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ARQUITECTURAS DEL SUR

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ENFOQUE Y ALCANCE

Arquitecturas del Sur es una de las revistas del Departamento de Diseño y Teoría de la Arquitectura, de la Facultad de Arquitectura, Construcción y Diseño de la Universidad del Bío-Bío (E-ISSN 0719-6466 ; ISSN 0716-2677), es editada semestralmente en los meses de enero y julio de cada año. Su publicación es seriada, de acceso abierto, arbitrada mediante revisión por pares (doble ciego) y, desde su primer número aparecido en 1983, su contenido atiende resultados de investigación originales e inéditos que amplían y fortalecen el conocimiento de la arquitectura latinoamericana y sus disciplinas afines.

Según el tesauro de la UNESCO, sus temáticas se inscriben en las líneas de arquitectura, del diseño, de los monumentos, de la preservación del patrimonio y de la planificación urbana. *Arquitecturas del Sur* admite la postulación de artículos científicos, resultados inéditos de investigación, tesis de Magíster y/o Doctorado y comunicaciones de congresos. También recibe revisiones temáticas actuales que aporten conocimiento nuevo sobre criterios en construcción, siempre que se encuentren dentro del enfoque general de la revista; esporádicamente publica números monográficos como resultado de convocatorias específicas y que, en esos casos, serán anunciadas a través de su plataforma en línea. El envío de manuscritos presupone, por parte de los autores, el conocimiento y cumplimiento de estas condiciones, así como del resto de las normas descritas en su Política Editorial. Los textos postulados deben estar desarrollados en español, inglés y/o portugués, ser originales e inéditos y no estar postulados simultáneamente en ningún otro tipo de publicación u órganos editoriales.

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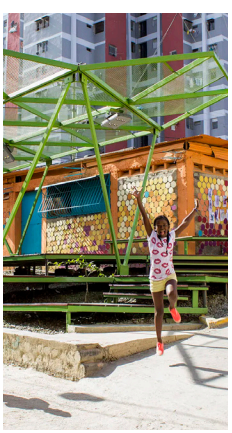
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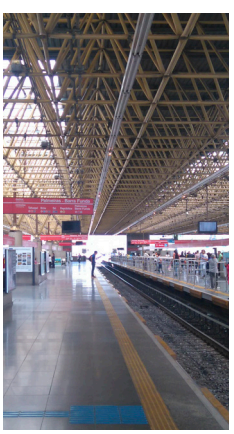
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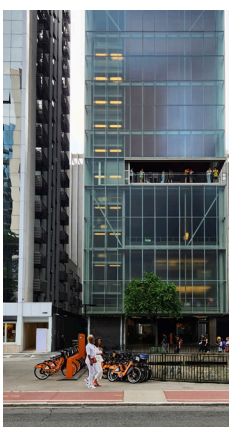


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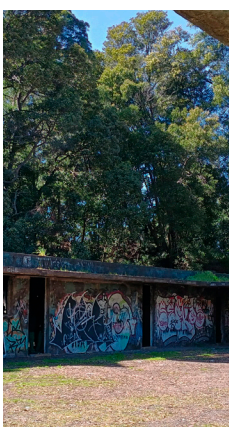
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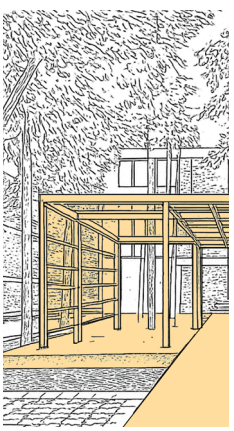
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EDITORIAL

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En aquellos días de su fundación, en 1983, una de las primeras disyuntivas que debió resolver la revista *Arquitecturas del Sur*, fue la de su nombre: ¿arquitectura en singular o en plural? Decidirla finalmente en plural, expresó una voluntad de diversidad, de intentar recoger, ya desde su nombre, la infinidad de expresiones de las arquitecturas del sur del continente americano.

El nombre marcó también un territorio, geográfico y cultural: el sur. Por aquellos años no se terminaba de acuñar el concepto de *sur global*, común y asentado al día de hoy, pero algo nos decía que lo natural es que nos refiriéramos al sur entendiéndolo como toda América del Sur, que ese debía ser nuestro ámbito de exploración e investigación arquitectónica y urbana. Hoy, al hacer un recuento, advertimos que esa es una constante que se consolidó, que nuestra mirada se volvió al sur, lo que fijó un derrotero, un sentido y orientación.

¿Y a qué arquitecturas y qué ciudad se volvería esa mirada?: a las arquitecturas anónimas, a las que estaban lejanas de los centros de poder y decisión, a las de un patrimonio no reconocido e inexplorado, a las que aún debían ser incorporadas a la historiografía de la arquitectura chilena y latinoamericana, a las arquitecturas contemporáneas con fuerte arraigo al territorio y a las culturas locales, a las que tejieran una ciudad mejor imbricada, a las arquitecturas que pusieran su énfasis en lo público, a las del espacio colectivo, a las de la vida comunitaria. Esa voluntad la reafirmamos hoy, luego de 68 números publicados.

¿Y cómo mostrar esas arquitecturas y esa ciudad?: los primeros 30 números en formato grande, en blanco y negro. Y a partir del número 31 y hasta la actualidad, en nuevo formato y a todo color. Pero tanto en uno como en otro tamaño, un criterio se ha mantenido a lo largo de los años: el de otorgar la misma importancia, tanto a textos como a imágenes. Ello deviene probablemente de nuestra formación de arquitectas/os, asunto que no resulta fácil sostener hoy, impactada la producción editorial de arquitectura por los nuevos paradigmas científicos, que todo lo cuentan, y que tiene en gráficos y estadísticas, su mejor aliada. Así, la observación y el análisis, acompañado de croquis, buenas fotos y planos, resulta hoy casi un acto de resistencia editorial que nos parece fundamental mantener y la que no renunciaremos.

Hoy los horizontes se han ampliado. Publicamos en español, en portugués y en inglés. Un importante número de artículos proviene del Brasil, lo que nos ha abierto a una cultura arquitectónica y urbana de inmensa riqueza, como también a un mundo de investigadora/es que hasta hace unos años no conocíamos. Si los primeros números estuvieron destinados a difundir el trabajo y las investigaciones de nuestra/os propios académicos, hoy en día y por evitar la endogamia, son las investigaciones de otras latitudes que ocupan la mayor cantidad de páginas de la revista. Tenemos *ventanilla abierta*,

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lo que significa que recibimos artículos en el ámbito editorial de la revista en cualquier fecha del año. ¿El criterio de selección?: que se trate de artículos de investigación, que se inserten en la línea editorial de *Arquitectura del Sur* y que cumplan con las normas de publicación declaradas. Los artículos son evaluados mediante el sistema de *doble par ciego*, lo que en definitiva ha permitido, a lo largo del tiempo, consolidar el nivel académico de la revista, encontrándose al día de hoy indexada en WOS Emerging (ESCI), SciELO Chile y Erihplus, entre otras indexaciones. Bienvenidos entonces sus aportes a este espacio editorial con el que esperamos contribuir a sus investigaciones y a la difusión de la cultura arquitectónica y urbana.

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EDITORIAL

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Upon its founding in 1983, one of the first dilemmas that the journal, *Arquitecturas del Sur,* faced was whether to use the singular or plural form of 'architecture'. The decision to use the plural ultimately expressed a desire for diversity, an attempt to capture, even in its name, the infinite expressions of architecture in the southern part of the Americas.

The name also marked a geographical and cultural territory: the South. In those years, the concept of the *Global South*, commonly used today, had yet to be coined. However, something told us that the natural thing was to refer to the South, understanding it as the whole of South America, which should be our field of exploration and architectural and urban research. Today, when we take stock, we notice that this is a consolidated constant, that our gaze has turned back to the south, which has set a course, a direction, and orientation.

And which architectures and cities would that gaze turn to? To the anonymous architectures, to those far from the centers of power and decision-making, to those of an unrecognized and unexplored heritage, to those that had yet to be incorporated into the historiography of Chilean and Latin American architecture, to contemporary architectures with strong roots in the region and local cultures, to those that wove a better intertwined city, to architectures that placed their emphasis on the public, to those of the collective space, to those of community life. We reaffirm that today, after 68 issues.

And how to showcase those architectures and that city? With the first 30 issues in large format, in black and white. And from issue 31 up to the present day, in a new full color format. However, in both sizes, one criterion has been consistent over the years: to give equal importance to both texts and images. This probably stems from our training as architects, an issue that is not easy to sustain today, as the editorial production of architecture is impacted by new scientific paradigms that convey everything, and which have, in graphics and statistics, their most effective ally. Thus, observation and analysis, accompanied by sketches, good photos, and plans, is today almost an act of editorial resistance that seems fundamental to us to maintain, and which we will not renounce.

Today, the horizons have expanded. We publish in Spanish, Portuguese, and English. A significant number of articles come from Brazil, which has opened us up to an architectural and urban culture of immense richness, as well as to a world of researchers that we did not know until a few years ago. If the first issues were intended to disseminate the work and research of our academic staff, today, to avoid endogamy, it is the research from other latitudes that fills more pages of the journal. We have an *open window*, which means that we receive articles in the journal's editorial field throughout the year. What about the selection criteria? They must

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be research articles, inserted in the editorial line of *Arquitecturas del Sur*, and comply with our rules for publication. The articles are evaluated by the *double-blind peer* system, which has ultimately allowed the journal to consolidate its academic level over time. It is currently indexed in WOS Emerging (ESCI), SciELO Chile, and Erihplus, among other indexations. Thus, your contributions to this editorial space are welcome as we hope to contribute to your research and the dissemination of architectural and urban culture.

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Na época da sua fundação, em 1983, um dos primeiros dilemas que a revista *Arquitecturas del Sur* teve de resolver foi o do seu nome: arquitetura no singular ou no plural? A decisão final pelo plural expressava uma vontade de diversidade, de tentar reunir, já a partir do seu nome, a infinidade de expressões da arquitetura do sul do continente americano.

O nome também marcou um território, geográfico e cultural: o sul. Por aqueles anos, ainda não se havia consolidado o conceito de *sul global*, comum e estabelecido hoje em dia, mas algo nos dizia que era natural nos referirmos ao sul entendendo-o como toda a América do Sul, que esse deveria ser nosso campo de exploração e investigação arquitetônica e urbana. Hoje, ao fazer um balanço, percebemos que essa é uma constante que se consolidou, que nosso olhar se voltou para o sul, o que definiu um rumo, um sentido e uma orientação.

E para quais arquiteturas e para qual cidade esse olhar se voltaria? Para as arquiteturas anônimas, aquelas distantes dos centros de poder e decisão, para as de um patrimônio não reconhecido e inexplorado, para aquelas que ainda precisavam ser incorporadas à historiografia da arquitetura chilena e latino-americana, para as arquiteturas contemporâneas com forte enraizamento no território e nas culturas locais, para aquelas que tecessem uma cidade melhor articulada, para as arquiteturas que enfatizassem o público, o espaço coletivo, a vida comunitária. Reafirmamos essa vontade hoje, após 68 edições publicadas.

E como mostrar essas arquiteturas e essa cidade? Os primeiros 30 números foram publicados em formato grande, em preto e branco. A partir do número 31 e até hoje, passaram a ser publicados em um novo formato e totalmente coloridos. Contudo, tanto em um formato quanto no outro, um critério se manteve ao longo dos anos: dar a mesma importância tanto aos textos quanto às imagens. Isso provavelmente se deve à nossa formação como arquitetas(os) e não é fácil mantê-lo hoje, com a produção editorial de arquitetura impactada pelos novos paradigmas científicos, que calculam tudo e encontram nos gráficos e nas estatísticas seus melhores aliados. Assim, a observação e a análise, acompanhadas de croquis, boas fotos e plantas, são hoje quase um ato de resistência editorial que nos parece fundamental manter e ao qual não renunciaremos.

Hoje, os horizontes se ampliaram. Publicamos em espanhol, português e inglês. Um número significativo de artigos vem do Brasil, o que nos abriu para uma cultura arquitetônica e urbana de imensa riqueza, bem como para um mundo de investigadoras(es) que até há alguns anos não conhecíamos. Se os primeiros números se destinaram a divulgar o trabalho e as investigações dos nossos próprios académicos, hoje em dia, para evitar a endogamia, são as investigações de outras latitudes que ocupam a maior parte das páginas da revista. Temos uma *janela aberta*, o que significa que recebemos artigos para publicação na revista em qualquer época do ano. O critério de seleção? Que

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sejam artigos de pesquisa, que se enquadrem na linha editorial da *Arquitecturas del Sur* e que cumpram as normas de publicação declaradas. Os artigos são avaliados através do sistema de *duplo par cego*, o que, ao longo do tempo, permitiu consolidar o nível acadêmico da revista, que hoje está indexada na WOS Emerging (ESCI), SciELO Chile e Erihplus, entre outras indexações. Sejam bem-vindas, portanto, suas contribuições para este espaço editorial, com o qual esperamos contribuir para suas investigações e para a difusão da cultura arquitetônica e urbana.

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EPHEMERAL ARCHITECTURE AS AN INSTRUMENT OF URBAN TRANSFORMATION: A SYSTEMIC ANALYSIS

ARQUITETURA EFÊMERA COMO INSTRUMENTO DE TRANSFORMAÇÃO URBANA: UMA ANÁLISE SISTÊMICA

ARQUITECTURA EFÍMERA COMO INSTRUMENTO DE TRANSFORMACIÓN URBANA: UN ANÁLISIS SISTÉMICO



Figure 0. *Tribuna Vecinal*, PICO Colectivo, 2014, Venezuela. Source: PICO Estudio (2014).

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RESUMO

Derivado de uma pesquisa de mestrado já concluída, este artigo analisa o papel da arquitetura efêmera em transformações urbanas contemporâneas, investigando como suas características específicas — temporalidade, flexibilidade e desmontabilidade — podem contribuir para a promoção de mudanças no espaço público. O objetivo principal é avaliar o potencial da arquitetura efêmera como instrumento de requalificação do espaço urbano, sob uma perspectiva sistêmica e complexa. Por meio de uma metodologia qualitativa, baseada em revisão bibliográfica e pesquisa documental, foram examinados um conjunto significativo de projetos e teorias, abrangendo desde as contribuições seminais de Cedric Price e Archigram até intervenções contemporâneas na América Latina. A investigação revela que a condição efêmera, tradicionalmente vista como uma limitação, constitui uma qualidade estratégica, ao permitir maior experimentação e estar menos sujeita às restrições típicas de construções permanentes. A discussão realizada aponta que intervenções temporárias têm potencial significativo para ativar espaços subutilizados, catalisar processos de requalificação urbana e promover novas formas de uso e apropriação do espaço público. Conclui-se que a arquitetura efêmera, quando associada a uma abordagem sistêmica, configura-se como uma ferramenta projetual relevante para contextos urbanos que demandam intervenções ágeis e adaptáveis, especialmente em situações nas quais soluções permanentes seriam inviáveis ou inadequadas.

Palavras chaves: arquitetura efêmera, espaço público, intervenções urbanas, requalificação urbana, sistemas

ABSTRACT

Based on the findings of a Master's research project, this article examines the role of ephemeral architecture in contemporary urban transformations, exploring how its specific characteristics—temporality, flexibility, and ease of disassembly—can contribute to changes in public space. The primary objective is to analyze the potential of ephemeral architecture as a tool for renovating urban space from a systemic and complex perspective. Through a qualitative methodology based on literature review and document analysis, we examine a substantial set of projects and theoretical contributions, from the seminal works of Cedric Price and Archigram to contemporary interventions in Latin America. The research reveals that ephemerality, traditionally perceived as a limitation, can instead be a strategic asset, allowing for greater experimentation and requiring fewer commitments to the typical restrictions of permanent constructions. The discussion indicates that temporary interventions have significant potential to activate underutilized spaces, catalyze urban requalification processes, and promote new forms of use and appropriation of public space. We conclude that ephemeral architecture, when linked to a systemic approach, can be a relevant design tool for urban contexts that require swift and adaptable interventions, particularly in situations where permanent solutions would be unfeasible or inadequate.

Keywords: Ephemeral architecture, public space, urban interventions, urban requalification, systems

RESUMEN

Basado en una investigación de maestría finalizada, este artículo analiza el papel de la arquitectura efímera en las transformaciones urbanas contemporáneas, investigando cómo sus características específicas —temporalidad, flexibilidad y facilidad de desmontaje — pueden contribuir a la promoción de cambios en el espacio público. El objetivo principal es analizar el potencial de la arquitectura efímera como instrumento de renovación del espacio urbano, desde una perspectiva sistémica y compleja. A través de una metodología cualitativa, basada en revisión bibliográfica y análisis documental, examinamos un conjunto significativo de proyectos y teorías, desde las contribuciones seminales de Cedric Price y Archigram hasta intervenciones contemporáneas en América Latina. La investigación revela que la condición efímera, tradicionalmente vista como una limitación, se convierte en una cualidad estratégica al permitir mayor experimentación y requerir menor compromiso con las restricciones típicas de construcciones permanentes. La discusión realizada señala que las intervenciones temporales tienen un potencial significativo para activar espacios subutilizados, catalizar procesos de recalificación urbana y promover nuevas formas de uso y apropiación del espacio público. Concluimos que la arquitectura efímera, vinculada a un enfoque sistémico, puede constituir una herramienta de diseño relevante para contextos urbanos que demandan intervenciones ágiles y adaptables, especialmente en situaciones donde las soluciones permanentes serían inviables o inadecuadas.

Palabras clave: arquitectura efímera, espacio público, intervenciones urbanas, renovación urbana, sistemas

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INTRODUCTION

Ephemerality in architecture, both in historical contexts and in specialized literature, presents various definitions and conceptual approaches. Authors as Fontes (2011), Jodidio (2011), Kronenburg (2000), Molina Escobar (1999), and Paz (2008) refer to this constructive modality as temporary, transitory, portable, or ephemeral architecture. When analyzing such designations, we find that the word "ephemeral" has its origins in ancient Greek *ephemeros* **(εφήμερος)**, which, in its original meaning, refers to something that lasts only a day or has a short duration. "Temporary" has its origin in Latin temporarius, derived from *tempus* (time), indicating the quality of something that exists for a specific duration. "Portable", also of Latin origin (*portare)*, refers to something you can carry with you. Finally, "transitory", from Latin *transire*, denotes something that crosses or passes without continuing.

The terms "ephemeral" and "temporary" indicate the importance of temporality in the design of these buildings, this being one of their central design premises. On the other hand, the terms "portable" and "transitory" elucidate the kinesis of these constructions, designed to be implemented in a place with the assumption that they will not remain there in a lasting way, being subsequently removed. All the adjectives mentioned apply to ephemeral architectural objects and highlight fundamental aspects of this modality.

Given the diversity of meanings and interpretations, this work presents an in-depth analysis of ephemerality in architecture, exploring its definitions and purposes. The general objective of this article is to examine the potential of ephemeral architecture as an instrument of requalification of urban space, from a systemic and complex perspective. Specific objectives include providing a conceptual and historical overview of the theoretical and technical contributions to temporary architecture, as well as critically examining its applicability as a catalyst for spatial and social transformations. The relevance of this study is justified by its current significance in Latin America, driven by the substantial production of ephemeral architecture carried out by collectives in several countries in the region (Blázquez, 2023).

The research employs a qualitative methodology, comprising a literature review and documentary research. The literature review was conducted from analytical categories, aiming to map and critically interpret theoretical approaches to ephemerality in architecture. The selection of authors, such as Kronenburg (2000), Molina Escobar (1999), and Paz (2008), was based on their influence and recognition in the field, as well as their consolidated and recurrent publications on the subject. The analytical categories related to the concepts, applications, and problems associated with ephemerality were established from the exploratory reading of the selected bibliography and served as the axis for the discussion outlined below. In addition, contemporary academic texts by Latin American authors, such as Balem and Reyes (2021), Barragán (2023), and Noguera (2023), were included in the review to update the debate and integrate perspectives produced in the region into current discussions.

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The documentary analysis, in turn, covered paradigmatic architectural projects, such as those of Cedric Price, Archigram, Buckminster Fuller, and Jean Prouvé. In addition, an overview of productions carried out by Latin American architectural collectives was presented, with a focus on the projects of the Venezuelan group PICO Colectivo. For the preparation of critical analyses, a systemic approach and complex thinking were adopted, based on the conceptualizations formulated by Von Bertalanffy (1975), Morin (2008), and Morin (2011). From these metatheories, it was sought to understand the system constituted by ephemeral architecture when inserted into the urban space, considering the interactions between its material, spatial, and symbolic elements, as well as the effects generated in social and urban dynamics.

The article is structured in three main sections: (1) theoretical definitions, where fundamental concepts of ephemeral architecture are discussed; (2) analysis of historical and contemporary examples, compared with the concepts addressed; and (3) discussion on the possibilities of contemporary application of temporary architecture and its relationship with urban space. Finally, the study's key findings are summarized in the final considerations.

HISTORICAL FOUNDATIONS

CONCEPTUAL ASPECTS OF EPHEMERAL ARCHITECTURE

For Molina Escobar (1999), defining an ephemeral work in architecture may seem like a contradiction at first glance, since it contrasts the fleetingness and transience of the ephemeral with the solidity and permanence commonly associated with an architectural work. Thinking about an ephemeral architecture implies displacing the architectural project from this perennial place, since it presents itself as the harbinger of a near disappearance, so that its materialization already announces its own end (Molina Escobar, 1999).

Paz (2008) understands temporary architecture as a constructive modality associated with its end, since it only fully fulfills its designated function after being dismantled. The author asserts that a construction that presents itself temporarily in space challenges the very concept of architecture as a built and permanent space, a notion reinforced by a Eurocentric ideal of modernity. In contrast, Barragán (2023) problematizes the immediate identification between ephemerality and temporariness in architecture, understanding the ephemeral as a dense condition that concentrates meanings and effects within a limited period, linked to more extended temporalities, especially when articulated with broader social processes.

Historically, the idea of temporary and portable buildings is not new. Many cultures, with their own ideas of modernity, understand architecture as temporary and impermanent. Kronenburg (2000) points out that since construction began, human beings have resorted to temporary housing, notably native and nomadic peoples from different localities. However, these peoples developed sophisticated construction techniques for building shelters, which retain their historical relevance.

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Figure 1. Collective housing of a Yanomami village: a xapono comprising individual yaños.
Source: Survival Brazil (2016).

Molina Escobar (1999) notes that the act of building a project with the intention of its future demolition or dismantling is a practice that dates back to ancient cultures, such as those of the peoples of present-day Mexico, who lived under the belief of a cyclical time. In these societies, buildings were periodically demolished for renovation, and new buildings were erected on their ruins. Paz (2008) broadens this perspective by mentioning societies that conceive architecture as something perishable, integrated into the natural cycle of its materials and the lives of its users.

Yaño, temporary housing developed by the Yanomami people in the Brazilian and Venezuelan Amazon region, constitutes a significant example of vernacular ephemeral architecture. According to Benucci (2020), the *yaño* is characterized by a basic triangular structure comprising supports and beams, made from local materials such as wooden sticks, straw, and plant fibers; even though it might have included other elements. It serves both as a temporary shelter during raids and as a base for more permanent structures, including the so-called collective dwellings, known as *xapono* (Figure 1).

In the European context, Puente (2000) and Bergdoll (2010) identify two moments when ephemeral architecture reached a new level of importance. The first took place at the Great Exhibition of London in 1851 – the inaugural edition of the World Exhibitions[1] – for which

1 World Exhibitions are major international events where countries present scientific innovations, culture, and technological progress, aimed at promoting global exchange. The body responsible for its organization is the Bureau International des Expositions (BIE), founded in 1928. Source: https://www.bie-paris.org/site/en/about-world-expos.

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architect Joseph Paxton designed the Crystal Palace. The second took place at the National Exhibition in Paris in 1867, with the construction of *the Palais du Champ de Mars* and the introduction of the concept of a national pavilion. Both exhibitions contributed to consolidating the idea that modernity could manifest itself through temporary buildings, establishing them as instruments for disseminating industrial progress. Thus, ephemeral architecture not only materialized technical progress but also asserted itself as a symbol of innovation, while national pavilions functioned as representations of the power and identity of nations (Bergdoll, 2010; Puente, 2000).

Based on historical examples from major exhibitions, Bolaños Linares (2023) assesses that ephemeral architecture, although conceived as transitory, often acquires meanings or roles that exceed its intended duration, being, in many cases, preserved, reinterpreted, or reconstituted. Its permanence would be associated with the relationships it establishes with the urban fabric and with collective memory. Such a possibility, however, does not nullify its conception as an essentially provisional architectural object. When analyzing ephemeral buildings, we observe that one of their qualities comes from their becoming, a temporary state of existence that gives them, from the beginning, the condition of an event, as suggested by Molina Escobar (1999).

Paz (2008) argues that the potential of temporary constructions lies in their ability to transform spaces both functionally and symbolically, albeit for a specific period. In a systemic reading, the introduction of a temporary construction in an environment alters its dynamics and expands the purposes for which the space was initially conceived, creating new possibilities for use and interaction. Its ephemerality allows a strategic application, especially in places that would not support permanent buildings. In this sense, ephemerality is also valuable because it offers greater formal freedom, has an experimental character, and allows tensioning spatial relationships in the context in which they are inserted (Bolaños Linares, 2023).

According to Kronenburg (2000), the major social transformations resulting from the political changes and technological advancements of the turn of the millennium have led to dramatic changes in how the built environment is perceived. These transformations are confirmed up to the present, driven by the increasing computerization of capitalist modes of production, by the acceleration of ways of life – characterized by impermanence – and by the need to provide quick answers to urban questions. In this scenario, Noguera (2023) identifies ephemeral architecture as a tool with the potential to attribute new meanings to public spaces and reverse processes of devaluation and emptying, creating situations that capture collective interest and promote new social interactions. Hence, ephemerality proves to be a strategic tool, offering flexibility, adaptability, and alternatives for rethinking the built space.

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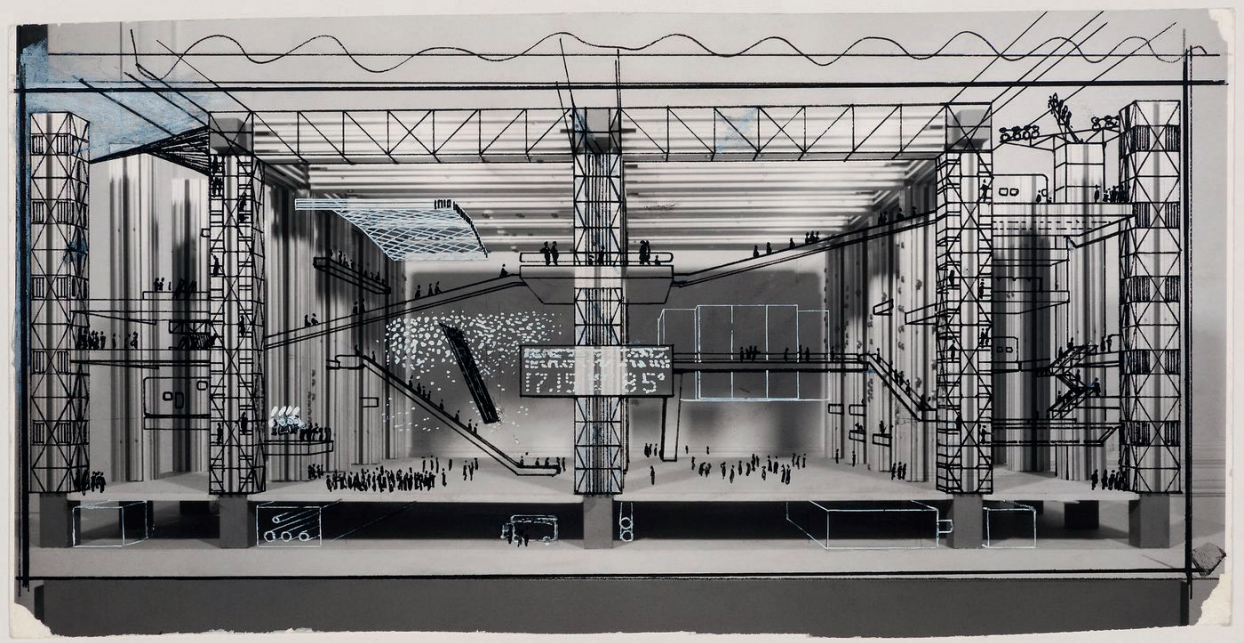


Figure 2. Interior perspective of the Fun Palace, 1964. Source: Cedric Price fonds / Canadian Centre for Architecture (1964).

ADAPTIVE SYSTEMS: CEDRIC PRICE AND ARCHIGRAM

In the 1960s and 1970s, English architects developed designs centered on the ideals of flexibility, instantaneity, and ephemerality. Influenced by new Mass Communication Technologies, progress in means of transportation, and grounded in cybernetics and a systemic vision of design, Cedric Price and the British group Archigram formulated innovative concepts for the architecture of the time (Cook, 1999; Dunn, 2012; Wilken, 2007), which remain relevant to this day.

Cedric Price held controversial convictions about heritage preservation, arguing that a structure should only be maintained as long as it was socially relevant (Mathews, 2006; Wilken, 2007). Price identified, in the United Kingdom, a tendency to extend the life of buildings far beyond their possible usability (Price, 1981), and he argued that once the relevance of a building has diminished, it should be demolished to make way for another. For him, the desire for changes in the built environment was inherent in its inhabitants, something that should be stimulated by architecture (Price, 2003).

Temporality played a central role in Cedric Price's thinking about architectural design, as it would be considered a fourth spatial dimension, in addition to length, width, and height (Almeida, 2006). In the *Fun Palace***2** project (Figure 2), which began in 1961, Price envisioned the possibility of modifications to the building over time, conceiving it as an open and highly porous system (Isozaki, 2003), in line with systemic thinking (Von Bertalanffy, 1975). As shown in Figure 2, the project was conceived as a large temporary multi-program entertainment center, comprising a steel structure on gantries, without fixed fences and with movable elements.

2 See: https://www.cca.qc.ca/en/archives/380477/cedric-price-fonds/396839/projects/399301/fun-palace-project.

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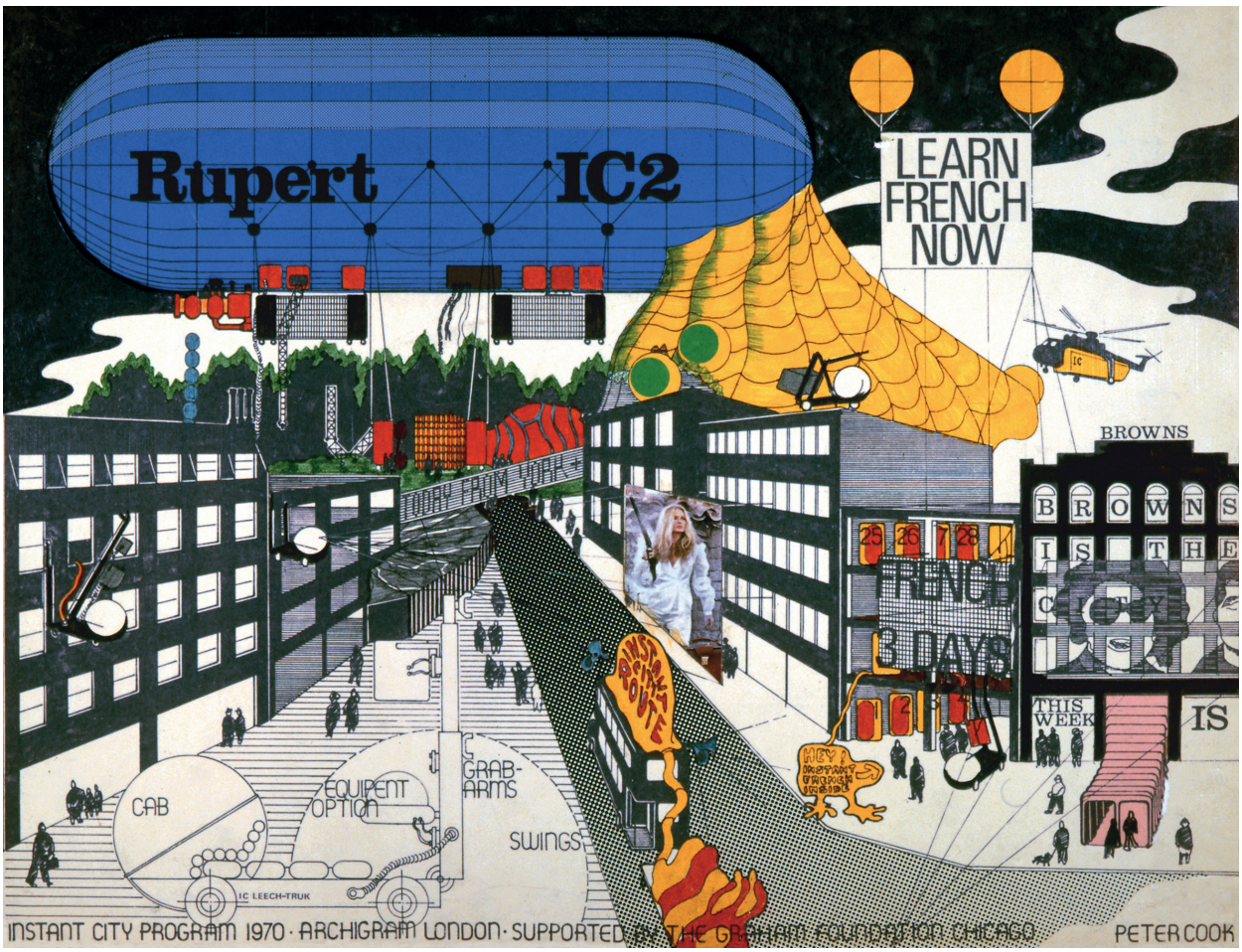


Figure 3. *Instant City*, version by Peter Cook, 1970. Source: Hobson (2020).

Through the integration between communication technologies and building components, the *Fun Palace* would function as a machine capable of adapting to the needs and desires of its users (Mathews, 2006).

This emphasis on user-machine interaction and the possibility of a building responding to its users' actions had its foundation in cybernetics**3**. The incorporation of feedback loop cybernetics as a design principle would characterize the *Fun Palace* as a result of this interaction cycle (Almeida, 2006), configuring it as a complex system (Morin, 2008) that is constantly in exchange with its users. Thus, the Fun Palace radically incorporated temporality and adaptability through the creation of a flexible structure capable of reconfiguring itself and modifying its own architectural program (Wilken, 2007).

With conceptions similar to those of Price, the British group Archigram recognized that architecture must transcend the fundamental principles of rigidity and stability to meet the economic, social, and cultural shifts of post-World War II European Society. The group advocated for an intrinsically systemic view as a means of addressing several simultaneous variables in a project. Systematization aimed to coordinate human needs, technological functions, and the environment as "[...] parts of a complete statement to

3 In addition to Cedric Price's proximity to the field, the cyberneticist and associate of the *Architectural Association School of Architecture*, Gordon Pask (1928-1996), participated as a consultant on the project.

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fuse each aspect into a positive, correlated whole" (Sadler, 2005, p. 118, translation by the author)**4**.

The group elaborated proposals based on mobility, flexibility, mutability, and ephemerality (Silva, 2004), conceiving one of its most representative works, the *Instant City***5**, conceptually illustrated in Figure 3, from cybernetic conceptual bases. In the proposal, the architects drew on the concept of a machine responsive to human feedback, which would regulate an environment conditioned not only by the assembly of its parts, but also by an infinite array of variables determined by the users' desires (Cook, 1999). The *Instant City* would function as a mobile and multimedia architectural complex, intended to provide a series of cultural events and information in localities far from the metropolises.

The proposal of the *Instant City* constitutes an architecture of the event capable of interacting with different communities and promoting an information network that interconnects several cities during its occurrence (Cook, 1999). According to Wilken (2007), the *Instant City* would act as a complementary system, articulator, and dynamizer of urban cultural processes. In this articulation, a systemic vision is evidenced, materialized in the creation of a complex network of information exchanges between different locations, capable of stimulating changes in the local context.

The works of Price and Archigram contribute to reflecting not only on the possibilities of architecture outside the *locus* of stable and durable constructions, but also on how to incorporate flexibility and changeability in temporary projects. Such experiences also elucidate a systemic and cybernetic understanding of architectural design, centered on the relationship between the architectural object and its users, as well as the environment in which it is situated. Both proposed architectural interventions as open and impermanent systems, with spaces that favored encounters and interactions, going beyond mere segregation of functions (Herdt, 2021; Sadler, 2005).

The *Instant City* allows thinking of temporary construction as an event in the place where it is installed, capable of assigning new uses and functions, so that its insertion would be able to modify the relationships between the parts that the system, constituted in that space, comprises. Finally, the works of these architects offer subsidies into understanding ephemeral architecture and its relationship with the environment as a complex system of interacting parts (Morin, 2011), which, for both Price and Archigram, represented a state of constant becoming and emergence of novelties (Isozaki, 2003; Sadler, 2005).

TECHNIQUE AND PREFABRICATION: BUCKMINSTER FULLER AND JEAN PROUVÉ

The notion of temporary architecture encompasses a wide range of techniques and design approaches. Although there is no direct link between

4 From the original: "Our job is to coordinate them as parts of a complete statement to fuse every aspect into a positive related whole."

5 See: https://platform-0.com/cook-peter-archigram-instant-city-1970/.

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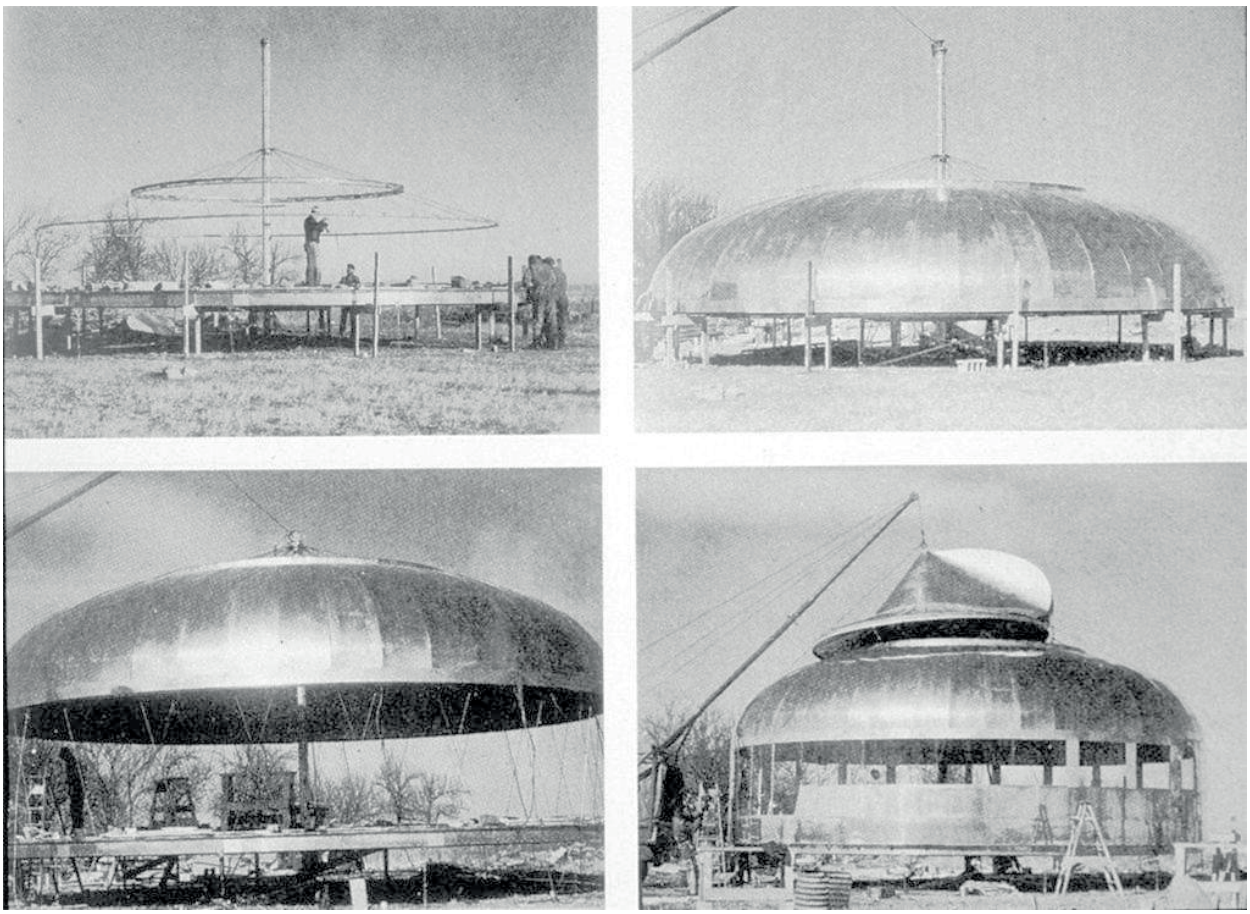


Figure 4. Assembly sequence of Fuller's Dymaxion House in Wichita, USA, in 1944. Source: The Estate of R. Buckminster Fuller. Compiled by Peter Lobner (2020).

the construction technology chosen and the ephemerality of a construction (Paz, 2008), it is considered that this relationship becomes fundamental when a design premise is adopted, that a building is temporary. In these cases, it is of paramount importance to choose construction techniques that favor assembly and disassembly, especially when a subsequent reassembly is sought. To discuss this relationship, we analyze the works of two important architects of the 20th century: the American Buckminster Fuller and the Frenchman Jean Prouvé.

Recognized exponents of architecture in its approach to industrial production, both sought to incorporate military technologies, developed mainly during World War II, to solve housing problems. Sadler (2005) states that Fuller in the United States and Prouvé in France adapted this technology for civil construction, taking advantage of the infrastructure and surplus supplies of the aircraft industry. The two architects employed metal components—mainly aluminum —and easy-to-assemble structures, as well as prefabricated building elements, to develop emergency residential units and other housing models in kit form.

Buckminster Fuller, in the original *Dymaxion House* project, developed a constructive system of facilitated assembly using abundant, reusable materials that featured a low-level finish and were optimized for transport, thereby facilitating mass production (Baldwin, 1997). Fuller designed the house to be

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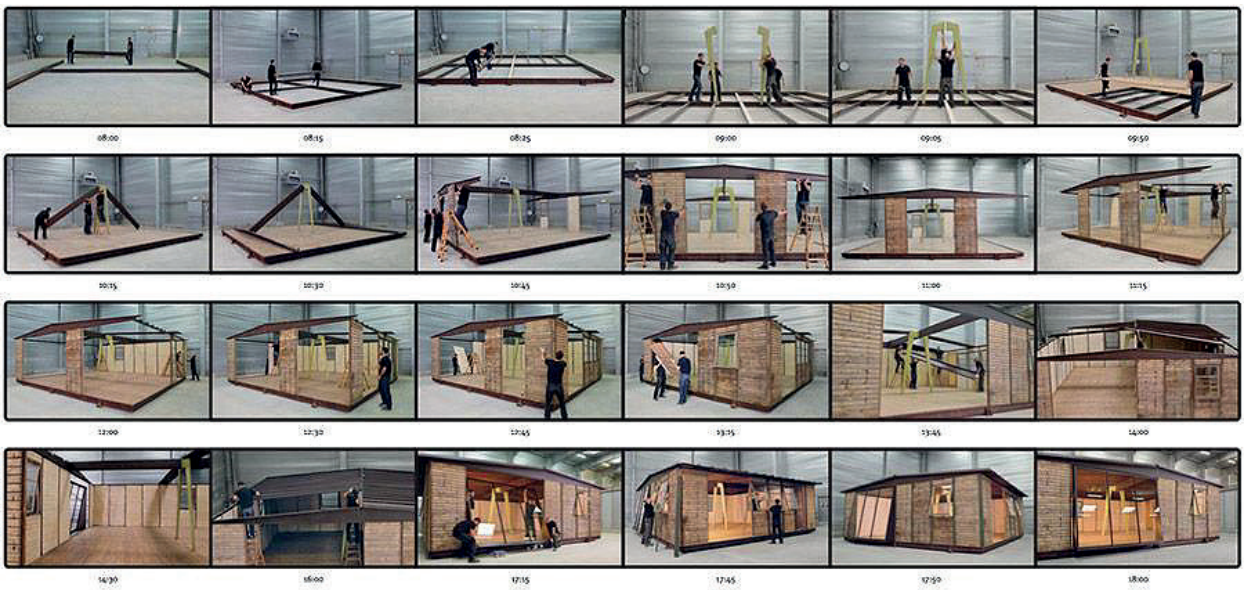


Figure 5. Assembly sequence of a collapsible 8x8 house. Prouvé's project from 1944. Prototype built by Patrick Seguin Gallery in 2013 in France. Source: Pictures of Galerie Patrick Seguin. Compiled by Peter Lobner (2025).

energy self-sufficient, capable of functioning without the need for external resources. In its original design, the *Dymaxion House* would be suspended from the ground using tension cables, supported by a central pillar with many functions that also served as a container for transporting its parts (Buckminster Fuller Institute, 2022). The project, conceived by Fuller in 1927, was only prototyped in 1944 with the Wichita house. Buckminster Fuller's original intentions were realized in the prototype, which was structured around a central mast with tension cables and raised off the ground, as shown in Figure 4. The house was installed in two days. The building required a minimal foundation because it is formed by lightweight components that can be carried by a single person, with minimal maintenance and energy costs (Baldwin, 1997).

Prouvé, in turn, had industrialization as a basic design premise, even in his works prior to World War II, and was based on workshop practice (Lavalou, 2005). As a response to the housing crisis of the time, the architect prepared several projects of prefabricated and collapsible houses, following some structural principles, such as: structuring with an axial metal portico; floor fixed on a grid of metal beams, so that the house only rested on the ground or with a minimal foundation; and independent sealing system, such as a curtain wall (Prouvé, 2024a). Like the demountable houses in Meudon, France, the components were lightweight, capable of being transported on a truck, and could be put together by a single person in a few days (Prouvé, 2024b). The construction system and the process of assembling collapsible houses**6** (Figure 5) present architectural principles similar to those of a temporary pavilion.

In the works of Fuller and Prouvé, important technical aspects are observed, which highlight the need to design construction systems thinking not only about their individual parts, but especially about the interactions between them. While the permanent building is typically conceived as

6 The *Palm Pavilion* (2006 – 2008),by Thai artist Rirkrit Tiravanija, references Maison Tropicale by Jean Prouvé. The pavilion is part of the collection of the Inhotim Institute, in Brumadinho, Minas Gerais. Source: https://www.inhotim.org.br/item-do-acervo/palm-pavilion-rirkrit-tiravanija/.

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a unitary structure, ephemeral construction is designed as a segmented building comprising smaller elements (Paz, 2008). It is in this sense that Kronenburg (2000) notes that temporary buildings are designed with the intention of facilitating their assembly in places far from their manufacture. Strategies adopted for transportation may involve systems of modular parts, parts transported in clusters as a partially complete package and then assembled on-site, and even architectural objects transported as a single piece.

Concerns with the partition of buildings for their transport and assembly are found in both studies analyzed. The notion of the architectural object as a kit of parts appears in the projects of Buckminster Fuller and Jean Prouvé, both of which constitute proposals that prioritized a facilitated assembly process and a reduced number of parts (Baldwin, 1997; Prouvé, 2024a). Price also designed the *Fun Palace* following this notion, conceiving it as a building of recombinant and quick assembly parts, formed by lightweight and detachable components (Isozaki, 2003). In addition, certain assembly procedures make it unfeasible to disassemble the architectural object later, as occurs in chemical joints of building elements (Paz, 2008). For disassembly to be possible, it is essential to think of processes that do not deform the parts or permanently interconnect them.

According to Kronenburg (2000), temporary buildings require simplified assembly and disassembly, leading to the adoption of construction strategies based on prefabricated systems, dry joints, and repetitive components. As already discussed, such strategies, advocated in the housing projects of Prouvé and Fuller -pioneers in the application of prefabrication for this purpose (Baldwin, 1997; Lavalou, 2005) -, show the importance of understanding, systemically, the parts that make up the construction and their interrelations for the development of collapsible buildings, guiding choices of transportation, assembly and storage of buildings. (Von Bertalanffy, 1975). The use of lightweight materials, the adoption of dry joints, the modulation of components, and the rationalization of the construction process exemplify how technical decisions can favor both the assembly and the eventual dismantling of the building. This understanding is related to the principles of flexibility and adaptability, as well as to the complex vision of the relationships between urban space, buildings, and users in the projects of Cedric Price and Archigram, particularly in their conception of ephemeral architectural solutions.

EPHEMERALITY AND THE PUBLIC SPACE

Considering the constructive particularities presented, we aim to understand how temporary architectural objects can serve as instruments of intervention in the public space, expanding the possibilities of their appropriation by users and addressing specific urban and social demands. This article presents a systematic and comprehensive analysis of this issue, illustrated with Latin American design examples that offer insights into the potential of ephemeral architectures to promote processes of spatial reconfiguration and requalification.

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It is understood here that the set formed by urban space, construction, and uses is a constituent part of a system (Von Bertalanffy, 1975). The urban space, devoid of the ephemeral architectural object, retains certain uses and dynamics among its parts. The insertion of the object or elements that constitute a temporary environment adds new parts to the space and, consequently, new interactions. The system is thus significantly altered, as the introduction of the building reorganizes flows, uses, and pre-existing relationships, enabling the emergence of new social dynamics (Morin, 2011). As Noguera (2023) highlights, such transitory systemic reconfigurations reactivate the collective use of the place and establish new symbolic links between users and public space.

An everyday example of a temporary intervention that significantly alters the individual-public space relationship is urban markets. The place of installation of markets, on usual days, performs specific functions: sometimes they are squares of low movement and noise; in others, roads of exclusive use for automobile traffic. The parts, in these cases, form an apparently consolidated system. With the market, a myriad of new objects and users begin to occupy the space, forming a new system, with other interactions and actors, endowing it with a totally different dynamic and enabling new emergencies.

At the end of the market, the objects will be removed from the site, and that system ceases to exist in that configuration. These objects can be stored or reused elsewhere, but the system they create is temporary. For Paz (2012), the creation of this transitional environment contradicts the consolidated image of the urban space designated exclusively for the same activity, as a closed system. Kronenburg (2000) and Fontes (2011) note that ephemeral installations, by temporarily modifying the landscape, can broaden and diversify an individual's vision of their environment, leading them to recognize both the positive and negative attributes better. In this context, Noguera (2023) argues that, although they disappear physically, ephemeral interventions can leave lasting marks on collective memory, transforming citizens' perceptions of the place and strengthening mobilizations for a more qualified use of public space.

Thus, from a systemic perspective, temporary interventions meet the conditions to modify the individual's engagement with public spaces, even those previously considered hostile or uninteresting. It has been found that temporary architecture can provide new roles for places that, at first glance, may not be suitable for other uses (Kronenburg, 2000; Paz, 2008). In addition, considering the exemption of some formalities that usually fall on permanent constructions, temporary architectural objects can function as experimentation laboratories, allowing designers and users to test and visualize new ideas in the field of architecture and urbanism (Fontes, 2011; Jodidio, 2011).

However, Barragán (2023) weighs in that the transformative potential of temporary interventions is weakened when they are carried out under the exclusive aegis of the private market, as support for promotions of large companies or media events. In this case, according to the author, ephemeral architecture tends to reinforce a logic of accelerated consumption, contributing to the commodification of urban space. Both Barragán (2023) and Noguera (2023) emphasize the importance

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Figure 6. *Polideportivo Reducido,* PICO Colectivo, 2017, Venezuela. Source: Edited by the authors, based on AGA Estudio (2016).

of developing a critical praxis for ephemeral architectures in Latin America, grounded in a systemic understanding of the region's sociocultural reality. This defends the development of its own thinking about ephemerality, its forms of materialization, and modes of application in urban requalification processes.

In this sense, Latin American architectural collectives that emerged in the first decades of the 21st century point to alternative architectural practices, often involving ephemeral buildings. According to Blázquez (2023), these collectives reinterpret forms of collective action from the previous century, such as Archigram itself, adopting collaborative models to respond to social, economic, and political transformations specific to Latin America. Recurrently, they work in direct contact with the communities, articulating the architectural practice with community participation. Such praxis approaches come close to what Balem and Reyes (2021) understand as insurgent urban practices: non-normative ways of making and using the city, which are placed as an alternative to hegemonic models**7**. These practices are characterized by temporary interventions and spatial transformations of short duration, but of significant political and symbolic impact.

Latin American collectives include República Portátil (Chile), Al Borde (Ecuador), Matericos Periféricos (Argentina), Arquitectura Expandida (Colombia), Arquitectura na Periferia (Brazil), and the PICO Colectivo (Venezuela). Among them, we identify in the Venezuelan group PICO Colectivo (2017) a practice of systemic and complex character that uses temporary architectural objects as instruments of requalification within a network, based on community demands (Morin, 2011; Von Bertalanffy, 1975).

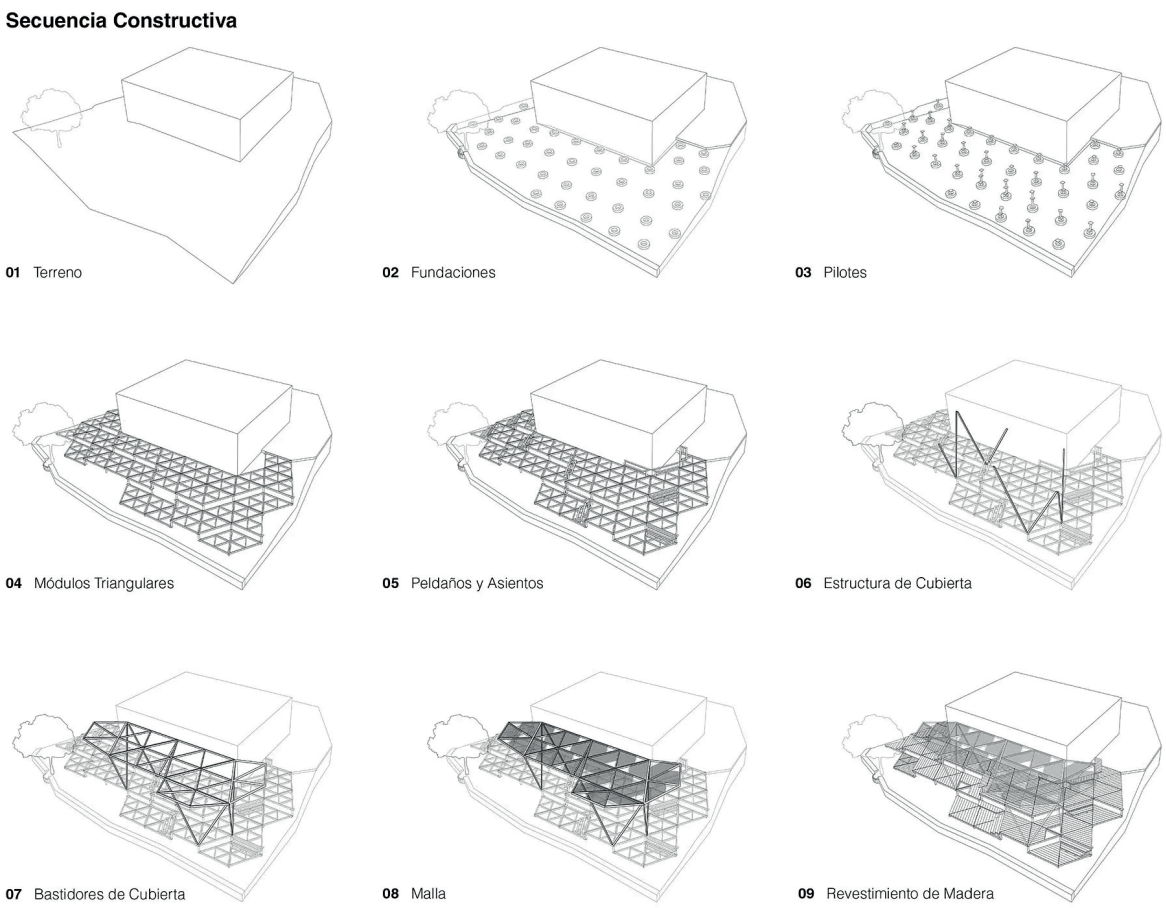
7 On a scale different from that analyzed in this article, Mehrotra and Vera (2017) conceptualize as "ephemeral urbanism" the non-hegemonic practices that adopt temporary and flexible solutions to urban issues.

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Figure 7. *Tribuna Vecinal*, PICO Colectivo, 2014, Venezuela. Source: PICO Estudio (2014).

Figure 8. Constructive sequence of *Tribuna Vecinal*, of PICO Colectivo. Source: PICO Estudio (2014).



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The PICO Colectivo design process (2017) involves local people, architecture students, and the use of donated or readily accessible materials, bringing together diverse agents and resources. The building is not conceived as an isolated solution, but as an instrument of spatial and social articulation capable of responding to multiple demands. As Vieira points out (2021), the construction aims to facilitate a broader social project, focusing on the activation of community organization processes in the economic, political, and cultural spheres. The *Polideportivo Reducido* project, also known as *Multideportivo La Canchita*, is an example of that approach. In Figure 6, it is observed that the group sought to integrate different uses in the reactivation of underutilized spaces, taking advantage of the terrain's dimensions and slope through the use of fixed and mobile elements. Recreational and living spaces are arranged in multiple layers, supported by retaining walls that interconnect two neighboring neighborhoods. The bleachers, a recurring feature in these interventions, serve as social mediation devices and a reappropriation of urban space.

The program of targeted interventions, *Espacios de Paz* (Spaces of Peace) (PICO Colectivo, 2017), is conceived by the group as a process of urban microsurgery, acting in segregated spaces – such as empty lots and residual public areas – to transform them into living spaces. An example, in the context of temporary buildings, is the *Tribuna Vecinal,* or Neighborhood Tribune project (Figure 7), which uses collapsible equipment to create a multipurpose public area. The construction of this project involved local actors and labor. In addition to requalifying the area, the group aimed to empower the community by integrating it into the design, construction, coordination, and management processes of the equipment. As a result, PICO Colectivo elaborated and built, together with the community, an architectural object replicable independently, once the assembly process was illustrated and systematized (Figure 8).

In the two projects, principles found in the works of Price, Archigram, Fuller, and Prouvé are observed. The construction systems of both employ prefabricated and lightweight components in metal structures that can be dismantled and reassembled. It is worth noting that PICO Colectivo's use of metal elements is strategic, as the group uses thin and small steel parts to facilitate transportation in densely built areas and expedite assembly with the community (Vieira, 2021). The metal structure offers durability and flexibility for constructions in areas of irregular and rugged morphology, as is typical in peripheral regions of large cities in Latin America.

