandonment by the public authorities that led the state government to grant use of the former complex to the private sector–without opening a bidding process (BID)

03 Satellite image from 2019 showing the current state of the Lagoon Shopping Mall, with aspects reminiscent of the old rowing stadium. The stretch of the lagoon to provide access to the boathouses in the Barros project and which, since the 1960s, had already been grounded, became a park in 2016. © Google Earth. March 26, 2019. [Accessed April 23, 2021]

and in deviation of purpose. A contract was signed on September 22, 1997 between the administration of Governor Marcello Alencar and the grantee, the Glen Entertainment Group (made up mostly of Uruguayan partners). The group undertook grotesque defacement starting in 2003 with the goal of turning the stadium into a shopping mall–named "*Lagoon*"–after the Pan American games, thus disfiguring the original proposal from the 1950s. The request to list the public building addressed to City Hall would be yet another effort to curb the destruction of the modern asset, faced with a predatory onslaught by financial interests.

Heritage listing was granted in 2005, but unfortunately, it did not stop the Lagoon shopping mall from being built over what remained of the increasingly unrecognizable Lagoa Rowing Stadium. "*Lagoon*" was inaugurated in 2010, concluding the denounced dilapidation of the sports complex, although it already had official status as a city heritage site.

The situation resembles the case of *Marina da Glória*–a kind of public dock with support for small boats situated in the neighborhood of Glória–which has long ceased to be public to give way to exploitation by private groups. A brief digression is called for about the concept that guided its construction and the effective use throughout the years, as it shares many similarities with the developments that took place in the case of the Lagoa Rowing Stadium.

THE CASE OF MARINA DA GLÓRIA

Architect Amaro Machado carried out studies commissioned by the *Marina da Glória* program between 1975 and 1977. The marina was part of the program for Flamengo Park, a "park-way" located in the South Zone of Rio, facing Guanabara Bay. With a professional career associated with names such as Oscar Niemeyer and Sérgio Bernardes, in his private life, Machado was a (sailor) athlete–as were the designers of the rowing stadium, Benedicto de Barros and Arlindo Laviola, which is believed to have contributed in a particular way to his in-depth knowledge and engagement when taking on the job.

In 1976, Iphan approved the project drawn up by Machado. Because Flamengo Park had been listed as a federal heritage site since 1965, any subsequent interventions had to go through the preservation agency. The project was done in partnership with Roberto Burle Marx, who was in charge of the landscape treatment around the inlet. The public marina was inaugurated in 1979, occupying a total area of around 2.700,00 m².

Unfortunately, Amaro Machado would be required to make adaptations to his initial ideas: he was given the ungrateful task of adding on to the project where he had warned add-ons were dispensable. Beginning in 1987, he added more stores to the main block and reduced the area for the boathouses, yielding to pressures that went against the original principles of the proposal for the site. Later, he was forced to give up his walkway slab–for pedestrian circulation–to design the administrative wing and a restaurant instead, once again disfiguring the initial concept. This time, his disapproval was even greater. The tensile structure first idealized to crown the building, a solution that took advantage of the lightness of the material and favored its discretion, was subsequently executed not by him, and without the participation. In disregard of the original proposal, it turned into a disrespectful copy of the plastic conception of the piece once visualized by Machado. The situation would only become worse when the structure was replaced by a warehouse ceiling, which is still in place. It would be appropriate to organize the facility's history in chronological order since the 1970s.

In 1976, the administration of the Marina–even before its inauguration–would be transferred to the city hall administration, specifically to the *Empresa de Turismo do Município do Rio de Janeiro S.A.–Riotur* (City of Rio de Janeiro Tourism Agency). With its "Marina Rio" project approved by Iphan, the idea of building a pavilion for keeping the boats, around which all public activities would be organized, was consolidated.

04 Marina da Glória, with a highlight on the main pavilion designed by Amaro Machado in 1976, in perfect harmony with the park's landscape. Scale model of the Marina da Glória preliminary project. © CAU Collection, YEAR. Available at https://www.caurj.gov.br/acervo-caurj/. [Accessed June 3, 2021].

In 1979, Mayor Marcos Tamoyo inaugurated the Marina, and the last military president, João Figueiredo–then at the beginning of his term–tried to separate the port facility from the rest of Flamengo Park, granting it permanently to municipal jurisdiction. The head of state wished to turn the space into a sort of club, foreshadowing the deviation of purpose that would become the norm from then on. His intention did not materialize, but the idea remained that Marina da Glória was a separate entity in its own right in the middle of Flamengo Park and, therefore, was not intended for public use.