PICO Colectivo's proposals reveal a systemic understanding, similar to Price's, when conceiving the architectural object as an instrument of intervention in the built environment. Price applied this principle to the building *Inter-Action Centre***8** (Herdt, 2021), putting into practice part of the precepts established with the *Fun Palace*. It aimed to create a community space that would serve as a facilitator of social interactions and cultural activities, acknowledging the emergence of improvements proposed by its users. As in the *Espacios de Paz* program of interventions, its installation

8 See: https://www.cca.qc.ca/en/archives/380477/cedric-price-fonds/396839/projects/406080/inter-action-centre.

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integrated a process of urban and social regeneration of the surroundings, acting as a requalifying device (Herdt, 2021). PICO Colectivo, as well as the other collectives mentioned above, reinterprets this logic of architectural instrumentalization from a Latin American perspective, employing ephemeral architectures as vectors of collaborative urban requalification processes, especially in environments neglected by the state.

FINAL REMARKS

Through the study of fundamental concepts and design approaches, this work demonstrates how temporary architectural objects can reconfigure spaces and engender new dynamics of use, promoting experiences that challenge established perceptions of places. It was found that transience, far from representing a limitation, is a strategic aspect, as it provides greater freedom of experimentation and reduces the link to formalities typical of permanent buildings, enabling interventions in contexts where permanent buildings would be unfeasible or inappropriate.

The projects examined – from the visionary proposals of Price and Archigram to the interventions of Pico Colectivo- demonstrate how temporary architecture, in the light of complexity, can provoke systemic changes in urban spaces. It was observed that, when an ephemeral building is inserted into the context, it acts as a disturbing element that triggers new interactions between users and the environment, allowing the system to reorganize into configurations richer in experiences and possibilities. In the *Polideportivo Reducido* and *Tribuna Vecinal* projects, we identified, in the Latin American context, how a project process can promote community articulation around a public facility. The architectural object of collective use, in turn, acts as an instrument of social reorganization and requalification of urban space.

It was found that the technical dimension, explored in the works of Fuller and Prouvé and reinterpreted in contemporary projects, is fundamental to enabling the transformative capacity of ephemeral architecture. Building systems based on prefabricated, lightweight, and collapsible components not only facilitates logistical aspects but also enables different levels of community involvement, as verified in the work of PICO Colectivo. This aspect reinforces the potential of temporary architecture as a device for communities to actively participate in the transformation of their territories, either through direct engagement in the construction or through the appropriation and resignification of the spaces created.

However, the analysis had methodological limitations. To formulate more precise statements about the potential of ephemeral architecture, it would be necessary to conduct longitudinal monitoring of the impact of different interventions on both the social dynamics of the communities served and on collective social memory. However, as objectified, fundamental aspects of the constructive modality were outlined, and its applications discussed from a systemic perspective. It is thus expected to contribute to the debate on

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ephemerality in architecture, supporting the formulation of a responsive design approach to contemporary demands.

CONTRIBUTIONS OF THE AUTHORS CRediT

Conceptualization, C. N. & M.T.; Data Curation, C. N.; Formal analysis, C. N.; Acquisition of funding; Research, C. N.; Methodology, C. N. & M.T.; Project Management, M.T.; Resources; Software; Supervision, M.T.; Validation, M.T.; Visualization, M.T.; Writing – original draft, C. N.; Writing – review and editing, C. N. & M.T.

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EL TERMINAL DE TRANSPORTE - ENTRE INTERMODALIDAD Y DESCONEXIÓN EN ITAQUERA, SÃO PAULO, BRASIL

TRANSPORT TERMINAL - BETWEEN INTERMODALITY AND DISCONNECTION IN ITAQUERA, SÃO PAULO, BRASIL

TERMINAL DE TRANSPORTE – ENTRE A INTERMODALIDADE E A DESCONEXÃO EM ITAQUERA, SÃO PAULO, BRASIL



Figura 0. Vistas del andén y el techo del metro desde el interior de la estación. Fuente: Foto del autor en 2017.

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ABSTRACT

This article analyzes the construction of the Corinthians-Itaquera transport terminal, an important intermodal mass transit hub, located in a peripheral area of the metropolis of São Paulo, Brazil. To promote urban development, the neighborhood of Itaquera has received investment in housing and transportation consistent with the Transit-Oriented Development (TOD) proposal; however, the implementation process has made it difficult to articulate these uses. As architecture, the terminal questions the boundaries of the building and raises important questions about urban context and design. This article addresses the architecture of transport nodes in two simultaneous dimensions: on the one hand, as a node in the network (access to a set of mass transport points), and on the other, as a place in the city, in a particular type of public space. Despite its numerous connections to the city's transportation networks (train, subway, and bus) and its proximity to a major housing complex, the Itaquera terminal has a precarious connection to its immediate urban context. Through the description of the case study, production of graphic material, and historical contextualization of the site, alongside a bibliographic discussion, this article aims to assess the gap between parameters in urban planning and those on a local architectural scale. It is argued that considering transit nodes as public buildings and spaces for collective use requires urban design and is fundamental to face the most critical urban challenges of peripheral metropolitan conditions.

Keywords: urban mobility, architectural design, public space, public transport, TOD.

RESUMEN

Este artículo analiza la construcción del terminal de transporte Corinthians-Itaquera, un importante nodo de transporte de masas intermodal en una zona periférica de la metrópolis de São Paulo, Brasil. Para impulsar su desarrollo urbano, el barrio de Itaquera recibió inversiones en el área de vivienda y transporte consistentes con la propuesta del Desarrollo Orientado al Tránsito (TOD, por su sigla en inglés), pero el proceso de implementación dificultó la articulación de estos usos. Como arquitectura, el terminal cuestiona los límites de las definiciones del edificio y trae consigo preguntas importantes sobre el diseño y el contexto urbanos. Este artículo aborda la arquitectura de los nodos de transporte en dos dimensiones simultáneas: de un lado, como nodo de la red, o sea, un acceso a un conjunto de puntos del transporte de masas y, de otro, como lugar en la ciudad, en un tipo particular de espacio público. A pesar de sus numerosas conexiones con las redes de transporte de la ciudad (tren, metro y autobús), y su proximidad con grandes conjuntos habitacionales, el terminal de Itaquera presenta una relación precaria con el contexto urbano inmediato. A través de la descripción del estudio de caso, la producción de material gráfico y la contextualización histórica del sitio, junto con una discusión bibliográfica, este artículo tiene como objetivo evaluar la brecha entre los parámetros de la planificación urbana y los de la escala arquitectónica local. Se argumenta que considerar los nodos de tránsito como edificios públicos y espacios de uso colectivo requiere de un diseño urbano y es fundamental para enfrentar los desafíos urbanos más críticos de las condiciones metropolitanas periféricas

Palabras clave : movilidad urbana, dibujo arquitectónico, espacio público, transporte público, TOD.

RESUMO

Este artigo analisa a construção do terminal de transporte Corinthians-Itaquera, um dos principais nós intermodais de transporte de massa na periferia da metrópole de São Paulo, Brasil. Para impulsionar seu desenvolvimento urbano, o bairro de Itaquera recebeu investimentos em habitação e mobilidade alinhados à lógica do Desenvolvimento Orientado ao Transporte Público (TOD); contudo, as características do processo de implantação dificultaram a articulação desses usos. Como objeto arquitetônico, o terminal problematiza os limites das definições de construção e suscita questões importantes sobre desenho urbano e inserção contextual. O estudo aborda a arquitetura dos nós de transporte em duas dimensões simultâneas: enquanto pontos de acesso a redes de mobilidade de massa (trem, metrô, ônibus) e enquanto lugares urbanos, dotados de características próprias de espaço público. Apesar das inúmeras conexões de transporte da proximidade com grandes conjuntos habitacionais, o terminal de Itaquera apresenta uma relação precária com seu entorno imediato. A partir da análise do caso, da produção de material gráfico e da contextualização histórica do local, associadas a uma discussão bibliográfica, o artigo busca avaliar a lacuna entre os parâmetros de planejamento urbano e os da arquitetura a escala local. Argumenta-se que compreender os nós de transporte como edifícios públicos e espaços de uso coletivo implica necessariamente estratégias de desenho urbano, fundamentais para enfrentar os maiores desafios das condições metropolitanas periféricas.

Palavras chaves:

mobilidade urbana, projeto de arquitetura, espaço público, transporte público, TOD.

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INTRODUCCIÓN

La concepción de nodos de movilidad es, a la vez, un problema de urbanismo, diseño urbano y arquitectura. Sin embargo, con frecuencia se considera singularmente por solo una o dos de esas dimensiones. La combinación de estos campos de estudio aumenta el potencial de este tipo de proyectos para funcionar como nodos y centralidades en la ciudad, especialmente considerando las áreas periféricas. Este artículo examina la construcción del Terminal Corinthians-Itaquera, un importante nodo de transporte intermodal dentro de la expansión del metro en São Paulo en la periferia de este de la metrópolis.

El Terminal Corinthians-Itaquera aparece como un caso paradigmático para la implementación de políticas de Desarrollo Orientado al Tránsito (TOD, por su sigla en inglés), ya que vincula temas fundamentales de movilidad regional con el desarrollo urbano local de un importante centro periférico en la metrópolis más grande de América Latina.

Aunque la base de las propuestas de TOD asocia bienes raíces con líneas de movilidad para mejorar la densidad y vitalidad urbana, una mirada más cercana al caso de Itaquera resalta algunas desconexiones importantes en torno a esos aspectos. Además, los distintos patrones sociales y culturales de las periferias brasileñas, que difieren significativamente de aquellos de los suburbios estadounidenses, hacen que la aplicación directa de las estrategias de TOD sea aún más cuestionable. Como tales, los "centros periféricos" brasileños deberían leerse en su relación particular con las prácticas informales y el potencial social. El diseño urbano y arquitectónico del Terminal es fundamental para esta discusión, dada su importancia como centro regional de transporte intermodal. La pregunta es cómo aborda su diseño la conexión tanto con su entorno inmediato de vivienda como con su dimensión metropolitana.

Existe una literatura generalizada sobre la promoción y el análisis de cómo la articulación de políticas públicas de planificación urbana, vivienda y transporte puede conducir a la producción de espacios urbanos accesibles (Chatman, 2013; Knowles et al., 2020; Rouillard y Guiheux, 2020). No obstante, poco se ha escrito sobre las escalas de diseño urbano y arquitectónico del Terminal. Aunque algunos estudios reconocen que estos aspectos juegan un papel crucial en la dinámica del terminal (Amorim et al., 2022; Rouillard y Guiheux, 2020), aún se necesita una discusión sobre cómo el diseño a escala local se relaciona con la escala urbano-regional. Este artículo busca analizar la articulación de estas escalas al hacer converger el contexto urbano junto con el diseño del edificio. Más específicamente, apunta a identificar los problemas del proyecto del terminal Corinthians-Itaquera y a adaptar el concepto de TOD a los países en desarrollo y áreas periféricas. Se discute la historia del sitio, incluidos sus proyectos de vivienda y de movilidad, así como materiales gráficos como dibujos y fotografías. Se demuestra que la dimensión regional por sí sola puede ser insuficiente para hacer frente a las demandas de transporte de masas en las zonas periféricas.

MARCO TEÓRICO

Un nodo de movilidad o de transporte puede definirse como un lugar que proporciona acceso a un sistema de red que comprende una o más líneas. Si la línea es el elemento que atraviesa el tejido urbano, ofreciendo un modo de desplazamiento, los nodos son los puntos donde los usuarios pueden acceder al sistema. La idea de resaltar las dimensiones duales de los nodos de transporte fue esbozada por Bertolini

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y Spit (1998), que analizaron inicialmente las estaciones ferroviarias (donde a menudo converge el acceso a más de un modo de transporte). El diálogo con la escala local es fundamental para este tipo de diseño, ya que las estaciones también son "lugares" en la ciudad y pueden ofrecer actividades y dotar de espacios públicos al entorno urbano, e incluso al barrio. La diferencia al ser un diseño que forma parte de una red de transporte implica una segunda dimensión, que lleva la red fuera de ella hacia la estación y también trae un flujo constante de personas de diferentes partes de la ciudad. Por ejemplo, la relación del edificio con el tejido urbano circundante dependerá de la prioridad asumida en el proyecto en cuanto a acceso, accesibilidad y visibilidad de la estación.

Varios estudios apuntan a la necesidad de analizar el diseño y planificación de los espacios de movilidad para aprovechar mejor su potencial urbanístico (Bertolini, 1998; Bertolini y Dijst, 2003; De Solà-Morales, 2008; Martin, 2023; Rouillard y Guiheux, 2020). La base de este enfoque es que, en la sociedad urbana actual, cada vez más móvil y conectada, una de las principales cualidades de un lugar determinado es su grado de accesibilidad. Esto se refiere tanto a la conexión a las redes de transporte, es decir, capacidad de pasajeros, velocidad, precio, etc., así como la diversidad de actividades disponibles, además de sus horarios de apertura y estructura del espacio público. Por ende, también se deben considerar las regulaciones institucionales aplicables, como los puntos de acceso y de seguridad.

Los puntos de conexión que comprenden los terminales y las estaciones de conexión tienen la característica de ser "nodos de red" y también pueden formar "nodos urbanos" y centralidades. Bertolini y Spit, en Cities on Rails (1998, pp. 211), definen el "entorno circundante" como uno de los factores que impulsan el desarrollo de las áreas aledañas a las estaciones. Definen cuatro parámetros para considerar la ubicación de la estación en la ciudad: un radio transitable fijo de 500 metros, o incluso, los límites físicos (barreras, topografía, etc.); un radio transitable de 10 minutos desde la estación; usos históricos en el entorno, como áreas industriales o ejes comerciales; y un perímetro delimitado institucionalmente (en planes urbanos, por ejemplo). Incluso dentro de este perímetro alrededor de la estación, la dificultad de formar centralidades a partir de nodos urbanos también se puede atribuir a la falta de una microaccesibilidad adecuada. Para los autores, esta debería ser una de las principales escalas de acción del diseño arquitectónico de las instalaciones de transporte, no limitada al perímetro de los edificios.

La idea del nodo de movilidad como lugar urbano trae problemas internos a proyectos de esta complejidad, desde la construcción hasta la gestión del espacio, además de la interferencia entre las actividades y las diferentes funciones de los terminales intermodales. El concepto de "Complejo de intercambio urbano" (Amar, 1996) aborda el tema de la "complejidad", que involucra los intercambios que caracterizan el espacio, y lo "urbano", como dimensiones intrínsecas. Dentro del aspecto del diseño, el concepto propone un enfoque global, mientras que los cortes sectoriales (por ejemplo, entre empresas que administran diferentes modos de transporte) conducen a soluciones ineficaces, tanto desde una perspectiva social como económica. Al considerar la calidad del diseño de los centros de conexión, tradicionalmente se considera que las personas suelen ser capaces de moverse por los espacios, es decir, la dimensión de nodo de la red funciona. Sin embargo, sin

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considerar la dimensión del lugar en la ciudad, Amar (1996) cuestiona que, si no se aumentan los parámetros de calidad, se encontrarán personas que están perdidas, estresadas y ciertamente más cansadas de lo necesario. El diseño de un "Complejo de Intercambios Urbanos", como comprensión de una vitalidad mínima del espacio público y urbano, debería valorar una mayor calidad del medio ambiente.

El complejo de intercambios urbanos se puede entender a través de dos funciones principales: conexión y servicios, análogas a las escalas de nodos y lugares que presentan Luca Bertolini y Tejo Spit (1998). Amar (1996) distingue entre una escala macroscópica, en la primera, relativa a los movimientos de masas, y una escala microscópica, en la segunda, relacionada con las actividades de los individuos. La segunda función dialoga directamente con el espacio urbano, pero es en el encuentro donde se completa la escena, proponiendo otro ritmo. La complejidad de estos espacios y la organización de los tipos de actividades se reflejan en la relación entre el uso público y el uso colectivo, que pueden tener lugar incluso dentro de la terminal o en conjunto con las instalaciones circundantes, así como dentro de un perímetro mayor. De Solà-Morales (2008) señala la importancia de considerar, en el diseño urbano, la colectividad como premisa de intervención. En este sentido, el uso colectivo se superpone a la noción de espacio público (que, para el autor, se refiere a los espacios de propiedad estatal), ya que permea los espacios públicos y privados.

METODOLOGÍA

El análisis del caso de estudio se realizó a través de una descripción del caso de estudio, producción de material gráfico y una contextualización histórica del sitio, junto con una discusión teórica. El artículo discute tres áreas principales: la urbanización de la zona este de São Paulo, que incluye vivienda y transporte, el concepto de TOD y el diseño de terminales de transporte, que se refiere al espacio público y colectivo en contextos periféricos. En cuanto al material gráfico, observar los espacios construidos como diseño arquitectónico es un método fundamental para revelarlos como un proyecto (Jacob, 2016). Esta lectura histórica de los acontecimientos recientes se alinea con un enfoque metodológico que busca descubrir lecciones de la ciudad existente (Koolhaas et al., 2018). En lugar de imponer ideas preconcebidas, se basa en lo que podría parecer una "mera descripción" de la realidad. No obstante, esta postura descriptiva sirve como método crítico, permitiendo una revisión reflexiva y abierta de la condición urbana contemporánea (Waisman, 2013, pág. 32). La combinación del análisis teórico y empírico permitió la construcción de nuevas hipótesis sobre el papel de los terminales de transporte en la desigualdad social asociada a la movilidad urbana. Desde diferentes puntos de vista, se muestra la situación del terminal en relación a su entorno inmediato.

ESTUDIO DE CASO

EL TERMINAL CORINTHIANS-ITAQUERA

Contexto y ubicación

La terminal Corinthians-Itaquera, como se muestra en la Figura 1, con su apariencia gris, techo rojo y pasarela sobre la calzada, se encuentra en la zona este de São Paulo, un distrito históricamente de clase trabajadora. Es un lugar clave para

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Figura 1. Terminal Corinthians-Itaquera, pasarela de acceso. Fuente: Foto del autor en 2017.

revisar, ya que recibió uno de los planes de desarrollo urbano más importantes del gobierno del Estado de São Paulo y uno de los pocos que abarcaba tanto la vivienda como el tránsito. Además, es uno de los pocos nodos de transporte que cuenta con tres tipos de transporte público: tren, metro y autobús. La construcción de la segunda línea del sistema de metro de São Paulo**1** respondió a las necesidades de la ciudad en la década de 1970, ya que la zona este ya se estaba expandiendo**2** y tenía una accesibilidad precaria. La línea de tren había proporcionado una ruta entre el centro de la ciudad (región "Luz") y el este (región "Mogi das Cruzes") desde principios del siglo XX, a lo largo de la antigua línea ferroviaria "Central do Brasil"**3**. Con la expansión de estas áreas y la disminución de las actividades industriales (con el consiguiente aumento de la dependencia del centro de la ciudad como foco de empleo), la línea ferroviaria ya no estaba a la altura de llevar pasajeros y trabajadores al centro de la ciudad, lo que sobrecargaba el sistema de autobuses urbanos.

Finalizado en 1988 con la línea de metro, el terminal tiene una superficie construida de 30.435 m^2 y una capacidad máxima para atender a 60.000 pasajeros por hora. El sistema de metro opera en paralelo a la línea de tren "Expresso Leste" y la autopista "Radial Leste", formando un corredor de triple modo. La línea de metro este-oeste no se ha ampliado desde 1988 y el Terminal Corinthians-Itaquera sigue siendo la última estación en dirección este. La Figura 2 y Figura 3 presentan los planos arquitectónicos y secciones del terminal, que presenta tres niveles: autobuses a nivel de calle, vestíbulos y boleterías en el entresuelo-segundo nivel y, en el tercer nivel, andenes para acceder a trenes y sistemas de metro.

El edificio del terminal, elevado desde el nivel del suelo, da acceso a la línea 3 del metro, la línea de tren "Coral 11" y el terminal de autobuses. Es un importante punto de entrada a la ciudad para un gran grupo de barrios de la zona este y también es un caso único de conexión del Metro con la empresa estatal de vivienda

1 Actualmente se llama Línea 3.

2 La población de Itaquera casi se duplicó entre las décadas de 1970 y 1980, pasando de 63.000 a 126.000. En 2010, había llegado a casi 205.000 (Ramalhoso, 2013, pág. 120).

3 Operada por el Ferrocarril Central de Brasil desde 1980, la línea llegó a Mogi das Cruzes en 1910, y a la estación "Estudantes" en 1976, marcando el final actual de la línea hacia el este. En cuanto a la administración de su operación, el control pasó a la Red Federal de Ferrocarriles (RFFSA) en 1975, luego a la Companhia Brasileira de Trens Urbanos (CBTU) en 1984, y finalmente a la Companhia Paulista de Trens Metropolitanos (CPTM) en 1994, cuando el sistema pasó al control del Gobierno estatal.

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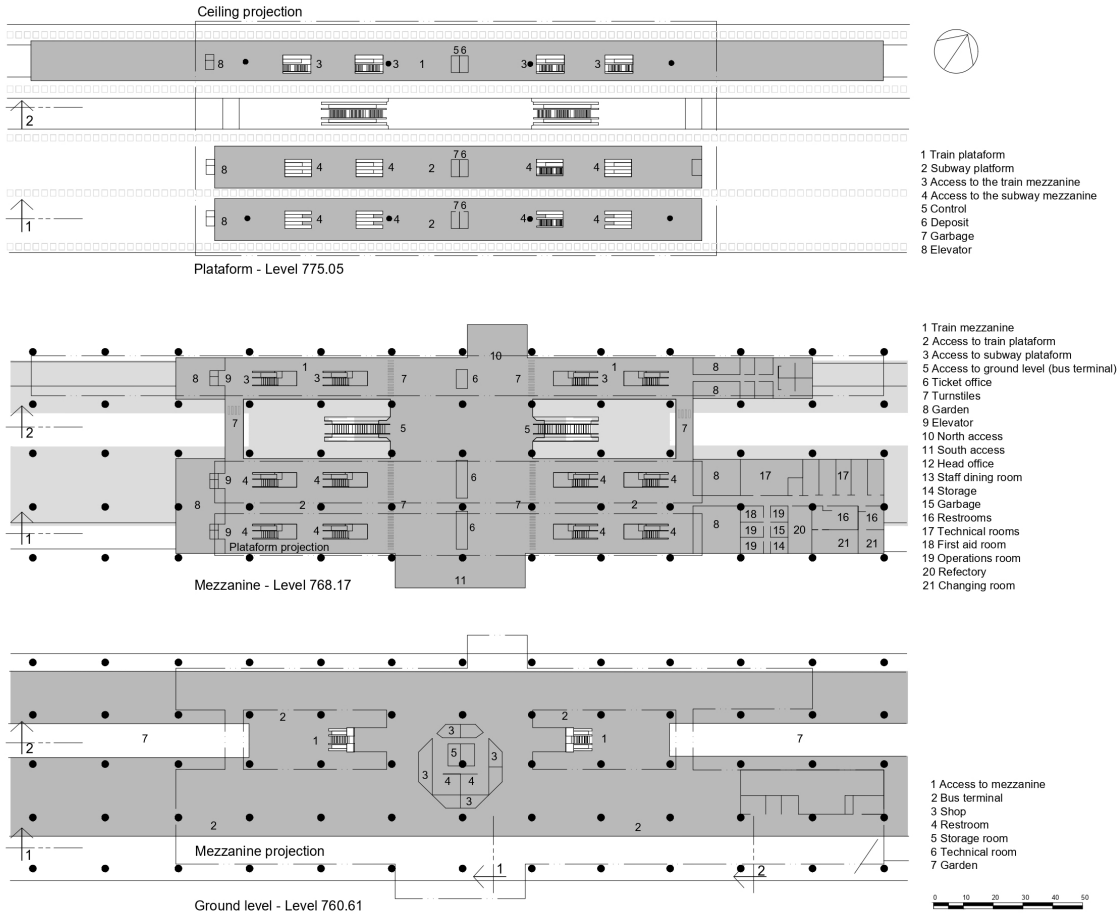


Figura 2. Planos de planta del Terminal Corinthians-Itaquera. Fuente: Redibujado por Luísa Gonçalves a partir de documentos del Metro: Metro, 1979, pág. 187.
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(conocida como COHAB) para un proyecto combinado de transporte y vivienda (Freitas, 2020). La Figura 4 muestra varias instalaciones en el entorno inmediato del terminal: la contigua Itaquera "Poupatempo"**3** (Figura 5) y edificios de centros comerciales, que están conectados directamente por pasarelas, así como al otro lado de la carretera, el Estadio del Corinthians (Figura 6) y el patio de mantenimiento de la línea 3 Roja este-oeste. El edificio "Poupatempo" de Itaquera, inaugurado en 1998, fue diseñado por el reconocido arquitecto Paulo Mendes da Rocha en asociación con la oficina de arquitectura MMBB. Su ubicación junto al terminal intermodal fue un requisito del arquitecto y se accede a ella a través de una pasarela que conecta con el terminal. El edificio, de más de 300 metros de longitud, puede atender hasta 12.000 personas diarias. Por otro lado, el Centro Comercial Itaquera fue inaugurado en 2007 y forma parte del plan de la compañía de Metro para unir estaciones con grandes centros comerciales.

En Itaquera, el municipio aprovechó la oportunidad de los terrenos disponibles de la empresa estatal de vivienda (COHAB) para solicitar financiamiento nacional **5**, lo que hizo factible combinar la ampliación del metro con un proyecto de vivienda (Ramalhoso, 2013). Los desarrollos habitacionales jugaron un papel importante en la densidad de la región, que a principios de la década de 1960 tenía una población aún pequeña pero creciente, concentrada junto a la línea ferroviaria. El Arena Corinthians fue una promesa de la década de 1970, cuando COHAB cedió terrenos vecinos al complejo de viviendas. Sin embargo, solo llegó a término en 2014, con

4 PoupaTempo o "AhorraTiempo", en español, es un servicio público brasileño diseñado para optimizar la burocracia para la población.

5 Financiado por el Banco Nacional de la Vivienda.

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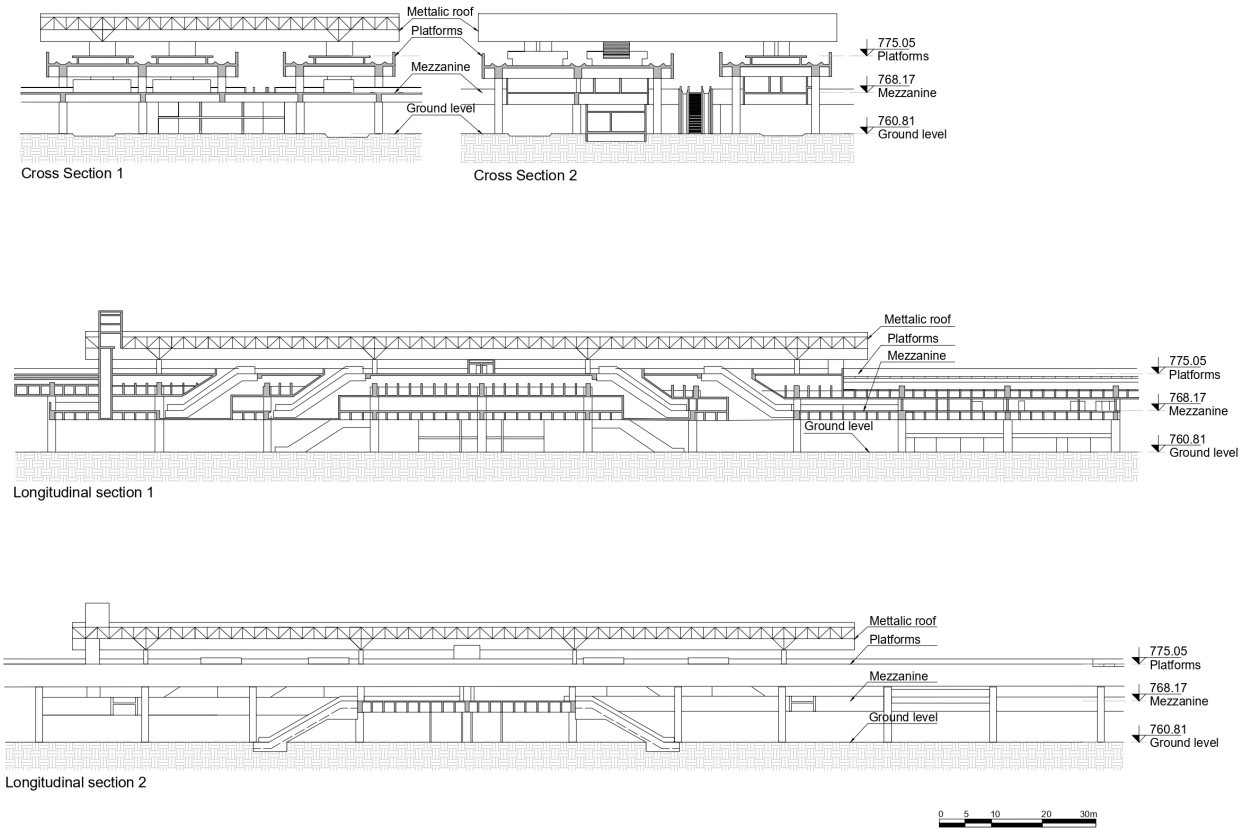


Figura 3. Secciones esbozadas del Terminal Corinthians-Itaquera. Fuente: Redibujado por Luísa Gonçalves a partir de documentos del Metro: Metro, 1979, pág. 187.

la Copa del Mundo. Además del proyecto habitacional, el Banco Nacional de la Vivienda (BNH) también financió el proyecto "CURA" (Comunidades Urbanas para la Recuperación Acelerada – Itaquera), que organizó el desarrollo urbano en torno al proyecto del metro en la región, pero no se llevó a cabo, ya que las prioridades de la ciudad en ese momento se centraban en las obras ya en marcha en la Línea 1-Azul. De ahí que la población de la primera COHAB de la zona (1978) tuviera que esperar 10 años por la terminal intermodal con conexiones de tren, metro y autobús (1988), 20 años por el servicio "PoupaTempo", 29 años por el centro comercial y 36 años por el polideportivo.

Incluso con todos estos servicios, viviendas e instalaciones públicas que rodean el terminal, este tiene una accesibilidad peatonal precaria. Como se muestra en la Figura 4, los alrededores inmediatos comprenden estacionamientos al norte y la autopista "Radial Leste" al sur. El acceso sur se encuentra en las cercanías de la ETEC Itaquera (Escuela Técnica Estatal) o por la pasarela en la meseta del estadio de fútbol, rodeada también por avenidas importantes.

Arquitectura del terminal

En la primera década del sistema de metro de São Paulo, los diseños arquitectónicos se elaboraron dentro de la empresa privada Promon y fueron coordinados por el arquitecto Marcello Fragelli. Cuando surgió la posibilidad de expandirse a la segunda línea, la empresa estatal de metro, "Metro", comenzó a

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Figura 4: Terminal Corinthians-Itaquera (1988) y edificios/áreas circundantes: proyecto de vivienda (COHAB, 1980), Arena Corinthians (2014), edificio "Poupatempo" (1998), centro comercial Itaquera (2007), Escuelas técnicas (2007) y patio de maniobras del metro. Fuente: Foto satelital de Google Earth con edición del autor en 2025.



Figura 5: Poupatempo "Itaquera", diseñado por el reconocido arquitecto Paulo Mendes da Rocha. Fuente: MMBB's, 2024.

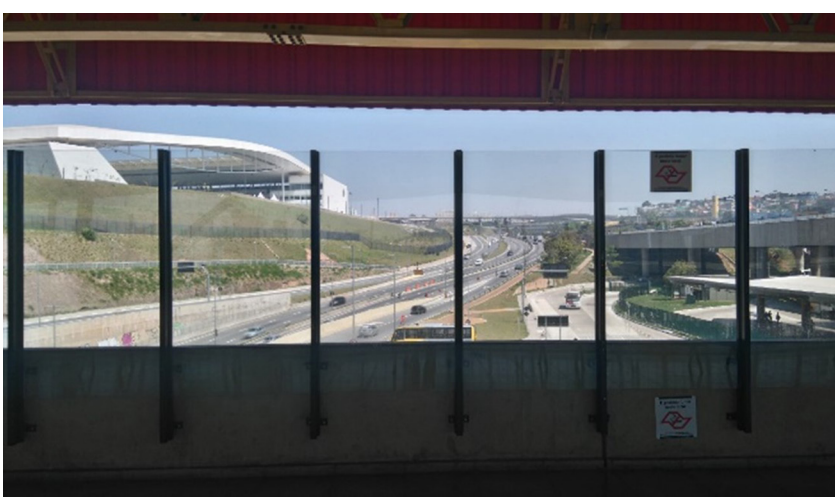


Figura 6: Estadio Corinthians visto desde el terminal. Fuente: Foto del autor en 2017.

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Figura 7. Vistas del andén y el techo del metro desde el interior de la estación. Fuente: Foto del autor en 2017.

Figura 8. Vista aérea del área: arena Corinthians y escuela técnica a la izquierda, y, en el centro, terminal de Itaquera, edificio "Poupatempo" y centro comercial. Fuente: Foto satelital de Google Earth en 2017.
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trabajar en los proyectos internamente, aportando innovación al proceso y su construcción. A medida que la línea corría a lo largo de la carretera y la línea de tren, la barrera que dividía el vecindario entre el norte y el sur podía reforzarse fácilmente, por lo que una de las pautas de diseño era incluir pasarelas de conexión a ambos lados de todas las estaciones.

En Itaquera, dado su tamaño, su materialidad no se entiende como una unidad cohesiva sino compuesta por fragmentos de estructuras y superficies que perfilan el interior de los rieles, bloques sanitarios y servicios del terminal, como se muestra en la Figura 7. En este sentido, el proyecto no se erige como un "objeto" arquitectónico tradicional sino más bien como una forma abierta y permeable. Además, la ausencia de un diseño urbano que integre el terminal con el tejido urbano (Figura 8) se debe en parte a la fragmentación administrativa de la ejecución de los proyectos, que, en ese momento, delegó el proyecto urbano (aunque algunas obras públicas

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se mantuvieron dentro del alcance) al municipio y restringió el proyecto del metro al propio edificio.

En el diseño del terminal de Itaquera, los arquitectos Renato Viégas y Meire Selli modificaron algunas de las soluciones de diseño previamente adoptadas en el diseño de las estaciones de metro de São Paulo. Fue necesario combinar los andenes de los diferentes sistemas (tren y metro) y, por tanto, diseñar un gran edificio con una sola cubierta. El edificio también se colocó sobre el nivel del suelo, que fue designado para la terminal de autobuses. Sin embargo, no se concretó la posibilidad de abrir este nivel como plaza, priorizando el diseño vial por sobre los espacios peatonales.

El diseño del terminal se divide en tres niveles: el primero tiene acceso peatonal y el terminal de autobuses urbanos; el segundo, el vestíbulo de distribución, boleterías, entrada y áreas técnicas y sanitarias, además de las pasarelas que conectan con el centro comercial Itaquera y el "Poupatempo", al norte, y, la conexión con el estadio Corinthians al sur (pasarela sobre la autopista "Radial Leste"); en el tercer y último piso, se encuentra el acceso tanto a las líneas de tren como de metro. La configuración es parte de la geografía específica del entorno, constituyendo un nuevo diseño para los proyectos de transporte por autopista, tren y metro, así como para el estadio. De hecho, el diseño arquitectónico del terminal fue premiado en la Quinta Bienal de Arquitectura de Buenos Aires (celebrada en la década de 1990).

DISEÑO DE CONEXIONES INTERMODALES

DISCUSIÓN

Similar al terminal Corinthians-Itaquera, varias otras terminales en São Paulo se construyeron sin planificación de integración intermodal, y menos aún considerando actividades y emprendimientos conjuntos, excepto los centros comerciales, en algunos casos, que no pueden considerarse como "inductores de urbanidad", ya que son espacios cerrados con acceso controlado. Más recientemente, en Río de Janeiro, el terminal Gentileza también se construyó sin prestar atención al diseño urbano, es decir, sin conexiones peatonales adecuadas, espacios públicos y enlaces con su entorno inmediato. En este sentido, los mejores intentos se encuentran en el trabajo de diseño que transformó los accesos en plazas públicas, como en las estaciones Jabaquara, Liberdade y São Bento, por nombrar algunas (Gonçalves, 2015). Otros diseños de integración interesantes se llevaron a cabo entre estaciones de metro y terminales de autobuses, como en Ana Rosa, Vila Mariana, Vila Madalena, Sacomã y, más recientemente, São Paulo-Morumbi; y también, entre rieles (integración tren-metro), como en las estaciones Barra Funda y Tamanduateí, pero rara vez entre tres o más sistemas de tránsito.

Bertolini y Dijst (2003) también destacan el dilema temporal para los edificios de estaciones, ya que el desarrollo del lugar y el nodo en las áreas de estaciones tienden a seguir caminos autónomos. Esta distinción genera incertidumbres que complican el proceso de diseño, pero, en general, destacan que la característica esencial de la estación es el intercambio intermodal (y todas las posibilidades de intercambio y encuentro que se producirán como consecuencia de las conexiones de movilidad), mucho más que un lugar de llegada y salida de trenes.

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Durante la implementación del metro en São Paulo se desarrollaron numerosos planes, proyectos y actualizaciones para la estructuración de la ciudad. En las últimas décadas, los planes se han centrado en un enfoque integrado, delineando la legislación sobre integración y transformación del transporte en su financiamiento. Con la elaboración del PITU (Plan Integrado de Desarrollo Urbano), hubo una amplia discusión en torno a cómo expandir la red, lo que a su vez influyó en el papel de la estación o terminal en el entorno urbano. En planes recientes, se ha destacado el potencial inductor de urbanidad de estaciones y terminales: tanto en el PITU-2025 (publicado en 2006) como en el PDE - Plan Maestro Estratégico de 2014, aumentando la densidad en torno a las redes de alta capacidad como estrategia urbana primaria para la movilidad urbana y la accesibilidad. El PITU-2025 propone que un nuevo modelo de terminal, implementado parcialmente bajo tierra, pueda integrarse mejor en el espacio urbano circundante: "Requiere un estudio completo del impacto en el barrio y el establecimiento de los controles necesarios para conducir a la creación de valor urbano y visual y para las propiedades" (Gobierno del Estado de São Paulo, 2006). Con una red abierta, los nodos de movilidad tienen un buen potencial para ser inductores de urbanidad, debido a su capacidad para unir servicios y actividades. La infraestructura de movilidad puede ofrecer intercambios intra- e intermodales, pero también servir a la población a través de la prestación de servicios públicos y privados.

"Dar calidad colectiva a los que no la tienen" (De Solà-Morales, 2008) es una idea central en el caso de los terminales intermodales que se construyen como complejos de actividades, cuando hay una buena mezcla de servicios públicos y privados abiertos a la vida urbana. En este contexto de servicios y actividades del "complejo de intercambio urbano" existen dos tipos principales: servicios de apoyo al viaje, como venta de boletos e información, y servicios de oportunidad, como comercio, pero también puntos de confort (como baños), amenidades y servicios públicos (Amar, 1996). Como resultado de las múltiples actividades y opciones de servicio que tiene la estación, puede convertirse en un centro de intercambios y un nodo de urbanidad. En el diseño de los pisos principales para el acceso público, el flujo debe ser lo más despejado posible, sin muchas barreras, divisiones o pasillos largos: los caminos deben ser cortos y simples. Sin embargo, también es necesario combinar las rutas de los usuarios cotidianos, que acceden diariamente al sistema de transporte y/o trabajan en el complejo, y los usuarios ocasionales, ya que circulan por diferentes vías. Los servicios, como las tiendas, que desean utilizar pueden demandar y generar flujo o bloqueos en la circulación, como colas de compra de entradas. Por ejemplo, algunos tipos de comercio se benefician de las vitrinas, mientras que algunos servicios, como los baños, pueden estar más ocultos y utilizar letreros visuales.

El terminal Corinthians-Itaquera juega un papel central en la región, captando y recibiendo usuarios de la red, y ha tenido un profundo impacto en la zona desde su inauguración. Al mismo tiempo, sirve como un hito para ubicar el territorio. Sin embargo, la permeabilidad de las áreas de vivienda circundantes es extremadamente precaria, con una distancia límite para los residentes y áreas para la circulación peatonal que son extremadamente frágiles. En resumen, de la revisión histórica tanto del desarrollo urbano de Itaquera como del Terminal Corinthians-Itaquera, surge una situación paradójica, en la que encontramos casi todos los modos de sistemas de movilidad en Itaquera. Al mismo tiempo, existe un nivel importante de precariedad

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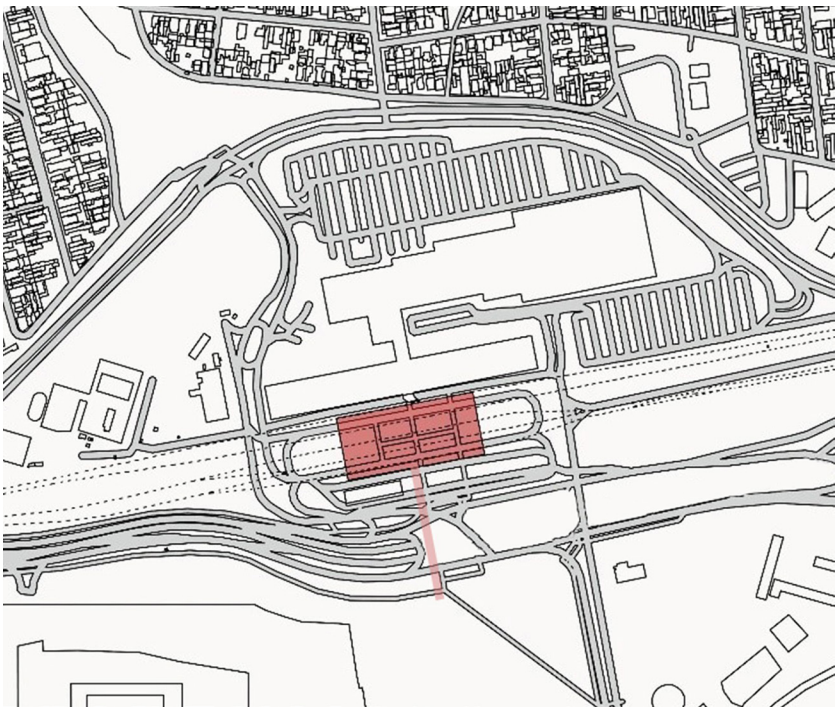


Figura 9. Terminal Corinthians-Itaquera. Fuente: Dibujo realizado por el autor utilizando la base CadMapper en 2019.



Figura 10. Alrededores del terminal. Fuente: foto de Google Street View en 2024.

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en términos de accesibilidad local y articulación de toda el área densa de viviendas y equipamientos públicos (Figura 9 y Figura 10).

CONCLUSIONES

En el Terminal Corinthians-Itaquera, en São Paulo, parece que existen todos los criterios para un "buen desarrollo orientado al tránsito": muchos modos de tránsito, rodeados de densos proyectos habitacionales y negocios a diferentes escalas. No obstante, la experiencia urbana sigue siendo precaria, particularmente en la interconexión entre estas actividades urbanas (vivienda, comercio y tránsito). El Terminal se erige, por tanto, como un caso paradigmático para entender el papel del diseño arquitectónico dentro de la práctica TOD. Es a través de un proyecto arquitectónico de la ciudad que se puede mejorar esta experiencia urbana. Los datos evidencian negligencia en la construcción de un proyecto urbano integrado a su contexto, a pesar de la complejidad de las actividades que involucraba el sitio, que comprendían el terminal intermodal, el edificio "Poupatempo" y un centro comercial. Debemos considerar que el diseño arquitectónico de los nodos de tránsito tiene un papel fundamental en las periferias metropolitanas, ya que estas infraestructuras funcionan como locus de actividades tanto locales-locales como locales-globales en estos contextos. En otras palabras, en las periferias metropolitanas, los nodos de tránsito son espacios muy públicos y su diseño debe considerar este rol cultural, social y político (Capillé et al., 2021). Como ha destacado Augé (2008), el transporte público es uno de los lugares principales para la constitución contemporánea de la noción de "público". Es donde retiene significado, identificación e identidad, ya sea que nos refiramos al espacio físico de encuentro, pero también al espacio abstracto de "opinión pública".

Las terminales intermodales y de conexión son nodos de la red de transporte y un "lugar" en la ciudad, y ninguna de estas escalas puede descuidarse a la hora de diseñar las estaciones. Además, aunque las estaciones más pequeñas y sencillas tienen ambas dimensiones -red y local-, es en los nodos terminales e intermodales donde este problema aparece con mayor complejidad.

Si se considera que la planificación del tránsito se está volviendo cada vez más importante dentro de la planificación urbana pública, especialmente en São Paulo y otras metrópolis brasileñas y del Sur global, es fundamental que redefinamos sus herramientas, considerando que las condiciones urbanas en las periferias requieren una consideración más profunda de los aspectos arquitectónicos de las infraestructuras de tránsito. En resumen, es necesario diseñar terminales y estaciones más allá de los edificios regulares; incorporar el diseño urbano como parte del diseño del edificio; contemplar el nivel del suelo como espacio público; brindar múltiples servicios dentro y fuera del edificio del terminal o de la estación, disipando sus límites; mejorar las conexiones peatonales con el entorno inmediato. En otras palabras, el diseño arquitectónico se convierte en una disciplina fundamental para abordar la cohesión de los proyectos urbanos que buscan vincular el desarrollo urbano sostenible a diferentes escalas. Como tal, creemos que este artículo contribuye a proporcionar la base para la propuesta de parámetros de diseño de terminales basados en las realidades periféricas y metropolitanas del Sur Global, que pueden ayudar a construir nodos de movilidad que realmente mitiguen la relación entre desigualdad social y movilidad urbana.

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TAXONOMÍA PARA LA FABRICACIÓN DIGITAL PARA LA ARQUITECTURA

DIGITAL MANUFACTURING TAXONOMY FOR ARCHITECTURE

TAXONOMIA DA FABRICAÇÃO DIGITAL PARA A ARQUITETURA



Figura 0. HF1 | CoBLOgó. Fuente: Sperling y Herrera Polo (2015)

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ABSTRACT

This article presents the Taxonomy for Digital Fabrication (TDFab+Arch), a tool developed to categorize and compare projects materialized through digital fabrication. In this article, TDFab+Arch has been applied to the Homo Faber (HF) catalogs, which bring together digital fabrication projects in Latin America from 2015 to 2022, and a comparison has been made between the techniques used by these projects. The structuring of the taxonomy was based on systematic literature reviews that identified criteria in the design processes, resulting in four categories: "design aspects," "machinery," "materials," and "surface topology." The methodology used in this article is "constructive research" as described by Kasanen et al. (1993) and Lukka (2003), which involves three phases of the process: understanding the project, proposing a solution, and validating the taxonomy. This methodology facilitates an understanding of the application of the taxonomy as a mode of classification, contributing to the advancement of knowledge in the field. The article presents the projects through text and images, making it easier to identify relevant aspects. TDFab+Arch stands out for its flexibility and versatility, making it suitable for cataloging project design. The taxonomy generates various visualization types, allowing designers to explore the criteria according to their specific needs. Qualitative content analysis and the structuring of the taxonomy were essential for organizing the techniques, materials, and equipment involved in digital fabrication, promoting a clearer understanding of the field. As a result, TDFab+Arch allows the designer to explore the criteria from different perspectives and gain a more comprehensive understanding of the projects. The taxonomy is an adaptable and customizable tool, allowing users to understand the criteria used in the development of each project.

Keywords: taxonomy, digital fabrication, project classification, Homo Faber.

RESUMEN

Este artículo presenta la Taxonomía para la Fabricación Digital (TDFab+Arch), una herramienta desarrollada para categorizar y comparar proyectos materializados a través de la fabricación digital. En este artículo, la TDFab+Arch se aplicó a los catálogos de Homo Faber (HF), que reúnen proyectos de fabricación digital en América Latina entre 2015 y 2022, y se realizó una comparación entre las técnicas utilizadas por estos proyectos. La estructuración de la taxonomía se basó en revisiones sistemáticas de literatura que identificaron criterios en los procesos de diseño para la estructuración en cuatro categorías: formas para fabricación digital, maquinaria, materiales y topología de superficie. La metodología utilizada en este artículo es la «investigación constructiva» de Kasanen et al. (1993) y Lukka (2003), que se ha dividido en tres fases del proceso: comprensión del proyecto, propuesta de la solución y validación de la taxonomía. Esta metodología ayuda a comprender la aplicación de la taxonomía como modo de clasificación y contribuye al avance de los conocimientos en la materia. El artículo presenta los proyectos mediante texto e imágenes, lo que facilita la identificación de los aspectos relevantes. La TDFab+Arch destaca por su flexibilidad y versatilidad, lo que la hace ideal para la catalogación del diseño de los proyectos. La taxonomía genera distintos tipos de visualización, lo que permite a los diseñadores explorar los criterios en función de sus necesidades particulares. El análisis del contenido cualitativo y la estructuración de la taxonomía fueron esenciales para organizar las técnicas, materiales y equipos implicados en la fabricación digital, promoviendo una comprensión más clara del campo. Como resultado, TDFab+Arch permite al diseñador explorar los criterios desde diferentes perspectivas y obtener una comprensión más exhaustiva de los proyectos. La taxonomía es una herramienta adaptable y personalizable, que permite a los usuarios comprender los criterios utilizados en el desarrollo de cada proyecto.

Palabras clave: Taxonomía, fabricación digital, clasificación de proyectos, Homo Faber.

RESUMO

Este artigo apresenta a Taxonomia para Fabricação Digital (TDFab+Arch), uma ferramenta desenvolvida para categorizar e comparar projetos materializados por meio da fabricação digital. Neste artigo, a TDFab+Arch foi aplicada aos catálogos Homo Faber (HF), que reúnem projetos de fabricação digital na América Latina entre 2015 e 2022, e realizada uma comparação entre as técnicas utilizadas por estes projetos. A estruturação da taxonomia foi baseada em revisões sistemáticas de literatura que identificaram critérios nos processos de projeto para a estruturação em quatro categorias: "formas para fabricação digital", "maquinário", "materiais" e "topologia das superfícies". A metodologia utilizada neste artigo é a "pesquisa construtiva" conforme descrita por Kasanen et al. (1993) e Lukka (2003), que envolve três fases do processo: compreensão do projeto, proposição da solução e validação da taxonomia. Essa metodologia auxilia o entendimento da aplicação da taxonomia como modo de classificação e contribui para o avanço do conhecimento na área. O artigo apresenta os projetos por meio de texto e imagens, facilitando a identificação de aspectos relevantes. A TDFab+Arch destaca-se pela flexibilidade e versatilidade, podendo ser utilizada tanto no processo projetual quanto na catalogação de projetos. A taxonomia gera diferentes tipos de visualização que permitem que os projetistas explorem os critérios conforme suas necessidades. A análise qualitativa de conteúdo e a estruturação da taxonomia foram essenciais para organizar as técnicas, materiais e equipamentos envolvidos na fabricação digital, promovendo uma compreensão mais clara do campo. Como resultados, a TDFab+Arch permite que o projetista explore os critérios a partir de diferentes perspectivas e tenha uma compreensão mais abrangente dos projetos. A taxonomia é uma ferramenta adaptável e personalizável, permitindo que os usuários entendam os critérios utilizados no desenvolvimento de cada projeto.

Palavras chaves: taxonomia, fabricação digital, classificação de projetos, Homo Faber.

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INTRODUCCIÓN

Este artículo presenta la Taxonomía para la Fabricación Digital para proyectos a escala arquitectónica materializados a través de la fabricación digital. Ofrece categorización con criterios bien definidos para ayudar a la comprensión y comparación entre proyectos. La taxonomía, que se denominó TDFab + Arch, se desarrolló como parte de una investigación doctoral. La aplicación de la TDFab + Arch permite el diseño de procesos de fabricación digital y categorización de diversos proyectos. La taxonomía es un marco teórico y metodológico, alojado en la plataforma Notion (una herramienta en línea) para la clasificación y documentación de proyectos. Por lo tanto, es una herramienta de registro de proyectos y apoyo analítico comparativo.

Este artículo tiene como objetivo describir el desarrollo de la taxonomía y su aplicación en proyectos de los catálogos Homo Faber (HF): HF1. 0 (Sperling & Herrera Polo, 2015), HF2.0 (Scheeren et al., 2018) y HF3.0 (Herrera et al., 2023), que albergan proyectos de fabricación digital publicados entre 2015 y 2022 en América Latina. Se eligieron estos catálogos porque organizan proyectos que detallan técnicas, procesos y resultados, facilitando el análisis. La TDFab + Arch se basa en dos revisiones sistemáticas de la literatura que identificaron criterios abordados en los procesos de diseño de fabricación digital, lo que permitió un análisis comparativo enriquecedor. Así, los proyectos del catálogo de HF se analizan utilizando la metodología de «investigación constructiva» de Kasanen et al. (1993) y Lukka (2003). Los pasos incluyen la caracterización de los proyectos materializados utilizando técnicas de fabricación digital, la aplicación de la taxonomía y la comparación de los proyectos para analizar las técnicas empleadas. Como resultado, surgen criterios relevantes para los laboratorios en América Latina, promoviendo debates, nuevas colaboraciones y aplicaciones en diferentes contextos, guiando así a los diseñadores en formación. La taxonomía y la herramienta apuntan a promover el debate, desarrollar nuevos criterios, expandir las aplicaciones y guiar a los diseñadores en formación mediante la sistematización de los criterios utilizados en los catálogos.

MARCO TEÓRICO

Este artículo analiza la aplicación de la taxonomía TDFab + Arch al catálogo de HF. La taxonomía, que sistematiza aspectos de diseño como materiales, maquinaria y topología de superficies, se utiliza aquí para organizar los proyectos catalogados y permitir comparaciones que revelen particularidades del contexto latinoamericano. Este enfoque vincula el proceso de diseño con los criterios de viabilidad regionales, mientras explora el desarrollo del catálogo de HF en sí. Para superar las limitaciones temporales del estado del arte, la taxonomía demuestra ser una herramienta flexible capaz de contextualizar nuevas discusiones en el campo, ya sean temporales, tecnológicas o geográficas.

Fabricación digital en América Latina

La fabricación digital en América Latina sigue una trayectoria diferente, al surgir del contexto académico antes de consolidarse en la práctica arquitectónica. Esto contrasta con el Norte Global, donde la evolución pasó de la industria a la arquitectura. Esta dinámica ha creado una cultura de fabricación personal y un ecosistema diverso de iniciativas locales, que integran tecnologías digitales en sus proyectos (Herrera, 2024). En Sudamérica, el interés por las formas complejas y las teorías de la complejidad ha llevado a que la fabricación digital sea reconocida como un medio de transición computacional, inicialmente en el ámbito académico, permitiendo la creación de prototipos a escala

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(Scheeren, 2022). Mientras que en el Norte Global, la fabricación digital evolucionó a partir de la práctica y el uso de herramientas como CAD y CAM. En contraste, el desarrollo de Sudamérica fue impulsado por el conocimiento teórico adquirido por investigadores capacitados en el extranjero, que a menudo estaban desconectados de la industria y la fabricación. (Herrera, 2024). En los últimos 20 años, la región ha visto pocos avances técnicos significativos, con iniciativas enfocadas principalmente en el uso individualizado de tecnologías, en lugar de introducir innovaciones en materiales, geometrías o sistemas integrados (Scheeren & Sperling, 2024).

La fabricación digital en América del Norte y del Sur presenta marcados contrastes. En el Norte, hay estabilidad económica y política; el sector está impulsado por fondos militares, gubernamentales e industriales, centrándose en la construcción a gran escala y con una amplia integración entre la industria, la academia y la cultura informática. En el Sur Global, existen dependencia económica e inestabilidad; el sector se sostiene con financiamiento académico y privado, lo que resulta en laboratorios modestos y proyectos a pequeña escala con un impacto limitado al diseño académico y una integración curricular restringida (Herrera, 2024).

Herrera (2024) señala que la producción global en fabricación digital ha avanzado de manera complementaria, integrando experimentos académicos y prácticos para difundir el conocimiento. En América Latina, SIGraDi ha sido el principal vehículo de discusión e intercambio sobre fabricación digital desde 1998. Para entender la producción latinoamericana en este contexto, este artículo utiliza el catálogo Homo Faber, que presenta proyectos de fabricación digital producidos durante las últimas dos décadas, para demostrar la aplicación de TDFab+Arch como herramienta para catalogar y comparar proyectos, así como para ayudar en proyectos futuros.

Catálogo Homo Faber

El proyecto Homo Faber comenzó en 2014 con el objetivo de mapear y categorizar iniciativas de fabricación digital en América Latina. La primera exposición, Homo Faber 1.0 (Sperling & Herrera Polo, 2015), brindó una base conceptual y tecnológica al tema, convirtiéndose en un referente en la región y consolidando el material como un punto clave en el escenario latinoamericano. En 2018, la segunda edición, "Homo Faber 2.0: Políticas de lo Digital en América Latina" (Scheeren et al., 2018), amplió este mapeo para incluir nuevas iniciativas de varias regiones. La tercera edición, "Homo Faber 3.0: Apropiación de la Fabricación Digital desde América Latina" (Herrera et al., 2023), consistió en una serie de exposiciones organizadas por varias universidades latinoamericanas. Estas exposiciones fueron apoyadas por investigaciones y publicaciones que integraron una red de investigadores y creadores, permitiendo una visión integral de las prácticas de fabricación digital en América Latina. El proyecto contribuyó al crecimiento y consolidación de laboratorios y redes de investigación en la región, destacando iniciativas locales y sus aplicaciones en arquitectura, diseño y arte (Herrera et al., 2023).

Estos catálogos cubren las dos décadas de implementación y desarrollo de tecnologías de fabricación digital en América Latina, fomentando una red de colaboración entre profesionales, académicos e instituciones de la región. Las publicaciones presentan producciones de arquitectura, muebles, utensilios domésticos, joyería e instrumentos musicales. Cada objeto catalogado contiene información detallada de fabricación, incluidos los procesos y materiales utilizados (Scheeren, 2022; Herrera et al., 2023).

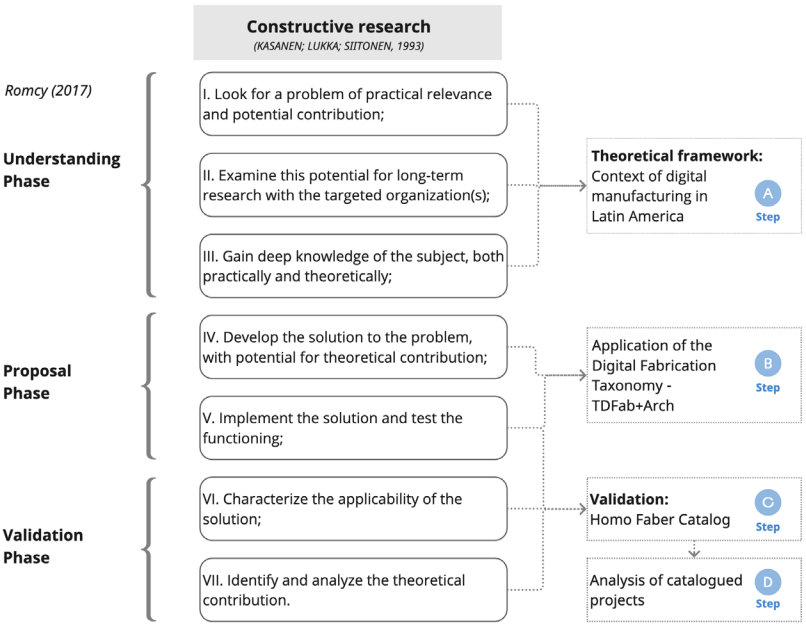


Figure 1. Directrices metodológicas. Fuente: Preparadas por el autor en 2024.

En esta investigación, los catálogos de Homo Faber se consideran como los esfuerzos más completos, sistemáticos y continuos para registrar los avances de investigación y diseño en Fabricación Digital en América Latina. Su uso en investigación también reconoce limitaciones derivadas de su proceso editorial inherente y la maduración de las discusiones teóricas sobre el tema. Por ende, también entendemos el impacto de ampliar las brechas de alcance seleccionando solo proyectos de estos catálogos que resultaron en objetos materializados, excluyendo así experimentos sociales o teóricos sobre fabricación digital. El propósito de este enfoque fue evaluar la efectividad de los criterios establecidos y las capacidades de la herramienta TDFab+Arch.

METODOLOGÍA

Este artículo emplea el método de «investigación constructiva» propuesto por Kasanen et al. (1993) y Lukka (2003), que comienza por identificar un problema y proponerle una solución. El proceso se divide en tres fases: comprender el proyecto, proponer una solución y validar la taxonomía en función de la catalogación de HF. Su objetivo es clasificar los proyectos de HF materializados utilizando TDFab+Arch. La investigación comenzó con la comprensión del problema y la identificación de contribuciones a la fabricación digital, seguida de la aplicación de la taxonomía para validar y evaluar su potencial para catalogar proyectos materializados digitalmente. Así, el estudio avanza en el conocimiento al crear y validar una taxonomía fundamentada teóricamente, corroborada por la literatura científica (Figura 1).

Categorización de criterios para la TDFab+Arch

A través de una rigurosa revisión sistemática de la literatura, los criterios descritos en las taxonomías se clasificaron posteriormente en grupos. Esta agrupación también registra, según la revisión bibliográfica, los múltiples autores que exploran los criterios seleccionados en su investigación. Estos son grupos que abarcan elementos clave del proceso de diseño (elementos de diseño), tipos de fabricación digital para la realización

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de materiales, como detalla Iwamoto (2009), y otros métodos, técnicas y estrategias prevalentes para generar superficies (topología de superficie), el tamaño del objeto (pequeño, mediano, grande y extragrande) y el equipo necesario para la fabricabilidad del objeto arquitectónico. Estos criterios se segmentaron y asignaron aún más dentro de estas categorías, como se ilustra en la Tabla 1.

Tabla 1. Criterios y autores. Fuente: Preparado por el autor

Criterios	Autores
Escala	
Pequeña	Pupo (2008), Griz et al. (2017), y Bax y Trum (2002)
Mediana	
Grande	
Extragrande	
Técnicas de fabricación digital	
Plegado	Iwamoto (2009), Dunn (2012), Capone y Lanzara (2018), Capone y Lanzara (2019) y Lanzara (2015)
Secciones	
Teselación	
Conformado	
Topología de superficie	
Curvatura doble	Capone y Lanzara (2018), Capone y Lanzara (2019) y Lanzara (2015)
Forma libre	
Curva simple	
Maquinaria	
Procesos aditivos | Impresora 3D	Bax y Trum (2000), Bax y Trum (2002), Trum y Bax (1996), Sass y Botha (2006) y Vrouwe (2018), Austern et. al (2018)
Procesos sustractivos / Corte por láser	
Procesos sustractivos | Enrutador CNC	
Robótica	
Materiales	
Madera/Contrachapado	Bax y Trum (2002), Chua et al. (2003), Austern et al. (2018), Ashby (2013), Agudelo (2017) y Vrouwe (2018).
Acero	
Tela	
Concreto	
Cob/Paja	
Cerámica/Mampostería	
Fibra de carbono	
Biomateriales	
Plástico/PLA	
Aspectos de diseño	
Desempeño (ambiental y estructural)	Ashby (2013) y Sass y Botha (2006)
Desechos	Ashby et al. (2019)
Tiempo - Corte, máquina y ensamblaje	Bax y Trum (2000), Sass y Botha (2006), Austern et al. (2018)
Transporte	Sass y Botha (2006), Austern et al. (2018), Griz et al. (2017), y Ashby et al. (2019),
Parametrización/BIM	Vrouwe (2018), Gebhardt (2011), Dunn (2012), y Cooper (2001)
Modulación	Griz et al. (2017) y Sass y Botha (2006)
Conexiones/Accesorios	Griz et al. (2017), Chua et al. (2003), Bax y Trum (2002)
Estabilidad	Trum y Bax (1996)
Montaje y desmontaje	Austern et al. (2018) y Sass y Botha (2006)
Costo	Austern et al. (2018), Ashby et al. (2019), y Bax y Trum (2000)
Ruta de la herramienta	Griz et al. (2017)

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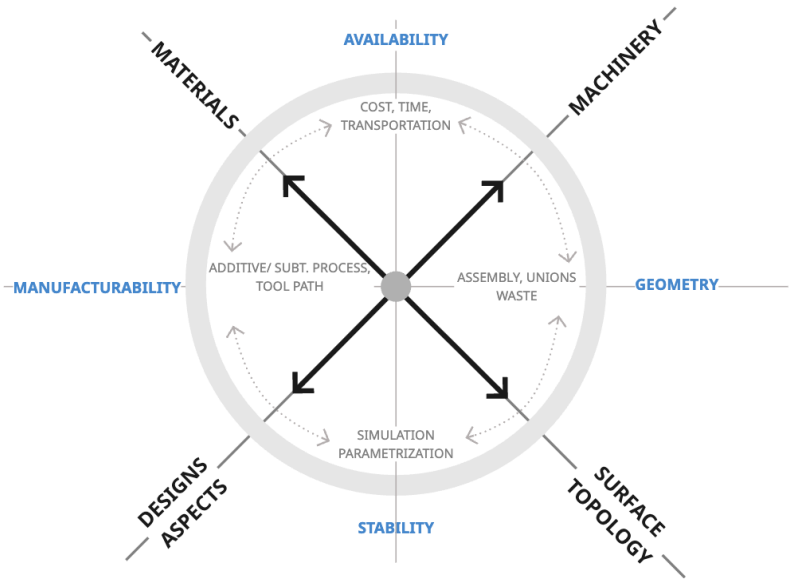


Figure 2. TDFab+Arch. Fuente: Preparado por el autor en 2023.

La TDFab+Arch está estructurada en un círculo para reflejar su aplicación cíclica. El círculo presenta cuatro categorías a lo largo de los ejes diagonales: «formas para fabricación digital», «maquinaria», «materiales» y «topología de superficie». Los criterios de «aspectos de diseño» están dispuestos en azul alrededor del círculo y en gris en el interior. Los criterios se organizan radialmente a lo largo de ejes diagonales y perpendiculares, lo que permite a los diseñadores acceder al proyecto desde varios puntos, como maquinaria, materiales o aspectos de diseño. Este enfoque requiere comprender la escala, el tipo de superficie y la fabricación digital. Esta estructura guía a los diseñadores en la toma de decisiones, permitiendo un acceso flexible a lo largo de los ejes, con flechas que indican la bidireccionalidad. La taxonomía y la herramienta propuesta ayudan al proceso creativo e informan las decisiones. La inclusión de «arco» enfatiza su enfoque arquitectónico, mientras que el símbolo más (+) sugiere aplicabilidad en otros campos, como la ingeniería y el diseño (Figura 2).

La aplicación de la taxonomía en los catálogos de Homo Faber sirvió como una muestra transversal ideal para validar esta efectividad, como se justificó anteriormente, permitiendo elaborar indicadores gráficos que reflejen las inquietudes de los diseñadores a la hora de crear los prototipos. El proceso de aplicación de la taxonomía destacó la importancia de los criterios en el entendimiento jerárquico y relacional entre ellos.

DESARROLLO

La TDFab+Arch resulta del desarrollo metodológico y del marco teórico-conceptual, incluidas las revisiones sistemáticas de la literatura, el análisis cualitativo del contenido, la estructuración taxonómica y la validación. La sección de información incluye datos sobre el catálogo del proyecto Homo Faber, como origen, laboratorio responsable, nombre del proyecto, autor y fecha de publicación. En la tercera sección, el diseñador debe definir la escala del objeto: la escala pequeña cubre objetos portátiles, como taburetes y sillas; la escala media se aplica a objetos que pueden ser movidos o levantados por una persona, como mesas, y; la gran escala se refiere a objetos más grandes y pesados que requieren de dos personas o equipos para ser

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movidos o manipulados, como camas matrimoniales y paneles de pared. Finalmente, la escala extragrande se refiere a estructuras autónomas, como pabellones y edificios, que requieren infraestructura para su ensamblaje. En el contexto de la taxonomía, la escala influye en la elección de los materiales, la precisión de los equipos y la viabilidad del proyecto, así como en las proporciones y la relación con el entorno.

En la cuarta sección, se seleccionan los criterios para la fabricación digital, incluidos las formas, la topología de la superficie, la maquinaria, los materiales y los aspectos de diseño. Se puede acceder a y completar cada categoría de forma independiente seleccionando el triángulo en el panel de herramientas de la TDFab+Arch.

En esta sección, se tratan las «formas para la fabricación digital», incluidos los planos en serie, el teselado y el conformado y plegado (Iwamoto, 2009), que permiten que un objeto incorpore diversas técnicas. Se analiza la «topología de superficies», incluida la doble curvatura, la forma simple y la forma libre (Lanzara, 2015). También se examina la maquinaria utilizada en la fabricación digital, incluidos los procesos aditivos y sustractivos, con imágenes y ejemplos de los equipos. La sección analiza los materiales utilizados en los proyectos, distinguiendo entre «un material», que utiliza un solo tipo de material, y «materiales diferentes», que involucra varios de estos.

Taxonomía aplicada en proyectos arquitectónicos

Este tema abarca tres secciones que analizan las similitudes y diferencias entre los criterios de los proyectos catalogados en el HF y los de la TDFab+Arch. La interacción con la taxonomía permite identificar aspectos del proyecto a través de texto, imágenes y videos. Estos análisis ayudan a mejorar la herramienta, identificar sus limitaciones y explorar nuevas oportunidades de creación y materialización.

HF | Escalas y geometría

En esta sección se analizan proyectos de diferentes escalas: pequeña, mediana, grande y extragrande, estableciendo una relación entre los criterios de la TDFab+Arch y su aplicación en la materialización. Ejemplos como «Mapped Empathy» (o Empatía Mapeada) de Guto Requena y «Bancapar» demuestran esta relación utilizando un solo material: metal para Bancapar y madera contrachapada para Mapped Empathy. Ambos usan procesos sustractivos con fresadoras CNC y utilizan planos en serie para construir formas libres, y Bancapar logra su forma cortando en una placa y Mapped Empathy, explotando la maleabilidad de los materiales (Figura 3 y Figura 4).

Los proyectos descritos son de gran escala y están influenciados por la disponibilidad de maquinaria, lo que afecta la elección de materiales, costo, tiempo y transporte. La estabilidad, garantizada por las uniones, es crucial en esta escala. Se utilizó parametrización para definir las curvas en base a simulaciones. Estos criterios se refieren a varios aspectos de la fabricación digital. Así, existe una síntesis en los proyectos, estructurada en base a los criterios establecidos por la taxonomía (Tabla 2).

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Figure 3. Mapped Empathy por HF2. Fuente: Scheeren et al. (2018)

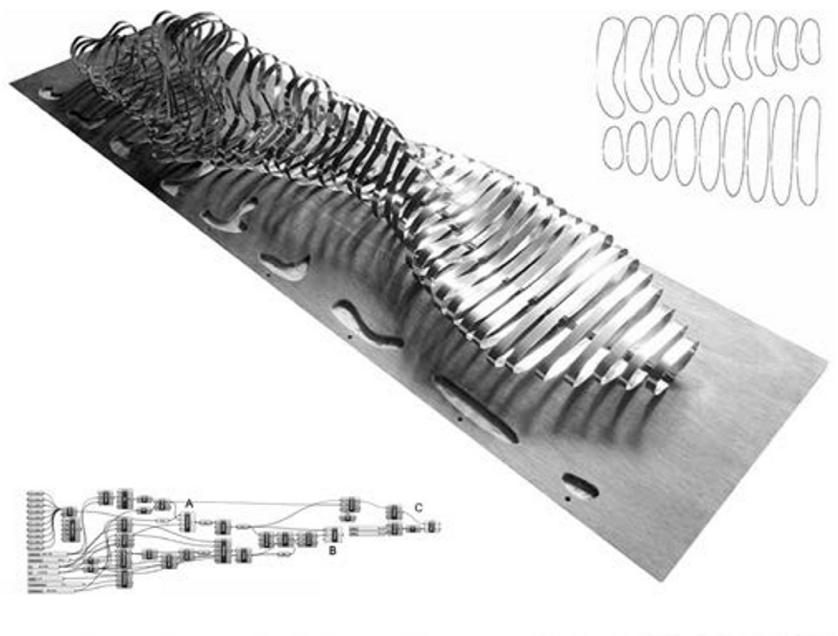


Figure 4. HF1-BANCAPAR. Fuente: Sperling y Herrera Polo (2015)

HF | Procesos de fabricación, superficies y materiales

Al centrarse en los procesos de fabricación aditiva y sustractiva, es posible aplicarlos de forma complementaria en un proyecto. En el ejemplo de «Fabricación Digital Artesanal de Baldosas», el proceso sustractivo sirve de base para el aditivo. El moldeado permite crear formas a partir de piezas cortadas, destacando la interdependencia entre los procesos. Esta integración demuestra cómo la fabricación digital explora varios enfoques, aprovechando las características únicas de cada método para crear soluciones creativas y prácticas en la materialización del proyecto (Figura 5).

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Criterios	Subcriterios	Aplicación
1. Escala	1.3 Grande	Ambos son proyectos a gran escala
2. Técnicas de fabricación digital	2.2 Secciones	Uso de planos en serie
3. Topología de superficie	3.2 Forma libre	Curvas de forma libre con geometría compleja
4. Maquinaria	4.3 Procesos sustractivos	El fresado CNC se utiliza para cortar secciones.
5. Materiales	5.1 Madera/contrachapado	«Mapped Empathy» usa madera contrachapada
	5.2 Acero/metal	«BANCAPAR» usa metal
6. Aspectos de diseño	6.1 Desempeño (estructural)	Se consideran el desempeño estructural y la estabilidad
	6.3 Tiempo - Corte, máquina y ensamblaje	El tiempo se ve afectado por la escala y el proceso.
	6.4 Transporte	Un gran tamaño influye en el transporte
	6.5 Parametrización/BIM	Curvas definidas por simulación paramétrica
	6.7 Conexiones/accesorios	Estabilidad garantizada a través del ensamblaje
	6.10 Costo	Costo influenciado por la maquinaria y la escala

Tabla 2. Escalas y geometría – taxonomía. Fuente: Preparado por el autor

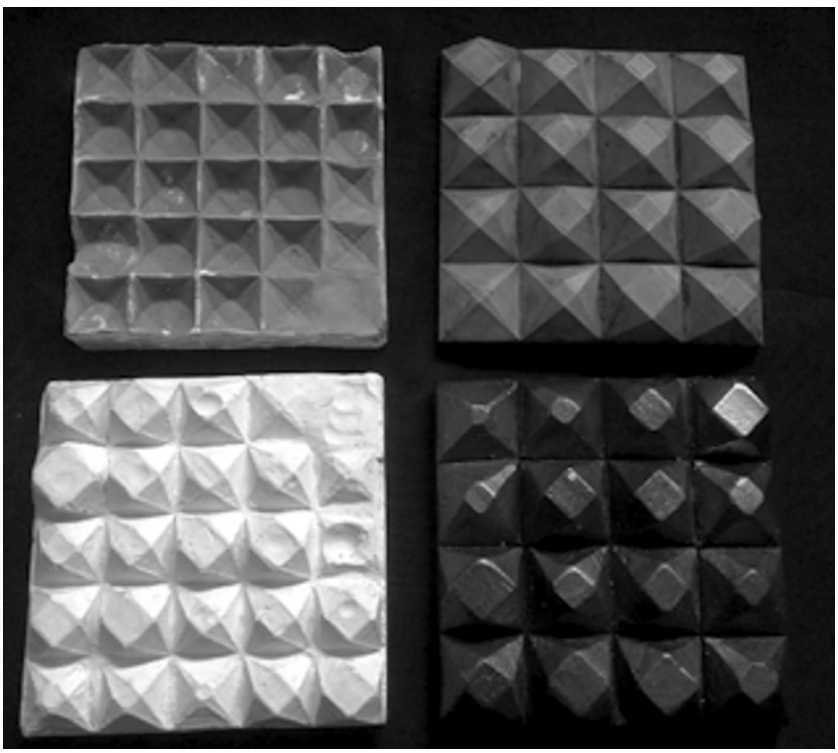


Figura 5. Fabricación Digital Artesanal de Baldosas. Fuente: Scheeren et al. (2018)

El proceso de fabricación puede utilizar concreto, arcilla y filamentos de impresora 3D, lo que da como resultado piezas curvas con diseños simples, dobles o de forma libre. Para objetos a gran escala, se requieren formas grandes o accesorios entre piezas más pequeñas. Al vincular técnicas de fabricación digital con uniones, existe una afinidad entre planos en serie, conformado, teselado y plegado. Algunos elementos se pueden formar sin accesorios, simplemente moldeándolos y apilándolos, como se ve en la «Escultura Helix» de The Onion Lab (Figura 6).

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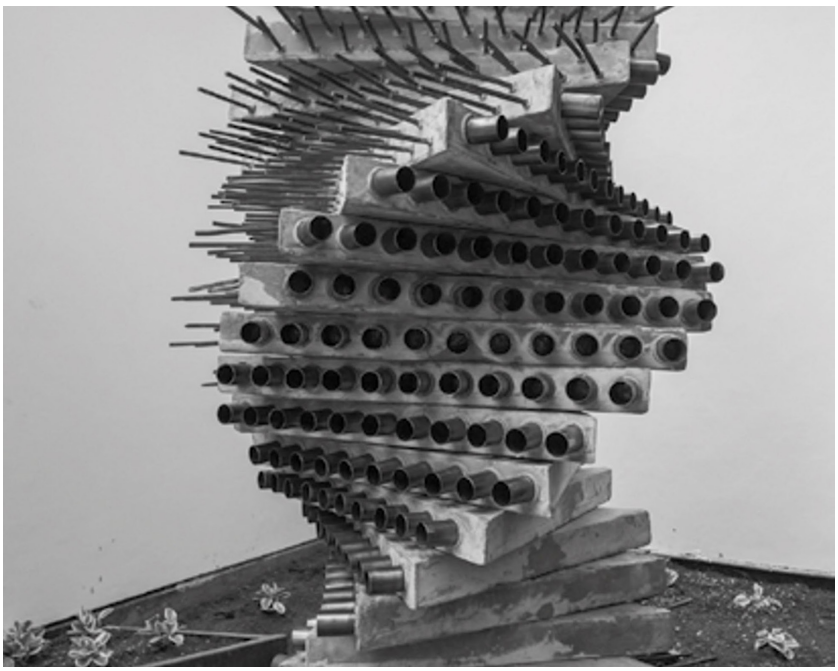


Figura 6. Escultura Helix. Fuente: Scheeren et al. (2018).



Figure 7. Lounge for Brazilian Venture. Fuente: Scheeren et al. (2018).



Figure 8. Funicular Shells. Fuente: Scheeren et al. (2018).

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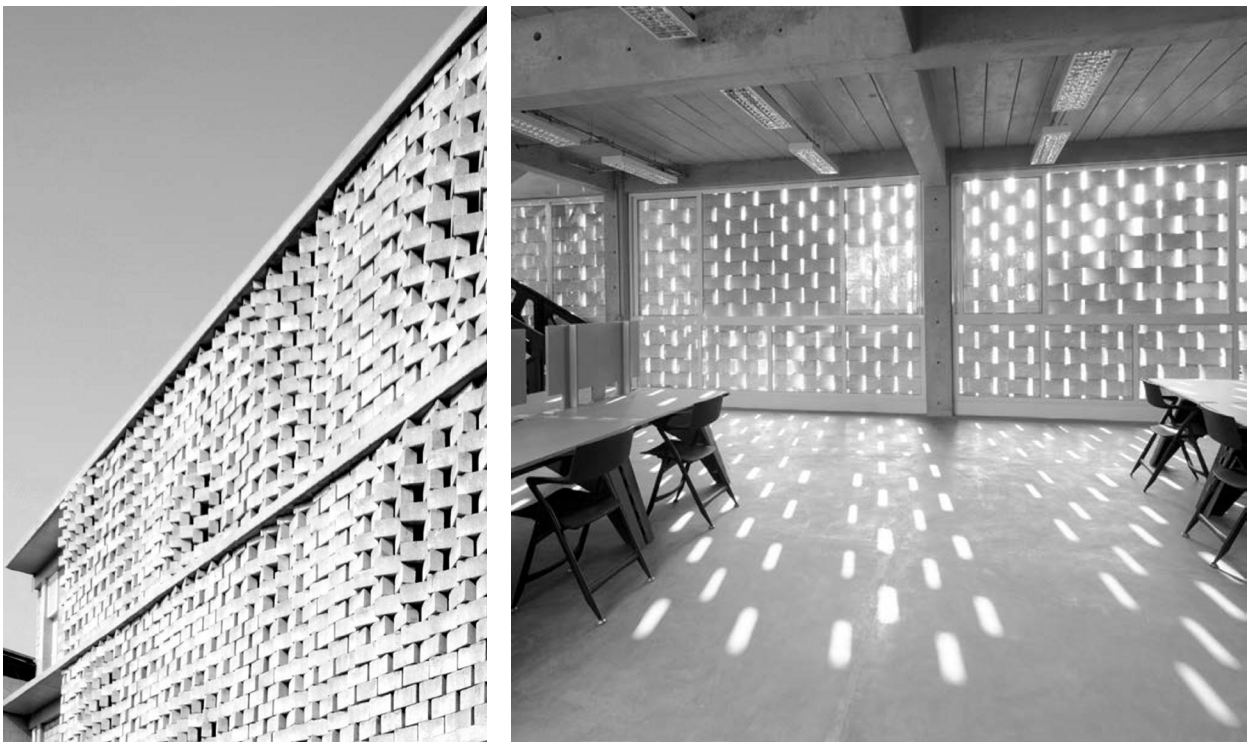


Figura 9. HF1 | CoBLOgó. Fuente: Sperling y Herrera Polo (2015).

En la TDFab+Arch, los procesos de fabricación impactan en otros factores clave, incluidos los materiales, la maquinaria y la topología de la superficie. Estas influencias se verifican a través de los proyectos Homo Faber discutidos. La combinación de dos o más técnicas en un objeto puede afectar su escala y complejidad, requiriendo una evaluación de costos, beneficios y conectores para la estabilización. Las técnicas de contorneado se pueden aplicar en el proceso sustractivo, como en las esculturas. En el proyecto «Lounge for Brazilian Venture», se utilizaron topologías basadas en escultura digital para crear las superficies de sofás y nichos, con un algoritmo en software paramétrico para automatizar la preparación de los archivos. El modelo 3D se seccionó de acuerdo con la profundidad de la fresadora CNC, con piezas cortadas, numeradas y agrupadas para su transporte. Estas piezas sirvieron de base para la aplicación de resina y fibra de vidrio, combinando procesos sustractivos y aditivos (Figura 7). El proyecto «Funicular Shells» utilizó modelado, fabricación CNC y montaje de pabellones con forma de funicular, analizando su comportamiento estructural a través de simulaciones. El análisis involucra la escala, la estabilidad y los conectores del objeto, y la topología de la superficie está influenciada por la técnica de fabricación utilizada (Figura 8).

Los proyectos mencionados también demuestran una conexión entre los diferentes criterios abordados en la Taxonomía. Esta conexión comienza en la categoría de topología de superficie y atraviesa los criterios relacionados con materiales, maquinaria, formas para fabricación digital, estabilidad y procesos aditivos y sustractivos. Esta interacción entre los criterios afecta el costo, el tiempo, el transporte, el ensamblaje, las uniones y la generación de desechos.

Para crear formas de doble curva o de forma libre, es común utilizar procesos sustractivos con accesorios. Es posible utilizar maquinaria como robots o deposición de material para construir curvas, pero se debe considerar la estabilidad y la conexión entre

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las piezas. Se agrega otra capa de complejidad con la simulación y el desempeño, tanto ambiental como estructural, del proceso de ensamblaje del proyecto. Este ejemplo se puede ver en el proyecto «CoBLOgó», donde se desarrolla una pieza monolítica de concreto para formar una fachada de forma libre. La disposición de las piezas fue dictada por simulaciones por computador del desempeño ambiental, como se muestra en la Figura 9.

En este ejemplo, la TDFab+Arch comienza seleccionando concreto como material y su proceso de fabricación, lo que influye en las simulaciones por computador que ayudan a definir la topología de la superficie. Además, se tiene en cuenta la disponibilidad de maquinaria a la hora de montar las piezas. Este proceso ilustra la interacción entre los diferentes criterios de la TDFab+Arch para registrar un escenario complejo, donde la elección del material, la definición de la geometría y el uso adecuado de la maquinaria son cruciales para el proyecto (Tabla 3).

Tabla 3. Procesos de fabricación, superficies y taxonomía de materiales. Fuente: Preparado por el autor

Criterios	Subcriterios	Aplicación
1. Escala	1.3 Grande	Todos los proyectos son de mediana a gran escala; la complejidad y el montaje requieren esta clasificación
2. Técnicas de fabricación digital	2.1 Plegado	Presente en la conformación (por ejemplo, Helix)
	2.2 Secciones	Utilizado en el proyecto Lounge (para CNC) y la escultura Helix
	2.3 Teselación	Presente en Helix, baldosas y Funicular Shells
	2.4 Conformado	Conformado de baldosas a través de moldes; conformado de concreto en CoBLOgó
3. Topología de superficie	3.1 Doble curvatura	CoBLOgó y Funicular Shells
	3.2 Forma libre	Lounge, Helix, CoBLOgó
	3.3 Curva simple	Proyecto de baldosas
4. Maquinaria	4.1 Procesos aditivos	Baldosas y CoBLOgó
	4.3 Procesos sustractivos	Proyecto Lounge y baldosas
	4.4 Robótica	Uso potencial para deposición de material (mencionado como una posibilidad para formas curvas)
5. Materiales	5.4 Concreto	CoBLOgó y baldosas
	Cerámica/mampostería	Baldosas
	5.9 Plástico/PLA	Filamentos de impresión 3D mencionados
6. Aspectos de diseño	6.1 Desempeño (ambiental y estructural)	CoBLOgó y Funicular Shells utilizan la simulación para informar el diseño
	6.2 Desechos	Eficiencia considerada en el uso de materiales y el proceso de producción.
	6.3 Tiempo - Corte, máquina y ensamblaje	CNC y métodos aditivos tienen un impacto en la duración
	6.4 Transporte	Proyecto Lounge, piezas preagrupadas para el transporte
	6.5 Parametrización/BIM	Lounge y CoBLOgó utilizan modelado paramétrico y simulación
	6.6 Modulación	Patrones de baldosas y segmentación de piezas (Lounge, baldosas)
	6.7 Conexiones/accesorios	Helix (apilamiento), CoBLOgó (montaje modular)
	6.8 Estabilidad	Requerida en toda debido a la forma y la escala; asegurada a través del ensamblaje o la simulación
	6.9 Montaje y desmontaje	Lounge y Helix se ensamblan de forma modular
	6.10 Costo	Afectado por la elección del proceso (CNC, impresión 3D, moldeo de concreto)
	6.11 Trayectoria de la herramienta	Enrutamiento CNC (Lounge, baldosas), generación automatizada de archivos mediante modelado paramétrico

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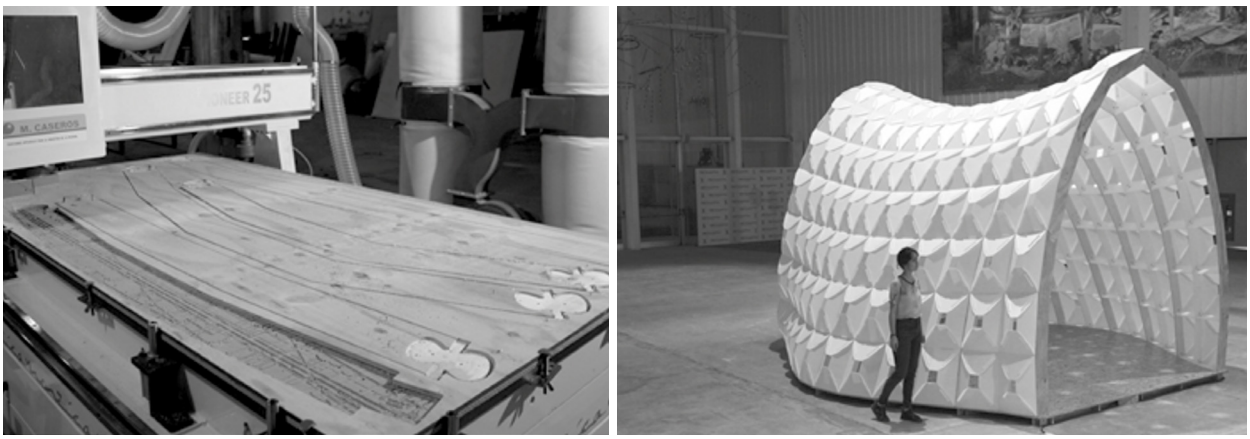


Figura 10. Furetsu. Fuente: Scheeren et al. (2018).

HF | Uniones y materiales

Un ejemplo de un proyecto que explora uniones y materiales es "Furetsu", que utiliza un material liviano para crear piezas con topologías de superficie altamente curvas o formas libres. El proyecto utiliza materiales como láminas de madera contrachapada, acrílico y metal y emplea enrutadores CNC y cortadores láser para crear pliegues y teselaciones dentro de estos materiales. Además, esta técnica se puede utilizar como método de anidación que facilita la flexión de la forma o incluso a través de la geometría de las propias piezas. Estas estrategias se ilustran en la Figura 10.

En este proyecto, se utilizó un material liviano para fabricar piezas independientes que se cortaron por separado. Estas piezas se superpusieron a una estructura piramidal y se conectaron mediante un marco rígido cortado con una fresadora CNC. En la fabricación digital, las uniones juegan un papel crucial en la unión de materiales y formas, proporcionando estabilidad a las piezas. La forma final del pabellón se logra a través de dos técnicas simultáneas de fabricación digital: plegado y teselado, que se aplican a piezas planas para crear una forma de doble curva. Las simulaciones por computador generaron esta geometría compleja, lo que permitió que el pabellón se montara y desmontara fácilmente y que fuera móvil y reutilizado.

En la discusión sobre la escala y las uniones, vemos que, en piezas pequeñas, los accesorios son innecesarios, ya que los objetos tienden a ser autoportantes o macizos. El proyecto «A Walking City; Archigram Unique vs Reproducible» se realizó utilizando dos tipos de materiales, clasificados como multimateriales en el contexto de la TDFab+Arch. En el prototipo, la forma se logró uniendo las piezas de madera contrachapada. En el segundo experimento, el modelo se hizo monolíticamente sin necesidad de accesorios (Figura 11).

El proyecto se concibió teniendo en cuenta la maquinaria disponible, estableciendo una relación con los materiales adecuados para la Fabricación Digital. Al mismo tiempo, se puso atención al ensamblaje de las piezas y a garantizar su estabilidad estructural. En cuanto a las uniones entre las partes de un mismo objeto, dos tipos se refieren a los criterios formulados: cuando las uniones están hechas del mismo material que el objeto, como en el caso de objetos de madera/contrachapado con accesorios de silla de montar para planos serializados; y cuando las uniones

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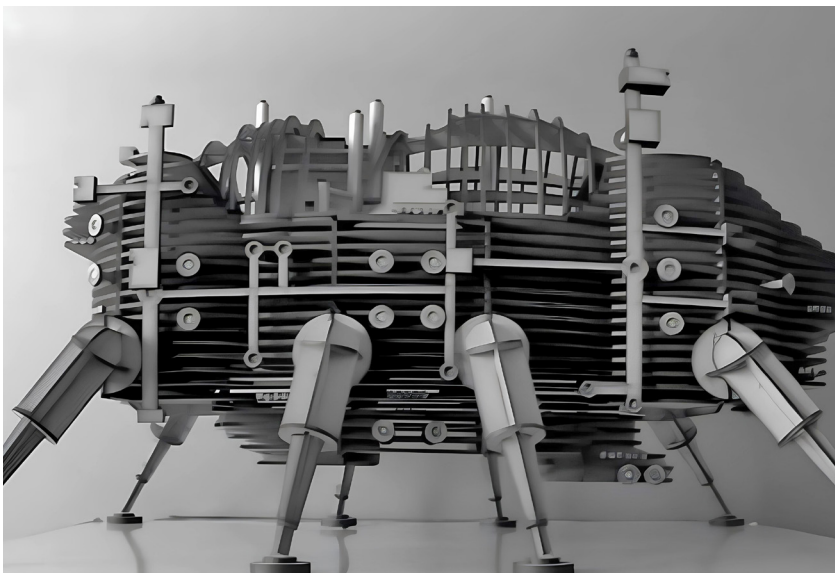


Figure 11. A Walking City. Fuente: Sperling y Herrera Polo (2015)



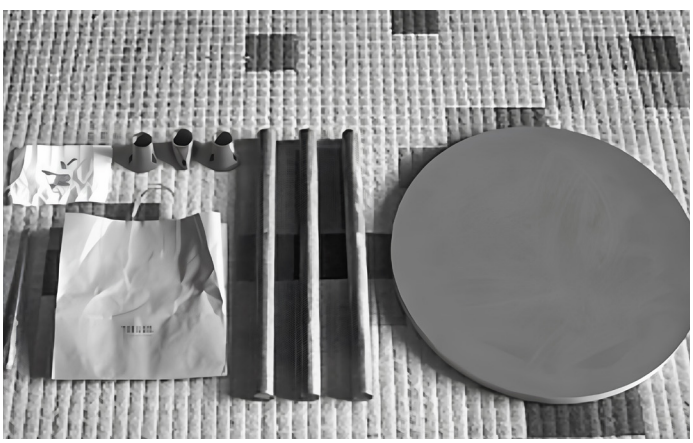


Figure 12 - HF2 | 360 Furniture. Fuente: Scheeren et al. (2018)

utilizan materiales diferentes, como en el caso de objetos de contrachapado y herrajes de tornillos y clavos u objetos impresos en 3D. Es el caso del proyecto «360° Furniture», una línea de mobiliario que integra objetos cotidianos con tecnología de impresión 3D. Este enfoque permite personalizar la producción según las preferencias del usuario (Figura 12).

La función de las uniones en el montaje de muebles caracteriza este proyecto. A través de la parametrización, estas uniones se optimizaron y adaptaron para satisfacer necesidades específicas. El proceso de montaje utiliza una impresora 3D para producir las uniones, que permiten la conexión entre el contrachapado cortado mediante procesos sustractivos y las patas cilíndricas de madera del mueble.

Resúmenes de casos prácticos - HF

Los estudios de caso examinan diferentes materiales, técnicas de fabricación y escalas, ilustrando cómo las herramientas digitales afectan la complejidad geométrica, la lógica de ensamblaje y el desempeño del material de cada propuesta (Tabla 4). Proyectos como Mapped Empathy y Bancapar ejemplifican construcciones a gran

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Criterios	Subcriterios	Aplicación
1. Escala	1.1 Pequeña / 1.3 Grande	«360° Furniture» y «Walking City» involucran objetos pequeños; «Furetsu» es un pabellón a gran escala
2. Técnicas de fabricación digital	2.1 Plegado	Se utiliza en «Furetsu» para permitir la conformación de la superficie
	2.3 Teselación	Permite la curvatura en «Furetsu»
3. Topología de superficie	3.1 Doble curvatura	Lograda en «Furetsu»
	3.2 Forma libre	Tanto «Furetsu» como «Walking City» exhiben formas complejas
4. Maquinaria	4.2 Procesos sustractivos	Usados en «Furetsu» y posiblemente en «Walking City»
	4.3 Procesos sustractivos	Se utiliza para cortar contrachapado y estructura en «Furetsu» y «360° Furniture»
	4.1 Procesos aditivos	Aplicado en «360° Furniture» para producir uniones
5. Materiales	5.1 Madera/contrachapado	Común a todos los proyectos
	5.9 Plástico/PLA	Componentes impresos en 3D en «360° Furniture»
	5.2 Acero/metal	Utilizado en «Furetsu»
	Multimaterial	«Walking City» (versiones monolíticas + ensamblaje)
6. Aspectos de diseño	6.1 Desempeño (estructural)	Todos los proyectos consideran la estabilidad estructural
	6.3 Tiempo - Corte, máquina y ensamblaje	Montaje simplificado mediante cortes CNC y simulación en «Furetsu» y uniones en «360° Furniture»
	6.4 Transporte	«Furetsu» es móvil; el desmontaje está habilitado
	6.5 Parametrización/BIM	Se utiliza para diseñar y adaptar uniones en «360° Furniture»
	6.6 Modulación	Presente en cortes planos serializados («Furetsu», «Walking City»)
	6.7 Conexiones/accesorios	Enfoque clave en los tres proyectos (uniones de madera, uniones de materiales mixtos, conectores impresos)
	6.8 Estabilidad	Lograda a través de estrategias de conexión y simulación de diseño.
	6.9 Montaje y desmontaje	Priorizado en «Furetsu» y «360° Furniture»
	6.10 Costo	Influenciado por el número de piezas, las técnicas de fabricación y el tipo de unión
	6.11 Herramienta	Estrategias de corte CNC y láser utilizadas para la optimización

Table 4 Uniones y materiales.
Fuente: Preparado por el autor
Síntesis de estudios de caso - HF

escala utilizando procesos sustractivos (fresado CNC) y secciones en serie para lograr geometrías de forma libre. Por el contrario, Furetsu y 360° Furniture destacan el papel de las uniones y el comportamiento de los materiales en proyectos de mediana y pequeña escala, utilizando procesos sustractivos y aditivos. Walking City y Lounge Venture enfatizan la modularidad, la movilidad y el diseño orientado al desempeño, a menudo moldeado por la maquinaria disponible y el modelado paramétrico. Como herramienta para registrar y apoyar el análisis comparativo, la exploración de la TDFab+Arch permite la construcción de diversas interpretaciones de estudios de casos. Ejemplos de subproductos se presentan en la Tabla 5 que consolida los principales criterios observados en cada caso, centrándose en la elección de materiales, procesos, geometría, métodos de montaje, escala del proyecto, consideraciones de rendimiento y el uso de la parametrización.

Esta investigación analiza, a través de la taxonomía desarrollada, cómo las técnicas de fabricación digital dan forma al desarrollo de un objeto arquitectónico a diversas escalas. A través de estudios de casos que van desde prototipos hasta pabellones, demuestra cómo los métodos de fabricación, los materiales y las estrategias de ensamblaje definen el resultado de un proyecto. Estos ejemplos ilustran la interacción

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Proyecto	Material	Proceso	Geometría	Montaje	Escala	Desempeño	Parametrización
Mapped Empathy	Madera contrachapada	Sustractivo (CNC)	Forma libre, secciones en serie	Estabilidad a través de las uniones	Grande	Tiempo, costo, transporte	Simulación basada en curvas
Bancapar	Metal	Sustractivo (CNC)	Forma libre, secciones en serie	Estabilidad a través de las uniones	Grande	Tiempo, costo, transporte	Simulación basada en curvas
Fabricación de baldosas	Concreto, cerámica	Moldeado, impresión 3D	Doble curvatura, teselación	Montaje modular con uniones	Mediana	Desempeño estructural, tiempo	Simulación paramétrica
Furetsu	MDF	Corte CNC (capas seccionadas)	Superficies de forma libre	Montaje apilando piezas	Grande	Estabilidad estructural	Scripting paramétrico
360° Furniture	PLA (impreso en 3D)	Aditivo (impresión 3D)	Curvas simples + uniones	Conectores de impresión directa	Pequeña	Costo, tiempo	Scripting específico de la unión
Walking City	MDF + Arduino	Corte CNC + montaje electrónico	Formas modulares simples	Componentes montables	Pequeña	Transporte, modularidad	No se menciona
Lounge Venture	Madera contrachapada	Corte CNC	Forma libre, secciones en serie	Montaje estructural con uniones	Grande	Desempeño estructural, tiempo	Parametrización geométrica

Tabla 5 Síntesis de casos.
Fuente: Preparado por el autor

fundamental entre la geometría, el desempeño estructural y las capacidades disponibles en los flujos de trabajo digitales. Aunque el enfoque actual está en el proceso de construcción, la taxonomía abre vías para futuras investigaciones sobre la función y ocupación de los espacios, ampliando la comprensión de cómo se pueden habitar estos sistemas. Además, la herramienta se puede utilizar para identificar tendencias emergentes en el Sur Global mediante el análisis de proyectos específicos. Su potencial se verá reforzado por la continua expansión de su base de datos, consolidando su papel como guía para la investigación y la práctica del diseño.

CONCLUSIONES

La taxonomía de fabricación digital TDFab+Arch es una herramienta flexible y versátil que puede contribuir a optimizar el proceso de diseño de proyectos de fabricación y catalogación digital. Este artículo cubre varios aspectos de la metodología de investigación, incluida la Revisión Sistemática de la Literatura (SLR, por su sigla en inglés), el análisis cualitativo de contenido y la estructuración y aplicación de la Taxonomía para la Fabricación Digital para la Arquitectura (TDFab+Arch). A través de estos enfoques, fue posible definir posibles avances en el campo de la fabricación digital a escala arquitectónica.

La SLR proporcionó una base teórica para la investigación, identificando y refinando el estudio y desarrollando la taxonomía. El análisis cualitativo de contenido permitió una investigación más profunda de los artículos recopilados a través de la codificación realizada por TDFab+Arch. Este análisis proporcionó una comprensión integral de los conceptos relacionados con la fabricación digital y las necesidades y desafíos que enfrentan los diseñadores.

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Así, se logró el objetivo de este artículo, siendo la estructuración de la taxonomía un paso fundamental para organizar y categorizar los elementos esenciales de la fabricación digital. Además, al aplicar la taxonomía, intervienen en el proceso diversas técnicas, materiales, equipos y aspectos de diseño. Esta estructuración contribuyó a una comprensión más detallada y sistemática, facilitando la aplicación de la TDFab+Arch y el desarrollo de proyectos de fabricación digital. La herramienta surgió del desarrollo e integración de todos los componentes discutidos. Constituye un marco teórico-metodológico, construido sobre la plataforma Notion (herramienta digital) para la clasificación y documentación de proyectos. En consecuencia, sirve como instrumento para el registro de proyectos y la asistencia analítica comparativa. La TDFab+Arch tiene el potencial de ayudar en el proceso de diseño y se puede utilizar como guía desde la concepción del proyecto hasta la materialización o como herramienta para clasificar proyectos de fabricación digital. El nombre de la herramienta sugiere un énfasis en la arquitectura, pero esto no limita su uso. Los tipos de visualización disponibles en la Taxonomía de Fabricación Digital ofrecen a los diseñadores diferentes formas de visualizar y explorar los criterios ingresados en la herramienta. Es importante tener en cuenta que se alienta al diseñador a explorar múltiples tipos de visualización, cambiando entre ellos según sea necesario. Cada vista tiene ventajas específicas y contribuye a comprender y organizar los criterios.

La flexibilidad de la herramienta y la posibilidad de aplicar filtros permiten al usuario seleccionar la visualización que mejor se adapte a sus preferencias y necesidades en cada momento. Esta posibilidad mejora la interactividad de la herramienta, permitiendo al diseñador explorar los criterios desde diversas perspectivas y obtener una comprensión más completa de los proyectos. La Taxonomía de Fabricación Digital es una herramienta adaptable y personalizable, que permite a los usuarios elegir la visualización que mejor se adapte a sus necesidades en cada momento.

La aplicación continua del arco de la TDFab+Arch a futuros catálogos y como herramienta de diseño permitirá comprender mejor los elementos contextuales que contribuyeron a los procesos de toma de decisiones que condujeron a diferentes soluciones. Se posibilitan estudios comparativos a través de las categorías de la taxonomía, así como revisiones estructuradas de procesos, técnicas, geometrías y materialidades similares. Este es un elemento crítico para acelerar la producción de contribuciones significativas al campo y aplanar las curvas de aprendizaje para las futuras generaciones de diseñadores e investigadores por igual.

CONTRIBUCIÓN DE LOS AUTORES CRediT

Conceptualización, BF y CN; Curación de datos, BF y CN; Análisis formal, BF y CN; Adquisición de financiación, BF; Investigación, BF y CN; Metodología, BF y CN; Administración de proyectos, BF y CN; Recursos, BF y CN; Software, BF y CN; Supervisión, CN; Validación, BF y CN; Visualización, BF y CN; Escritura-borrador original, BF y CN; Escritura- revisión y edición, BF y CN.

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ARQUITETURA E TRABALHO: UMA ANÁLISE FLUSSERIANA, DOS MOSTEIROS MEDIEVAIS ÀS SMART CITIES

ARCHITECTURE AND WORK: A FLUSSERIAN ANALYSIS, FROM MEDIEVAL MONASTERIES TO SMART CITIES

ARQUITECTURA Y TRABAJO: UN ANÁLISIS FLUSSERIANO, DE LOS MONASTERIOS MEDIEVALES A LAS SMART CITIES



Figure 0. Washington office, c.1904. Source: Burke, 1946.

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RESUMO

O artigo parte de duas referências teóricas – as reflexões do filósofo Vilém Flusser acerca da natureza do trabalho e os conceitos de espaço e lugar desenvolvidos pelo geógrafo Yi-Fu Tuan – para analisar três tipos de espaços de trabalho: os mosteiros medievais, as fábricas da Era Industrial e os escritórios contemporâneos. Segundo Flusser, "Para poder trabalhar é necessário supor que o mundo não é como deveria ser e que se pode transformá-lo". A arquitetura – desde o processo de concepção até a construção – pressupõe um tipo de trabalho que transforma o mundo de maneira concreta, articulando as dimensões descritas por Tuan como espaço mítico, espaço pragmático e espaço geométrico. O cruzamento da abordagem flusseriana com os conceitos de Tuan revela aspectos estruturais das relações entre os edifícios e as culturas que neles se expressam e se apoiam, indicando possíveis caminhos para a interpretação do papel da arquitetura em um mundo dominado por aparelhos.

Palavras-chave: espaços de trabalho, escritórios, fábricas, mosteiros, teoria da arquitetura

ABSTRACT

The paper draws from two theoretical references – philosopher Vilém Flusser's reflections on the nature of work and the concepts of space and place developed by geographer Yi-Fu Tuan – to analyse three types of workspaces: medieval monasteries, industrial-age factories, and contemporary offices. According to Flusser, "To be able to work, it is necessary to suppose that the world is not as it should be and that it can be transformed", and architecture – from the process of conception to construction – presupposes a type of work that transforms the world in a very concrete way, articulating the dimensions described by Tuan as a mythical space, pragmatic space, and geometric space. The intersection between the Flusserian approach and Tuan's concepts reveals some structural aspects of the relationships between buildings and the cultures they express and support, indicating possible paths for interpreting the role of architecture in a world dominated by devices.

Keywords: workspaces, offices, factories, monasteries, architectural theory

RESUMEN

El artículo parte de dos referencias teóricas – las reflexiones del filósofo Vilém Flusser sobre la naturaleza del trabajo y los conceptos de espacio y lugar desarrollados por el geógrafo Yi-Fu Tuan – para analizar tres tipos de espacios de trabajo: los monasterios medievales, las fábricas de la era industrial y las oficinas contemporáneas. Según Flusser, "para poder trabajar, es necesario suponer que el mundo no es como debería ser y que se puede transformar", y la arquitectura – desde el proceso de concepción hasta la construcción – presupone un tipo de trabajo que transforma el mundo de una manera muy concreta, articulando las dimensiones descritas por Tuan como espacio mítico, espacio pragmático y espacio geométrico. La intersección del enfoque Flusseriano con los conceptos de Tuan revela algunos aspectos estructurales de las relaciones entre los edificios y las culturas que ellos expresan y apoyan, indicando posibles caminos para la interpretación del papel de la arquitectura en un mundo dominado por los aparatos.

Palabras clave: espacios de trabajo, oficinas, fábricas, monasterios, teoría de la arquitectura

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INTRODUCTION

This article begins by identifying the tension between the immateriality of an increasingly digitized culture and the architecture's inherent materiality, a tension that becomes particularly evident in recent transformations in the configuration and design of workspaces. Even though many people carry out work activities using networks of interconnected devices, cities continue to suffer from the problems caused by the daily flow of people commuting between their homes and offices, shops, and factories. To better understand this contradiction, the article draws on Vilém Flusser's reflections on the nature of work, articulating them to the concepts of space and place developed by Yi-Fu Tuan in the analysis of three historical models of workspaces.

Vilém Flusser (1920-1991) was born into a family of Jewish intellectuals in Prague, where he studied philosophy for only two semesters – training interrupted by the Nazi threat, which led him to flee first to England and then to Brazil, where he lived for more than 30 years. In São Paulo, Flusser joined the local intellectual circles, developed his thinking, and published his first books. With the hardening of the military dictatorship in Brazil, he returned to Europe in 1972 – initially residing in Italy and later settling in Robion, France. From the 1980s, his work began to gain widespread dissemination in Europe. In November 1991, Flusser died in a car accident after giving a lecture at the Goethe-Institut in Prague. His intellectual production, marked by a non-academic spirit, is recognized mainly by the idea that the internal logic of the means of communication that predominate in the production and distribution of a given culture shapes the worldview of that culture. In his most famous example, Flusser argues that historical consciousness is the product of a culture based on linear texts and that the notion of history is being overcome by the emergence of "technical images" generated by "devices".

Yi-Fu Tuan (1930-2022) was born in Tianjin, China, completed his university education in the United Kingdom, and later settled in the United States, where he played a leading role in consolidating and expanding the field of humanistic geography. By studying the cultural and psychological roots of the different types of relationship that can be established with space, Tuan systematized the fundamental concepts of "space" – understood as an "undifferentiated" extension susceptible to exploitation or appropriation – and "place" – understood as a "portion" of space demarcated and recognized by the attribution of meaning by individuals and/or groups.

Although these two authors are widely recognized in their fields, where Flusser's influence, initially limited by the fact that most of his texts were written in Portuguese and German, has been amplified by recent translations into English, unfortunately, both seem to have had little direct impact in the area of architecture. This article aims to explore the fruitfulness of certain concepts developed by Flusser and Tuan, reflecting on the relationships between the architectural form of workspaces and the social and relational dynamics prevalent in specific historical periods.

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The idea of this reflection arose from the reading of the text "Beyond the Machines" (Flusser, 2012), where the author presents three historical models of work: "that of the engaged revolutionary, that of the research scientist, and that of the technocratic employee". Based on this reading, we identified three historical models of workspaces that could be related to Flusser's models: the medieval monastery, the factory, and the office. Next, we analyze the relationship of each of these models with the conceptions of space and place formulated by Tuan, understood as always "situated" and, therefore, variable according to the dominant ontologies in each culture and in each period. We believe that this analysis can reveal some structural aspects of the relationships between buildings and the cultures that are expressed and supported in them, pointing out possible ways to interpret the role of architecture in the contemporary context.

THEORETICAL FRAMEWORK

WORK, ACCORDING TO FLUSSER

For Flusser, the transition from agricultural to industrial society brought about not only a social or economic revolution, but above all an ontological revolution. The ontology of the peasant, who "patiently" worked with nature, was replaced by the ontology of the engineer, who "violently" shapes nature. However, by the late 1970s, Flusser had identified another transition: the industrial world, designed by engineers and built by workers, was beginning to give way to a post-industrial world programmed by programmers and operated by employees.

This succession of ontologies -peasant, engineer, employee – may seem overly synthetic, since it assumes that the entire pre-industrial period would have been a very long era shaped by the logic of agriculture. However, although this model groups together periods as complex and diverse as antiquity and the Middle Ages, what really distinguishes each of these ontologies is the difference between "the view of an animated cosmos" and the "scientific view of the world". Flusser recognizes that "in agricultural society there were artisans, and in industrial society there were peasants", but stresses that "the agricultural blacksmith hammered according to an animated cosmos, and the industrial peasant milked according to an inanimate cosmos" (Flusser, 2011b, p.48). Likewise, in both periods, there were already employees or administrators who worked according to the prevailing worldviews in each era. Thus, the transition to the ontology of the employee may only seem like a redistribution of labor within the industrial age: the automation of production and the growth of corporations would have increased the demand for administrative employees, who came to be more numerous than workers. However, the cosmos of the employee is no longer the same as that of the engineer – both are inanimate, but the first obeys the logic of projects, while the second follows the logic of programs.

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Although they lived in ontologically very distinct periods, pre-industrial peasants and factory workers worked with "things" – cows, wheat, wood, iron – whether they were animate or inanimate, as their respective cosmos. Now the employee works not with things, but with symbols – such as texts, numbers, tables, and so on. Of course, many people already worked with symbols in previous eras, but not in the same way. For the monk in charge of the accounting of the monastery, those numbers corresponded to exchanges, things, or agreements that took place in the concrete world, which for him was still an animated cosmos; for the employee, the document is the concrete fact. The monk-accountant did not live according to the logic of the accounting balance sheet. However, the employee lives according to the managerial logic that demands and consumes their spreadsheets and reports. These documents also refer, for the most part, to concrete things – but for the employee, they are concrete themselves. So much so that the work of managers often consists more in controlling the documents that record the activities of the organization rather than in controlling the activities themselves. The management of documents that theoretically record the results of work has become more important than the management of the work itself.

This transformation leads us to reflect on the nature of work, which, especially in industrial and post-industrial contexts, forces us to consider the question of technique. An in-depth reflection on technique is undoubtedly beyond the pretensions of this article. However, it is worth mentioning that Heidegger – who exercised a significant influence on Flusser's thought- points out that the "apparent neutrality of technique" stimulated the search for the realization of "all the possibilities of technique," extending its domains in the direction "of technically conquering nature and technically organizing history, in order to create an international institution which, fabricated by man, must assume the prosperity or well-being of man" (Martin Heidegger em Vietta, 1993, pp. 152-153; Rüdiger, 2014, p.10). Even though we can say that the technique was already present in the world of the peasant, not only in agricultural practices, but also in techniques linked to artisanal production and the arts in general, its internal logic was inserted in a broader worldview, which included and exceeded it. In the age of the worker, however, the technique became a worldview in itself.

In *O Universo das Imagens Técnicas*, Flusser presents a model of the history of culture – perhaps an attempt to organize history technically? - which consists of five steps or degrees towards abstraction. A predominant form of cultural organization marks each step: initially, immersed in nature, the human being could only express and transmit knowledge through their actions; then, through the manipulation of natural materials, objects arise, which perpetuate actions – informing nature and giving rise to culture; the next step is the emergence of images that represented or symbolized objects, serving as models for future actions; then, however, these images become more important than the objects themselves - Flusser calls them "traditional images", whose predominance would be replaced around four thousand years ago, with the emergence of writing, which "explained" the images;

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finally, more recently, the predominance of texts and their linear and causal structure collapsed – "the pebbles of the necklaces begin to roll, loose from the rotten threads, and form chaotic heaps of particles, of much, of many bits, of zero–dimensional points" (Flusser, 2008, p.17). These "pebbles "cannot be seen, manipulated, or described, but they can be calculated by devices such as photographic cameras, television sets, and computers – devices that generate" technical images," the predominant means of organizing contemporary culture.

This model suggests a linear process in which the human being would be constantly moving away from direct experience of the world. Flusser himself, however, points out that "it was certainly not so, linearly, that man withdrew, became alienated, from the concrete world" (Ibid., p. 18): the steps symbolize distinct worlds, created and shaped by different cultural forms. The fifth step, shaped by the predominance of technical images, would correspond to a new, dimensionless level, called "post-history" (Flusser, 2008). The term arises from the realization that the linear logic of writing engendered the notion of history and that the predominance of technical images -not linear, but rather more two-dimensional- marks, therefore, the end of this history. Today, the logic of linear writing no longer applies to how we experience culture, and this experience influences people's perception of reality in its entirety. As Soto Calderón underlines, Flusser understands "that we find ourselves in a cultural crisis comparable only to the passage from oral culture to written culture, a crisis that requires us to think in new categories, since traditional episteme and modern critique are no longer operative for our current situation" (Soto Calderón, 2023)[1].

Crossing the model of cultural history with the model of dominant ontologies, it becomes clear that the ontology of the peasant has maintained its predominance despite the transformations that have occurred in the forms of construction and expression of culture. We can say that objects, images, and texts have been created, over centuries, from the same general attitude: the "patient manipulation of animated nature." It is only in the industrial age, already under the predominance of linear writing, that this attitude is replaced– or, at least, relegated to the background. This rupture will be discussed below, based on the description made by Flusser of the type of work typical of each ontology.

According to Flusser, "to be able to work it is necessary to assume that the world is not as it should be and that it can be transformed" (Flusser, 1998, p.9). This premise leads to the development of three distinct approaches: ontology, which deals with how the world is; deontology, which deals with how the world should be; and methodology, which seeks to transform it. For Flusser, history "can be understood as a development of this tripartite division" (Ibid.), also structured in three phases: in the first – antiquity and the Middle Ages –, "interest is concentrated on the target of work, the 'must-be' of the world" (Flusser, 2012); in the second – the Modern Age –, "some people focus on the being of the world that reveals itself under work. Thus arises epistemological, scientific, experimental, 'faithless' work, in short: one

1 Original quote: *Flusser argues that we are in a cultural crisis comparable only to the passage from oral culture to written culture, a crisis that requires thinking in new categories, since the traditional episteme and modern critique are no longer operative for our current situation.* Translation by the author.