In 1987, the pavilion designed in 1976 was executed. Another 11 stores were added, a project that saw Amaro Machado in charge. It should be noted that the lack of a firm stance by the federal body in charge of the protection of the park, at the time called *Secretaria do Patrimônio Histórico e Artístico Nacional–Sphan* (Secretariat of National Historic and Art Heritage), ended up allowing the interventions to take place. In 1988, Riotur proposed the construction of a panoramic restaurant overlooking the pavilion–the one designed by Amaro Machado– which, this time, was vetoed by the preservation body.

In 1996, City Hall outsourced–in a questionable maneuver–the administration of Flamengo Park to the *Empresa Brasileira de Terraplenagem–EBTE* (Brazilian Earthworks Company) for a period of ten years.

In 2005, the project for the 2007 Pan American Games was presented, and like what happened with the Lagoa Rowing Stadium, the international event was used again as an excuse for the undertaking of modifications supposedly needed to meet the demands of the sailing races.

In 2006, the EBTE contract was renewed for another thirty years, and in March, the construction of a new stretch of bike path inside the Marina began. Between the night of April 28 and the following day, the picnic grounds were laid waste. In 2008, that same area was paved.

On December 15, 2009, EBTE "sold" the management of the Marina to EBX, from the business group owned by one of the richest entrepreneurs in the country at the time, Eike Batista, who had recently bought a famous luxury hotel in the neighborhood of Glória. On March 31, 2010, the company launched a closed tender of projects for new changes in Marina da Glória. Bids were received on the very same day.

In 2013, a municipal decree created a special commission for Marina da Glória to set parameters for works on the site. The decree also determined that a heterogeneous commission be created, comprising two representatives from City Hall, one from Iphan and another from the *Instituto de Arquitetos do Brasil–IAB* (Brazilian Institute of Architects). The newly created group then discussed the project of Eike Batista's company for the Marina, and in the same year, EBTE lost its grant of the facility as punishment for the pecuniary transfer of duties that were exclusively theirs–grants of any kind to the private sector were forbidden. Despite the sentence, in that same year, MGX–then the legal name of the company that held "control" of the Marina–changed its name to "BR Marinas S.A." and the Marina became part of another unit of this private company that managed other similar facilities across Brazil.

05 The main pavilion of the Marina with a "warehouse ceiling" today, with the project signed by architect Eduardo Mondolfo (built in 2016), radically altering Amaro Machado's original proposal. © Agência Estado, 2016.

In practical terms, the impact caused by the collusion between segments of both public and private sectors against the common good was the closure of a collective space and the curbing of freedom of movement. The Marina was turned into a mooring for upper-class clients and a space for private events, made possible by a succession of modifications to Amaro Machado's project that destroyed the concept of democratic appropriation and harmonious integration of the facility into the lush landscape of the park. There are currently several lawsuits demanding that the Marina be reverted to public use. Most of them were filed by members of society represented by entities such as the *Federação das Associações de Moradores do Município do Rio de Janeiro–FAM-Rio* (Federation of Neighborhood Associations of the City of Rio de Janeiro).[3]

MUNICIPAL LISTING OF THE LAGOA ROWING STADIUM

Through case number 12/000.343/03 by the municipality, filed in the *Instituto Rio Patrimônio da Humanidade–IRPH* (Rio Institute of Humanity Heritage) in 2003 (s. endnote 1), the Lagoa Rowing Stadium was granted the status as a cultural heritage site. At the *Instituto Estadual do Patrimônio Cultural–Inepac* (State Institute of Cultural Heritage), a petition[4] was forwarded on February 11 of the same year, but nothing could be ascertained about its developments. Almost a decade later, in 2012, case number 1664-T-12 was filed at Iphan, again petitioning for the heritage listing of the facility, but it was denied.

Regarding the heritage listing by the IRPH, the proponent Luiz José da Silva Barros, among the justifications for the petition, presented those drafted by the architects Pedro Rivera and Clarissa da Costa Moreira:

"[...] The Lagoa Rowing Stadium is being threatened by this phenomenon where private investors intend to open new restaurants, concert houses and cinemas for the middle and upper classes in one of the main public leisure areas of the city, the Rodrigo de Freitas Lagoon.

The lagoon is a public and democratic space par excellence and an important natural landmark of the city, which justified its being listed by Iphan in 1973" [in actual fact, the case was opened this year, but the decision to list the lagoon only came in the year 2000].

"We also understand that the existing facilities by the lagoon, which benefit from it, must be public and, above all, must preserve the visibility of the lagoon.

[...] The Rowing Stadium is one of the few public pieces of modern architecture in Rio de Janeiro, the first rowing stadium in the country, and constitutes an important example of modern Brazilian architecture.

[...] For the reasons presented above, and doing our duty as citizens to care for the public good of Rio de Janeiro, we petition for the definitive listing of the Lagoa Rowing Stadium so that it can be used in a way compatible with the building itself and with the environment that surrounds it, and mainly to preserve for the people of Rio de Janeiro one of city's great landmarks and the free access to it"
(Rivera, Moreira, 2003).

Architect Oscar Niemeyer himself made the following statement:

"It is difficult for an architect to express himself about the work of his colleagues in the profession. I, for one, always refuse to do so.

The project of the Rowing Stadium, modern and already integrated into the lagoon landscape, was designed by Benedicto de Barros, a talented architect.

Faced with the decision of the municipality to repair it and turn it into a culture center, I confess that if it were up to me to make such a decision, as an architect and friend of Benedicto's, I would refuse the idea"
(Niemeyer, 2003).

06 The lightness of the 1950s Block 1, with the V-shaped pillars elegantly supporting the grandstand, complemented by the subtlety of the pilotis and the translucent floors. © Available at http://urbecarioca.com.br/o-nao-legado-do-estadio-de-remo-da-lagoa-rodrigo-de-freitas/. O "Não-Legado" do Estádio de Remo da Lagoa Rodrigo de Freitas. [Accessed April 23, 2021].

Responding to Luiz José da Silva Barros' appeal, sports representatives also participated in the petition for listing. Former Olympic rower Valter Hime issued his opinion:

"[...] Transfiguring our stadium would be as disastrous as turning the Maracanã Stadium into a shopping mall, or the Statue of Christ the Redeemer into a giant billboard, or even leasing the Sugar Loaf to a hotel chain."
(Hime, 2003).

Finally, highlighting that the petition for listing was "filed by Luiz José da Silva Barros, and endorsed by personalities from the world of sport and architecture" (Lima, p. 29, 2003), the councilor and reporter of the petition for the listing the Lagoa Rowing Stadium at the *Conselho Municipal de Proteção do Patrimônio Cultural do Rio de Janeiro–CMPC* (Municipal Council for the Protection of Cultural Heritage of Rio de Janeiro), Evelyn Furquim Werneck Lima, submitted her opinion to that collegiate on August 20, 2003, where she states the following:

"[...] Because it is a representative work of Modern architecture - with many characteristic elements of the Modern Movement – and also rich in affectionate meanings for the city as a whole and especially for rowing enthusiasts, my opinion is that the entire building complex should be listed, with the admission, at the discretion of the protective body, of works for support, training and infrastructure facilities to enable the stadium to host international level rowing competitions in order to encourage the election of Rio de Janeiro for the 2012 Olympics. I also suggest that criteria be set for complementary activities that can enhance the building complex [highlighted by the author]."
(Lima, 2003, p. 30).

It should be noted that by suggesting in her final remark that "*criteria be set for complementary activities that can*

07 The original design turned into a monolithic block housing a shopping mall, hiding the view to the lagoon and extinguishing the monumentality of the pillars. © Riotur, Verônica Peixoto, Year.

enhance the building complex," the reviewer implies a somewhat vague position, which might lead to permission being given for the use of stadium premises for other activities than those exclusively sports-related. The City of Rio listing would only happen two years later, on April 12, 2005, by decree 25.237, *Diário Oficial* (Official Gazette), Rio de Janeiro, April 14, 2005, sanctioned by Mayor Cesar Maia.

In practical terms, the predatory action undertaken by the licensee–illegally constituted, it should be noted here– which turned the public facility into a private trade enterprise, did not encounter major obstacles to achieving its goals. Most of the site is occupied by a shopping mall housing restaurants, movie theaters, improvised terraces on the grandstands, events of various natures, and parking lots occupying a considerable share of the grounds until today. It should also be stressed that the erasure of the memory of the former Lagoa Rowing Stadium was deliberately prosecuted: its original name was suppressed in favor of the logo with the inscription "*Lagoon*," suggesting to those who never knew the sports building complex the idea that the shopping mall has always been located there.