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also works theoretically "(Ibid.); in the third – our post-industrial world – "interest is always more concentrated on the work method and the work tends to be its own purpose. Functional, technical, programmed work emerges" (Ibid.).

In each phase, one type of question predominates: in the first, it is the final questions (for what?); in the second, causal questions (why?); and in the third, formal questions (how?). Each type of question expresses a way of dealing with values, which, although they belong to deontology, are always necessarily linked to both an ontology, which they intend to preserve or modify, and a methodology, elaborated so that concepts encoded in values can act on the world and transform it. This is the function of work, which does not seek "to satisfy a biological need, but to realize a coded value, a 'must-be' inserted on a given scale. Because work is natural movement, but coded gesture (culture)" (Flusser, 2012).

However, it is important to emphasize the fundamental distinction between the machines – devices typical of the Modern Era – and the devices that characterize the post-industrial era. The arrow and the plow are machines, "objects made to overcome the resistance that the world puts to work" (Ibid.), effective in performing tasks, but incapable of questioning whether or not such tasks should be performed. With the appearance of devices, machines become problematic: they "serve the discovery, and not the modification, of the world" (Ibid.) – the telescope allows you to see the moon, but does not intend to transform it. Unlike the machine, the device is not "between the world to be worked and the man who works it", because "the world to be worked passes beyond the horizon, becomes 'metaphysical', that is, a thing in itself" (Ibid.). The machine must work so that, through it, man can change the world; in the case of the device, it is man who works according to the worldview that it offers him, or imposes.

The devices caused, therefore, an imbalance in the interrelationships between ontology, deontology, and methodology, since they are "results of the concentration of interest on the methodological aspect, the 'how' of the work process. (...) The technique, which is not possible without ontology and deontology, nevertheless devoured both ontology and deontology" (Ibid.). Ontology and deontology have come to be shaped by methodology. Thus, we run the risk of producing increasingly more sophisticated and efficient methods for creating things, without clarity about their real utility, their underlying values, or the world where they will be inserted.

SPACE ACCORDING TO TUAN

Yi-Fu Tuan defines a place as "an object in which one can dwell" (Tuan, 2013, p.22). Although associated with space, the *place* is also a pause in time, a humanized space that can take the form of a house, a neighborhood, a homeland, and so on. The *space,* in contrast, refers to freedom, to the world that we imagine to be "out there", open to exploration – and that can be classified into three types: mythical space, pragmatic space, and abstract (or theoretical) space. Mythical space has two dimensions: one that projects beyond the pragmatic space of everyday life – encompassing both what we vaguely know and what we do not

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know and, therefore, can only imagine –; and another that corresponds to the spatiality of a worldview. Tuan underscores the role of architecture in the articulation and expression of this second dimension, loaded with symbolism and anchored in places that configure an image of the world and "inform" men about it: "first man creates the circle, be it the plane of a Native tent or the ring for the warrior dance, and after that he can discern circles and cyclic processes anywhere in nature" (Ibid., p. 138).

In modern societies, this instructive function of architecture has been almost completely abolished. Pragmatic space – understood only as a resource or support for human activities, such as "belts of poor or rich soil" (Tuan, 2013, p.27) – and conceptual or abstract space – understood in geometric terms, such as area and length- predominated. Moreover, just as space can only be known in time, there is also a mythical time, which unfolds in three dimensions: cosmogonic time – "the history of origins, including the creation of the universe" (Ibid., p. 162); human time – the linear sequence formed by the birth, life, and death of each individual; and astronomical time – the "rhythms" of nature. The first two types of time are linear and unidirectional; the latter, however, is cyclic.

According to Tuan, modern societies have either abandoned or fought against the notion of mythical space by replacing images that expressed time as an oscillating pendulum or a circular orbit – cyclic time – with the synthetic and unappealing image of time as linear, arrow-like time (Tuan, 2013, p. 152). This substitution began gradually during the Renaissance and consolidated in the routine of industrial cities, profoundly transforming human activity in space. According to Titus Burckhardt (2004), several pre-industrial cultures used similar procedures for the location and orientation of sacred buildings: based on astronomical observations with different degrees of sophistication, the quadrature of the solar cycle was traced, symbolizing the divine action in the world through the concretization, in the architectural form, of the transition from the circle -divine– to the square –terrestrial (Hani, 1981, p.33). In the context of industrial and post-industrial societies, such an operation seems absurd. Our buildings no longer fit into a mythical space: they are limited to occupying portions of pragmatic space, defined by urban zoning, the real estate market, and construction techniques, and of abstract space, constructed by maps and architectural drawings. The places people inhabit in everyday life become points in a flow that is linear in time, but cyclical in space: home, work, home. Looking back, the way in which this structure expresses and preserves a very particular worldview – and one that is perhaps in crisis- can be seen.

DEVELOPMENT

MIDDLE AGES: DEONTOLOGY, ETHICAL WORK, SYMBOLIC ARCHITECTURE

The rule of St. Benedict, written in the sixth century, established parameters for all aspects of monastic life –from the administration of the granaries to the way the monks should sleep– by articulating different

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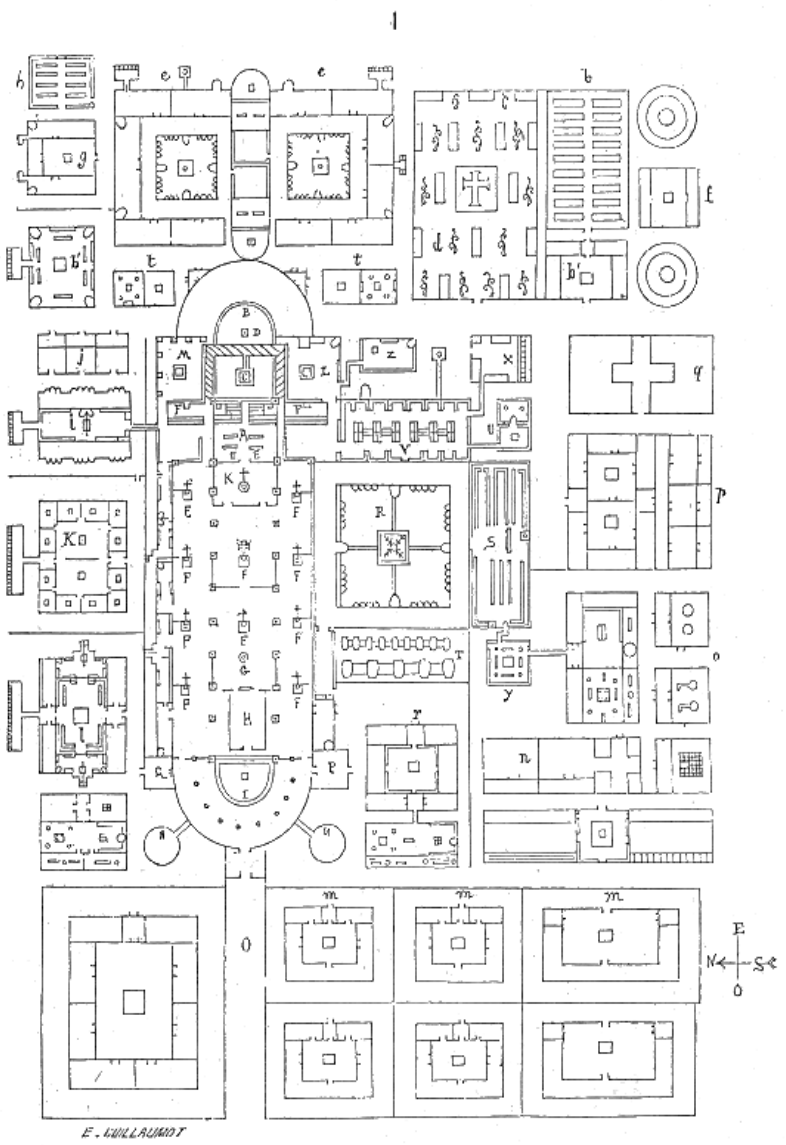


Figure 1. Simplified version of the general plan of an "ideal monastery" (Abbey of Saint-Gall), originally from the ninth century. Version published in Dictionnaire raisonné de l'architecture française du XIe au XVIe siècle, by Eugène Viollet-Le-Duc in 1856. Source: Guillaumot, 2005.

temporalities: the routine of work varied according to the liturgical calendar, which cyclically repeated an already known series of events. The form of the monasteries was structured according to the three types of space identified by Tuan, as seen in a ninth-century plan illustrating an "ideal" monastery (Figure 1). The layout of the buildings was based on the church, whose entrance faced East —the direction of the Rising Sun, traditionally understood as a symbol of resurrection (Duby & Aries, 1988). On the right, there were spaces for spiritual activities, intellectual work, and the accommodation of members of the community who needed the protection of "the right hand of God", such as novices and the sick; on the left, there were spaces for material functions - refectory, kitchen, work spaces, etc.

The model uses a 40-foot module, a number associated with several biblical episodes, such as the 40 days of the flood and the 40 years in the desert (Kostof, 1995) –reinforcing how geometry (abstract space) could materialize a worldview (mythical space) by creating symbolic forms capable

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of translating "transcendental" spatial concepts into a concrete presence. As the rule determined that monasteries should be self-sufficient, their deployment was conditioned on the availability of water and arable land (pragmatic space) (Stoddard, 1972). Only in a space endowed with these resources would it be possible to constitute a place that symbolizes the world created by God, functioning as an antechamber and prefiguration of paradise on Earth (Duby & Aries, 1988, p.55) – that is, a deontological model. The monastery, in its form and functioning, represented what the world should be.

The form of the monastery simultaneously expressed an ontology –the Christian Worldview–, a deontology –the conception of how the earthly world should be– and a methodology -living in the monastery, according to the precepts of the Rule, would allow the individual to become what every human being should be.

In a famous lecture, Frank Lloyd Wright stated that, until the 15th century, architecture was the primary form of recording humanity. This condition was gradually weakened and eventually overcome by the diffusion of what he identified as the first machine: the book. For Wright, before Gutenberg, architecture was "the universal writing of humanity" (Wright, 1992, p.60). Interestingly, it was precisely a writer, Victor Hugo, in *The Hunchback of Notre Dame*, who perhaps expressed more incisively the impact of the book on the role of architecture in Western culture: "The little things end up with the big ones. (...) the book will kill the building!"(Hugo, 2013, p.274). Wright's reading is not limited, however, to the fact that many buildings literally "tell stories" through their iconography. For him, architecture is a means of communication for the simple fact that its material presence is capable of transmitting cultural values through generations (Goldberger, 2009, pp. 32-34).

This communicative dimension of architecture seems to have been suppressed by the functional pragmatism of industrial buildings, conceived as shelters for machines and, in a way, as machines themselves. However, as will be seen below, the attempt to deprive architecture of any communicative or symbolic intention can never be fully realized. What actually changes is only what is sought to symbolize, even if unconsciously. If the monastery symbolized the world of the peasant, who worked in consonance *with* nature, the factory would represent the world of the worker, who works, to a certain extent, *against* nature.

INDUSTRIAL REVOLUTION: ONTOLOGY, SCIENTIFIC WORK, PRAGMATIC ARCHITECTURE

The scientific mindset that led to the development of industry focused on understanding the natural world and was therefore shaped by "why" questions. However, the factory is pure methodology: the ontology created by the scientific mentality manifests itself, apparently, in a strictly pragmatic way, without explicit symbolic intention. While the presence of the church

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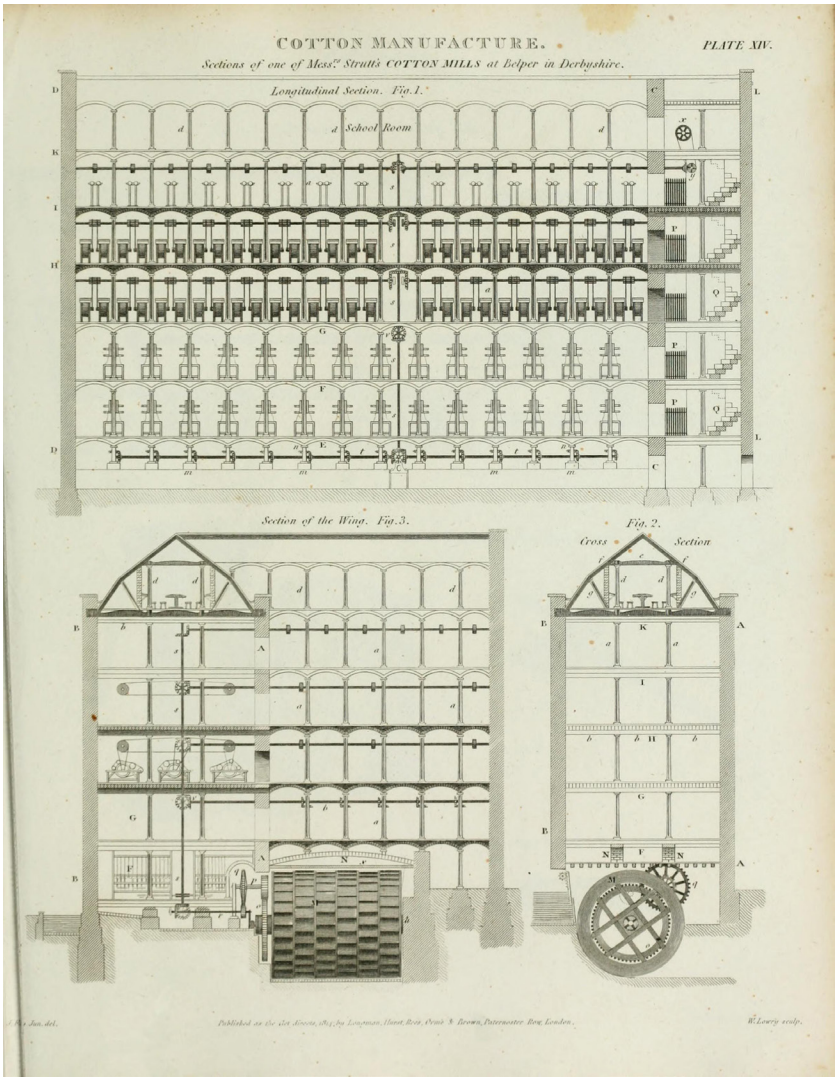


Figure 2. Diagram of a monastery at Belper, Derbyshire, England, 1819. Source: Strutt, 1819.

"multiplies" the presence of Christ –preserved and renewed with each Eucharistic ritual– the presence of the factory seeks only to ensure the permanence of the machines, guaranteeing the continuity of production (Figure 2). In the factory, deontology becomes irrelevant: if it is possible to produce a certain number of screws in a specific time interval, they will be produced, regardless of any project or purpose aimed at "transforming the world".

According to Flusser, pre-industrial man worked with tools, concretizing through them the presence of the culture in which he was immersed. He is "no longer in the world as his own home, as was the case, for example, with prehistoric man who used his hands. It is alienated from the world, protected and imprisoned by culture" (Flusser, 2007, p.37). In this relationship, the human being was the constant and the tool, the variable: the artisan could resort to different instruments at their disposal. With the insertion of the machines, however, an inversion occurs: the machines become the constant and the human being, the variable. If a tool breaks, the craftsman replaces it and continues working; if a machine breaks, work ceases; but if the operator

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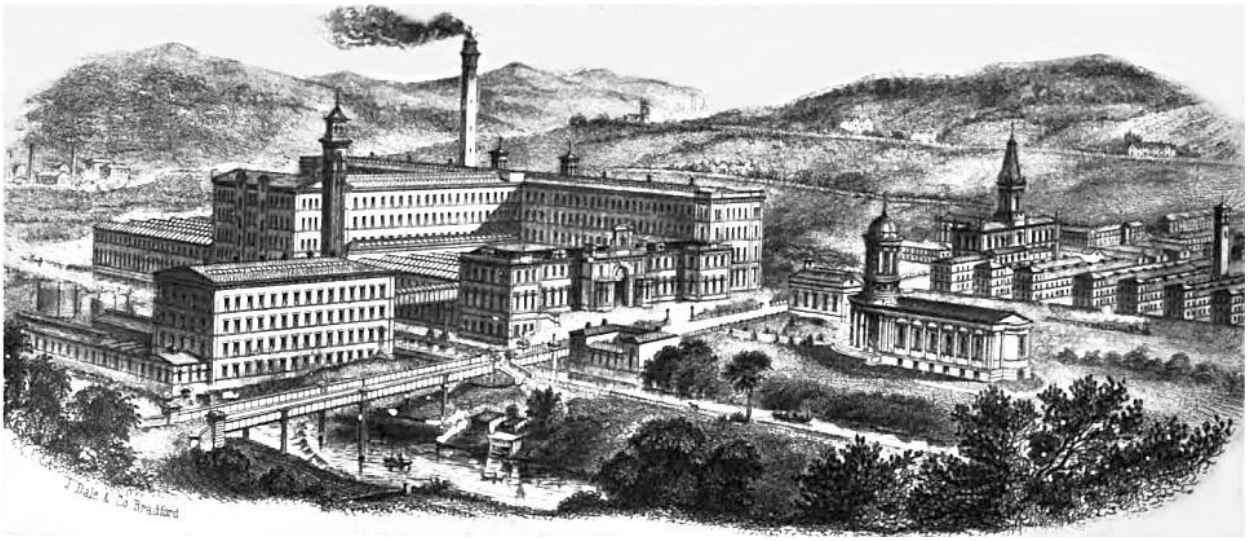


Figure 3. 19th-century drawing illustrating the village of Saltaire with the mill in the background. Source: Dale and Bradford, 1853.

"breaks," he can easily be replaced by another. Man thus ceases to surround himself with tools; it is the machine that men surround.

This phenomenon turns all space into pragmatic space: there are only resource areas to be exploited by industrial activity – coal, iron ore, cotton, etc. - and areas of consumption of industrial products-cities and other factories -, interconnected by distribution lines. The flows that run along these lines have two opposite directions: centripetal flows, which lead nature and culture into machines, and centrifugal flows, where "transformed things and men flow out of machines" (Ibid., pp.40). Human groups settle along these lines, forming places "from which the men are sucked into factories, to then be periodically regurgitated, and spat out again from there. The whole of nature is drawn concentrically by this suction of machinery "(Ibid., pp.40).

It is not surprising, therefore, that many industrialists sought to turn their factories into planned cities, where the corporation would meet all the needs of the inhabitants/workers. This model took up, in a way, the functional logic of monasteries, in which the corporation/religious order provided everything necessary for the daily life of the workers/monks, and these, in return, guaranteed their right to such services through work and obedience to the rule/direction. An example is the village of Saltaire, built by Titus Salt from 1851. The name of the village honors the two most responsible for its existence: The Salt itself and the Aire River, next to which the mill was installed. The place was chosen for its proximity to the river (production), the railway (distribution), and the abundance of wool in the region – strictly pragmatic criteria, as in the case of monasteries. However, the layout of the buildings did not follow any symbolic system. Even its primary symbolic dimension was, in essence, pragmatic: the main facade of the mill was erected facing the railway, functioning as an instrument of propaganda (English Heritage, 2001, p.36). The orthogonal grid of streets had only the role of organizing the buildings, ensuring adequate insulation and ventilation (Figure 3).

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Until the end of the 19th century, the construction of a building was the product of dialogues between customers, builders, artisans, and suppliers, based on relationships of trust (Davis, 2006, p.66). With the spread of real estate speculation, buildings cease to be built by individuals and are *published* by companies. The future inhabitants are unknown and do not participate in any stage of the design and construction processes – they only choose the house, apartment, or office from the options available on the market, as with the purchase of any industrialized product. The city ceases to be constituted by the sum of the buildings and begins only to "house" them, just as the factory houses the machines or the supermarket houses the products.

A person moves between these buildings, which are placed on plots of land previously designated by the public administration as suitable for their installation. However, while apartments and offices were standardized and sold, the factory retained its specificity due to its technical and functional demands. There cannot be a speculative market for industrial plants and buildings, and therefore, these are still effectively *built*. In homes and offices, although the cooling, sewage, and electricity systems are almost always hidden in the walls, the building as a whole *works* like a mechanism, a gear or mill wheel, that moves in the rhythm of industry, the same that ends up governing the city and human life in general. Man is sheltered as a resource, a kind of machine that, unfortunately, needs to inhabit. Following Flusserian terminology, we can call the inhabitants of these published – and no longer truly built – buildings, *employees*. At first glance, we may be led to believe that employees will be the protagonists of the post-industrial era, but this protagonism is only superficial. Although the office – the main workspace of the employee- seems to be more " human" than the factory, which after all was conceived primarily to house machines and only secondarily the operators still needed, the true protagonist of the post-industrial – and, according to Flusser, post-historical- world is, in fact, the device in function of which employees exist and operate: or rather, in function of *work*.

POST-INDUSTRIAL ERA: METHODOLOGY, TECHNICAL WORK, PROGRAMMED ARCHITECTURE

The most characteristic typology of the post-industrial era is no longer the factory, the space of production, but the office, the space of administration (Figure 4). For much of the 19th century, administrative employees occupied an intermediate social position, working side by side with businessmen in small offices. However, from the 1860s, office buildings built mainly for rental purposes began to be erected. One of the best-known examples of this first phase is the Oriel Chambers, in Liverpool (1864), designed by Peter Ellis (King, 2005). The building housed small offices, organized in a modular composition that was also reflected in the structure and its façade –the shape of the ensemble as a whole expressed the industrial logic behind its construction.

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Figura 4. Washington office, c.1904. Source: Burke, 194.

With the growth of organizations and the intensification of demand for administrative work, this type of office, small and still domestic in appearance, quickly became obsolete. At the same time, the advancement of construction technologies made it possible to break from the restricted module, giving way to large spaces, occupied by rows and more rows of employees bent over tables. In this configuration, very similar to that of factories, the place of the machine was occupied by the table or workstation that, because it was commonly individual, came to be recognized by the employee as his "place", both in the physical space and in the organization. Similarities to industrial work include the control of time and movement, which breaks administrative work down into tasks such as copying documents or filling out orders. Thus, the *mystery* of this work was equally fragmented, making it increasingly difficult to imagine that an employee responsible for filling out a certain number of forms in a timed interval could one day become an entrepreneur. This employee was no longer an apprentice administrator, but only an archivist, a typist, or even a "document filler".

The office houses the desks, the "places "around which employees move and "on" which they spend much of the day. At the desk, the employee lays out his tools, and although all desks and instruments may be the same or very similar, each desk "belongs" to an individual. The presence of the employee *at the* desk, and not only around it, gives it a

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Figure 5. Wooton desk on display at the William Howard Taft National Historic Site. Source: LeMay, 2019.

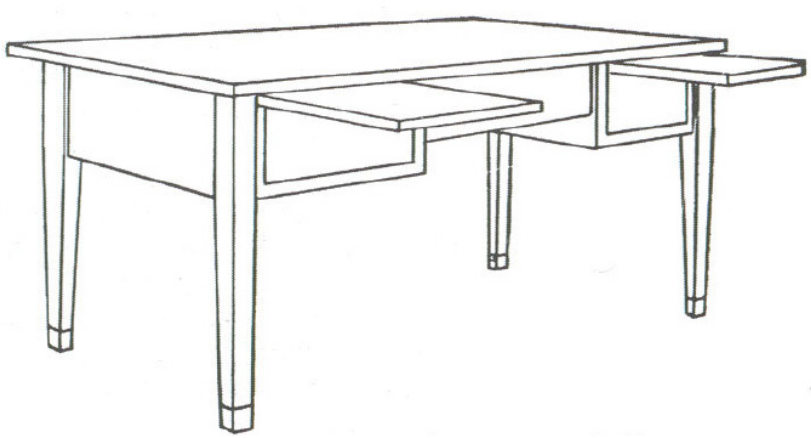
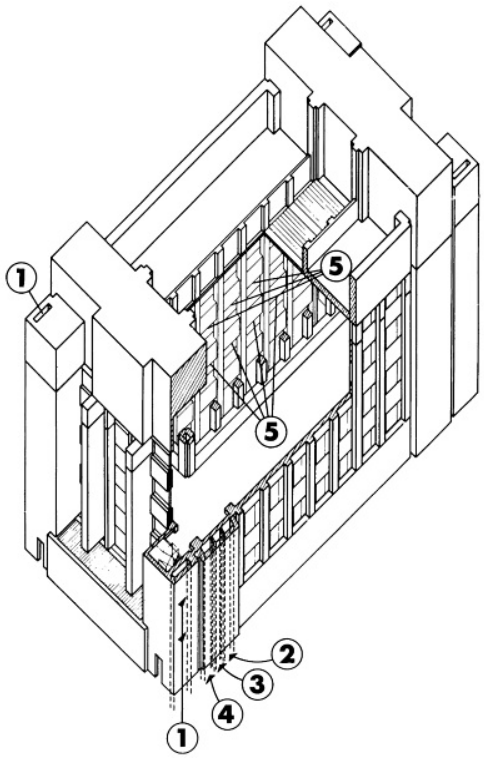


Figure 6. Modern Efficiency Desk. Source: Galloway, 1922, p.89.

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1 - Fresh air intake
2- Distribution of temperate air
3- Polluted and exhausted air
4- Duct for installations
5 - Grills for fresh air outlet

Figure 7. Larkin Building - Air circulation system. Source: Banham, 1969.

purely contextual individuality, almost independent of its shape. Until the beginning of the 20th century, employees who still worked in small offices of a "domestic" nature used desks such as the *Wooton desk* (Figure 5), which had compartments in side flaps that could be closed, transforming it into a piece of furniture that could be perfectly placed in a living room, without looking "out of place". In the newly industrialized office, employees began to work at standardized desks, such as the *Modern Efficiency Desk* (Figure 6), released in 1915. The design of this desk was reduced to the essentials – a top, four feet, and minimal storage space. In addition to reducing costs and facilitating the observation of *supervisors*, this new design made a significant contribution to creating a distinct ambiance for the offices, one that is increasingly separate from the domestic atmosphere.

The pace of growth of some organizations led many of them to build headquarters, such as the Larkin Building, designed by Frank Lloyd Wright in 1906. The building brought all the departments of the Larkin Soap Company under one roof, as well as complementary spaces such as canteens, a gym, and a doctor's office. Although monasteries and industrial cities had already sought to integrate diverse functions, at Larkin, all the rooms were concentrated in a single block, a new typology made possible by the implementation of one of the first air conditioning systems (Figure 7). Wright himself would describe the building as "a simple hermetically sealed brick cliff" (Wright, 1977, p.175).

The interior of the brick enclosure was marked by a large central void, around which all other spaces were arranged. This configuration considered

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Figure 8. Seagram Building.
Source: Ohyama, 2017.

the functional demand of the air conditioning systems available at the time, and Wright exploited the resulting monumental ceiling height. At the corners of the building, vertical circulations –which also functioned as ventilation ducts- created a continuous spiral flow from the upper floor to the ground floor. This solution also addressed another functional need: the document flow planned by the company's managers. Thus, the building's shape grew directly from the technical and administrative demands of the corporation. According to Banham, it was "a design whose final form was imposed by the environmental control method employed" (Banham, 1969, p.91). However, Wright knew how to simultaneously manipulate both systems –technical and administrative– in favor of his architectural intentions, synthesizing them in the spiral circulation around a large central void. This solution may have served as inspiration for his design of the Guggenheim Museum in New York, developed almost 40 years later.

Although the Larkin Building was relatively small, the logic of its design would be replicated in the skyscrapers of Chicago and New York, which became global models. Until the first half of the 20th century, these towers were lined with eclectic facades, and the interiors of common areas – lobbies, halls, restaurants– followed the same decorative pattern. On the other hand, the office spaces, aimed at the real estate market, were much more straightforward and essentially "pragmatic", allowing maximum

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adaptation by the rental companies. From the 1950s, this contrast between exterior and interior began to be fought and overcome: the pragmatic logic of the workspace broke through the mass of the facade, dissolving it in glass panes. In the following decades, this typology of skyscrapers spread globally, consolidating the so-called International Style. One of the most famous examples is the Seagram Building (Figure 8), designed by Mies van der Rohe, which opened in New York in 1958. The black glass and steel tower, marked by bronze uprights and erected on a foundation that included a large square, became a paradigm for numerous office buildings built around the world. As Philip Johnson stated, "What makes Mies a great architect is that he is very easy to copy" (Saval, 2014).

A few years earlier, in 1943, Peter Drucker had stated that the company had become the "constituent institution of industrial society" (Donkin, 2003, p.239). By 1960, office workers –many of them housed in buildings modeled after the International Style– already accounted for one-third of the workforce in the U.S. (Saval, 2014). For William Whyte, organizational culture had spread to society as a whole, creating a "generation of bureaucrats" who did not seek to transform the *status quo*, but only adapt to it (Whyte & Saval, 2014). In Flusserian terms, these individuals did not properly desire to *work*; they believed that the world should remain unchanged. Instead, they limited themselves to *function.*

Most of these employees operated devices, such as calculating machines, telex machines, and computers. In one of his most provocative definitions, Flusser states that a device is a "toy that simulates a type of thinking", and a toy is an "object to play with" (Flusser, 2011a, p.11). The employee is therefore a "person who plays with the device and acts on it" (Ibid., p. 12). Their work may seem extremely serious, but it is structured like a game whose rules "emanate" from the toy-device itself. The employee who uses a calculator can only calculate, since that is all the device allows them to do; the same logic applies to those who fill out a performance report or an inventory control sheet. The employee represents a new type of worker who, instead of actually working, only works according to the programs of the devices they use.

Even in the 1960s, large computers began to gain a foothold in offices, automating data processing and rendering many employees obsolete. A few decades later, the personal computer concentrated functions that had previously been spread among various tools, making large desks that house papers, pencils, and calculators redundant. This new office, popularized in the 1980s, grew alongside the so-called reengineering and redistribution of workload among fewer people, as well as the emergence of forms of work made possible by information technologies, such as *teleworking* and the *home office*. These modalities would gain strength in the 1990s and 2000s (Figure 9), reaching their apogee during and immediately after the COVID-19 pandemic. As Donkin noted: "when the tool is also a toy (...), real work needs to be more absorbing, to keep screen workers from spending

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Figure 9. The work desk in 1980 and in 2014. Source: Azzarello (2014).

time on the Internet" (Donkin, 2003, p.302). The increasing mobility of these devices has led Alvin Toffler to state that "we are changing the concept of 'workplace' to that of 'work done anywhere'" (Toffler in Donkin, 2010, p.343). Just as the book would have killed the building, the device could one day kill the office.

Despite Toffler's diagnosis, offices still exist, many of them comprising desks, cubicles, and other types of workstations. In addition, virtually all the devices that threaten its existence have themselves been created or developed in the offices of companies such as Hewlett-Packard, Intel, Apple, and Microsoft. However, in these spaces of technological innovation, the organization of work was, in general, more informal than in the skyscrapers of large cities. Many of these companies have adopted flexible working hours, relaxed dress codes, and started offering leisure areas and socializing events – practices already present in organizations like Larkin, but now associated with an *ethos* of informality. From the 1990s, with the boom of "dot-com companies", this culture intensified to the point of making the transition between university campuses and the corporate environment almost imperceptible (Saval, 2014).

The collapse of the" internet bubble" marked the end of many of these companies, but those that survived consolidated a model inspired by the university campuses: *the suburban office parks*. One of the most celebrated examples is AT&T's Bell Laboratories, often compared to Princeton University's campus. Its creators conceived the space as an environment entirely focused on research, which required a degree of flexibility incompatible with the model of the urban skyscraper. Thus, several blocks interconnected by corridors were designed, allowing for meetings between scientists, researchers, and administrative employees as they moved between laboratories, offices, and recreational areas. Within a few years, the employees of this campus had developed the transistor and the bit (Ibid.). Four decades later, the Googleplex, Google's headquarters in Mountain View, was conceived in a similar configuration (Figure 10). In its internal spaces, an atmosphere of informality predominates, designed to turn offices into "fun" spaces that foster creativity, complemented by gyms, sports courts, and relaxation rooms, among other features. However, despite the distinctive appearance marked

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Figure 10. Interior of the Googleplex. Source: Chan, 2005.

by unconventional decoration and furniture in corporate environments, it is, in essence, another space in which an organization, be it a religious order, a factory, or a large technology company, seeks to offer its workers everything they may need.

Googleplex provides free food to its employees, who can frequent the cafes and restaurants of the complex at any time of the day or night. Similarly, Google's search engine makes available to any user a seemingly inexhaustible amount of information on virtually any subject. This is a service that is undoubtedly useful, practical, and conveys a semblance of reliability. However, just as the Googleplex employee can only consume what the company puts at their disposal –unless they bring something "from outside"–, the user of the search service finds only what the algorithm presents to them as a result. In both cases, the logic of the Flusserian device is evident. It seems to offer all imaginable possibilities, but in fact, it is limited to a set of previously defined and programmed options. The large number of options helps to disguise the structural, intrinsic, and inescapable limitations of the device. If we want something not provided for in your program, we need to introduce external elements, "from the outside".

CONCLUSIONS

Mobility and the increasing multifunctionality of devices have made it possible to perform many types of work almost anywhere, as evidenced during and shortly after the COVID-19 pandemic. For some professionals, this meant the possibility of working without a formal link to a company, a phenomenon that, combined with trends of decentralization and outsourcing, explains the growing number of *freelancers* and *coworking* spaces. However, even though people are increasingly immersed in the universe of devices, cities continue to replicate the rhythm inherited from

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the industrial age, characterized by centrifugal and centripetal flows between living spaces and workspaces. The pandemic seemed to disrupt this logic, and although many organizations experimented with hybrid or remote work regimes, the post-industrial logic that reduces the city to a mere space and does not view it as a place was soon re-established. In contrast, information –immaterial or at least invisible- circulates almost unrestrictedly between devices. It is in this tension between the fluidity of information and the rigidity of urban structures that Flusser's thinking proves particularly fruitful for mapping and understanding contemporary contradictions.

On the first pages of *The Last Judgment: Generations I*, Flusser describes the experience of flying over Europe on an airplane, observing medieval cities from a "transcendental point of view" (Flusser, 2017, p.35). On the plane, he was completely isolated not only from the city but also from its immediate context: he did not experience either the speed of its movement or the environment around it. The city "outside" or "down there" was reduced to a picture framed by the window. Such experience was not available to those who conceived, built, and inhabited those cities before the 20th century. Thus, the plane added a new dimension to the experience of a medieval city, impossible to be foreseen by its builders and therefore absent from their "program".

In 1923, Le Corbusier published *For An Architecture*, a collection of essays where he defended his views on modern architecture. In the section entitled "Eyes that do not see", he extolled the mechanical logic of ocean liners, airplanes, and automobiles –products of "imagination and cold reason" (Corbusier, 2020)– that should inspire the architects of his time. For him, the war had been "an insatiable customer", converting the millenary dream of flying into a pragmatic, life-and-death matter. The airplane, which enabled Flusser to contemplate European cities from a transcendental point of view, was also the instrument that allowed for their bombing. Le Corbusier himself explored this new aerial perspective in radical urban projects for cities such as Rio de Janeiro and Montevideo, conceived from the vision obtained by approaching them on airplanes or zeppelins.

The emergence of this aerial perspective had profound theoretical implications: the idea of "seeing things from the outside", as an external observer, was disseminated, which approaches the almost metaphysical point of view generated by the experience of flying. Similarly, the development of digital technologies and their dissemination through the Internet have added unprecedented dimensions to the human experience, profoundly transforming the way people perceive the world and themselves. The builders of the Alhambra could not imagine that centuries later it would be possible to fly over the palace and contemplate it in its entirety while remaining comfortably seated in a controlled and isolated environment. Even more improbable would be to suppose that they could foresee the possibility of carrying out a virtual tour of the palace from

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anywhere in the world. It is also a new dimension – an additional layer embedded in our experience of the world.

Currently, a simple search can provide information about almost any building, city, or locality. The extent and quality of information may vary, but almost everything that exists in the "real" world also has a virtual presence. In this process, everyone who produces and shares images, texts, and videos acts, to some extent, as employees who feed a large device – the World Wide Web of information. Some initiatives even seek to use this data to manage cities. As Emily Badger notes in an article published in *The New York Time*s, "many have become enamored with the same idea": that the same actors responsible for designing circuits and social networks could also conceive cities. The reflection culminates in a provocative question: "What if the people who build circuits and social networks could build cities, too?"(Badger, 2018)**2**. The logic behind such a hypothesis is clear: if we have already resorted to devices to work, have fun, and solve countless practical problems, why not assume that those who created these solutions could also face the challenges that afflict our cities?

The assumption that the logics that govern our devices could also make cities work better leads to an inevitable analogy: the city as a device, or as an object, or a *gadget*. The modern concept bears a striking resemblance to that advocated by modern architects and urbanists, such as Le Corbusier, about a century ago: cities planned rationally, following the pragmatic logic of machines, would shape society in the image of the modern and industrialized world. However, even the rare cities designed according to these principles turned out to be something quite distinct from what was predicted. They do not work "as well as machines", but perhaps it is precisely this imperfection that makes it possible to characterize them as cities.

One of the most emblematic examples is Brasilia. Both Marshall Berman's report (2007) and James Holston's ethnographic analysis (1989) contrast the organizational clarity of the urban plan, perceptible from the transcendental perspective of the aerial view, with the direct experience of the space at ground level. Both demonstrate how the Brazilian capital has evolved into something vastly different from the efficient and fully functional bureaucratic metropolis envisioned by Brazilian urbanists and politicians in the late 1950s. Designed by Lúcio Costa in line with several principles formulated by Le Corbusier, Brasília was conceived "from above". For Holston, the project represented an imagined and desired future that implied the denial of the social and cultural conditions prevailing in Brazil at the time. This "purposeful inadequacy" constituted the very premise of the project: the city should be an instrument of transformation, capable of promoting this idealized future from –and despite– the existing conditions (Holston, 1989, p.5). However, instead of being entirely transformed by the new capital, these conditions ended up, in practice, transforming the city into something that escaped the original project.

2 Original quotel: *many have become enamored with the same idea: What if the people who build circuits and social networks could build cities, too.* Tradução do autor.

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The word *plan* highlights the main difference between the modern mentality that created Brasilia and the contemporary logic that guides many initiatives linked to the concept of *Smart Cities*. Brasilia was a plan, both in the sense of design and project, designed to transform the functioning of Brazilian society. Its idealizers placed such confidence in the power of urban structures that they believed the control exercised by architects and urbanists during the design phase was sufficient: it was assumed that modernity would inevitably shape modern men. However, the fact that the occupation and growth of Brasilia did not follow the original plan –evidenced by the disorderly expansion of satellite cities, which formed a vast periphery marked by serious urban and social problems- demonstrated that controlling only the "shape" of the city is not enough.

If the goal is for the city to function as planned, it is not enough to design roads; one must also program the cars. By understanding the city as a program –and no longer as a machine, as in the modernist ideology– planning and control extend beyond conception, reaching the daily functioning of urban space. The program is dimensionless, focused mainly on processes and not on material objects ("things") such as buildings, roads, or viaducts. It cannot be simply drawn or planned, but only programmed. In the programmed city, there is more control, which can result in greater efficiency, but also inevitably, less freedom. An autonomous vehicle, for example, can only travel routes provided for in its program – there is no room for a "wrong" turn or for crossing an open field. In addition, each displacement is not only programmed, but also recorded and stored. The urban program feeds off this continuous stream of data to keep the city running. Thus, the program needs to know the displacements, origins, and destinations of each individual. Unlike what happened in Brasilia and in other neighborhoods or housing complexes planned according to modernist parameters, confronting, subverting, or adapting a program is much more difficult.

The new layers created by machines –like airplanes– and by devices – computers, smartphones, and the like– have significantly expanded our range of vision and control over reality. The opacity of these devices is often tolerated, or even "welcomed," because we trust their "judgment": we no longer need to see what they see. The external observer, displaced from the field of phenomena to an almost divine position, can now allow themselves some "blind spots". In this context, many advocates of smart cities believe that the dialogue between devices will enable an efficient, fluid, and infallible infrastructure, where human life will flourish, spared from everyday worries about traffic, climate, or service management. Sensors, computers, autonomous vehicles, and the massive processing of data (big data) would form a self-regulating urban organism, fed by the energy and information that it generates and manages itself. Just as machines promised to free humans from manual labor to devote themselves to intellect and leisure, smart cities propose to free their inhabitants from the task of "caring" for them – managing, operating, cleaning, maintaining, restoring. However, would a city that "works" and that, therefore, no longer needs to be effectively administered or governed, still really be a city?

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Faith in rational planning has given way to faith in algorithms. However, the programmatic mindset can be as utopian as the one centered on planning that emerged in the early 20th century. Modern urbanism aimed to create cities that worked like machines: rational, efficient, reliable. They would then rise from their concrete and steel bodies toward the mathematical perfection of the sciences. The programmatic mindset, on the other hand, seems to invert the vector: it would now be the algorithms, coming from a dimensionless and immaterial domain, that would descend on our cities, impregnating them with their mathematical rationality. However, the idea of a literally "smart" city – or a "spatialized intelligence," as Picon (2015) suggests – is certainly problematic if we consider both the intrinsic opacity of devices and the risk of delegating political decisions to mute dialogues between automated systems.

In any case, it is important to recognize a rather obvious fact: many cities around the world survived the rational plans of the modernists and, most likely, will also survive the effects of the spread of the programmatic mindset. The very essence of cities –as webs of meaningful places that sustain human ties– cannot be reduced to a plan or a program. The danger of the notion of the city as a program lies precisely in the denial of this dynamic and existential nature of urban life. The program tends to reduce or deny the freedom necessary for engagement in risky and unpredictable human relationships, which may be problematic but constitute the essence, the vital core of cities. The desire to delegate to machines and algorithms the decisions on the management of the city can, in this sense, hide the intention – or the effect – of establishing an apolitical *Polis*. Without the kind of critical research proposed in this article, there is a risk of unquestioningly advancing towards the aggravation of the tension between the apparent efficiency of the devices and the political and social dilemmas inherent in life in cities. Such a movement can result in the unconscious and uncritical assimilation of the logic of the device, transforming the city –and architecture as a whole– into mere functional spaces, rather than places where we can, in fact, live.

CONTRIBUTIONS OF THE AUTHORS CRediT

Conceptualization, F. L., R. B.; Data curation; Formal analysis, F. L., R. B.; Acquisition of funding; Research, F. L., R. B.; Methodology, F. L., R. B.; Project Management, R. B.; Resources, R. B.; Software; Supervision, R. B.; Validation, R. B.; Visualization; Writing-original draft, F. L.; Writing-revision and editing, F. L.

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TEACHING VERNACULAR CONSTRUCTION: A PRACTICAL EXPERIENCE WITH EARTH IN THE TRAINING OF ARCHITECTS IN BUCARAMANGA, COLOMBIA

ENSEÑANZA DE LA CONSTRUCCIÓN VERNÁCULA: EXPERIENCIA PRÁCTICA CON TIERRA EN LA FORMACIÓN DE ARQUITECTOS EN BUCARAMANGA, COLOMBIA

ENSINO DA CONSTRUÇÃO VERNÁCULA: EXPERIÊNCIA PRÁTICA COM TERRA NA FORMAÇÃO DE ARQUITETOS EM BUCARAMANGA, COLÔMBIA



Figure 0. Photo of details inside a residence in El Cogollo, Barichara. Colombia. Source: Prepared by the authors.

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RESUMEN

En Colombia, diversas instituciones de educación superior han incorporado dentro de sus programas de arquitectura la exploración de prácticas y conceptos asociados a la arquitectura vernácula. En este caso, la Universidad Santo Tomás, sede Bucaramanga, a través de su programa de Arquitectura, desarrolló el Taller en Construcción en Tierra, diseñado para estudiantes del tercer semestre al noveno semestre. Esta experiencia pedagógica se centró en la técnica de la tapia pisada y adobe, como sistemas constructivos tradicionales arraigados en la región santandereana. El presente artículo, desde un enfoque cualitativo y descriptivo, busca analizar las principales fortalezas de esta experiencia de aula. Se implementaron cinco fases metodológicas del proceso formativo, que comprenden desde la aproximación conceptual a la construcción en tierra en Colombia, se pasó por la exploración de experiencias regionales y nacionales, hasta la práctica directa en sitio con técnicas como el adobe y la tapia pisada. Estas etapas permiten articular la teoría con la experimentación, que fomentan un aprendizaje integral. Finalmente, la sustentación de resultados abre un espacio de aplicabilidad de estas prácticas en el aula. Como conclusión, se identifica la necesidad de fortalecer este tipo de experiencias como una estrategia pedagógica que integre conocimientos locales en la formación de los futuros arquitectos.

Palabras clave: arquitectura, construcción, vernáculo, enseñanza, diseño

ABSTRACT

In Colombia, several higher education institutions have incorporated the exploration of vernacular architecture practices and concepts into their architecture programs. In this case, the University of Santo Tomás, Bucaramanga campus, through its Architecture program, developed the Earth Construction Workshop, designed for students in their third to ninth semesters. This pedagogical experience focused on the techniques of rammed earth and adobe, as traditional construction systems rooted in the Santander region. Using a qualitative, descriptive approach, this article seeks to analyze the main strengths of this classroom experience. Five methodological phases of the training process were implemented, ranging from a conceptual approach to earth construction in Colombia to the exploration of regional and national experiences, and culminating in direct on-site practice with techniques such as adobe and rammed earth. These stages allow combining theory and experimentation, promoting comprehensive learning. Finally, the sustainability of the results opens the door to the applicability of these practices in the classroom. In conclusion, the need to strengthen this type of experience as a pedagogical strategy that integrates local knowledge into the training of future architects is identified.

Keywords: architecture, construction, vernacular, teaching, design

RESUMO

Na Colômbia, diversas instituições de ensino superior incorporaram em seus programas de arquitetura a exploração de práticas e conceitos associados à arquitetura vernacular. Neste caso, a Universidade Santo Tomás, sede Bucaramanga, por meio de seu programa de Arquitetura, desenvolveu a Oficina de Construção em Terra, projetado para alunos do terceiro ao nono semestre. Essa experiência pedagógica centrou-se na técnica da taipa de pilão (tapia pisada em espanhol) e do adobe, como sistemas construtivos tradicionais enraizados na região de Santander. O presente artigo, a partir de uma abordagem qualitativa e descritiva, busca analisar os principais pontos fortes dessa experiência em sala de aula. Foram implementadas cinco fases metodológicas do processo formativo, que compreendem desde a abordagem conceitual da construção em terra na Colômbia, passando pela exploração de experiências regionais e nacionais, até a prática direta no local com técnicas como o adobe e a taipa de pilão. Estas etapas permitem articular a teoria com a experimentação, o que promove uma aprendizagem integral. Por fim, a sustentabilidade dos resultados abre espaço para a aplicabilidade destas práticas em sala de aula. Em conclusão, identifica-se a necessidade de fortalecer este tipo de experiências como uma estratégia pedagógica que integre conhecimentos locais na formação dos futuros arquitetos.

Palavras-chave: arquitetura, construção, vernacular, ensino, projeto

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INTRODUCCIÓN

Vernacular architecture comprises a set of construction techniques deeply rooted in the territory that express the cultural, climatic, and material particularities of each region (Guarnizo Sanchez et al., 2025a). These practices respond to environmental conditions and the availability of local resources, reflecting the ways of living that have been passed down from generation to generation. For example, in Colombia, cities such as Mompox (Bolívar), with its model of colonial adobe houses, internal courtyards, and tiled roofs, and Barichara (Santander), with its rammed earth walls, tiled roofs, white facades, and wooden carpentry, stand out. Each building is transformed into a tangible testimony of the community's intrinsic identity and its link to the surrounding environment. The use of a diverse range of materials is sought, starting from the general concept of traditional architecture, revealing the versatility and adaptability of these construction techniques across the country in a contemporary way (García Villar & Rolón, 2023).

A contemporary example of the successful application of the earth-based construction technique is found in the Santander region, located in the northeast of Colombia, where buildings that use this technique are living testaments of the rich local architectural heritage, but also stand out for their ability to integrate into contemporary constructions, which create a unique symbiosis between traditional and modernity. For example, in the cities of Barichara, El Socorro, Girón, and Piedecuesta, their buildings use the rammed earth technique, complemented by the use of local materials such as wood and stone, which provide stability, durability, and a harmonious integration with the natural environment (Vargas Osorio & Agelvis, 2001).

Through a descriptive qualitative analysis, the intention is to present the experience of the academic community of the Santo Tomás University, Bucaramanga Campus, through its Faculty of Architecture, in its workshop on the use of earth, which ran from 2017 to 2022. This theoretical-practical academic space was created as an elective inter-semestral course for students from the third and ninth semesters, who could study it at any of these levels, focusing on the study of and construction with earth. The course addressed the theoretical and practical aspects of traditional construction, including adobe and rammed-earth wall construction. As a final phase, the students prepared a design proposal presented in both plans and models, which provided a basic approach to integrating knowledge and skills into a tangible project.

This experience allowed the exploration and in-depth study of the construction technique in the academic environment, providing the teaching staff with the invaluable opportunity to generate practical academic and scientific products throughout the program (Estévez Suárez, 2018). The students who participated in the course acquired competencies and practical skills in earth-based construction techniques (Rivero Bolaños, 2007).

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Figure 1. Photograph of a residential facade - City of Mariquita, Colombia. Source: Prepared by the authors.

The result of this experience was significant growth for the students and teachers, who were able to build on the knowledge acquired during the course in practical, theoretical, and academic ways (Gallego Jorreto, 2018). Conducting the construction technique in situ also led to the development of creative and reflective skills (Guarnizo Sánchez et al., 2025b), thus consolidating in students a conscious vision of sustainable architecture, focusing on resolving real problems from an integral perspective.

Vernacular architecture and value in construction

Vernacular architecture, at its essence, is manifested as an organic and authentic architectural testimony that emerges directly from the needs and specific characteristics of local communities in each region. It is a living reflection of the adaptation to the environment and to the particular conditions of the habitat that define each place (Fonseca Martínez & Saldarriaga Roa, 1992). The uniqueness of vernacular architecture lies in its origin: local communities develop and perfect construction methods adapted to their environment, the result of observation and accumulated experience, which allows them to optimize the use of available resources and ensure the resistance of buildings to geographical conditions. The accumulated knowledge was then transmitted in an ancestral way and has been skillfully applied in constructive techniques that, although they

incorporated adaptations from the European colonies, remain deeply rooted in the cultural and aesthetic identity of regions such as the Coffee Axis, the Andean Region, and the Pacific Coast (Figure 1).

Throughout history, humans have explored and used the materials available in nature to meet their needs for shelter and habitability. Elements such as stone, due to its solidity and durability, or materials of vegetable origin, such as bamboo, have played an essential role in the development of diverse construction techniques. In Colombia and in nearby countries such as Ecuador, they have adapted the material vulgarly known as *guadua* (Angustifolia Kunt) for construction; it is a kind of giant bamboo, with the capacity to grow up to 20 meters in length and acquire considerable diameters, which makes it a material traditionally used in rural housing (Sornoza-Tituano et al., 2022).

A representative example of this relationship between construction technique, sustainability, and social context is found in the Quindío, Caldas, Risaralda, Tolima, and Cundinamarca regions, and other parts of Colombia, which have used *guadua* as the main material for housing construction, due to its economic value, its seismic flexibility, and its low environmental impact (Castilla Ceballos & Garzón Castañeda, 2023). Nowadays, this knowledge has been reinterpreted by architects and academics, who have investigated new applications of the material in construction processes that seek to merge tradition with innovation.

Another material used has been earth, especially in systems such as adobe and rammed earth. These techniques, long-standing in rural and sub-urban contexts, have been characterized by the use of large compacted or molded earth blocks, which provide solidity and stability to the buildings. Their use has endured over time due to the resource's availability, low cost, and excellent thermal performance, especially in hot and dry climates (Saltos-Solórzano & Mendoza-Gracia, 2024).

Earth has a remarkable responsiveness to high temperatures, thanks to its thermal inertia, which allows it to keep indoor environments cool without resorting to mechanical air conditioning systems. In addition, its plasticity facilitates adaptation to simple, straight, and curved construction shapes, which favors efficiency in the building process and allows for maintaining an austere yet functional aesthetic (Do Prado Rocha & Melo de Oviedo, 2019).

Indigenous tradition and colonial contributions in Colombian vernacular construction

The indigenous peoples who inhabited the vast territories of Colombia developed an advanced empirical knowledge of natural materials such as earth, stone, wood, palm, and *guadua*, applying them skillfully in the construction of their homes and community spaces.

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Figure 2. Photo of details inside a residence in El Cogollo, Barichara. Colombia. Source: Prepared by the authors.

Outstanding examples of these constructions are the hypogeums of Tierradentro (Cauca), a manifestation of native architectural skill. These underground tombs are arranged as underground galleries with funerary roles, carved in rock, and adorned with pictography that narrates stories and fundamental beliefs of their culture (Aroca Araújo, 2013).

Another manifestation of this type of construction is the Tairona in the Sierra Nevada de Santa Marta, Colombia. Its architecture reflects a deep understanding of its natural environment. Using local resources, these settlers erected structures that integrate harmoniously with the landscape, demonstrating a symbiosis between human activity and the surrounding nature. The buildings were not only functional, but also fulfilled a ceremonial and symbolic role, demonstrating the spiritual richness of these communities (Medina, 2016).

During the occupation of the region by the Spaniards, the colonization process began during the 16th century, which led to the implementation of urban and architectural regulatory instruments under the Laws of the Indies in 1573, titled "The order to be had in discovering and populating", considered the first urbanism laws, inspired by Vitruvius and Alberti (Guarnizo-Sanchez & Mosquera-Muñoz, 2024). Over time, knowledge and

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techniques fused, combining native construction methods, such as earth, wattle and daub, *guadua*, and palm, with European contributions, such as stone masonry, adobe, clay tile, and wood carpentry. This process of architectural miscegenation generated hybrid solutions that responded both to local environmental and material conditions, as well as to the aesthetic and functional norms imposed since colonization on the foundational settlements of the Andean region, such as Ibagué (Tolima), Tunja and Villa de Leyva (Boyacá), or Barichara (Santander) (Figure 2).

During the 17th and 18th centuries, a regional exploratory process began through the political-administrative framework. Navigation along the Magdalena River and the organization of trans-Andean roads facilitated urban and architectural development, which in turn guided regional growth (Arbouin Gómez, 2012). This type of architecture, spread across several regions of the country, has been preserved to the present day and is considered cultural heritage. Its value lies in both its stylistic characteristics and its construction techniques, which reflect its history and enrich Colombia's historical and architectural heritage. This includes the railway stations, which mostly had a simple neoclassical and republican style, with brick masonry walls and stone foundations, symmetrical facades, high windows, and sloping clay tile roofs (Zambrano Pantoja, 1994).

METHODOLOGY

A qualitative, descriptive approach has been adopted. The study focuses on the teaching dynamics of the earth-based construction course, approached from a theoretical-practical perspective that fosters connections to the environment while strengthening the ability to analyze and solve everyday architectural problems (Popper, 1993). These conditions made it possible to formulate a methodology applied in five phases, focused on course development. The first was the theoretical and conceptual foundation; the second, the exploration of previous experiences; the third, the practical part, using equipment to build the masonry at 1:1 scale; the fourth, the architectural design at 1:50 scale; and finally, a fifth integration phase that consolidated the learnings. This allowed the projects to include fundamental design concepts, approached transversally from the first semesters of their education, which constitute the basis and essence of learning in architecture (Guarnizo-Sánchez & Gualdron-Camacho, 2024).

The workshop's structure comprised five phases:

- **Phase I. Basic concept of earth-based construction in Colombia:** In this stage, the origins of earth-based construction are addressed, highlighting the role of techniques such as rammed earth, wattle and daub, and adobe masonry, which have been fundamental in the development of vernacular architecture in Colombia. These constructive typologies show adaptation to the environment and the use of local materials, and also

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allow analyzing their constructional differences, recognizing the advantages and disadvantages related to durability, maintenance, and resistance to environmental factors.

- **Phase II. Exploration of experiences in the Santander region and Colombia:** This stage of research identifies the leading exponents of earth-based architecture in Santander and Colombia, facilitating exploration of the concepts, approaches, and methodologies applied in their work. It also enables the analysis of the diversity of projects in the region and the country, which show how the earth-based construction tradition has been reinterpreted from a contemporary perspective, linking sustainability, cultural identity, and new expressions of architectural design.
- **Phase III. On-site practice:** The third phase consisted of an initial experience with the material, where students participated in the learning process in the field. In this stage, they had the opportunity to experiment directly with traditional materials and tools for earth-based construction, providing a practical approach that promoted hands-on learning.
- **Phase IV. Preparation of rammed-earth walls and adobe masonry:** During this stage, the two earth-based construction components are used at 1:1 scale: Adobe masonry (compressed earth blocks) and rammed-earth walls (compacted walls in wooden formwork). Tools such as *simbarra* (to create compressed earth blocks) and *pisón* (rammer/tamper) were used, along with materials such as earth and lime. In addition, the resistance, setting time, moisture behavior, and aesthetic evolution of the material from the beginning to the end of the process were analyzed.
- **Phase V. Supporting the results.** Finally, in the final phase of the course, students design prototypes at scale (1:50) in which they apply a constructive system, either adobe or rammed earth, in a reduced format in two and three dimensions, drawing on the knowledge and skills acquired throughout the previous stages. This phase not only facilitates the understanding between the conceptual design and its physical materialization, but also addresses proportion, functionality, and the project's overall aesthetics. The prototypes must be properly represented by detailed technical drawings and physical models, which ensures technical communication in the design process.