According to the facts described here, from the desire to build a definitive space on the banks of the Rodrigo de Freitas Lagoon that would welcome the practice of rowing in the city of Rio de Janeiro to the moment when dominant groups decided to seize the public facility for private purposes, one realizes how fragile the right of the public to access city property is when confronted by a controlling minority holding political power and financial resources.

The recent vote in the *Câmara Municipal de Vereadores do Rio de Janeiro* (Rio de Janeiro City Council) of complementary bill 174/2020–nicknamed "*Lei dos Puxadinhos*" ("Add-on Bill") because it addresses the flexibilization of construction norms in force–illustrates the difficulty of ordinary citizens, even when mobilized in associations, to assert their rights against a system carefully articulated to serve questionable interests, operating by distortion legal devices to cater for private ambitions.

FINAL CONSIDERATIONS

The interference of financial capital in the fate of public facilities can be seen clearly in the interventions and defacement undertaken on the Lagoa Rowing Stadium, as well as on the Marina da Glória. In both cases, even in a succinct analysis, it does not take much effort to come to the conclusion that the concept of "public space" is

08 The Lagoa Rowing Stadium today, now also serving as a billboard for the G20 Summit to be held in Rio de Janeiro in November 2024. © Renato Alves, 2024.

summarily ignored in all of them at the first opportunity when a profitable business possibility is spotted–with the aggravating factor that both of them were listed heritage sites.

Another aspect to be emphasized is the position taken by the preservation bodies. Even if the legal instrument for heritage listing continues to play a crucial role in protecting existing assets against the speculative greed of the market, it needs to be complemented with assertive actions of management and energetic supervision so that it is not lost in the subjective field of intentions–or in the risky territory of omission–, instead of having the expected protective effect. The restrictions that guarantee the protection of assets must be enforced, and prior to that, when assets are proposed for listing, attention must be paid to setting clear guidelines, thereby avoiding allowing interpretations that will favor groups interested in relativizing their application.

In fact, the struggle to preserve existing assets that we wish to perpetuate, including the physical and symbolic aspects that led to them being listed, does not end with the act of listing itself. From all that has been seen, we understand as essential the mediating role that guardianship bodies play in the mobilization of society, especially because the arm wrestling between the collective and the private interests is an unequal dispute, most of the time tending toward the side that holds the monetary and political power. But in spite of this conclusion, evoking the blow that toppled the giant Goliath, insistence and strategy can produce the desired effect, provided that many "Davids" combine forces to resist on the battlefield instituted by the voracity of the current system.

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ENDNOTES

1 Listing process number 07/014.748/85, assets surrounding the Rodrigo de Freitas Lagoon, Rio de Janeiro City Hall/ Archive of the Conselho Municipal de Proteção do Patrimônio Cultural do Rio de Janeiro (CMPC) – Municipal Council for Protection of Cultural Heritage of Rio de Janeiro –.

2 It was not possible to find the data for process 12/000.748/02. However, analyzing process 12/000.343/03 [of the listing of the Lagoa Remo Stadium], a compendium of files called "Preliminary file of listed properties" was found, relating to Decree 21,306, of April 19th. 2002, which refers to the listing of assets around Lagoa Rodrigo de Freitas.

3 Testimony of jurist and Professor Sonia Rabello, then President of the Federação das Associações de Moradores do Município do Rio de Janeiro (FAM-Rio) – Federation of Neighborhood Associations of the City of Rio de Janeiro –, for the public hearing on the case of Marina da Glória, at the Federal Prosecutor's Office. Rio de Janeiro, April 17, 2015. https://www.youtube.com/watch?v=6p7bTV_oJHY Accessed February 22, 2017.

4 File in "Excel" format entitled "Updated list of Listing Petitions - June 2016", supplied by architect Sergio Linhares Miguel de Souza on June 21, 2018, then director of the Departamento de Pesquisa e Documentação (DPD) do Instituto Estadual do Patrimônio Cultural (Inepac) – Research and Documentation Department (DPD) of the State Institute of Cultural Heritage (Inepac).

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