RESULTS

Basic concept of earth-based construction in Colombia

Earth-based construction has been, throughout history, one of the most widely used techniques in the world due to the abundance of the material and its adaptability to different climates. In Colombia, rammed earth and wattle and daub have been consolidated as construction

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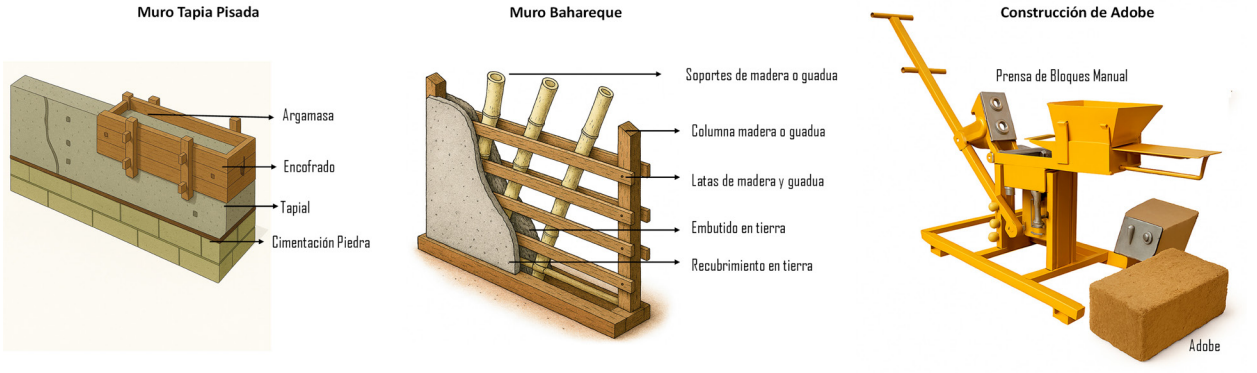


Figure 3. Types of Earth-Based Construction. Source: Prepared by the authors.

systems in both rural contexts and urban settlements, and are part of the country's architectural and cultural heritage.

In the case of rammed earth, this consists of the manual compaction of layers of earth within wooden formworks, known as *tapiales*. The process involves pouring wet earth into successive layers that are rammed to form massive, really thick walls, usually between 40 and 80 centimeters thick. This thickness provides structural stability and excellent thermal and acoustic insulation, making it a technique used in cold, warm, and temperate climate regions. From a constructive point of view, rammed-earth stands out for its durability; it can remain standing for decades if adequately protected from moisture by elevated foundations, facade coatings, and the possibility of seismic rehabilitation (Gómez, López & Ruiz, 2016).

Wattle and daub, on the other hand, is known as a form of "architecture without architects", since, due to the practicality of its construction methods, it was the indigenous and peasant communities who devised and perfected these techniques over time. It is based on a *guadua* or wooden structure arranged as a framework or with a mesh, which is filled with earth mixed with vegetable fibers. Once applied, the wall is coated with clay or lime plaster, which improves its finish and resistance (Archdaily, 2018). In this construction system, the ceiling and floor beams are almost always made of *guadua* or wood, taking advantage of their strength and workability. The columns are mainly made of *guadua*, although in some instances, sawn wood is used as a structural alternative. On the other hand, foundations are usually made of stone, brick, or reinforced concrete to provide stability and ensure adequate protection against the soil's moisture.

Adobe, as a vernacular building material, is made using earth mixed with water and vegetable fibers, molded into rectangular blocks, and dried in the sun. Its artisanal preparation is characterized by being an economic, sustainable, and low-impact system, as it uses local resources and requires little energy in production. These blocks are used primarily in rural housing and colonial buildings.

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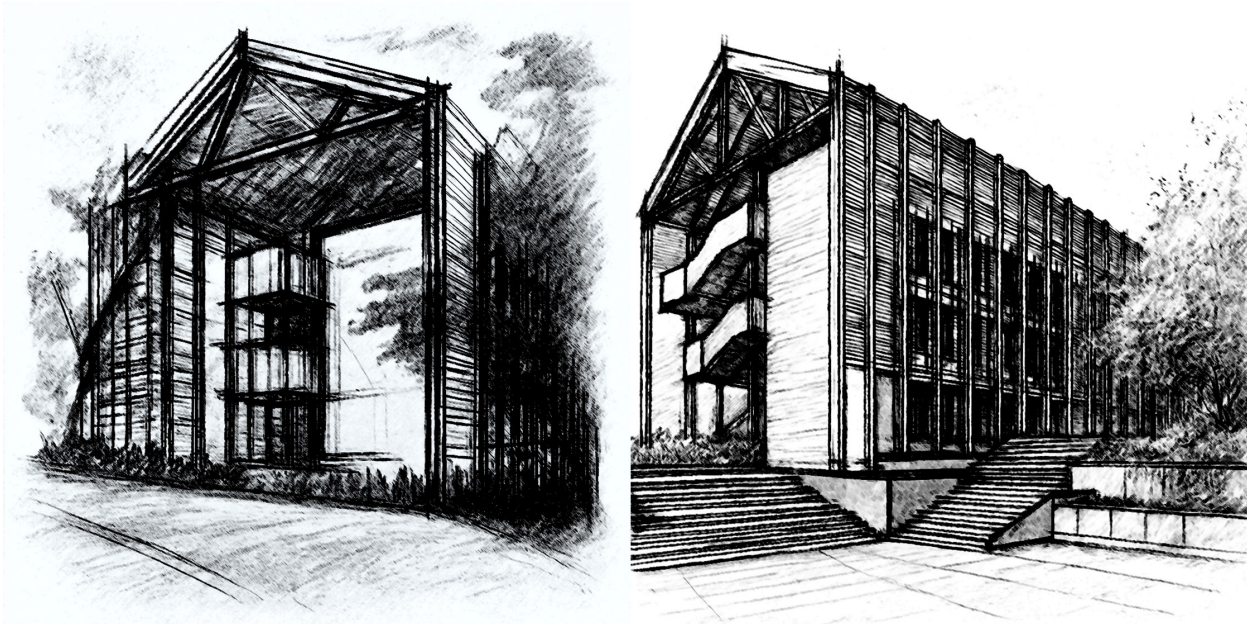


Figure 4. Sketch of the D. Industrial University Building of Santander, Socorro Campus. Source: Prepared by the authors.

In this stage, students must differentiate among earth-based techniques from regions and contexts across the country and present the specific preparation processes and constructive methods, along with their advantages and disadvantages. These differences are evident in the tools and equipment used and in the execution itself, which reflects the richness and variety of constructive solutions. In this phase, students will specifically experience the traditional construction techniques applied in Santander, such as rammed earth and adobe (Figure 3).

Phase II. Exploration of experiences in the Santander region and Colombia.

The students of USTA's Faculty of Architecture investigate the leading exponents of earth-based architecture in their region, analyzing the theoretical concepts and the practical experiences of architects whose works have left a significant imprint on the local and Colombian context. Professionals such as Daniel Bonilla (Figure 4), Jaime Higuera, Laura Angarita Pinzón, César de Salgar Navarro, and the Ark-Terra collective have established themselves as referents in earth construction, both in residential architecture and in residential and institutional equipment projects (Velosa Araque, 2022). Their contemporary proposals have transformed the perception of this ancestral material, highlighting not only its constructive and aesthetic qualities but also its sustainable potential.

At the same time, their works maintain a strong connection to the cultural and territorial context, serving as examples of how their designs have combined the construction tradition of using earth

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Figure 5. Students exploring earth-based materials. Source: Prepared by the authors.

Figure 6. Students engaging with tools and rammed-earth formworks. Source: Prepared by the authors.

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with avant-garde elements, creating spaces that reflect the identity and cultural richness of Santander (Figure 4).

Phase III. On-site practice.

In this phase, the activities take place on the Piedecuesta campus in a space equipped with the conditions needed for construction experimentation and practical learning. During this process, students interact with the material in their first experiments, exploring its components in different states, such as color, texture, and physicochemical properties. By mixing these elements, they discover how the earth acquires a malleability that makes it an ideal resource for producing adobe and designing rammed-earth walls. This experimentation process provides them with a deep understanding of the material's characteristics and its creative possibilities in the architectural field (Figure 5).

For example, Figure 6 illustrates how, under the instructor's guidance and students' active participation, a rammed-earth wall is built. Initially, the roles of the construction system's key elements are explained, such as the floor, formwork, and earth, which form the basis of the process. Similarly, students' participation in preparing the masonry allows direct contact with traditional techniques, fostering a practical understanding of theoretical concepts and ensuring the involvement of all participants.

In this way, students consolidate an interactive process that provides them with an understanding of the material's essence and its application onsite. Through this practical experience, they acquire a solid knowledge of how to use earth and tools as construction elements. This process facilitates experimenting with this resource in a practical way.

Phase IV. Preparation of Adobe and Rammed Earth masonry.

In this phase, the necessary tools are available and used outside to prepare the adobe. Among them, the *simbarra* stands out as a fundamental instrument for molding and standardizing masonry units, ensuring uniform, high-quality pieces. The practical session is organized into four main steps that allow students to progressively understand the construction process, from preparing the material to obtaining the final block, promoting comprehensive learning based on direct experience (Table 1).

At the end of this process, students, under the instructor's guidance and in a controlled manner, use traditional tools to obtain a compact, uniform, and high-quality adobe. This result depends not only on the correct handling of the instruments but also on the precise dosing of the earth and water, as well as on the application of the technique. The practical activity offers students the opportunity to understand first-hand

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Stages of Adobe Masonry Construction	Procedure	Result
Preparation of the mud	Earth and water are mixed until a homogeneous and malleable mass is obtained. The ratio of clay, sand, and water will depend on soil quality and climate.	
Molding	The mixture is placed in a bowl that has the shape and size of the adobe bricks. It is compacted well so that the mass is uniform and cracks do not form.	
Sun-drying	Once molded, the adobe bricks are left to dry in the sun for several days, turning them regularly so that they dry evenly. It is important to protect them from rain during this process.	
Storage	Once the adobe bricks are completely dry, they can be stored in a dry, well-ventilated place until they are ready for use in construction.	

Table 1. Stages of adobe masonry construction. Source: Prepared by the authors.





Figure 7. Preparing adobe masonry and walls - 1:1 scale. Source: Prepared by the authors.

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Figure 8. Removing the rammed earth wall formwork - scale 1:1. Source: Prepared by the authors.

the physical and mechanical principles involved in the production of adobe, such as material cohesion, compaction, and controlled drying. In this way, the exercise becomes a pedagogical experience that combines technical and practical knowledge (Figure 7).

In the case of rammed earth, the process begins with preparing the ground where the wall will be erected. For this purpose, it is recommended to lay a soil-cement base and, on it, a layer of bricks. This prevents the wall from coming into direct contact with soil moisture, which could compromise its strength and durability (Figure 8). Subsequently, the formwork is installed, inside which the previously selected soil mixture is deposited. With the help of the rammer, this earth is gradually compacted into a solid, homogeneous block that will give the wall its shape.

According to the teacher's instructions, this process proceeds sequentially, as shown in Table 2, which outlines the practical steps that help students understand the technique in its whole constructive dimension.

Phase V. Supporting results

This is proposed as a final product: the development of an architectural solution in adobe or rammed earth that responds to the needs of the

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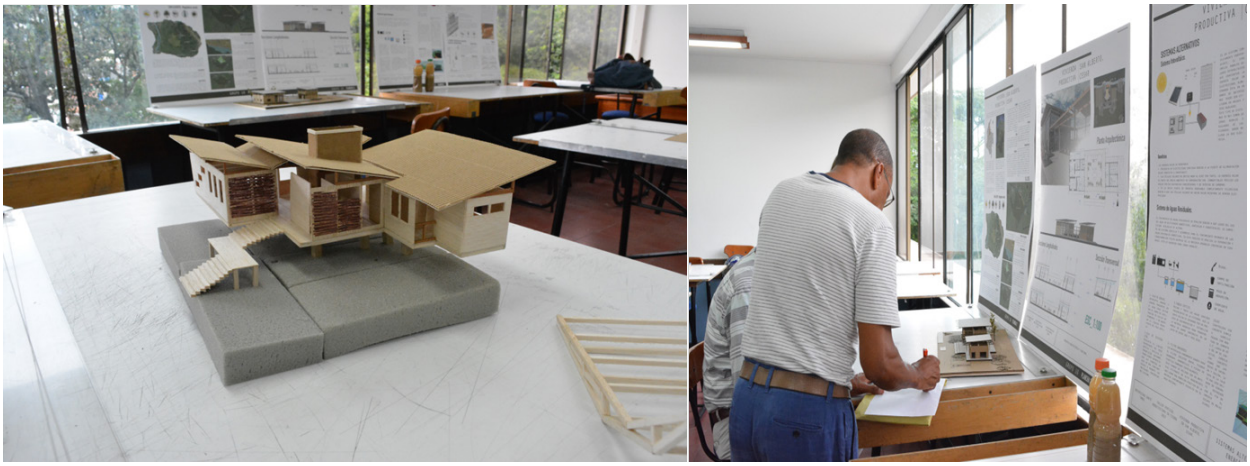
Stages of Adobe Masonry Construction	Procedure	Result
Leveling of the ground	Removal of plant material Leveling is checked with a hose or a laser level	
Foundation	Excavation of trenches according to the structural design. Laying of stone with earth or lime mortar. Manual compaction between layers.	
Preparation of soil mixture	Selection of soil with good clay content. Work is done with a mixture of sand, gravel, and stabilizers (lime). Controlled wetting and manual or mechanical mixing.	
Compaction	The soil mixture is poured in layers of about 20-30 centimeters and compacted using a tool called a pisón (rammer). Each layer is compacted until it is very firm and uniform.	
Erection of walls	Repetition of the formwork and compaction process by levels. Control of vertical and horizontal joints. Integration of reinforcements if necessary (wood, cane).	
Finish	Once the desired height is reached, finishes can be made on the exterior surface to protect the wall from the elements, such as lime coating, stone, or cement.	

Table 2. Stages of adobe masonry construction. Source: Prepared by the authors.

context and the conditions of the place at a graphic scale of 1:50. The main objective of this exercise is for students to be able to design a proposal that articulates the principles of sustainability in all its stages: implementation in the territory, architectural design and construction process (Figure 9). Also, as a proposal, the project can integrate basic accessibility solutions, the design of pedestrian paths, and the incorporation of complementary landscape elements, which strengthen the relationship between the proposed architecture and its immediate surroundings (Ariza Rodríguez & Guarnizo Sánchez, 2022).

Similarly, it is sought that the outcome includes analogous graphic

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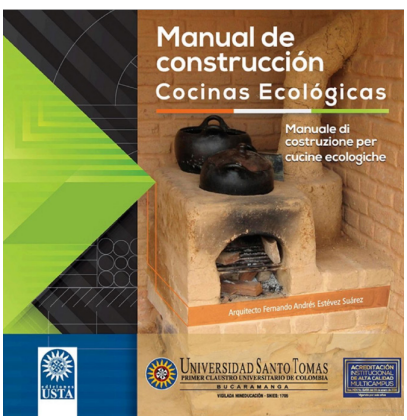




Figure 9. Results of the proposals based on the experience of the Earth materials workshop. Source: Prepared by the authors.

Figure 10. Ecological kitchens construction manual. Source: Estevez-Suarez (2018).

resources, such as physical sketches, models, and outlines, as well as digital versions with 3D models, renders, and technical drawings, to complement these. This strengthens the student's projective and communicative competencies across various stages of learning (Guarnizo Sanchez, 2024). Also, as a scientific product for the teaching staff, the "Construction: Ecological Kitchens" manual by Estévez Suárez (2018) offers a practical guide to constructing sustainable kitchens, focusing on the use of local materials and traditional techniques that promote energy efficiency and environmental sustainability. The work combines theoretical concepts with instructions, including diagrams, plans, and recommendations for this functional area of the house (Figure 10).

Finally, the objective was to promote the sensitivity and importance of implementing constructive heritage techniques, given that numerous cases across the country show that inadequate conservation has increased the vulnerability of these assets, making them increasingly prone to destruction (Guarnizo-Sánchez & Gualdron-Camacho, 2024). However, this situation can also become an opportunity for the architecture and construction industry by opening spaces for research, innovation, and the generation of projects that promote the preservation, adaptation, and resignification of these traditional techniques and knowledge in the contemporary context.

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CONCLUSIONS

The process of understanding the dynamics of earth-based architecture in Colombia proved fundamental, as it allowed exploring the history, construction systems, and concepts that have supported this type of building over time. Its symbolic and cultural value has left a significant mark across various regions of the country, constituting itself not only as a testimony to identity and tradition, but also as a resource that dialogues with the sustainability and relevance of using local materials in contemporary architecture.

By engaging with the characteristics and uses of the earth as a construction material, the students were able to appreciate not only its technical versatility but also its relevance in contemporary architectural practice. Through theoretical, research, and practical experiences, they developed specific skills to understand fundamental concepts, recognize referents, handle tools, and work directly with this material. This learning process was consolidated as a key initial experience, which, in addition to strengthening academic competencies, awakened in students from different semesters a particular sensitivity towards natural and sustainable materials by fostering a critical and responsible vision in the face of the challenges of current architecture.

In addition, this educational process of directly experimenting with ancestral earth-based construction techniques establishes an invaluable link between academic and traditional knowledge. The earth, in this context, is not only a construction material but a vehicle of memory, culture, and sustainability. By understanding this, future architects not only develop technical skills but also a respectful vision regarding the architectural legacy of their communities, thus promoting a more humane, responsible, and rooted architecture in its context.

CONTRIBUTION OF AUTHORS CRediT

Conceptualization, N.A.G.S. & F.A.E.S.; Data Curation, N.A.G.S. & E.Y.M.M.; Formal analysis, N.A.G.S.; Research, F.A.E.S.; Methodology, F.A.E.S.; Project management, E.Y.M.M.; Supervision, E.Y.M.M.; Validation, E.Y.M.M.; Visualization, N.A.G.S. & F.A.E.N.S.; Writing - original draft, N.A.G.S. & F.A.E.S.; Writing - proofreading and editing, N.A.G.S. & F.A.E.S.

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LIGHTHOUSE IN SÃO PAULO: THE IMS PAULISTA AND CONTEMPORARY BRAZILIAN ARCHITECTURE

UN FARO DE SÃO PAULO: EL IMS PAULISTA Y LA ARQUITECTURA BRASILEÑA CONTEMPORÁNEA

FAROL PAULISTANO: O IMS PAULISTA E A ARQUITETURA CONTEMPORÂNEA BRASILEIRA



Figure 0. The IMS Paulista. Source: Author's collection in 2023.

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RESUMO

O artigo investiga a genealogia da proposta vencedora do escritório Andrade Morettin para a nova sede do Instituto Moreira Salles (IMS) na Avenida Paulista, examinando sua inserção no contexto da produção arquitetônica brasileira – e, em particular, paulista – entre o final do século XX e o início do XXI. Para tanto, situa o projeto na trama de modos contemporâneos de pensar e produzir arquitetura, marcada pela coexistência produtiva de referências cruzadas, nacionais e estrangeiras. Tributário das lições da chamada "tradição brutalista" – considerada um norte para a geração de arquitetos formados na FAU-USP na década de 1990 –, o projeto do IMS Paulista distingue-se por transformações significativas no tratamento da forma e da lógica construtiva, com ênfase na envolvente, superfície e materialidade. Por meio do método histórico, apoiado em análise bibliográfica, documental e arquitetônica, identificaram-se as articulações entre influências nacionais e internacionais refletidas no caso de estudo. A produção do escritório Andrade Morettin revela-se, assim, nutrida pelos debates teóricos e projetuais da arquitetura contemporânea internacional, reinterpretados criticamente pelos arquitetos numa atitude de ruptura frente ao caráter autorreferente e fechado ao diálogo com a produção internacional que caracterizou a cultura arquitetônica moderna brasileira.

Palavras-chave: arquitetura contemporânea, crítica, arquitetura paulista, materialidade, teoria de projeto

ABSTRACT

The article investigates the genealogy of Andrade Morettin's winning proposal for the new headquarters of the Moreira Salles Institute (IMS) on Paulista Avenue, examining its insertion in the context of Brazilian architectural production – and, in particular, São Paulo architecture – between the end of the 20th century and the beginning of the 21st. To this end, it situates the project within the framework of contemporary ways of thinking about and producing architecture, marked by the productive coexistence of cross-references, both national and foreign. Drawing on the lessons of the so-called 'brutalist tradition' – considered a guiding principle for the generation of architects trained at FAU-USP in the 1990s – the IMS Paulista project is distinguished by significant transformations in the treatment of form and constructive logic, with an emphasis on the envelope, surface, and materiality. Through the historical method, supported by bibliographic, documentary, and architectural analysis, the articulations between domestic and international influences reflected in the case study were identified. The work of the Andrade Morettin firm is thus nourished by theoretical and design debates in contemporary international architecture, critically reinterpreted by the architects in a break with the self-referential character and closed dialogue with international production that characterised modern Brazilian architectural culture.

Keywords: contemporary architecture, criticism, São Paulo architecture, materiality, design theory

RESUMEN

El artículo investiga la genealogía de la propuesta ganadora del estudio Andrade Morettin para la nueva sede del Instituto Moreira Salles (IMS) en la Avenida Paulista, examinando su inserción en el contexto de la producción arquitectónica brasileña —y, en particular, paulista— entre finales del siglo XX y principios del XXI. Para ello, sitúa el proyecto en el entramado de las formas contemporáneas de pensar y producir arquitectura, marcadas por la coexistencia productiva de referencias cruzadas, tanto nacionales como extranjeras. Influenciado por las lecciones de la llamada «tradición brutalista» —considerada un referente para la generación de arquitectos formados en la FAU-USP en la década de 1990—, el proyecto del IMS Paulista se distingue por transformaciones significativas en el tratamiento de la forma y la lógica constructiva, con énfasis en la envolvente, la superficie y la materialidad. Mediante el método histórico, apoyado en análisis bibliográficos, documentales y arquitectónicos, se identificaron las articulaciones entre las influencias nacionales e internacionales reflejadas en el caso de estudio. La producción del estudio Andrade Morettin se revela así alimentada por los debates teóricos y proyectuales de la arquitectura contemporánea internacional, reinterpretados críticamente por los arquitectos en una actitud de ruptura frente al carácter autorreferencial y cerrado al diálogo con la producción internacional que caracterizó la cultura arquitectónica moderna brasileña.

Palabras clave: arquitectura contemporánea, crítica, arquitectura paulista, materialidad, teoría del proyecto

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INTRODUCTION

The winning project of the competition for the new São Paulo headquarters of Instituto Moreira Salles (IMS), conceived by Andrade Morettin, condenses in its formulation a bundle of meanings that expresses the state of Brazilian architectural production at the turn of the 21st century. Although some of its most visible attributes were already announced in projects and works of the generation of architects active from the 1990s – where the authors are recognized and with which they share training paths, professional backgrounds and a range of references –, the headquarters of IMS Paulista stands out for making explicit the negotiations underway, since then, between the architecture produced in the country and the directions of the international architectural debate. These negotiations were invariably mediated by the legacy of the sound modern architectural culture consolidated in Brazil in the second half of the 20th century, which subjected all approaches and dialogue with the erratic international architectural panorama at the turn of the century to discretionary cuts averse to simplistic adherence to the flavor of passing fads.

The exploration of new plastic and material possibilities, perceptible in the Brazilian architectural production of the period and resulting from contact with the most recent developments of International Architecture, raised questions about the vitality of the local modern tradition and its ability to sustain an unbroken renewal. In this context, the work of architects such as Paulo Mendes da Rocha, Oscar Niemeyer, and Lina Bo Bardi instigated new looks, serving as a reference in the definition of professional lineages and alignments. Inserted in this debate, the IMS Paulista project proposes productive reconciliations by articulating, with ease and without orthodoxy, its belonging to the Brazilian modern architectural culture. This posture is representative of the extension identified as a common attribute of the works gathered in the *Coletivo* (Collective) exhibition (Milheiro et al., 2006), dedicated to a profile of contemporary São Paulo production, in which the authors of IMS Paulista also participated.

As the critic Ana Luiza Nobre observes, in the Brazilian architectural environment – and, in particular, in the São Paulo context, the focus of the *Coletivo* exhibition - this extension manifested itself as a "replacement of the trend of reports against modern production with a less aggressive and more judicious posture" (Nobre, 2006, pp. 18-19). If until the 1990s "it made some sense to defend the exercise of freedom previously considered intangible", the current trend was "progressively oriented towards a reassessment of modernist production that would have consequences, in one way or another, for a significant part of our younger architecture" (Nobre, 2006, p.19).

This article aims to investigate the genealogy of the winning proposal of the Andrade Morettin firm for the new headquarters of IMS Paulista, considering its insertion in the context of Brazilian architectural production – and, in particular, paulista or São Paulo production – between the end of the 20th century and the beginning of the 21st. Such an investigation implies situating the project in the context of the extension highlighted by the *Coletivo* exhibition, and linking it to the dense web of contemporary ways of thinking

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Figure 1. The IMS Paulista. Source: Author's collection in 2023.

and producing architecture, marked by the productive coexistence of a set of domestic and foreign cross-references and the multiple commitments that articulate them. It is assumed that, at the same time that the project operates from the architectural knowledge associated with the so-called "brutalist tradition" of São Paulo Architecture – still considered as a guideline for architects trained in the 1990s at the Faculty of Architecture and Urbanism of the University of São Paulo (FAU-USP) –, the proposal of IMS Paulista, as well as the production of the Andrade Morettin firm in a broader sense, is nourished by the theoretical and design debates of international contemporary architecture, submitted, as it could not be otherwise, to rigorous critical screening.

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To this end, the article adopts the historical method and seeks to convey a sense of continuity and interweaving among the events. As proposed by Groat and Wang (2013), the result of historical research in architecture consists of the construction of a narrative, the final product of a process that involves the search for facts (identification), the organization of evidence, its evaluation, and analysis. The bibliographic research used sources dedicated to the topic in the disciplinary field of architecture at the turn of the century – that is, from the 1990s until the competition period –, which allowed delimiting both the timeframe and the theoretical framework from texts by Moneo (Moneo, 2004; Moneo, 2008), Koolhaas (2000) and Heathcote (2016), in the international context, and by Nobre (2006) and Wisnik (2018), in the domestic context, which support this research. As part of the process of identifying the facts, interviews with the architects, published in specialized journals, were used to consolidate the relationships and assumptions of this article within the proposed case study. The *Light Construction* (Museum of Modern Art [MoMA], 1995) and ***Coletivo*** exhibitions (Milheiro et al., 2006) serve as references for the connection between theory and projects. A comparison was made between the theoretical approaches and the IMS Paulista project (Figure 1), examining the design discourse, design strategies, the use of materials – with emphasis on the surface and the surroundings –, construction techniques, and the references that directly affect the analyzed work.

CASE STUDIES

The Search for a New Space

The holding of the competition for the new headquarters of IMS Paulista, at the end of 2011, was one of the decisive moments in the search for an adequate space in São Paulo to house collections and promote events of the institution, founded in the late 1980s by diplomat and banker, Walther Moreira Salles (1912-2001). Dedicated to the conservation, preservation, and dissemination of collections of photography, music, literature, and iconography, the project to create a building specifically designed to function as a cultural center also represented a departure from the current practice of adapting pre-existing buildings for institutional purposes. Examples of this practice are the cases of the IMS in Poços de Caldas (MG), installed in the historic Cristiano Osório Chalet, and the IMS of Rio de Janeiro (RJ), where the family residence, located in the Gávea neighborhood and designed in 1948 by Olavo Redig de Campos, with landscaping by Burle Marx, was transformed into the Institute's Rio headquarters in 1999; in addition to the unit located in the Higienópolis neighborhood, in the capital of São Paulo, which housed the IMS between 1996 and 2016.

The choice of land for the implementation of the IMS Paulista preceded the contest by some years, culminating in the selection of the lot on Avenida Paulista, between the streets of Consolação and Bela Cintra. This location (Figure 2) ensured the São Paulo headquarters' remarkable visibility, in addition to placing it close to important cultural facilities of public interest,

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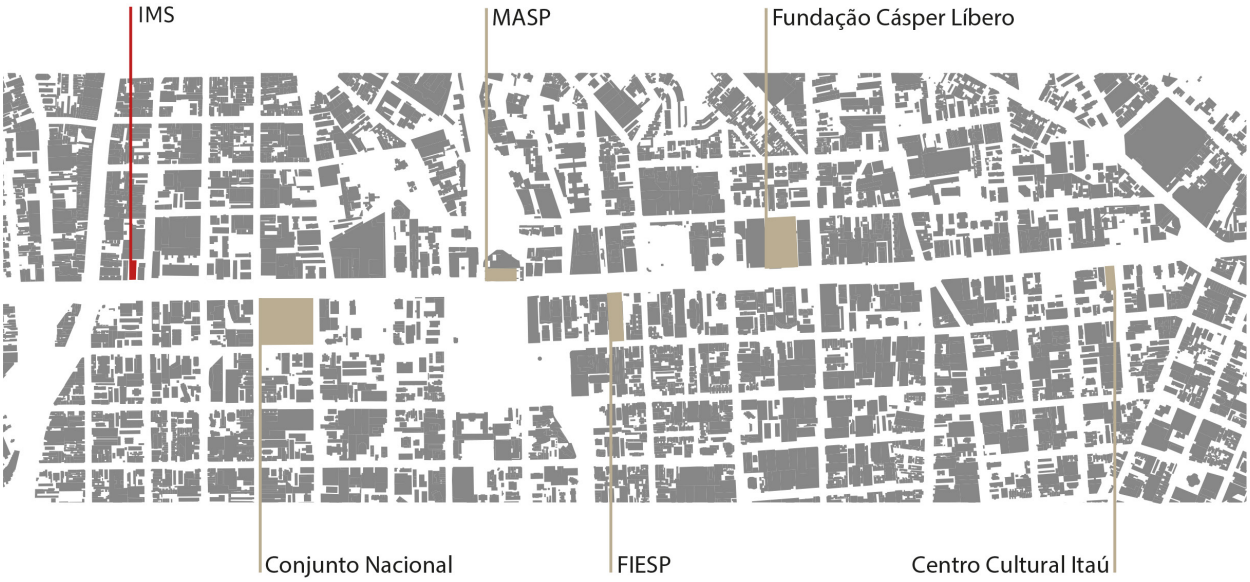


Figura 2. Location of the new IMS headquarters in relation to the iconic Paulista buildings. Source: Andrade Morettin Arquitetos Associados collection (Moretti et al., 2023).

such as Conjunto Nacional, MASP, Parque Trianon, Centro Cultural FIESP, Fundação Cásper Líbero, Casa das Rosas, and Itaú Cultural. The gradual conversion of Avenida Paulista into a true cultural and leisure corridor would be reinforced, in turn, by the implementation of the *Japan House* in 2017, designed by the Japanese architect Kengo Kuma in partnership with the firm, FGMF, and SESC Paulista in 2018, with the firm, Königsberger + Vannucchi, in addition to the new IMS, opened at the other end of the Avenue in September 2017.

Before deciding to hold a competition, the possibility of hiring international architects for the task was considered. Fernando Serapião, who was involved in organizing the competition from the start, invited Japanese architect Ryue Nishizawa, Kazuyo Sejima's partner at the SANAA office, to see the lot on Avenida Paulista, for which Nishizawa even made some sketches. The suggestion of the SANAA team was undoubtedly due to the recent notoriety gained from the New Art Museum project, built in New York City between 2002 and 2007. The presence of the SANAA team in this context reveals not only the promoters' expectations regarding the project for the São Paulo headquarters, but also confirms the approximations to contemporary international architecture observed in Brazil since the 1990s. The treatment of volumes, transparencies, and material explorations that characterize the works of the Japanese firm -producing visual overlay effects through the use of sandblasted or silkscreen glazed planes, among other combinations – is present both in the New York museum and in works such as the Museum of Contemporary Art of the 21st Century, in 1999, The Glass Pavilion in 2001-2006 and the *Louvre Lens* in 2005.

Also, Mexican architect Ricardo Legorreta was consulted to conceive a project. His proposal addressed expectations for the public use of the ground floor and the importance of spaces dedicated to research

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and teaching. João Moreira Salles synthesized the vision that IMS São Paulo should be "an open and democratic space", reflecting the inclusive character of the new headquarters (Serapião, 2012, p.39).

Although an international project competition was also considered – a financially viable option that would undoubtedly bring great visibility to the IMS – this alternative lost strength in the face of the "IMS' decision [to] support Brazilian culture" (Serapião, 2012, p.37). Thus, the final decision was guided by the idea of promoting young Brazilian firms through a competition, as a way to value and encourage local architecture, as highlighted by João Moreira Salles in his opening speech of the new Paulista headquarters. Initially, fifteen teams of architects were selected. After interviews, the following teams were invited to participate in the competition: Andrade Morettin Arquitetos, Una Arquitetos, SPBR Arquitetos, Bernardes + Jacobsen, Márcio Kogan (Studio MK27), and Arquitetos Associados. Among the six teams, four were from São Paulo, and the first three had participated in the *Coletivo: Arquitetura Paulista Contemporânea* exhibition (Milheiro et al., 2006), presenting recent and expressive trajectories.

Chaired by Pedro Moreira Salles, the jury included André Corrêa do Lago, diplomat, architecture critic, member of the Architecture and Design Council of MoMA, and advisor to the *Monolith* journal; Fernando Serapião, architecture critic and editor of the same journal, who had participated in the entire contest process; and Flávio Pinheiro, executive superintendent of the Moreira Salles Institute. In addition to these, four foreign representatives were invited: Karen Stein, co-chair of the Architecture and Design Council of the Museum of Modern Art in New York and a jury member of the *Pritzker* Prize; Richard Koshalek, Director of the *Hirshhorn Museum* in Washington (USA) and member of the selection committees of the *Tate Modern*, in London, and the *Walt Disney Concert Hall in Los Angeles*; Jean-Louis Cohen, architectural historian, professor at *New York University* and director of *Institut Français d'architecture*; and the aforementioned Ricardo Legorreta, who went from potential author of the project to member of the jury, having also been a Pritzker Prize juror and winner of the AIA Gold medal in 2000. The composition of the jury reinforced the IMS's commitment to promoting Brazilian architecture and, at the same time, to legitimizing the competition in the international architectural landscape – a role played by foreign representatives.

At the suggestion of jury member Karen Stein, 33x60x60 boxes were provided, inspired by the practice of MoMA competitions, so that competitors could include all the necessary materials to understand their projects (Serapião, 2012). The submission included two mandatory items: a 1:200-scale model and four photomontages. The program, as stated in the notice, included exhibition spaces with an area between 1000 and 1200 m^2, galleries with 4 to 5 meter high ceilings and different levels of artificial lighting; two classrooms for 30 people or a single room with the equivalent

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capacity; multiple-use foyer; multimedia area with controlled access; cinema/auditorium; library with capacity for approximately 3000 volumes; administrative areas; about 115 parking spaces; and space for loading and unloading in the basement. It also included the request that the reception have the welcoming character typical of cultural institutions, with a restaurant and shop around which the building's spatial organization would be structured (Serapião, 2017). Thus, it was anticipated that the ground floor would assume importance in the project, with the access to the exhibition rooms organized from that level.

It was also evident that, for IMS, it was essential to understand how the new museum would be inserted into Avenida Paulista, especially in front of the cultural axis that had been consolidated there, aligning itself with the guidelines that provided for an open and democratic space. This strategic character of the site, in light of the institution's goals, did not go unnoticed by the winning architects of the competition. In his report, Andrade Morettin recognizes the centrality gained by Avenida Paulista in recent decades, describing it as "one of the most interesting and lively spaces in São Paulo," where the image of "a mixed, plural and more Democratic city" seemed to acquire full adherence (Andrade & Morettin, 2016, p.131).

Modern traditions and contemporary affiliations

Seen from the educational and performance perspective of the Andrade Morettin duo of architects, the most common affiliation built is with what is generically identified as a "Paulista tradition" in contemporary Brazilian architecture, associated with preparation at the Faculty of Architecture and Urbanism of the University of São Paulo (FAU-USP), a reason that explains their participation in the *Coletivo (Milheiro, Nobre, Wisnik, 2006)* exhibition. However, many of the elements mobilized by the architects in their presentation shed light on references, architectural aspects, and ways of treating materials and surfaces that escape this strict profile and stress, requiring a more detailed reading to understand the nature of the IMS Paulista project and its genealogy. This is clear in an interview with the *AU* journal, two years after the competition, where the architects were asked about their influences and how they deal with international and national references, as seen in the words of Vinicius Andrade:

> Marcelo and I were bookworms, and FAUUSP has a fantastic library. We saw a lot of things: international journals, L'Architecture d'Aujourd'hui, and a lot of national and international architecture. Since before working together, we had this curiosity and a comprehensive palette of references, carefree from an ideological point of view. The FAUUSP was quite restrictive in its official references, but the library was not (Andrade & Morettin, 2014, p. 59).

Moreover, as Marcelo Morettin adds:

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> We always like to see what is being done both here and outside, without restriction. This speculative attitude is a characteristic of us. Here in Brazil, we have always liked Rino Levi, Vilanova Artigas, and Paulo Mendes da Rocha; from outside, we like Morphosis, Koolhaas, and Herzog & de Meuron. It is a characteristic of the firm to be aware of what is happening at all times, such as Lacaton & Vassal, Sanaa, Yoshio Taniguchi, Riken Yamamoto, and Belgian and Austrian light architecture with wood. However, when the reference is taken very seriously and becomes idolatry, it gets boring because criticism is lost, and we love to criticize. It is not because this or that architect is good that he does everything right. There is a somewhat dogmatic attitude in São Paulo of thinking that if an architect is important, he cannot make mistakes. At the same time, we have a lot of self-criticism (Andrade & Morettin, 2014, p.59).

The passages highlight a critical, comprehensive stance by the duo of architects toward the repertoire of references, free of ideological restrictions. This approach favored the creation of a broad repertoire, with direct counterarguments in the firm's work, allowing Brazilian modern references, such as Rino Levi, Vilanova Artigas, and Paulo Mendes da Rocha, to dialogue with international exponents, including Koolhaas, Herzog & de Meuron, SSNAA, and others. Influences, however, do not become dogmas: they are filtered through a critical attitude towards references, without becoming idolatries. This critical and experimental orientation permeated the firm's work, which soon moved away from the brutalism characteristic of the graduates at the time at FAU-USP, adopting more open and dynamic architectural solutions.

For Heathcote (2016, p.7), although the firm emerged within a "system full of nostalgia and modernist tribute, it found its own way to escape expectations and the weight of tradition", marked by the genius of masters such as Niemeyer, Lúcio Costa, Paulo Mendes, Lina Bo Bardi, and Vilanova Artigas. This path led to an architecture that was "light, of industrial components and rational and delicate surfaces, as opposed to the raw and sculptural mass of concrete." This formal lightness, although anchored in references ranging from Mies to Koolhaas, configures a clearly Brazilian architecture, with elements of transparency and amplitude.

Taking this into account, it is significant that architects have resorted to a work that has long been marginal in the history of modern architecture – *Maison de Verre* by Pierre Chareau and Bernard Bijvoet (1928-1932)- as the opening image in the presentation of the proposal (Figure 3). As Terence Riley, curator of the *Light Construction* exhibition at the New York *Museum of Modern Art* (MoMA, 1995-1996) recalls, *Maison de Verre* appeared as a work that, for a long time, remained "disappeared and undervalued, which completely departs from the assumptions of modern rationalist thought" and the parameters of the International Style (Riley & García, 1996, p.14). Recovered historiographically by Kenneth Frampton, the work stood out in its "cinematic sense of space, a description that recalls many of the images used here to describe the synergy of contemporary architecture" (Riley & García, 1996, p.27).

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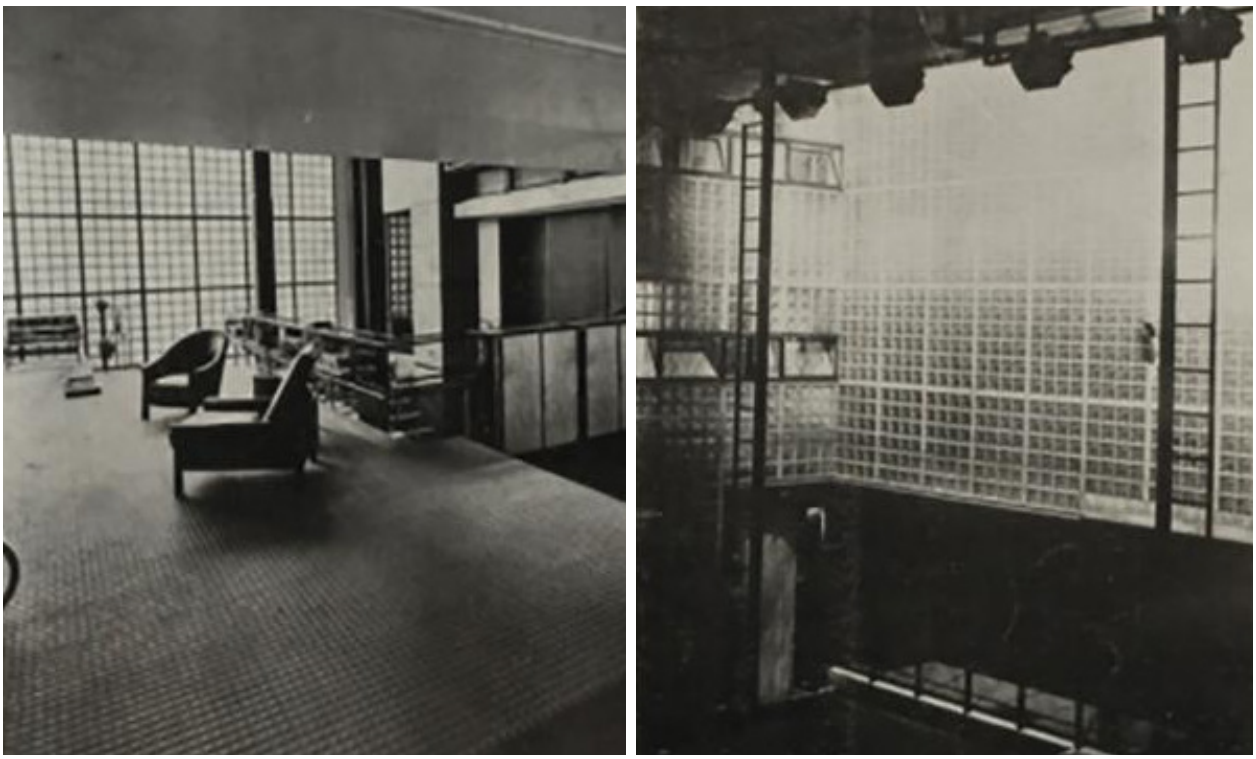


Figura 3. *Maison de Verre* by Pierre Chareau and Bernard Bijvoet (1928-1932). Source: Chareau (1933).

Combining in its program domestic functions and spaces intended for a gynecological clinic, the translucent character and "light " materiality of *Maison de Verre* - path for the extensive use of milky glass blocks and slender, delicate metal structures- articulated perfectly with the *Light Construction* (MoMA, 1995) exhibition's intentions, conducted by MoMA, to explore lightness as an attribute of contemporary architectural production. Filled with seemingly intangible buildings, dematerialized and ambiguous in their display of volumes and facades, the exhibition emphasized aspects already rehearsed in visionary works of modern architecture from the 1920s and 1930s, of Ludwig Mies van der Rohe to Pierre Chareau.

At the outset, the invocation of a work like this by architects, often classified schematically as aligned with the brutalist legacy of Brazilian architecture, undoubtedly distorts and allows its authors to be associated with other lines and lineages of modern architectural culture, whose repercussion is evident in the proposal presented to the competition. For Andrade (2012), in the presentation of the proposal to the jury, the image of *Maison de Verre* contained something like the essence of the space they intended to create. Without any reference to the material dimension or the constructive technology of the work, it was the atmosphere – emanated insufficiently in the photographs, in the form of a homogeneous light that dilutes in space – that captured the attention of the architects.

The absence of any noise between the mention of *Maison de Verre* and a formation under the sieve of the ideology of Artigas and Mendes da

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Rocha says a lot about the idea of extension previously enunciated in *Coletivo*, in which the interest and exploration of the legacy of canonical figures of Brazilian architecture coexisted, without hindrance, with an equally attentive look at other modern and contemporary traditions and practices. On more than one occasion, IMS Paulista architects articulate diverse references as a substrate of their way of thinking about architecture, citing from Chareau to the Australian architect Glenn Murcutt, passing through the architects of the *Case Study House* program and the practice of the French architects, Lacaton & Vassal, interspersing them with specific mentions of vernacular forms, such as stilts, and other ways of building in tropical regions, such as the metallic prototypes of *maison tropicale*, developed by Jean Prouvé for French colonial possessions in Africa.

Impossible to be understood from a formal or stylistic point of view, what brings this set of references closer is the tendency to production logics based on the handling of light elements – industrial or not – according to assembly processes, with the use of materials and constructive solutions that exploit varying degrees of transparency and translucency of surfaces, both in environmental and phenomenological terms. An example of how these references permeate Andrade Morettin's production appears in the project for the R. R. residence in Itamambuca (2006-2007) and in the Living Steel competition for sustainable housing in 2007, which the team won.

In line with these theories, Vinicius Andrade and Marcelo Morettin report, in an interview published in the book *Cadernos de Arquitetura*, that they began adopting lightweight roofs as a solution to the team's architecture. The Pavilion of the Viva O Centro Association, built for the 3rd São Paulo Architecture Biennial in 1997, "served as a laboratory for the concept of light structures." Implemented on a wooden base with raw and translucent cotton canvas, Vinicius comments that "from then on, [they] experimented with various degrees of translucency in other projects" (Andrade & Morettin, 2016, p.17).

This assembly procedure, recurrent in the team's work, seems to have reached its fullest expression in the project for the Paulista museum, given its urban scale and its direct relationship with the city's environment. The use of industrialized materials, integrated into a construction system that favors assembly, establishes a counterpoint to the artisanal work on the construction site, contributing to organizing it in a more efficient and socially responsible way. It is noticeable how architects extend the construction system beyond the modern tradition of cast-in-place concrete, through significant changes in the handling of construction shape and logic, using combinations of materials and techniques that reflect contemporary conditions of thinking about the architectural object.

In contrast, the runner-up project in the IMS Paulista competition,

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authored by the architect Angelo Bucci, who was also on the list of participants at the *Coletivo* exhibition, is based on a construction system using pre-stressed concrete slabs. In this case, the structure combines cast-in-place reinforced concrete and precast concrete slabs, with an evident emphasis on design and structure, clearly reflected in its articulation with the architectural program.

Architectures of the city and its floor

Similarly, the architects' view of buildings along the Avenida Paulista axis evidences a design rationale in which the dialogue with the city – in its proper urban dimension and in its multiple architectural configurations – feeds productive reflections on the definition of the proposal. To do this, the architects used a map of the full and empty spaces of Avenida Paulista (Figure 2), marking several iconic buildings along its route. Here again, the profile does not follow a formal criterion, but seeks to capture the spatial qualities of different buildings in their relationship with the city, particularly in the way their ground floors articulate with the immediate urban space.

That is, the focus falls on the urban quality of these architectures and on the public character of their ground spaces, regardless of the nature of the buildings – whether institutional, residential, commercial, or mixed. One of the most emblematic buildings, in this sense, in view of the continuity that it provides between the public space of the street and the private space, is the Conjunto Nacional (1954-1962), by David Libeskind, located two blocks from the lot on which the IMS Paulista would be built. With the lot fully occupied and the permeability of its ground floor, the spatial fluidity between the street and the lot is ensured by free movement. It is this presence of the continuous floor that fascinated the architects, the "tremendous asset" of this work:

> The Conjunto Nacional is undeniable in saying that it establishes a new paradigm in the Paulista occupation, because it faces and places itself on the Avenue in a way in which its great asset is the ground, the ground floor level, unlike 99% of the buildings on Paulista Avenue. The great asset of this building is the public enjoyment that extends across its internal floor; it is an offshoot of the public sidewalk. So, there was an understanding here that the floor is the most important place on the avenue (Andrade, 2017).

It is the variations in the treatment of this "floor" that guide the selection of buildings on the Avenida Paulista intersection. Observed together, these buildings seem to compose a kind of urban grammar, rich in suggestions about the relationships between building/city and built volume/floor, each of which stands out for a particular trait in the links with public space. In the case of Lina Bo Bardi's MASP (1958-1969), the elevation of the museum's main volume provides the city with extensive public space in a high-cost urban land zone. Another

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Figure 4. The ground floor and strategy for IMS Paulista. Source: Andrade Morettin Arquitetos Associados collection (Moretti et al., 2023).

grammatical variation resulted from the renovation of the FIESP building (1970-1979) and the Rino Levi office, carried out by Paulo Mendes da Rocha and the MMBB firm (1996-1998), which created a double ground floor and new half-floors. Particularly singular, among the buildings highlighted by the architects in their reading of the city, is the Gazeta building, headquarters of the Cásper Líbero Foundation (1958-1966), by engineer José Carlos De Figueiredo Ferraz, where the interest falls on a specific element: the wide staircase on the facade, converted into a meeting point and viewpoint for the observation of the street and its flows.

It is interesting to observe how these analyses of the land along Paulista Ave. are reversed in the proposed IMS design. In continuity with a design practice identified in the projects they mentioned, such analyses endowed the proposal with historical depth and connected it to the ethics of the "Paulista school," marked by the appreciation of the collective and public dimensions of urban space. In the architects' vision, the ground floor would function "as a large urban hall," becoming an "extension of the sidewalk, leading the visitor through escalators and elevators to the heart of the building" (Andrade & Morettin, 2016, p.134). This sought an architecture that takes place in the city, is intensely committed to urban space, invites the visitor to enter through the ground floor, and culminates in the elevated square, thereby translating the aspirations outlined by the analysis of the iconic buildings on Paulista Ave.

The consideration of the program and the analysis of the urban context determined the design strategy that led to the option to raise the ground floor and transform it into a square, 17 meters above the level of Paulista Ave., "creating a totally new and open relationship between the museum, the city and its inhabitants" (Andrade & Morettin, 2016, p.134). This displacement resolved the "claustrophobic" situation imposed by the lot's boundaries on the ground floor. It established a new relationship with the Avenue, in addition to connecting the program's diagram with the distribution hall between the exhibition spaces and the media library (Figure 4).

For the elevated square, and with the intention of "reinforcing the idea that it is still in a public space" (Andrade, 2014), the architects chose to rescue the original Portuguese stone floor of Paulista's pavement, a

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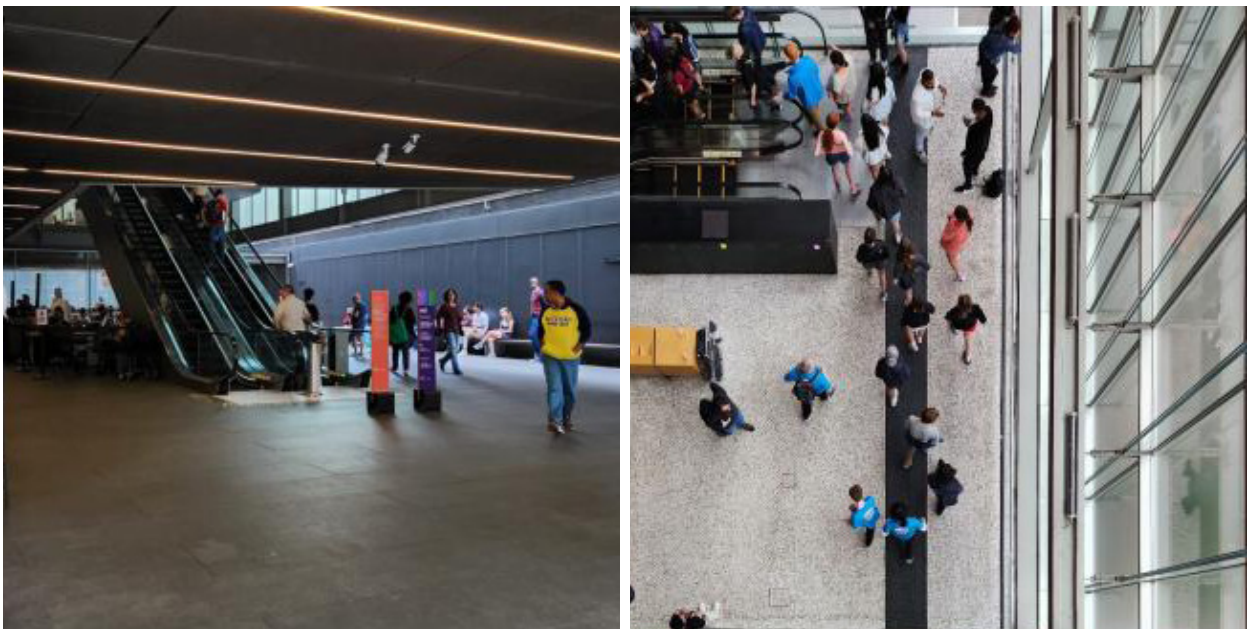


Figure 5. Portuguese stone (raised ground floor) and Basalt (ground level of the sidewalk). Source: Author's collection in 2023.

project by Rosa Kliass in the early 1970s, which remains intact only on the block of the Conjunto Nacional. On the ground floor, at sidewalk level, basalt was used, establishing a direct relationship with the cement on the sidewalks and creating continuity in the public space, without interference or clear boundaries (Figure 5).

The transfer from the ground floor to the center of the building reorganizes circulation and the program, bringing the museum's main sectors closer together (Figure 6). In short, with the media library located below the elevated ground floor, housing spaces dedicated to cinema, literature, research, and the production of knowledge, the inclined cut resulting from the escalator helps organize the necessary slope for the auditorium. In the remaining space, the library and study rooms are inserted, fully visible to those who walk up and down the escalator. Like the raised square, the exhibition spaces above it are free of any support, the result of the structural reasoning made possible by the metal trusses, which rest on the longitudinal concrete gables of the ground, where vertical circulations (elevators and stairs) and toilets are found.

Skins, envelopes, and materials

Referring to the use of *Maison de Verre* during the proposal's presentation, the message that the architects intended to give to the jury was clear: the institute would be translucent, wrapped by a second double-layer skin that would define the four facades. The spatiality of IMS Paulista is structured by a sequence of voids resulting from circulation spaces, with the fully enclosed ones constituting the programmatic content in well-defined volumes, articulated as boxes within a large translucent prismatic box. Thus, the translucent surface

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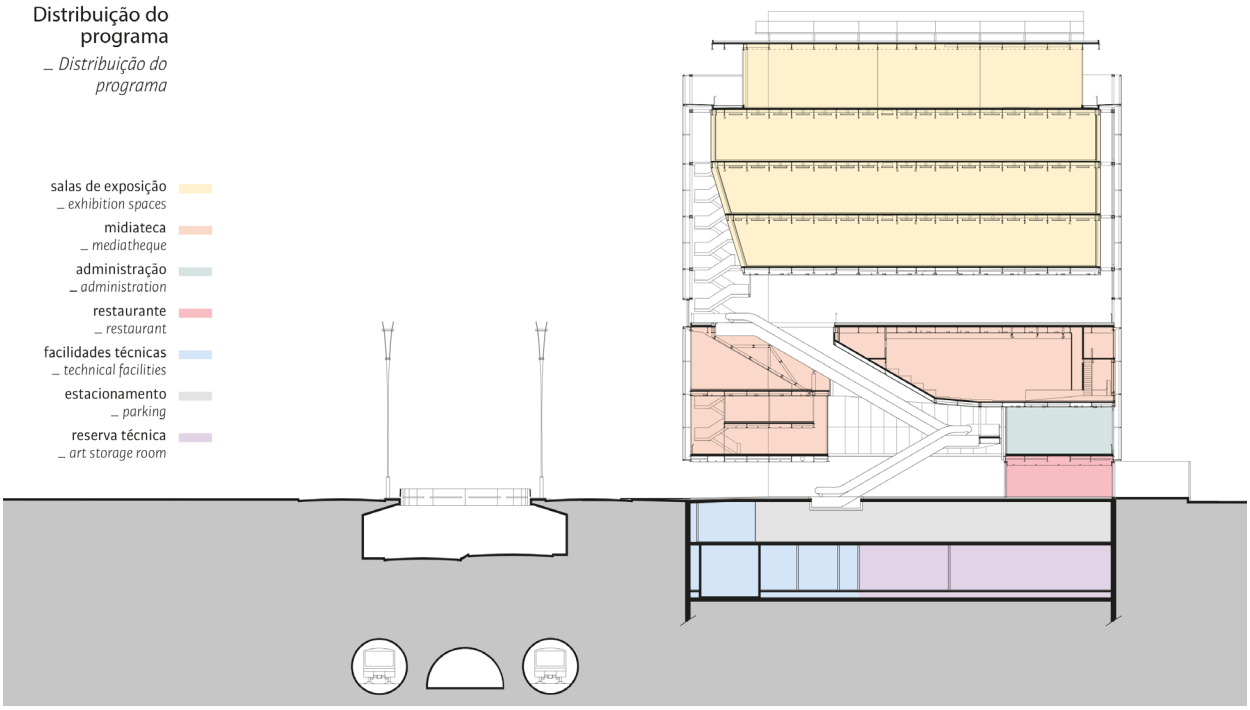


Figure 6. Cross-section of the program's distribution. Source: Andrade Morettin Arquitetos Associados collection (Moretti et al., 2023).

offered two qualities to the proposed space. First, its materiality enabled a mediated dialogue between the city and the institute; and second, it responded to the need, as the architects pointed out, for a materiality capable of incorporating the program, organized as a set of boxes.

The relationship between the building and its surroundings, marked by the translucent coating, allows the subtle silhouettes of people and the building's internal lights to be perceived from the outside. On the other hand, those inside experience the city in an almost filtered way, with gently blurred images, maintaining a visual dialogue with the urban environment while creating the necessary distance to preserve the museum's introspective character. The translucent skin provides a soft and diffused light, but with "traits of the city," which does not completely dissociate itself from the urban space:

> The use of translucent glass as a second skin makes the museum appear as a well-defined, integral volume, with the necessary strength to establish its place among the neighbors and other buildings on Avenida Paulista. At the same time, its light and translucency properties create a second register for the building, changeable depending on the nature of the environment and the position of the observer. As a result, the interior of the building subtly manifests itself in the urban space (Andrade & Morettin, 2016, p. 139)

As stated by Vinicius Andrade in a lecture, the use of the skin by the duo of architects gave the IMS a unique presence in the urban environment of São Paulo, with a poetic and subtle character, marked by its prismatic volumetry. The environment allowed "neutralizing" the building's volume in the context of the avenue, its translucency letting us glimpse people, activities, lights, and movements (Figure 7), without resorting to" crazy"

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Figure 7. The Paulistano Lighthouse. Source: Author's collection in 2023.

volumetries (Andrade, 2014). Morettin complements that the facade, at night, acquires a lit-up aspect, like a lighthouse that illuminates the beginning/end of the avenue (Andrade & Morettin, 2013). In the judges' view, the materiality worked reaffirmed a language dear to the duo's architecture, using translucent and opaque skins. In this way, the skin produces a mixture of ambiguity and reflections, an almost sublime aura that hovers over the avenue.

The materiality of the envelope, in addition to ensuring a subtle insertion into the urban environment through a quota of translucency, also responded to the need to envelope the program's volumes, organized into "boxes." Thus, the envelope creates a feeling of "a box within a box", a configuration that, since the first conceptual model developed by the architects, already evidenced the intention to create a closed exhibition

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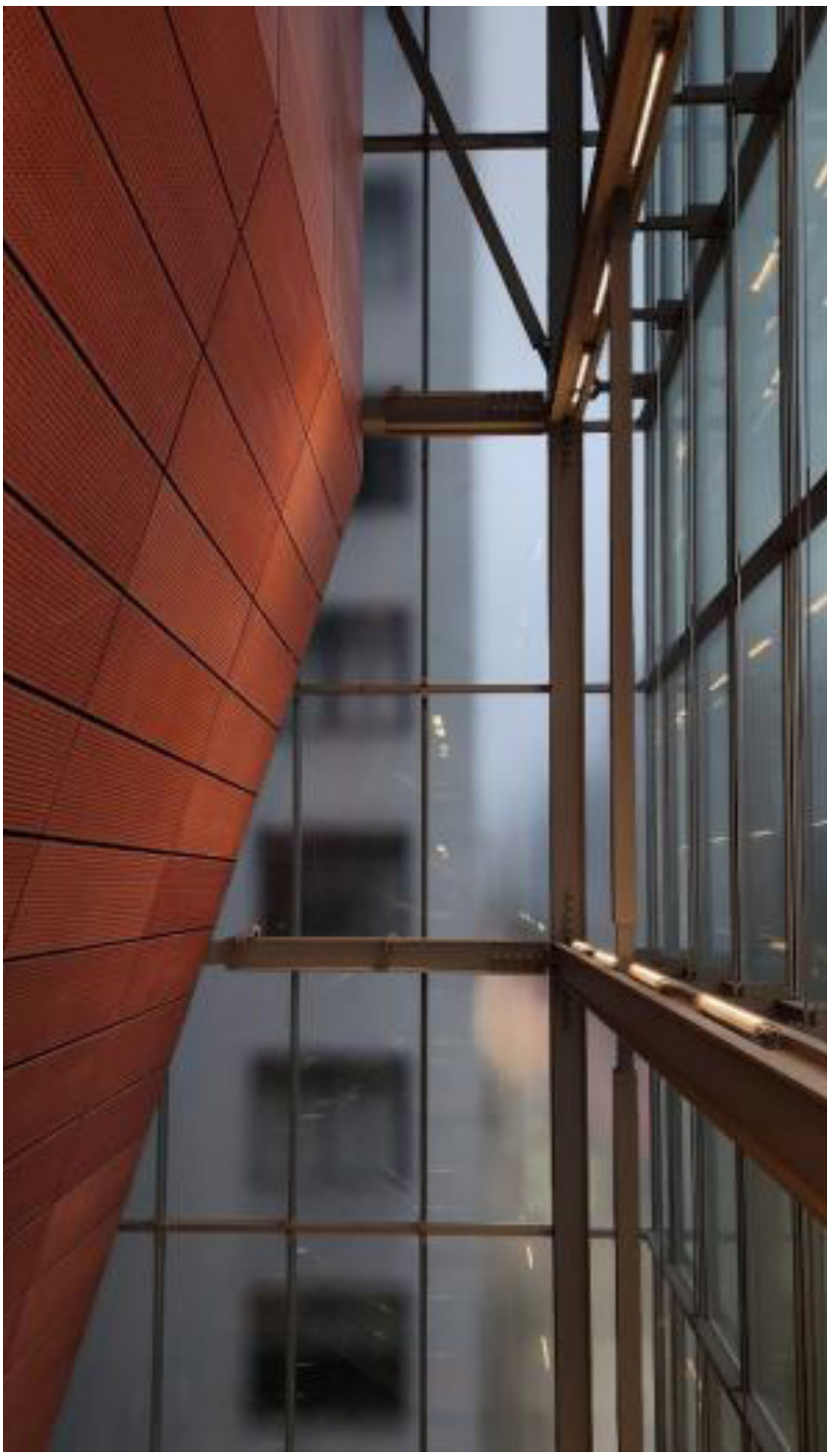


Figure 8. Translucent outer box and the inner box in a reddish perforated sheet. Source: Author's collection in 2023.

volume and visually separated from the rest of the program, which the skin would then wrap. Therefore, the external envelope contrasts sharply with the exhibition rooms' volume, demarcated by a perforated wooden sheet in reddish tones (Figure 8).

This smokiness of the structural frame – generated from the tension between the materiality of the architectural object and other immaterialities, such as light, movement, and reflections – makes the

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perception of the whole impose itself to the detriment of the volumes that make up the internal blocks (Wisnik, 2018). When approaching the glass facade, the moiré effect is present due to the glass's material constitution: with the perforated patterns, the optical interference between internal and external reflections is intensified.

What is behind the IMS' envelope?

The chain of references in the IMS Paulista shows that, in more than one design decision, the resonances of Koolhaas' work are present. Directly linked to the program and manipulated diffusely, with no direct connection to the final form, Koolhaas's architecture is conceived from the "free cut," according to which buildings are thought vertically, from the cut, and the architectural form emerges from the relationship between the scale and the function of the building within the city. In the project not built for the *Très Grande Bibliothèque* (TGB) from 1989, the architecture is conceived as a translucent cubic solid, inside which the programmatic spaces are inserted as "bubbles", independent volumes that do not affect the building's external volumetry (Moneo, 2008).

These volumes excavated inside the solid cube only touch the outer block, manipulating the full and empty spaces, as well as the surface texture in relation to the program. Wisnik suggests that the project for TGB breaks doubly with the post-modern paradigm of the time, both by the refusal of a formal contortionism of the volumes practiced in the process of developing the project, and by the exterior image of their skins, now translucent and ambiguous" (Wisnik, 2018, p.219).

Something like the manipulation of the program is carried out at IMS Paulista: articulated in vertical diagrams and conceived from the cut, the spaces resulting from this manipulation form independent volumes, and what remains is the void – the "negative" spaces –, evidenced by the model in its juxtaposition of light and shadow, manifesting themselves as essential elements and articulators of the museum's design space. The solution of wrapping the box continues the line of reasoning developed, where the volumes do not touch the envelope, remaining flexible for programmatic adaptations.

This solution is also directly related to what Moneo proposes about the changes identified in contemporary architecture from the 1990s. Prismatic volumes accentuate the material dimension of the architectural object, while the program solution becomes an effort independent of the specific form. For the author, the cubic volumes wrapped by a translucent skin make the concept of compactness an attribute of the architectural object: the construction remains in its regular perimeter, mediated by the urban fabric in which it is inserted, and creates a totally autonomous interior world (Moneo, 2004). To exemplify this concept, Moneo turns to the Kursaal project (1990), in which the clarity of the contours of pure geometry elevates compactness to a fundamental attribute of architectural design.

The concept of compactness proposed by Moneo (2004) can be observed in the IMS Paulista project, the TGB project by Koolhaas, and the unbuilt project for the Orthodox Church in Zurich (1989) by Herzog & de Meuron. In these cases, compactness operates directly with materiality, in an architecture of clean and compact volumes that extend to the edge of the terrain, with the envelope folding and enveloping the architectural program. Representative of these issues is the interweaving between the projects of Koolhaas and Herzog & de Meuron, cited in the book by Riley and García (1996) on *Light Construction* (MoMA, 1995), and *Maison de Verre*, which was used as a reference by São Paulo architects for the museum.

Resuming Andrade Morettin's interviews, the citation to the works of the Swiss architects Herzog & de Meuron resonates in the architectural design as a capacity to operate on the surface. Regarding Swiss architects, Moneo (2008) highlights the importance they attach to materials and how they reveal themselves, usually in sober, prismatic volumes, as a celebration of matter through surface design, with materials that help define the structure itself. At IMS Paulista, this attitude manifests itself in the way the architects work the surroundings around the architectural program, but also in the way it opens, at a specific moment, to the avenue, establishing a more direct relationship with the city, alongside the veiled relationships that occur along the entire surface.

Riley and García (1996) point out that the tension between the observer and the object, caused by the use of the facade as a veiled membrane, generates a visual and ambiguous complexity resulting from the materiality of its surfaces, as seen in design lines such as those in the *Light Construction* exhibition. By flirting with an architecture of lightness, from the materiality of the surroundings, new constructive techniques, and the manipulation of the program, the project for IMS Paulista highlights how materiality has become a central issue in contemporary architectural production. Authors such as González de Canales (2001), Löschke (2016), and Leatherbarrow and Mostafavi (2007) demonstrate how the relationship between structure and skin has become an important concern in much of architectural production since the 1990s.

This centrality acquired by materiality is directly related to the assembly system present in both the IMS Paulista and the repertoire of works by Andrade Morettin, which can dialogue with the concept of Junkspace proposed by Koolhaas (2000). In this context, Koolhaas (2000, p.108) states that "all materialization is provisional: cutting, bending, tearing, coating: the construction has acquired a new softness, like a piece of tailoring." Verbs that would have been unthinkable in the history of architecture become indispensable today, and each constructive element acts in isolation, like an assembly, "waiting to be undone, unscrewed," through building materials that become increasingly modular, unitary, and standardized. Since the walls ceased to exist, only partitions and membranes are resorted to, with transparencies that reveal what could not be shared before (Koolhaas, 2000).

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As you walk through the Paulista Museum, Koolhaas' theory resonates: from the screws exposed on the facade, which fix the vertical and horizontal uprights of the metal structure, to the envelope's transparency, to the mounting system for these elements, to the fold that surrounds the architectural program. Attitudes like these show significant changes in the treatment of form and constructive logic, marking a clear departure from the orthodoxy of the apparent concrete of the "Paulista school," since the structural tonic of the apparent concrete predominated in this school's projects.

The attitude of thinking beyond the possibilities of concrete, from more contemporary conditions, makes architects relate to the São Paulo School more broadly, through ethical and social commitment rather than aesthetics. Without shying away from a tradition from which they emerge in their formation, they continue to cite in their repertoire Brazilian and São Paulo architects, such as Rino Levi, Artigas, and Paulo Mendes da Rocha. These citations materialize in the IMS Paulista project, such as the attention dedicated to the ground floor, which unfolds in a recurring social and political character in the agenda of the Paulista School, thought of as a device that acts as urban infrastructure, as a covered square.

This character unfolds on the ground floor level, with an urban hall that seems to operate from an expansion of the sidewalk boundary to culminate in the escalators, sustained by the emphasis on material continuity seen in projects they cited along Avenida Paulista, connecting to the ethics of the "Paulista school" and ensuring historical charge. However, this enjoyment is partially interrupted by the restaurant located at the back of the lot. In addition to the restaurant, a garden was included at the bottom of the lot, which soon housed *Echo*, a work by Richard Serra (1938-2024). The inclusion of the restaurant was a response to the museum's request after the competition, to give the reception a character familiar to cultural institutions. Such an interruption of this permeability ultimately delimits the space's fruition and extension.

The material reference, also present in the solution for the elevated ground floor, reflects aspirations derived from analyses of the buildings along the Avenue. The solution of doubling the ground floor, directly related to the renovation of the FIESP building, allows the public to experience Avenida Paulista as a landscape, framed by the opening, in a more distant way than occurs in the MASP span, for example. The stairs that lead to the interior of the building, as well as the reflections of the surroundings in the environment, ensure that the arrival at the elevated ground floor produces a transition and a distancing of the public in relation to the avenue, ensuring a more introspective and singular space, compared to the examples observed along Paulista Ave.

In this sense, the collective space of the IMS is related to the São Paulo School, sharing an ethical affinity with the urban space. Milheiro (2006) notes that the generation of São Paulo architects trained under

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FAU – in which Andrade and Morettin are included – presents a "strong political consciousness with reflections in the maintenance of social discourses around the practice, and that is reflected in the approach". For Heathcote, although Andrade Morettin's architecture possesses an almost ephemeral material lightness, it does not entirely break with the Brazilian modernist tradition. The tradition is resumed in the elevation of floor volumes, in the elimination of barriers between public and private spaces, in the refusal of rigid separations between environments, and it is still possible to "resort to the ideas present in the design of the building of the Faculty of Architecture and Urbanism of São Paulo (FAU-USP), by Vilanova Artigas" (Heathcote, 2016, p.11).

CONCLUSION

Between experimentation, ruptures, and tradition, the genealogy of the project for the IMS Paulista considered its insertion into the context of Brazilian and São Paulo architectural production, seeking to situate it through the articulation of the references that converge in it. Marked by significant changes in architectural production, the project seeks a rearticulation between the modern São Paulo heritage and the design strategies of contemporary architecture, characteristics of the field's international reflection in the late 20th century, filtered through a critical view of architects toward the mobilized references.

Awarded in several instances, the project for IMS Paulista reveals, without a doubt, an open posture in the face of a modern architectural culture like the Brazilian one, deeply self-referent and, for a long time, skeptical and averse to transit with international production. It is noted how the surroundings, the surface, and the materiality begin to acquire relevance for the understanding of the architectural object and, allied to the constructive method that prioritizes the assembly, signal changes in the treatment of the form and the constructive logic. This approach, seen and related to projects by architects of the 1990s – such as Herzog & de Meuron, Koolhaas, and Moneo - is discussed throughout the work. The stages foreseen in the methodology of identification, organization, and analysis enabled a reading of the project that evidenced the context of its insertion into contemporary production, aiming to identify the references that emerge from it. The maintenance of an ethics associated with the Paulista School, together with references that point to changes in the treatment of the architectural object, constitutes a plot that allows thinking the project contemporaneously.

With an architecture of lightness and translucency, in contrast to the massive, impermeable concrete of Brutalist production and its contemporary affiliates, among the tangle of references, IMS Paulista reveals possible resonances of an architecture that tensions and finds a broader path in contemporary Brazilian and Paulista production.

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CONTRIBUTIONS OF THE AUTHORS CRediT

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TOPOGRAPHIES OF MEMORY IN A LANDSCAPE OF RESISTANCE AND TRANSFORMATION: THE CASE OF THE FORMER EL MORRO FORT OF TALCAHUANO, CHILE

TOPOGRAFÍAS DE LA MEMORIA EN UN PAISAJE DE RESISTENCIA Y TRANSFORMACIÓN: EL CASO DEL EX FUERTE EL MORRO DE TALCAHUANO, CHILE

TOPOGRAFIAS DA MEMÓRIA EM UMA PAISAGEM DE RESISTÊNCIA E TRANSFORMAÇÃO: O CASO DO ANTIGO FORTE EL MORRO EM TALCAHUANO, CHILE



Figure 0. Inside El Morro.
Source: Prepared by the authors.

Este artículo es parte de un proyecto que ha recibido financiamiento a través del Fondecyt Regular 1241635 "La ciudad en dictadura. Institucionalidad, modernización autoritaria y planificación urbana en Chile (1973-1990)".

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RESUMEN

Este artículo analiza cómo en el Sitio de Memoria y Monumento Histórico el ex Fuerte El Morro, en la comuna de Talcahuano, Región del Biobío presentan distintas capas históricas del territorio, a través de diferentes periodos históricos: desde su rol estratégico militar, tanto en la época colonial como en la dictadura, hasta su uso como refugio para las familias damnificadas post tsunami del año 2010 y su posterior proceso de monumentalización, patrimonialización y memorialización por la Corporación de Socorros Mutuos Bautista van Schouwen Vasey. Por medio del análisis de las entrevistas realizadas y fuentes de archivo, los resultados de esta investigación muestran cómo los procesos de memoria se entrelazan con la reconstrucción física y emocional del territorio, y cómo en el sitio se presentan distintas materialidades de la memoria a través de los elementos arquitectónicos que funcionan como archivos vivos de sus transformaciones y significados, que permite conservar narrativas de diferentes temporalidades; no obstante, estas se presentarían como contranarrativas respecto a cómo comprender y dar significado al sitio. Se concluye que el ex Fuerte El Morro, a pesar de ser un monumento histórico, aún presenta algunos problemas, debido principalmente a los significados que este sitio evoca y a la falta de financiamiento y voluntad política. Este caso muestra cómo el patrimonio se resignifica y tensiona a través de los usos, los que están volcados a los atributos del patrimonio que son identificados a partir de la memoria política e histórica del sitio, con ayuda de la comunidad y del territorio como tal, al comprender a éste como un patrimonio difícil, debido a que en este lugar se conjuga no sólo la biografía del lugar sino también la de los protagonistas.

Palabras clave: memorialización, patrimonialización, patrimonio urbano, producción del espacio, Talcahuano

ABSTRACT

This article analyzes how the former El Morro Fort, a Site of Memory and Historical Monument located in the municipality of Talcahuano, in the Biobío Region, presents different historical layers of the territory over different historical periods, from its strategic military role during the colonial era and the dictatorship, to its use as a refuge for families affected by the 2010 tsunami, and its subsequent processes of monumentalization, heritage designation, and memorialization by the Corporación de Socorros Mutuos Bautista van Schouwen Vasey. The study, through an analysis of interviews and archives, examines how memory processes intertwine with the physical and emotional reconstruction of the territory and how the site displays different materialities of memory through architectural elements that function as living archives of their transformations and meanings, preserving narratives from different times. However, these narratives often emerge as counter-narratives that challenge dominant ways of understanding and giving meaning to the site. The article concludes that, despite its designation as a historical monument, the former El Morro Fort still faces challenges, primarily due to the meanings it evokes and the lack of funding and political will. This case demonstrates how heritage is re-signified and contested through its uses, which are tied to the attributes of heritage identified through the site´s political and historical memory, with the aid of the community, and the territory itself. It suggests that this site can be understood as difficult heritage, encapsulating not only the place's biography but also the stories of its protagonists.

Keywords: memorialization, heritage designation, urban heritage, production of space, Talcahuano

RESUMO

Este artigo analisa como o Sítio de Memória e Monumento Histórico do antigo Forte El Morro, na cidade de Talcahuano, Região do Biobío, apresenta diferentes camadas históricas do território, através de diferentes períodos históricos: desde seu papel estratégico militar, tanto na época colonial quanto durante a ditadura, até seu uso como refúgio para as famílias afetadas pelo tsunami de 2010 e seu posterior processo de monumentalização, patrimonialização e memorialização pela Corporación de Socorros Mutuos Bautista van Schouwen Vasey. Por meio da análise das entrevistas realizadas e das fontes de arquivo, os resultados desta investigação mostram como os processos de memória se entrelaçam com a reconstrução física e emocional do território e como, no local, se apresentam diferentes materialidades da memória por meio de elementos arquitetônicos que funcionam como arquivos vivos de suas transformações e significados, o que permite a conservação de narrativas de diferentes temporalidades. No entanto, estas se apresentariam como contranarrativas em relação à forma de compreender e de atribuir significado ao local. Conclui-se que o antigo Forte El Morro, apesar de ser um monumento histórico, ainda apresenta alguns problemas, principalmente devido aos significados que este local evoca e à falta de financiamento e de iniciativa política. Este caso evidencia como o patrimônio é resignificado e tensionado através de seus usos, que estão intrinsecamente ligados aos atributos que a comunidade identifica a partir da memória política e histórica do local. O antigo Forte El Morro, como patrimônio difícil, não apenas encarna a biografia do lugar, mas também as experiências e narrativas daqueles que o habitaram e transformaram.

Palavras-chave: memorialização, patrimonialização, patrimônio urbano, produção do espaço, Talcahuano

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INTRODUCTION

In the 1990s, following Chile's return to democracy, the country's heritage experienced two significant transformations. On the one hand, new actors appeared in applications for declarations, as communities organized themselves to declare elements as patrimonial, especially in typical zones, through neighborhood movements that defended their neighborhoods against the real estate market (Ibarra & González, 2021). On the other hand, there were changes in the valued attributes, where the monumental and architectural emphasis shifted towards the social value of heritage, generating processes of resignification and memorialization (Colin, 2017; Matus Madrid, 2017).

Over the decade, memory began to gain importance in the patrimonialization processes, changing how heritage is approached (Márquez, 2019; Ibarra & Álvarez, 2024). In particular, in the post-dictatorship context, a heritage of human rights and memory began to emerge (Alegría & Uribe, 2018), driven by new citizen subjectivities focused on democratic recovery and the pursuit of reparation and justice (Jelin & Langland, 2003).

In this context, this research analyzes how the former El Morro Fort Site of Memory and Historical Monument (hereinafter El Morro), located in the commune of Talcahuano, province of Concepción, Biobío Region, has appeared as a space of multilayer significance with geographical and symbolic transformations that has gone through different periods of use and abandonment, from its creation as a military fort in the 18th century to the monumentalization, patrimonialization and memorialization process conducted by the Bautista van Schouwen Vasey Mutual Aid Corporation (hereinafter the Mutual) from 2010 to the present day.

The hypothesis is that memory is embodied both in the territory's architecture and in the people who preserve it, intertwining with its physical and emotional reconstruction. This difference between the material and the immaterial would present counter-narratives about how to understand and give meaning to the site, producing tensions over its preservation and resignification.

Despite the extensive literature on heritage and memory in Chile, this research is relevant for evidencing the tensions and complexities in the patrimonialization of sites with multiple memories that evoke dissonance in meaning, producing counter-narratives and, in turn, making heritage difficult. Regarding the latter, this research will be approached through the concept of difficult heritage, which is still incipient in Chilean heritage studies.

THEORETICAL FRAMEWORK

HERITAGE AS A SOCIAL AND POLITICAL CONSTRUCT

Heritage is a social construct with a dynamic character that represents the identity and history of specific groups (García Canclini, 1999; Dormaels,

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2014), which "is configured by a landscape with socio-cultural content product of a determined historical development" (Ortega & Ibarra, 2021, p. 4). In this sense, heritage creates a sense of inclusion and exclusion (Smith & Akagawa, 2009) that involves a political dimension manifested in three ways (Van Geert & Roigé, 2016): 1) Identity producer: heritage evokes community identity with its history and territory; 2) Power and counterpower strategy: legitimizes official narratives or functions as resistance to threats; 3) Memory producer: claims collective memories, particularly visible in historical sites.

It is in this performative sense that the processes of patrimonialization take place, which entail ideological visions that seek to be re-signified, that turn heritage into a terrain of struggle where dissensions and alternative narratives converge (Márquez, 2019), that allows the formation of new identity projects, those that take place through the struggles for memory(ies).

For Smith (2011), the construction of an authorized heritage discourse (AHD) has historically fallen on those who possess the power to speak, that is, those who occupy an authorized discursive position. This implies a struggle between the AHD and the subaltern or counter-narrative discourses, which translates "into simultaneous processes of contestation, desacralization and resignification of monuments and their public space, and which result both from social, political and cultural demands, as well as resistance to the narrative of an official history" (Matus Madrid, Ibarra Alonso, & Méndez Layera, 2023, p. 66). This allows certain assets to be categorized as difficult or uncomfortable.

This heritage emerges when significant sites are questioned or uncomfortable (Logan & Reeves, 2009; Macdonald, 2009), such as detention and torture centers during Latin American dictatorships. That said, difficult heritage will be understood as "heritage that evokes counter narratives and dissonances regarding the value of heritage, which generates feelings of discomfort and pain, not only in the people who lived the events, but also in those who visit these places" (Fuentes Zuleta, 2025, p. 15).

MEMORY AS A CORE ELEMENT OF HERITAGE

Memory, as Kuri Pineda (2017) points out, "is inserted in a field of confrontation where dominant and subordinate sectors confront and negotiate, disputing visions of the past." Considering the dynamic nature of memory, Samuel (2012) characterizes it as an active, historically conditioned force in which each period develops new ways of remembering. In this sense, memory is a social form and, as such, varies over time.

Continuing with this idea, Macdonald (2009; 2015) suggests that heritage is a way of reclaiming memory by revealing how the past is

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articulated at specific times and places. In a similar vein, Jelin and Langland (2003) define heritage as a "memory vehicle", a tool for collective, political, and symbolic action.

Within this framework, various actors, including human rights defense organizations, the academic community, and institutions, have promoted initiatives to recognize the value of memory and foster a culture of respect for human rights (Monsálvez Araneda, 2023).

Those who lead these initiatives of patrimonialization and memory construction are what has been characterized as memory entrepreneurs, defining them as those "active subjects in a political scenario of the present, who link in their actions the past (paying tribute to victims) and the future (transmitting messages to the "new generations") (Jelin & Langland, 2003, p. 4).

Taking this into account, Schindel (2009) states that in the processes of reclaiming memory or memorialization, "the multiplicity of meanings that diverse actors grant to spaces based on their memories is put into play" (p.69). This allows memories previously omitted in the official history to emerge.

PRODUCTION OF SPACE THROUGH MEMORY

Memories are inscribed in territories through "landscapes of memory" or memoryscapes (Arora, 2018), shaped by processes of remembering, forgetting, and commemorating. Thus, space functions as a fundamental support for the constitutive processes of memory, both materially and symbolically.

In the field of analysis on the relationship between memory and space, the contributions of Rebolledo Hernández (2022), who examines the spatial dimensions of memory by studying objects that represent crucial moments for particular social groups, are particularly relevant. Authors such as Jelin (2021) go deeper into this idea, pointing out that this materialization of memory, through objects such as plaques, stones, murals, among others, can be inside or outside what are recognized as memory sites, which are defined:

> as physical spaces that witnessed situations in which many victims suffered or resisted human rights violations, and that are claimed to remember these facts through the denunciation and political action of social groups that actively seek their visibility (Tesche-Roa et al., 2023, p. 71).

This configures heritage as a space of constant tension and dispute (Smith, 2006), thereby constituting what has been defined as difficult, uncomfortable, or dissonant heritage (Macdonald, 2009). In the case of El Morro, the use of memory forces one to situate oneself not only

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spatially, but also temporally, since this case illustrates the convergence of three types of memory: historical (colonial fort), political (torture center during the dictatorship), and social (shelter after the tsunami of 2010).

As Alegría-Licuime, Acevedo-Méndez, and Rojas-Sancristoful point out, "the interaction between territory and memory transforms a place with no apparent significance into a place of memory" (2018, p. 26), which generates potentially patrimonializable spaces for communities. In this sense, the production of space, through memory, is materialized through spatial practices, representations of space, and spaces of representation, which show how processes of collective remembrance actively shape the territory and its patrimonial meanings (Fuentes Zuleta, 2024).

METHODOLOGY

This research uses a qualitative methodology. The fieldwork was carried out in September 2024. A visit was made to El Morro, and semi-structured interviews were conducted with three members of the Mutual, focusing on the dimensions of patrimonialization, tensions, practices, management, and the site's current use. The three interviewees were chosen according to the level of relevance for the investigation, since they were the current president of the Mutual, so their testimony served to know more about the management of the site at present; the former president of the Mutual, who was in the entire process of patrimonialization, so his testimony served to inquire more about the process that lasted 7 years; and finally, one of the people in charge of conducting the guided tours, to tell his experience as a living heritage of the site, having been imprisoned in this place during the dictatorship. The selection of the three key players was conducted in conjunction with a key informant from the Mutual, who assisted with the selection.

Subsequently, based on the information gathered in the interviews, together with the preparation of a map of actors based on the power and influence of each one, interviews were conducted with different institutional actors relevant to the case, specifically, with representatives of the Memory and Human Rights Unit of the Council of National Monuments, with the chief of staff of the Local Cultures, Art and Heritage Authority of the Biobío region and with a councilwoman of the municipality of Talcahuano. The objective of interviewing these actors was to learn more about the management of memory sites and the specific problems El Morro faces in this regard.

Along with the collection of primary sources, a review of secondary sources was conducted to provide background and support the construction of the case study's history, enabling an

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Figure 1. Location of the former El Morro Fort Site of Memory and Historical Monument. Source: Preparation by the authors using Google Earth (June 29, 2024).

examination of the key milestones of this monument. To do this, we searched for studies on the place's history, videos and documentaries, press coverage, and social media.

CASE STUDY

This research will analyze the case of El Morro, located in the commune of Talcahuano, province of Concepción, Biobío Region (Figure 1). It is located on the hill of the same name, near the city center, next to the El Morro Stadium and the main access road to the port of Talcahuano, where the El Morro Cove is located. It should be noted that, on being located in an urban area, it is spatially inserted directly into the Talcahuano commune.

ONE PLACE, THREE MEMORIES

El Morro (named initially San Agustín Fort) was located on the homonymous hill in 1777 in the city of Talcahuano. During the time that this site served as a military fort, several battles were fought due to its importance as a strategic surveillance position of the bay (Cartes & Luppi, 2013), as the scene of battles in different periods ranging from independence to the civil war of 1890 and the uprising of the navy of 1931. Finally, after the Second World War, El Morro was dismantled, leaving only its structure and losing its use as a military fort (Tesche-Roa, González-Alarcón & Antonio-Inostroza, 2021).

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It is not until about thirty years later that El Morro became useful again, serving as a place of detention and torture during the military dictatorship. Between the years 1973 and 1975, the former fort was used by the Regional Intelligence Center (CIRE) and the Naval Intelligence Service (SIN), also known as Ancla II. Subsequently, the fort passed to the National Intelligence Directorate (DINA), and in 1977 it passed to the National Information Center (CNI), where it operated as a base until 1985, after which it was abandoned (Tesche-Roa, González-Alarcón, & Antonio-Inostroza, 2021).

During these years, it is estimated that about 300 people were detained there, including workers, residents, student leaders, and militants of left-wing parties, mainly of the Revolutionary Left Movement [MIR] (Tesche-Roa, González-Alarcón, & Antonio-Inostroza, 2021).

After the February 27th, 2010, earthquake in Chile, which greatly affected the southern part of the country, El Morro served as a shelter for people who lost their homes to the subsequent tsunami. As a result of this, the recently created Bautista van Schouwen Vasey Mutual Aid Corporation[1] decided to head there to provide help to the affected people.

In this context, some members of the Mutual, who had been MIR militants during the dictatorship, recognized the place as the one where they had been detained and tortured. It is from this that the process of patrimonialization and memorialization of El Morro began to obtain its designation as a Site of Memory and Historical Monument (HM). In 2017, the declaration was made official as the former El Morro Fort Historical Monument and Site of Memory, becoming the first memory site in the HM category in the Biobío Region.

From what has been presented, the history of El Morro can be divided into three clear periods:

1. Firstly, from its construction in the 18th century to its abandonment after the Second World War, it stands out for its strategic location and its importance in defending the bay.
2. Secondly, the period covered by the military dictatorship in Chile, where it served as a clandestine detention and torture center until 1985. It should be noted that the fort's disuse and abandonment did not occur with the return to democracy; it had already happened before: first from 1945 to 1973, and then from its abandonment in 1985 to its rediscovery in 2010.
3. Finally, the period that covers from 2010 to the present is when the process of patrimonialization and memorialization of this place begins.

The following timeline summarizes the history of El Morro (Figure 2).

1 The Bautista van Schouwen Vasey Mutual Aid Corporation was founded in 2009.

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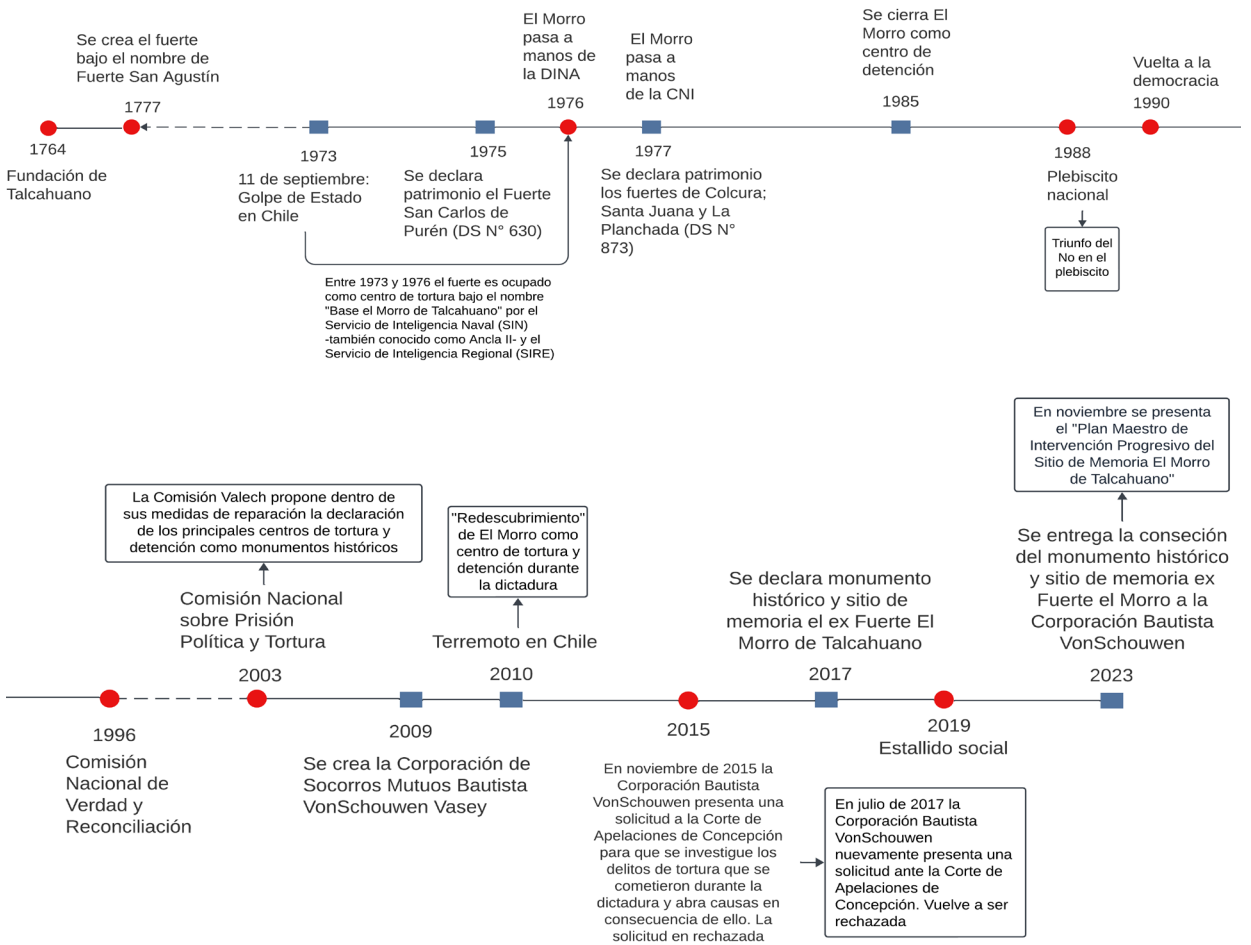


Figure 2. Timeline summary of the history of El Morro. Source: Prepared by the authors (2024).

DEVELOPMENT

MULTILAYER FORT

The structure of El Morro houses the manifestation of different periods and memories. The fort's structure is a vestige of the colonial era, when it served to defend the Bay of Concepción. Today, despite neglect and deterioration, it is still possible to see the structure of this ancient fortification (Figure 3).

The vestiges of the dictatorship are currently the least visible places, since, although the place in its entirety was a clandestine detention and torture center, there are currently no explicit vestiges of this beyond the stories that the survivors of this site can tell and who currently make the guided tours of the spaces narrating what each one was used for and what roles they fulfilled during the time that El Morro functioned as a center of repression by the various repressive agents of the military regime, that occupied this site during its years of operation, such as mentioning what was done in certain rooms, in the bathrooms or in the basement, to mention some spaces.

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Figure 3. Exterior facade of the El Morro Fort. Source: Prepared by the authors.

The other observable vestiges are the remains of this place's use as a shelter for tsunami victims in 2010. According to the plans of the SERNAGEOMIN and SENAPRED, El Morro is contemplated as an evacuation place and a safe zone in the face of an imminent tsunami (Mella, 2023), which meant that several people, particularly the inhabitants of El Morro Cove, a neighborhood alongside the homonymous hill, evacuated to it. The victims, according to one of the members of the Mutual, were about four years in this place until they could be transferred elsewhere. Currently, floors, walls, and ceilings show burn marks from bonfires lit to provide shelter during their time in the fort, still bearing vestiges of that time. In addition, in the collective memory of Talcahuano, the earthquake is a recent event, so the memory of El Morro as a refuge remains alive.

Finally, regarding the current situation of El Morro, which has been a Historical Monument and a Place of Memory since it was declared as such, the only thing that shows this is an identification plaque of its status as an HM and a drawing that is on a wall adjacent to the site (Figures 4 and 5). Since November 2023, the Mutual has held the concession for the El Morro site, where it prepared a "Master Plan of Progressive Intervention of the former El Morro Fort." As a result, modifications to the infrastructure and surroundings have made this new stage in the history of El Morro more evident. This will be seen later.

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Figure 4. National Monument Plaque. Source: La Voz de los que Sobran (2022).



Figure 5. Exterior of El Morro, in front of the entrance to climb the hill to reach the site. Source: Prepared by the authors.

This Master Plan consists of six components: site museum, interpretive museum, access square, trails, viewpoints, and slope structural reinforcement (Figures 6 and 7). These projects aim to make El Morro a place that not only serves as a site of memory and education about human rights violations under the dictatorship, but also as an accessible and recreational destination, using its green spaces and location.

To recapitulate what this research reveals, the fort's architecture is not understood today only as a military vestige, but also as a physical support for the dictatorship's violence and as a shelter after the tsunami. The site's walls and spaces are simultaneously loaded with these memories,

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Figure 6. Project outline. Source: Mella (2023).

Figure 7. Interpretative museum / Access square / Paths-viewpoint / Reinforcement of slopes. Source: Mella (2023).



becoming living archives that condense collective biographies and function as the common thread that integrates different times into a unique spatial experience.

Likewise, the military memory clashes and coexists with the repressive and social memories of the post-tsunami shelter. None of these disappear; they challenge one another, creating a space where the heroic story is problematized by state violence and resignified through practices of care and solidarity. It is this friction that makes it a dissonant heritage.

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What makes El Morro's heritage difficult is not that there are different memories, but that they coexist inseparably. It is impossible to walk around El Morro and think of it only as a fort, only as a repressive center, or only as a shelter: the heritage experience arises precisely from the superposition of those layers, which evoke both pride, pain, and resilience.

DISPUTES AROUND MEMORY

Although El Morro has multiple historical layers, it is usually visited by archaeologists or historians to learn more about its colonial fort history. Currently, the prevailing memory in this place is that of the dictatorship, given its status as a memory site. It is in this sense—understood as a space for promotion and education on human rights and the memory of events during the dictatorship—that a large part of the activities carried out by the Mutual are directed.

However, when El Morro became an HM, the Municipality of Talcahuano thought about promoting tourism in the commune; for this it wanted to make this place a space similar to the San Sebastián de la Cruz Fort (located in the commune of Corral, Los Ríos Region), that is, a space where recreations of battles that took place there, such as battles of the Independence period between patriots and royalists, the Civil War of 1890 or the Uprising of the Navy of 1931. However, the Mutual immediately rejected this option, arguing that El Morro was already occupied for these purposes.

Currently, guided tours are carried out at the El Morro site by members of the Mutual, some of whom were imprisoned and others who were not, where they tell the events that occurred at the place while it served as a clandestine detention and torture center. These activities are carried out to all kinds of civil society actors, but mostly to schools in the Greater Concepción area.

In addition to guided tours, El Morro hosts commemorative events on key dates: March 8th for Women's Day, August 30th for the Day of the Disappeared Detainees, and December 10th for Human Rights Day. These acts, particularly the last two, are also framed as promoting memory, in keeping with the site's purpose.

Added to this, as already mentioned, the Master Plan seeks to insert El Morro spatially into the Talcahuano commune, making it a space with meaning since, currently, despite its status as a memory and HM site, the former fort presents a serious state of abandonment and deterioration (Figure 8), mainly due to vandalism by right-wing groups and other inhabitants of the commune, who do not take care of the place.

In addition, there is a lack of financing and support from the municipality, which further aggravates the problem, as it does not fulfill its

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Figure 8: Inside El Morro.
Source: Prepared by the authors.

role of maintaining the site by collecting garbage or installing lighting that makes the site safe and passable at night.

EL MORRO AS A CASE OF DIFFICULT HERITAGE

El Morro represents a case of "difficult heritage" due to its dissonant histories that generate moral and political disagreements, which becomes even clearer when considering that there are still ambiguities about the condemnation of human rights violations during the dictatorship (Monsálvez Araneda, 2023). Instead of creating a unitary sense of identity, it rather reflects, as Seguel Gutiérres (2019) points out, the figure of a counter-monument that does not glorify the past that it remembers.

Although its recognition as an HM and memory site has increased thanks to the activities of the Mutual, primarily through guided tours, its condition as a difficult heritage can be observed in two main dynamics:

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Memory of repression and the challenge of representation

As a clandestine detention and torture center, El Morro is part of what Uzzel and Ballantyne (2008) conceptualize as a heritage that hurts, by evoking a traumatic past that generates painful emotions. For some former detainees, it is impossible to return because of the reactivation of traumatic memories. Even visitors without direct experience can feel overwhelmed when learning about what happened.

This phenomenon transforms El Morro into a space that viscerally confronts people with historical memory, serving as a living witness to human rights violations. In this sense, the difficulty of dealing with these emotions makes it an uncomfortable place for society, which emphasizes the importance of preserving it as a memory space, but also highlights the challenge of making its history visible without revictimizing those who were imprisoned there.

In this regard, the way in which what happened at El Morro is represented and narrated is another element that reflects the monument's difficulty. There is a paradox in the reconstruction of memory: because the former political prisoners themselves lead the tours, a personalistic vision is presented that may not reflect the complexity of the repressive phenomenon as a system. This shows the need to balance individual memories with a more pluralistic narrative.

Political and social controversies: the dilemma between forgetting and memory

El Morro faces social and political tensions arising from its preservation and management. The Mutual denounces vandalism actions by right-wing groups, in addition to municipal obstacles such as the lack of utilities and garbage collection, which they interpret as expressions of institutional denialism.

Simultaneously, the municipality accuses the Mutual of promoting social division through its activities, by revealing an ideological-political conflict in which efforts to preserve memory and to dialogue with other actors, such as the El Morro Cove neighborhood council, are interpreted as political polarization.

This situation highlights the tension between those who seek to re-signify sites of repression to reconstruct memories of the dictatorship and those who prefer to dilute these historical episodes in the name of a supposed social reconciliation or the development of other projects. The latter, according to the Mutual, would be due to institutional denial by both the municipality of Talcahuano and the State.

This denialism causes sites like El Morro to remain silent, making it difficult for it to preserve and promote memory, not only in

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architectural and urban terms - given its state of abandonment and that it is located next to an irregular settlement where people have accused assaults, which makes this site unsuitable to visit for security reasons—, but also socially, due to the lack of interest of the municipality to promote education around human rights and memory (Tesche-Roa et al., 2023).

CONCLUSIONS

El Morro has faced various problems during and after its patrimonialization, mainly due to its location and lack of state support. This situation underscores the need for greater political commitment to safeguard this key space for regional historical memory, the first and only HM memory site declared in the Biobío region.

Currently, El Morro exemplifies "difficult heritage" by facing challenges in how to remember, commemorate, and use a space where traumatic events occurred, emerging as a deeply significant yet problematic place that evokes a dilemma between forgetting and memory.

To the emotions generated by its history as a detention and torture center during the military dictatorship, political and social tensions are added that transcend memory and its representation. El Morro thus becomes a mirror of the unresolved tensions around historical memory in Chile. Its preservation entails not only remembering the authoritarian city's memories during the dictatorship but also challenging the power dynamics that seek to make it invisible.

These tensions and resignifications arise from the interaction between multiple meanings, uses, and interests of different actors. The heritage management of the site thus faces a complex balance among respect for its historical and archaeological value (given its status as a military fort), the visibility of memories of repression, and accessibility for future generations, while also facing external interests that may alter its original purpose.

Since space is in a constant (re)production, the memory of the past is invoked to be (re)interpreted and (re)imagined to shape the spatial configuration of the present. Memory, then, like space and heritage, is not static, but actively participates in the (re)creation of space.

In conclusion, El Morro is a site of heritage interest, which generates different meanings, stories and memories that have to do with forgetting and memory, the construction of space, and the actors involved, which reflect how space is part of the channels through which memory endures over time, where memory entrepreneurs had a fundamental role in facing this dilemma between forgetting and memory.

CONTRIBUTION OF AUTHOR CRediT

Conceptualization, J.F.; Data curation, J.F.; Formal analysis, J.F.; Acquisition of financing, J.F.; Research, J.F.; Methodology, J.F.; Project management, J.F.; Resources, J.F.; Software. J.F.; Supervision, J.F.; Validation, J.F.; Visualization, J.F.; Writing - original draft, J.F.; Writing - revision and editing, J.F.

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TEACHING DESIGN IN BRAZIL BASED ON THE STUDY OF WORKS BY JOÃO FILGUEIRAS LIMA

ENSINO DE PROJETO NO BRASIL A PARTIR DO ESTUDO DE OBRAS DE JOÃO FILGUEIRAS LIMA

ENSEÑANZA DEL DISEÑO EN BRASIL A PARTIR DEL ESTUDIO DE LAS OBRAS DE JOÃO FILGUEIRAS LIMA



Figure 0. Outline of the summary panel by Group 9 based on the analysis of the Vitoria TCU. Source: The authors.

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RESUMO

O artigo apresenta uma experiência de ensino de projeto arquitetônico baseada no estudo de obras pré-fabricadas do arquiteto brasileiro João Filgueiras Lima, o Lelé (1932-2014). O ateliê de projeto foi realizado no âmbito de uma disciplina optativa do curso de arquitetura e urbanismo da Universidade Federal de Santa Catarina. O objetivo principal foi apresentar um método de estudo da arquitetura por meio da investigação aprofundada de um edifício, valendo-se do redesenho como instrumento analítico e crítico, bem como da aplicação dos elementos estudados em um exercício projetual propositivo. Para tanto, o curso foi estruturado a partir da compreensão de um conjunto de soluções desenvolvidas por Lelé, utilizadas como matriz para o redesenho de edifícios previamente selecionados e para a formulação de novas propostas de projeto voltadas a uma demanda comum aos estudantes: um pavilhão dedicado à convivência e à permanência estudantil na universidade. Optou-se por um recurso pedagógico de projeto que busca sensibilizar para a arquitetura a partir da imersão em um legado arquitetônico fortemente vinculado ao contexto brasileiro, incorporando questões sócio-históricas, ambientais e tecnológicas. Os trabalhos apresentados evidenciam a adaptação dos elementos pré-fabricados concebidos por Lelé a diferentes situações, em virtude de sua coordenação modular, adaptabilidade e flexibilidade. Observa-se, ainda, a utilização da modulação e dos elementos construtivos presentes nos edifícios analisados, bem como de aspectos projetuais recorrentes, tais como pátios internos, passagens cobertas, definição dos fluxos e distribuição dos ambientes. Tais características reforçam que a obra de Lelé possui um caráter profundamente didático e que seu estudo em disciplinas de graduação em arquitetura favorece a assimilação integrada de aspectos projetuais e tectônicos. Nesse sentido, cabe aos docentes proporcionar aos estudantes experiências de aprendizagem baseadas na práxis, orientadas pela análise crítica de obras arquitetônicas, pela verificação de hipóteses e pela realização de exercícios de natureza propositiva.

Palavras chaves: ensino, projeto arquitetônico, desenho, pré-fabricação, metodologia de projeto

ABSTRACT

The article presents an architectural design teaching experience based on the study of prefabricated works by Brazilian architect João Filgueiras Lima, or Lelé (1932-2014). The design studio was carried out as part of an elective course in architecture and urbanism at the Federal University of Santa Catarina. The main objective was to present a method for studying architecture through an in-depth investigation of a building, using redesign as an analytical and critical tool, and applying the elements studied in a propositional design exercise. To this end, the course was structured around the understanding of a set of solutions developed by Lelé, used as a matrix for redesigning previously selected buildings and for formulating new project proposals aimed at a demand common to the students: a pavilion dedicated to students spending time together at the university. A pedagogical design resource was chosen to raise awareness of architecture through immersion in an architectural legacy strongly linked to the Brazilian context, incorporating socio-historical, environmental, and technological matters. The works presented show the adaptation of the prefabricated elements designed by Lelé to different situations, due to their modular coordination, adaptability, and flexibility. There is also the use of modulation and constructive elements in the buildings analyzed, as well as recurring design aspects such as internal courtyards, covered passages, definition of flows, and distribution of environments. These characteristics reinforce the fact that Lelé's work has a profoundly didactic character and that its study in undergraduate architecture courses favors the integrated assimilation of design and tectonic aspects. In this sense, it is up to teachers to provide students with learning experiences based on praxis, guided by the critical analysis of architectural works, the verification of hypotheses, and the performance of propositional activities.

Keywords: teaching, architectural design, drawing, prefabrication, design methodology

RESUMEN

El artículo presenta una experiencia de enseñanza de proyectos arquitectónicos basada en el estudio de obras prefabricadas del arquitecto brasileño João Filgueiras Lima, conocido como Lelé (1932-2014). El taller de proyectos se llevó a cabo en el marco de una asignatura optativa del curso de arquitectura y urbanismo de la Universidad Federal de Santa Catarina. El objetivo principal fue presentar un método de estudio de la arquitectura mediante la investigación en profundidad de un edificio, utilizando el rediseño como instrumento analítico y crítico, así como la aplicación de los elementos estudiados en un ejercicio de diseño propositivo. Para ello, el curso se estructuró a partir de la comprensión de un conjunto de soluciones desarrolladas por Lelé, utilizadas como matriz para el rediseño de edificios previamente seleccionados y para la formulación de nuevas propuestas de proyecto orientadas a una demanda común a los estudiantes: un pabellón dedicado a la convivencia y la permanencia de los estudiantes en la universidad. Se optó por un recurso pedagógico de proyecto que busca sensibilizar hacia la arquitectura a partir de la inmersión en un legado arquitectónico fuertemente vinculado al contexto brasileño, incorporando cuestiones sociohistóricas, ambientales y tecnológicas. Los trabajos presentados evidencian la adaptación de los elementos prefabricados concebidos por Lelé a diferentes situaciones, gracias a su coordinación modular, adaptabilidad y flexibilidad. También se observa el uso de la modulación y los elementos constructivos presentes en los edificios analizados, así como aspectos recurrentes del diseño, tales como patios internos, pasillos cubiertos, definición de los flujos y distribución de los ambientes. Estas características refuerzan que la obra de Lelé tiene un carácter profundamente didáctico y que su estudio en disciplinas de pregrado en arquitectura favorece la asimilación integrada de aspectos proyectuales y tectónicos. En este sentido, corresponde a los docentes proporcionar a los estudiantes experiencias de aprendizaje basadas en la praxis, orientadas por el análisis crítico de obras arquitectónicas, la verificación de hipótesis y la realización de ejercicios de naturaleza propositiva.

Palabras clave: enseñanza, proyecto arquitectónico, diseño, prefabricación, metodología de proyecto

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INTRODUCTION

This article presents a design workshop experience grounded in project practice, drawing on a study of prefabricated works by João Filgueiras Lima, also known as Lelé (1932-2014). The workshop was held as part of an optional course in architecture and urbanism at the Federal University of Santa Catarina (ARQ-UFSC). Led by Professor Eduardo Westphal, it was supported by the Faber Group - Architecture, Construction, Technology and Heritage, based at the Faculty of Architecture of the Federal University of Bahia (FAUFBA), which has researchers from several higher education institutions in Brazil. First, issues related to teaching and learning design, construction prefabrication and industrialization, modern architecture, its fragility, and the need for its preservation are raised. The issue of project teaching is then problematized, presenting the theoretical assumptions underlying the pedagogical strategy adopted here. After this, relevant aspects of Lelé's prefabricated architecture are highlighted. Finally, the subject's methodological path is presented, including its stages, before discussing the results and their possible implications.

The idea of conducting a project workshop based on a detailed analysis of works stemmed from a question about how students have used design references in undergraduate design exercises. These references are primarily understood as an illustrative gallery of materials, colors, and shapes found in photographs and digital perspectives, without establishing a deeper understanding of design logics, spatial organization, or the tectonics of the sample buildings. Given this, it was decided, at first, to propose a design exercise guided by the selection of works of recognized architectural quality that were, simultaneously, didactic in conception and provided sufficient information for an in-depth analysis. In this sense, Lelé's works meet these initial assumptions, as we will expand upon below.

The architect João Filgueiras Lima is recognized as one of the most relevant names in the field of building prefabrication and industrialization in Brazil. Over more than fifty years, Lelé developed prefabricated systems, designing and constructing buildings using standardized components. From the first experiments during the construction of Brasília in 1960 to the 2010s, Lelé researched and developed several construction systems using reinforced concrete, steel, and mortar. In most of his works, the sheds - Zenith lighting and ventilation elements -, combined with closing panels, light structural elements, the expressive use of colors, and the incorporation of the art of Athos Bulcão, contributed to consolidating an unmistakable and internationally recognized architectural language. According to Vilela (2019, p. 250), Lelé, over decades, developed a modus operandi that has been tested and refined through constant

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transformation, creating a know-how that needs to be understood and protected.

The light, flexible, tectonic, modular, and serialized architecture developed by Lelé outlines possible paths, suggesting that certain precepts of architectural modernity remain valid. Lelé has also always considered aspects of the production chain, including reducing waste and resource use, low-cost environmental comfort strategies, and prioritizing locally developed, locally produced products. Another notable aspect is the social relevance of his architectural legacy, which addresses demands related to people's fundamental rights – core topics in the formation and professional practice of architecture. Throughout his work, characteristic patterns of serial prefabricated systems are identified that can adapt to different conditions, including categories, programmatic scales, locations, and deployment. Thus, the study of these logics leads to understanding a design system based on recursion applied to the space-form-component triad.

In the context of architecture and urbanism education, analyzing and synthesizing Lelé's works can significantly enrich the teaching and learning of design. Thus, using an investigative process in which students follow paths already trodden by Lelé, it is sought to expand and strengthen the foundations of the students' project. By understanding the logic of prefabrication in Lelé's work, an approach is sought that aligns with Waisman's (2020) reflections on the relationship between technology and modernity, and is oriented toward regional architecture. If, according to Waisman, there is a schematism in much of current architecture, starting to be conceived in photogenic terms, in Lelé's work, the concept of "advanced technology" described by it is identified, insofar as Lelé was concerned both with understanding local circumstances and with the scope, repeatability, and recomposition of the systems developed by him.

However, this path is not intended to imitate the form of a consecrated master, nor to be based on what Corona Martinez calls "donors of forms" (2000, p.78). IInstead, it is a pedagogical design resource that seeks to raise awareness of architecture, based on an architectural legacy closely tied to the Brazilian context, considering socio-historical, environmental, and technological issues, as a way to bring students closer to prefabrication and industrialization practices of construction and, at the same time, to know and recognize Lelé's works as constituents of a modern heritage to be safeguarded or, as Montaner (2023, p.11) puts it, of an architecture that recovers and perpetuates "traditions that understood modernity as a promise of liberation and equality."

Therefore, the workshop reported here aimed to conduct a teaching and learning experience through a project that sought to understand a set of solutions developed by Lelé, using them as a basis to prepare new project proposals addressing a common student demand: a pavilion dedicated to student coexistence at the University.

The specific objectives, in turn, comprise:

- A project analysis and synthesis exercise based on the redesign of Lelé's referential works;
- The discussion of issues related to prefabrication and industrialization of construction;
- Exchange between students, teachers, and researchers from different institutions;
- Recognition of Lelé's architectural legacy as modern heritage.

THEORETICAL FRAMEWORK

In architectural design practice, there is an alternation between analysis and synthesis processes. Cyclically, we can analyze the syntheses we elaborate. In this fertile field of architectural creation, doubt is desired. Therefore, the project's teaching must allow for doubt. As the architect Álvaro Siza mentioned, "it is necessary to maintain a kind of cloudiness – which is neither ignorance nor naivety – to escape an inevitable application of supposed solidified knowledge" (Zaera-Polo, 2015, p.152). On the other hand, answers to many questions are not limited to institutional spaces and school rules, as the construction of a personal repertoire extends beyond the educational environment. The acquisition of knowledge begins with the first interactions with the environment we live in. In vocational training, however, a specific understanding of the craft is introduced. During the creative process, the architect draws on their experiences, incorporating them into their reflections and analyses to find solutions. As stated by the architect Paulo Mendes da Rocha (2007, p. 19), "if you are going to make a project, initially you must be able to invoke memory about knowing, even if you are not aware that you know." Rocha also states that architecture is a singular form of knowledge, something complex to define and easily degenerable. The architect, according to him, manages knowledge in a peculiar way.

However, part of the project's cloudiness may reflect contemporary production processes, which fragment the vision of architecture. The architect often does not engage with all stages of architectural making. Their work is almost always limited to the drawings that precede the work's materialization. Thus, the accumulation of design experience is restricted to expression through drawing or image. In this context, the one who masters the technique is not the one who designs. As Siza mentions:

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> The tendency toward self-expression is inevitable; it is the bright yet immature phase of a project. This concerns an artificial separation between the design and construction phases, characteristic of the contemporary production process. [...] the reason for the low quality of a lot of contemporary architecture lies, to a large extent, in this division of labor... (Zaera-Polo, 2015, p. 160)

However, in the teaching of design, it is essential to sensitize students to the values of architecture and the production process, because otherwise their learning tends to be limited to their own creative gestures, often tentative and rooted in limited prior experience. Under a psychoanalytic approach to the creative process, it is known that "the subconscious uses a reservoir of experiences at its disposal in its projects and works" (Huskinson, 2021, p.153). The subconscious can break into creative insights, for example, emerging into the conscious mind. In this logic, it is possible to feed the subconscious with experiences that later become evoked by memory.

Getting to know Lelé's works through a process that involves their redesign and screening constitutes a strategy to support projects. It is about feeding students with sound principles of architecture and strengthening their design references, because, as Rocha says, when dealing with possible stimuli to creativity, "you can't do anything other than what you actually know" (Wisnik, 2012, p. 169).

The practice of redesign is not new and has been applied in architectural training since the beginnings of its directed teaching, which dates back to the 15th century and would go on to found the French academies of the 17th century. Architectural treatises, such as Giacomo Barozzi da Vignola's 1562 treatise, were widely used at the Imperial Academy of Fine Arts in Rio de Janeiro throughout the 19th century. If, historically, in artistic education, great masters were imitated by apprentices, in modernism, as stated by Corona Martinez (2000, p. 78), this practice began to be practiced in secret. This concealment can perhaps be understood as a repression of the conflict with academic classicism. On the other hand, as Piñon puts it,

> Someone who knows only the music they are capable of performing, and tries to train themselves in its practice, will eventually become accustomed to the primitiveness – if not clumsiness – of their babbling, and will lose all ability to recognize the attributes that characterize the quality of music. In the same way, the complicity of the student with the natural precariousness of their sketches makes them desensitized to architecture, so that as years go by – at the end of the studies- they are totally unable to distinguish what is good from what is not, if they do not mediate a legitimizing or condemning reasoning, which is usually based on a concept that – by definition- is incapable of recognizing the values of architecture. (Piñon Pallarés, 2005, p. 23)

Bearing these questions in mind, we begin by examining João Filgueiras Lima's legacy in prefabrication and industrialized construction, considering the importance of the "responsible and socialized use of technology" in his work (Montaner, 2023, p. 11). The "know-how" of Lelé constitutes a patrimony to be protected (Vilela, 2019, p. 248), but, for this, this technology must be understood. In the academic context, scrutinizing Lelé's projects is a way to equip future architects with a design practice that considers the use of prefabrication technologies and contributes to the preservation policies of a material and intangible heritage, namely the works of João Filgueiras Lima and the technologies he continuously developed.

Drawing on concepts from the analysis and synthesis model of shape grammars can help understand the recurrence of solutions in industrialized construction systems, as Westphal (2007) demonstrated by describing the language of Lelé's hospital projects produced by the Centro de Tecnologia da Rede Sarah (CTRS). Definitions such as shape, vocabulary, rule, and structure form the basis of shape grammar. Similarly to the redesign, in shape grammar, a particular sample of buildings is decomposed from predefined criteria, reducing it to primitive forms - the vocabulary - and rules for combining these forms, capable of synthesizing all the analyzed buildings, as in the works of Koning and Eizenberg (1981) and Pinto Duarte (2005).

The optional project workshop course, called "João Filgueiras Lima: Projects with prefabrication," was structured from a logic of analysis and synthesis of projects, based on fundamentals of shape grammar, according to which, from the same matrix, differentiations between products arise, resulting from simple operations that combine the recursion of rules applied to sets of shapes and sizing parameters.

METHODOLOGY

The workshop was organized in three modules: Module 1 – Lectures on Lelé's works, given by several researchers from the Faber research group; Module 2 – Analysis of Lelé's referential projects and their constructive components; Module 3 – Architectural synthesis through the preparation of projects, based on the analyses carried out in the second module.

In short, from the lectures (Module 1) and the analysis and dissection, through the redesign of projects and their construction components (Module 2), an architectural synthesis is developed in Module 3 by identifying vocabulary and syntactic rules for prefabricated construction components, shapes, and spatial articulation. Despite the shape grammar methodology, given the discipline's schedule, the analysis of the works was carried out empirically, without the use of markers of rule application or

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graphic syntheses. Any ambiguities arising from the absence of these markers were resolved through teacher-guided guidance. Using Building Information Modeling (BIM) tools, students identified the constructive components of the works, represented them as families, and applied specific rules and parameters of Lelé's compositional systems. The activities carried out in each module are described below.

The first module consisted of four weekly meetings, in each of which two researchers from the Faber Group presented and discussed the architecture of João Filgueiras Lima from different perspectives. These public classes, held in a hybrid format with teachers online and students in the ARQ-UFSC auditorium, aimed to provide a theoretical and conceptual basis for Lelé's experiences with prefabrication and the industrialization of construction. The first session was attended by the professors Marieli Azoia Lukiantchuki from the State University of Maringá (UEM) and André Marques from Mackenzie Presbyterian University. Respectively, the lectures "Hospital architecture and the bioclimatic project: the lessons of Lelé" and "'Lelé greater than Le Corbu', what the walls say" were presented. Fábio Mosaner, from the Federal University of Pernambuco (UFPE), and Adalberto Vilela, from the Federal University of Uberlândia (UFU), then presented the lectures "Redesign of the Sarah Network Technology Center (CTRS)" and "Transition Elements: Sheds and marquees in Lelé's architecture", respectively. The third session featured professors José Fernando Minho and Ceila Cardoso from FAUFBA, who delivered the lectures "The Brazilian Institute of Habitat Technology (IBTH)" and "The Community Equipment Factory (FAEC) and Iansã". In the fourth and final session of the first module, Professor Sergio Kopinski Ekerman, from FAUFBA, and architect Michel Hoog Chaui Do Vale, PhD student at the Faculty of Architecture of the University of São Paulo (FAUUSP), presented, respectively, the lectures "The shapes of Lelé" and "Lelé in Salvador."

The presentations made throughout the first module addressed various aspects of Lelé's works, from socio-historical issues and technical and constructive aspects to environmental and perception attributes, as well as symbolic aspects related to the architectural legacy of João Filgueiras Lima and the recognition and preservation of modern heritage. These subjects, in addition to serving as a support to the following modules, aimed at the practice of the project workshop, brought to light contents underlying the reading of the graphic pieces of the discipline's base projects, allowing students to expand their analysis further (Module 2), as well as project decision-making (Module 3).

In the second module, of an investigative nature, referential works by Lelé were presented, characterized by prefabrication. The introductory class was based on the research "The Language of Hospital Architecture by João Filgueiras Lima" (Westphal, 2007), where constitutive aspects of a characteristic language of the hospitals of the Rede Sarah do Aparelho Locomotor system, designed by Lelé during his time at CTRS, are

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Figure 1. Mosaic of Lelé's buildings that this article illustrates in the works of the workshop: a) Colina residential complex, Brasília-DF; b) Rural school, Abadiânia-GO; c) Iansã Pavilion, Salvador-BA; d) TCU headquarters, Vitória-ES. Source: a) The authors; b) Risselada et al., 2010, p.62; c) The authors; d) Mosaner, 2021, p. 420.

addressed. Concepts of shape grammars were presented to support possible readings of Lele's other projects. Subsequently, a selection of photographs and drawings from 14 Lelé projects was exhibited for students' reference (Figure 1). All projects have been implemented with some degree of prefabrication. After the presentation, the teams selected the following works:

- Colina residential complex (1962), Brasilia;
- Service sheds of University of Brasilia (UnB) (1962), Brasilia;
- Rural schools of Abadiania (1982);
- Cresches Mais, Salvador (1987);
- Iansã Pavilion, Salvador (1987);
- Sarah Network Technology Center (CTRS), Salvador (1994-1997);
- Headquarters of the Federal Court of Accounts (TCU) of Salvador (1996);
- TCU Belo Horizonte headquarters (1997);
- TCU Victoria headquarters (1998).

It should be noted that the chosen projects are smaller and have shorter programs, enabling their analysis within shorter time frames, given that it is an optional discipline with only one weekly session. For this reason, hospital projects, except for the smaller Children's Rehabilitation Center, were not included in the list of suggestions, although they were presented and discussed in the module's introduction.

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The analysis of the projects was based on publications about João Filgueiras Lima's works, including books, dissertations, and theses. Some printed technical drawings of CTRS's works were also made available to students. During five sessions, the students worked in the workshop, redesigning the works and seeking to understand the role of the constructive components used, as well as the modular coordination and dimensioning of each system and each work. Among the works consulted by the students, in addition to books focusing on Lelé's production, the research of Ekerman et al. (2022) on Lelé's metal formwork, Lelé's primer with assembly guidelines for transitional schools in Goiás (Lima, 1984), Mosaner's thesis (2021) on The Sarah Network Technology Center (CTRS), Câncio Trigo's dissertation (2009) on Lelé's prefabricated components in reinforced mortar, as well as Westphal's dissertation (2007) on the language of hospital architecture produced at CTRS.

During one of the sessions of the second module, the class visited the Professor Barreiros Filho Municipal Library, built in 1988 by FAEC in the Estreito neighborhood of Florianópolis. This building is the result of the same system used in the Iansã Pavilion, from 1987, which was assembled at the Faculty of Architecture of the Federal University of Bahia (FAUFBA) and was recently restored in a process coordinated by members of the Faber Group. During the visit, the students were able to see the components of reinforced mortar up close, understand the logic behind variation and part assembly, and observe the modular coordination characteristic of the FAEC system.

At the end of this module, each team presented a panel in the workshop, printed on A1-size paper, featuring the redesign of their respective work, including plans, cross-sections, elevations, layouts, perspectives, and brief explanatory texts. The class rule was to use only drawings prepared by each team, adhering to the essence of the redesign process.

The final module aimed to summarize the analyses performed in module 2. Thus, it was up to each team to develop a project that applied the principles listed in the redesign of Lelé's works, testing their recurrence and expanding their understanding through propositional experience. A place and a program common to the class were defined using the principle of isonomy. Each team developed a proposal for a pavilion to be set up in front of the ARQ-UFSC building, at the site where the block nicknamed Pavilhinho is located, a remnant of the Department's provisional facilities, partially demolished and in a precarious state of repair. The Academic Center and the Model studio are located on this block, characterizing an important space of student permanence and representation. Thus, the proposed program should include spaces for student representation, permanence, and socialization at ARQ-UFSC, taking

into account dialogue with existing pedestrian flows and bioclimatic considerations. The choice of an open program also aimed to move away from a functionalist order, prioritizing spatial, constructive, and contextual decisions and seeking connections among places activated by people.

Again, the students worked in the workshop for five more meetings. In one of them, Professor Fábio Mosaner, from the Department of Architecture and Urbanism at UFPE, participated in person in the orientation sessions for the teams, highlighting technical, formal, and programmatic issues to consider in each project. At the end of the course, new A1 panels were presented, featuring each group's pavilion designs.

PROCESS

Using the lectures and available materials as an initial reference, the student groups began the redesign, first in sketches, to reveal the pieces' measurements and fittings. After the first sketches, the teams began, concomitantly, the redesign of digital models using the BIM (Building Information Modeling) tool. This tool helps students understand the constructive and tectonic aspects of buildings beyond the records in plans and cross-sections, since digital construction emphasizes the relationships between design, construction, tectonics, and materiality. In addition, the redesign methodology using digital models contributes to students' learning by requiring them to understand and systematize information about the elements that the studied buildings comprise.

As a result of the course, nine groups of students, organized in pairs or trios, presented two A1 boards each: the first, dedicated to the redesign of a Lelé building, the result of the analysis developed in module 2; the second, for the pavilion project attached to the ARQ-UFSC, prepared based on the constructive components studied.

Two groups analyzed projects featuring precast reinforced concrete systems molded on-site. The projects addressed were the UnB service shed (Group 1) and the Colina residential complex (Group 2). Lelé developed these projects at the University of Brasilia Planning Center (CEPLAN) between 1962 and 1964. The structure of these buildings consisted of a reduced set of precast elements. For example, in the Colina residential complex, the construction system consists of precast end pillars (precast piece 1), connected to molded pillars (vertical circulation boxes), and interconnected by precast double beams (precast piece 2), forming the main gantries. These gantries support secondary beams (precast piece 3), which, in turn, support the slabs (precast piece 4). Also noteworthy are the hollow closing panels (pre-molded part 5) and the opaque elements (pre-molded part 6). The analysis drawings prepared by

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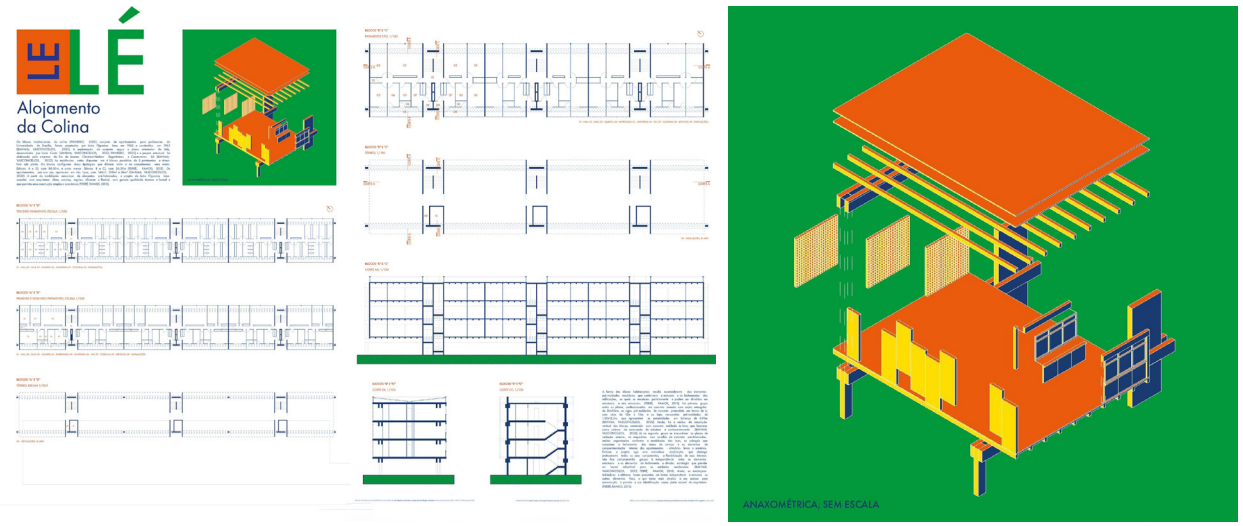


Figura 2. Outline of the analysis panel of the Colina residential complex, prepared by Group 2[1], with emphasis on the isometric perspective. Source: The authors.

Group 2 demonstrate an understanding of the construction system, presenting plans, cross-sections, and an isometric perspective (Figure 2).

In its summary project (Figure 3), Group 2 conceived an "L-shaped" building, subdivided into two blocks: Block A, parallel to the street, and Block B, perpendicular to the street, which configures the entrance square of the ARQ-UFSC. Both blocks have open ground floors, and the upper floors have subdivided units with light partitions, allowing for flexible layouts, in line with Lelé's project. Regarding the use of the elements analyzed in the Colina complex, the students describe, in the report presented in the summary panel, that "regarding the original project, the proposal maintained the modulation, the prefabricated structural system in concrete, the external seals and the vertical circulation system molded onsite, which also has a structural character".

However, in the original design, there is no 90-degree articulation, but only linear articulation. To address the perpendicular articulation of the blocks, the group resorted to a metallic trellis walkway, referencing Lelé's work, specifically the architect's walkways for the City Hall of Salvador. According to the report presented by the group, "the biggest difference in relation to the UNB housing complex consists of the addition of the walkway, conceived in a light metal structure to 'float' between the blocks, connecting them without causing great visual interference in the architectural setup proposed by Lelé."

Three buildings characterized by the construction system of lightweight prefabricated reinforced mortar were analyzed: the rural schools of Abadiânia-GO (Group 3), prepared by Lelé between 1982 and 1984; the Iansã Pavilion (Group 4) and Crèches

1 Students - Maria Júlia Kravulski Kormann and Matheus Alvarenga.

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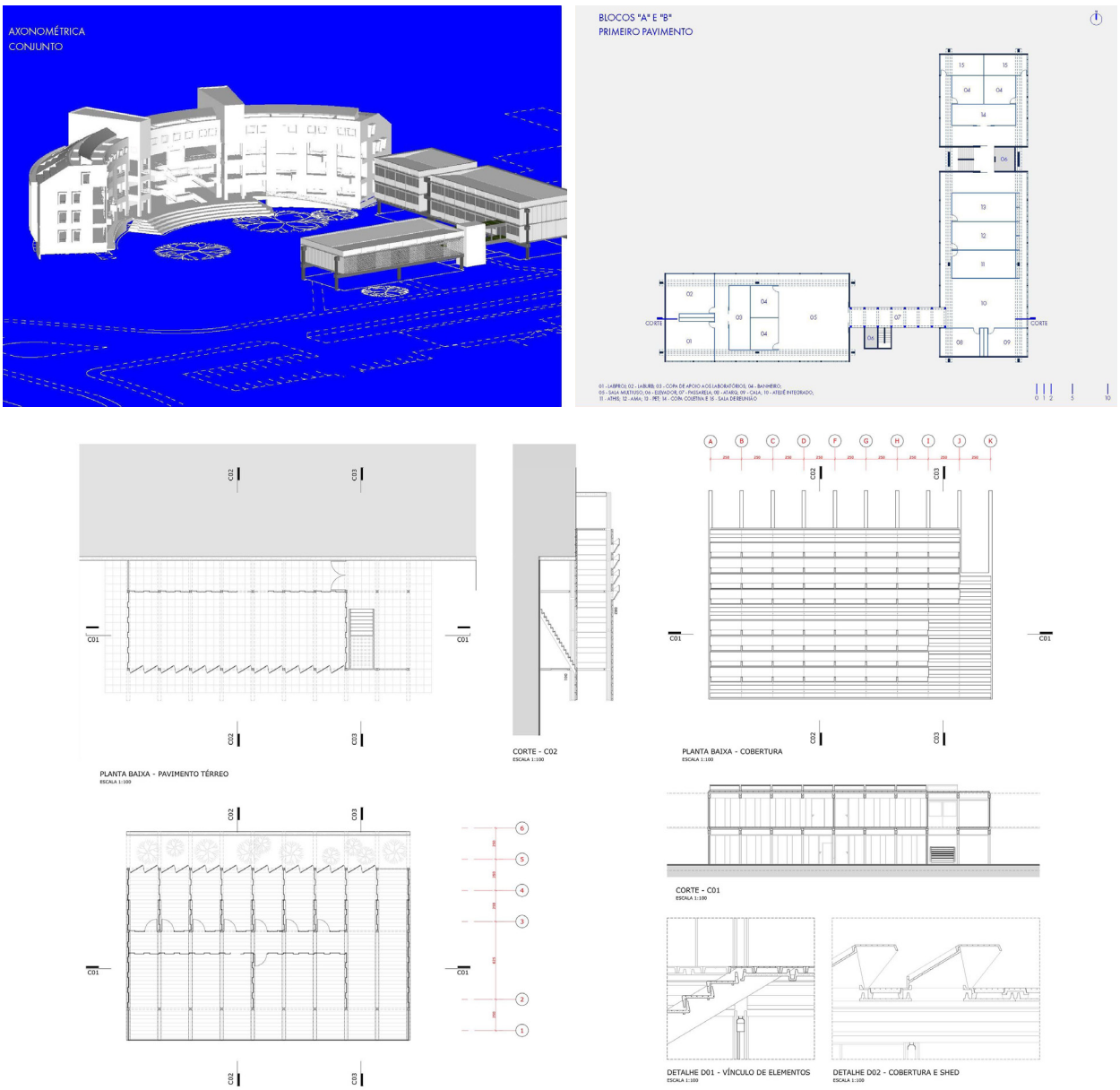


Figure 3. Outline of the project summary panel by Group 2, based on the analysis of the Colina residential complex. Source: The authors.

Figure 4. Outline of the Iansã Pavilion panel, prepared by Group 4[2], with emphasis on detailing the stair formwork, slab systems, and roofing for the sheds. Source: The authors.

2 EStudents - Diego Dias Caramez Rodrigues and Pedro de Souza Speck.

Mais (Group 5), both in Salvador – BA, developed by the Fábrica de Equipamentos Comunitários (FAEC), created and managed by Lelé for the city of Salvador between 1986 and 1989. These buildings are characterized by the use of lightweight reinforced mortar sections, with a level of design complexity significantly higher than that observed in heavy precast reinforced concrete. These experiments implied greater variation in sections, forming a complete construction system, with reinforced mortar as the predominant technique. The panel of the Iansã Pavilion (Figure 4), prepared by Group 4, presents plans, cross-sections, and details of the construction system, evidencing a modulation of 1.25 meters, as observed by the students during the redesign of these components

The project presented by Group 3 (Figure 5), which analyzed the rural schools of Abadiânia, was implemented in line with the schools'

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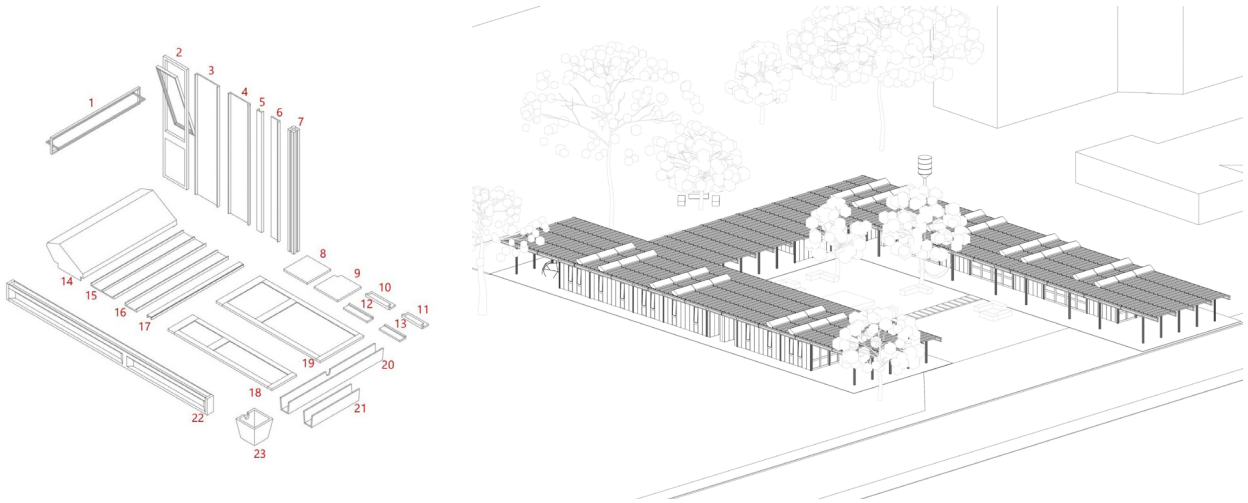


Figura 5. Outline of the project summary panel by Group 3[3], based on the analysis of rural schools in Abadiânia-GO. Source: The authors.

logic: single-story buildings with generous balconies for circulation, combining covered passages, internal courtyards, and enclosed rooms that act as islands. The roof system with Zenith lighting (sheds) allows flexibility in arranging the rooms in the covered area. As for the prefabricated elements, the family used in the studied project is observed, with the addition of new closing elements, such as windows and doors.

Four groups analyzed buildings produced at the Sarah Network Technology Center (CTRS). Group 6 approached the CTRS headquarters building itself, located in Salvador. Groups 7, 8, and 9, respectively, analyzed the buildings of the Federal Courts of Accounts (TCU) in Salvador (1996), Belo Horizonte (1997), and Vitória (1998). This center was conceived and directed by architect João Filgueiras Lima between 1992 and 2009, becoming the longest-lived facility under Lelé's direction. The CTRS was responsible for the construction and maintenance of buildings, the production of equipment and furniture for the Hospitals of the Sarah network, and the implementation of buildings through agreements with other public institutions, such as the Federal Courts of Accounts (TCU) (Mosaner, 2021). The construction system uses steel structures combined with lightweight, prefabricated, reinforced-mortar elements. Regarding the architectural language, one of the most striking elements is the design of the sheds, which have been progressively improved for natural cooling and ventilation.

In the redesign of Vitória's TCU, Group 9 presented the cross-section that best synthesizes the building, as it brings together all the roofing cases: smaller sheds, which illuminate and ventilate the living rooms on the top floor; a larger shed, for the entrance and atrium for the different rooms, associated with vertical circulation; and the arch that forms the auditorium roof, located on the ground floor. The group also detailed the joint between the "L-shaped" pillar and the double steel beam, which is considered one of the key nodes for understanding the construction system (Figure 6).

3 Students - Clara Bragança Boschiglia and Bruna Espíndola.

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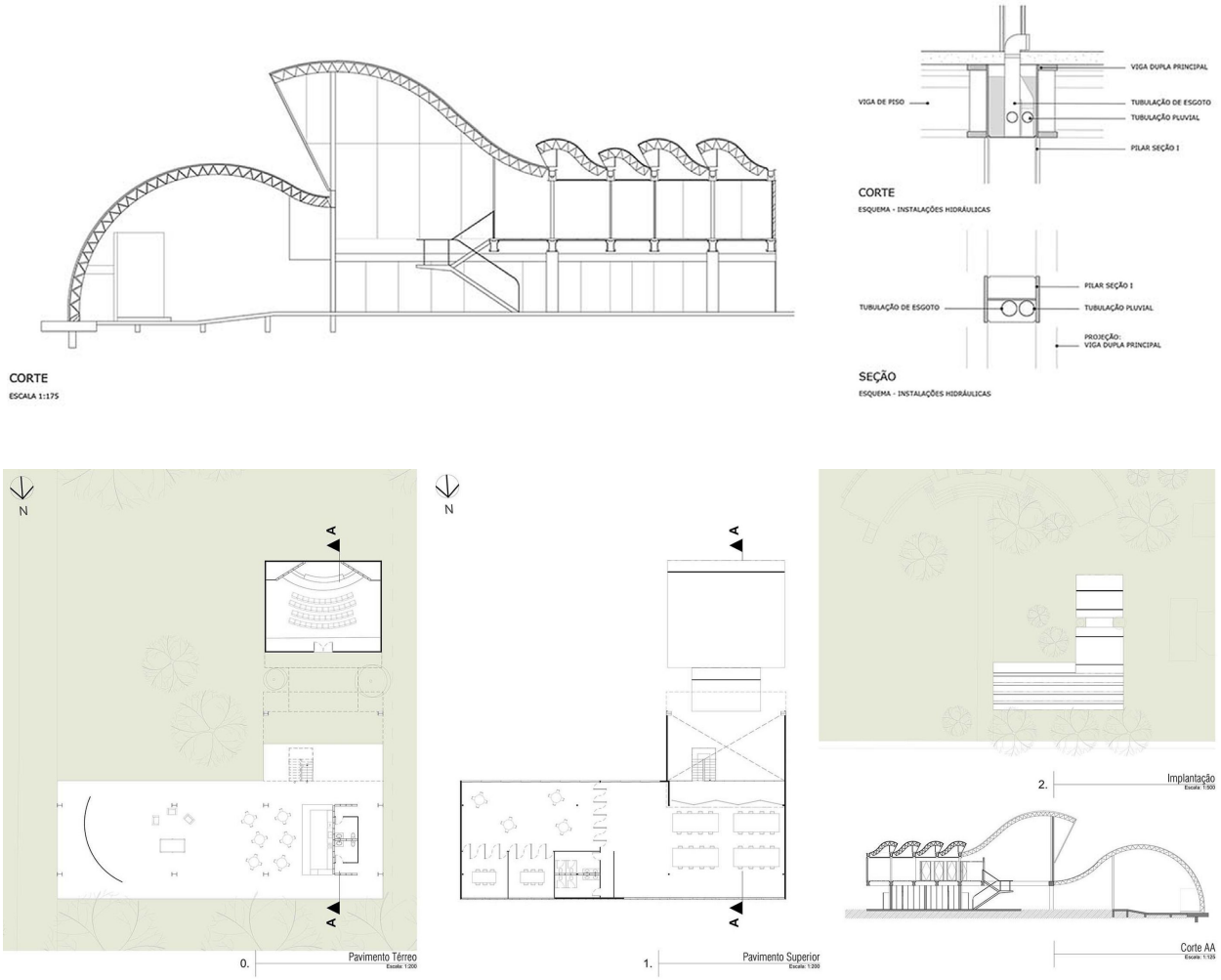


Figure 6. Outline of the analysis panel for the TCU headquarters building in Vitória, prepared by Group 9[4], with emphasis on the cross-section and the joint between the steel beam and the pillar. Source: The authors.



Figure 7. Outline of the summary panel by Group 9 based on the analysis of the Vítoria TCU. Source: The authors.

In the summary panel prepared by Group 9, the implementation of the "L-shaped" buildings was presented, with rooms distributed over two floors, an open ground-floor section, and an auditorium block. The implementation is similar to that at the current Pavilhinho location, where the auditorium occupies one of the legs of the "L," analogous to the TCU auditorium of Vitória (Figure 7).

4 Students - Bruna Honorato da Silveira, Carolina Aline Herpich Holdefer, and Matheus Vieira da Silva.

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CONCLUSION

Despite the students' proposals, the objective of the discipline was not to propose an effectively executable design solution for that program and place, but rather to apply the constructive elements developed by Lelé. The first intention was to present a method of studying architecture through the in-depth investigation of a building, using redesign as an analytical tool and applying the elements studied to the project.

On the other hand, through the works presented, it was possible to verify the high adaptability of the prefabricated elements designed by Lelé to different situations, due to their modular coordination, adaptability, and flexibility, as well as their timeliness when addressing issues of prefabrication and environmental comfort. These questions reinforce that Lelé's work is also didactic and that studying it in undergraduate architecture disciplines enables integrated learning of project and tectonic aspects.

The recurrence of solutions that involve the constant improvement of design decisions through the evaluation of previous results led to a deliberate search in Lelé's works. In the words of the architect himself: "You have to repeat the experiences, but there is no point in exact repetition, but in repeating while evolving, adding, improving, improving. I think this issue of recurrence is fundamental." (Minho, 2025, p.11). This evolutionary view of recurrences reinforces the teaching and learning potential of a design analysis and summary of the project, grounded in the industrialization of construction. At the same time, such practice highlights dilemmas inherent to architectural design in a broader sense, anticipating issues from the professional field.

The impact of the pedagogical experience reported here has been observed as the workshop content begins to inform other student work, including projects, technology areas, and recent term paper topics. This demonstrates the relevance of the subject and its insertion in other contexts, reinforcing learning and improving the education of students, as evidenced by some testimonies from students of the discipline:

> The course [...] provided a very significant lesson. The methodology adopted, which included lectures, theoretical content on the projects, field trips, and a practical workshop based on the constructive logic of João Filgueiras Lima (Lelé), proved to be well-structured and fundamental for a broader, more consistent understanding of the subject, contributing to knowledge appropriation. Lelé's principles, especially those related to human-scale, site-adjusted prefabrication in construction and the well-being of workers, constitute valuable lessons I will certainly carry with me beyond graduation. (Student 1)
>
> The knowledge obtained in the course directly influenced my future design choices, as in my final coursework, where I studied and applied prefabrication, incorporating bioclimatic strategies primarily through the use of sheds. (Student 2)
>
> The subject [...] was a milestone in the course, providing a deeper understanding of modularity and how to work with this design

> logic, as demonstrated by the architect we studied and that we redesigned. This exercise gained even greater significance because it was conducted in familiar terrain under different implementation conditions than those in the study. (Student 3)

The understanding of the analyzed buildings is evident in several aspects of the projects presented, including the use of modulation and constructive elements, the implementation (internal courtyards, covered passageways), the definition of flows, and the distribution of the rooms. In addition to understanding architecture, there is also learning about design representations, since some groups prepared isometric perspectives with assembly layouts similar to the drawings produced by Lelé, which represented not only the building but also the construction strategies adopted.

In subsequent workshop projects, as well as in final course work, issues related to prefabrication and industrialization of construction began to be developed by the graduates, who seek to meet, in their projects, aspects such as resource savings, lightness of components, constructive flexibility, qualification of means of production and working conditions, in addition to agility of execution, in order to respond to urgent social demands. Despite being academic projects, these interests fuel debate about the paths of architecture amid global-scale changes.

The workshop reported here aimed to expand students' project experiences to support their future practices. Taking up the idea of Paulo Mendes da Rocha (Wisnik, 2012), according to which, contrary to any notion of stimulating creativity, an architect can only do what they effectively know, it is reinforced that it is up to teachers to offer students learning experiences based on praxis, guided by the dissection and analysis of architectural works, by the verification of hypotheses and by the propositional character.

CONTRIBUTIONS OF THE AUTHORS CRediT

Conceptualization, E. W.; Data Curation, E.W. & F. F.; Formal analysis E.W. & F. F.; Acquisition of funding; Research, E.W. & F. F.; Methodology, E.W. & F. F.; Project Management, E.W.; Resources, E.W. & F. F.; Software; Supervision, E.W. & F. F.; Validation, E.W. & F. F.; Visualization, E.W. & F. F.; Writing – original draft, E.W. & F. F.; Writing – review and editing, E.W. & F. F.

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CONTEMPORARY ARCHITECTURE AND AWARDS IN THE AMERICAS

ARQUITECTURA CONTEMPORÁNEA Y LOS PREMIOS EN LAS AMÉRICAS

A ARQUITETURA CONTEMPORÂNEA E AS PREMIAÇÕES NAS AMÉRICAS



Figure 0. Unidad Común, Rozana Montiel, 2018 MCHAP.emerge award. Source: Adapted using ChatGPT.

Proyecto de investigación posdoctoral «La divergencia latina de la arquitectura contemporánea», desarrollado en la Universidad Presbiteriana Mackenzie (2023-2025). Agradecemos a la Universidad Federal de Alagoas por concedernos una licencia para capacitación docente.

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RESUMEN

A través de los ganadores del Premio Latinoamericano de Arquitectura Rogelio Salmona (PLARS) y del Mies Crown Hall American Prize (MCHAP), este artículo pretende reflexionar sobre la arquitectura contemporánea, respondiendo a lo que las obras ganadoras dicen sobre ambos premios, pero también señalar cuestiones subyacentes que revelan la naturaleza de los premios, especialmente del MCHAP. Se utilizó un protocolo de observación, las obras fueron analizadas individualmente y los resultados revelaron cinco principios recurrentes que estructuran los proyectos y que, por parte de las obras, demuestran una exención de la distinción ideológica de los premios, que destaca el predominio de los espacios abiertos como característica cualitativa de la latinidad arquitectónica. Esta distinción de los premios es la antesala de la reflexión latinoamericana, realizada tras el análisis de las obras, que evidenció una contradicción inicial y posterior giro latino en el MCHAP y una coherencia continuada del PLARS, poco valorada. Desde la credibilidad del MCHAP, la reflexión vislumbró una ambigüedad arriesgada en los premios, donde el reconocimiento viene disfrazado de mérito para ser usurpado por la geopolítica del conocimiento que la contemporaneidad necesita desvelar.

Palabras clave: arquitectura contemporánea, premios, análisis, cultura, proyecto

ABSTRACT

Through the winners of the Rogelio Salmona Latin American Architecture Prize (RSLAP) and the Mies Crown Hall American Prize (MCHAP), this article aims to reflect on contemporary architecture regarding what the winning works say about the two awards, but also to point out underlying issues that reveal the nature of the latter, especially the MCHAP. Using an observation protocol, the works were analyzed individually, and the results revealed five recurring principles that structure the projects, demonstrating an exemption from the ideological distinctions of the awards and highlighting the dominance of open spaces as a qualitative characteristic in architectural Latinity. This distinction between the awards is the antechamber to the Latin American reflection, conducted after analyzing the works, which revealed an initial contradiction and a subsequent Latin twist in the MCHAP, and a continued coherence in the RSLAP, which is little valued. From MCHAP's credibility, the reflection glimpsed a risky ambiguity in the awards, where recognition is disguised as merit, to be usurped by the geopolitics of knowledge that contemporaneity needs to unveil.

Keywords: contemporary architecture, awards, analysis, culture, project

RESUMO

Este artigo pretende refletir sobre a arquitetura contemporânea a partir dos vencedores do Prêmio Latino-Americano de Arquitetura Rogelio Salmona (PLARS) e do Prêmio Mies Crown Hall American Prize (MCHAP), respondendo ao que as obras vencedoras dizem sobre esses prêmios, mas também apontando questões subjacentes que revelam a natureza dos prêmios, especialmente do MCHAP. Utilizou-se um protocolo de observação, as obras foram analisadas individualmente e os resultados revelaram cinco princípios recorrentes que estruturam os projetos e que, em relação às obras, demonstram uma isenção da distinção ideológica dos prêmios, destacando o predomínio dos espaços abertos como característica qualitativa da latinidade arquitetônica. Essa distinção entre os prêmios é a antessala de uma reflexão latino-americana, realizada após a análise das obras, que evidenciou uma contradição inicial e uma subsequente inflexão latino-americana no MCHAP, bem como a coerência contínua do PLARS, pouco valorizada. Apesar da credibilidade do MCHAP, a reflexão apontou uma ambiguidade arriscada nos prêmios, pois o reconhecimento vem disfarçado de mérito para ser usurpado pela geopolítica do conhecimento que a contemporaneidade precisa revelar.

Palavras-chave: arquitetura contemporânea, prêmios, análise, cultura, projeto

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INTRODUCTION

The center-periphery geographical relationship is undoubtedly a factor that distinguishes two of the most important awards in the Americas, whether in economic or linguistic terms. The Rogelio Salmona Latin American Architecture Prize**1** (PLARS) is limited to Latin America, divided into four regions: the Southern Cone, Brazil, the Andean region and Mexico, and Central America and the Caribbean. On the other hand, the Mies Crown Hall Americas Prize**2** (MCHAP) considers all the Americas, without distinguishing between North, Central, or Latin America. However, it would be naive to believe this makes no difference.

The PLARS Prize is based on the thinking of the architect Rogelio Salmona, who believed that open and collective spaces were "the most important structuring element of a city, capable of encouraging participation and strengthening the construction of the social fabric." In line with this position, Fernández Cox (1988) characterized suitable architecture for Latin America as proprietary because it responds to the peculiarities of its conditioning factors, fits the reality of each situation, so that the community and the context are the material and formal inspiration, and adapts to the Latin context where the selectivity of globalized information is convenient for each region. To these attitudes, the debate on the relationship between center and periphery is added, amplified by Waisman (1990), which introduces the notion of region as a possible site of change in how architecture is qualified. This is clear in the PLARS Prize, where delegates are selected by region to select works. "The idea of region, contrary to that of periphery, situates each culture in a system that is based precisely on the plurality of regions, a system where none of them exercises hegemony, nor can they, therefore, be erected as a model of universal validity" (Waisman, 1990, p. 96).

The MCHAP Prize defines the excellence of the works awarded for a holistic stance, in which "works that integrate natural, built, and human ecologies to improve the quality of the places where we live" are valued. This generic position is close to the historiographical term "critical regionalism", popularized by Frampton in the 1980's, who was the president of the jury of the first cycle. Associated with the "clash between the pressure of modern civilization and the previous strong presence of a prior culture/civilization" (Bastos & Verde Zein, 2010, p. 243), critical regionalism indicates the belief in the hegemony of one dominant architectural culture over another, which moves towards having a "gap of freedom" to world recognition. The possibility of presenting works in "peripheral" situations, which represent "cultural gaps that more unexpectedly articulate Europe with the Americas" (Frampton, 2006), is sanctioned by the prize, although not explicitly, and will be better outlined in the reflection that follows.

The importance of knowing and recognizing the architectures produced in the Americas is the point of intersection among the

1 This text is restricted to the editions from 2014 to 2018.

2 The cycles from 2014 to 2022 will be considered.

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awards. However, the awareness noted these points as a persistent, hidden understanding that colonial architectural sovereignty persists, colonizing the underdeveloped, either by restricting it to the Global South in PLARS or by encompassing the Americas in MCHAP. The central question is, how are the ideological dynamics presented through the observation of the architectures that received the two awards?

METHODOLOGY

The analysis is based on a procedure called observation protocol (Andrade, 2020), whose implementation summarizes two actions: (1) carefully studying the published images of the design solution together with the photographic images of the built work, visualizing the physical-environmental context and the shape-spatial configuration; (2) the analytical action will replicate a line of reasoning following a "review of the work in its essentially architectural conception, as a result of a design process" (Verde Zein, 2023, p. 211). The aim is to identify arguments that justify the work's configuration by examining the interrelations among its elements (Andrade, 2018). The act of reading about the works follows this first approximation and responds to questions the data cannot answer.

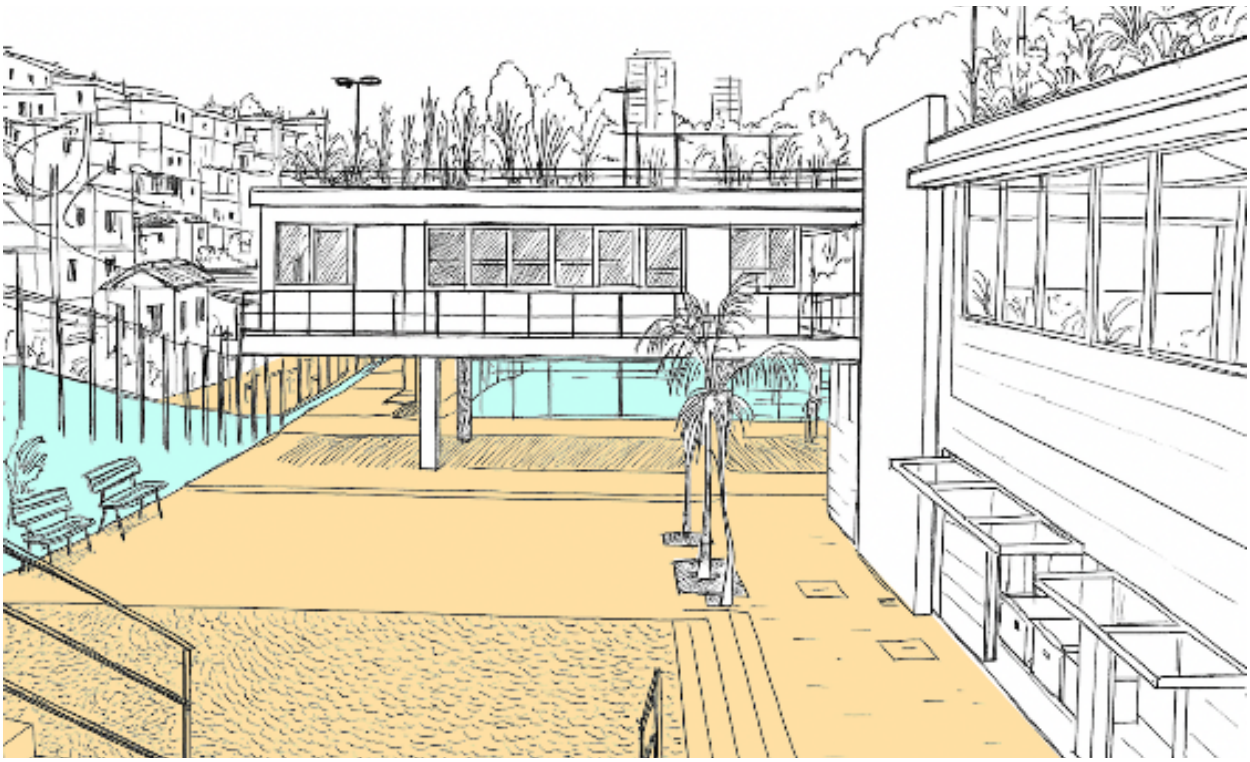
The analysis of these factors was systematized into five recurring principles, comprising the set of values and priorities that drive a project through the interpretation and reflection on situated and contingent variables (Lawson, 2004). This set essentially derives from the appreciation of the site (physical-environmental context), on the one hand, and the project (form-spatial configuration), on the other (Porter, 1988). Based on this structured dialogue, the result of the analyses highlighted five principles that shaped the projects: (1) the recognition and respect of cultural and social pre-existences; (2) the participation of the community/users; (3) the inseparable relationship between structure-form-space; (4) the specificity of place and materiality, and (5) the reflective and distinctive use of pre-existences as architectural references.

The presentation of the analysis of the cases studied, through the five principles proposed, aims to demonstrate that the relationships among the principles are more significant for understanding contemporary architecture in the Americas than the awards' chronology or grouping by awards. This position allowed us to infer what the works say about the prizes, but also to reflect on the prizes, pointing out an initial antagonism between the winners that culminates in an equivalence that obliterates the incompatibilities, revealing a harmonious, non-homogeneous diversity that exposes the cultural differences in the Americas.

THE PRINCIPLES AND THE WORKS

The *recognition and respect for cultural and social pre-existences* demonstrate a reflective and contingent architecture in response to vital circumstances, which addresses poverty as an ethical and moral issue (Torrent, 2015). Social awareness focused on intervention and small-scale

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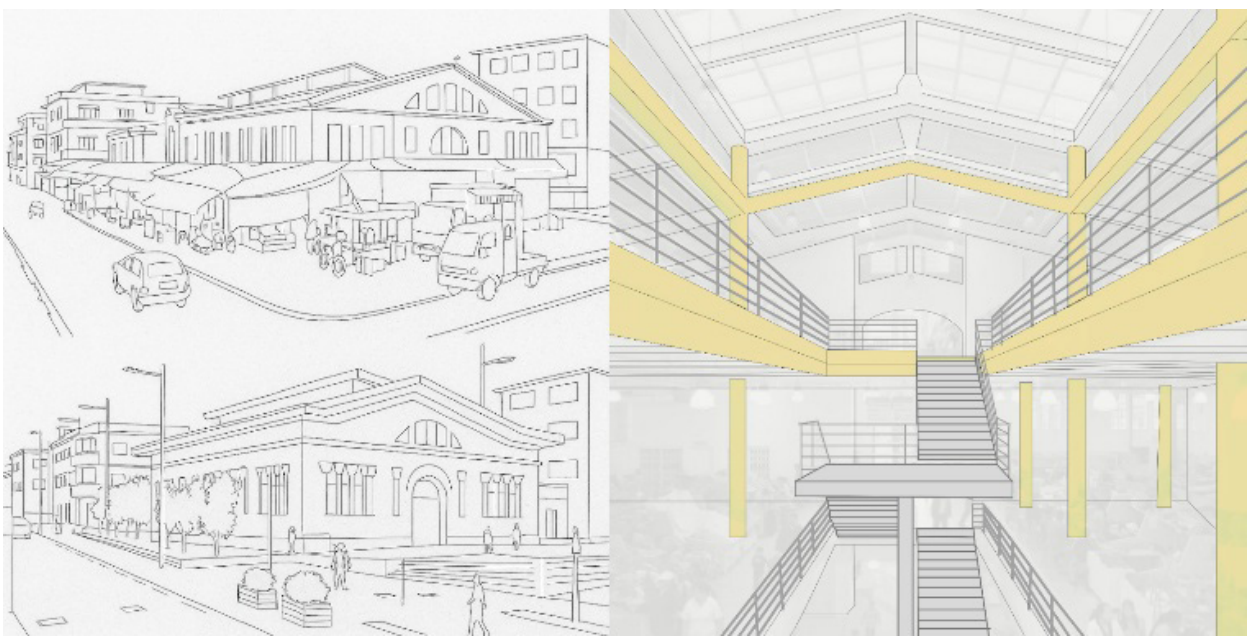


Figure 1. Viver Project, FGMF, PLARS 2014. Source: Adapted using ChatGPT.

Figure 2. Mercado 9 de Octubre, Boriz Albornoz, PLARS 2016. Source: Adapted using ChatGPT.

transformation, without claiming the power to change social problems (Carranza & Lara, 2014), is significant, especially among winners of the PLARS between 2014 and 2016 and of the MCHAP.emerge award between 2018 and 2022.

The winner of the 2014 PLARS, the FGMF's Viver Project (Figure 1), occupies land that served as access to the Jardim Colombo community. The pre-existing social dynamics are supported by the project's free space,

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Figure 3. Unidad Común, Rozana Montiel, 2018 MCHAP. emerge award. Source: Adapted using ChatGPT.

which opens to the community's urban fabric, promoting social and sports coexistence. In 2016, the winner, the 9 de Octubre Market in Cuenca (Figure 2), from the Boriz Albornoz studio, relocated, improved conditions, and organized merchants by sector based on the social and cultural understanding of their activities, providing a new spatiality to showcase their products. The success of the community/users' participation, together with the municipality's subsidy for the proposal, undoubtedly helped align the project for the 9 de Octubre Market with reality (Quito Architecture Biennial [BAQ], 2025).

The winner of the 2018 MCHAP.emerge award, Unidad Común (Figure 3) by Rozana Montiel, recognizes that any social or cultural pre-existence was eliminated in the housing complex project. The rescue of social values and public coexistence, achieved by understanding what had become invisible, was made possible by the community/users' participation in the project process (Montiel, 2016). Meanwhile, Barrera Colosio (Figure 4), a project by Loreta Castro and José Pablo Ambrosi together with UNAM, winner of the 2022 MCHAP.emerge award, pointed to the recognition of social and cultural pre-existence regarding how the community understands water as a value for the region (Capital Workshop, 2025), which makes the project impose itself as a water containment infrastructure.

The *inseparable relationship among structure, form, and space* is explored in the 21st century using weight and structural efforts (Carranza & Lara, 2014). All the winners of both awards start from this principle, like in a simple way, the Viver Project, where the reinforced concrete structure, a pillar/slab system with concrete block closure, forms two rectangular prisms installed perpendicular to the west face of the land. The cross-

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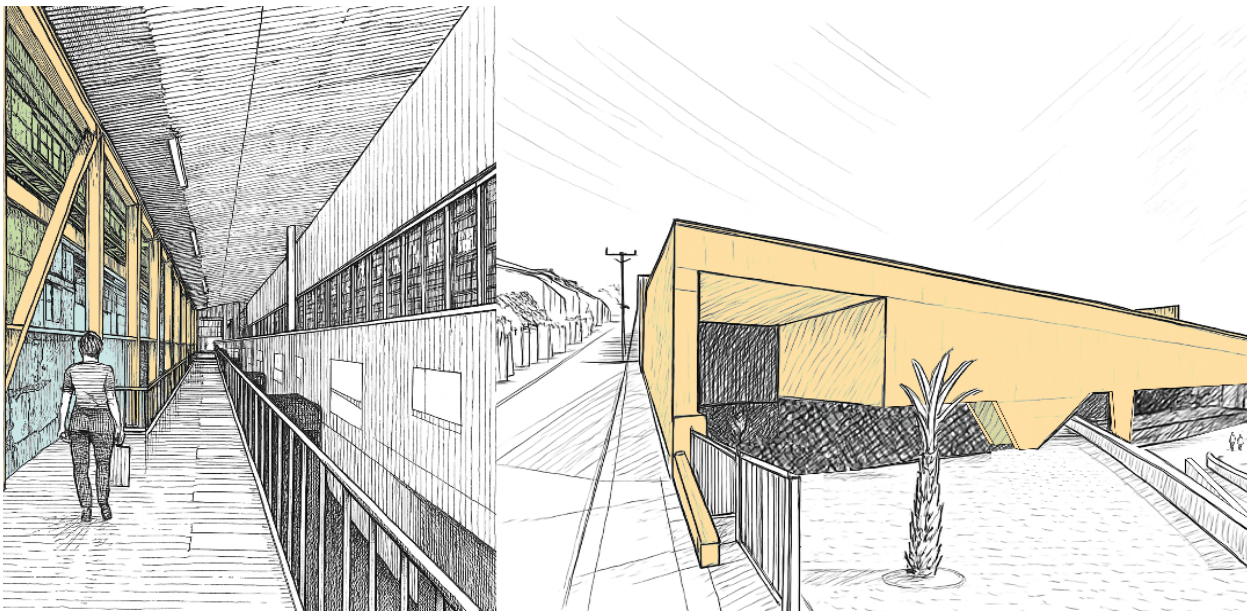
Figure 4. Colosio Dam, Taller Capital, 2022 MCHAP.emerge award. Source: Adapted using ChatGPT.

sectional prism is set on pilotis, which enlarge the free space, with a set of stairs serving as stands on the east face and the sports court on the south face. Or in an intricate way, by caring for the historical building of the 9 de Octubre Market that, by inserting a metal structure of circular pillars and steel deck slab supported on I-profile metal beams, the location of pre-existing pillars was taken into account, establishing the alignment of the new structural system, which borders the building and allows extending the mezzanine and modifying the roof's height. The concrete containment in the basement configures the basement.

The Valparaíso Cultural Center (Figure 5), winner of the 2018 PLARS, reflects this inherent relationship in two ways. In the old cell building, the strategy of maintaining the prison's external faces defines the form driven by the first principle. It integrates a mixed concrete-metal structure, providing open spaces and corridors that lead to the rooms. In the new building, embedded in the topography, the site is recognized as the driver of the exposed parallelepiped concrete, which stands out for the different arrangement of the V-pillars, forming a single vertical plane with the gable that delimits the internal spaces and protects the open space. The way structural stresses and weight are exploited differently in the two buildings shows the extent to which mastery of materiality interferes with the second principle.

At the 2014 MCHAP and MCHAP.emerge awards, the Iberê Camargo Museum (Figure 6) by Álvaro Siza, and the Poli House (Figure 7) by Pezo von Ellrichshausen exemplified this indissociability, as expressed in

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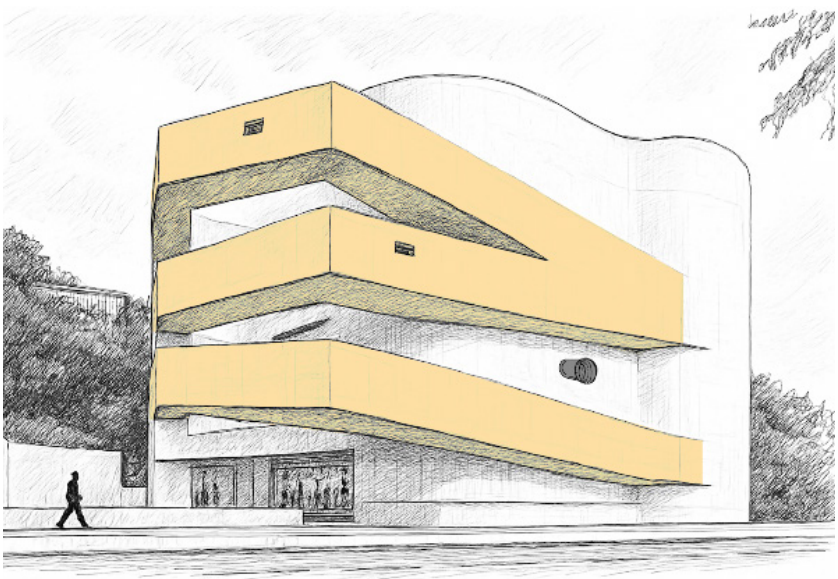


Figure 5. Valparaiso Cultural Center, HLPS, PLARS 2018. Source: Adapted using ChatGPT.

Figure 6. Museo Iberê Camargo, Álvaro Siza, MCHAP 2014. Source: Adapted using ChatGPT.

the second principle through weight. The main block of the museum is a volume with curved and orthogonal walls, where the linear, prismatic geometry of three zigzag external walkways stands out. The Poli House, on the other hand, is a cubic monolith with windows that frame the landscape, located in the circulation area outside the interior void that organizes and interconnects the space across three levels. In both works, the weight of the museum's white concrete block or the house's natural concrete is, in itself, a form and structure that configures an interiority governed by empty space.

The winner of MCHAP 2016, the Grace Farm (Figure 8), a work by SANAA, consists of a concrete base that adapts to the topography and

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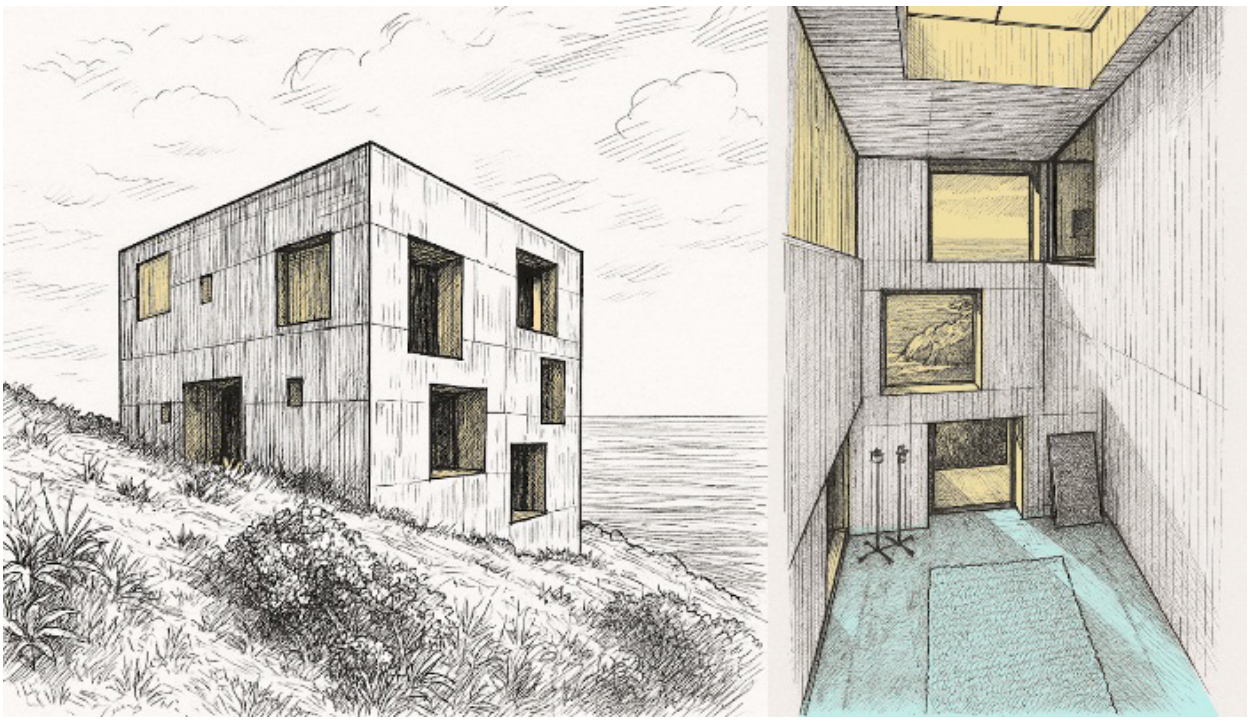


Figure 7. Casa Poli, Pezo von Elrichshausen, MCHAP.emerge 2014. Source: Adapted using ChatGPT.



Figure 8. Grace Farm, SANAA, MCHAP 2016. Source: Adapted using ChatGPT.

draws a serpentine shape, enclosed with curved glass at five points to meet internal spatial needs, such as a restaurant, a library, and a sports court. The wooden cover is supported by a metal structure with thin circular pillars and curved beams at the ends of the work. Their relationship to the place defines the shape and space, and the structure is conditioned by advanced construction technology and materials from different localities (Baldwin, 2025).

To this second principle is added what Torrent (2015) proposes as experimentation of new strategies for space production, as in 1111

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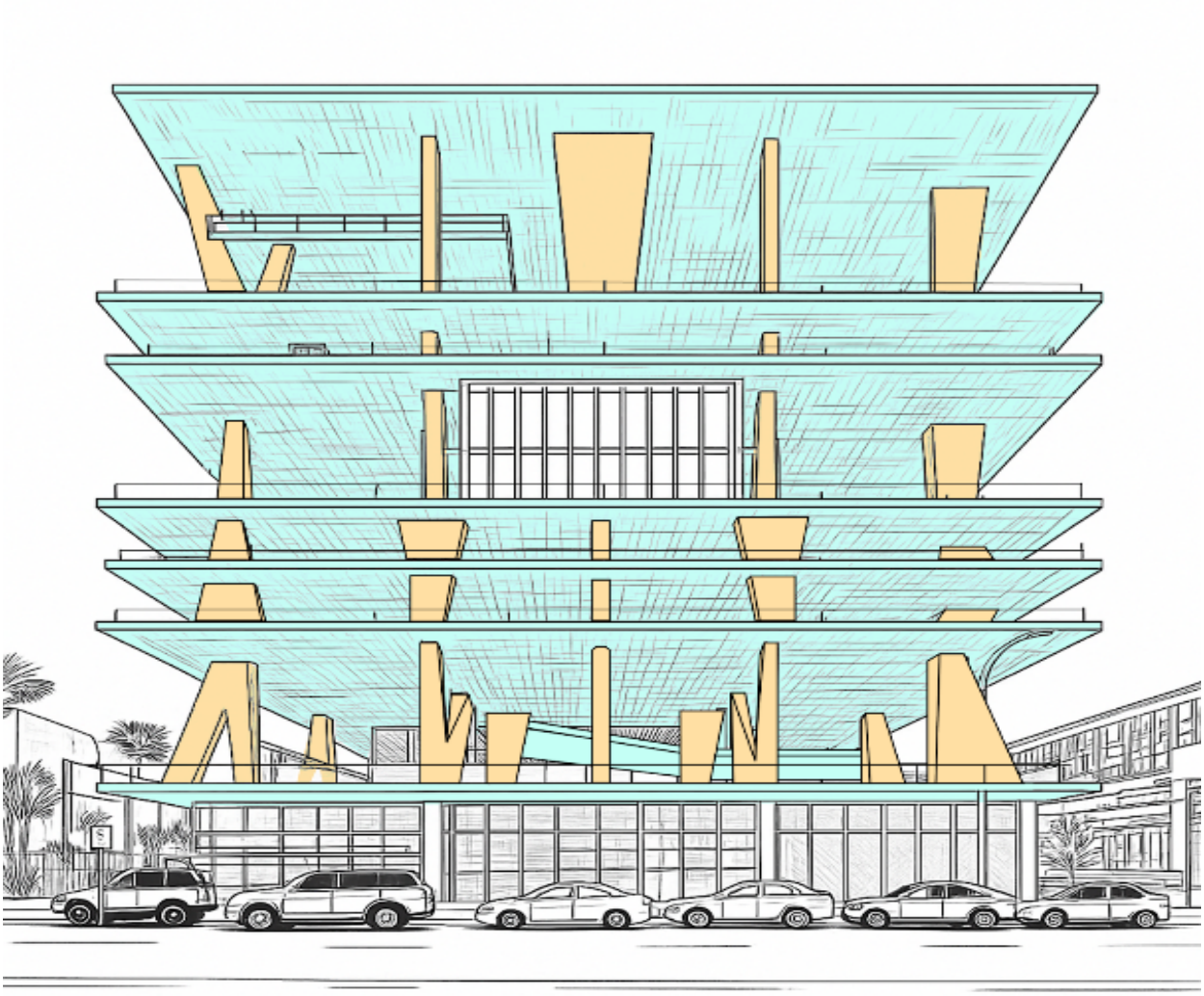


Figure 9. 1111 Lincoln Road, Herzog de Meuron, MCHAP 2014. Source: Adapted using ChatGPT.

Lincoln Road (Figure 9), winner of MCHAP 2014. Herzog de Meuron's work consists of a system of irregular slabs and pillars that create a spatial arrangement that essentially houses a parking lot, a restaurant, shops, and a rooftop residence. The structural complexity of the three different types of levels is interspersed in an unpredictable verticality, where disparate pillars mark rhythms without order between them. The spatial production is the void protected by the exposed concrete structure, the result of a strategy that questions the standard configuration of parking buildings and proposes a viewpoint building with different uses, where the levels descend from the interpretation of the existing neighboring building, that is, from the fifth principle.

Another winner of the MCHAP 2018, Building E (Figure 10) of the University of Piura, a project by Barcley & Crousse, points to a spatial production strategy where the different volumes are connected at the ends that configure internal voids as a system of passage and permanence, shaded and characterized by courtyards, ramps, and corridors. The prismatic result of exteriority presents four facades suited to the climate, unified yet distinct.

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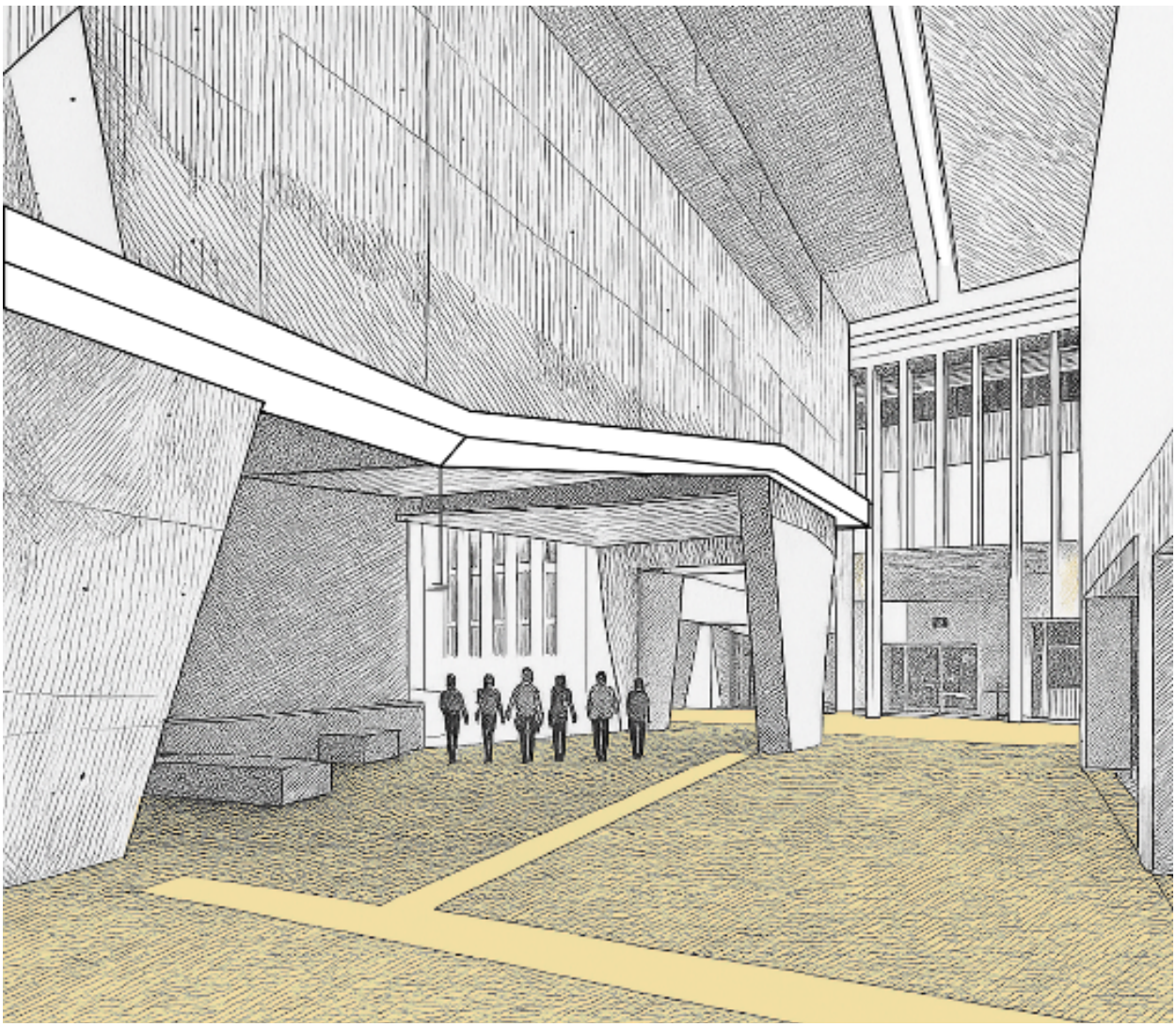


Figure 10. Building E, Barcley & Crousse, MCHAP 2018. Source: Adapted using ChatGPT.

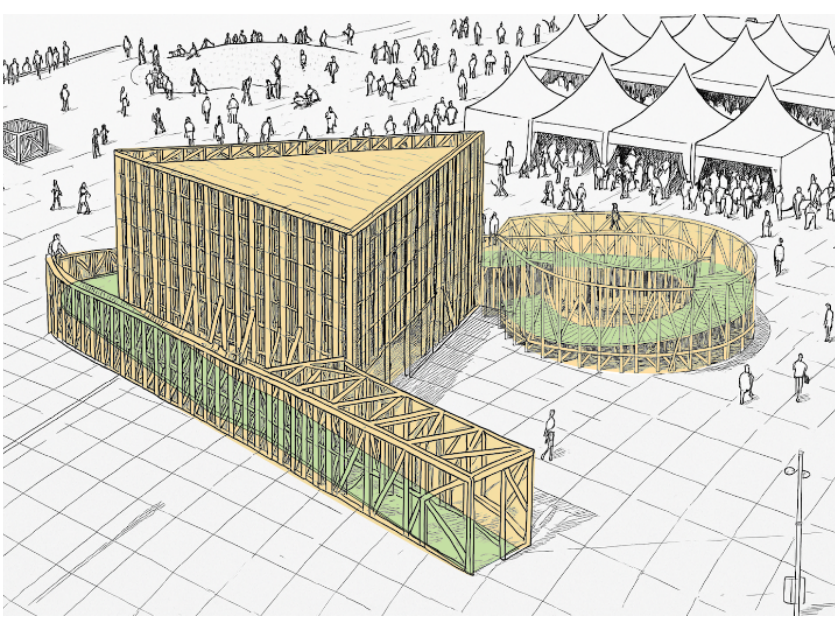


Figure 11. Pavillion in the Basement, PRODUCTORA, MCHAP.emerge, 2016. Source: Adapted using ChatGPT.

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The specific and possible tectonic materiality in each context (Carranza & Lara, 2014) considers "the cultural condition of each place, [which] is much more divergent than it seems, although the conditions of architectural and constructive production are quite similar" (Torrent, 2015, p. 289). Even though concrete is the primary material used in the works, its expressiveness varies and characterizes each work differently. This principle, *the specificity of the place and the materiality*, is directly related to the structure-form-space relationship. Among the works, two winners of MCHAP.emerge, the Pavilion in the Basement from 2016 (Figure 11), and the Colosio Dam in 2022, are presented differently from the rest.

The Pavilion in the Basement is a temporary structure in the form of an equilateral triangle, externally flanked by a straight ramp that leads visitors to the square's contemplation terrace, followed by a descending curved ramp. Access to the exhibition area is directly from the square. The triangle is itself the shape, and the minor components of the wooden structure are conditioned by the execution time and the duration of the work. In Colosio, the stone dam's structure contains water through a system of floodable platforms that serve as a sports and leisure area during drought periods. The only constructed volume, with a triangular geometry, has a metallic structure and a programmatic spatiality of a multi-sports court. In these two works, the specificity of place and materiality are prominent in the relationship among structure, form, and space, yet they are also brought together.

The last principle, the *reflective and distinctive use of pre-existing structures as architectural references*, composes the conceptual scheme of the works, which comes from the interpretation, understanding, and formulation of an appropriate judgment based on knowledge and reflection on previous solutions of other architects or their own (Lawson & Dorst, 2009). The conceptual density of specific projects and practices stems from this coherent, reflective action and is attentive to plurality and diversity (Carranza & Lara, 2014). The Anahuacalli Museum (Figure 12), the work of Maurício Rocha, winner of MCHAP 2022, exposes the inseparable relationship among structure, form, and space, derived from both local and material specificity and from the reflective use of architectural pre-existence. The work starts from the location of the existing volumes to propose both the linearity integrated into the north face volume and the free spaces and the courtyard, based on the parallelism with the existing blocks. The understanding of the site and the volcanic materiality of the stones in place define the elevated layout, which preserves the continuity of access level and the natural terrain's configuration while also providing access to the site. Because concrete and basalt are the primary materials (Rocha, 2025), they are handled and presented in ways that distinguish the old from the new.

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Figure 12. Anahuacalli Museum, Maurício Rocha, MCHAP 2022. Source: Adapted using ChatGPT.

Among the other winners already presented, the Valparaiso Cultural Center considers the pre-existing structure of the old prison to be the basis for a new building, while maintaining the old powder magazine. It uses vestiges of antiquity to establish the gardens and preserves the walls and the historical building of the access square as a prison memory. The rehabilitation of the 9 de Octubre Market is the very embodiment of respect for the pre-existing building, achieved through direct intervention in the old structure while maintaining a balance between the old and the new. 1111 Lincoln Road, although different from the built environment, considered the adjacent building when determining the heights of its parking slabs. Even knowing the study's processual dynamics, it is interesting to perceive, by analogy, how the various column configurations recall the columns in modern works by Latino architects. The same analogy can be made to SANAA's project for Grace Farm, which recalls the serpentine marquee of the Pampulha ballroom and their own works, such as the Serpentine Pavilion of 2009.

The Poli House connects with the Rivo House, which precedes it, so that the cubic exploration will lead to reflection in Pezo von Ellrichshausen's production, just as the deconstruction of the cube led to Eisenman's reflection. The Álvaro Siza Museum is a theft of its own language, already attributed to the architect. However, it also does not steal the possibility of correlating it with a contemporary approach to Frank Lloyd Wright's MoMA using the continuous gallery. The Viver Project considers the dense, conjugated construction of overlapping prisms in an apparent perforated brick-and-slab/pillar structure in concrete, which dialogues with prisms that approach the pre-existing-built form and materiality, while also being distinguished by a more polished presentation.

The MCHAP.emerge winners, the Colosio dam, the Common Unit (*Unidad Común*), and the Pavilion in the Basement are the only ones

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in which the dialogue with architectural pre-existence does not occur directly in the configuration of form, spatiality, or materiality. The cultural and social problems, in the specificity of each work, led to reflection on the different uses of geometry in shapes and planes, as guided by professional practice itself.

LATIN AMERICAN REFLECTIONS

The presentation of the winners, through the project principles, demonstrated the impartiality of the works with respect to the ideological distinctions between the prizes. The principles qualify the works without classifying them, indicating the relevance of the relationships among location, built material, conceived empty space, and cultural and social capital. The reflection does not intend to disparage any of the awarded professionals, but rather to point out underlying issues related to the awards and to invite a critical look at contemporary architecture.

Of the seven MCHAP 2014 finalists, four are renowned architects (three European and one American). The double prize clearly demonstrates how critical regionalism, rooted in the center/periphery condition, has acted. The Portuguese winner exemplified Frampton's category (2006) for being "resistance to the reductionist approaches that characterized the modern mainstream" (Zein & Alves dos Santos Neto, 2023, p. 25) even in an intrinsically European relationship, where Portugal was a "peripheral situation" (Junqueira Bastos & Verde Zein, 2010). However, in the 21st century, the Portuguese "colonizing" naturalness embeds in the colonized lands another architectural cultural form, not peculiar to the Latin American reality, and sanctions as more relevant the internationally recognized European one in Tupiniquines lands than the Latinos themselves.

The Swiss, when handling columns, approaches, without making it explicit, the recognized attributes of the modern Latino architecture, "improving" by assimilation and reinterpretation, an architectural culture that does not belong to him. The work of a European who supposedly knew how to manipulate Latino architectural culture is recognized, but the main prize is not awarded to Latino architects, "whose works boast architectural languages clearly differentiated from the rest of Latin American production and an undeniable consistency" (Quintana, 2021) based on waiving European modernity and through "alternative modes of relationship between architecture and the city, mediated by new perceptions of time, by reflection on one's identity, by the historical memory of the city and the conception of heritage (...)" (Quintana, 2021).

This double political and ideological recognition underlines the European "supremacy" in the supposed ability to improve architecture in "peripheral" places, as well as the American "supremacy" as an

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economic center for a peripheral Latin America, in addition to reinforcing a historiographical construction that attributes to Brazil also a "supremacy" in relation to other Latinos, "periphery" of architecture. Alternatively, it even reinforces a historiographical construction that attributes to Brazil also a "supremacy" regarding other Latinos, "periphery" of architecture. The contradiction in this position was perhaps, for ethical reasons, eclipsed by Steven Holl, whom Frampton recognized as one of the five most promising American architects. It should be noted that Holl's work, the extension of the Nelson-Atkins Art Museum, contrasts with the existing neoclassical building, but maintains a respectful dialogue in the implantation and height of the volumes, conditioned by a subsoil that connects the buildings. The prize could have been more from the Americas if Steven Holl had won the 2014 MCHAP.

The "consolation" came in the form of the MCHAP.emerge award winner, the Poli house. Very well integrated into the landscape, the house is, for Montaner (2016), an "icon of stereotomic architecture", but its architecture goes beyond the domesticity associated with myths and foreign architects. The reinterpretation and new conditions of modern principles bring about the condition of contemporaneity. Among the emerge finalists, the OMS Station of the Canadian studio 5468796 Arquitectura should have been the rival. The work also presents a spatial reflection of the cube, configuring a mutable spatiality for public use. However, hardly a Canadian work would be awarded before an American one.

The "Framptonian symphony" was maintained at the MCHAP 2016. A work by foreigners was awarded again: the Grace Farm, by the Pritzker Prize winners in 2010, Kazuyo Sejima and Ryue Nishizawa. It would not be acceptable to award a work in the country of origin of the award with less importance. Among the finalists, the Star Apartments project by the Michael Maltizan FAIA studio exemplifies American production. However, there seems to be internal resistance to the postmodern persistence evident in American production. This assumption will need further investigation in the future. The winner of 2016 *emerge* is still Latino, but the ephemeral work is fading away, and neither of the two winners so far is an expression of Latino social challenges. Until this cycle, the winners of this category have exemplified how Latino production dialogues with the contemporary condition of global architecture.

The first two MCHAP are presented masked, and the last two reveal a Latino twist, quantitatively and qualitatively apprehended by the winners presented above. Table 1 shows the growing number of works from the Global South nominated, with the increase in the *emerge* category in the 2022 cycle, standing out. This distinction announces a Latino twist in the MCHAP, an "invasion" of architecture

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		2014 Cycle		2016 Cycle		2018 Cycle		2022 Cycle	
MCHAP Prize	Nominees	101	55	153	59	148	52	201	44
			46		94		96		157
	Nom. Emerge	27	11	56	11	36	9	51	7
			16		45		27		44
	Outstanding	17	9	34	15	30	9	30	6
			8		19		21		24
	Outs. Emerge	5	2	11	4	4	1	50	5
			3		7		3		45
	Finalists	7	3	6	2	6	2	6	2
			4		4		4		4
	Final. Emerge	4	2	5	2	4	1	4	-
			2		3		3		4
LARS Award	Recognition	17		18		20		-	
	Mentions	3		5		3		-	

* The numbers highlighted in gray are for works of the Global South.

Table 1. Number of works in the MCHAP and LARS Awards. Source: Prepared by the authors (2024).

produced in the "periphery" in an economic "center" award. There may be several reasons for this change, from the increase in the number of invited Latino experts who identify works that reach the nominee list, to the increased production, dissemination, and recognition of Latino architecture by other media, including the 2016 Pritzker Prize awarded to Alejandro Aravena. The variables for this twist may be diverse, but it is a fact.

Focused on the finalists, this round introduces, through the works, the distinctive Latino architectural expression and the current concern and commitment to social problems. This distinction should not be understood as "exotic" or "rustic", but as specific, coherent, and, to use an already recognized term, appropriate to their reality that, however much they may seem, are different. There is no denying that social concerns are limited to the MCHAP finalists and winners, while cultural themes predominate among them. Regardless of that, it is important to highlight here Montaner's lucidity in stating that "critical regionalism — a paternalistic invention of mainstream criticism to appropriate the progress of architecture on the American and Asian continents - has become obsolete for interpreting contemporaneity" (2016, p. 08). In this sense, the emerging Latino works are closer to Waisman's (1990) divergent interpretation, where divergence means embarking on new directions based on what is and what can become.

Another fact worth highlighting is the credibility the award brings to competitors at the nomination stage. This relationship attributes a veiled hegemony to the American institution compared to the Rogelio Salmona Foundation. However, does the Global South need this to be relevant? Is this seal of quality necessary? To this Latin American reflection is added the database that is built and, to a certain extent, shared, since publications, research, and what happens and is developed in the MCHAP Chair at the

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IIT CoA are not freely available online. The winners become objects of knowledge production. This confirms what Mignolo and Brussolo Veiga (2021, p. 25) say: "The first world has knowledge, the third world has culture; Native Americans have wisdom, Anglo-Americans have science." To paraphrase Mignolo and Brussolo Veiga (2021), the Latino winners provide information, knowledge, and cultures to be systematized, analyzed, and transformed into knowledge for one year, with a financial contribution to "support teaching and a publication on an agreed research topic" at the IIT CoA. Recognition comes disguised as merit to be usurped by/in the power of the geopolitics of knowledge.

Realizing that the PLARS award is diametrically opposed to the MCHAP in every way could be reason enough to value it more. All those recognized, awarded, or who received honorable mentions do not raise doubts or political questions. They are expressions of a quality Latino production, without owing anything to any European or even to any North American. The idea of open spaces, which governs the PLARS prize, is given in the works awarded by the MCHAP, except for the Iberê Camargo Museum, the Poli House, and the Grace Farm, the latter two because they are not works inserted in the urban space. However, the same cannot be said of critical regionalism, which is limited to the winners of MCHAP.emerge in 2014 and 2016, since European architects won those two cycles. As of the MCHAP 2018, this regionalism seems to be weakening, and a growing awareness of the Americas has led to an increase in the number of Latinos on the jury since the 2022 cycle.

FINAL CONSIDERATIONS

It was necessary to use the analytical view and recognize the finalists to demonstrate the idiosyncrasies of MCHAP, since the ideological thinking in PLARS is less harmful, given that the idea of open space, guided by the relationship between location, materiality, the empty urban or architectural connector, and cultural and social capital, is inherent to the architectural object itself. From this perspective, the works say little about the awards and a lot about contemporary architecture in the Americas. The Latino awardees point out that the set of values and priorities that reflect the principles is more compelling than the creation or revival of an exogenous category, such as critical, restrictive, personified, and outdated regionalism.

The dominance of open spaces as a qualitative characteristic among almost all the awardees, stemming from a reflective, appropriate, and contingent practice, is evidence that architectural Latinity knows how to address not only its specific problems, but also present itself to the universal architectural culture with prominence. The conjunction of analytical principles is evidence of this. However, the practices and works from this Latin expression constitute a distinct condition from the political duality between the awards. While the PLARS awards a

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"divergent architecture" (Waisman, 1990), the MCHAP embraces works by renowned European architects in the Americas. This antagonism disappears as the winning works become more closely aligned, indicating a Latino twist, specifically in the MCHAP from the third cycle.

However, it may be generalizing (but necessary) to say that the Global South lacks recognizing that we strengthen each other much more, even by loving and relating to others. There is more strength in our "ethos" as common, although less pronounced, social characteristics (Quintana-Guerrero, 2024, free translation). It would be interesting to more strongly adopt an endogenous valuation of the PLARS, with greater adherence to the award among architecture practitioners, given that the current cycle has only obtained forty-seven registrations. There is no indication of abandonment or devaluation of the MCHAP, but to rewrite the matrix of the coloniality of knowledge (Quijano, 2019; Mignolo & Brussolo Veiga, 2021), it is necessary to recognize the usury of the prize in borrowing our culture and knowledge. A question remains: what impact do the practices and architectures of America's Global South have on America's Global North?

CONTRIBUTION OF AUTHORS CRediT

Conceptualization, M.M.A and R.V.Z; Data curation, M.M.A and R.V.Z; Formal analysis, M.M.A; Acquisition of financing; Research, M.M.A; Methodology, M.M.A and R.V.Z; Project management,; Resources,; Software.; Supervision, R.V.Z; Validation, R.V.Z; Visualization,; Writing - original draft, M.M.A; Writing - revision and editing, M.M.A and R.V.Z.

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WELL-BEING IN POST-DISASTER SHELTERS: THE PERCEPTION OF THE INDIGENOUS COMMUNITY, SANTA CATARINA, BRAZIL

BEM-ESTAR EM ABRIGOS PÓS-DESASTRE: A PERCEPÇÃO DA COMUNIDADE INDÍGENA, SANTA CATARINA, BRASIL

BIENESTAR EN ALBERGUES POST-DESASTRES: LA PERCEPCIÓN DE LA COMUNIDAD INDÍGENA, SANTA CATARINA, BRASIL



Figure 0: Example 2 of material and shape. Source: ArchDaily Brazil, 2017.

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RESUMO

Este estudo analisa os impactos decorrentes de desastres naturais em comunidades vulneráveis, com ênfase nos abrigos temporários como espaços de proteção física, restauração psicossocial e reconstrução identitária. O objetivo foi identificar os atributos ambientais que influenciam o bem-estar e formular recomendações de projeto baseadas na percepção ambiental. A pesquisa foi desenvolvida com a comunidade indígena Xokleng, em José Boiteux/SC, afetada por inundações recorrentes e pelos impactos negativos da Barragem Norte, por meio de uma abordagem qualitativa que incluiu entrevistas com lideranças indígenas e a técnica da fotografia como modelo. Os resultados indicam que o conforto e a segurança não se restringem à materialidade, integrando dimensões simbólicas, culturais e sociais. Destacam-se o uso da madeira como material identitário, as configurações morfológicas que simbolizam a coletividade (estrela e colmeia), a ventilação cruzada, a iluminação natural e uma organização espacial que equilibra privacidade e vida comunitária. Também foram valorizadas a convivência em grupos familiares extensos e a participação ativa no planejamento, em contraposição à adoção de soluções padronizadas. Conclui-se que os abrigos pós-desastre devem ser concebidos como espaços restauradores, culturalmente contextualizados e participativos, capazes de fortalecer a resiliência comunitária e a recuperação integral de populações indígenas vulneráveis.

Palavras-chave: apropriação do espaço, arquitetura pós-desastre, comunidades tradicionais, percepção ambiental, vulnerabilidade socioambiental

ABSTRACT

This study analyzes the impacts of natural disasters on vulnerable communities, with emphasis on temporary shelters as spaces for physical protection, psychosocial restoration, and identity reconstruction. The objective was to identify environmental attributes that influence well-being and to propose design recommendations based on environmental perception. The research was conducted with the Xokleng Indigenous community in José Boiteux, Santa Catarina, Brazil, which is affected by recurrent flooding and the North Dam, using a qualitative approach that included interviews with Indigenous leaders and photography as a model. The results indicate that comfort and safety/security extend beyond material aspects, integrating symbolic, cultural, and social dimensions. The use of wood as an identity-related material, forms that symbolize collectivity (stars and beehives), cross-ventilation, natural lighting, galleries, and a spatial organization that balances privacy and community life, stand out. The findings also highlight the value of extended family living arrangements and active participation in planning, in contrast to standardized solutions. It is concluded that post-disaster shelters should be conceived as restorative, culturally contextualized, and participatory spaces that strengthen community resilience and promote the comprehensive recovery of vulnerable Indigenous populations.

Keywords: environmental perception, post-disaster architecture, socio-environmental vulnerability, space appropriation, traditional communities

RESUMEN

Este estudio analiza los impactos de los desastres naturales en comunidades vulnerables, con énfasis en los albergues temporales como espacios de protección física, restauración psicosocial y reconstrucción identitaria. El objetivo fue identificar atributos ambientales que influyen en el bienestar y formular recomendaciones de diseño basadas en la percepción ambiental. La investigación se desarrolló con la comunidad indígena Xokleng, en José Boiteux, Santa Catarina, Brasil, afectada por inundaciones recurrentes y por la Presa Norte, mediante un enfoque cualitativo que incluyó entrevistas con líderes indígenas y la técnica de fotografía como modelo. Los resultados muestran que el confort y la seguridad no se restringen a la materialidad, integrando dimensiones simbólicas, culturales y sociales. Se destacaron el uso de la madera como material identitario, formas que simbolizan la colectividad (estrella y colmena), ventilación cruzada, iluminación natural, galerías y una organización espacial que equilibra privacidad y vida comunitaria. Asimismo, se valoraron la convivencia en grupos familiares extensos y la participación activa en la planificación, en contraposición a soluciones estandarizadas. Se concluye que los albergues posdesastre deben concebirse como espacios restauradores, culturalmente contextualizados y participativos, capaces de fortalecer la resiliencia comunitaria y la recuperación integral de poblaciones indígenas vulnerables.

Palabras clave: apropiación del espacio, arquitectura posdesastre, comunidades tradicionales, percepción ambiental, vulnerabilidad socioambiental

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INTRODUCTION

According to the National Institute for Space Research (INPE, 2020), disasters are adverse events that have a major impact on society and are classified by the natural or technological nature of the underlying phenomenon. In the case of natural disasters, their occurrence arises from the interaction between environmental processes and human vulnerability. Hence, their effects are socially produced and unevenly distributed (Wisner et al., 2004).

In Brazil, severe hydrometeorological events have exacerbated social, territorial, and institutional vulnerabilities, especially for traditional populations. In Santa Catarina, flood- and landslide-associated disasters extend beyond the phenomenological dimension and are linked to historical processes of territorial occupation, socio-spatial inequalities, and shortcomings in risk management (Wisner et al., 2004; Acselrad, 2014; Intergovernmental Panel on Climate Change [IPCC], 2022). This scenario became patently clear in October 2023, when intense rainfall in the upper Itajaí Valley culminated in the unprecedented opening of the Norte Dam in the municipality of José Boiteux, affecting access roads, flooding homes, and directly impacting Ibirama-Laklãnõ's Indigenous villages. The episode aggravated historical socio-environmental vulnerabilities, highlighting the disproportionate exposure of indigenous peoples to disasters and the territorial injustices associated with containment infrastructures.

In that context, emergency shelters and temporary housing have become fundamental structures in the post-disaster phase. However, scientific research highlights a significant historiographical gap. Although there is extensive debate about risk management, infrastructure, and emergency logistics, studies addressing the well-being, environmental perception, and psychosocial attributes of these spaces remain scarce, especially in specific cultural contexts. The state-of-the-art underscores the need for shelters that transcend the merely provisional, incorporating principles of adaptability, identity, environmental comfort, and community participation (Gordillo Bedoya, 2004; Caia et al., 2010; Gibbs et al., 2017; Félix et al., 2013; Delgado, 2022; Sukhwani et al., 2021). These authors emphasize that standardized solutions often overlook ways of life, symbolic values, and cultural practices, which can compromise feelings of protection, well-being, and psychological rehabilitation.

Given this scenario, this study aims to characterize the environmental attributes that affect well-being in post-disaster shelters from users' perspectives, to provide design recommendations based on environmental perception principles. This is a qualitative, exploratory study, conducted as a single case study, with the Xokleng indigenous community in the municipality of José Boiteux (Santa Catarina). The choice is justified by the group's vulnerability in disaster situations and the urgency of considering cultural and identity aspects

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for housing solutions that are more sensitive, inclusive, and consistent with their way of life.

THEORETICAL FRAMEWORK

VULNERABILITY

The term vulnerability comes from the Latin *vulnerabilis*, which denotes susceptibility to injury and refers to the exposure to physical, social, and environmental risks shaped by historical and unequal social protection processes (Meerow & Newell, 2019; Rufat., 2013). In the 1980s, Hewitt (1983) argued that vulnerability structures the distribution of damage, a perspective exacerbated by recent research showing that it arises from the interplay of environmental, territorial, and institutional factors (United Nations Office for Disaster Risk Reduction [UNDRR], 2022). Thus, different population segments experience uneven levels of exposure and response capacity, influenced by socioeconomic conditions, public policies, and geographical location (Rufat., 2013; IPCC, 2022).

This understanding is exacerbated in contexts marked by historical and territorial processes, where Indigenous peoples' adaptive capacity is constrained by rights violations, territorial restrictions, and persistent institutional weaknesses (Fleuri & Okawati, 2021). Vulnerability is further aggravated by mobility limitations, a dependence on external infrastructure, and the intensification of extreme events associated with climate change, in addition to substandard public policies, which transform each new disaster into a mechanism for deepening historical inequalities (IPCC, 2022; Instituto Socioambiental [ISA], 2023; UNDRR, 2022).

In this sense, the vulnerability of Indigenous Peoples is marked by the combination of environmental risks and territorial injustice. The fragility of consultation and participation mechanisms limits their capacity to prevent and protect, increasing exposure to disasters (Fleuri & Okawati, 2021). In the case of the Laklãnõ/Xokleng, land conflicts, environmental degradation, impacts of the Norte Dam, and extreme hydrometeorological events have created a contemporary scenario of accumulated vulnerability (ISA, 2023).

Indigenous area in José Boiteux / Santa Catarina

The region traditionally occupied by the Laklãnõ-Xokleng, Kaingang, and Guarani peoples was first explored in 1920 by German settlers from Rio do Sul. The state-imposed occupation generated land conflicts and the forced displacement of Indigenous communities to reservations. In 1926, the Ibirama-Laklãnõ reservation was created, which includes the main flood-control dam in Santa Catarina. This structure reduces the level of the Itajaí-Açu River in Blumenau by up to 2 meters. Figure 1 indicates the location of José Boiteux, where the reservation is inserted.

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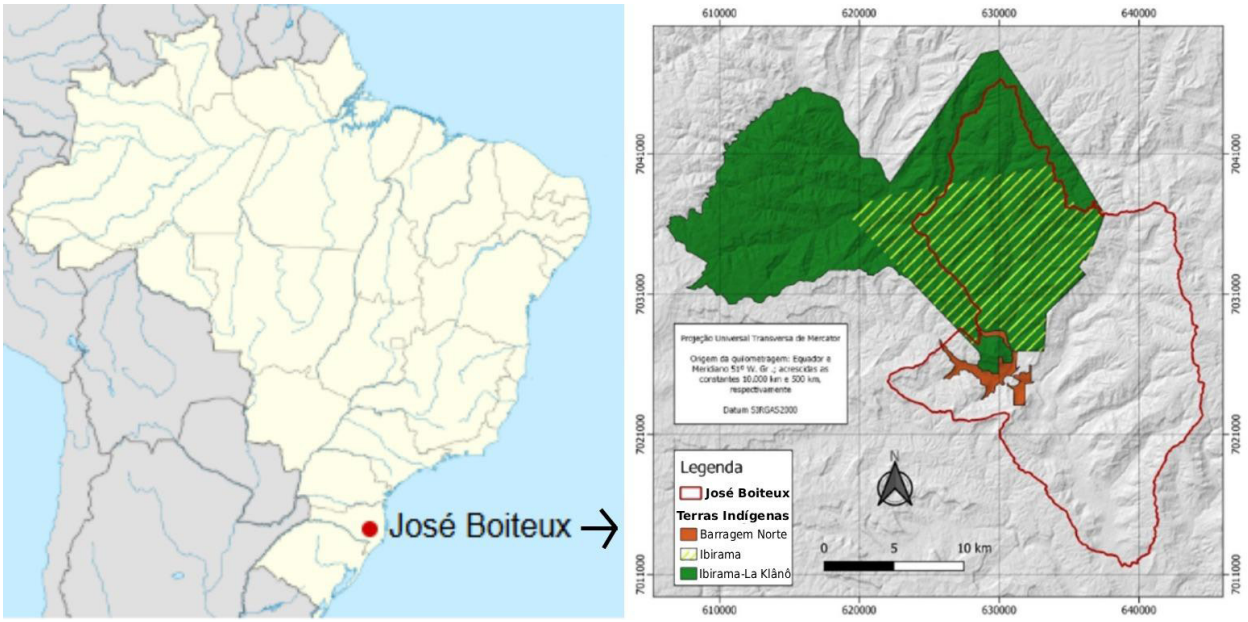


Figure 1: Map of José Boiteux. Source: Prepared by the authors based on Wikipedia.



Figure 2: Flooding in the indigenous area of José Boiteux. Source: Kienen (2023).

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According to the cadastral survey report (Center for Studies and Research in Engineering and Civil Defense [Ceped] - World Bank, 2020), the massif for the Norte Dam was erected from 1972, downstream of the confluence of the Dollmann and Itajaí do Norte Rivers and near the limits of the Xokleng/Laklãnõ reservation (ISA, 2023). The rock structure, with its clay core, which is integral to the system of three dams in the upper Itajaí Valley, significantly altered the landscape and environmental dynamics. At 60 meters in height and with a capacity of more than 357 million m^3, its construction affected lands traditionally occupied by Indigenous Peoples, isolating villages during floods (CEPED, 2020). According to Costa et al. (2024), there are records of material losses, damage to community facilities, and deaths associated with the floods. However, the reparatory measures judicially outlined in 2003 have not been complied with (Figure 2).

Natural disasters pose a recurring threat to traditional communities, exposing them to loss of life, material damage, and disruptions to daily life (Nogueira, 2002). In 2023, heavy rainfall caused the Norte Dam's first overflow, damaging homes and access roads in the community. Hence, given this socio-environmental vulnerability framework, it is essential to consider not only material risks but also psychosocial impacts of disasters and forced displacement. Studies on environmental attributes have indicated that the quality and layout of shelters are determinants of the well-being and physical and emotional recovery of affected populations.

Post-disaster architecture: shelters and temporary housing

According to the State Secretariat for Protection and Civil Defense (SEDEC, 2024), an emergency shelter is an adapted, organized structure that hosts people and families displaced by adverse events for a given period. It relies on public support due to the absence of alternative housing. It must be an adequate, safe, habitable, and private structure, away from risk areas and adapted to local culture, climate, and regional characteristics, guaranteeing access to basic services and users' dignity. These shelters can reuse pre-existing structures, such as clubs, churches, hotels, and gyms. However, using school buildings should be avoided to preserve the return to normality (SEDEC, 2017).

According to Carbonari (2021), several authors draw a distinction between the terms "shelter" and "housing" in emergency scenarios. While "shelter "refers to a place of immediate stay during and shortly after the disaster, where regular daily routines are suspended, the term" housing" indicates the return to domestic activities, responsibilities, and daily routines. Based on this distinction, four distinct phases can be identified: *emergency sheltering, temporary sheltering, temporary housing*, and *permanent housing*. The boundaries between these are often gray, and their duration depends on overlaps of two or more stages.

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Figure 3: Stages of post-disaster shelter and housing provision. Source: Adapted from Carbonari (2021).

Table 1: Literature review: authors, countries, disciplines, and focus. Source: Prepared by the author.

Authors	Year	Country	Area	Focus
Gordillo Bedoya	2004	Colombia	Architecture	Elements that minimize the feeling of transience in temporary housing
Caia et al.	2010	Italy	Psychology	The psychological effects of the characteristics of temporary housing
Félix et al.	2013	Portugal	Engineering	State-of-the-art survey on the inadequacy of post-disaster temporary housing
Gibbs et al.	2017	Australia	Urbanism	Impact of post-disaster relocation on wildfire homeless
Sukhwani et al.	2021	Japan	Geography	Cultural adequacy in temporary housing
Delgado	2022	United States	Psychology	Importance of "home" for disaster survivors

In Brazil, the Secretariat of State for Protection and Civil Defense [SEDEC] – the government agency responsible for coordinating civil protection and defense actions in the country- also adopts this conceptual distinction between "shelter" and post-disaster "housing" (Simon, 2006). However, the institution recognizes only three phases: temporary emergency shelter, temporary housing, and permanent housing, as illustrated in Figure 3.

Integrative literature review

The aim of this review was to identify environmental attributes that support the well-being of homeless people in temporary shelters and housing. The bibliographic review, conducted on May 28th, 2024, yielded 33 articles in the Scopus® (4) and Web of Science® (29) databases, without applying filters, due to the scarcity of studies on the subject. After analyzing titles and abstracts and excluding works that did not focus

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on welfare in temporary housing, six articles were selected for in-depth analysis, as shown in Table 1.

The studies analyzed converge in stating that effective temporary shelters and housing must go beyond minimum emergency response, incorporating environmental features that help reestablish a sense of home and promote the physical, psychological, and social well-being of those made homeless.

In brief, the literature indicates that the main environmental attributes associated with well-being in temporary housing are: (1) flexibility and personalization; (2) cultural and symbolic integration; (3) physical comfort and environmental protection; (4) balance between privacy and collective spaces; and (5) community participation in the project. Although few studies explicitly address specific environmental variables, the findings reinforce the need for holistic, human-centered approaches in the design and development of post-disaster shelters and temporary housing.

METHOD

The research is a qualitative, exploratory, survey-based field study that aims to understand perceptions of well-being in post-disaster shelters from the perspective of Xokleng Indigenous leaders affected by the 2023 floods in José Boiteux/Santa Catarina. Exploratory research is particularly apt for phenomena that are still poorly investigated or require in-depth qualitative analysis (Sampieri et al., 2013).

The sample was intentional and not probabilistic, comprising two Indigenous leaders directly affected by the floods of October 2023 – an event associated with the critical rise within the Norte Dam and the temporary displacement of the population. The exploratory nature of the study justifies selecting participants, their ethnic-territorial specificity, and their representative role. The results are not generalizable and are interpreted strictly in the context investigated.

The methodological procedures included: an integrative literature review; definition of the central concepts (vulnerability, shelters, and temporary housing); conducting field interviews; and analysis and discussion of the results.

The semi-structured interviews were conducted in person on January 28th, 2025, at Casa Indígena in São José/Santa Catarina. They lasted 20 to 30 minutes, after approval by the Research Ethics Committee (CAAE nº 79748324.00000.0121). The instrument addressed environmental attributes of shelters, comfort, stressors, emergency reception, and suggested improvements. The photo-elicitation technique (photography as a support tool) was also used, using images of temporary housing, to facilitate participants' articulation of their perceptions of well-being. By way of illustration, the following Figures are presented: Figure 4 and Figure 5.

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Figure 4: Example 1 of material and shape. Source: ArchDaily Brazil, 2017.

Figure 5: Example 2 of material and shape. Source: ArchDaily Brazil, 2017.

The data were collected through audio recordings of interviews, complemented by notes in a field diary and by documenting the visual choices made during the photo-elicitation technique. The interviews were then fully transcribed and submitted to a qualitative analysis process, with organization and thematic categorization of the responses, linking the empirical findings to the theoretical framework adopted. This step allowed data systematization and supported the discussion of the results and the study's final considerations.

To systematically summarize the procedures adopted, Table 2 presents the methodological stages of the research from the conceptual definition and review of the literature to the collection, processing, and analysis of empirical data.

Organizing the methodological path into successive phases helps explain the coherence among the study's objectives, the techniques used, and the results obtained, thereby demonstrating the scientific rigor of the field

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Stage	Methodological phase	Objective	Data collection, processing, and systematization procedures	Products / Results
01	Conceptual definition and delimitation of the subject	Theoretically substantiate the research and delimit the main analytical concepts	Conduct exploratory searches on scientific bases to identify the concepts of vulnerability, shelters, and temporary housing,	Consolidation of the conceptual framework that guides the research
22	Integrative literature review	Identify approaches, methods, and gaps in welfare in post-disaster shelters	Review and critical analysis of relevant national and international literature on the subject	Theoretical basis to interpret empirical data
33	Field research-data collection	To investigate the perception of well-being in post-disaster shelters from the Xokleng Indigenous perspective	Conduct semi-structured interviews with two Indigenous leaders, victims of the 2023 floods, applying the photography technique as a model, with presentation of reference images of materials, form, implementation, lighting, layout, and furniture	Interview records (audio and annotations), visual selections, and verbal and graphic descriptions of participants
44	Data processing and systematization	Organize and prepare data for analysis	Transcription of interviews; thematic categorization of responses; Organization of visual choices based on reference images	Qualitative data organized into analytical categories
55	Analysis and interpretation of results	Understand the environmental attributes associated with well-being and stress in shelters	Interpretative qualitative analysis, relating empirical data to the theoretical framework	Discussion of results considering the literature
66	Summary and final considerations	Reach the research goal and present study contributions	Consolidation of findings, final discussion, and preparation of final considerations	Project recommendations

Table 2: Methodological procedures of the research. Source: Prepared by the authors.

survey. Thus, systematization contributes to the method's transparency, helping to understand the investigative process and facilitate the study's replicability in analogous contexts.

DEVELOPMENT

RESULTS OF INTERVIEWS

Interviews with Xokleng leaders reveal key aspects of Indigenous perceptions of post-disaster shelters. The discourse is marked by recurrent flooding, criticism of Civil Defense performance, and appreciation of culture as a structuring element of community organization. It is evident that there is a need to understand the shelter not only as a contingency measure but also as a space that combines the Xokleng's cultural identity and social

practices. This perception confirms that well-being in this Indigenous context arises from the interplay of physical space, culture, and community bonds.

The content analysis identified central themes: culture and identity; safety and dignity as pillars of well-being; institutional shortcomings; demand for a minimum level of health, education, and social infrastructure; and the valorization of extended family organization, with up to three nuclei (8 to 12 individuals). The relevance of the shelters' spatial configuration and the preventive implementation in villages susceptible to isolation during floods, as seen in 2023, was also highlighted. The recurrence of these extreme events directly shapes how the community perceives the risk and the demand for adequate housing solutions.

The results suggest that well-being in the context of shelters extends the building's tectonic dimension, linking it to symbolic, social, and cultural aspects. The emphasis on Xokleng culture shows that post-disaster architecture must dialogue with Indigenous ways of life, rejecting standardized solutions that neglect collectivity. On the other hand, criticism of the Government (Civil Defense) for non-compliance with agreements highlights institutional vulnerability and a sense of helplessness. Thus, these factors accentuate perceptions of insecurity and the need for assertive public policies. These findings reiterate the importance of Indigenous community leadership in defining emergency reception strategies.

The allusion to the extended family model indicates that the shelter, to be fully functional, must allow extended coexistence and consolidate a sense of belonging. The shelter assumes a dual role: physical and symbolic protection, linked to the guarantee of rights, cultural recognition, and the preservation of community dynamics. In summary, the data demonstrate that, from the Indigenous perspective, well-being in post-disaster shelters depends on the integration of culture, safety, basic infrastructure, social organization, and institutional recognition– elements that should guide future design guidelines. It should be noted that these results are situated and are not generalizable to the cultural and territorial heterogeneity of Indigenous peoples.

RESULTS - TECHNIQUE

Using the photo-elicitation technique, presenting reference images of temporary shelters with different materiality, morphological configurations, layouts, and modes of implementation allowed participants to concretely articulate their perceptions and preferences regarding housing well-being. The results show the preeminence of the Xokleng cultural tradition in the choice of materials: although bamboo is acknowledged as a traditional element, its semantic association with

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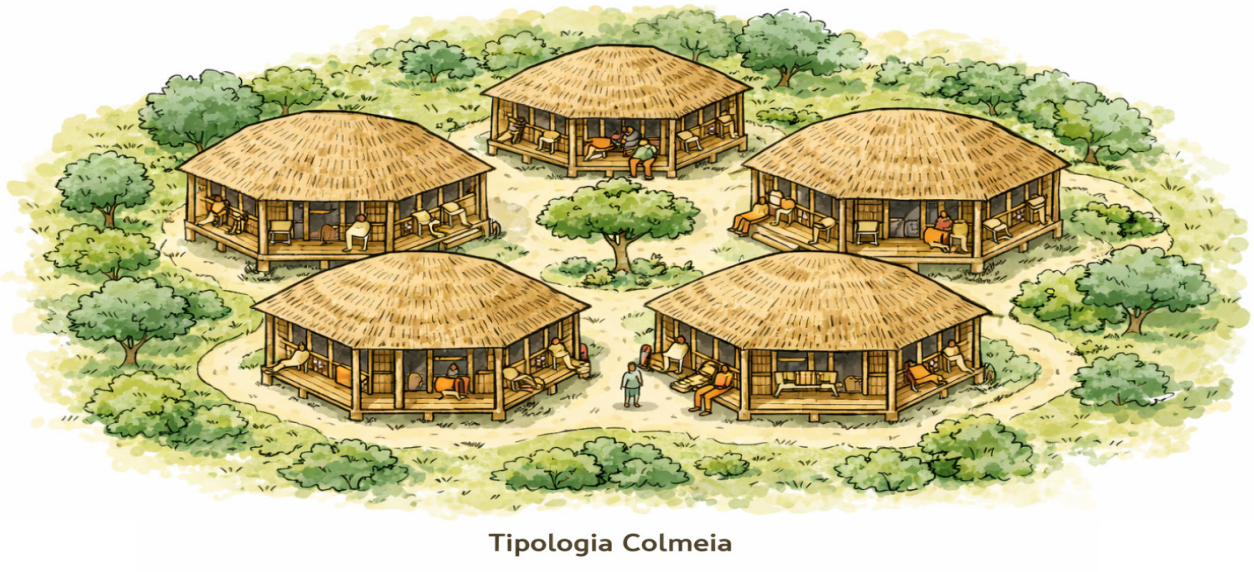


Figure 6. Representation of the suggested hive typology. Source: Preparation by the authors, with support of a generative artificial intelligence tool (ChatGPT / DALL·E – OpenAI), used for conceptual representation.



Figure 7. Suggested housing unit layout. Simple diagram showing the spacing of units, verandas, and community circulation. Source: Preparation by the authors, with the support of a generative artificial intelligence tool (ChatGPT / DALL·E – OpenAI), used for conceptual representation.

other ethnicities, such as the Guarani, makes wood emerge as the most legitimate and identitarian option. This choice ratifies the relevance of materiality as a cultural and symbolic expression of Indigenous living.

Regarding the shape, the preferences for the star geometry and the "hive" typology stand out (Figure 6), which evoke the idea of collectivity, preserving the necessary spatial organization.

Regarding implementation, the emphasis fell on the degree of distance between units, revealing the search for privacy and individualization of the family nuclei – an aspect mentioned as essential by the leaders. This data reinforces the importance of considering not only the functionality, but also the symbolic and relational dimensions of community life (Figure 7).

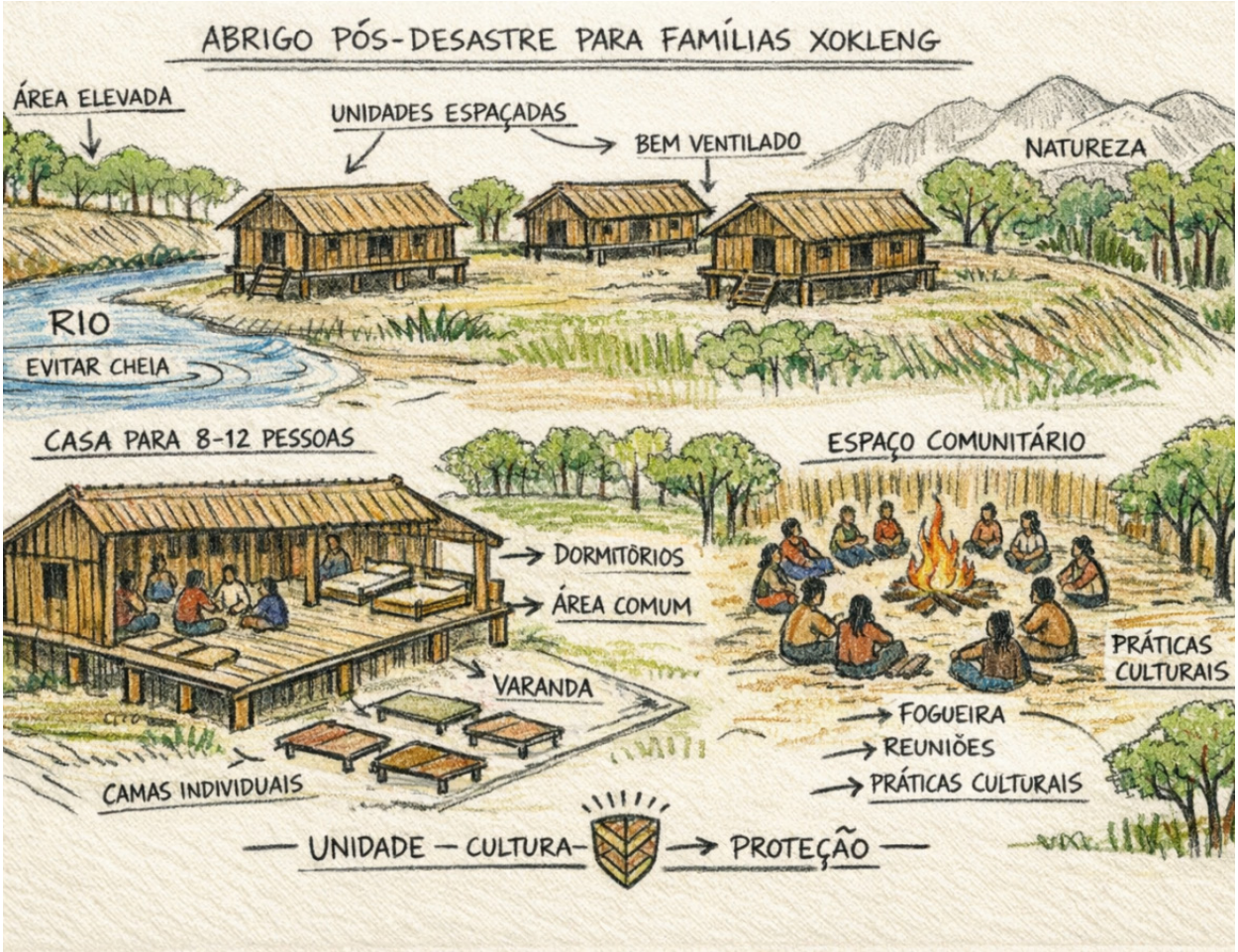


Figure 8. Conceptual outline of post-disaster shelters for the Xokleng people, based on socio-cultural and territorial design recommendations. Source: Preparation by the authors, with support of a generative artificial intelligence tool (ChatGPT / DALL·E – OpenAI), used for conceptual representation.

Regarding environmental comfort (ventilation and lighting), preference was given to solutions that favor daylight transmission and integration with the external environment through openings and verandas. This choice reflects the appreciation of contact with nature, a predominant factor for Indigenous well-being. In the internal layout, preferences focused on the sectorization of spaces, with segregated bedrooms and single beds, which demonstrates an appreciation for intimacy and domestic organization.

Thus, the analysis of the results indicates that the Xokleng's perception of well-being regarding temporary housing is not limited to technical determinants but is also linked to identity and cultural elements that reaffirm specific ways of living. The housing solutions must include both performative requirements, such as ventilation, lighting, and spatial organization, and socio-cultural values that ensure belonging, cultural continuity, and quality of life, as illustrated in Figure 8. Such recommendations should be understood as set in the specific context of the Xokleng community and should not be uncritically transposed to other Indigenous realities.

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CONCLUSIONS

The integrated analysis of the theoretical framework and the empirical results demonstrate a close correlation between the attributes discussed in the literature and the perceptions of the indigenous Xokleng community. Studies reiterate that the personalization and adaptability of shelters are fundamental to mitigating a sense of temporariness (Gordillo Bedoya, 2004; Caia et al., 2010; Sukhwani et al., 2021). This aspect is confirmed in the results, where the interviewees reinforce the importance of culturally legitimate material choices– such as wood, to the detriment of bamboo associated with other ethnicities –and the preference for star and hive morphological layouts, which allow spatial organization and symbolize collectivity.

Cultural identity and belonging, pointed out by Félix et al. (2013), Caia et al. (2010), and Sukhwani et al. (2021) as essential elements for rebuilding well-being, emerge clearly in the discourses, especially in the criticism of standardized solutions that neglect the *modus vivendi* value of cohabitation in extended family groups (comprising up to twelve individuals).

In the field of physical protection associated with environmental comfort (Gordillo Bedoya, 2004; Delgado, 2022), the results reveal the precedence given to cross-ventilation, daylighting, verandas, and visual permeability to the external environment, reinforcing connections with nature, a core element for well-being in the Xokleng worldview.

The literature also highlights the need for a balance between privacy and collectivity (Gordillo Bedoya, 2004; Gibbs et al., 2017; Félix et al., 2013), an aspect identified in the preference for layouts with a higher distance coefficient between units and for sectorized internal layouts, with independent bedrooms, which guarantee intimacy without compromising community sociability. The participation of communities in the design process, advocated by Gordillo Bedoya (2004), Sukhwani et al. (2021) and Félix et al. (2013), also appears as a central demand, expressed both in the criticism of institutional performance (Civil Defense) and in the demand for shelters built preventively in the villages, reinforcing autonomy and a sense of agency.

Finally, the vulnerability dimension, discussed as a historical and social process that accentuates risks for specific groups, is confirmed by the interviewees' reports of institutional failure to assist and non-compliance with agreements, which exacerbate feelings of insecurity (Table 3). In this sense, the findings corroborate the literature, pointing out that post-disaster housing solutions must combine protection, cultural identity, and restorative attributes, transcending materiality to address symbolic and social dimensions.

Thus, the research shows that, from an Indigenous perspective, well-being in temporary shelters depends on integrating technical, cultural, and environmental factors, confirming the convergence between theoretical

Attributes	Theoretical findings	Perceptions of the Xokleng community	Project recommendations
Customization and adaptability	Adaptive shelters reduce the feeling of transience (Gordillo Bedoya, 2004; Caia et al., 2010; Sukhwani et al., 2021).	Preference for culturally legitimate materials (wood) and symbolic morphological configurations (star, hive).	Allow the self-determination of materials and typologies; provide functional versatility and morphologies that evoke a sense of collectivity.
Cultural identity and belonging	Belonging and identity are essential for well-being (Félix et al., 2013; Sukhwani et al., 2021).	Criticism of standardized solutions; valuing the cohabitation of extended families (up to 12 people).	Avoid standardization; design for extended family groups; encourage symbolic and affective appropriation of space.
Environmental comfort and connection with nature	Natural elements favor restoration and well-being (Gordillo Bedoya, 2004; Delgado, 2022).	Improvement of cross ventilation, daylighting, verandas, and visual permeability to the surroundings.	Ensure environmental comfort by designing wide openings and open spaces, and by integrating with nature.
Privacy and collectivity	A balance between privacy and community life is essential (Gordillo Bedoya, 2004; Gibbs et al., 2017).	Preference for more spacious units and separate bedrooms.	Adopt degrees of distance between units and internal sectorization (intimate + collective spaces).
Community involvement	Participation strengthens autonomy and a sense of control (Gordillo Bedoya, 2004; Félix et al., 2013).	Criticism of Civil Defense: demand for preemptive construction of shelters in villages.	Ensure co-authorship of communities; invest in preventive planning; promote participatory processes.
Protection and security	Vulnerability stems from social and historical processes.	Perception of institutional lack of assistance and non-compliance with agreements.	Ensure institutional trust; integrate physical and symbolic protection; honor commitments made.
Expanded well-being	Shelters must go beyond materiality and integrate social and cultural dimensions.	Well-being is linked to the restoration of the notion of home, identity, and collectivity.	Transcend a palliative /minimalist character; adopt culturally contextualized, restorative solutions.

Table 3. Theoretical findings, empirical insights, and practical recommendations. Source: Prepared by the authors (2025).

constructs and practical experience. The theoretical implications underscore the need to move beyond minimalist approaches, broadening the conceptual frameworks of post-disaster architecture to include identity and community dimensions. In practical terms, the results support the formulation of culturally contextualized, restorative, and participatory housing solutions that reestablish the sense of home, strengthen resilience, and promote the integral recovery of vulnerable populations.

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